Plan of Management for Yass Gorge 2017-2027

Yass Valley Council

Date of Adoption 27th September 2017

Contents

Preamble

This Plan of Management has been prepared in accordance with Office of Local Government's *Practice Note 1: Public Land Management* (2000)[1] and the Department of Primary Industry's *Reserve Trust Handbook* (2015)[2], and therefore meets the requirements of the *Local Government Act 1993* and the *Crown Land Act 1989*.

The land is within the Yass Valley Local Government Area (LGA) which is situated in the Southern Tablelands of NSW.

The Yass Gorge is located on the Yass River, between Flat Rock Crossing and Yass Dam. The land is zoned Public Recreation (RE1) under the Yass Valley Local Environment Plan 2013 (YVLEP). The majority of the surrounding land is zoned General Residential (R1), all of which has been developed. A small area to the south west of the land is zoned Low Density Residential (R2), of which Guginya Place is currently being developed.

1 Land covered under this Plan of Management

This Plan of Management applies to the land known as Yass Gorge (Figure 1), covering the following parcels of land: LOT: 11 DP: 788640 (part); LOT: 252 DP: 821789 (part); LOT: 7011 DP: 1026235; LOT: 19 DP: 912933 (part); LOT: 149 DP: 913164 (part); LOT: 1 DP: 1176996 (part); LOT: 1 DP: 782734 (part); LOT: 9 DP: 1160355; LOT: 74 DP: 1149635 (part); LOT: 7301 DP: 1141564 (part); two undescribed lots under the control of Crown Lands Division; and the unformed road reserves known as Allman Street, Hibernia Crescent and Riley Terrace (see Figure 4 for details).

The riparian area of the land is subjected to minor flooding. The area around the cliffs (under, and across the top) is described as hazardous terrain. The land is not mapped as Bush Fire Prone Land.

[1] https://www.olg.nsw.gov.au/sites/default/files/Practice-Note-No1-Public-Land-Management-Revised-May-2000.pdf
[2] http://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/652093/Reserve_Trust_Handbook.pdf

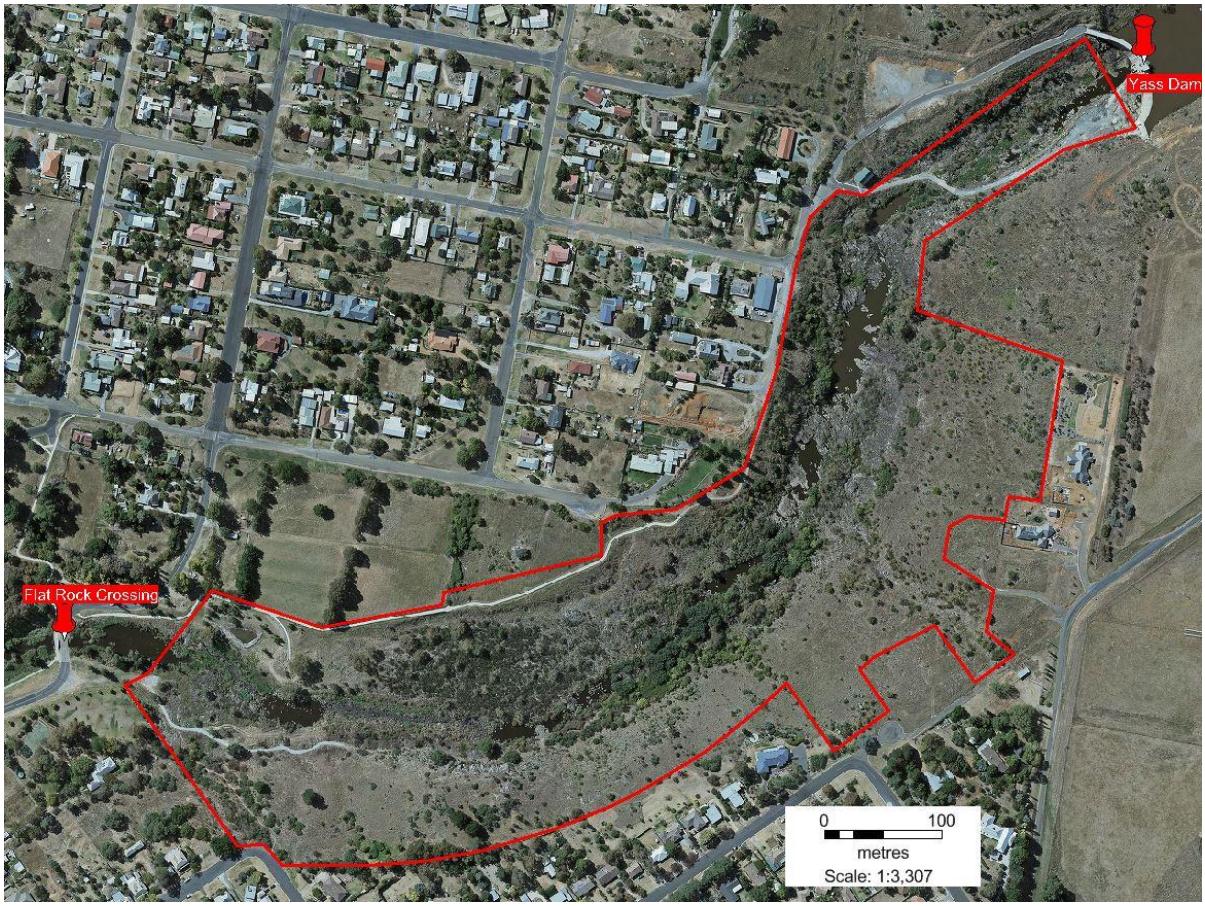


Figure 1: Yass Gorge (note: the red boundary represents the existing fence lines or property boundaries)

1.1 Background and History

Aboriginal people have lived in Australia for over 60 000 years. During this time a rich cultural history has developed and continues to grow within Aboriginal communities. Aboriginal people have a strong connection and belief system which is intertwined with Country and its ability to provide spiritual guidance.

The Yass Valley has traditionally been inhabited by the Ngunnawal people. The township of Yass was named after Yarrh or Yharr, the word for running water in the Ngunnawal language (Julian 1958).

The natural environment, including rivers and grasslands, were very important places for Aboriginal people, as a source of food, a sense of place or habitat, and as landscapes of cultural and historical significance. Rivers were often focal points of life and the value of water is intangible; water is an intricate part of the landscape that holds vast social, cultural and economic importance. Natural environments, with their important values and distinctly Aboriginal relics, can also provide insight for non-Aboriginal people that can help mutual understanding (NRAC, 2010).

It is generally accepted (Environment ACT, 2005) that NTG has adopted to a fire regime that included burning by Aboriginal people (probably consisting of a mosaic of patchy, low intensity fires in spring and autumn) and occasional high intensity fires in summer (most probably caused by lightning strike).

Since European settlement of the Yass area, an area adjacent to the Yass Gorge was known as the Old Blacks Camp, Riverside Camp or Guginya, where Aboriginal people were recorded living since at least the early 1800's, and probably well before European settlement (Kabaila 1995).

The town of Yass was gazetted in 1836 and the Town Plan was prepared in 1837. The land alongside the Yass Gorge was not part of this original gazettal, but was included in an extension of the town in 1840. The land was designated part of the private town "O'Connelltown", owned by Henry O'Brien (See Figure 2). While the rest of O'Connelltown was surveyed and planned, the area adjacent to the Gorge, directly below the designated road Hibernia Crescent (which was never developed) was not.

When Mr O'Brien died in 1866, this piece of land was not included in his estate so has remained in abeyance ever since. The land has always been considered as Crown Land by successive Councils and it wasn't until Land Titles was converting Old System titles in 2010 that it was discovered that this parcel of land was still in fact owned by Mr O'Brien.

The Yass Township Heritage Study in 2000 included most of the Yass Gorge in an area recommended to be considered as a "Special Character" area.

Figure 2: Plan of the Extension of the Town of Yass, 1840 (State Archives of NSW)

Figure 3: Yass Gorge, 1912 (Yass Archives)

2 Owners of the Land

The majority of the land is owned by Yass Valley Council, Henry O'Brien[3], and NSW Crown Lands Division. Two small areas of the Yass Gorge are owned by the Department of Education and the Onerwal Local Aboriginal Lands Council. There are no restrictions, covenants, trusts etc. applying to the land. The use or management of the land is not subject to any condition imposed by the owners.

