Richmond Floodplain News

A newsletter about natural resource management on the Richmond Floodplain

Issue 16

In this Issue

WELCOME

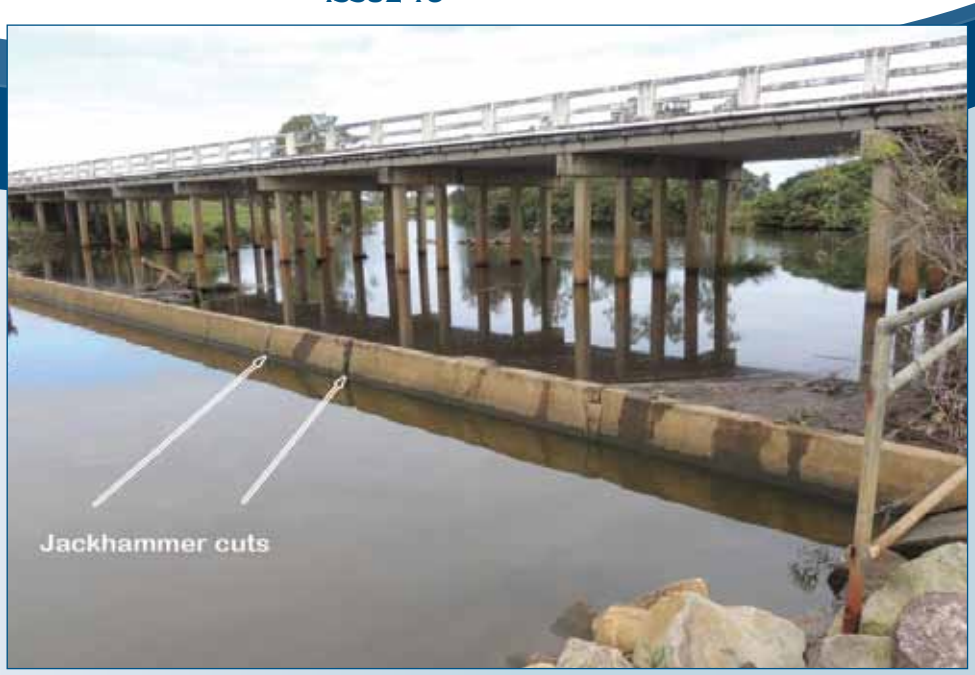
Welcome to the Richmond Floodplain newsletter, an initiative of the Richmond River County Council.

In the cycle of wet and dry weather we find opportunities and challenges to implement on-ground works to enhance the estuary and floodplain environments.

On the up side are the efforts of council's floodplain project officer, Garry Owers, who has delivered some impressive results with groundwater management of acid-sulphate soils in the Kookami Swamp; riparian restoration and coordinating the Ecohealth monitoring program for the Richmond River valley councils. Well done, Garry!

Another good news story is the floodway excavations in South Lismore, which when complete will reduce flood levels in the city by 15cm.

On the down side is the attack on the Tuckombil weir, featured at right.



Attackers used a jackhammer to damage the Tuckombil weir, near Woodburn.

WANTED: Tuckombil weir attackers

The Tuckombil weir, south of Woodburn, has been deliberately damaged and must be repaired.

Richmond River County Council (RRCC) is offering a $5000 reward for information that will help police find the culprits.

RRCC chairman Councillor David Wright said he was extremely disappointed that a critical piece of community flood-mitigation infrastructure had been deliberately targetted.

The weir, in the Tuckombil Canal, separated the mid Richmond River from the Evans River.

"It was deliberately damaged with two cuts jack-hammered in two joins in the modular weir so that it will collapse," Cr Wright said.

"Council and the state government invested seven years and several hundred thousand dollars in studies, flood modelling and surveys to determine the best long-term option for the Tuckombil Canal.

"The fixed weir that is currently in place represents the best middle-ground option as it prevents sea water from the Evans River entering the fresh waters of the mid Richmond.

"It allows high-flow floodwaters to escape from the mid Richmond into the Evans and prevents deoxygenated 'blackwater', which forms in the mid Richmond following summer floods, from totally decimating the Evans River system, as happened in 2001.

"The fact that one interest group seeks to overturn the current system for self interest is wrong at every level."

Continued, next page.

