

Black Gully Rejuvenation Plan

Stage 3

220128_01



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Document

Black Gully Rejuvenation Plan – Stage 3

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Abbreviations and Acronyms

ACCKP	Aboriginal Cultural Centre and Keeping Place
ARC	Armidale Regional Council
ATG	Armidale Tree Group
AURG	Armidale Urban Rivercare Group
DCP	Development Control Plan
FON	Friends of NERAM
GA	Greening Australia
HICUB	High Country Urban Biodiversity Project
LLS	Local Land Services
NECOM	New England Conservatorium of Music
NERAM	New England Regional Art Museum
REF	Review of Environmental Factors
SNEL	Southern New England Landcare
TAS	The Armidale School
V4ACL	Visions for Armidale's Creeklands

1 Introduction

Black Gully is an ephemeral creek within the urban area of Armidale, NSW. Since 2000, a collective of individuals and organisations (Friends of Black Gully) have worked to improve the natural environment and social amenity of the section of Black Gully behind the New England Regional Art Museum (NERAM). Work in this area has included weed control, tree planting, rock revetment, earthworks, signage, habitat enhancement and educational activities. During this period the work has primarily been carried out by:

- Armidale Tree Group (ATG),
- Southern New England Landcare (SNEL),
- Greening Australia (GA),
- Friends of NERAM (FON),
- Armidale Urban Rivercare Group (AURG).

A significant amount of this work was implemented by the High Country Urban Biodiversity program (HiCUB) between 2010 and 2012, funded by the NSW Environmental Trust and by Stringybark Ecological and Friends of NERAM (Figure 1).



Figure 1: Aerial view of part of Black Gully showing pools created as part of Stage 2. (Photo: Terry Cooke)

As a result of this work, the section of Black Gully between the railway line and the Aboriginal Cultural Centre and Keeping Place (ACCKP) has been substantially improved with better habitat for wildlife, better stream function and water quality and much greater social amenity leading to a high level of community use.

The next stage of the project (Stage 3) aims to fill in gaps in these works and extend the works behind ACCKP to Taylor St. It will also see the involvement of new stakeholders: the ACCKP and Visions for Armidale Creeklands group (V4ACL). Stage 3 will include:

- Designing and planting a bush food garden and circular walk at ACCKP,
- Planting of local trees, shrubs and grasses in the riparian zone, mainly behind ACCKP,

- Removal of woody weeds in the whole length between the railway and Taylor St,
- Addressing spring seepage near the stage,
- Excavation of pools filled in by sediment (willow root entrapment) along the length of the creek,
- Trenching, rock bar establishment and rock revetment in strategic locations to prevent head cuts in the creek bed,
- Rock revetment to improve the health and oxygenation of water trickling along the creek, especially during dry times,
- Development of the Old Teacher's College basketball court as a temporary car park for visitors to the area,
- Maintenance of existing infrastructure, including the outdoor stage, the low-level creek crossing culvert, the rock works, the gabion baskets near Taylor St.
- Seating, picnic tables and other infrastructure.

Longer term plans, which will require a greater level of consultation and detail to plan include:

- Establishment of a walking and cycling track through the site to connect the Heritage Walking Trail with Taylor St (and eventually to the Mike O'Keeffe Reserve).
- Design and construction of a pedestrian bridge to connect the temporary carpark (and any more permanent carpark) to NERAM.
- Continuation of revegetation works east of Taylor St, to connect with the plantings in the Mike O'Keeffe Reserve.

One of the aims of this stage 3 plan is to better integrate all the organisations in the area into a cultural and community precinct. This may include:

1. NERAM,
2. ACCKP,
3. Armidale Community Garden,
4. Radio 2 ARM-FM,
5. Armidale Gymnastics Club,
6. Museum of Printing and Black Gully Printmakers,
7. Museum of Education,
8. Armidale Tree Group,
9. New England Conservatorium of Music (NECOM) and
10. Friends of the Old Teachers College.

2 Details of proposed works

2.1 Approvals, licences and permissions

2.1.1 Land ownership

The Black Gully precinct includes four parcels of Crown Land on separate Lots (Table 1 & Figure 2). The works proposed for Stage 3 will mostly occur in the riparian zone of Black Gully, wholly within Lot 3, managed by Armidale Regional Council. The proposed new dam will occur within Lot 2 and the proposed walking/cycling track may enter all Lots. Permission will need to be granted by all land managers and Crown Land in the NSW Government Department of Planning and Environment.

Table 1: Lot and DP and land managers in Black Gully

Lot	DP	Manager
1	1055438	University of New England, Museum of Education.
2	1055438	ACCKP
3	1055438	Armidale Regional Council
1138	722471	NERAM

All of the Crown Land is subject to a NSW Aboriginal Land Claim, which has not yet been determined. According to Crown Lands, no substantial development may take place on this land until the Claim is finalised, without the consent of the claimants. In this case the claimants are the NSW Aboriginal Land Council.



Figure 2: Location of Lots and boundaries in Black Gully area.

2.1.2 NSW Water Act (2000)

Black Gully is a minor watercourse according to the NSW Water Act. Minor watercourses are defined according to the Strahler system as 1st and 2nd order streams. Black Gully, at the site of the works, is a 2nd order stream, as a 1st Order stream is joined by a 2nd Order stream just upstream.

2.1.3 NSW Fisheries Management Act (1994)

A Section 201 permit may be required for stream bed or bank stabilisation works involving dredging or reclamation to halt erosion and 28 days-notice before work. This permit may be required for any works in the channel or banks of Black Gully.

2.1.4 Tree Preservation DCP – Armidale Regional Council.

The removal of any trees that are more than 6m in height and located more than 3m from a building requires Council approval. A 'Permit for Tree Removal or Pruning' form must be completed and submitted to Council.

2.1.5 Local Government Zoning

All of the land in the Black Gully precinct is zoned RE1 "Public Recreation". In this Zone Environmental Facilities are permitted without consent.

2.2 Proposed works

These works will involve actions that are likely to have an impact on the creek or natural environment or potentially may impact site users. Some of these works will need to be considered as part of a “Review of Environmental Factors” (REF) which may be used to gain approvals or permits listed in Section 2.1. This REF is intended to be a single document with separate subsections addressing all works requiring a REF. Other works are proposed for future development and are likely to require individual Development Applications.

The aim of the works is to achieve a more natural shape and structure to the creek, with the minimum amount of disturbance and to improve the habitat values for wildlife using the creek either as habitat or for connectivity. A second aim is to improve aesthetics and amenity for people using the Black Gully parklands area.

Figure 3 shows the location of the proposed works.



Figure 3: Works proposed in Black Gully parklands. (Source: Google Earth)

2.2.1 Vegetation management

Woody vegetation removal

We will remove exotic woody vegetation from within the dam, the creek channel and the banks of the creek. This includes mature and regrowth trees and shrubs such as:

- Willow,
- Silver poplar,
- Lombardy poplar,
- Small-leaved privet,
- Montpellier Broom,
- Blackberry,
- Honeysuckle.

Large trees will be cut at a safe height with a chainsaw and dragged out of the creek with a tractor. The stumps of plants larger than 30cm (dbh) will be removed with an excavator. Trees and shrubs with a clear trunk less than 30cm dbh will be cut off at the base and the stump surface painted with glyphosate. Vine weeds will be sprayed with the appropriate herbicide at the appropriate time and/or removed with an excavator.

Woody debris will be removed from the site and taken to the green waste area at Armidale Regional Council waste management facility or, if possible, mulched on site and the mulch re-used in revegetation works.

Perennial grass weed management

Perennial exotic grass weeds are the dominant ground cover in several reaches of Black Gully, particularly behind the stage and behind the ACCKP. These include:

- Phalaris,
- Cocksfoot,
- Paspalum.

The weeds pose a fire risk and prevent regeneration of native species. We will remove or control these weeds using a combination of:

- Fire,
- Herbicides, used according to label by qualified operators,
- Mulch mat, as has been successfully used near the footbridge.

Revegetation

Once excavation and weed control works have been completed, we will revegetate the banks using local native species, following the pattern established over the last 30 years in previous stages. Where possible we will use jute mulch matting to permanently suppress weeds before planting at high plant densities (10,000-40,000 plants/ha). Species will include:

- *Eucalyptus dalrympleana*,
- *Eucalyptus stellulata*,
- *Eucalyptus pauciflora*,

- *Eucalyptus viminalis*,
- *Eucalyptus nova-anglica*,
- *Casuarina cunninghamiana*,
- *Allocasuarina littoralis*,
- *Leptospermum polygalifolium*,
- *Callistemon sieberi*,
- *Callistemon pungens*,
- *Callistemon pityoides*,
- *Hakea microcarpa*,
- *Lomandra longifolia*,
- *Grevillea juniperina*,
- *Acacia rubida*,
- *Acacia melanoxydon*,
- *Banksia integrifolia*,
- *Cenchrus purpurascens*,
- *Carex apressa*.

Revegetation will be carried out by volunteers and contractors in stages as funding becomes available. Seedlings will be grown in Hiko cells and protected by milk carton tree guards after planting.

Revegetation design will include areas of low height vegetation to allow vistas of the creek and beyond which will also allow for adequate sight lines for safety.

2.2.2 Excavation in creek channel

There are three main reasons we will be excavating soil from within the creek channel and banks:

1. To remove sediment built up in parts of the channel (sediment removal),
2. To deepen or broaden pools to increase the area of pools within the creek (pool widening), and
3. To embed rock into the banks or create rock-filled trenches to prevent head cuts (rock revetment).

Sediment removal

Prior to 2010 there were many large willow trees in the channel of the creek, the roots of which trapped sediment and decreased the width and depth of parts of the channel. The sediments are high in nutrients and have encouraged rampant growth of exotic weed species.

We will use an excavator with a flat, broad bucket to remove some of this sediment, to create a shallow U-shaped channel in parts of the creek. This will remove some of the weed seeds stored in the sediment. It will also increase the speed of water in these sections, which has the potential to create erosion. We will mitigate this by only cleaning out short sections in this way, with jute matting and rock revetment to protect exposed banks on bends and creation of pools to slow the water. The creation of this series of pools and channels, will increase oxygenation of the water, allowing a greater diversity of aquatic fauna to use the creek. Areas of the channel between pools will be protected with jute matting and planted with appropriate grasses and sedges.

Figure 4 shows the profile of the channel of the creek before and after works.

This activity will be considered in the REF.

