EXECUTIVE SUMMARY

Waterwatch volunteers from the Ginninderra Catchment Group (GCG) have been undertaking water quality and other monitoring in the catchment since 1999, as part of a Waterwatch and Catchment Health Indicators (CHI) Program. The program was initiated to develop a simple and practical method that community groups can use to:

- measure the health of their local catchment;
- monitor and evaluate the effectiveness of their on-ground projects;
- identify early warning signs of environmental problems; and
- measure trends in the condition of the natural resources in their catchment over time.

It is well understood that environmental impacts of land management actions are reflected in the water quality of receiving waters. The Catchment Health Indicators (CHI) Program brings together information about landscape features, physical and chemical water quality, macroinvertebrate diversity and frog species diversity, in order to provide a picture of the overall health of the Ginninderra catchment and its sub-catchments.

This report summarises the findings of the Waterwatch and CHI monitoring that has been collected in the Ginninderra catchment from 1999 - 2005. The report synthesises the information collected, and makes recommendations for continued management and on-ground action.

KEY FINDINGS

Large sediment loads

Turbidity was observed to be at unacceptable levels at all sites from time to time, indicating erosion issues throughout the catchment. Sites where high turbidity was observed consistently were mainly either upstream of settlement ponds in areas of urban construction in Gungahlin and Dunlop, or in the rural areas along Halls Creek and Gooromon Ponds Creek, where no settlement ponds are in place.

Large nutrient loads

Observations of phosphorus concentrations and algal growth indicated regularly high nutrient loads at a number of sites across the catchment, particularly at those sites upstream of urban settlement ponds. Large nutrient loads and subsequent excessive plant growth is likely to have contributed to decreased oxygen levels at a number of sites. Oxygen concentrations below acceptable levels were apparent at most sites across the catchment from time to time.

Biodiversity

Aquatic macroinvertebrate populations throughout the catchment were consistently impoverished with regard to diversity and population structure and generally indicated high nutrient levels or pollution. Large sediment loads, large nutrient loads, low dissolved oxygen levels, frequent high water temperatures in summer and fluctuating pH levels are all likely indicators of a less than ideal aquatic habitat for macroinvertebrate populations. Aquatic habitat has also been impacted by changed hydrological regimes and removal of vegetation throughout the catchment.

Observations of frog populations across the catchment highlight some sites providing high quality habitat for frog species. Areas of particular significance were located in numerous dams in the Mulligans Flat Nature Reserve and in the dam in the Dunlop Grasslands Nature Reserve.

Salinity issues

The electrical conductivity of surface water along Ginninderra Creek was generally acceptable, except when flow levels became very low. Consistently high electrical conductivity results in Gooromon Ponds Creek indicate significant potential for salinity problems in this subcatchment.

Litter and dumping

Waterwatch and Landcare observations indicate that litter is an issue throughout the catchment. Litter is predominantly composed of various plastics, food wrappers, drink bottles,

broken glass and cigarette butts. Dumping is also highlighted as a major issue at a number of sites, especially on the urban fringes, for example, in Dunlop.

Changed Hydrological Regime

It is recognised that most of the issues listed above are related to the altered hydrological regime in the Ginninderra catchment, resulting from land clearing, farming practices and urbanisation. Increased amount and power of stormwater and decreased groundwater infiltration has incised the creek channel and caused more frequent and severe flooding events, increased erosion and compromised aquatic habitat and water quality.

KEY RECOMMENDATIONS

Specific On-ground Works

- Support and encourage the development of a series of urban wetlands to slow water flows, capture pollution and generate aquatic habitat. The Group can play a major role in initiating and fostering partnerships to this aim. In particular, there is great opportunity for Group members to identify appropriate sites for consideration, promote their construction, and assist with planting, maintenance and community education.
- Continue to support revegetation and weed removal work by Landcare Groups throughout the Urban Open Space and Canberra Nature Park network and on private urban and rural properties. The Ginninderra Creek corridor provides a good focus point for revegetation and biodiversity protection. Revegetation in the direct vicinity of willow stumps is an immediate priority in order to prevent bank collapse and erosion as the stumps degrade.
- Investigate and initiate strategies to support local landowners to implement whole farm management strategies on their properties. This could include fencing, revegetation and other works to protect riparian areas on their properties from degradation and associated erosion.
- Further investigation is required to determine underlying causes of large erosion gullies in Hall, whether or not they are actively eroding and strategies to prevent further soil disturbance.