Site works complete floodway

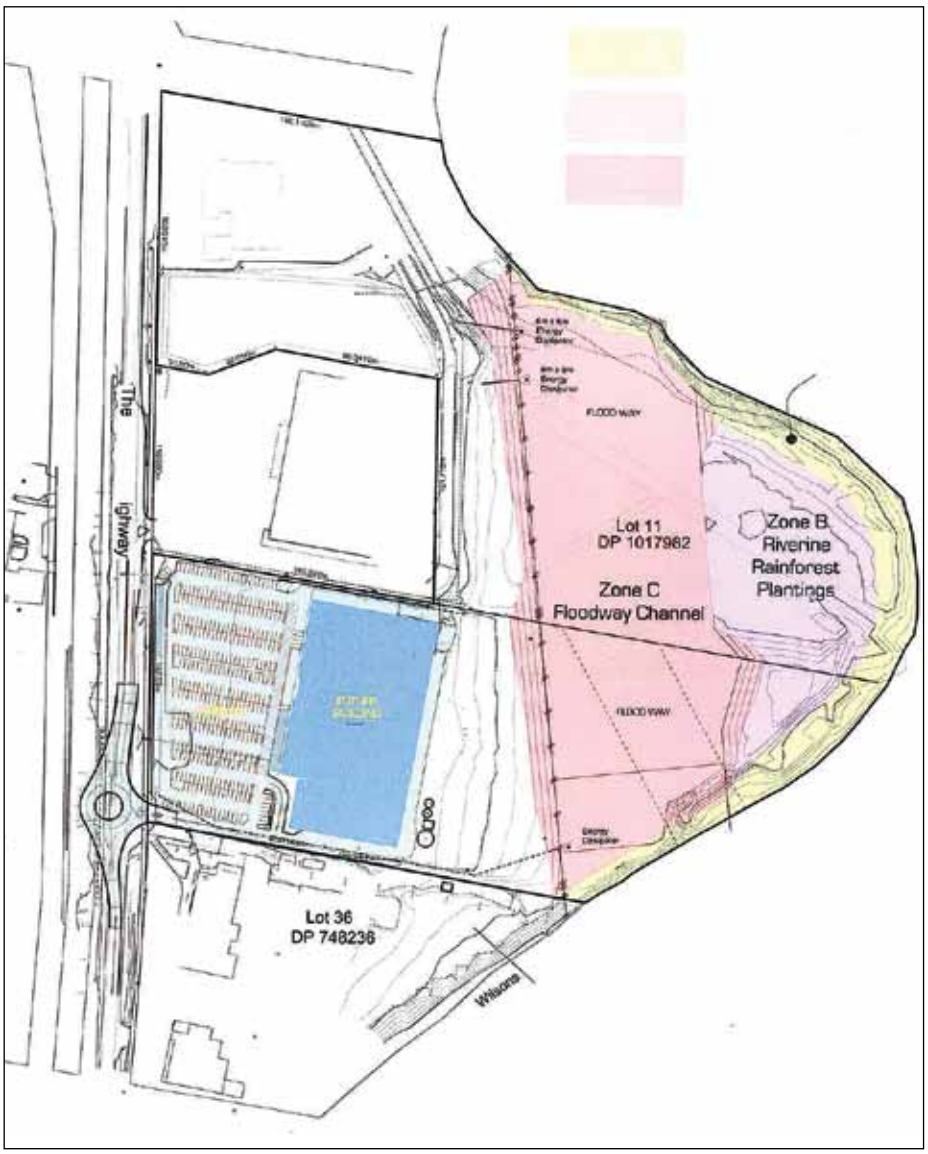
A 100-metre-wide floodway at South Lismore will be completed by excavation of site fill for the Masters home-improvement store, to be built on the Bruxner Highway.

The Wilsons River Channel Improvement Project includes the removal of remnant embankment and creation of a channel to improve the passage of flood flows away from the Lismore central business district.

The floodway is expected to lower the CBD water level by about 150mm in a one-in-100-year flood.

Richmond River County Council (RRCC) engineer Bill Moorhouse said the council was the approval authority for the work on the Masters site, next-door to the Bunnings hardware store.

He said soil excavated from the floodway would be used to build up the level of the site for the 9903-square-metre Masters store and its 389-space car park.



The South Lismore floodway will be completed by excavating fill for the Masters homeware store, to be built beside Bunnings.

