WASHPOOL CREEK
Washpool National Park

Wild River Assessment

Parks and Wildlife Division
Department of Environment and Conservation

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SUMMARY

NSW has recently introduced legislation that enables wild rivers to be formally recognised and protected. Wild rivers are those rivers of which the biology, geomorphology and hydrology are in a substantially unmodified condition. Wild rivers are declared within areas currently reserved and managed for natural and cultural heritage conservation purposes to ensure that the high conservation values of these rivers and their catchments are maintained. Wild rivers can be used as focal points for a range of protection and rehabilitation works outside reserves.

Washpool Creek occurs within the Clarence River Basin, the largest catchment on the NSW North Coast. The catchment incorporates the rugged hills of the Great Dividing Range (including the Washpool sub-catchment), the more gently sloped western edge of the escarpment, and the coastal plain, which meets the sea south of Ballina and north of Coffs Harbour.

The Washpool Creek sub-catchment falls within Washpool National Park, which, with the adjacent Gibraltar Range National Park, forms part of the World-Heritage–listed Central Eastern Rainforest Reserves of Australia (CERRA).

The Washpool Creek sub-catchment was, and continues to be, very important to Aboriginal people. It contains important Aboriginal sites and is used for cultural heritage education. The remote and rugged landscape has limited European disturbance to cedar cutting, localised patches of logging, and bush grazing; the entire sub-catchment is wilderness.

Washpool Creek has been assessed for its biological, geomorphic and hydrological condition. The river has been found to support a highly diverse macroinvertebrate fauna and the biological assessment. A geomorphic assessment of the river indicated that it is in good geomorphic condition. The section of the river on park was found to be of the bedrock and gorge River Styles® (Ferguson et al. 1999). both of which are highly resistant to disturbance. This river section was classed as a conservation reach—the highest condition category given in this geomorphic study. In terms of hydrology, there is nothing in the sub-catchment's history to indicate that the river or catchment would have been significantly altered.

The Washpool Creek and its tributaries within Washpool National Park are considered to meet the criteria for wild rivers.

1 INTRODUCTION

Wild Rivers under the National Parks and Wildlife Act

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the declaration of wild rivers.

In order to be considered wild, a river must be in a relatively natural condition. Both the river and the parts of the catchment that affect the river are taken into account:

Wild rivers are those *exhibiting substantially natural flow ... and containing remaining examples, in a condition substantially undisturbed since European occupation of …*

a) the biological, hydrological and geomorphological processes associated with river flow, and

b) the biological, hydrological and geomorphological processes in those parts of the catchment with which the river is intrinsically linked. (s. 61 (4), NPW Act)

Wild rivers may be declared only on reserves managed by the Department of Environment and Conservation (DEC).

A wild river may be an estuary, a freshwater creek, or a chain of ponds. The Act states that a wild river may be:

any water course or water course network, or any connected network of water bodies, or any part of those, of natural origin, exhibiting substantially natural flow (whether perennial, intermittent or episodic) (s. 61 (4), NPW Act).

Declaration of a wild river occurs by notice in the *Government Gazette*.

The Director General of DEC has the power to declare a wild river without an Act of Parliament, but in some cases the concurrence of certain Ministers must first be obtained: if the declaration may affect the functions of the Minister responsible for the *Water Management Act 2000* or, in the case of State Conservation Areas, the Minister responsible for the *Mining Act 1992,* the concurrence of the Minister(s) may need to be obtained (s. 61 (3), NPW Act).

DEC also needs to consider how the river will be managed. A river may not be declared wild unless the declaration is consistent with any Plan of Management that applies to the river's reserve, (s. 61A, NPW Act).

Wild rivers are to be managed in a manner that is consistent with the maintenance and restoration (if necessary) of their wild river values. Aboriginal objects and places associated with the wild river are to be identified, conserved and protected (s. 61 (5) (a) and (b)). Wild river declaration can therefore be used to trigger investigations of Aboriginal objects and places and the development of conservation plans.

The objectives of the NPW Act, such as the conservation of significant natural and cultural features and the fostering of a public appreciation and enjoyment of nature, also apply to wild rivers.

Community consultation

It is DEC policy to consult the community where the declaration of a wild river will have a substantial effect on the management of that river.