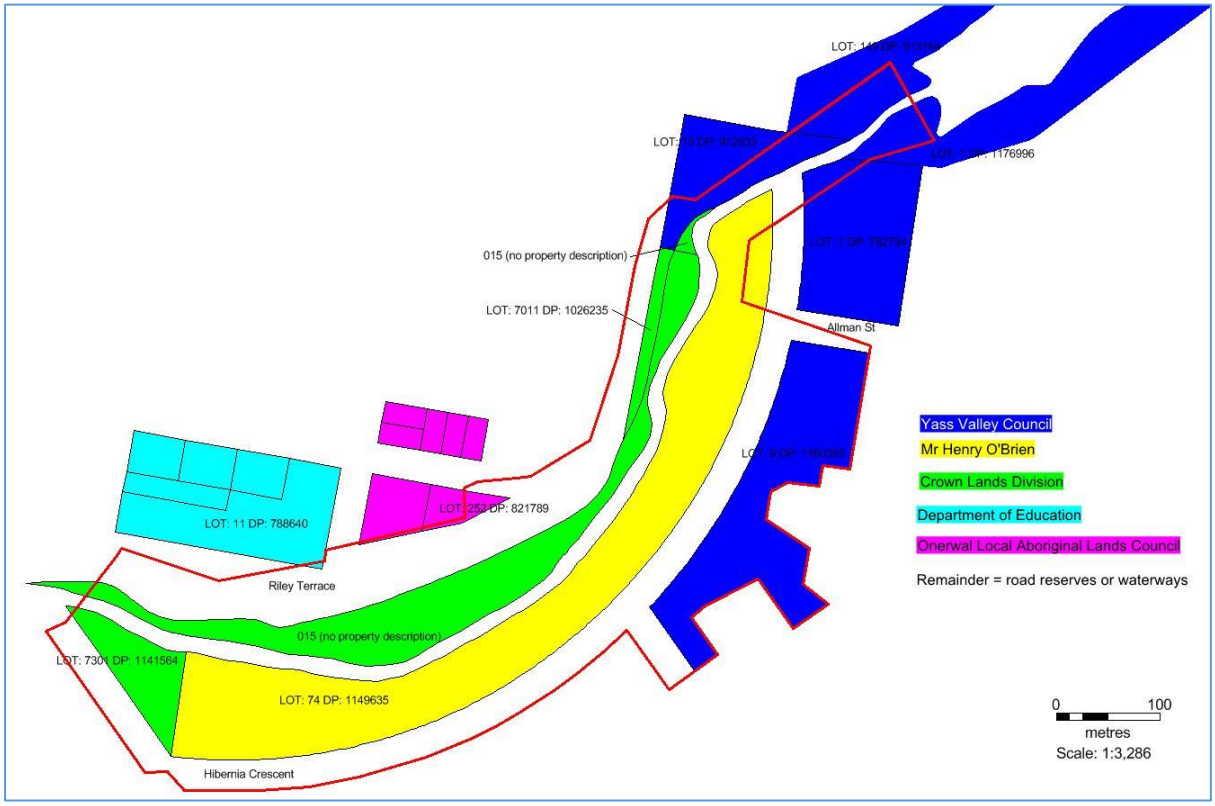


Figure 4: Tenure of Yass Gorge (note: the red boundary represents the existing fence lines or property boundaries)

The Yass Landcare Group and other interested parties have formed the Friends of Yass Gorge (FOYG), a community organisation committed to maintaining the Yass Gorge. Council has an agreement with the Friends of Yass Gorge Inc. to carry out activities in the Yass Gorge as detailed in Table 1.

[3] Lot: 74 DP: 1149635 was originally part of the private town "O'Connell Town" owned and developed by Henry O'Brien that was auctioned off in 1840. Whilst the rest of the private town was surveyed and planned, this particular piece below the unformed road reserve of Hibernia Crescent was forgotten. When Mr O'Brien died in 1866, this piece of land was not included in his estate so has remained in abeyance ever since. The land has always been considered as Crown Land by successive Councils and it wasn't until Land Titles was converting Old System titles in 2010 that it was discovered that this was still in fact owned by Mr O'Brien. As 150 years have now passed, Council have begun proceedings to have the land transferred into Council's name.

3 Classification and Category of Land

Public land vested in a Council is either classified "Community" or "Operational". The land is classified in the YVLEP as community land under the *Local Government Act1993* (LG Act).

The land is further categorised as "natural area – bushland" under s36 of the LG Act. For land which is classified "Community", a draft Plan of Management (POM) must be prepared. The POM must identify the category of the land under s36 of the LG Act.

Community land which is affected by Threatened Species legislation must be categorised as a "natural area". This land must also have its own specific POM, rather than be included in a generic POM.

As such, the core objectives for management of the Yass Gorge, under s36J of the LG Act, are:

a) To ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and
b) To protect the aesthetic, heritage, recreational, educational and scientific values of the land, and
c) To promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and
d) To restore degraded bushland, and
e) To protect existing landforms such as natural drainage lines, watercourses and foreshores, and
f) To retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and
g) To protect bushland as a natural stabiliser of the soil surface.

A part of the land, as mapped in Figure 6, is under s36B of the Act "Community land containing habitat of threatened species" and under s36C of the Act as "Community land containing significant natural features."

Figure 5: Natural Temperate Grassland in the Yass Gorge

The s36B "Community land comprising the habitat of threatened species" applies because a part of the land within the Yass Gorge contains Natural Temperate Grassland of the South Eastern Highlands (a critically endangered ecological community, listed under the Commonwealth EPBC or *Environment Protection and Biodiversity Conservation Act, 1999*), and is therefore affected by a recovery plan (that being the National Recovery Plan for Natural Temperate Grasslands of the Southern Tablelands, NSW and ACT: An Endangered Ecological Community). NTG provides habitat for the following State and Commonwealth listed threatened species:

- Pink-tailed Worm Lizard *(Aprasia parapulchella)*
- Little Whip Snake *(Suta flagellum)*
- Striped Legless Lizard (*Delma impar*)

- Golden Sun Moth (*Synemon plana*)
- Grassland Earless Dragon (*Tympanocryptis pinguicolla*)

Other threatened fauna, such as Superb Parrot (Polytelis swainsonii) also consider the site as important foraging habitat.

The s36C "Community land containing significant natural features' declaration was made because

1. the cliffs that form the Yass Gorge are a scenic feature that warrant protection or special management considerations, and
2. the riparian vegetation along the Yass River forms a unique wildlife corridor through a residential area.

