3 THE DEVELOPMENT OF A CATCHMENT-BASED LOCAL ENVIRONMENTAL STUDY

3.1 IMPORTANCE OF CATCHMENT-BASED PLANNING

By definition, a catchment is known as the area supplying surface water to a common watercourse (see Figure 4). Each catchment is bounded by hills or ridges that direct the flow of water. Rain falling on one side of a ridge flows into one river while rain falling on the other side flows into another.

![Figure 4: Typical catchment (J. Doring, 2001)](image)

Catchments support a wide variety of uses as illustrated in Figure 4. The way in which we interact with the catchment (for example how we use the land, what pollutants we allow into rivers and creeks, how much vegetation we clear) ultimately determines its health. Activity in one part of a catchment is able to impact on another part of the catchment in some way. For instance, the removal of vegetation in the upper reaches of a catchment can cause soil erosion which, in turn, leads to sedimentation and muddy water downstream. Consequently, dams fill up with silt, aquatic plants are smothered, aquatic fauna assemblages may change
and water has to be filtered prior to being used for irrigation or drinking. Therefore, it follows that the quality of water leaving a catchment is a good indicator of how well that catchment is being managed.

The catchment-based approach to land use planning is widely accepted by government authorities, the community and environmental groups alike. It is a fundamental element of the strategic planning process for urban and rural areas for it is through this approach that land use decisions are connected to their wider environmental and ecological contexts. In addition, catchment-based planning is an effective means of integrating land, vegetation and water resource management and allows for efficient co-ordination with existing catchment management groups and their studies. It also assists in the recognition and management of cumulative impacts of all activities in a catchment and provides a consistent unit of study to measure the catchment health through water quality analysis (Shearer, 1997; Healthy Rivers Commission, 2000 pp. 57-60).

The CWSS has adopted a catchment-based approach to land use planning. This is in accordance with a preferred approach determined in conjunction with DIPNR.

3.2 RELATIONSHIP TO CATCHMENT MANAGEMENT PLANS

A number of Catchment Management Plans and Strategies already exist, or are being prepared, for catchments in the LGA. As the CWSS is catchment-based, relevant Catchment Management Plans and Strategies have been consulted to ensure that, where appropriate, the strategic directions within the CWSS are consistent with the detailed plans already in place, strengthening the concept of catchment management.

3.2.1 Hunter Catchment Blueprint (HCRCMA/DLWC 2003)

The Hunter Catchment Blueprint has been prepared by the Hunter – Central Rivers Catchment Management Authority (HCRCMA), formerly known as the Hunter Catchment Management Trust, in partnership with the natural resources arm of DIPNR, (formerly known as the Department of Land and Water Conservation). The main purpose of the plan is to ensure the health of the Hunter River catchment by meeting a series of key targets in the areas of River System Health, Land Degradation, Native Vegetation/Biodiversity and Salinity.

Priority actions in the Hunter Catchment Blueprint specific to the LGA include:
Improving water quality by restoring and protecting stream bank vegetation in a number of Hunter River catchments including the Wollombi Brook and Wallis/Swamp Creek catchments; improving land management practices on highly erodible soils in the Hunter catchment, including the Wollombi Brook catchment, through increasing the area of native vegetation cover by 5,000 hectares; and increasing deep-rooted vegetation and/or permanent ground cover by 7,500 hectares on salinity recharge areas and discharge sites in priority areas such as the Wollombi Brook and Black Creek catchments to reduce salinity levels in the Hunter River.

### 3.2.2 Wallis and Fishery Creeks Total Catchment Management Strategy

The Wallis and Fishery Total Catchment Management (TCM) Strategy provides a basis for “coordinated actions and activities aimed at ensuring that quality of life is maintained or improved for everyone who lives, works and visits the catchment” (HCMT, 2000 p.ii). It emphasises the need to effectively manage the ecological, social and economic aspects of the catchment.