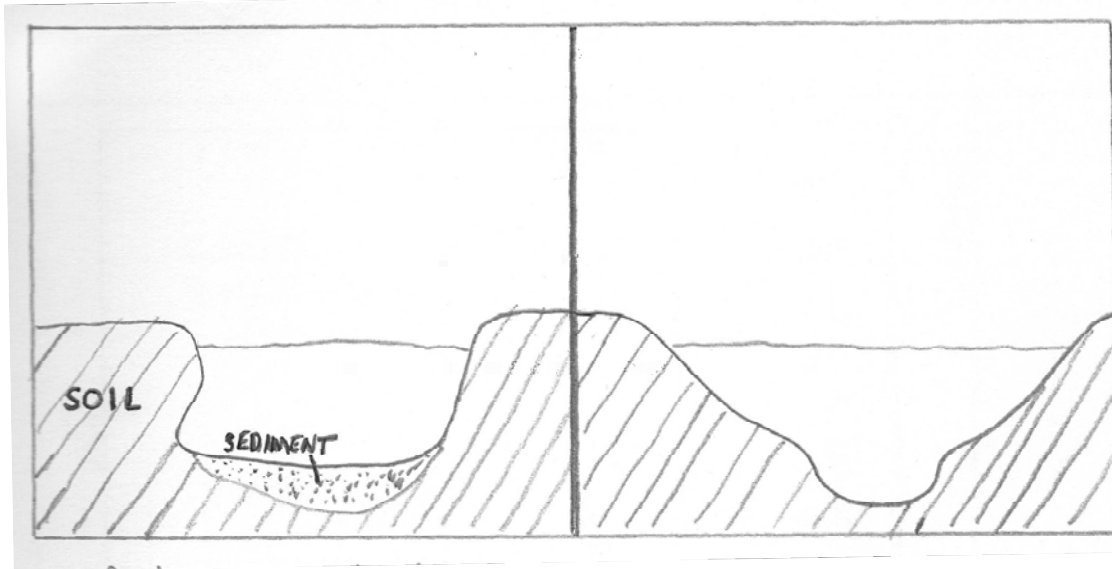


Figure 4: (L) Channel profile showing sediment accumulation and bank slump. (R) Channel profile after removal of sediment and bank shaping.

Pool widening

Many of the pools which once existed in Black Gully have been filled in or made shallower by the deposition and trapping of sediment. In Stage 2 we increased the depth and width of 4 pools behind NERAM and used rock revetment to stabilise these pools and successfully prevent developing head cuts in the bed (Figure 5).



Figure 5: In Stage 2 of the Black Gully Rejuvenation, these pools were widened and protected with rock banks. Photo: Terry Cooke.

We propose to do similar work to increase the number of pools in the creek to create a variety of habitats, to slow water during high flows and to provide permanent sources of water during dry periods.

We will use an excavator to widen some of the existing pools and, if appropriate, to increase depth. The maximum depth would be 2m with a median depth of around 1.2m. The shape of the pools will be a teardrop, with the narrow end facing upstream. Upper banks will be close to vertical, becoming less steep at a depth of 300mm. The sediment we remove will be used on site for other projects where possible or will be removed to ARC landfill.

Figure 6 shows the longitudinal profile of the creek after works with rock revetment to prevent the downstream bank from erosion. The right-hand figures show (top) the pools in plan view before and (bottom) after, with rock revetment in place to protect the outflow channel.

This activity will be considered in the REF.

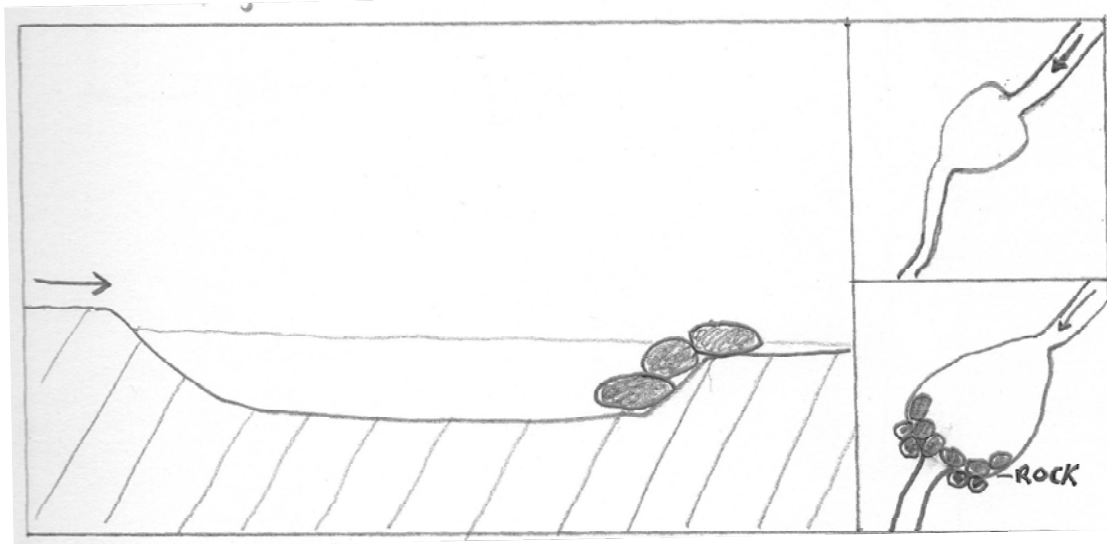


Figure 6: Pools in the creek. (L) longitudinal cross section showing rock revetment. (R) Plan view of pools showing before and after shape and rock placement.

Rock revetment

Rock revetment will be used in several locations to protect the banks and bed of the creek from eroding. Rock revetment has been used successfully under stage 2 behind NERAM.

Trenches filled with small diameter rock (100-150mm) lined with geotextile will be used at two locations (Figure 3) to prevent head cuts in the creek channel. These trenches are dug perpendicular to the creek flow to a depth of 0.8m and width of 1m. One trench will be placed just downstream of the dam inlet channels behind ACCKP. This trench will be capped with large (50-100cm) basalt rocks to act as stepping stones for people crossing to the dam as part of the bush food walk. The other trench will be placed upstream of the footbridge and immediately upstream of the water/sewerage pipe behind the 2ARM-FM building.

Large basalt boulders will be used in several locations to protect the banks or pool edges from erosion during high flow events (Figure 6). These will be embedded into the bank at points where water will hit the banks at high speed.

This activity will be considered in the REF.

2.2.3 Excavation adjacent to creek channel

Existing dam on south side of creek

The existing dam on the opposite side of the creek to the ACCKP is designed to intercept surface flow and excess flow in the creek. There is a diversion channel from the creek but this is full of sediment and overgrown with grasses, so does not seem to be functioning any more. The dam is largely silted up as evidenced by the dense growth of *Typha orientalis* (bulrush), which requires reasonably shallow water (Figure 7).



Figure 7: Aerial view of the silted-up dam adjacent to Black Gully. Photo: Terry Cooke.

Several large poplars on the western side of the dam are falling over. Several of these close to, or in the dam, should be removed during excavation. Figure 8 shows the trees to be removed and retained around the dam.



Figure 8: Tree removal in and around the dam. The white line is the approximate boundary of the dam. The blue-green lines show approximate location of new high-flow channels for flow into the dam from the creek. (Source: Google Earth.)

We will use an excavator to remove sediment from this dam and return it to its former depth of around 1.2m in the middle with shallower benches around the edge (Figure 9). The excavator will also clean out the diversion channel. Sediment removed from the dam will be spread on the former playing fields adjacent to the dam to a depth of 100mm. The base of the dam will be terraced to create a bench around the edge for aquatic plants, with a deeper sump in the middle.

After woody weeds are removed in this area, two channels will be cut from upstream leading to the dam (Figure 3). These channels will take high flows from the creek to refill the dam. The existing dam overflow will be retained.

This activity will be considered in the REF.

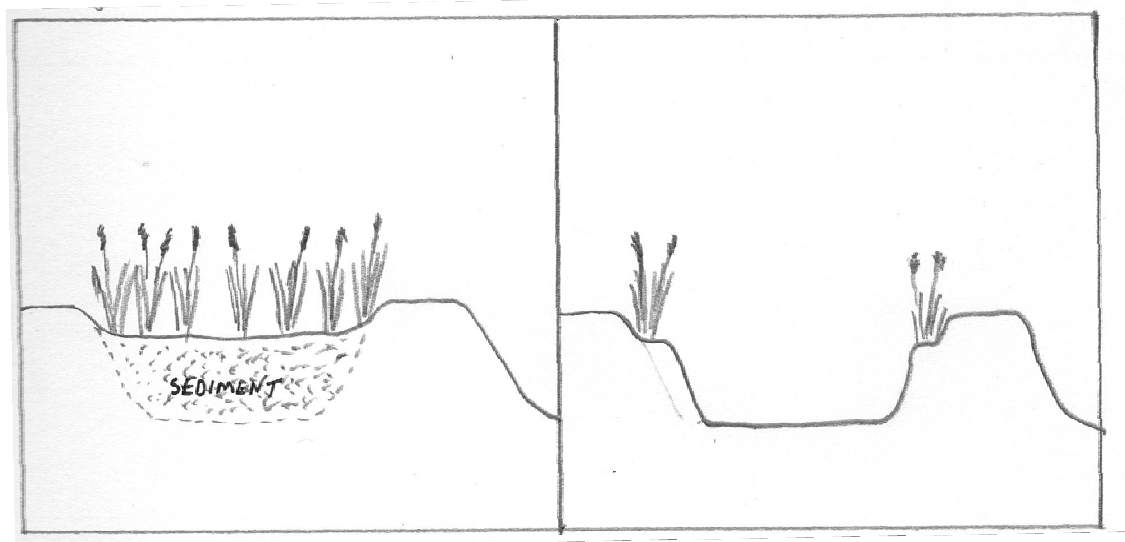


Figure 9: Cross section of dam before (L) and after (R) sediment removal.

2.2.4 Earthworks to reduce inundation at ACCKP

During periods of heavy rain, the western and southern sides of ACCKP have water building up and threatening to inundate the building. The accumulated water makes the grassed areas very soggy so they can't be used. A grant from Northern Tablelands LLS will allow a tree to be removed and an agricultural drain installed to take water from the western side and drain it into the creek.

However, floodwater from Black Gully has the potential to damage and inundate the ground on the southside of ACCKP. We will use an excavator to install a low diversion bank (300mm above existing) running from the existing garden beds in a south-easterly direction, to divert high flows back towards the creek.

This activity will be considered in the REF.

2.2.5 Construction away from creek

Conversion of basketball court to car park

NERAM currently has limited parking space available, with a small carpark off Kentucky St and on-street parking on Kentucky St. On the south side of Black Gully directly opposite NERAM there are two asphalt basketball courts which were originally part of the Teacher's College (Figure 11) The courts are now cracked and overgrown in part with grass, but provide a level and stable surface that could be used for temporary car parking (Figure 10) for NERAM and other Black Gully users, until a more permanent solution can be found.

Access to the basketball courts will be via the gravel road from the gate on Taylor St, turning down toward the causeway over Black Gully. A new gravel ramp would have to be built from this gravel road to the courts, with a suitable pipe (300mm diameter) installed under the ramp for drainage (Figure 10).

The grass on the courts would be removed using herbicide and scraped with a bobcat bucket to level the surface and remove loose grass and bitumen. A new surface would be laid with spray bitumen and fine blue metal. The posts and backboards would be retained as heritage items. These could be refurbished and even fitted with basketball rings again for community use.

The carpark will accommodate 26 standard car spaces and three disabled parking sites. Standard car park spaces are 5.4m long by 2.65m wide and disabled parks are 5.4m long and 3.2m wide. The aisles between parking rows are 7m wide. Car parking spaces would be designated by painted lines. Wheel stops will be placed on the outer rows 1m from the outer end of each parking space.