$5000 reward for information on weir attack

From Page 1

RRCC held an extraordinary meeting in May to determine what steps could be taken to address the attack and repair the structure.

Cr Wright said the cost of repairing the weir was estimated at $50,000 of public funds, but the worst case was that the whole weir would collapse and then the replacement cost would sky-rocket to about $1 million.

RRCC engineer Bill Moorhouse said someone had cut the concrete weir vertically in two places.

While the weir contained steel reinforcing pins, there was some doubt about whether they would be strong enough to hold the vandalised section in place if it was hit by heavy flood debris.

Mr Moorhouse said RRCC could fit a steel 'cap' along the crest of the weir to reinforce it and prevent the damaged section being pushed over.

The Tuckombil Canal, which was originally built in 1895 and deepened and widened in 1965, drains flood waters from the Bungawalbin Creek, Sandy Creek, Moonem, Swan Bay, New Italy, Oaky Flat and Rocky Mouth Creek catchment areas into the upper reaches of the Evans River.

The weir was built in 2001, at a cost of $80,000, to replace an inflatable fabridam.

It has been criticised for impeding fish passage and slowing the release of local flood waters.

News flow

High-Priority restorations claim extra funds

By the end of June, Richmond River County Council (RRCC) will have completed high-priority works at four sites on the Richmond River estuary.

The Richmond River Estuary Project received $65,000 from Local Land Services (LLS) through WetlandCare Australia (WCA) to carry out riparian restoration at three sites – Lismore, Kilgin and Swan Bay – and hydrological modification in the Bora-Codrington drain, at Bora Ridge.

RRCC floodplain project officer Garry Owers said RRCC had to commit additional funding to complete the work.

Works at Swan Bay, Wilson River and Kilgin Road were under way and those at Bora Ridge were complete.

Wilson River

The Wilson River site, taking in five properties, on the western side, between Ballina Street and Coleman's Point bridges, was the subject of riparian restoration.

Far North Coast Weeds assisted by killing off vine weeds to improve access and RRCC's bush-regeneration contractor was working at the site.

Mr Owers said there was considerable difficulty obtaining approval for access to RailCorp land containing the old railway wharf.

While RRCC was awaiting receipt of the final access licence from

Riparian restoration work on the Wilson River at Lismore.

An excavator works on the Bora-Codrington Drain weir.

John Holland, outside contractors 'cleaned up' the site using earthing moving machinery and buried coral tree and morning glory, creating a weed control problem for bush regeneration.

To extend available funds, a community tree planting was planned for May 16.

Swan Bay

Swan Bay was four kilometres west of Woodburn by road and its three project riparian restoration sites were on Richmond Valley Council (RVC) road reserve.

Work at the three sites was progressing well with morning glory and coral tree the dominant weeds present. Works consisted of riparian restoration through weed control and planting 80 seedlings in gaps.

The sites comprised a narrow strip between the Woodburn-Coraki Road and Swan Bay. The traffic hazard and limited parking involved traffic-safety consideration, with a Section 138 approval obtained from RVC.

Kilgin Road

Work had started on the 750-metre Kilgin Road site, on Lismore City Council (LCC) road reserve, at Kilgin.

The site, along a narrow strip between Kilgin Road and the Richmond River, was just south of a 500-metre section weeded by RRCC last year.

Once weeds were controlled, 150 native tree and shrub seedlings would be planted to fill gaps and thicken the vegetation and native seed would be scattered.

The traffic hazard present also required a Section 138 certificate approval by LCC.

Bora-Codrington Drain weir

Bora-Codrington drain was located near Springville Road, at Bora Ridge, six kilometres south-west of Coraki.

The drain discharged into Sandy Creek and drained a subcatchment of 2800 ha, including 650 ha of wetland.

The original rock weir, placed by RRCC, had eroded over time and required topping up to restore groundwater control and stop future erosion.

The weir was topped up using large rocks keyed into the existing structure and topped using cement stabilised road base.

It would control groundwater over about 200 ha of low-elevation acid-sulfate soil.

This would help to improve water quality within Sandy Creek by decreasing acid export and blackwater export.

The site of roadside restoration work at Swan Bay.

Farm benefits from rehabilitation works

Sandy Creek property owner Troy Aleckson is seeing the benefits of recent rehabilitation works on his farm.

