

# ARALUEN CREEK RESTORATION PROJECT 2021-2023



Top left: Penny Hayman, Secretary Upper Deua Catchment Landcare Group, and Daniel Anderson and his Apical team demonstrating weed management techniques.

Top right: Erosion works on Araluen Creek.

Bottom: Rootballs being delivered. Photo: Cath Harrison



Upper Deua  
Catchment  
**Landcare**



Upper Shoalhaven  
**Landcare**  
Council



**Local Land  
Services  
South East**



**Australian Government**

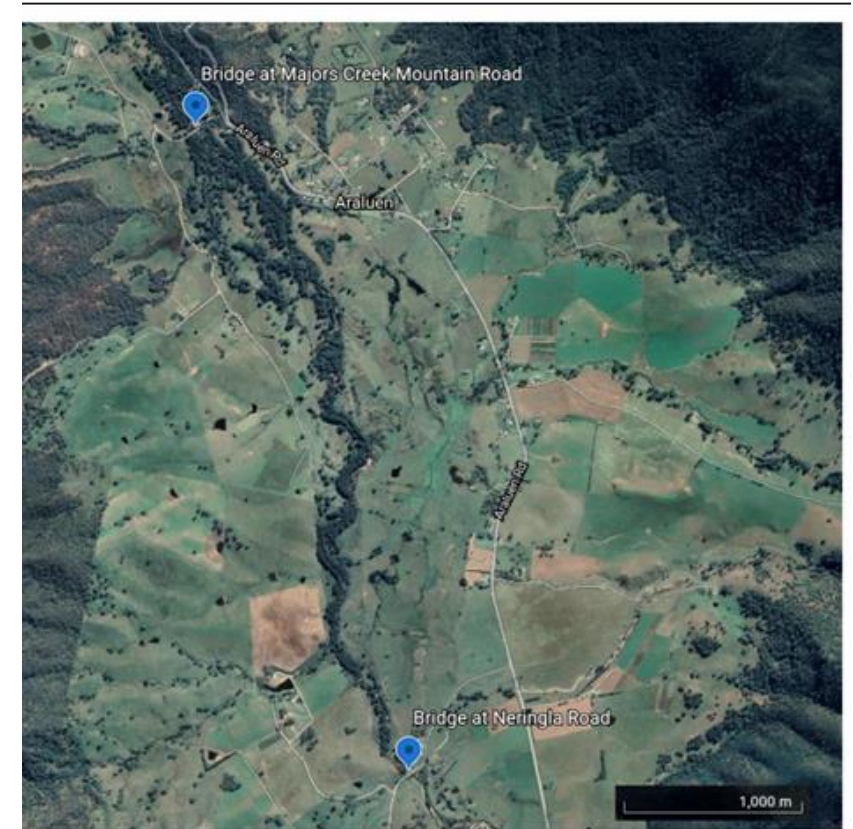


*This is a Bushfire Community Recovery and Resilience Fund project through the joint Commonwealth/State Disaster Recovery Funding Arrangement*

# Araluen Creek

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- Name Araluen believed to come from Aboriginal word “Arr-al-yin” meaning “place of lilies”.
- Araluen Creek is in the Southern Tablelands, NSW
- Flows south-east and drops 637 metres over 24 kilometres
- Tributaries include: Majors Creek, Bell’s Creek, Big Oaky Creek
- Feeds into Deua River and to Pacific at Moruya
- Before gold-mining the creek was a series of billabongs covered with water lilies which were destroyed by gold mining in the 19<sup>th</sup> and 20<sup>th</sup> centuries



Source: Google Earth

# Upper Deua Catchment Landcare Group

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- Formed 1996
- 27 years active and ongoing Landcare
- Aims to educate and encourage Araluen community and landholders to participate in projects that focus on improving environment and biodiversity in Upper Deua Catchment

Photo: 2004 Annual General Meeting



# Why Araluen Creek needs stabilising

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- Araluen Creek disturbed after gold discovered and extracted in the 1800s
- Creek bed was turned upside down via dredging
- Natural systems disrupted