This activity will be considered in the REF.

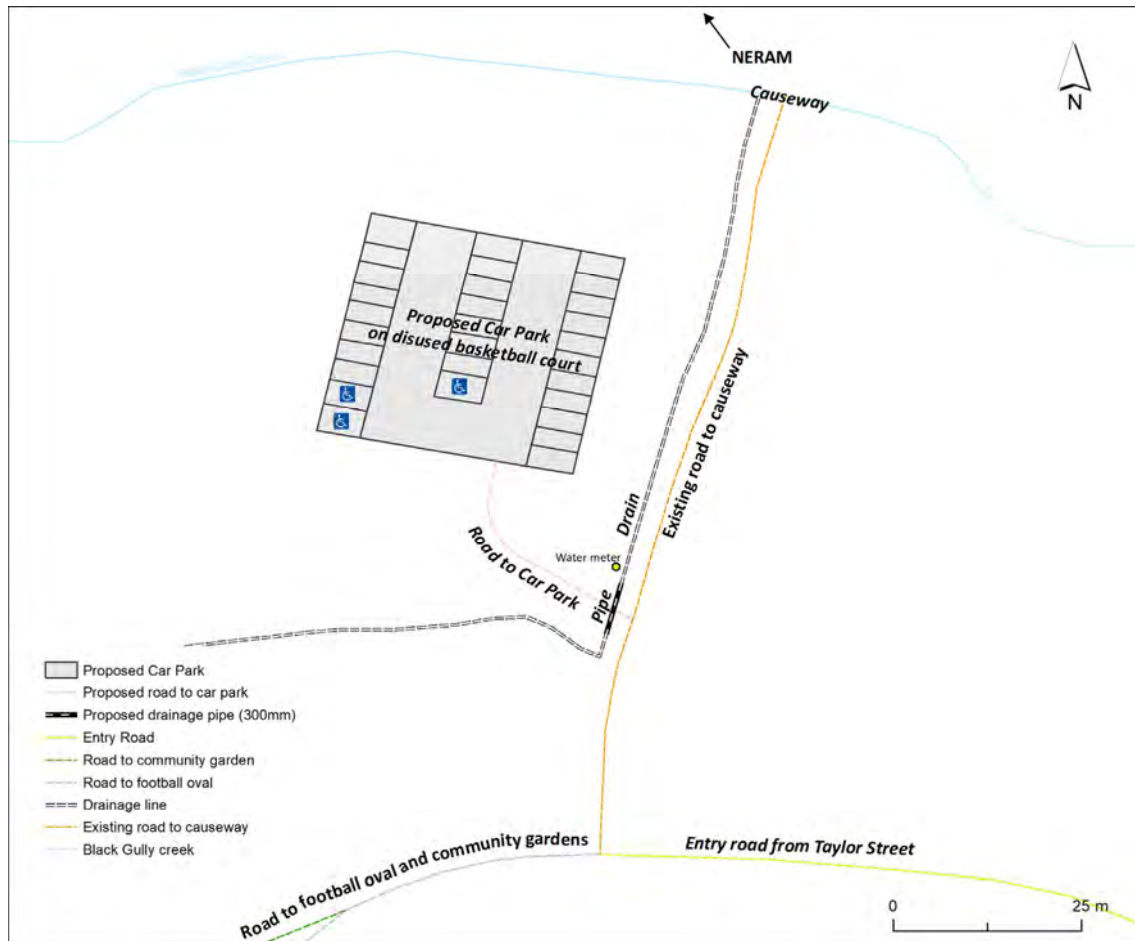


Figure 10 Proposed conversion of basketball court to carpark



Figure 11: Potential car park location and access from Taylor St

Subsurface drainage near the stage

The hill on which NERAM, NECOM and the Museum of Education is located has soil derived from basalt, with rock layers close to the surface. During wet periods a number of springs appear in the side of the hill. One such spring is located 20m upslope from the stage and creates very wet conditions in the immediate area. The wet conditions make it impossible for the site to be mown and vehicles can become bogged.

We will dig a shallow trench below the spring and install drainage pipes (ag pipe) to drain the water across the slope and discharge it into the creek. This will allow the site to dry out faster in wet conditions and prevent bogging of mowers and other vehicles.

This activity will be considered in the REF.

Construction of additional footbridge linking basketball court to NERAM

The causeway allowing vehicles to cross from Moran Oval to the back of NERAM is periodically flooded, making it difficult for pedestrians to safely cross from the carpark to be constructed on the basketball court to NERAM.

We propose that Council, NERAM and the community seek grant funding to construct a footbridge (e.g., Figure 12) across the creek, just upstream from the causeway to allow carpark users to access NERAM across the creek, even at the highest flow level. The footbridge would need to be connected to the carpark at the southern end and to existing footpaths at the northern end. The bridge would need to have a surface and gradient suitable for wheelchairs and prams.

The bridge should be high enough to clear the high flow of the creek. As it is high in the catchment, the water in the creek rises and falls quickly. The Friends of Black Gully recorded the height of a high flood in 2011 which will be used as a benchmark for the bridge construction.

In keeping with the connection to NERAM and the setting in which it will be constructed, the design of the bridge should have high aesthetic appeal. This will be part of the NERAM Masterplan.



Figure 12: Example of a small pedestrian foot bridge that could span Black Gully.

The bridge and connecting paths will need lighting.

Grant funding should cover design and construction.

This activity will require a separate Development Application.

Walking and cycling track

Several groups have proposed a cycleway/walkway connecting the Armidale Heritage trail at the corner of Kentucky and Dangar St with Armidale Tree Group Mike O'Keeffe Woodland. The track would enter the Kentucky St parklands near the Gymnastics Club (possibly behind) and run along the contour behind the Museum of Education, NERAM and ACCKP, then crossing Taylor St, before running parallel to Black Gully to Kentucky St then through the Mike O'Keeffe Woodland to Armidale Tree Group.

The track could be used by walkers or cyclists completing a circuit from the heritage trail through Black Gully and then past TAS and back into town (Figure 13). Figure 3 shows a possible pathway through the Black Gully parkland area.

The track would need to be constructed to appropriate Australian Standards, following guidelines such as (Austroads, 2021), have a bitumen sealed top and have adequate drainage to allow water to pass underneath it. The track will also need to be constructed to avoid stormwater and sewerage caps. The cycle path should have lighting, similar to that installed on the Dumaresq Creek path.

It is likely that grant funding will need to be found to cover the cost of design and construction of this track. Council would be the best organisation to apply for and administer such a grant with the support of all other community organisations along the length of the track.

This activity will require a separate Development Application.



Figure 13: Proposed route of cycle and walking track linking Black Gully parklands to existing trails

Existing stage

The existing stage dates from the days when the area was managed by the Armidale College of Advanced Education, when it was used as a drama and music performance area. The stage has a concrete slab over a brick footing, with steps on two sides. The stage is still structurally sound. There is a power box at the back of the stage supplying 3-phase power.

The stage is currently used for the annual Black Gully festival, occasional theatre performances and even the odd wedding.

The stage is not protected from rain nor from sun which limits its use at some times. A cover over the stage would provide protection from the elements and increase its use.

It is likely that grant funding would be required to design and then construct a cover over the stage. The cover should be weather-proof, vandal-proof, sympathetic to the local environment and influenced by artists from the ACCKP to provide a First Nations connection to Country.

A desirable alternative would be to move the existing stage 20m west to position it better for an audience sitting near the hill. This would also avoid the large tree which is located on the side of the hill almost directly in front of the stage.

This activity will require a separate plan and Development Application.

3 Partners and Funding Opportunities

There are a number of stakeholders involved in the management of the Black Gully precinct outlined in the Introduction. Not all of these are in a position to implement, manage or fund the works proposed in this plan.

Armidale Regional Council

The main proponent of some of these works should be Armidale Regional Council (ARC), in partnership with other stakeholders. It is likely that ARC will have access to funding sources not available to community organisations or private businesses. ARC also has skilled staff and equipment to carry out some of the works.

ARC will also be the consent authority for any works carried out in this area, which would require approval through Part 5 of the EPA Act. A Review of Environmental Factors will be required for such works.

Applications by ARC and other stakeholders for funding to carry out some of these works will have a greater chance of success due to the broad and high support from the many stakeholders in the plan.

Community organisations are also likely to have access to funding not available to ARC. NERAM, SNEL, ATG, ACCKP and possibly V4ACL will be well placed to apply for grants to implement some of these works.

If grant funding is obtained, there is likely to be considerable in-kind contributions from the partner organisations.

NERAM/Friends of NERAM

NERAM, as a community organisation, has a track record of successfully accessing grant funding for a wide range of projects. Although they have not applied for funding for environmental projects, they have received capital works funding in the past. In the current plan, NERAM may be the best placed to apply for funding to carry out the conversion of the basketball court to a carpark and for the design and construction of the footbridge linking it to the museum.

The Friends of NERAM is a group of volunteers who carry out activities to raise funds to support the work of NERAM. In Stage 2 of the Black Gully plan, they contributed funds to carry out works to enlarge pools, do rock revetment and plant the banks in the creek immediately behind the museum. The Friends may be in a position to provide in-kind or cash funding to support an application to build the footbridge.

Armidale Cultural Centre and Keeping Place (ACCKP)

ACCKP are very keen to carry out the works in the vicinity of their centre, including the construction of a bush food garden in their grounds. To this end, they have already received funding from Northern Tablelands LLS to control weeds, lay mulch mat and revegetate the banks of the creek at the back of the Centre. ACCKP have also lined up volunteers from the local Aboriginal community to assist with these works.

Friends of Black Gully / Armidale Tree Group / Friends of Armidale Creeklands

The Friends of Black Gully (a sub-group of Southern New England Landcare) have successfully raised funds through sponsorship and grants for works in Stage 2 including revegetation, earthworks and weed control.

Armidale Tree Group have contributed voluntary labour to maintain and plant sections of the creek over the years and have received grant funding on several occasions for this work.

These organisations should be able to access funding through Landcare and through Northern Tablelands LLS for environmental works, such as the weed control and revegetation outlined here.

Southern New England Landcare is an important partner to help access grant funding for environmental works.

Stringybark Ecological Pty Ltd

As a private ecological consultancy business, Stringybark Ecological is an important partner in the Black Gully plan. We have provided our services at no charge to develop this plan and have been active partners in supporting ACCKP in developing and implementing their grant for works at their site.

Visions for Armidale Creeklands Inc.

This community association, which aims *“To assist in the careful planning, design and development of beautiful, healthy and safe public spaces featuring wetlands, lagoons and billabongs, connected by flowing water along the Armidale Creeklands”* was the catalyst for this plan. In March 2021, they held a public meeting of stakeholders at the ACCKP and received broad support at the time. They were also responsible for gaining financial support from Armidale Regional Council’s then Administrator (Viv May) with funds for Drought Recovery from the NSW State Government. The concept plan approved for this funding was titled Black Gully Billabongs project. They may also be a source of funds if they are successful in raising sufficient funds from their members and possible sponsorship.