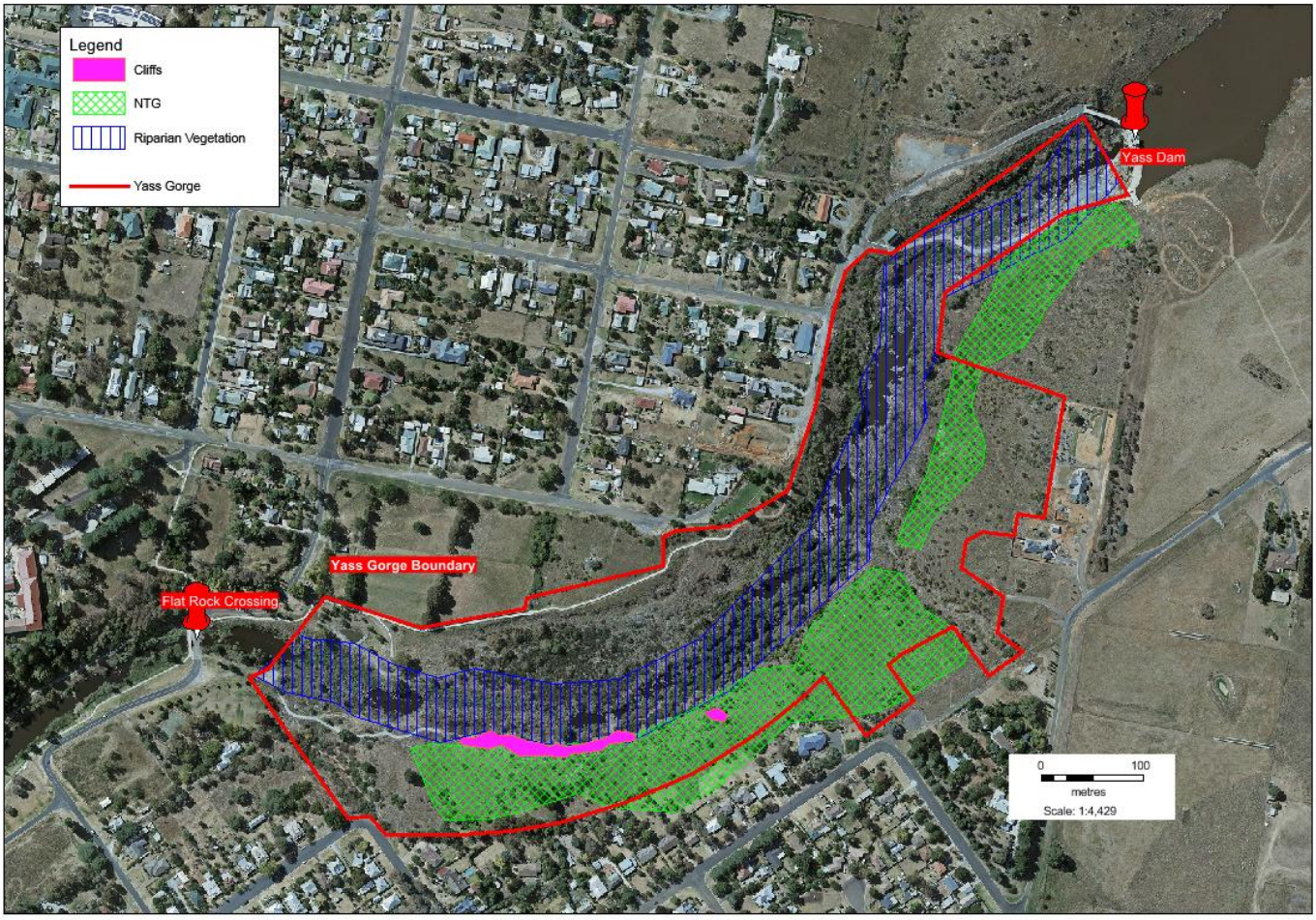


Figure 6: Land covered under s36B (NTG) and declared under s36C (Cliffs and Riparian Vegetation) of the LG Act.

4 Management of the land

The land is to be managed according to the objectives and methods set out in Table 1.

Table 1: Yass Gorge Management Actions

Land Characteristics	Objectives and Performance Targets • s36(3)(b)	YVC Actions • s36(3)(c)	YVC Performance Monitoring • s36(3)(d)
Natural Areas	To conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area	• YVC support and facilitate the gradual removal of woody weeds over a 5 year period (following guidelines to minimise short term impact of control) • Treat herbaceous invasive exotic species as recommended by OEH	• Annual flora survey (including biomass and floristics) and photo monitoring points recorded (FOYG) • Reptile and insect surveys when resources available
	To maintain the land, or that feature or habitat, in its natural state and setting	• 4 yearly review of management actions to optimise outcomes. • Inclusion in and consistency with environmental planning instruments, ie LEP and DCP, to ensure impacts from development in the surrounding areas are avoided.	• POM actions are reviewed each Council term • LEP/DCP is updated when required to reflect any land ownership changes (ie private to public) or updated information on environmental values. • Regular observations of site to check for damage (FOYG)
	To provide for the restoration and regeneration of the land	• YVC support and facilitate the planting of recommended native shrub species (mostly outside of the NTG area) prior to removing woody weeds, to replace any habitat they may be providing • Ensure volunteers are informed of correct techniques for restoration works, to avoid undesirable disturbance of the site	• Annual flora and bird survey • Site review following restoration works (FOYG)

		• YVC obtain and/or partner with other organisations for external funding or resources	
	To provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion	• YVC support and facilitate the creation and maintenance of pathways (see Figure 7), to limit human intrusion into NTG. • Creation and use of communication materials stressing the importance of using the tracks.	Completion of connection of pathway circuit/loop
	To assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.	• YVC support and facilitate the delivery of the Management Plan (attached in Appendix A), to address the Key Threatening Processes for NTG including control of priority grassland weeds.	Review of management plan and activities every four years.
Natural Temperate Grassland	To ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land	• Inclusion in and consistency with environmental planning instruments, ie LEP and DCP, to ensure impacts from development in the surrounding areas are avoided. • Include, in planning instruments, a buffer for the site (to a width of 30m where possible), to reduce risk of off-site impacts • YVC support and facilitate the assessment of the site for biomass levels, investigate an appropriate regime for biomass control if necessary.	• LEP/DCP is updated when required to reflect any land ownership changes (ie private to public) or updated information on environmental values. • Surveys are carried out to measure level of biodiversity over time (including flora and fauna surveys) by FOYG. • Regular observations of site by YVC to check for damage

		• YVC obtain advice on appropriate fire risk management	• YVC consults with RFS on appropriate fire risk management
	To protect the aesthetic, heritage, recreational, educational and scientific values of the land	• YVC support and facilitate the removal of threats, such as weeds and erosion, to identified values.	• Annual flora surveys by FOYG • Annual photo monitoring by YVC • Funding applications submitted to assist with resourcing of site management (YVC)
	To promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land	• Communication material, including social media, interpretive signs and brochures, distributed to the community, to promote access and enjoyment of the Gorge. Landholders adjacent to the Gorge provided with information to reduce impacts of off-site activities. • Public consultation on Plan of Management, to increase community ownership and interest.	• Pathways, seating and signage maintained and repaired when necessary. • Interest monitored in relevant social media platforms.
	To implement measures directed to minimising or mitigating any disturbance caused by human intrusion	• YVC support creation and maintenance of pathways, to limit human intrusion into NTG • Inform and advise contractors of offsite activities (such as weed spraying) of possible effects on NTG community • YVC to install signs and use social media to alert to the dangers of dumping, and promote good green waste management in the community	• Regular observations of site to check for damage, including illegal dumping and litter. • Boundary fences of adjoining properties are regularly checked for condition (to limit domestic animals accessing the Gorge off-leash)

		• YVC install signs advising visitors to take all their waste away from the site. • Education program is run by YVC in media including local/social media, transfer stations and interest groups on impact and prevention of garden escapees/weeds. • Lighting of fires in the Gorge is prohibited. • Off leash domestic animals are prohibited	
	To restore degraded bushland	• Revegetation where needed. Disturbance measures introduced where needed, eg mosaic cool burns in consultation with OEH. • YVC to provide community groups and/or contractors with species list and planting recommendations to ensure appropriate restoration techniques are used. • Signs installed to discourage access during heavy rainfall periods.	• Annual flora and fauna surveys • Annual photo monitoring (FOYG)
	To protect existing landforms such as natural drainage lines, watercourses and foreshores	• YVC to support and facilitate the removal of any riparian vegetation, eg willows, by cut/paste only (roots to remain in ground to stabilise soil). • Maintain current drainage conditions, or improve where necessary.	• Annual assessment of riparian health (YVC)
	To retain bushland in parcels of a size and configuration that will enable the existing plant and animal	• YVC to ensure connectivity is maintained to other natural vegetation areas, ie avoid fragmentation from construction of	• Documentation demonstrating that the issue has been satisfactorily considered in REF's and EIS's

	communities to survive in the long term	infrastructure and nearby development. • Encourage adjacent residents to plant	for any public works in the area (YVC)
	To protect bushland as a natural stabiliser of the soil surface	• YVC support and facilitate rabbit control to avoid damage due to grazing and digging.	• Regular observations of site to check for damage (FOYG) • YVC maintains relationship and communication with SE LLS
Crown Land	To manage as part of the Gorge whole	• YVC will submit a claim for ownership of the Crown Land parcels if possible under the new Crown Land Legislation	• YVC maintains communication with NSW DPI L&F Crown Lands

4.1 Existing condition of the Yass Gorge

Yass Gorge contains areas of exposed granite cliffs and rocky outcrops that tower above the Yass River, just downstream of the Yass Dam. The broader area within the Gorge contains a high diversity of native vegetation, which includes an area of EPBC-listed critically endangered Natural Temperate Grassland of the South Eastern Highlands (NTG), a riparian community dominated by River Red Gum (*Eucalyptus camaldulensis*), a variety of native shrub species and some areas of degraded vegetation dominated by woody weeds and exotic grasses and forbs. There are no buildings located within the Gorge and structures are limited to signage and seating.

4.1.1 Natural Temperate Grassland of the South Eastern Highlands

The native grassland community at Yass Gorge belongs to "Community r8: North-western & Eastern Kangaroo Grass - Wire-grass Dry Tussock Grassland", and is a particularly intact example of that community, having a high forb diversity and several shrub species that are characteristic of this community.