Photo taken November 2022 shows exposed roots and undercut banks



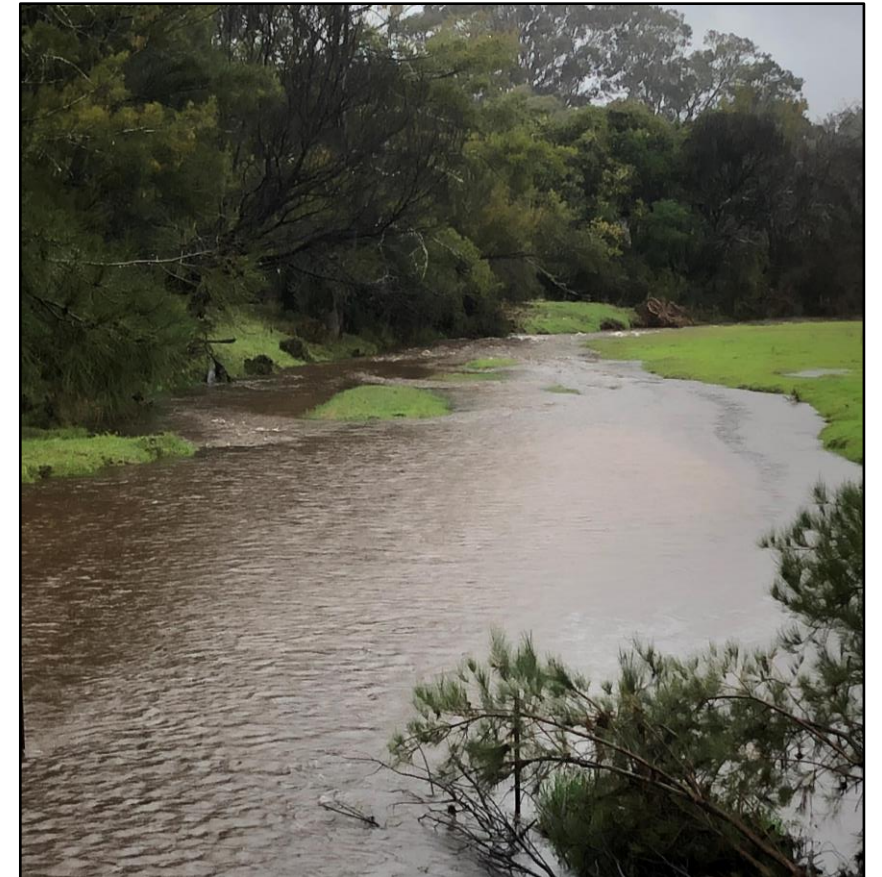
# Protecting and stabilising Araluen Creek

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## Key measures:

- Large scale erosion control works
- Small scale erosion control works
- Fencing the creek from stock
- Alternative water sources for stock
- Weed management
- Revegetation - right plants in the right spot
- Ongoing monitoring of waterway health
- Ongoing management

All are needed in balance – one measure by itself will not protect or stabilise the creek in the long-term.



# Stabilising the creek with streambed controls

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Upper Deua Catchment Landcare Group  
Major Projects 1996 – 2023

- 1998-2004 – Araluen Creek Streambed Controls – Rivercare funding
- 2004-2010 – Araluen Creek Streambed Controls Extension – Site 16
- Commenced 2013 – Bridge to Bridge Weed Project
- 2021-2023 – Araluen Creek Restoration Project funded by Bushfire Community Recovery and Resilience Fund



# Drought, fire then a flood and more floods

There have been ~19 flood events since February 2020



# Araluen Creek Restoration Project 2021-2023

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- Araluen Creek Restoration Project - initiative of Upper Deua Catchment Landcare Group (UDCLG)
- December 2020 - application to Bushfire Community Recovery and Resilience Fund funded by Commonwealth and NSW Governments
- May 2021 - UDCLG advised grant application successful.
- Main focus - works to rehabilitate Araluen Creek from effects of drought, bushfires and flooding
- Stabilisation of creek necessary to prevent further catastrophic outcomes for Araluen Valley and downstream water quality
- Climate change and associated extreme weather means remedial action now urgent and unavoidable to avoid future adverse catchment impacts compromising whole area's viability for years to come.