4 Where to From Here?

The next steps for implementing the plan, in order of priority, are:

1. Seek endorsement from Armidale Regional Council for the Plan and the REF to carry out some of the works.
2. Seek funding to implement the activities described here. Funding is likely to come from multiple grant programs and philanthropy.
3. Further develop (with grant funding where necessary) the ideas for a pedestrian bridge, a cover over the stage and a walking/cycling track.

5 Acknowledgements

This plan has been developed by David Carr from Stringybark Ecological PTY Ltd. It builds on over 30 years of work in Black Gully by; Southern New England Landcare, Armidale Urban Rivercare Group, Armidale Tree Group, Friends of Black Gully Landcare Group, Friends of NERAM, Armidale Regional Council and Greening Australia.

Recently, Visions for Armidale Creeklands proposed some ideas for the site which prompted the development of this plan. V4ACL have also obtained funds for producing a Review of Environmental Factors (REF) referred to in this plan. Josh Oxley of 2ROG and Cassandra Hunt assisted with the production of some figures and maps.

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Review of Environmental Factors

Black Gully Rejuvenation Plan

Review of Environmental Factors



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Document

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1 Introduction

The environmental assessment and determination of the proposal has been undertaken in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). For this proposal, Armidale Regional Council is both a public authority proponent (EP&A Act s5.3) and the determining authority (EP&A Act s5.1). The REF has been prepared in accordance with Clause 228 of the EP&A Regulation (2000). Table 1 below outlines the proponent contact details.

Table 1: Proponent details

Project Name	Black Gully Rejuvenation
Proponent Name	Armidale Regional Council
Project Manager	
Position	
Contact Details	

1.1 Project Description and Background

1.1.1 Scope of works

The following proposed works were initially developed as part of the Black Gully Rejuvenation Plan (henceforth, 'the Plan') (Carr, 2023) and are designed to align with the overall goal of the project. The works will be carried out in a section of Black Gully (the creek), a tributary of Dumaresq Creek, behind New England Regional Art Museum, from the railway line easement to Taylor St (Figure 1 in the Plan). The works are a continuation of works undertaken by a consortium of community organisations since 1990.

The aims of the works are:

- to restore natural features in the creek including pools and riffles and to reduce the risk of head-cut erosion,
- to improve public amenity around the creek, and
- to improve the natural values for wildlife using the creek as habitat and/or for connectivity.

The proposed works have been separated into four areas discussed in detail below.

Excavation within the creek channel

Sedimentation as a result of upstream erosion has significantly changed the nature of the creek bed by filling in pools and changing the shape of the bed. We aim to deepen and reshape six pools as shown in Figure 2 of 'the Plan'. These pools have become narrower and shallower as a result of sedimentation. We will use a tracked excavator to widen the pools, remove sediment from the base of the pools and reshape the banks to 45°. The general shape of the pools after excavation will be a teardrop with the narrow section upstream. Figure 4 in 'the Plan' shows the profile and plan view of the pools to be treated in this way. Pools will not be widened beyond those immediately upstream of the concrete causeway (widened in Stage 2).

Sediment removed from the creek will be used as fill on site where there is an opportunity, otherwise will be removed to a suitable landfill site.

The project will also excavate two trenches across the creek to create a rock bar to prevent head-cut erosion from advancing up the creek channel. These trenches are shown in Figure 2 of 'the Plan'. The

trenches will be 1m wide and 0.8m deep, perpendicular to the channel and extending 2-3m into the banks on each side. The trenches will be lined with geotextile and filled with hard rock, 100-150mm diameter (rip rap). The trenches will be capped with large flat basalt rocks.

Rock revetment will be used to prevent bank erosion during high-flow events in pools widened by this project. A layer of rock will be placed over exposed soil in areas where there is centrifugal force from the water or direct impact. A range of rock sizes from 100 to 1200mm will be used as rock armouring over geotextile. In some cases, this rock revetment will be dug into the bank to secure it requiring additional small-scale excavation with an excavator.

Sections of the creek bed between the pools will also be reshaped to remove sediment accumulated by willows (removed in 2011). Figure 3 in 'the Plan' shows the before and after profile of the creek channels treated in this way. Channels between Pools 1 and 2, below Pool 4 and between Pools 4 and 5 will be treated in this way (Fig 2 in 'the Plan'). Sediment from channel reshaping will be disposed of in the same way as that from pool widening.

Excavation adjacent to the creek channel

An existing dam on the southern side of Black Gully (Fig 2 in 'the Plan') is designed to intercept surface flow and excess flow in the creek. There is a diversion channel from the creek but this is full of sediment and overgrown with grasses, so does not seem to be functioning any more. The dam is largely silted up as evidenced by the dense growth of *Typha orientalis* (bulrush), which requires reasonably shallow water. The following works are proposed to restore the dam to its former depth and increase the interception capacity. These works are shown in Figure 5 in 'the Plan'.

- Removal of several large poplars on the edge of the dam. These trees are prone to falling over, posing a safety risk. These trees will be removed under a 'Permit for Tree Removal or Pruning' from ARC.
- Removal of sediment within the dam with an excavator. The dam is to be dug to its original depth of 1.2m in the middle with shallow benches around the edge. The excess sediment is to be spread on the former playing fields adjacent to the site or used in the diversion bank adjacent to ACCKP (see below).
- Removal of woody weeds and sediment in the diversion channel. Within the existing diversion channel (inflow), two channels are to be constructed to divert high flows into the dam. These channels will be approximately 450mm deep and wide.

Earthworks around the dam will be undertaken between February and August to avoid affecting birds using the reeds for nesting.

Earthworks to reduce inundation at the ACCKP

These works consist of a single proposed works action to install a low diversion bank to prevent inundation of the ACCKP in high rainfall events. The proposed diversion bank is 300mm high and runs in a south-easterly direction from existing mounded garden beds towards the creek, with the aim of diverting high flows back to the creek. The mound will not prevent surface water escaping from the south west corner of ACCKP to the creek.

The mound will be constructed with a core of impervious clay material overlaid with more pervious topsoil. Over time the surface of the mound will become covered with grass.

Conversion of the old basketball court to a temporary carpark

The old Teachers College basketball court has a sound gravel base and a deteriorating surface of bitumen. There is grass growing through the bitumen. Works to turn it into a temporary carpark to accommodate extra visitors to NERAM will be:

- Scraping of surface of the bitumen with a bobcat bucket to remove grass and loose bitumen,
- Resurfacing with spray bitumen and fine gravel,
- Installing a 300mm diameter pipe in the drain adjacent to the avenue leading from Moran Oval to the concrete causeway over Black Gully,
- Laying a gravel road from this avenue, across the grass to the basketball court.
- Marking and painting lines for car parks.

Diversion of spring near stage

The spring near the existing stage releases a lot of water onto the grass which then flows across towards the stage. During wet periods (e.g. 2020-2022) this area becomes very wet and boggy to the point where vehicles cannot drive through without getting bogged. It blocks access on the northern side of the creek between the Gymnasium carpark and the concrete causeway near NERAM.

The project will dig a trench below the spring running south-west to the creek. The trench will be lined with geotextile and a 200mm ag-pipe will be laid, then covered with geotextile and coarse gravel (DLWC, 1998). The aim of the trench is to drain water into the creek rather than have it run across the grass. The trench will have to cross the sewer main that runs beside the creek, so care will have to be taken during excavation to avoid damaging the sewer pipes.

1.1.2 Pre-construction activities

Prior to construction commencing, the following activities will take place:

- Marking out work zones, including delineation of no-go areas,
- Clearly marking existing buried infrastructure adjacent to the creek (sewer and water pipes)
- Marking and delineating access points for machinery and personnel to the site (via Taylor St gate), parking and unloading areas, equipment storage compounds, spoil disposal areas, truck access to work sites for loading, location of rock stockpiles.
- Installation of sediment and erosion control structures.
- Notification to adjoining land users of activities and dates of construction.
- Installation of signage around the construction area notifying users of the activities and expected dates of work.
- Securely fencing any areas where the public might be in danger from truck movements or excavator work.
- Briefing of principal contractors (excavator and truck operators) including reviewing and approving Job Safety Assessments, Insurances and Safe Work Method Statements.

1.1.3 Operational activities

The works are expected to take around 5 days of work and will involve:

- Supervision of contractors and volunteers by a suitably-experienced person, to monitor safety and environmental compliance and ensure activities go to plan
- Daily briefing of contractors and volunteers to discuss safety and activities,
- Delivery and unloading of materials and equipment,
- Excavator operations to remove soil, load trucks and place rocks.
- Spread or removal of spoil.

- Loading of spoil into trucks and removal from site.
- Cutting and poisoning of woody and other weeds (by volunteers),
- Loading of woody weeds into trucks and removal from site.
- Preparation for revegetation by ripping with small tractor,
- Laying and securing of geotextile and jute erosion matting and mulch matting.
- Securing the site at the end of the day.

1.1.4 Post-construction activities

- Clean up any areas of adjacent land affected by the works, such as removing waste, cleaning up rock piles, removing rubbish etc.
- Removing equipment and any unused materials.
- Remediating any damage to grassed areas from excavators or trucks by backfilling and levelling.
- Revegetation of creek banks in Spring.
- Removal of sediment and erosion control structures once erosion threat has abated.

1.1.5 Machinery and Equipment

Excavation work will be carried out by a large excavator (20-35T) with sufficient arm reach to avoid damage to existing infrastructure and planted vegetation.

Trucks (>8T) will be used to deliver rocks and remove spoil and woody weeds from the site.

A small tractor (80hp) will be used to rip lines for planting adjacent to the creek.

A bobcat or similar to scrape the surface of the basketball court level,

A bitumen spray truck and gravel spreading truck.

A heavy roller to compact the gravel track to the basketball court.

1.1.6 Duration and Working Hours

Table 2: Work timing

Commencement Date	Depending on funding. Work will take place between February and September.
Work Duration	What is the total timeframe of the proposed works? Work will take between 5 and 10 working days, plus time for revegetation. If a staged approach, how long will each stage take? Revegetation will occur as a series of half-day working bees throughout Spring.
Work Hours	What are the working hours? 7am to 5pm on weekdays only. Are the proposed hours in accordance with the Interim Construction Noise Guideline or Council working hours? Yes

1.2 Project Location and Context

1.2.1 Location of the Proposed Activity

The site of the proposed works is located within the Black Gully precinct, along an ephemeral creek, Black Gully, in Armidale, NSW. The site is situated behind New England Regional Art Gallery (NERAM), Aboriginal Cultural Centre and Keeping Place (ACCKP) and the University of New England Museum of Education (Figure 1).

The proposed works addressed within this REF will take place predominantly within the riparian zone of **Lot 3, DP 1055438**. The closest streets are Kentucky St and Taylor St.



Figure 1. Location of the proposed works

1.2.2 Site Context

The proposed site is situated within a semi-urban landscape and is highly valued for its ecological, social and cultural attributes. The site is regularly utilised by the general public, visitors to NERAM and the ACCKP and is the site of the Black Gully Festival each year, providing vital greenspace to the broader community of Armidale.