The TCM Strategy incorporates issues relating to flooding, water quality, vegetation management and protection and land use planning. A number of key land use planning issues are expressed in the strategy that are of particular relevance to the CWSS. These are listed as follows:

- identification of a clear planning direction for the catchments;
- the need for future planning policies to be developed on a catchment basis;
- the need to consider the future of concessional allotments in the LGA;
- preparation of land use plans to identify:
  1. areas of land which may be suitable for future sustainable development subject to further detailed investigation; and
  2. areas of land which should be conserved for environmental, scenic or cultural reasons;
- the need to assess, wherever possible, the cumulative impacts of development;
- recognition of flooding issues and the need for Council planning and development approval processes to incorporate floodplain management measures;
- the need to proactively encourage conservation and re-establishment of native vegetation by landholders;
- protection of significant stands of remnant vegetation within the catchment including existing riparian vegetation along major and minor watercourses;
protection of Bow Wow Creek Gorge; and

the need to develop an economic plan for the catchment (HCMT, 2000, pp.16-18).

In terms of relevance to the CWSS, the Wallis and Fishery Creeks TCM Strategy affects the Wallis/Swamp Creek catchment (see Figure 5).

### 3.2.3 Wollombi Valley Total Catchment Management Strategy

The Wollombi Valley TCM Strategy has been jointly prepared by DLWC and the Wollombi Valley Landcare Group. The Strategy provides a framework for the ecologically sustainable management and future development of lands within the Wollombi Valley. The Strategy identifies issues of concern to landholders and provides information and guidance on how these issues may be addressed. Catchment issues that the Strategy addresses include property management, erosion and sedimentation, native flora and fauna, wetlands, water quality and quantity, land use intensity, weed control, bush fire management, extractive industries, communication and assigning responsibility, development and roads.

Specific actions recommended to be taken by Council and of particular relevance to the CWSS include the prohibition of clearing of native vegetation on steep slopes, and ensuring any new development is low key and sympathetic to the area.

In terms of relevance to the CWSS, the Wollombi Valley TCM Strategy affects the Wollombi Brook and Stockyard Creek catchments (see Figure 5).

### 3.2.4 Hawkesbury Lower Nepean Catchment Blueprint

The Hawkesbury Lower Nepean Catchment Blueprint provides guidance on the management of the catchment and in particular identifies actions for the community, various government agencies and local councils responsible for the management of the catchment. A number of land use planning issues are expressed in the strategy that are of particular relevance to the CWSS. These are listed as follows:

- Ensure all relevant local, regional and state plans and strategies and other land use management plans support the achievement of biodiversity catchment targets (both terrestrial and aquatic);
- Prepare and implement effective strategies to minimise the impact of activities that damage native habitats and assist in the protection of threatened species; identify the biophysical constraints of land, incorporate these constraints into planning strategies and
instruments and introduce appropriate controls to protect or limit development on sensitive and highly constrained lands;

- Prepare and implement a riverine corridor strategy which identifies and maps appropriate width of riparian corridors and prioritises rehabilitation programs for riverine corridors and is supported by appropriate planning, strategies, instruments, and development control plans;

- Revise and implement, in partnership with Aboriginal communities and other key stakeholders, planning strategies and instruments that recognise, protect and manage significant Aboriginal landscapes, places and sites, and non-Aboriginal landscapes, places and sites; and

- Ensure that catchments and catchment wide issues are reflected in regional planning strategies and that regional strategies and subsequent local plans adopt and implement the targets in the blueprint (DLWC, 2003).

In terms of relevance to the CWSS, the Hawkesbury Lower Nepean Catchment Blueprint affects the Macdonald River and Yengo Creek catchments (see Figure 5).

### 3.2.5 Black Creek – Cessnock Catchment Study

The Black Creek – Catchment Study (CMPS&F, 1995) evaluates the water quality of Black Creek and discusses point and diffuse sources of pollutants and their impact on water quality.

The Total Catchment Strategy in the study addresses the management of point sources of pollution into Black Creek from Pelton Colliery and Cessnock Waste Water Treatment Works. It also addresses the management of diffuse sources of pollution from agriculture and stormwater and discusses a number of options, such as buffer strips and recycling irrigation water, to manage their impacts on Black Creek.