The draft Gibraltar Range Group of National Parks Plan of Management applies to the Washpool Creek area. This plan has undergone public consultation but has not been finalised. The draft plan of management recognises Washpool Creek as a wild river and specifies a management regime that is consistent with the management principles required for wild rivers under the *National Parks and Wildlife Act 1974.*

DEC will not be altering the existing management practices for Washpool Creek. Therefore, there will be no public consultation before the declaration of this river as a wild river.

2 ASSESSMENT

The NPW Act requires that rivers and relevant parts of their catchments meet certain standards of biological, geomorphological and hydrological condition in order for them to be declared wild rivers. A range of existing information is available on the condition of Washpool Creek and on its catchment. This study has drawn from this information and local expertise to assess whether this river is wild.

DEC has assessed Washpool Creek in accordance with its *Framework for Wild River Assessment* (Department of Environment and Conservation 2005b). This document outlines DEC's policy in relation to wild river assessment and declaration. The techniques adopted to assess wild rivers measure the current biological and geomorphological condition and compare these with a reference condition.

- For assessment of **biological** health, 'AUSRIVAS' (Davies 2000) analysis is used. This method samples and analyses freshwater invertebrates and uses the presence/absence of groups of invertebrates as a surrogate for biological health.
- For assessment of **geomorphological** condition, River Styles® (Brierley and Fryirs 2005) is used. This method measures a range of physical features of a river to determine whether there are unnatural rates of change in the river system.

These methods have been used extensively in NSW. For AUSRIVAS the reference condition is represented by reference sites from all major river systems across NSW; these sites were selected from river reaches thought to be least affected by post-European human activities. Some minor disturbances may still be present at reference sites.

For river **hydrology**, there is no widely available means of estimating a river's natural flow and the degree of flow alteration since European occupation. Stations that measure river flow have been established along some rivers, and from the data obtained from them it is possible to estimate a river's flow regime. These data can be compared with those of models of pre-European flow conditions to determine the degree of alteration. Accurate data on river flow are available only where river-flow monitoring stations have been installed and data on river flow and rainfall in the catchment have been collected over long periods. To determine whether any land-use changes have had an impact on river flow, flow data from before and after major disturbances need to be collected. Such information is rarely available. In cases where data are insufficient the hydrological condition can only be surmised, on the basis of coarse indicators of river flow alteration such as water extraction or the presence or absence of dams and weirs.

The current and historical land-use practices within the relevant parts of the catchment may directly affect the river condition. Current land-use information is used to highlight any management practices that might affect the river or catchment in the future. Disturbances that may have an impact on the biology, hydrology and/or geomorphology of the river include logging, clearing, road works, mining, drainage works, water extraction, frequent or severe fires, intensive recreational activities, grazing, and the presence of certain weeds and feral animals. Sources of information include spatial data sets, maps of vegetation structure, aerial photographs, physical evidence and any documents relating to the history, use and management of the area. In this study, local knowledge has also been used.

The wilderness values of the Washpool sub-catchment have been assessed. The wilderness assessment looked at a range of land-use issues to determine the degree to which this sub-catchment was natural; that is, whether it had been substantially undisturbed since European occupation. The wilderness assessment examined factors such as fire history, presence of roads, powerlines, and other infrastructure, logging, mining, grazing and clearing history, and allocated 'naturalness' classes based on the likely cumulative effect of these disturbances (NSW National

Parks and Wildlife Service 2001b). Three classes were allocated according to the level of disturbance in any particular area: substantially modified (for areas that had been cleared or extensively modified), modified but recoverable (for areas that had some disturbance but were likely to regenerate naturally within a reasonable period), and substantially unmodified. The wilderness disturbance classes were useful in this study, as they helped to provide a more comprehensive picture of catchment condition.

DEC has developed recreational 'zonings' across Washpool National Park to indicate the management intent for each section of the park, including the level of recreational use that is appropriate. The zoning scheme uses a gradation of zones from 1 to 5. Zone 1 allows for a small number of self-reliant visitors who do not require facilities, whereas zone 5 provides for a large number of visitors seeking a range of more intensive recreational activities that rely on facilities. A more detailed description of recreational zonings is provided in Appendix A. These zonings provide a useful indication of the recreational values of the area and the recreation-related impacts that may be operating in the catchment.