Geology

The site is situated within '9236ir' Soil Landscape under the Soil Landscapes Series. This indicates the geological and soil properties of the site. Associated soil hazards under this soil landscape include; minor sheet and gully erosion (localised) and minor engineering hazards due to localised shrink-swell and soil instability issues. No known salinity or acid-sulfate soil hazards are associated with this landscape.

Existing vegetation

The existing vegetation within the proposed site is a mix of planted native and exotic vegetation. Previous restoration efforts have focused on replanting a riparian buffer strip with native species to improve habitat connectivity and water filtration.

Water catchment

Black Gully is a minor watercourse according to the NSW Water Act. Minor watercourses are defined according to the Strahler system as 1st and 2nd order streams. Black Gully at the site of the works is a 2nd order stream, as a 1st Order stream is joined by a 2nd Order stream just upstream.

Site drainage

Site drainage is poor-moderate, with many areas of standing water present after rain. During heavy rainfall events water breaks out of the channel onto the relatively narrow flood plain. Below the ACCKP, the water fans out and can flow across Taylor St.

Topography

The site is situated predominantly within the riparian buffer area of Black Gully. The surrounding land is gently undulating. The site is approximately 1010m above sea level.

1.2.3 Landuse and Ownership

The Black Gully precinct is wholly Crown Land, with the land zoned as 'RE1 – Public Recreation' under the NSW Principal Planning layers. All of the Crown Land is subject to a NSW Aboriginal Land Claim, which has not yet been determined. According to Crown Lands, no substantial development may take place on this land until the Claim is finalised, without the consent of the claimants. In this case the claimants are the NSW Aboriginal Land Council. Works to improve environmental amenity are considered minor works. The Armidale Cultural Centre and Keeping Place (ACCKP) is a partner in the development of the Plan.

While the Black Gully precinct encompasses a number of Lots, land managers and landuse, the proposed works for Stage 3 of the '*the Plan*' take place wholly within **Lot 3, DP 1055438** managed by Armidale Regional Council.

1.2.4 Project Justification and Consideration of Alternatives

Prior to 1988, the land where these works will take place was managed as the sports facilities for the Armidale Teachers College (Armidale CAE). The grounds included sports fields, volleyball courts,

netball courts, tennis courts and athletics infrastructure. The remaining areas were maintained as parkland by grounds staff. This included management of weeds in and around the creek. Willows and poplars had been planted in and around the creek at some stage between 1920 and 1988.

After 1988, the grounds were no longer used in this way as the students moved to the main UNE campus and the area reverted to general public recreation land. Maintenance was reduced to mowing open grassy areas. As a result, the creek filled with woody weeds and blackberries grew prolifically in and around the creek. Unmown areas reverted to weeds.

Remediation of the creek started around 1998, when Greening Australia North West NSW occupied a building near the current gymnasium. Volunteers from GA and Armidale Urban Rivercare Group, cleared some woody weeds and planted trees and shrubs in several sections of the creek (Stage 1).

In 2010, Armidale – Dumaresq Council (in partnership with Uralla Shire, Guyra Shire and Walcha Councils) received a State Government grant to run the High Country Urban Biodiversity Project. Under the direction of Southern New England Landcare, this project worked with local stakeholders (Armidale Tree Group, NERAM, ACCKP, Armidale Urban Rivercare Group, schools, neighbours and businesses) to improve the amenity of the creek. Willows were removed from the creek along with other woody weeds. Large areas of blackberry were poisoned and removed (revealing the former outdoor performance stage of the Teachers College) and hundreds of trees were planted along the banks of the creek. This work allowed much better community access to the area and recreational use substantially increased.

This work was followed up by other tree planting and weed clearing work led by ATG and Friends of Black Gully landcare group, with the assistance of Work-for-the-dole participants and day release prisoners from Tamworth Gaol. Further tree planting was done during successive Black Gully Festivals.

In 2016, Stringybark Ecological, Friends of NERAM and ATG carried out significant works directly behind NERAM along the lines of the activities proposed here. This work included pool and channel excavation, rock revetment, headcut-prevention works and revegetation. This work significantly improved amenity, biodiversity values and water quality.

The current proposal is to carry out works to remediate the remaining areas of the creek between the railway line and Taylor St, which will result in significant improvements in biodiversity, social and cultural values. It will add significant value to existing cultural institutions (NERAM and ACCKP) and will create greater connectivity between all organisations in this precinct.

The alternative is to simply maintain the work completed so far, leaving the potential of the site unfulfilled.

2 Statutory and Planning Framework

2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) provide the framework for development and environmental assessment in NSW.

As Armidale Regional Council is the proponent, the works have been assessed as 'development permissible without consent' under Part 5 of the EP&A Act. Therefore, the activity has been assessed in accordance with Sections 5.5, 5.6 and 5.7 of that Act by examining and taking into account to the fullest extent possible all matters which are likely to affect the environment. Environmental Planning Instruments made under the EP&A Act 1979 may also be relevant and are addressed below.

2.2 Other Environmental Legislation

Table 3 outlines how the project has been considered under other relevant Commonwealth and State environmental legislation.

Table 3: Other environmental legislation

Legislation	Relevance to the Proposed Activity
COMMONWEALTH LEGISLATION	
<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	The EPBC Act protects matters of National Environmental Significance (NES), such as threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places (among others). Stringybark Ecological has investigated Matters of National Environmental Significance and found that none are relevant to this site or will not be impacted by the works due to the small scale and highly-localised nature.
STATE LEGISLATION	

<p><i>Biodiversity Conservation Act 2016 (BC Act)</i></p>	<p>Part 7 of the BC Act provides the environmental assessment requirements for activities being assessed under Part 5 of the EP&A Act 1979. If a significant impact is likely, a Species Impact Statement is required. A biodiversity development assessment report may also be required if the proponent elects for this. Section 7.2(1)(a) and 7.3 describe the assessment requirements and thresholds for what is considered a significant impact.</p> <p>The BC Act has three thresholds to determine if the project has a significant impact and requires a BDAR or Species Impact Statement:</p> <ol style="list-style-type: none"> 1. An area test (size of impact relative to minimum lot size) 2. Presence of the site on the Biodiversity Values Map, or 3. The project will have a significant impact on a threatened ecological community or species. <p>Only one threshold must be exceeded to require the BDAR/SIS.</p> <p>A Biodiversity Values Map and Threshold Report shows that the threshold area for clearing native vegetation at this site is 2500m². No native vegetation will be cleared so this threshold does not apply. The report also shows that there is no land mapped on the Biodiversity Values Map that will be affected by the proposal, so the second threshold does not apply.</p> <p>Stringybark Ecological reviewed the threatened species and ecological communities possibly occurring at or near the site (identified in a Bionet search) and found that none of these are relevant to the site or will be affected by the works due to the scale and localised nature of the works.</p> <p>The works will not have such an impact on biodiversity that a BDAR or SIS is required.</p>
<p><i>Local Land Services Act 2013 (LLS Act)</i></p>	<p>The objects of the LLS Act include 'to ensure the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development. The Act regulates the clearing of native vegetation, however section 60(O)(b)(ii) excludes the need for consent under the LLS Act where the clearing is an activity carried out by a determining authority within the meaning of Part 5 of the EP&A Act 1979. As the proponent is the determining authority for these works, this act does not apply. No clearing of native vegetation is proposed under the works within this REF.</p>

<p><i>Fisheries Management Act 1995</i> (FM Act)</p>	<p>FM Act provides for the protection, conservation, and recovery of threatened species, populations and ecological communities of fish and marine vegetation and fish habitats, as well as promoting the development and sharing of fishery resources in NSW. A permit is generally required for stream bed or bank stabilisation works involving dredging or reclamation to halt erosion and requires 28 days notice before work. This permit would likely be required for any works in the channel or banks of Black Gully, under s. 200 of the <i>Fisheries Management Act 1994 (NSW)</i>. However, the Permit Application form states, "If your proposed work site is not within or adjacent to a waterway that fits the definition of Key Fish Habitat and/or is not mapped as Key Fish Habitat, you do not need a permit for dredging, reclamation, obstructing fish passage under the Fisheries Management Act 1994." The definition of Key Fish Habitat excludes:</p> <ol style="list-style-type: none"> 1. Unmapped gullies and first and second order streams (based on the Strahler method of stream ordering) as determined from the largest scale topographic map produced for the area concerned (i.e. use 1:25 000 rather than 1:50 000 and use 1:50 000 rather than 1:100 000 and include all depicted streams). Note that this methodology only applies to 'gaining systems' – those where streams are coming together and becoming progressively larger. 2. Urban ponds including water pollution control ponds and detention basins. <p>Therefore, the area of Black Gully and the adjacent dam, subject to these works are excluded and a Fisheries Permit is not required.</p>
<p><i>National Parks and Wildlife Act 1974</i> (NPW Act)</p>	<p>The NPW Act regulates the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas.</p> <p>The main aim of the Act is to conserve the natural and cultural heritage of NSW. Where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required. The proposed works will not disturb any Aboriginal objects, however the proponent acknowledges that the area may not have been investigated in detail. As a result, safeguards for the management of any Aboriginal objects that are found during the works is addressed within Section 4.</p>
<p><i>Heritage Act 1977</i></p>	<p>The proposed activity does not involve an item or place listed on the NSW State Heritage Register or the subject of an interim heritage order or listing and is therefore not a controlled activity. Approval of works on the site is therefore not required under Part 4 of the Heritage Act.</p>

<p><i>Protection of the Environment Operations Act 1997 (POEO Act)</i></p>	<p>The POEO Act is the key environmental protection and pollution statute. The POEO Act is administered by the EPA and establishes a licensing regime for waste, air, water and pollution. Relevant sections of the Act are listed below:</p> <ul style="list-style-type: none"> • Part 5.3 Water Pollution • Part 5.4 Air Pollution • Part 5.5 Noise Pollution • Part 5.6 Land Pollution and Waste <p>Any work potentially resulting in pollution must comply with the POEO Act. Relevant licences must be obtained if required. Check the POEO Public Register for any relevant Environment Protection Licences (EPLs).</p> <p>The proposed activities are not listed as “Premises-based Activities” in Schedule 1 of the Act, so permits are not required.</p>
<p><i>Water Management Act 2000 (WM Act)</i></p>	<p>The WM Act’s main objective is to manage NSW water in a sustainable and integrated manner that will benefit today’s generations without compromising future generations’ ability to meet their needs. Section 91E of the Act establishes an approval regime for controlled activities within waterfront land. However, clause 41 of the Water Management (General) Regulation 2018 provides an exemption for public authorities in relation to all controlled activities on waterfront land.</p> <p>The proposed works are a “controlled activity” under Section 91E., but are exempt under S41 of the Regulations so, a controlled activity permit is not required.</p>
<p><i>Roads Act 1993</i></p>	<p>Section 88 of the <i>Roads Act</i> states that a roads authority may, despite any other Act or law to the contrary, remove or lop any tree or other vegetation that is on or overhanging a public road if, in its opinion it is necessary to do so for the purposes of carrying out road work or removing a traffic hazard. However, the environmental safeguards outlined in this REF still apply.</p> <p>As proposed works will not remove or lop any trees overhanging a public road, this act does not apply.</p>
<p><i>Biosecurity Act 2015</i></p>	<p>The <i>Biosecurity Act 2015</i> and regulations provide requirements for state level priority weeds. The Act regulates all plants, with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Several priority weeds listed under the '<i>Northern Tablelands Strategic Weed Management Plan 2017 – 2022</i>' are present on site.</p>