# Partnerships and collaboration

- 
- Upper Shoalhaven Landcare Council (USLC)
  - South-East Local Land Services (LLS)
  - Soil Conservation Services (SCS)
  - Landholders
  - Specialist advice through workshops:
    - Weed management and revegetation
    - Species selection and propagation
    - Geology and soil
    - Scalable erosion control techniques
    - Riparian management and water monitoring
  - Working with each other



# Project facts

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- Substantial in-stream erosion works at 13 sites, using:
  - 460 tonnes of large rocks.
  - 29 truckloads of root balls.
  - 32 x 6-metre hardwood logs.
- 1,500 plants in the ground
- Long stretches of creek fenced
- 6 workshops; 3 community planting days
- Over 120 people participating in workshops (average 20 per workshop)
- Over 50 media articles in regional media



# Soil erosion earthworks

- Works undertaken at 13 sites
- Community liaison with landholders essential
- Before and after photos at Long Flat Creek (where revegetation has since occurred with ~400 plants)



# Community Engagement: Workshops and Events

**GEOLGY & SOILS OF THE ARALUEN REGION**  
Presented by Leah Moore, Australian National University

**Saturday 26th February**  
9:30am - 1:00pm  
Araluen Hall  
**RSVP Required**

Are you interested in learning about the origins of Araluen's agricultural soils and geology?

Join Upper Shoalhaven and Upper Deua Landcare to discover how the region's soils were formed and the geological events that preceded them. Morning tea and a light lunch will be provided.

Places are limited so please RSVP by Monday 21st February to: Clare Henderson 0412 425 665 or email [upper.shoalhaven@gmail.com](mailto:upper.shoalhaven@gmail.com)

This workshop is part of Upper Deua Landcare's Araluen Creek Restoration project and will be one of a series held over the coming months.

**EROSION CONTROL WORKSHOP**

**SATURDAY 28TH MAY**  
9:30 - 12:30 PM  
856 MAJORS CREEK MOUNTAIN RD  
(DIRECTIONS GIVEN UPON RSVP)

Register your interest to Clare Henderson 0412 425 665 OR [upper.shoalhaven@gmail.com](mailto:upper.shoalhaven@gmail.com)

This workshop will provide landholders with hands-on skills and information on how to treat and prevent erosion after fire.

Presenter Andrew Taylor will cover erosion processes and control techniques, as well as help you identify what methods are best suited to your catchment size and soil type.

The workshop also examines low cost soil erosion techniques and more technical erosion structures.

**Come along to Araluen. Some give aways of coil logs and jute mesh will be available on the day.**

This workshop is part of Upper Deua Landcare's Araluen Creek Restoration project.

**WEED MANAGEMENT WORKSHOP**

**SATURDAY 25TH JUNE**  
9:30 - 2:30 PM  
ARALUEN CREEK, ARALUEN  
(DIRECTIONS GIVEN UPON RSVP)

Register your interest to Clare Henderson 0412 425 665 OR [upper.shoalhaven@gmail.com](mailto:upper.shoalhaven@gmail.com)

At this workshop weed management experts, Apical, will outline restoration, remediation and weed eradication processes and principles.

They will also provide practical demonstrations of weed removal and bush regeneration on site along the Araluen Creek.

The focus will be on – African Boxthorn, Broad-leaved Privet, Small-leaved Privet and blackberry.

Techniques will address management and control measures for different stages of growth – seeding through to mature plants.

Morning tea and lunch provided.

This workshop is part of Upper Deua Landcare's Araluen Creek Restoration project.

**Workshop**  
Upper Shoalhaven Landcare Council with Upper Deua Landcare Catchment Group  
**PRESENTS**  
**LOOKING AFTER CREEKS**

**SATURDAY 27 AUGUST**  
9:30am to 1:00pm  
Araluen (address after RSVP)

**FEATURING**  
Lori Gould of Rivers of Carbon  
[www.riversofcarbon.org.au](http://www.riversofcarbon.org.au)

The workshop will cover:

- riparian management options
- creating healthy riparian areas
- monitoring waterways (waterwatch)
- riparian habitat and indicators.

**RSVP**  
Register your interest to Clare Henderson 0412 425 665 OR [upper.shoalhaven@gmail.com](mailto:upper.shoalhaven@gmail.com)

This workshop is part of the Araluen Creek Restoration project.