Mr Aleckson told participants in a field day on the property, near Coraki, that acid-sulfate scalds were growing smaller and flood-tolerant vegetation was flourishing.

He said once the current dry weather was over, he hoped to hold about half a metre of water over more than 60 acres of the farm and manage it as wetland pasture.

The Aleckson property contains part of the Kookami Swamp, a hotspot for acid-sulfate soil and 'blackwater' production.

A joint project of Richmond River County Council (RRCC), the Department of Primary Industries (DPI) fisheries division and WetlandCare Australia aims to alleviate these problems by raising the water table.

In dry weather acid-sulfate soil exposed to the air becomes oxidised as the water table falls. When wetter weather returns and the soil mixes with water it produces sulphuric acid, which is highly corrosive and damages vegetation and aquatic habitat and causes red spot disease in fish.

Parts of the property and the swamp are below sea level and in times of flood may be covered by more than a metre of water.

In the high temperatures of a summer flood, introduced pasture vegetation dies and rots rapidly, bringing an explosion in the populations of micro-organisms (bacteria) which feed on the rotting plants and strip oxygen from the water, turning it black.

Kookami Swamp in flood.

Sandy Creek farmer Troy Aleckson is pleased by the results of recent rehabilition works on his property.

When deoxygenated blackwater flows into the Richmond River it kills fish and crustaceans, often resulting in a public outcry.

Mr Aleckson said that in 1999, when he bought the farm, there were growing areas of acid-sulfate burns (scalds), so he filled in some of the drains as a trial to see whether higher water levels would reduce acid production.

"We've seen the acid-sulfate burns get smaller and smaller," he said.

"Coming from a farming family, I'd always been drilled that you drain the swamps otherwise you can't manage them.

"We went the other way and we are seeing results. It's hard to explain now because it is so dry, but in wet times we do see it.

"We have areas of swamp couch now that is spreading out and it's really starting to take off. As soon as it comes in wet, you can see it stand up in the water."

He pointed out an acid-sulfate scald which was healing and a large patch of swamp couch which had become established.

Swamp couch is a flood-tolerant pasture species with a protein content about two-and-a-half times that of normal couch grass.

In 2005, as part of a Bungawalbin Catchment Management Group project, funded by the Myer Foundation, now RRCC floodplain project officer Garry Owers carried out an elevation survey of the property and upstream for about seven kilometres.

He wanted to know the effect of building a rock weir in the drain on the property's eastern boundary.

RRCC and Mr Aleckson built the weir last year and data loggers upstream and downstream from the structure show that it dampens tidal oscillations in the drain and has lifted the over-all water level by about 300 mm.

Mr Owers said the rise in water level reduced exposure of iron pyrites in the soil to oxygen and consequently reduced acid production.

Also, the rise in the water table encouraged the growth of wetland species such as water couch, which would out compete conventional pasture species such as dry-land couch.

He said that during a summer flood, dry-land couch would rot within

Continued, next page.

Flood-tolerant swamp couch.

FLOOD-TOLERANT VEGETATION FLOURISHES

Small infrastructure changes are expected to boost production and improve fish habitat.

From previous page.

about four days, producing blackwater. While water couch might eventually rot if deep inundation continued, it could survive flooding a lot longer, while other native wetland plants were known to survive months of inundation.

In 2012 the Northern Rivers Catchment Management Authority, now Local Land Services (LLS), provided $15,000 to build the weir and clear the drain, which was built in the 1950s.

Mr Owers said weeds were blocking the drain and backing up water in the swamp.

The drain clearing was part of an agreement with surrounding land holders to allow establishment of the weir.

He showed field day participants water-level graphs produced by the data loggers upstream and downstream from the weir.

Mr Owers said the weir was a good illustration of how small, affordable changes in infrastructure could bring about big improvements in the health and profitability of the land.

DPI (Fisheries) conservation manager – aquatic habitat rehabilitation Simon Walsh said he was interested in improving fish habitat and production.

"The fish populations really took a bit of a hammering when a lot of these swamps were drained back in the '50s and '60s and before," he said.

DPI (Fisheries) biologist Simon Walsh stands atop the drop-board weir.

"We can't turn the clock back and we don't want to. There is some good production coming from this land as well.

"What interests me is making sure that the people who own the land now are making more money while making better water quality and more fish."