The data sources used and experts consulted for the technical assessment are listed in Appendix B.

3 RESULTS

Description of the catchment

The Clarence River Basin covers an area of 22 700 square kilometres and is located on the Far North Coast of New South Wales (Figure 1). The regional centre for the catchment is Grafton. This is the largest catchment on the NSW coast and supports a population of approximately 70 000.

The catchment incorporates the rugged hills of the Great Dividing Range (including the Washpool sub-catchment), the more gently sloped western edge of the escarpment, and the coastal plain, which meets the sea south of Ballina and north of Coffs Harbour (Ferguson *et al.* 1999).

Approximately 68% of the Clarence catchment is covered by native vegetation, and 21% of the catchment is protected within DEC reserves. The catchment supports a variety of land uses, including logging, sugarcane growing, mining, and grazing of beef cattle, dairy cattle and sheep.

The key issues for river management include riverbank erosion, gully erosion, invasive weeds, fire management practices and acid sulfate soils.

Description of the Washpool sub-catchment

Physical features

The Washpool sub-catchment defined in this study is the area upstream of, and directly influencing, the reserved section of Washpool Creek (Figure 2), as it is this reserved section that is proposed for wild river declaration. The Washpool Creek sub-catchment covers 13 598 ha. Washpool Creek is situated in the main valley channel of the sub-catchment and is flanked by peaks to the south and north that reach close to 1100 metres, with ridges 700 to 900 metres high on the eastern and western borders.

The soils in the study area are red and yellow podsolics on the slopes and deep brown earths in deposition areas. Soils in the planning area—especially those derived from granites—are highly erodible, and highly erosive torrential rainfall is common in summer. When influenced by cyclonic activity, these rainfall episodes can last several days, resulting in rapid creek-level rises, erosion of unsealed roads and movement of sediment. The annual rainfall is 2450 millimetres.