**UPPER DEUA LANDCARE INVITE YOU TO OUR**

**native seed collection and propagation workshop**

presented by Lyn Ellis  
**SATURDAY 3 SEPTEMBER 9.30AM - 1.00PM ARALUEN**

RSVP TO CLARE@DACELO.COM.AU OR 0412 425 665

Suitable for beginners or those with familiarity with native plant seed collection and propagation. It will cover:

- benefits and importance of local seed
- tools and materials to collect seed
- different seed/fruit types and timing of collection
- techniques to collect seed
- seed processing, storage and record-keeping
- methods of seed propagation and equipment
- making your own propagation mix
- care for your native seedlings

**PARTICIPANTS GET A TRAY OF PLANTED SEEDS TO TAKE HOME**  
This workshop is funded by the Landcare and Riparian Recovery Grants Program and supported by the Australian Government's Riparian Recovery Program for Wildlife and their Habitat.

**WEED MANAGEMENT WORKSHOP**

**SATURDAY 25 FEBRUARY**  
8:30AM - 2:30PM  
ARALUEN CREEK, ARALUEN  
(DIRECTIONS GIVEN UPON RSVP)

Register your interest to Clare Henderson 0412 425 665 OR [upper.shoalhaven@gmail.com](mailto:upper.shoalhaven@gmail.com)

At this workshop weed management experts, Apical, will outline restoration, remediation and weed eradication processes and principles.

They will also provide practical demonstrations of weed removal and bush regeneration on site along Araluen Creek.

The focus will be on – creepers and native grasses, in particular, Madeira Winter Cherry Vine, an emerging threat in the region and weed grasses such as Serrated Tussock and African Lovegrass.

Techniques will address management and control measures for different stages of growth – seeding through to mature plants.

Morning tea and lunch provided.

This workshop is part of Upper Deua Catchment Landcare's Araluen Creek Restoration project.

**UPPER DEUA CATCHMENT LANDCARE GROUP AND UPPER SHOALHAVEN LANDCARE COUNCIL INVITE YOU TO OUR**

**COMMUNITY PLANTING DAY AND CELEBRATION LUNCH FOR THIS STAGE OF THE ARALUEN CREEK RESTORATION PROJECT**

**APRIL SATURDAY 1 10 AM 2023**

**RECREATION GROUND 5969 ARALUEN RD, ARALUEN**

LUNCH 12.30PM  
PLEASE RSVP TO: [UPPERSHOALHAVEN@GMAIL.COM.AU](mailto:UPPERSHOALHAVEN@GMAIL.COM.AU)

- 9 workshops and events July 2021 to June 2023
- Average 20 participants per event

# Community Engagement: Media

Over 50 articles in community and regional media –

- **Regional Independent**
- **Braidwood's Changing Times**
- **Braidwood Bugle**

Hooray for local media!

BRAIDWOOD'S CHANGING TIMES Wednesday September 21, 2022 – 9

## Learning native seed collection and propagation

Clare Henderson, Upper Shoalhaven Landcare Council

Our Saturday 3 September workshop on native seed collection and propagation "delivered useful, practical advice and hands on technique that gave participants the knowledge needed to collect and propagate native species at home" says Cath Harrison, Upper Deua Landcare Community Liaison Officer.

Over the last six months, as part of the Araluen Creek Restoration Project, the Upper Shoalhaven Landcare Council has run a series of workshops to educate the community on native seed collection and propagation. The workshops have been held at a local native plant nursery near Mongarlowe for 20 years. Many windbreaks and plantings around the Braidwood district were planted from their stock.

Lyn and her partner Murray run a local native plant nursery near Mongarlowe for 20 years. Many windbreaks and plantings around the Braidwood district were planted from their stock. They developed a great reputation for providing good hardy tubestock plants. However, Lyn and Murray did much more than propagate and sell tubestock. Their advice on plant identification, what to grow, where, when



REGIONAL INDEPENDENT 3 August 2022

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### Down and dirty in Araluen Practical Erosion Workshop

The Upper Shoalhaven Landcare's Soil Erosion Workshop - the second in a series of workshops for the Araluen Creek Restoration Project - was recently held in Araluen. Around 15 people gathered on the day to hear Andy Taylor from Local Land Services share practical advice on controlling small-scale erosion with simple techniques. The group "walked the talk" and installed some basic structures on a patch of seriously degraded land that was previously mined for gold. The ingredients for the day included cor logs, jute mesh, mulch, local rocks and branches, mixed with some elbow grease and Andy's extensive experience to fit them together to make water work for you.