In 2011 Mr Walsh secured $50,000 funding from WetlandCare Australia (on-ground works) and the then catchment management authority (detailed site assessments) to prepare a management plan, assess the site and do the work, expanding the project to allow Mr Aleckson to further control the water level across the whole property.

This work included analysis of soil profiles, liaison with local government and contingency planning.

The final phase of the project, which is complete, includes installation of three weirs, one of which includes a drop-board structure. An earthen levee also helps to hold water on the site and prevent water backing up in the drain and affecting the road and neighbouring property.

The main spillway can be progressively closed with the drop boards, allowing Mr Aleckson to accurately control the water level.

Mr Owers said that when there was a flood all these structures were submerged.

He said future funding could be used to fence the drains and plant shade trees and other appropriate vegetation on the banks to prevent weed growth.

News flow

Year-long study monitors health of waterways

University of New England (UNE) researchers are monitoring the health of waterways across the Richmond River catchment.

Funded by the Office of Environment & Heritage (OEH) and Local Landholder Services (LLS), the Ecohealth project began on December 18 last year and sampling is due to be completed in December this year, with reports to be presented in March 2015.

Waterway-health data are being collected at 39 sites during the year.

They include temperature, dissolved oxygen level, salinity, acidity/alkalinity, murkiness (turbidity), redox potential, conductivity, nutrients, type and number of macroinvertebrates, type and number of zooplankton and riparian condition.

The project should be repeated

University of New England researchers take to the Richmond River.

every three years to determine trends and provide a source of data for State of the Environment (SOE) reporting.

The project is funded jointly by Ballina, Kyogle, Lismore and Richmond Valley councils and Richmond River County Council, with in-kind assistance from Rous Water.

The Ecohealth program uses physical, chemical and biological indicators to determine the health of waterways.

Waterway health indicators which identify short-term (water chemistry), intermediate-term (zooplankton, macroinvertebrates), and long-term responses (fish and riparian vegetation) provide a means of quantifying waterway health and prioritising management actions.

Water chemistry identifies trends in nutrients (nitrogen and phosphorus), chlorophyll a and suspended solids and static variables such as pH, salinity, dissolved oxygen and temperature.

Macroinvertebrate assemblages, collected from freshwater sites in Autumn and Spring, are used to assess long-term condition of water quality and in-channel habitats. Zooplankton assemblages are used as biological indicators in estuary reaches and coastal lagoons.

Riparian restoration is prioritised

Richmond River catchment sites needing riparian restoration are being prioritised under a project funded by the Office of Environment and Heritage (OEH).

'Prioritisation and Education for Riparian Restoration in the Richmond River Catchment' looks at riparian zones within the Richmond estuary Coastal Zone Management Plan (CZMP) area.

Byron Bay based Landmark Ecological Services Pty Ltd has completed the geographic information system (GIS) component of the project, which prioritises the condition of riparian zones in the study area, with mapping delivered by Google Earth and Mapinfo.

Landmark and Bushland Restoration Services (BRS) are carrying out the second stage of the project, which consists of a land-owner survey and education package.

Richmond River County Council (RRCC) has finalised the land-owner survey after distributing it for comment and is organising the phone survey.

Data on land-owner willingness and priority areas will be overlaid to produce a map of high-priority sites with willing land owners for targetted funding applications.

CBD floodgate procedure changes

The operating procedure for Lismore's Browns Creek drain floodgate has been changed to minimise the impact of fast flooding at the Dawson Street end of the drain.

In February, Lismore City Council (LCC) voted to include the change in the revision of the operating procedures and operations manual for the Lismore flood levee.

Richmond River County Council (RRCC) engineer Bill Moorhouse said that under the old procedure once floodwater topped the levee near the Browns Creek pump station, the floodgate in the creek drain would be opened. Under the new procedure, the gate would remain closed and the pumps would continue to pump water out of the basin and back into the river.

"Under the old procedure, once the water overtopped the levee, the gate would be opened and this would lead to an enormous rush of water up the pipe," Mr Moorhouse said.

"Flooding at the Dawson Street end of the pipe would be extremely rapid and cause considerable damage to businesses close to the pipe's outlet."