<p>State Environmental Planning Policy Vegetation in Non-Rural Areas 2017</p>	<p>Clause 8 of the SEPP states that an authority to clear vegetation under this policy is not required if it is a clearing authorised under s60(O) of the Local Land Services Act 2013. Section 60(O) provides an exemption for clearing under Part 5 of the EP&A Act and therefore consent is not required under the SEPP (Vegetation in Non-Rural Areas).</p>
<p>State Environmental Planning Policy (Koala Habitat Protection) 2019 [Now covered under the Biodiversity and Conservation SEPP 2021]</p>	<p>Koala Habitat Protection SEPP aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for <i>Phascolarctos cinereus</i> (Koala) to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline.</p> <p>As no koala use trees (or any native trees) will be removed, this SEPP does not apply to the proposed activities.</p>

3 Community and Agency Consultation

Table 4: Community and Agency Consultation

Community / agency consultation	<p>Have any community stakeholders been identified for the proposed works? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p style="background-color: #f2f2f2; padding: 5px;">If yes, provide details of consultation undertaken and identify where comments received are considered in the REF. Attach any correspondence sent or received (if relevant such as approval for stockpiles on private land, property access, impact on business, etc).</p> <p>The Plan has been developed by Stringybark Ecological in consultation with key stakeholders, including adjacent land managers. Consultation included initial discussions about options for the area, then giving all stakeholders a copy of the draft Plan and holding meetings with selected stakeholders to discuss concerns and make changes. The Plan has been changed to accommodate issues raised by ACCKP, NERAM, ATG and Visions For Armidale Creeklands.</p> <p>Is consultation with other authorities required under the requirements of Clauses 13-16 of the Infrastructure SEPP? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i>? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are the works adjacent to a declared aquatic reserve under the <i>Fisheries Management Act 1994</i>? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <hr/> <p>Other agency and community consultation:</p> <p style="background-color: #f2f2f2; padding: 5px;">Provide details of any other agency or community consultation, including Aboriginal community consultation, carried out or proposed to be carried out for the proposed works. Include copies of all correspondence as an Appendix to the REF. If comments from other agencies or the community have been received regarding the proposed works, document the issues raised and provide a response or identify where in the Minor Works REF the issues have been addressed. This can be done in a table format if there are a large number of comments.</p>
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4 Environmental Assessment

This section describes in detail the potential key environmental impacts associated with the proposal during both construction and operation and includes identifying site-specific safeguards to ameliorate the identified potential impacts.

Issue	Description
<p>Landform, geology and soils</p>	<p>Does the project involve the disturbance of large areas (eg >2ha) for earthworks? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Does the site have constraints for erosion and sedimentation controls such as steep gradients, narrow corridors or is located on private property? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any sensitive receiving environments that are located in or nearby the likely project footprint or that would likely receive stormwater discharge from the project? Sensitive receiving environments include (but are not limited to) wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments). Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Potential Impacts</p>	<p>Any disturbance of groundcover presents a potential risk for erosion. As the project involves the use of heavy machinery, groundcover disturbance is possible. Likewise, as the project involves alteration to site hydrological processes, discussed below in Water Quality and Hydrology, a potential risk exists for facilitating erosion and sedimentation.</p>
<p>Safeguards</p>	<ul style="list-style-type: none"> • Site management will incorporate best management erosion and sediment control practices such as those found in the Landcom’s <u>“Blue Book (4th Edition)”</u> on erosion and sediment control. • Linear silt stop fencing to be installed down slope of all affected areas and stockpiles. Silt fencing will be installed before excavation begins. • Sandbags, hay bales wrapped in geotextile fabric etc. will be used to slow water flow and trap sediment. No straw bales are to be used. • Overburden will be placed in the form of a bund upslope of the site where necessary to reduce surface water entering the site. • All erosion and silt control devices will be visually inspected weekly to ensure effectiveness as well as after each rainfall event. • Stockpiles will be designed, established, operated and decommissioned in accordance with the RMS Stockpile Site Management Guidelines 2015.

	<ul style="list-style-type: none"> The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, using seed of local grass species.
<p>Contaminated Land and Acid Sulfate Soils</p>	<p>Is the project located within an area mapped as Potential Acid Sulfate Soils? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any known occurrences of acid sulfate soils in the area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Is the project located within an area mapped as Potential Contaminated Land? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Potential Impacts</p>	<p>Is the project likely to disturb areas mapped as Potential Acid Sulfate Soils or Potential Contaminated Land? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Safeguards</p>	<p>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with relevant government agencies.</p>
<p>Water Quality and Hydrology</p>	<p>Are the works located within or adjacent to a waterbody or wetland, or within 40m of a waterway? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> <p>The proposed works include alteration to hydrological process with the ultimate goal of improving flow and filtration within the Black Gully system.</p> </div> <p>If yes, the NSW DPI Water or DPI Fisheries should be notified. Have they been notified? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

	<p>If yes, is a permit required? Provide details: No permit is required as there is an exemption under s41 of the Water Management (General) Regulation 2018 for local government authorities as the proponent.</p> <hr/> <p>Will the proposed works be undertaken on a bridge? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Is the location known to flood or be prone to water logging? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, provide details: Black Gully is an ephemeral stream located high in the catchment. With heavy rain, the creek will flood but the floodwater only extends to the narrow floodplain and quickly recedes.</p>
<p>Potential Impacts</p>	<p>Does the project pose any potential risk to the surrounding water quality? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Describe the potential impact</p> <p>Disturbance of groundcover, use of chemicals and generation of waste all have the potential to impact on the surrounding waterways via runoff. This risk can be minimised through implementation of the following safeguards.</p>

<p>Safeguards</p>	<ul style="list-style-type: none"> • Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. • Water quality control measures are to be used to prevent any materials (eg. concrete, grout, sediment etc) entering drain inlets or waterways. • Use a floating boom to intercept surface sediment in the water as a result of excavation within the channel. • Wash down should use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release, and away from all waterways. • No dirty water may be released into drainage lines and/or waterways. • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets. • Reduce water velocity and capture sediment on site. • Minimise the amount of material transported from site to surrounding pavement surfaces. • Divert clean water around the site. • Store fuels, chemical and hazardous materials in secure, bunded areas within temporary construction ancillary facilities, and at least 50m from all waterways. • Capture and dispose of spill and contaminated materials from temporary construction ancillary facilities at a licensed facility. • Provide spill kits around temporary construction ancillary facilities.
<p>Biodiversity</p>	<p>Have relevant database searches been carried out?</p> <ul style="list-style-type: none"> • NSW Bionet • Threatened species profile search (www.environment.nsw.gov.au/threatenedspeciesapp/) • Commonwealth EPBC • Fisheries <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Date searches undertaken:</p> <p>Are the proposed works likely to impact on any vegetation including, shrubs, trees?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

	<p>Did the database searches identify any endangered ecological communities, populations, threatened flora and/or threatened or protected fauna, or migratory species within the vicinity of the proposed works? Both Federal and State listed matters must be considered.</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>A Bionet database search for the 10km² area surrounding the proposed works was conducted to assess the potential impacts on threatened species. This search returned a list of species listed under the EPBC and NSW BC Act, with a full list available in Appendix A of this report.</p> <p>Are the works taking place in a roadside area designated as high conservation value vegetation?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Will the proposed works require the removal of any other vegetation?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f9f9f9;"> <p>If yes, provide details: The works will remove woody weeds including species listed as Significant Weeds in the Northern Tablelands Regional Weeds Strategy. No native trees or shrubs will be removed,.</p> </div> <p>Do the proposed works involve pruning, trimming or removal of any tree/s?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f9f9f9;"> <p>If yes, provide details: Willows (Salix spp), Poplars (Populus sp).</p> </div> <p>Will the proposed works affect any tree hollows or hollow logs?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f9f9f9;"> <p>If yes, provide details:</p> </div> <p>Will the proposed works disturb any crevices or other locations (such as on bridges and culverts) for potential bat habitat?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
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	<p>If yes, provide details:</p> <p>Are there any known areas of Areas of Outstanding Biodiversity Value (formerly known as critical habitat), Directory of Important Wetlands in Australia within the vicinity of the proposed works?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Will the proposed works disturb any natural waterways or aquatic habitat?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, provide details: As described under the Project Scope, the activities include excavation and widening of pools and channels in the creek and excavation of a dam adjacent to the creek.</p> <p>Do the trees form part of a streetscape, an avenue or roadside planting?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Have the trees been planted by a community group, Landcare group or by council or is the tree a memorial or part of a memorial group eg. has a plaque?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Do the trees form part of a heritage listing or have other heritage value?</p> <p>Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any significant weeds present?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Several priority weeds as identified under the 'Northern Tablelands Strategic Weed Management Plan 2017 – 2022' are present on site. Part of the broader Black Gully Rejuvenation Plan includes the control of these weed species as part of a broader restoration strategy.</p>
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<p>Potential Impacts</p>	<p>Does the project pose any potential risk to the biodiversity within the vicinity of the site? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, describe the potential impacts:</p> <p>If there are impacts on threatened species, complete Assessment of Significance- under Section 7.3 of the BC Act (2016) to determine if there is a significant impact.</p> <p>Assessments have shown that there are no threatened species that will be impacted by the activities.</p>
<p>Safeguards</p>	<ul style="list-style-type: none"> • The works described here will be supervised with a qualified ecologist present or available. If a threatened animal species is discovered during the works, work will immediately cease until the impact on that species can be assessed by the ecologist. • A number of significant environmental weeds will be removed as part of the activities. If propagules are present during removal, loads of green waste from weeds will be covered for transport to a waste disposal facility.
<p>Aboriginal Heritage</p>	<p>Are the works likely to disturb previously undisturbed areas of the landscape? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Has an AHIMS register search been conducted? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any known Aboriginal artefacts/sites within the vicinity of the work site? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Would the proposal involve the removal of mature native trees? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>

<p>Potential Impacts</p>	<p>Does the project pose any potential risk to Aboriginal heritage? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, provide details</p>
<p>Safeguards</p>	<p><u>Unexpected Finds:</u></p> <ul style="list-style-type: none"> If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.
<p>Non-Aboriginal Heritage</p>	<p>Complete online heritage database searches</p> <ul style="list-style-type: none"> NSW Heritage database Commonwealth EPBC heritage list Australian Heritage Places Inventory Local Environmental Plan(s) heritage items <p>Are there any items of Non-Aboriginal heritage located within the vicinity of the proposed works? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>There are three items/sites of non-Aboriginal heritage within the vicinity, namely within the Black Gully precinct, of the proposed works. Two heritage buildings; a collection of heritage public school buildings and a railway cottage, and a row of heritage listed Elm trees are present and are listed as Local Environmental Plan heritage items. None of these heritage items is within the footprint of the project and will not be affected.</p> <p>The basketball court and associated infrastructure is part of the sporting facilities of the former Armidale Teachers College. While not a listed heritage item, it has value to people who attended or worked at this institution. As such all infrastructure will be retained and protected from damage during construction.</p>
<p>Potential Impacts</p>	<p>Does the project pose any potential risk to Non-Aboriginal heritage? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Safeguards</p>	<p><u>Awareness:</u></p> <ul style="list-style-type: none"> All personnel working on site will receive training to ensure awareness of location of existing heritage items within the Study Area and immediate surrounds, and relevant statutory responsibilities.