The area the erosion remediation efforts took place was formerly a site for gold dredging or hydraulic mining. What was left was almost completely denuded, with no vegetation or topsoil remaining. Mining finished around the 1930s and no remediation was ever attempted. Now, decades later, there is still a deficit of topsoil, but the site is slowly regenerating with some native trees and grasses. However, points of active erosion remain and Andy explained it is better to get onto them sooner than later, to prevent them becoming bigger, more costly issues down the track. That was the aim of the day - doing things that can be done by hand, to prevent having to do them by machine.

A key element of the Araluen Creek Restoration Project is landholder and community engagement to expand our understanding of waterway remediation, with the overall aim of building resilience back into our landscape. While the scale of control techniques may vary, the process of soil erosion is largely the same.

"Water always wins" said Andy, many times! However, his tip was to think like water - think where it will flow, what will make it divert to places where you want it to go, ways to slow it down or spread it out - without creating new erosion problems. You should also look more broadly at the site, as the answer to localized erosion may have simple up-slope solutions. His other top tip for livestock producers is "the best measure to address most soil erosion is fencing. Almost 90% of soil erosion can be fixed by keeping livestock out of areas with erosion issues, and giving plants a chance to do their bit."

Andy Taylor is the South East Local Land Services Senior Natural Resource Management Advisor for the Queanbeyan-Palerang region, living and working in the Braidwood region for over 20 years. He's worked on a range of projects, partnering with landholders and community groups, to improve the decision making and management of the natural environment on private land. He encourages an integrated approach, so that any given management action considers the uniqueness of its particular site and works toward achieving multiple outcomes for soil, water, native flora and fauna, as well as farm goals. Andy's take-home message is that all of these things are connected, and we must work together to make a difference at the landscape scale.

If you have any erosion queries or are interested in having similar workshops in your area, don't hesitate to contact Andy at [andy.taylor@lls.nsw.gov.au](mailto:andy.taylor@lls.nsw.gov.au) or Ph. 02 4842 3800



The Araluen Creek Restoration Project is funded through the Bushfire Community Recovery and Resilience Fund.

Local Land Services South East

Images: Workshop participants trying out some simple erosion control techniques © USLC

Right: Andy Taylor explaining erosion on a vehicle track. Photo by Larry O'Loughlin

Braidwood Bugle

News for Braidwood & the district  
Page 26 5th April 2023

## Landcare partnerships in action – Community planting for Araluen Creek

By Larry O'Loughlin, Chair, Upper Shoalhaven Landcare Council

Sunday 2 April saw an enthusiastic group gather along Araluen Creek for the Upper Shoalhaven Landcare Council and Upper Deua Catchment Landcare Group Community Planting Day. Four hundred trees, shrubs and grasses were planted, fertilised, staked, watered and protected with tree guards and weed mats, Penny Hayman, Secretary of the Upper Deua Catchment Landcare Group, sent a note to the organisers saying: "Wonderful day. Top organisation. Please send everyone a photo with a gold star."

Gold mining took off in the Araluen Valley 170 years ago starting a process of massive environmental impacts. Over time the Valley has converted to agriculture which has also had its impacts. In the late twentieth century community groups worked to build resilience and to repair some of the natural environment, particularly the waterways.

The Upper Deua Catchment Landcare Group (UDCLG) in 2020 obtained bushfire recovery money to try to deal with the ravages on Araluen Creek of a quick succession of drought, fire and flood. "We saw the damage that had been done with the loss of good farmland, the falling of mature trees and the reduction or disappearance of fish and eels," said Cath Harrison, Community Liaison Coordinator, UDCLG.

The UDCLG worked with the Upper Shoalhaven Landcare Group, South-East Local Land Services and several local landholders to do earthworks to stabilise the creek and build its resilience to future flood events. This included managing appropriate local species, to help reduce erosion by holding soil in place, reducing debris and taking energy out of the water in flood events.

On Sunday 2 April a great group of volunteers dug through rocks and clay to plant about 400 plants along Long Flat Creek, a tributary of Araluen Creek, on the property of Ken Harrison, with about 130 grass and shrub plants.