Community Engagement and Education

- Conduct education and community engagement activities to encourage Canberrans to actively implement revegetation and Water Sensitive Urban Design activities in their own backyards, school grounds or work places.
- Initiate collaborative partnerships with key bodies such as ACTPLA, EPA and building industry bodies, with a view to developing and implementing a comprehensive education campaign directed at developers, builders and contractors involved in the construction industry.
- Investigate and initiate strategies to support local landowners to implement whole farm management strategies on their properties. This could include fencing, revegetation and other works to protect riparian areas on their properties from degradation and associated erosion.
- Conduct an education, awareness and action campaign to engage and support urban residents to prevent localised erosion issues.
- Continue to foster positive behavior change in school students through school education activities.
- Target community stormwater education programs at particular sections of the community. For example, ‘pick up your poo’ – through the RSPCA, overuse of fertilisers / weeds – through nurseries.
- Continue to conduct community and school education activities that deliver the “do the right thing” message. This can be done in conjunction with existing programs such as ‘Clean Up Australia’ or the Sustainable Schools program.
- Encourage community groups to report dumping activity.

Advocacy and Building Partnerships

- Support and encourage government and industry initiatives to incorporate Water Sensitive Urban Design principles into urban planning and land management.
- Initiate collaborative partnerships with key bodies such as ACTPLA, EPA and building industry bodies, with a view to developing and implementing a comprehensive education campaign directed at developers, builders and contractors involved in the construction industry.
- Advocate for more resources to be directed at enforcement of construction industry environmental protection measures.
- Continue to identify and advocate for the protection of significant areas of biodiversity in the Ginninderra catchment. Significant areas of amphibian diversity include Mulligans Flat and the Dunlop Grassland Reserve.
- Advocate for the recognition of the Ginninderra Creek corridor and local nature reserves as important focuses for biodiversity, and investigate strategies to establish links between the two areas.
- In partnership with urban land managers, encourage the removal of significant weed species in strategic areas, and continue to support revegetation efforts by Landcare Groups throughout the 'Urban Open Space' & Canberra Nature Park network and on rural properties.

Further Monitoring and Evaluation

Water Quality Monitoring Techniques

The current monitoring regime for the Ginninderra Waterwatch Program provides valuable information about base flows of surface waters in the Ginninderra catchment. For the sake of continuity and comparability of water quality data, it is recommended that the current water quality monitoring techniques and QAQC protocols are continued.

The current regime does not however, collect information about rain and storm events, when the major inputs of pollution and the most significant changes to stream integrity occur. It is recommended that the Ginninderra Catchment Group acquire specialised water sampling equipment that can automatically collect stormwater samples without the need for volunteers to be present during a rain event. This will enable more strategic collection of water quality data without compromising volunteer safety.

Scope of Monitoring Parameters

The current monitoring of aquatic macroinvertebrates and frog species generates important information about biodiversity in the catchment and highlights areas of significant habitat. It is recommended that monitoring of both of these biological indicators continue.

In order to increase the breadth of the biodiversity information that we generate, it is recommended that the Ginninderra Catchment Group investigate opportunities to monitor a range of habitat and wildlife in the catchment, to enable formal recognition of areas of high biodiversity, to measure impacts of on-ground works by Landcare Groups and to contribute further to Territory and National monitoring and evaluation programs.

Analysis and Reporting of Water Quality Data

It is recommended that in future Waterwatch data is analysed according to water quality threshold values, as set out in the relevant ACT Environment Protection Legislation. These thresholds are based on ANZECC guidelines and define a line between 'acceptable' and 'not acceptable' water quality conditions. By using these standards rather than the CHI ratings, the Catchment Group will be able to more directly relate occasions of unacceptable water quality conditions to Environment Protection Legislation, and therefore more effectively trigger responses from government agencies and other stakeholders. The use of legislated threshold values for water quality analysis will also allow for more timely reporting of results.

ABOUT THIS REPORT

This report is divided into 5 sections.

Section 1 introduces the GCG Waterwatch and Catchment Health Indicators Program, and describes what has been monitored and how the program fits into the regional context.

Section 2 synthesises the findings of the monitoring efforts for the five year period from 1999 - 2005, including landscape features, rainfall and discharge, stormwater and water quality, turbidity, phosphorus, electrical conductivity, pH, dissolved oxygen, water temperature, macroinvertebrate diversity and frog species diversity. For each parameter a short explanation is given of what it is, and how it can impact aquatic ecology. Results of monitoring are then summarised highlighting some 'hot spots' for each issue in the Ginninderra catchment.

Section 3 describes in detail the results of the physical / chemical water quality monitoring at each of the twenty-one water quality sites in the Ginninderra catchment. Charts of the monitoring results are provided, along with photographs from each of the sites.

Section 4 presents a short summary of the activities of Landcare and Parkcare groups in the Ginninderra catchment, for the six year period from 1999 - 2005.

Section 5 summarises the significant findings of the report, highlights the key issues arising from the monitoring data, and suggests corresponding recommendations for each issue.