Figure 1. The Clarence catchment

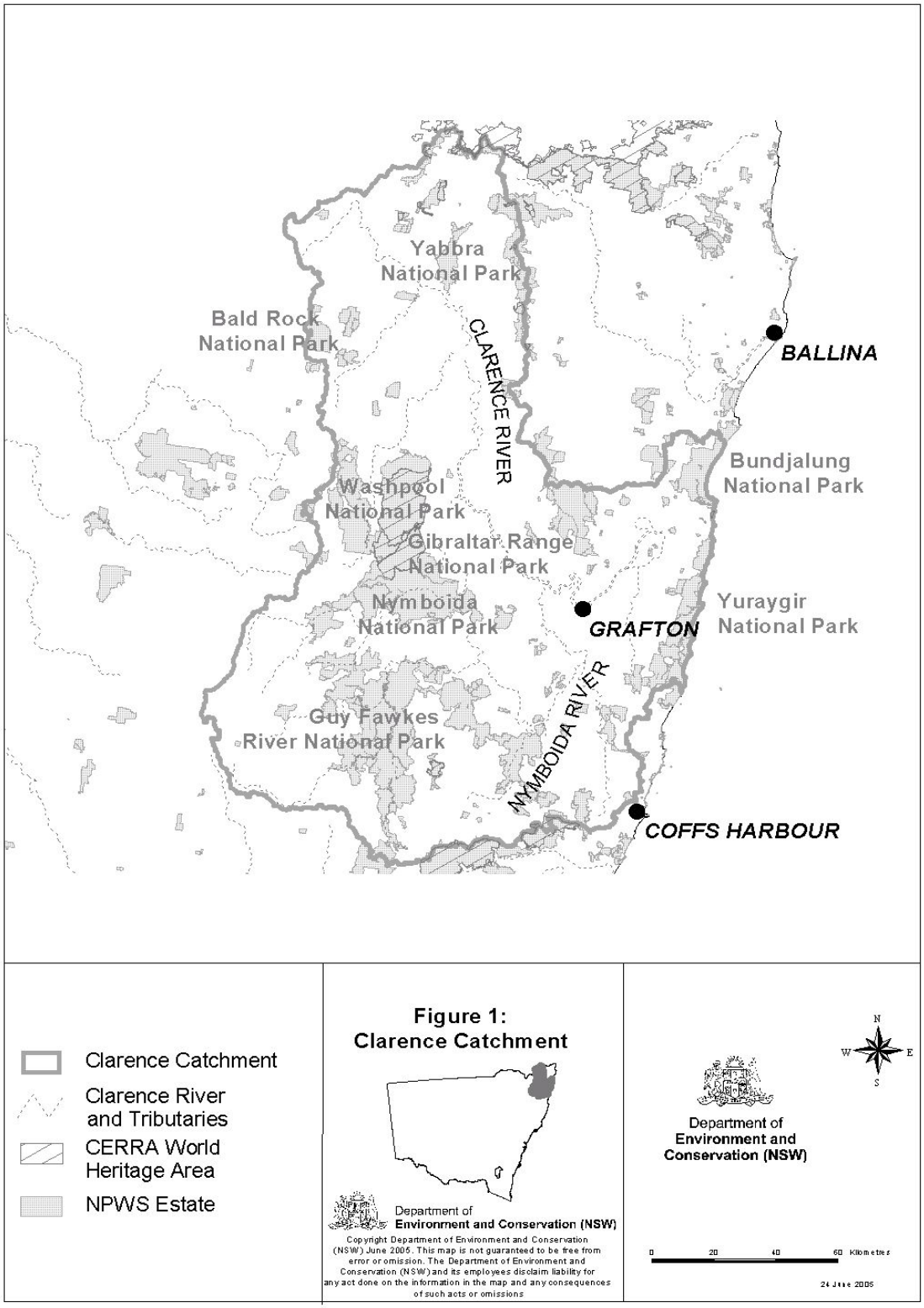
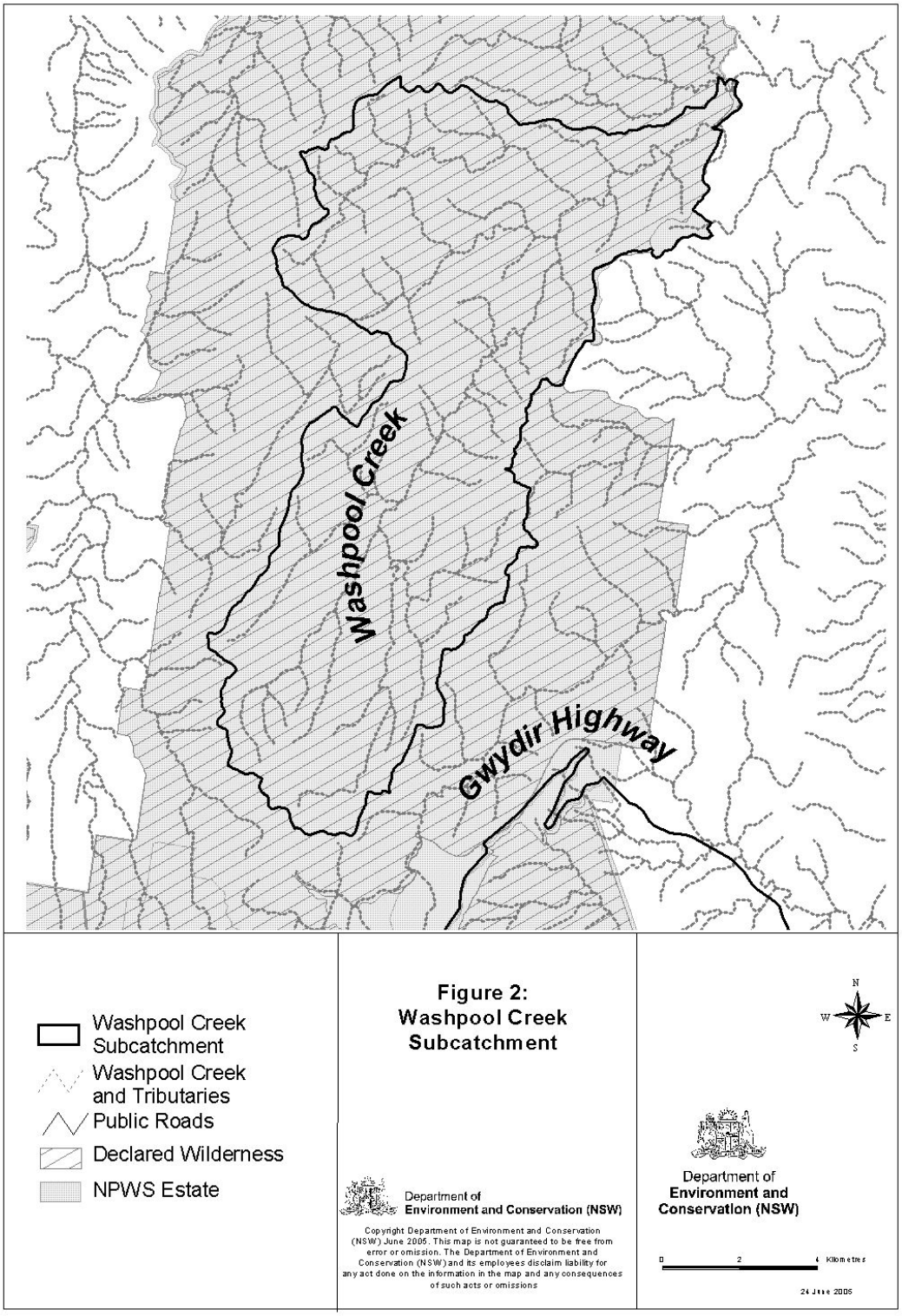