"It's great to have active involvement from landholders and Ken Harrison, UDCLG President. "He has not only fenced off an active watering area and replaced it with troughs, he also actively assisted on the day and has established ongoing watering and weeding processes while the new plants get established."

The volunteers used an array of tools to break through river debris brought down from previous floods to dig holes deep enough to give the plants their best start in their new homes. Some of the plants were also raised by volunteers who participated in an earlier workshop given by Lyn Ellis, formerly of Currajuggle Creek Nursery, who attended on the day. "Some of these trees that have been in their pots for a long time and have grown very tall will be suitable to plant as long-stemmed tube give a fairly thick sturdy stem," said Lyn Ellis. "New roots will form pm leaf nodes and the extra depth will give the trees less temperature fluctuations, more moisture availability and additional ability in their early lives especially in flood zones and increase their chances of survival."

A number of volunteers worked under and out from the existing majestic casuarinas along the creek. However, some of these trees are being impacted by the drought and one was singed by fire and they are being replaced by new plants. "Some of these trees are being impacted by the drought and one was singed by fire and they are being replaced by new plants."

Ken Harrison, "I want to thank everyone who came today and it without them,"

videographer Clare Young was on-site for the day, gathering footage for a forthcoming video on the Araluen Creek Restoration Project. Watch this space for more news on this part of the project.

The Araluen Creek Restoration Project is funded through the Bushfire Community Recovery and Resilience Fund.




Lyn Ellis, Braidwood local and former nursery manager, Cath Harrison, UDCLG Community Liaison, Erin Brinkley, USLC Coordinator explaining planting techniques.  
Photo: Clare Henderson

The group at work. Those rocks and the terrain made it a difficult site to plant on, however these new plants will over time stabilise this rocky bank.  
Photo: Clare Henderson

# Community Engagement: Information Sheets

- Eight information sheets provided to workshop participants
- The website holds all these information resources

**Weed management: a key part of the Araluen Creek Restoration Project**

A key component of the Upper Deua Catchment Landcare Group (UDCLG), Araluen Creek Restoration Project is weed management, so a Weed Management Plan was prepared in 2021.

The survey assessed weeds along the Araluen Creek riparian zone, Bridge to Bridge (refer map below). This included presence, abundance, and classification of weed species within individual properties. 91 monitoring sites were assessed. Based on the survey the report included recommendations for eradication, control and remediation of the various weeds.

The Araluen Creek Weed Management Plan project area extends between and Majors Creek Mountain Road Bridge in the north and ~~North~~ Road Bridge in the south.

The survey identified seventeen species of weeds including:

- Two Weeds of National Significance
- Two State Priority Weeds
- Seventeen Environmental Weeds
- One Local Management Programs Weed
- One Declared Pest Plant (ACT)

The most significant woody weed species identified within the Weed Management Project area are:

- **African Boxthorn** *Lycium ferocissimum*, a Weed of National Significance, which was recorded within 64 of the 91 survey sections.
- **Broad-leaved Privet** *Ligustrum lucidum*, an Environmental Weed, which was recorded within 71 of the 91 survey sections.
- **Small-leaved Privet** *Ligustrum spicatum*, an Environmental Weed, which was recorded within 60 of the 91 survey sections.
- **Blackberry Rubus** *Rubus species* *obovatus*, a Weed of National Significance, which was recorded within 19 of the 91 survey sections.

The presence of a range of growth stages (i.e. seedling to maturity) of African Boxthorn, Broad-leaved Privet and Small-leaved Privet indicate that the infestation of these weeds is actively increasing.

Upper Deua Catchment Landcare  
Apical Bushfire and Planning

**PLANTING LIST**

The Upper Shoalhaven Landcare Council is assisting the Araluen Creek Restoration Project with the Upper Deua Catchment Landcare Group. The chunky part of the project is the actual large scale works along the creek.

In addition to substantial erosion control works on the actual creek, there are other necessary elements to look after Araluen Creek, such as riparian health, waterwatch monitoring, re-vegetation, weed control and measures to keep stock out of the creek line by fencing and providing alternative water sources. We have also looked at small scale erosion control measures. The final component of the project is re-vegetating near the site works after fences are in place. This is another key way of stabilizing and protecting the creek.