Who's Who
on the Richmond Floodplain

There are many groups involved in the natural resource management in the floodplain. The following is a list designed to help you improve your floodplain networks. If you know of other groups that should be included, or if any of the details appearing below need updating, please contact: **The General Manager (02) 6621 8314** or **email mwood@rrcc.nsw.gov.au.**

Ballina Fishing Co-operative

Regulates the sale of professional fishers' catch.
Contact: General manager Phil Hilliard
Ballina Fishermen's Co-operative
phone: (02) 6686 2533

Bungawalbyn Catchment Management Group

Formed to source funding, implement on-ground works and demonstrate better management of the Bungawalbyn sub-catchment.
Contact: Garry Owers
email: garry.owers@rrcc.nsw.gov.au

Drain Watch

Drain watch groups are being set up by the sugar industry to monitor water quality. This is an outcome of the sugar industry's three-year program developing best management practices for improving water quality in drains.
Contact: Rick Beattie, Broadwater Sugar Mill
phone: 6620 8200

Environmental Training and Education Inc (ENVITE)

Provides training and education to unemployed young people. Engages in environmental works around the catchment.
Contact: General manager
phone: 6621 9588
email: envite@bigpond.net.au

Far North Coast Weeds

Works with a wide range of stakeholders to combat the spread of noxious weeds in the Northern Rivers region of NSW.
Contact: Chief Weeds Officer
phone: 6623 3833
email: fncw@fncw.nsw.gov.au

Floodplain and Acid Sulfate Soils Network

Provides an avenue for flood mitigation authorities, research bodies, government organisations to exchange ideas and information.
Contact: Simon Walsh
email: simon.walsh@dpi.nsw.gov.au

North Coast Local Land Services

North Coast Local Land Services is a part of the NSW Department of Industry and Investment. It provides catchment management, natural-resource management, biosecurity, agricultural production advice and emergency management. Its strategies are consistent with ecologically sustainable development and total catchment management..
Contact: John Nagle
phone: 6626 5659
email: john.nagle@lls.nsw.gov.au

NSW Department of Industry and Investment (Agriculture and Fisheries)

Agriculture: Soil and water investigations, acid sulfate soil research, best management practices for backswamps.
Contact: Abigail Jenkins
phone: (02) 6626 1200
email: abigail.jenkins@dpi.nsw.gov.au

Fisheries: Protect and enhance aquatic habitat in natural waterways within the estuarine reaches of the floodplain.
Contact: Simon Walsh
phone: 6626 1200
email: simonwalsh@dpi.nsw.gov.au

NSW Sugar Milling Co-operative, Broadwater

Regulates and processes sugar cane production on the Far North Coast.
Contact: Rick Beattie
phone: 6620 8200

Who's Who
on the Richmond Floodplain

Office of Environment and Heritage
Estuary: *Contact:* Ben Fitzgibbon
email: ben.fitzgibbon@environment.nsw.gov.au
Floods: *Contact:* Toong Chin
email: toong.chin@environment.nsw.gov.au

Pelican Creek Landcare Inc.
Riparian restoration and aquatic weed control in the Pelican Creek catchment.
phone: (02) 6683 2158

Richmond Landcare Inc.
Supports and represents local Landcare groups and works in partnerships with others in the community to protect, manage and enhance natural resources in the Richmond River catchment.
Phone: 02 6619 1582
Email: info@richmondlandcare.org

Richmond River Cane Growers Association
Body representing cane growers on the Richmond River.

Contact: Monica Poel
phone: 6683 4205

Richmond River County Council (RRCC)
Responsible for flood mitigation, drain maintenance and water quality in the Ballina, Lismore and Richmond Valley areas.
Contact: General manager or floodplain services manager
phone: 6621 8314
email: floodplain@rrcc.nsw.gov.au
or michael.wood@rrcc.nsw.gov.au

Wetland Care Australia
Concerned with rehabilitation of drained wetlands, and reinstatement of wetlands and their ecological functions.

Contact: Cassie Price
phone: 6681 6069
email: cassieprice@wetlandcare.com.au

Wilson's River Landcare Group
The main focus of the group is river bank restoration and enhancing riparian vegetation at sites along the Wilson River at Lismore.

Contact: Kristin on 6624 7979 or Vanessa on 6624 5500
email: eco_nsw@bigpond.net.au

MORE INFO
Richmond River County Council Floodplain Management website
http://www.rrcc.nsw.gov.au/

Design: Flexible Learning Development Services, Southern Cross University. Editorial: North Coast Media, phone 6683 2295.