Figure 2. The Washpool Creek sub-catchment



Natural values

Rainforest, including coachwood and crabapple, dominates the rugged northern section of the study area and the deepest sections of the river gorges. Tallowwood – Sydney Blue Gum Forest occurs on the steeper river slopes, with New England Blackbutt Forest on the ridges. Also common are vegetation types dominated by grey gum – grey ironbark and spotted gum.

Forest ecosystems that are under-represented in the NSW reserve system—predominantly rainforest and Wet Bangalow Brushbox Forest—make up 49% of the catchment (6619 ha) (Forestry Commission of New South Wales 1989, NSW National Parks and Wildlife Service 1998).

The wetland bird species common sandpiper (*Tringa hypoleucos*) and white-throated needletail (*Hirundapus caudacutus*) have been recorded in the sub-catchment. These species are listed in the Japan–Australia and China–Australia Migratory Bird (protection) Agreements (JAMBA and CAMBA, respectively).

River-dependent fauna recorded in the sub-catchment and listed as threatened under the *Threatened Species Conservation Act 1995* includes *Assa darlingtoni, Mixophyes balbus, Mixophyes iteratus, Philoria loveridgei* and *Philoria sphagnicola* (Department of Environment and Conservation 2005a).

Threatened flora recorded in the moist forest types of the sub-catchment includes the green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*—endangered), arrow-head vine (*Tinospora tinosporoides*—vulnerable), coolamon (*Syzygium moorei*—vulnerable), and red fairy orchid (*Oberonia titania*—vulnerable) (Department of Environment and Conservation 2005a).

Aboriginal cultural values

This area is very important to Aboriginal people. Their traditional ancestors seasonally moved through these forested ranges, hunting and gathering. Research suggests that the Bundjalung, Gumbaingirr and Ngarrabul people used this rugged country mainly for ceremonies, including initiation, when they travelled between the coast and tablelands. Today the area is used to teach young people and contains a number of important sites that are central to the identity of current and future Aboriginal people. The NPWS recommended that an area in the northern section of the sub-catchment within Washpool National Park be declared as the Goagun Aboriginal Place under the NPW Act (National Parks and Wildlife Service 1990a, 1990b). At this point in time the Place is yet to be formally gazetted.

Recreational values

Because of the remote and inaccessible nature of the area, the majority of the sub-catchment is accessed only by the most determined and competent of bushwalkers. An exception, however, is the North Washpool camping area, which is located on Washpool Creek in the north-eastern section of the park. The site provides for basic camping, with tables, fireplaces and a sealed pit toilet. Visitor numbers are low, consisting mainly of motorcycle riders who utilise the nearby network of State Forest roads.

Land-use history

The sub-catchment was gazetted as a National Park in 1983. Disturbances from European colonisation are limited, and in 1985 the area was considered to be sufficiently natural to be declared wilderness.