The NTG at Yass Gorge is arguably the best and largest remnant of NTG in what was part of once extensive grassy plains, known as the Yass Plains. Regionally, NTG has been reduced to a fraction of its former extent. Of the approximate 500 000 ha that were thought to have existed before the time of European settlement, the current estimate of the area of NTG that is formally protected within its range is now only about 2 400 ha and that is within the reserve network. This is less than 0.5% of the original extent of this vegetation type. This highlights the importance of protecting as many remnants of NTG as possible.

Long subjected to the impacts resulting from its close proximity to the urban environment of Yass, the Yass Gorge NTG community has been exposed to varying degrees of disturbances, modifications and infestation of both woody and herbaceous weed species that now dominate much of the site.

Yass Landcare commissioned Kosciusko to Coast to prepare a management plan for the Yass Gorge NTG (Peden, 2016), attached as Appendix A, which details the management actions required to address the current threats to the Yass Gorge NTG by avoiding, minimising, and mitigating the impacts of the threats.

4.1.2 River Red Gum Riparian Woodland

The Yass Gorge has 1.1km of the Yass River flowing through it. It is possibly the largest stretch of native riparian vegetation along the Yass River with public access that has not been cleared and is not currently grazed by hard hooved animals. There is a history of the land being leased to a local sheep grazier; however this has not happened in recent years and there is no intention to do so in the future.

Infestation of both woody and herbaceous weed species dominate much of the riparian vegetation, particularly willows.

4.1.3 Public Access

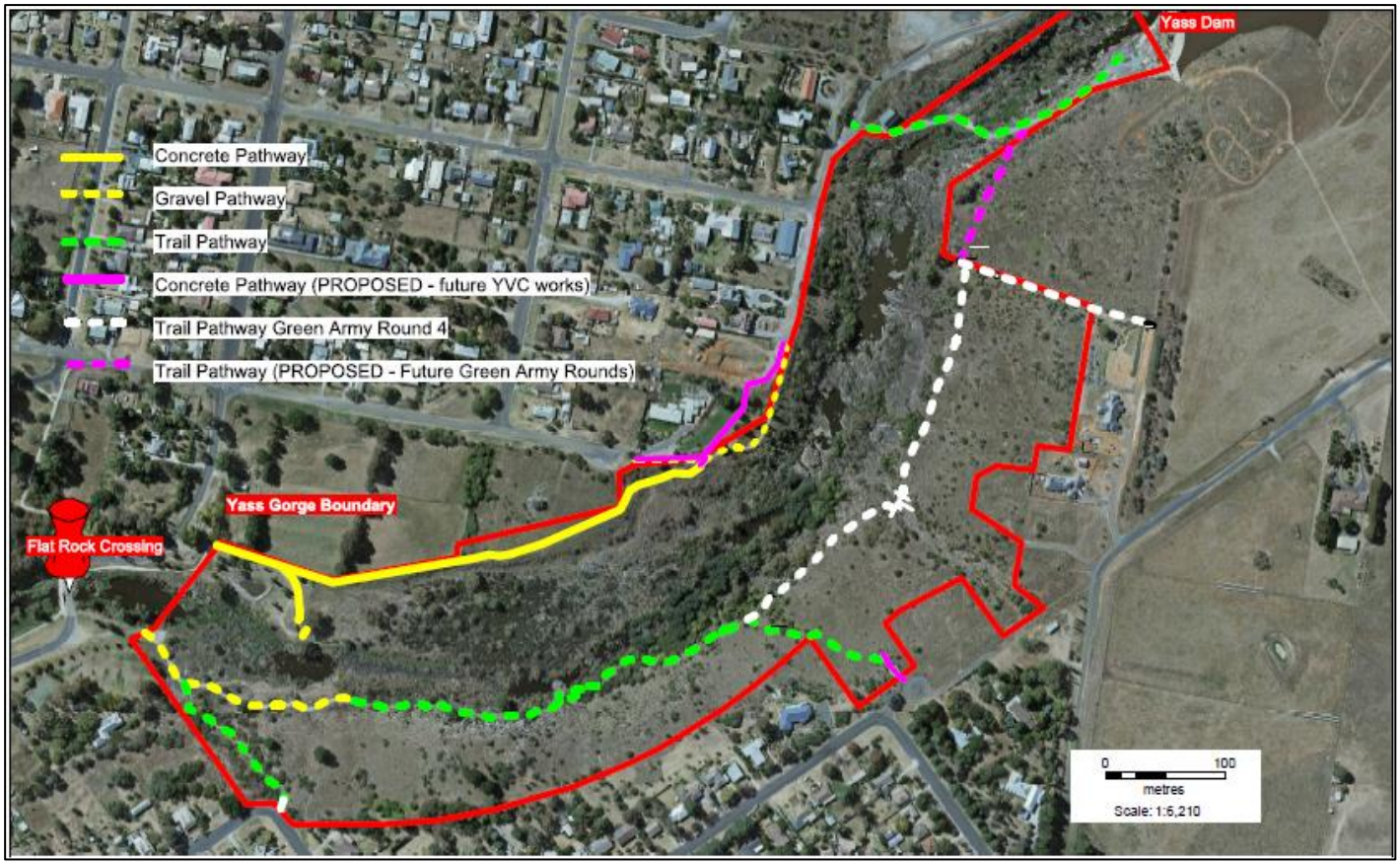
Access to the Yass Gorge has been limited in the past, due to the over growth of woody and herbaceous weed species.

4.2 Future land use of the Yass Gorge

The land will continue to provide habitat for a range of flora and fauna, and form a local wildlife corridor.

There are existing formed pathways which will be extended through the land and a series of interpretive signs that are used by members of the community for recreational purposes. Pathways also provide access to fishing holes along the river and it is expected that this will continue. A map of the current and proposed pathways & trails is shown in Figure 7.

Figure 7: Existing and proposed passive & active trails in Yass Gorge



It is Council's intention that the Yass Gorge will remain a bushland area, with limited but improved and maintained public access. Public access to the area will increase the community's awareness and ownership of responsibility to protect and conserve the environmental and social values of the Yass Gorge.

Principles of Crown Land management include that environmental values be observed, and that public use and enjoyment of the land be encouraged (NSW DPI 2015). The management activities listed in Table 1 will make the site more accessible for public use, in a manner which will not cause harm to the environmental value of the site.

Council will support FOYG and the community in ensuring overall environmental quality in the Gorge is improved through weed, pest animal and illegal dumping management.

4.3 Threatened Species Obligations

There are a number of State and Commonwealth threatened species in the Yass Gorge, as listed in Section 2 above.

Land mapped as NTG within this Plan of Management is directly affected by a number of recovery plans under the EPBC Act (Cth), those being:

- National Recovery Plan for Natural Temperate Grassland of the Southern Tablelands (NSW and ACT): an endangered ecological community. (Environment ACT, 2005) [see footnote 3 above]
- National Recovery Plan for the Striped Legless Lizard (*Delma impar*): 1999-2003 (Smith, W.J.S. & P. Robertson, 1999)
- National Recovery Plan for the Superb Parrot *Polytelis swainsonii* (Baker-Gabb, D., 2011)
- National Recovery Plan for the Grassland Earless Dragon *Tympanocryptis pinguicolla* (Robertson, P. & M. Evans, 2009)

Council has a responsibility under the *Threatened Species Conservation Act 1995* and the *Environmental Protection and Biodiversity Conservation Act 1999* to manage the land in accordance with these Acts.

5 Leases, licences and other estates.

It is not intended to lease or licence any part of the Yass Gorge area. However, Council has an agreement with the Friends of Yass Gorge Inc. to carry out activities in the Yass Gorge as detailed in Table 1, and may enter into other arrangements with 3rd parties for specific management issues (eg. Feral animal control).

6 Approvals for activities on the land

Council endorses the activities in the Yass Gorge as detailed in Table 1.

7 References

Baker-Gabb, D. 2011. *National Recovery Plan for the Superb Parrot Polytelis swainsonii*. Department of Sustainability and Environment, Melbourne.

Department of Environment, 2016. *Natural Temperate Grassland of the South Eastern Highlands SPRAT Profile*. http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=152&status=Critically+Endangered Accessed 04 May 2016

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NRAC, 2010. *Understanding our Native Grasslands: agricultural, environmental and indigenous values and management for the future*. NSW Government, Sydney.

NSW DPI, 2015. *Trust Handbook: A Handbook for Trusts Managing Crown Land Reserves and Commons, and Trustees of Schools of Arts.* State of New South Wales through the Department of Industry, Skills, and Regional Development, Sydney.