	<p><u>Unexpected Finds:</u></p> <ul style="list-style-type: none"> If heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed. 						
<p>Noise</p>	<p>Are there any noise sensitive areas near the location of the proposed works that may be affected by the works (i.e. church, school, hospital, residences)?</p> <p>During construction? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>During Operation? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p style="background-color: #f0f0f0; padding: 5px;">If yes, provide details including a map to show proximity to proposed works.</p> <p>Are the proposed works going to be undertaken during standard working hours detailed below? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>Standard working hours</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"><i>Monday – Friday</i></td> <td style="text-align: right;"><i>7:00am to 6:00pm</i></td> </tr> <tr> <td><i>Saturday</i></td> <td style="text-align: right;"><i>8:00am to 1:00pm</i></td> </tr> <tr> <td><i>Sunday and Public Holidays</i></td> <td style="text-align: right;"><i>No work</i></td> </tr> </table> <p>Would operation of the proposal alter the noise environment for sensitive receivers? This might include, but not be limited to, altering the line or level of an existing carriageway, changing traffic flow, increasing traffic speeds by more than 10km/hr or installing audio-tactile line markings.</p> <p style="background-color: #f0f0f0; padding: 5px;">No</p>	<i>Monday – Friday</i>	<i>7:00am to 6:00pm</i>	<i>Saturday</i>	<i>8:00am to 1:00pm</i>	<i>Sunday and Public Holidays</i>	<i>No work</i>
<i>Monday – Friday</i>	<i>7:00am to 6:00pm</i>						
<i>Saturday</i>	<i>8:00am to 1:00pm</i>						
<i>Sunday and Public Holidays</i>	<i>No work</i>						
<p>Potential Impacts</p>	<p>Does the project pose any potential risk to the surrounding noise quality?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>						

	<p>If yes, provide details: There will be noise of the operation of machinery – excavators, trucks, etc during daylight working hours. As the area is within a public parkland, the noise will be somewhat mitigated by the distance to nearby residences. The nearest neighbours will be people working in, or visiting, NERAM and ACCKP. Noise impacts are mitigated by the fact that operations are on the opposite sides of the building to entrances and windows.</p>
<p>Safeguards</p>	<p><u>Notification:</u></p> <ul style="list-style-type: none"> All sensitive receivers (eg local residents) likely to be affected will be notified at least five working days prior to the start of any works associated with the activity that may have an adverse noise or vibration impact. <p><u>Standard Hours of Operation:</u></p> <ul style="list-style-type: none"> Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays may not be permitted and, if permitted, works are to minimise noise impacts. <p><u>Out of hours:</u></p> <ul style="list-style-type: none"> Where out-of-hours activities are required, a Noise and Vibration Management Plan will be prepared and implemented in consultation with sensitive receivers.
<p>Air quality</p>	<p>Are the proposed works likely to result in large areas (>2ha) of exposed soils? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are there any dust sensitive receivers located within the vicinity of the proposed works during the construction period (i.e. church, school, hospital, residences)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Is there likely to be an emission to air of dust, smoke, steam or vehicle emissions? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>Potential Impacts</p>	<p>Does the project pose any potential risk to the surrounding air quality? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, provide details</p>
<p>Safeguards</p>	<ul style="list-style-type: none"> Measures to minimise or prevent air pollution or dust are to be used including watering or covering exposed areas.

	<ul style="list-style-type: none"> • Works are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely • Vegetation or other materials are not to be burnt on site. • Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation • Vehicles and equipment are to be maintained in good working order. • Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress. • Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust • Do not leave vehicles idling
<p>Waste and Chemical Management</p>	<p>Are the proposed works likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Are the proposed works likely to require a licence from EPA? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Is waste being transported off site to another location? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Does the project pose any potential risk to the surrounding environment as a result of waste generated? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If YES to any of these items, you need to prepare a Waste Management Plan</p>
<p>Potential Impacts</p>	<p>Describe the potential impacts: Waste material from the project will include:</p> <ul style="list-style-type: none"> • Soil excavated from the creek and dam, • Vegetation and tree debris from woody and other weeds removed from the creek, • Surplus rock, geotextile and jute matting, • Used sediment protection materials. <p>These materials, if not removed or dealt with have the potential to:</p>

	<ul style="list-style-type: none"> • Impede mowing and pedestrian access in grassed areas, • To enter the creek bed and cause sedimentation and pollution.
<p>Safeguards</p>	<ul style="list-style-type: none"> • Excavated material will be used or disposed of as follows: <ul style="list-style-type: none"> - re-use in high-flow diversion banks near ACCKP, - spread to a maximum depth of 100mm on grassed areas adjacent to the creek (alluvial sediment only, not native clays), or - removal from the site by truck and disposal in ARC landfill site. • All surplus material and other debris resulting from the work shall be removed from site and disposed of by a licensed contractor to a licensed waste management facility. • Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed. • Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. • Sediment-control structures will be removed at the end of the project and disposed of.
<p>Traffic and transport</p>	<p>Are the proposed works likely to result in detours, disruptions or delays to traffic flow (vehicular, cycle and pedestrian) or access to properties or businesses?</p> <p>During construction Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>During Operation Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Potential Impacts</p>	<p>Are the proposed works likely to affect any other transport nodes or transport infrastructure (eg bus stops, bus routes) in the surrounding area? Result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>The proposed works may affect pedestrian access within the Black Gully precinct during construction and operation. As proposed works do not directly impact existing footpaths or cycleways, this impact will be minor.</p> <p>There will be minor and short-term disruption to traffic in Taylor St near the entrance gate while the excavator is unloaded from the float and manoeuvred through the gate.</p>

<p>Safeguards</p>	<ul style="list-style-type: none"> • Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays. • Comply with Council requirements regarding traffic control, access and road/ pedestrian access. • Use temporary stop/go signage while excavator is unloaded and manoeuvred. • Erect signs regarding proposed works, temporary road closures, diversions etc.
<p>Visual Amenity/ Landscape</p>	<p>Will the project have any potential impact on visual amenity of the site and surrounding landscape?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, provide details: One of the aims of the project is to improve visual amenity of the creek.</p>
<p>Potential Impacts</p>	<p>Describe the potential impacts.</p> <p>The project will improve the amenity of the creek by reducing weeds, opening vistas along the creek and creating a more natural appearance to the pools and channels and softening the view of the creek with native vegetation.</p>
<p>Safeguards</p>	<ul style="list-style-type: none"> • Contain all work within the boundaries designated on the site plan • Restore work sites to as close to their original condition as possible • Sow native grass seed onto any spread soil to achieve rapid cover. • Minimise spread of stockpiles, waste, and parking.
<p>Socio-economic</p>	<p>Are the proposed works likely to impact on local business?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, provide details</p> <p>Are the proposed works likely to require any property acquisition?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, provide details</p>

	<p>Are the proposed works likely to alter any access for properties (either temporarily or permanently)?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, provide details</p>
	<p>Are the proposed works likely to alter any on-street parking arrangements (either temporarily or permanently)?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>If yes, provide details</p>
	<p>Are the proposed works likely to change pedestrian movements or pedestrian access (either temporarily or permanently)?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>See above 'Traffic and Transport'</p>
	<p>Are the proposed works likely to impact on any items or places of social value to the community (either temporarily or permanently)?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>As the aim of these proposed works is to improve both ecological functioning and aesthetic, cultural and social values of the site and has been developed in consultation with representative stakeholders, the impact on the sites social value to the community will be a positive one. As per the supplementary 'Black Gully Rejuvenation Plan' these proposed works will return the site to a condition better to its current state.</p>
	<p>Are the proposed works likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>

<p>Potential Impacts</p>	<p>Does the project pose any potential risk to the socio-economic factors?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p style="background-color: #f2f2f2;">If yes, provide details</p>
<p>Safeguards</p>	<ul style="list-style-type: none"> • Contain all work within the boundaries designated on the site plan • Restore work sites to as close to their original condition as possible • Display public information signs until site restoration is complete • Carry out community and stakeholder consultation before works start • Notify the Works Supervisor and Asset Manager immediately of any complaints or any accidental damage to property • Locate services on DBYD search and peg out no-go areas to avoid service-disruption

5 Conclusion

Safeguards for the proposed work	
General	<ul style="list-style-type: none"> • If the scope of the works changes at any time, review this REF to determine any new measures to take. • An environmental management plan is prepared and implemented prior to the commencement of works. • No new access tracks to be created for the works. • Parking of vehicles and storage of plant/equipment is to occur on existing paved areas. Where this is not possible, vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees. • All project staff and contractors will be inducted on the environmental sensitivities of the work site(s) and relevant safeguards prior to commencement. • The Project Manager will be notified immediately of any complaints relating to management of environmental issues • To ensure compliance with Section 148(3) of the Protection of the Environment Operations Act 1997, Insert PCBU Health and Building Manager must be notified of any pollution incidents that have caused or threaten material harm to the environment
Soil	<ul style="list-style-type: none"> • Site management will incorporate best management erosion and sediment control practices such as those found in the Landcom's <u>"Blue Book (4th Edition)</u> on erosion and sediment control. • Linear silt stop fencing to be installed down slope of all affected areas and stockpiles. Silt fencing will be installed before excavation begins. • Sandbags, hay bales wrapped in geotextile fabric etc. will be used to slow water flow and trap sediment. No straw bales are to be used. • Overburden will be placed in the form of a bund upslope of the site where necessary to reduce surface water entering the site. • All erosion and silt control devices will be visually inspected weekly to ensure effectiveness as well as after each rainfall event. • Stockpiles will be designed, established, operated and decommissioned in accordance with the RMS Stockpile Site Management Guidelines 2015. • The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, using seed of local grass species.
Waterways and water quality	<ul style="list-style-type: none"> • Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. • Water quality control measures are to be used to prevent any materials (eg. concrete, grout, sediment etc) entering drain inlets or waterways. • Use a floating boom to intercept surface sediment in the water as a result of excavation within the channel. • Wash down should use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release, and away from all waterways.