Grazing began in the 1840s, and bush grazing may have continued until the area was reserved.

A disused chalcopyrite mine is present in a valley in Washpool National Park immediately north of the study area, but this falls outside the Washpool Creek sub-catchment and does not affect the creek.

Logging is thought to have been limited to cedar until the 1960s, when the Forestry Commission began commercial logging operations (Wilkinson 1980, cited in Carr *et al.* 1988). These ceased over the majority of the sub-catchment in 1983, when this section was declared a reserve.

A significant fire event occurred 2002–03, when a substantial proportion of the study area was burned. Smaller areas were burned in 1994–95 and 1995–96.

Aerial mapping of the age structure of the canopy in the catchment indicates that only small, scattered patches contain regrowth, with 93% of the catchment showing no evidence of any disturbances such as uneven age stands of trees or weeds (NSW National Parks and Wildlife Service 2001a).

Degree of naturalness. During a wilderness assessment (NSW National Parks and Wildlife Service 2001b) over 98% of the Washpool sub-catchment was found to be substantially unmodified. Small areas of substantially modified land are located in the mid-south of the catchment and along the north-east edge of the catchment.

Trails. Roads and trails are confined to sections on the north-east and southern boundaries of the sub-catchment. The majority of these are unmaintained, closed tracks for walking or fire access only; they are not accessible by public vehicles.

European sites. The sub-catchment contains a number of historic sites that relate to earlier forestry and grazing activities. These include old stumps, trails, sawmills, dwelling sites and structural vegetation changes. The majority of these sites are inaccessible, and the forest has already reclaimed much of the physical evidence.

Washpool National Park and the adjacent Gibraltar Range National Park form part of the World-Heritage–listed Central Eastern Rainforest Reserves of Australia (CERRA).

Recreational zoning. Recreational zoning is consistent with the promotion of low-impact activities. Almost all of the Washpool Creek sub-catchment is zoned 1, as there are no recreational facilities provided. The Moogem Fire Trail along the south-west border of the sub-catchment is zoned 2. See Appendix A for an explanation of these zonings.

Threatening processes

The primary management objective of the reserve is to ‘preserve and protect the unique or outstanding scenery or natural phenomena’ (NSW National Parks and Wildlife Service 2002), and wilderness is afforded the highest form of protection within the DEC reserve system. As the entire sub-catchment is within reserve and is declared and managed as wilderness there are few threatening processes operating. However, Lantana (*Lantana camara* L.) is widespread throughout the sub-catchment. Lantana competes with, and displaces, native species, thus dramatically affecting the conservation values of natural areas. Control programs in the past have been limited because of difficult access and issues related to the use of chemicals in riparian environments.

Technical assessment

Biological condition

AUSRIVAS sampling was done 1.6 kilometres from the edge of the park, downstream from the section of river under investigation. Samples were collected in May and October 1995 and April 1996. A rich macroinvertebrate fauna comprising 54 taxa (identified mostly to family level) was collected from this site (Appendix C).

The AUSRIVAS scores from the Washpool Creek site were high. These results suggest that the effects of past and present disturbance in the catchment were too small to have a measurable impact on the aquatic fauna of Washpool Creek and its tributaries. Both the high AUSRIVAS scores and the high aquatic biodiversity support the view that Washpool Creek is suitable for listing as a wild river.

Geomorphological condition

A geomorphology assessment has been undertaken in Washpool Creek (Ferguson *et al.* 1999). The section of the river within the national park was found to be of bedrock and gorge River Styles®, with the bedrock section occupying only the first 600 metres or so of the creek. These River Styles® are highly resistant to disturbance. This river section was classed as a conservation reach—the highest condition category given in this study. The geomorphology suggests that this is a wild river (Ferguson *et al.* 1999).

Hydrological condition

There is a flow gauge downstream from the park, but data were collected only from 1972 to 1986; therefore this information cannot be used to detect any significant disturbances outside this period. The headwaters of Washpool Creek are entirely within reserve and no water extraction is taking place. No weirs occur within this river section. There is nothing in the sub-catchment's history to indicate that the hydrology has been significantly altered. In the absence of accurate flow information it is assumed that the Washpool Creek and its sub-catchment have not undergone substantial hydrological modification.