Peden, L., 2016. *Yass Gorge Natural Temperate Grassland Management Plan*. Unpublished report prepared for Yass Landcare, Yass.

Robertson, P. and Evans, M., 2009/2012. *National Recovery Plan for the Grassland Earless Dragon Tympanocryptis pinguicolla*. As varied October 2012. ACT Department of Territory and Municipal Services, Canberra.

Smith, W.J.S. & P. Robertson, 1999. *National Recovery Plan for the Striped Legless Lizard (Delma impar): 1999-2003*. Unpublished report to Environment Australia, Canberra.

8 List of Acronyms

LEP	Local Environment Plan
DCP	Development Control Plan
DPI L&F	Department of Primary Industry - Land & Forestry
POM	Plan of Management
LGA	Local Government Area
EEC	Endangered Ecological Community
YVC	Yass Valley Council
LG Act	Local Government Act 1993
FOYG	Friends of Yass Gorge
OEH	Office of Environment and Heritage
SE LLS	South East Local Land Services

Appendix A: Yass Gorge Natural Temperate Grassland Management Plan

YASS GORGE

Natural Temperate Grassland

Management Plan

Prepared for Yass Landcare

by Lesley Peden – K2C Facilitator

February 2016

Contents

1. EXECUTIVE SUMMARY

The aim of this Management Plan is to address the current threats to the Natural Temperate Grassland (NTG) at Yass Gorge by avoiding, minimising and alleviating their impacts.

In particular, the Plan aims to provide protection for the high conservation values of less-disturbed areas that represent one of the best examples of NTG remaining in the Yass region. Additionally, this may provide a guide for the rehabilitation of the more disturbed areas within the site.

Restoration, protection and maintenance of NTG areas at Yass Gorge should be considered as a long-term project targeted at threat abatement and minimization of further loss and degradation. Long-term care of the NTG site should include a rigorous monitoring program and application of adaptive management guided by the outcomes of the monitoring.

A proposed detailed plan of action for the Yass Gorge NTG is provided.

2. INTRODUCTION

2.1. Introduction to Country

We wish to acknowledge the traditional custodians of the land of the Ngunnawal people. We acknowledge and respect their continuing culture and the contribution they make to the life of this region.

2.2. Location

Yass Gorge is located on the Yass River, between Flat Rock Crossing and Yass Dam. Situated in the heart of the Yass Township, the site is bordered by Meehan Street to the south, Demestre Street to the south-west and Yass River to the north. **Figure 1** shows the location of Yass Gorge in its regional context.

2.3. Site Description

Yass Gorge contains areas of exposed granite cliffs and rocky outcrops that tower above Yass River, just downstream of the Yass Dam. The broader area within the Gorge contains a high diversity of native vegetation, which includes an area of Natural Temperate Grassland, a riparian community dominated by River Red Gum (*Eucalyptus camaldulensis*), a variety of native shrub species and some areas of degraded vegetation dominated by woody weeds and exotic grasses and forbs. The focus of this management plan is the native grassland community, which is an outstanding remnant of the critically endangered ecological community (CEEC) *Natural Temperate Grassland of the South Eastern Highlands*, which is abbreviated as NTG and is listed under the Australian Government's *Environmental Protection and Biodiversity Conservation Act, 1999* (EPBC Act) (Australian Government, 2016). The grassland community at Yass Gorge belongs to the NSW-defined Community r8: North-western & Eastern Kangaroo Grass - Wire-grass Dry Tussock Grassland (Armstrong R,

2013) and is a particularly intact example of that community, having a particularly high forb diversity and several shrub species that are characteristic of this community.

The NTG at Yass Gorge is arguably the best and largest remnant of NTG in what was part of once extensive grassy plains, known as the Yass Plains (Environment ACT, 2005). Regionally, NTG has been reduced to a fraction of its former extent. Of the c. 500,000 ha that were thought to have existed before the time of European settlement, the current estimate of the area of NTG that is formally protected within its range is now only about 2400 ha and that is in the reserve network. This is less than 0.5% of the original extent of this vegetation type, and it is likely that sections of this would not be eligible for listing under condition thresholds within the listing criteria. This points out the importance of protecting as many remnants of NTG as possible.

Long subjected to the impacts resulting from its close proximity to the urban environment of Yass, the Yass Gorge NTG community has been exposed to varying degrees of disturbances, modifications and infestation of both woody and herbaceous weed species that now dominate much of the site.

The extent of NTG within Yass Gorge is shown in **Figure 2.**

Figure 1: Yass Gorge - Regional Context

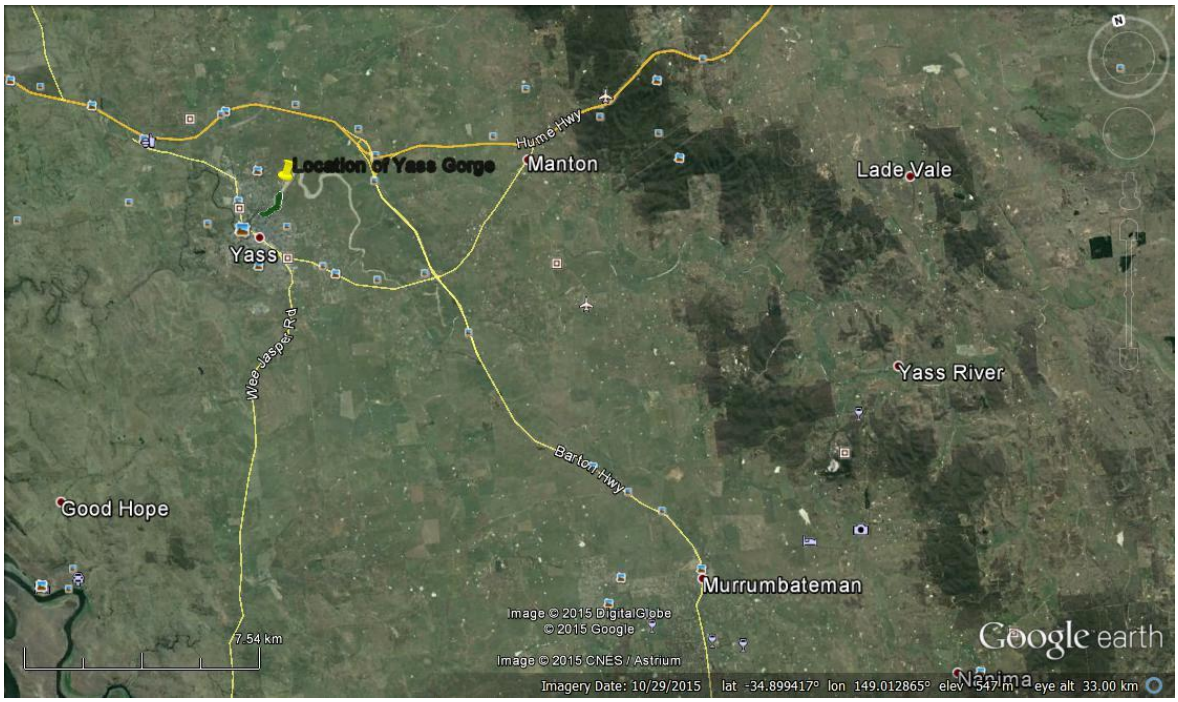

Figure 2: Extent of Natural Temperate Grassland at Yass Gorge (green shading).

Note - the red polygon is the area known as Yass Gorge

3. NATURAL VALUES OF THE YASS GORGE NTG

3.1. Vegetation

The NTG at Yass Gorge contains a high diversity of native plant species. The NTG vegetation occurs in a broad area above the riparian zone, on steep, often rocky slopes and on the narrow flat area adjacent to the houses that border the Gorge. This is characteristic habitat of the Community r8 (Armstrong R, 2013). The NTG is dominated by Kangaroo Grass (*Themeda australis*), Wattle Mat-rush (*Lomandra filiformis*), Spiny-headed Mat-rush (*L. multiflora*) and spear-grasses (*Austrostipa* spp.). There is a variety of forbs (herbaceous plants) that occur in the intertussock spaces within the grassland, including Bulbine Lily (*Bulbine bulbosa*), Yellow Rush-lily (*Tricoryne elatior*) and Creamy Candles (*Stackhousia monogyna*). The forbs at Yass Gorge include several regionally rare native species, including Rock Lily (*Bulbine glauca*), Yellow Burr-daisy (*Calotis lappulacea*), Corrugated Sida (*Sida corrugata*) and Tarvine (*Boerhavia dominii*). These forbs are characteristic species of Community r8 and are found rarely, if at all, in other natural grassland communities in the southern tablelands. Several shrub species occur, including Sticky Hopbush (*Dodonaea viscosa*), Native Blackthorn (*Bursaria spinosa*) and several wattle species, including Red-stemmed Wattle (*Acacia rubida*) and Poverty Wattle (*A. dawsonii*). A number of shrub species are also characteristic of Community r8. Of these, the Tick Indigo (*Indigofera adesmiifolia*) is still present, though the, Sticky Wallaby-bush (*Beyeria viscosa*), Fern-leaved Hopbush (*Dodonaea boroniifolia*) and Slender Westringia (*Westringia eremicola*), which were formerly recorded, seem now to be extinct at the site.