	<ul style="list-style-type: none"> • No dirty water may be released into drainage lines and/or waterways. • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets. • Reduce water velocity and capture sediment on site. • Minimise the amount of material transported from site to surrounding pavement surfaces. • Divert clean water around the site. • Store fuels, chemical and hazardous materials in secure, bunded areas within temporary construction ancillary facilities, and at least 50m from all waterways. • Capture and dispose of spill and contaminated materials from temporary construction ancillary facilities at a licensed facility. • Provide spill kits around temporary construction ancillary facilities.
<p>Air quality</p>	<ul style="list-style-type: none"> • Measures to minimise or prevent air pollution or dust are to be used including watering or covering exposed areas. • Works are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely • Vegetation or other materials are not to be burnt on site. • Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation • Vehicles and equipment are to be maintained in good working order. • Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress. • Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust • Do not leave vehicles idling
<p>Non-Aboriginal Heritage</p>	<p><u>Awareness:</u></p> <ul style="list-style-type: none"> • All personnel working on site will receive training to ensure awareness of location of existing heritage items within the Study Area and immediate surrounds, and relevant statutory responsibilities. <p><u>Unexpected Finds:</u></p> <ul style="list-style-type: none"> • If heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.
<p>Aboriginal Heritage</p>	<p><u>Unexpected Finds:</u></p> <p>If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.</p>
<p>Biodiversity</p>	<ul style="list-style-type: none"> • The works described here will be supervised with a qualified ecologist present or available. If a threatened animal species is discovered during the works, work will immediately cease until the impact on that species can be assessed by the ecologist.

	<ul style="list-style-type: none"> A number of significant environmental weeds will be removed as part of the activities. If propagules are present during removal, loads of green waste from weeds will be covered for transport to a waste disposal facility.
Traffic and transport	<ul style="list-style-type: none"> Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays. Comply with Council requirements regarding traffic control, access and road/ pedestrian access. Use temporary stop/go signage while excavator is unloaded and manoeuvred. Erect signs regarding proposed works, temporary road closures, diversions etc.
Noise and vibration	<p><u>Notification:</u></p> <ul style="list-style-type: none"> All sensitive receivers (eg local residents) likely to be affected will be notified at least five working days prior to the start of any works associated with the activity that may have an adverse noise or vibration impact. <p><u>Standard Hours of Operation:</u></p> <ul style="list-style-type: none"> Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays may not be permitted and, if permitted, works are to minimise noise impacts. <p><u>Out of hours:</u></p> <ul style="list-style-type: none"> Where out-of-hours activities are required, a Noise and Vibration Management Plan will be prepared and implemented in consultation with sensitive receivers.
Socio-economic	<ul style="list-style-type: none"> Contain all work within the boundaries designated on the site plan Restore work sites to as close to their original condition as possible Display public information signs until site restoration is complete Carry out community and stakeholder consultation before works start Notify the Works Supervisor and Asset Manager immediately of any complaints or any accidental damage to property Locate services on DBYD search and peg out no-go areas to avoid service-disruption
Landscape character and visual amenity	<ul style="list-style-type: none"> Contain all work within the boundaries designated on the site plan Restore work sites to as close to their original condition as possible Display public information signs until site restoration is complete Carry out community and stakeholder consultation before works start Notify the Works Supervisor and Asset Manager immediately of any complaints or any accidental damage to property Locate services on DBYD search and peg out no-go areas to avoid service-disruption
Waste	<ul style="list-style-type: none"> Excavated material will be used or disposed of as follows: <ul style="list-style-type: none"> - re-use in high-flow diversion banks near ACCKP,

	<ul style="list-style-type: none">- spread to a maximum depth of 100mm on grassed areas adjacent to the creek (alluvial sediment only, not native clays), or- removal from the site by truck and disposal in ARC landfill site.• All surplus material and other debris resulting from the work shall be removed from site and disposed of by a licensed contractor to a licensed waste management facility.• Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.• Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.• Sediment-control structures will be removed at the end of the project and disposed of.
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6 Certification and Review

This Review of Environmental Factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal. It identifies the likely impacts of the proposal on the environment and details the environmental safeguards and mitigation measures to be implemented to minimise the potential impact to the environment. In light of the above assessment of the proposed activity, it is considered that the overall impact on the environment is likely to be minimal and therefore acceptable. The long-term benefits of the activity will have a cumulative positive environmental, social and cultural benefit and the activity should proceed accordingly.

REF Author:

A handwritten signature in black ink, appearing to read 'David Carr', is centered on the page.

Signature:

Name: David Carr

Title: Principal Ecologist, Stringybark Ecological Pty Ltd

Date: 2/2/2023

Appendix A Bionet Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -30.46 West: 151.60 East: 151.73 South: -30.58] recorded since 01 Jan 1993 until 03 Feb 2023 returned a total of 1,365 records of 25 species.

Report generated on 3/02/2023 11:36 AM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Aves	Ciconiidae	0183	<i>Ephippiorhynchus asiaticus</i>		Black-necked Stork	E1,P		2	
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>		Little Eagle	V,P		13	
Animalia	Aves	Accipitridae	0230	^^ <i>Lophoictinia isura</i>		Square-tailed Kite	V,P,3		3	
Animalia	Aves	Falconidae	0238	<i>Falco subniger</i>		Black Falcon	V,P		1	
Animalia	Aves	Burhinidae	0174	<i>Burhinus grallarius</i>		Bush Stone-curlew	E1,P		1	
Animalia	Aves	Cacatuidae	0265	^ <i>Calyptorhynchus lathami</i>		Glossy Black-Cockatoo	V,P,2	V	1	
Animalia	Aves	Psittacidae	0309	<i>Lathamus discolor</i>		Swift Parrot	E1,P	CE	1	
Animalia	Aves	Strigidae	0248	^^ <i>Ninox strenua</i>		Powerful Owl	V,P,3		2	
Animalia	Aves	Tytonidae	0250	^^ <i>Tyto novaehollandiae</i>		Masked Owl	V,P,3		22	
Animalia	Aves	Climacteridae	8127	<i>Climacteris picumnus victoriae</i>		Brown Treecreeper (eastern subspecies)	V,P		68	
Animalia	Aves	Acanthizidae	0504	<i>Chthonicola sagittata</i>		Speckled Warbler	V,P		73	
Animalia	Aves	Meliphagidae	0603	<i>Anthochaera phrygia</i>		Regent Honeyeater	E4A,P	CE	3	
Animalia	Aves	Meliphagidae	8303	<i>Melithreptus gularis gularis</i>		Black-chinned Honeyeater (eastern subspecies)	V,P		1	
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>		Varied Sittella	V,P		1	

Animalia	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		38
Animalia	Aves	Petroicidae	8367	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		6
Animalia	Aves	Petroicidae	0380	<i>Petroica boodang</i>	Scarlet Robin	V,P		36
Animalia	Aves	Estrildidae	0652	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		12
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	2
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>	Koala	E1,P	E	647
Animalia	Mammalia	Petauridae	1137	<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		1
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	422
Animalia	Mammalia	Vespertilionidae	1372	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		1
Animalia	Mammalia	Miniopteridae	3330	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		5
Plantae	Flora	Poaceae	4895	<i>Dichanthium setosum</i>	Bluegrass	V	V	3

Appendix B Bibliography

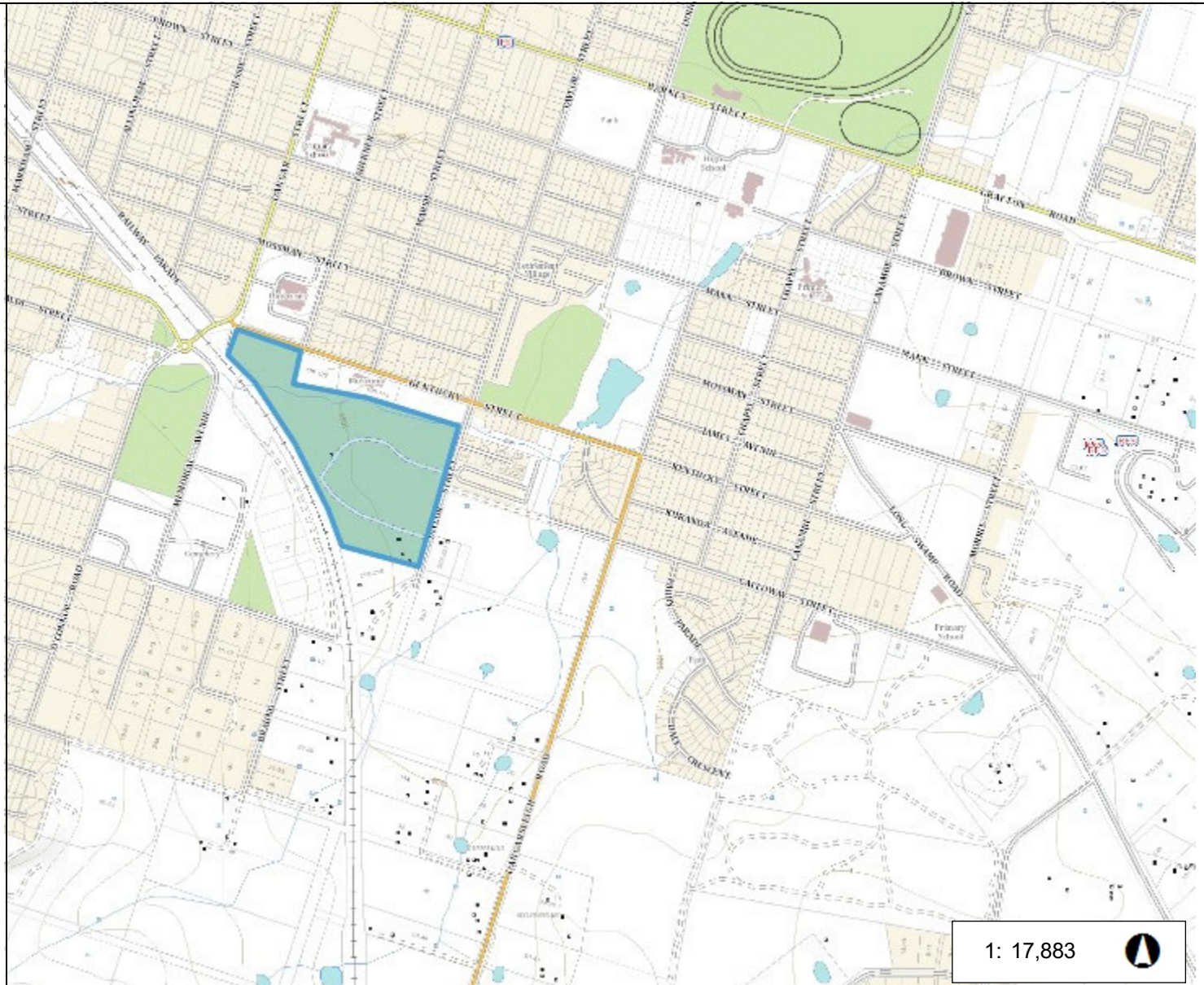
Department of Land and Water Conservation (1998) The Constructed Wetlands Manual Volume 2.

Northern Tablelands Regional Weed Committee (2017). Northern Tablelands Regional Strategic Weed Management Plan. Northern Tablelands Local Land Services

Sources used:

- AHIMS
- BioNet
- NSW Soil Landscapes Maps
- State Heritage Inventory Map https://www.hms.heritage.nsw.gov.au/App/Item/SearchHeritageItems?_ga=2.165972984.714120821.1658117920-344545924.1656901875

Biodiversity Values Map



908.5 0 454.24 908.5 Metres
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

1.1 Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Stringybark Ecological

Notes

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Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	31/01/2023 4:47 PM	BDAR Required*
Total Digitised Area	146,619.3 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	500 sqm	
Area Clearing Threshold 10,000sqm = 1ha	2,500 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	