4 REFERRALS

As stated in *Wild Rivers under the National Parks and Wildlife Act* in section 1, in some cases DEC requires the concurrence of certain Ministers before a river can be declared wild. Concurrence is required where the declaration may affect the functions of the Minister responsible for the *Water Management Act 2000* or, in the case of State Conservation Areas, the Minister responsible for the *Mining Act 1992* (s. 61 (3), NPW Act).

That part of the Washpool Creek sub-catchment under investigation in this report comprises the headwaters of this river and falls entirely within National Park. The declaration of this river will therefore have implications for DEC only, and the concurrence of the Ministers responsible for the *Water Management Act 2000* and the *Mining Act 1992* is not required.

5 RECOMMENDATION

Washpool Creek and its tributaries, as defined in Figure 2, are considered to meet the criteria for wild rivers as listed in the *National Parks and Wildlife Act 1974.*

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APPENDIX A: RECREATIONAL ZONING CATEGORIES FOR DEC RESERVES

(Excerpt from NSW National Parks and Wildlife Service 2003: Draft Recreation Planning Framework for NSW National Parks. Unpublished.)

In **zone 1** a visitor can expect opportunities to experience solitude in a large and wild natural area requiring a high degree of self-reliance.

In **zone 2** a visitor can expect to experience solitude in a natural area. Visitors in this zone will be largely self-reliant, with facilities provided only where essential for public safety and environmental protection.

In **zone 3** a visitor can expect various opportunities for nature appreciation and minor social interaction in a natural setting, but with some human disturbance.

In **zone 4** a visitor can expect a natural setting, in which facilities and good access (all-weather 2WD) are provided, with a moderate level of social interaction. The provision of visitor facilities and interpretation is a major feature of the zone.

In **zone 5** the visitor can expect what is perceived to be a relatively natural setting with the provision of significant visitor facilities for large numbers of visitors; a high level of social interaction may be evident. Visitors will rely on the facilities provided. The facilities, setting and social interaction will be major attractions for the visitors to this zone.

APPENDIX B: DATA SOURCES—TECHNICAL ASSESSMENT CRITERIA FOR WILD RIVERS

	Biological condition	**Geomorphological condition**	**Hydrological condition**
Data source	Department of the Environment and Heritage (2003) *Australian River Assessment System (AusRivAS) National River Health Database*. Australian Government, Canberra. ANZCW0501009864	Ferguson R, Lambert G and Brierley G (1999) *River Styles in the Clarence Catchment, North Coast, NSW.* Report completed for the NSW Department of Land and Water Conservation, November.	Department of Infrastructure, Planning and Natural Resources water extraction licence data.
Technical advice	Eren Turak, Research Scientist, Policy and Science, Department of Environment and Conservation. Graeme White, Department of Primary Industries.	David Outhet, Research Scientist, Department of Infrastructure, Planning and Natural Resources.	Paul Simpson, Senior Natural Resource Officer, Water Management Division, Department of Infrastructure, Planning and Natural Resources.

APPENDIX C: AQUATIC MACROINVERTEBRATE FAUNA

Taxa found in Washpool Creek

Aeshnidae
Ancylidae
Atyidae
Baetidae
Caenidae
Calamoceratidae
Calocidae
Carabidae
Ceratopogonidae
Chironominae
Chrysomelidae
Collembola
Conoesucidae
Corbiculidae
Corduliidae
Corixidae
Corydalidae
Dixidae
Dugesiidae
Dytiscidae
Ecnomidae
Elmidae
Gelastocoridae
Gerridae
Gomphidae
Gripopterygidae
Helicopsychidae
Hydracarina
Hydraenidae
Hydrobiidae
Hydrobiosidae
Hydrophilidae
Hydropsychidae
Hydroptilidae
Lepidoptera
Leptoceridae
Leptophlebiidae
Libellulidae
Lymnaeidae
Notonectidae
Orthocladiinae
Ostracoda
Philopotamidae
Physidae
Protoneuridae
Psephenidae
Ptilodactylidae
Pyralidae
Simuliidae
Synlestidae
Tanypodinae
Thaumaleidae
Tipulidae
Veliidae