Several exotic species occur within the NTG. The most serious weed species include Serrated Tussock (*Nassella trichotoma*), St John's Wort (*Hypericum perforatum*) and African Lovegrass (*Eragrostis curvula*), which all occur in low densities. Various other herbaceous weeds are present, including Wild Oats (*Avena* spp.), Cat's-ear (*Hypochaeris radicata*), Phalaris (*Phalaris aquatica*), Paterson's Curse (*Echium plantaginium*) and brome grasses (*Bromus* spp.). Several woody weeds occur, including privets (*Ligustrum* spp.), plums (*Prunus* spp.), cotoneasters (*Cotoneaster* spp.), Tree Lucerne (*Chamaecytisus palmensis*), Blackberry (*Rubus fruticosus*), English Hawthorn (*Crataegus monogyna*) and a prickly-pear (*Opuntia* sp.). **Appendix 1** provides a complete list of flora species recorded at Yass Gorge.

While not a focus of this Management Plan, the vegetation of the riparian zone at Yass Gorge is worthy of mention here. This community corresponds to Community u173: *River Red Gum ± Apple Box very tall grass-forb riparian woodland on alluvial flats in the South Eastern Highlands and upper South Western Slopes Bioregions* (Armstrong R, 2013). Armstrong et al 2013 notes that this community should be considered for listing as a threatened ecological community. The community is dominated by River Red Gum (*Eucalyptus camaldulensis*) and has an understorey of Burgan (*Kunzea ericoides*), River Bottlebrush (*Callistemon sieberi*), Silver Wattle (*Acacia dealbata*), Red-stemmed Wattle (*Acacia rubida*) and Spiny-headed Mat-rush (*Lomandra longifolia*). A diversity of sedges, rushes, reeds and other aquatic species occupies the water's edge. Exotic species within the riparian zone include willows (*Salix* spp.), Blackberry (*Rubus fruticosus*), Phalaris (*Phalaris aquatica*) and privets (*Ligustrum* spp.).

3.2. Fauna of Yass Gorge

Native fauna species known to occur in the NTG at Yass Gorge include Eastern Grey Kangaroo (*Macropus giganteus*), Wallaroo (*Macropus robustus*), Swamp Wallaby (*Wallabia bicolor*), Little Forest Bat (*Vespadelus vulturnus*), and Common Brush-tailed Possum (*Trichosurus vulpecula*).

A variety of birds occur at Yass Gorge including grassland and woodland specialists, including some species listed as threatened, some listed as vulnerable, including Dusky Woodswallow (*Artamus cyanopteris*), and others that are recognised as declining, including the Rufous Whistler (*Pachyccephala rufiventris*) - (Reid, 1999). The most notable threatened bird species recorded at Yass Gorge is the Superb Parrot (*Polytelis swainsonii),* Scarlet Robin (*Petroica boodang*) and Diamond Firetail (*Stagonopleura guttata*).

The grassland provides habitat for a variety of reptile species, but no comprehensive survey has been undertaken to determine what species occur there. Populations of two threatened grassland reptiles are known from the Yass region, namely the Striped Legless Lizard (*Delma impar*) and Pink-tailed Worm-lizard (*Aprasia parapulchella*). Additionally, the endangered Grassland Earless Dragon (*Tympanocryptis pinguicolla*) occurs in nearby ACT. These reptile species have not been recorded at Yass Gorge, though likely habitat exists for all three species. The Little Whip Snake (*Suta flagellum*) is also likely to occur. It is recommended that a survey for these reptile species should be undertaken.

The critically endangered Golden Sun Moth (*Synemon plana*) has been recorded at Yass Gorge but surveys for other invertebrates have not been undertaken. It is also recommended that a survey for invertebrate species should be undertaken.

Introduced species recorded in the NTG at Yass Gorge include Brown Hare (*Lepus capensis*), Rabbit (*Oryctolagus cuniculus*), European Fox (*Vulpes vulpes*), Common Myna (*Sturnus tristis*), Common Starling (*S. vulgaris*), Common Blackbird (*Turdus merula*), and House Sparrow (*Passer domesticus*) (NSW Government, 2016).

A complete list of fauna species recorded at Yass Gorge is presented in **Appendix 2.**

The area is used extensively by domestic dogs and as it is in close proximity to a residential area, the Gorge is also likely to be readily accessed by domestic cats.

3.3. Cultural Heritage Values

Aboriginal people have lived in Australia for over 60,000 years. During this time a rich cultural history has developed and continues to grow within Aboriginal communities. Aboriginal people have a strong connection and belief system which is intertwined with Country and its ability to provide spiritual guidance.

The Yass Valley has traditionally been inhabited by the Ngunnawal people. The township of Yass was named after Yarrh or Yharr, the word for running water in the Ngunnawal language.

Grasslands in general were very important places for Aboriginal people, as a source of food, a sense of place or habitat, and as landscapes of cultural and historical significance. Grasslands, with their important values and distinctly Aboriginal relics, can also provide insight for non-Aboriginal people that can help mutual understanding.

It is generally accepted that NTG was adapted to a fire regime that included burning by Aboriginal people (probably consisting of a mosaic of patchy, low intensity fires in spring and autumn) and occasional high intensity fires in summer (most probably caused by lightning strike).

3.4. Natural Temperate Grassland of the South Eastern Highlands (NTG)

3.4.1. Legislative Context

Natural Temperate Grassland of the South Eastern Highlands (NTG) is listed under the Environment Protection and Biodiversity Conservation Act 1999 (Australian Government, 2015) as critically endangered.

Although NTG is not listed as threatened on the *NSW Threatened Species Conservation Ac*t, 1995 (TSC Act), it is protected as 'Native Vegetation' under the *Native Vegetation Act, 2003*.

The threatened fauna species that are listed either under the EPBC Act (1999), the TSC Act, or both Acts, is shown in **Table 1**.

Table 1: Threatened fauna recorded, or with potential habitat in NTG at Yass Gorge

Species name	Common name	EPBC Act	TSC Act
Aprasia parapulchella	Pink-tailed Worm Lizard	V	V
Delma impar	Striped Legless Lizard	V	V
Suta flagellum	Little Whip Snake	-	V
Synemon plana	Golden Sun Moth	CE	E
Tympanocryptis pinguicolla	Grassland Earless Dragon	E	E

Key: EPBC Act=Australian Government Environmental Protection and Biodiversity Conservation Act, 1999; TSC Act=NSW Threatened Species Conservation Act, 1995; CE=critically endangered; E=endangered; V=vulnerable

Several other threatened fauna, such as Superb Parrot (Polytelis swainsonii) and Scarlet Robin (Petroica boodang), consider the site as important foraging habitat.

3.4.2. Natural Temperate Grassland of the South Eastern Highlands of NSW and the Australian Capital Territory

NTG is a natural vegetation community dominated by a range of perennial grass species and, in highly intact sites, contains a large range of herbaceous species, including daisies, peas, lilies, orchids and many other flora species, all collectively known as forbs, or "wildflowers". The community is often treeless, though trees and shrubs of a range of species may occur in low densities, either as isolated individuals or in clumps.

It is estimated that less than 5% of the natural grassland that existed in pre-European times retained sufficient integrity to be regarded as NTG. Less than 1% of its previous range is protected in national parks and nature reserves and many plant species associated with the

community are listed as Threatened. NTG also supports a range of animal species, some of which are unique to grassland communities, or if not unique, are restricted to sites with grassy ecosystems (i.e. grassy woodland communities). Many of these species, including several birds and reptiles and an invertebrate Golden Sun Moth, (*Synemon plana*), are listed as threatened.