In terms of relevance to the CWSS, the Black Creek – Cessnock Catchment Study affects the Black Creek catchment (see Figure 5).

### 3.3 Catchments Of The Cessnock LGA

Catchments were defined using elevation contours as they appear on Central Mapping Authority of NSW 1:25 000 topographic maps. The LGA boundary was used as the boundary for all maps, however, in some instances catchment boundaries extended well beyond this limit. Where this was the case, topographical maps outside the area were
obtained and the true extents of these catchments were defined. In addition, planning instruments from adjoining LGAs were obtained and consulted in the course of preparing the CWSS.

The CWSS uses 9 catchments as study units across the LGA. These are illustrated in Figures 5 and 6 and listed in Table 2 below.

Table 2: Catchments in the Cessnock LGA – a locality guide

<table>
<thead>
<tr>
<th>Catchment Name</th>
<th>Locality Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anvil Creek Catchment</td>
<td>This catchment area incorporates Branxton, East Branxton, Greta, Illalong and part of North Rothbury and flows into the Hunter River to the northwest.</td>
</tr>
<tr>
<td>Black Creek Catchment</td>
<td>This catchment area incorporates Aberdare, Bellbird, Cessnock, part of Kearsley, Keinbah, Kitchener, Lovedale, part of North Rothbury, Nulkaba and the Vineyards District (as defined by the 1(v) Rural (Vineyards) Zone and in DCP No. 28) and flows into the Hunter River to the northwest.</td>
</tr>
<tr>
<td>Congewai Creek Catchment</td>
<td>This catchment area incorporates the Congewai Valley, Ellalong, Millfield, Paxton and extensive surrounding rural areas and flows westward into Wollombi Brook.</td>
</tr>
<tr>
<td>Four Mile Creek Catchment</td>
<td>This catchment area incorporates Blackhill and other rural areas adjoining the LGAs of Maitland and Newcastle and flows northeast into the Hunter River.</td>
</tr>
<tr>
<td>Wallis/Swamp Creek Catchment</td>
<td>This catchment area incorporates Abermain, Bishops Bridge, Heddon Greta, most of Kearsley, Kurri Kurri, Mulbring, Neath, Pelaw Main, Stanford Merthyr, Weston and surrounding rural areas and flows north into the Hunter River.</td>
</tr>
<tr>
<td>Wollombi Brook Catchment</td>
<td>This catchment area incorporates Bucketty, Laguna, Wollombi and extensive surrounding rural areas and flows north into the Hunter River.</td>
</tr>
<tr>
<td>Yengo Creek Catchment</td>
<td>This catchment area incorporates an extensive component of the Yengo National Park, Finchley and Mt. Yengo and is a component of the larger Hawkesbury-Nepean Catchment which falls outside the Cessnock LGA.</td>
</tr>
<tr>
<td>Stockyard Creek Catchment</td>
<td>This catchment area incorporates Stockyard and Bagnells Creeks and surrounding rural areas and flows north into the Hunter River.</td>
</tr>
<tr>
<td>Macdonald River Catchment</td>
<td>This catchment area incorporates Yengo National Park and is a component of the larger Hawkesbury-Nepean Catchment which falls outside the Cessnock LGA.</td>
</tr>
</tbody>
</table>
Figure 5: Catchment boundaries in relation to town and village locations.
Flow to Hunter River
Wallis/Swamp Creek & Four Mile Creek catchments extend into the Newcastle, Maitland & Lake Macquarie LGAs. These catchments take in Beresfield, Thornton & Woodberry. Drainage is into Woodberry & Hexham Swamps.

Anvil Creek catchment extends into the Maitland & Singleton LGAs encompassing Lochinvar, Gosforth, Windemere and Windella. Black Creek catchment also extends into the Maitland & Singleton LGAs.

Macdonald River catchment extends into the Singleton & Hawkesbury LGAs.

Figure 6: Catchment boundaries in relation to adjoining LGAs.