On Sunday 2 April we are hoping to plant about 400 plants at one of the sites where erosion control works are complete, along with fences and alternative water supply to keep stock out of the creek.

**What are we planting? Here's the list!**  
The focus is on trees as once they grow they provide all important canopy cover for understorey plants.

**Trees approx. 190**

- 104 - *Casuarina cunninghamiana*, River Sheak
- 35 - *Eucalyptus tereticornis*, Forest Red Gum
- 25 - *Eucalyptus* (unspecified)
- 20 - *Eucalyptus melliodora*, Yellow-Bus Gum
- 6 - *Eucalyptus* Elata, River Peppermint
- 6 - *Acacia* covermylei, Blue Birch
- 5 - *Tasmannia lanceolata*, Mountain Pepper
- 6 - *Eucalyptus sideroxylon*, Red Ironbark
- 4 - Qandong

**Shrubs approx. 135**

- 80 - *Lomandra longifolia*, Matt Rush
- 40 - *Cassinia longifolia*, Shiny (Long Leaf) Cassina
- 15 - *Bursaria spinosa*

**Grasses / sedges approx. 65**

- 15 - *Carex appressa*
- 50 - *Ficinia nodosa*

**Ground cover**

- 3 - *Kunzia baggenoides*, Badga Carpet

Upper Deua Catchment Landcare  
Australian Government  
NSW  
This is a Public Community Recovery and Resilience Fund project through the plan Community Open Disaster Recovery Funding Arrangement

**LYN ELLIS SOIL MIX RECIPE FOR GROWING NATIVE PLANTS**

We mixed our own potting mix in the following ratio:

- 4 x composted pine fines or peat moss
- 2 x coarse river sand
- An Osmocote slow release fertilizer pellet for natives. You can get it lasting 6 – 9 months or 12 – 14 months. It's major minerals normally referred to as NPK were Nitrogen 17; Phosphorus 16; Potassium 9.0 plus Magnesium 0.6.

We also added a small amount of a loamy bush soil taken from a healthy native forest area. We believe this acted as an inoculant of the many soil microbes and fungi that have associations with native plants and are likely to be missing in long cleared pasture lands.

This information is from an Upper Deua Catchment Landcare Workshop led by Lyn Ellis on Native Seed Collection and Propagation on Saturday 1 September 2022. Lyn and her partner are a bush-obsessed plant nursery on the Shoalhaven region for almost twenty years. The workshop was funded by the Upper Shoalhaven Catchment Council under their Landcare and Bushfire Recovery Grants Project. The Project has been generously supported by the Australian Government Bushfire Recovery Program for WMAU and their partners.

**Apical Bushfire and Planning**

## TIPS FOR MANAGING PRIVET

**Mature plants:**  
Use a chainsaw to cut lower branches to expose trunk to a workable height say approx. 1 metre. Create wells (cuts into trunk) immediately apply a dyed (coloured) 90% glyphosate-10% water mix. Also apply to any branch trunks that have been cut. Leave tree standing; it will die and eventually fall over, meanwhile it provides a canopy for shade and a dripline for moisture for replanting desired species. Focus on plants that are in seed or about to seed, this is usually autumn or early winter.

**Seedlings:**  
Mechanically remove, hand pull, however replant with other native vegetation to discourage new weed incursions.

**Bio-mass cuttings:**  
Burn. Or leave on-site.

**Follow-up:**  
Keep an eye on treated sites. Seed remains viable or up to two years. So monitor seedling growth at sites that have been treated.

**Best time and methods for weed control:**  
All seasons hand pull or dig. Plus in spring cut and paint.

Upper Shoalhaven Landcare Council  
Upper Deua Catchment Landcare

# Community Engagement: Video

- Video footage of the project
- Clare Young, award-winning film maker and Braidwood local, is video producer
- Video released September 2023 in Araluen

Photo here is Clare Young filming local landholder, Les Mundy, outside Federal Hall Araluen after February 2022 workshop on geology and soils of Araluen Creek.





## Challenges and key lessons

- It's a big job for a small community of volunteers
- Government agencies have a special approach
- Different landholders need different approaches
- Funding bodies need to be massaged
- Project ends but more work needed



# Next steps

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Do more of the same

- Build community resilience
- Build environmental resilience
- Fix the past and plant the future