Natural Temperate Grassland is confined to the South Eastern Highlands where the community occurs in a number of distinct plant associations. According to the association present, the community is found in various topographical positions and on a variety of rock types. The altitudinal range of the community is between 500 and 1200 m. The community is mostly found on broad sweeping plains with poor drainage and cold air inversions that promote frosts that inhibit tree growth (Australian Government, 2016).

NTG is not currently listed as a threatened ecological community in NSW, but is likely to be in the future. However, it is considered by OEH and other NSW authorities as a High Conservation Value (HCV) entity and is legally protected under the current NSW Native Vegetation Act (2004).

3.4.3. Threats to Natural Temperate Grassland

NTG has become threatened for various reasons, including:

- Weed invasion, particularly by exotic ground cover species, such as African Lovegrass (*Eragrostis curvula*), Chilean Needlegrass (*Nassella neesiana*), St John's Wort (*Hypericum perforatum*), Serrated Tussock and Paterson's Curse;
- Woody weeds, such as cotoneasters (*Cotoneaster* spp.), firethorns (*Pyracantha* spp.), privets (*Ligustrum* spp.) and Blackberry (*Rubus fruticosus*) also threaten the integrity of NTG, outcompeting native grasses and creating artificial shading in grasslands;
- Illegal dumping of plant matter and garden waste, storm water run-off carrying weed seed and garden escapes;
- Invasion by a range of pasture grass species, most notably Phalaris (*Phalaris aquatica*), Cocksfoot (*Dactylis glomerata*), Paspalum (*Paspalum dilatatum*) and a range of exotic annual grasses (e.g. *Avena* spp., *Bromus* spp., *Vulpia* spp. and *Lolium* spp.);
- Fragmentation and isolation of grassland remnants which lead to genetic problems for small populations of fauna and flora species in the community;
- Loss of sites to urban, rural subdivision and infrastructure development;
- Loss or severe modification resulting from grazing and physical soil disturbances by feral and domestic animals;
- Altered fire regimes;
- Soil disturbances from dumping, trampling, vehicles, and gravel extraction;

- Changes to soil fertility due to addition of chemical or organic fertilisers, stormwater run-off and use of soil ameliorants (e.g. lime) to adjacent sites;
- Changes to drainage patterns, either within a site or in adjacent sites, which alter hydrological balance and on-site fertility patterns and can increase weed invasion;
- Inappropriate mowing or slashing, with either too-frequent or too-infrequent biomass control, and non-removal of thatch following slashing of high biomass loads;
- Spray-drift from spraying in adjacent sites, or non-target spraying by the use of inappropriate methods to control weeds on-site;
- Planting of trees and using inappropriate plant species; and
- Over-harvesting of grass and forb seeds

3.4.4. Natural Temperate Grassland in Yass Gorge

Many of the threats common to NTG in the region are present at Yass Gorge. In particular the invasion of weeds, as listed above (See 2.4.3); impacts of adjacent residential development, which result in altered hydrology, soil disturbances and high nutrient run-off, altered fire regimes, impacts of domestic pets, trampling and illegal dumping. In addition, increased recreational use of the area will create further impacts that require management.

The aim of this Management Plan is to address the current threats to NTG at Yass Gorge by avoiding, minimising and alleviating their impacts. A further goal is to guide future management of the site to restore, enhance and protect the high conservation values of the Yass Gorge NTG site.

3.4.5. Assessment of Natural Temperate Grassland Condition

Condition of NTG varies considerably with the extent and nature of past and current land usage and associated forms of disturbances. Botanical significance ratings have been used in NSW to rank the relative condition of NTG remnants (Australian Government, 2016). A method that uses Floristic Value Scores and Weed Value Scores has been developed to assess and monitor NTG site condition, based on the floristic value and weediness of each site (Rehwinkel, 2014).

3.4.6. Natural Temperate Grassland Monitoring at Yass Gorge

The Floristic Value Scoring (FVS) method (Rehwinkel, 2014) relies on three groupings of species found in the ecological community, viz.:

- Common or increaser species (add little value to a site);
- Indicator species, level 1 (indicate a site has value); and

- Indicator species, level 2 (highly significant plants that are the rarest of the grassy ecosystems species).

The assessment method assigns a score to each recorded flora species depending on which of the above three groupings it has been allocated to. Exotic species (weeds) have been similarly assigned a value, and a Weed Value Score (WVS) can be derived for grasslands to assist in assessing a site's value.

Two monitoring plots have been established at Yass Gorge within the NTG area to record variation in grassland condition. Baseline data has been collected and this can be repeated annually, or as often as resources allow. Shifts in FVS and WVS will provide the basis for applying adaptive management to the site. The locations of each plot, a complete flora species list and the FVS and WVS of each plot are presented in **Appendix 3.**

4. SCOPE AND PURPOSE OF MANAGEMENT PLAN

4.1. Management Purposes and Principles

This Management Plan has been established to identify threats to Natural Temperate Grassland at Yass Gorge and provide guidelines for the ongoing care and management of the site. In particular, the Plan aims to provide protection for the high conservation values of less disturbed areas that represent one of the best examples of NTG remaining in the region. Additionally, this may provide a guide for the rehabilitation of the more disturbed areas within the site.

4.2. Threats to Natural Temperate Grassland at Yass Gorge

The objective of the National Recovery Plan for NTG of the Southern Tablelands (Environment ACT, 2005) is to "arrest the decline in extent and quality of Natural Temperate Grassland of the Southern Tablelands region".

The Recovery Plan sets out Steps and Actions to achieve this, including:

- Establishment and maintenance of an information base;
- Identification and mapping of sites by floristic associations;
- Identify and evaluate the extent and quality of NTG and component species;
- Biological and vegetation surveys within grassy ecosystems, focusing on threatened flora and fauna;
- Arrangements for NTG protection and management using "Best Management Practices";

- Ensuring community participation and involvement;
- Integration of Natural Temperate Grassland conservation into regional planning processes; and
- Development of an adaptive management approach to NTG which links research and monitoring to management.

An overview of threats to NTG at Yass Gorge and actions to minimise and abate their effect is found in **Table 2**. This table has been adapted from the 'Natural Temperate Grassland of the South Eastern Highlands' threatened species profile (Australian Government, 2016).

Table 2: Natural Temperate Grassland Management Actions

Aim: To Improve the Condition and Extent of Natural Temperate Grassland at Yass Gorge	
Threatening process	**Threat abatement/action**
• Fragmentation and isolation of patches of remnant NTG. This may lead to genetic problems for small populations of fauna and flora which may threaten their long-term survival. •	Maintain connectivity, where possible, between areas of NTG, or between NTG and other natural grassland, woodland, forest, wetland or riparian areas. Avoid fragmentation, e.g., from construction of roads, service lines and easements.
• Invasion of exotic weeds, particularly by African Lovegrass (*Eragrostis curvula*), Chilean Needlegrass (*Nassella neesiana*), St John's Wort (*Hypericum perforatum*), Serrated Tussock (*Nassella trichotoma*) and Paterson's Curse (*Echium plantagineum*). •	These are the high priority weeds. Apply best practice weed control by using hand weed wipers to treat exotic species. Spot-spraying is the next preference and should avoid off target spraying, i.e., spraying onto nearby native species. Any physical removal of weeds should avoid damage to soil surface. Scatter seeds of local native species in sites of weed removal after weeds have died and any herbicide has dissipated.
• Invasion by a range of pasture grass species, most notably Phalaris (*Phalaris aquatica*), Cocksfoot (*Dactylis glomerata*), Paspalum (*Paspalum dilatatum*) and a range of exotic annual grasses (e.g., *Bromus* spp., *Vulpia* spp. and *Lolium* spp.). •	Carefully assess the impact of these weeds. If impact is not high, then there may be no need to treat them. Apply best practice weed control by careful spot-spraying or use of daubers to treat exotic species. Spot-spraying should avoid off target spraying, i.e., spraying onto nearby native species. Any physical removal of weeds should avoid damage to soil surface. Scatter seeds of local native species in sites of weed removal after weeds have died and any herbicide has dissipated.
• Inappropriate recreational use of the site.	Install and maintain public access paths to minimise impacts on delicate areas of NTG.

	Install interpretive signs to inform the public of the value of the NTG and the importance of caring for and minimising impacts to the site.
• Impacts from grazing and physical soil disturbances by feral animals (particularly rabbits, foxes and pigs). •	Incorporate a feral pest management program in cooperation with the SE LLS (document currently in preparation – See Appendix 5). Create an eradication plan specific to Yass Gorge and its neighbouring urban environment.
• Soil disturbances from dumping, trampling, driving over NTG, gravel extraction, etc. •	Maintain soil conditions and avoid physical disturbance, e.g., digging and removal of rocks. Prevent soil compaction, e.g., from vehicles and public recreational use of the site. Erect barriers, if necessary, to prevent vehicular access. Ensure the path is maintained through the NTG site to minimise public use and recreational impacts to delicate areas.
• Removal of bush rock for gardens.	Install interpretive signage to inform the public of the importance of rocks as habitat for native fauna, and includes that this is a key threatening process under the TSC Act. Signs should also alert the public on the need to protect all plants.
Inappropriate mowing or slashing, with either too-frequent or too-infrequent biomass control being an issue; non-removal of thatch following slashing of high biomass loads.	Assess the site and the need and if there is a need, apply biomass control through an appropriate defoliation regime. This may be either by burning using cool autumn patch burns, or by slashing, trimming or mowing in small selected areas. If slashing, trimming or mowing are used, ensure any clumps of thatch are removed to prevent these killing native cover, and thereby creating sites for invasion of weeds. Machinery weed hygiene protocols should be adhered to.
Inappropriate weed control methods that effect non-target species.	Prevent spraying in sensitive areas, particularly in windy conditions. Use daubers to target only specific weed species. Use suitably qualified personnel to prevent inappropriate weed control methods being used.
Spray drift into NTG areas from weed control in adjacent areas of Yass Gorge.	Inform and advise contractors of offsite impacts to NTG areas through inappropriate use of weed control in adjacent areas of Yass Gorge and

	neighbouring urban areas. Prevent spraying close to sensitive areas, particularly in windy conditions.
Inappropriate tree and shrub plantings and revegetation projects.	Provide a recommended plant list for NTG at Yass Gorge (see Appendix 4). Plants should be of local provenance (within c. 20km) if possible to avoid compromising population genetics. If planting woody species, avoid planting trees within the NTG area and only plant scattered shrubs, and then only to provide habitat prior to removal of woody weeds. In these cases, it is appropriate to plant dense shrubs in areas adjacent to patches of woody weeds prior to their removal, but only in areas that are not occupied by NTG. Control plant introductions (weeds, introduced pasture species, inappropriate native species including trees and shrubs not indigenous to the NTG of the region.
Exotic woody shrub and tree species spread by birds.	It is important to replace any habitat provided by exotic woody species before undertaking their control. Planting fast-growing local natives, such as Red-stemmed Wattle (Acacia rubida), Green Wattle (A. mearnsii) or Silver Wattle (A. dealbata) in degraded areas immediately adjacent to patches of exotic woody species in the years prior to their removal ensures that habitat is replaced. Control woody weeds is best done using the cut and daub method, using Glyphosate®. Stockpile any cut material in areas not occupied by NTG. This material can be burnt in situ or removed. Apply caution with berry-bearing species so that their seeds are not spread in the removal process. Apply caution if green waste is physically removed from site so that it is not dragged across sensitive areas of NTG. Carefully apply spot-spraying of areas with a high density of seedlings of privets, cotoneasters, etc.
Misidentification of flora species, either spraying natives or leaving weeds untreated.	Create or source available information pamphlets to guide weed spraying and identification of native species; particularly of some commonly misidentified species,

	e.g. Blackberry (Rubus fruticosus) and Native Raspberry (R. parvifolius).
Garden escape plants invading NTG areas.	Inform adjacent residents of potentially invasive garden plants. Advise removal and replacement with less invasive species (native or exotic). Control spread of wildings from adjacent tree plantings, e.g., pines, olives, fruiting and berry-bearing trees, garden plants, etc.
Illegal dumping of rubbish and green waste.	Install signs that alert to the dangers of dumping. Initiate a community education project to guide and shift behaviour and instill increased environmental awareness in the community. Provide a free green waste deposit site at Yass.
Inappropriate fire regimes, either too frequent or too infrequent, or seasonally ill-timed.	Liaise with the local Rural Fire Service and the NSW Office of Environment and Heritage about appropriate fire times and fire regimes for the NTG at Yass Gorge.
Damage to NTG by inappropriate rehabilitation projects in adjacent areas of Yass Gorge, e.g., stockpiling of cut trees and shrubs on sensitive areas of NTG.	Inform groups such as paid contractors and local Landcare and Friends of Yass Gorge community volunteers about appropriate site procedures when working in and adjacent to the NTG. Prevent dragging weeds across, and stock-piling of green waste on sensitive areas. Minimise damage to delicate areas during rehabilitation and restoration projects and prevent soil dumping, water run-on, soil damage and compaction, weed spread and other direct and indirect impacts.
Loss of areas of NTG to urban, rural subdivision and infrastructure development.	Prevent further loss of high quality NTG areas at Yass Gorge to urban subdivision and infrastructure development. This Plan encourages the relevant authorities to ensure compliance with relevant NSW and Australian Government legislation. Consult local experts such as Friends of Grasslands for advocacy. Under the EPBC Act 1999 (Australian Government, 2015) an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.
Off-site impacts, including adjacent land modification, such as urban subdivision and development.	This Plan encourages the relevant authorities to ensure that they manage any impacts to the NTG area, either direct or

	indirect, from urban subdivision or development. Maintain light regimes by preventing shading from new buildings or tree planting. Buffer the NTG from adjacent land uses that have the potential to impact on its integrity. Impacts may arise from adjacent soil disturbances, or from run-on of water from adjacent sites, especially that containing increased nutrient loads or sediments. Buffers should be a minimum of 30 m wide.
Changes to drainage patterns, either within a site or in adjacent sites with associated changes to hydrological balance and on-site fertility patterns, or increased weed invasion.	Maintain existing drainage conditions, or improve if deleterious changes have been previously made. In particular, water run-off onto NTG from adjacent areas should be prevented.
Loss of areas of NTG to urban, rural subdivision and infrastructure development.	Prevent further loss of high quality NTG areas at Yass Gorge to urban subdivision and infrastructure development. This Plan encourages the relevant authorities to ensure compliance with relevant NSW and Australian Government legislation. Consult local experts such as Friends of Grasslands for advocacy. Under the EPBC Act 1999 (Australian Government, 2015) an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.
Off-site impacts, including adjacent land modification, such as urban subdivision and development.	This Plan encourages the relevant authorities to ensure that they manage any impacts to the NTG area, either direct or indirect, from urban subdivision or development. Maintain light regimes by preventing shading from new buildings or tree planting. Buffer the NTG from adjacent land uses that have the potential to impact on its integrity. Impacts may arise from adjacent soil disturbances, or from run-on of water from adjacent sites, especially that containing increased nutrient loads or sediments. Buffers should be a minimum of 30 m wide.

Changes to drainage patterns, either within a site or in adjacent sites with associated changes to hydrological balance and on-site fertility patterns, or increased weed invasion.	Maintain existing drainage conditions, or improve if deleterious changes have been previously made. In particular, water run-off onto NTG from adjacent areas should be prevented.
Changes to soil fertility by addition of chemical or organic fertilisers, or soil ameliorants, e.g., lime; these threats can come from addition of fertilisers to adjacent sites.	Prevent chemical changes to soil conditions, e.g., from fertiliser or run-off from upslope and off-site.

5. YASS GORGE MANAGEMENT ACTIONS

5.1. Restoration Management Guidelines - Natural Temperate Grassland

The report - MANAGING NATIVE GRASSLAND: *a guide to management for conservation, production and landscape protection* (Eddy, 2002), describes detailed restoration management guidelines for Natural Temperate Grasslands. It is recommended that methodology suggested in this report be applied to the management of Yass Gorge. Weed control needs to be sympathetic to the values of the site, with herbicide application applied with the utmost care to avoid off-target impacts. Spot-spraying and cut-and-daub techniques are the most appropriate methods. Spot-spraying should employ a funnel over the spray to avoid spraying beyond the target species. Weed control using herbicides should use the directions as on the labels of products to be used. Herbicide use should only be by suitably qualified personnel.

6. LONG–TERM SITE MAINTENANCE PLAN

6.1. Implementation of Management Action Table Timeline

Restoration, protection and maintenance of Yass Gorge Natural Temperate Grassland areas should be considered as a long-term project. Targeted at threat abatement and minimisation, long-term care of the NTG site should include a rigorous monitoring program and application of adaptive management guided by the outcomes of the monitoring. A suggested monitoring regime is discussed in **Table 3.**

Table 3: Natural Temperate Grasslands Site Management Timeline (5 Year Plan)

Date/timing	Recommendation	Method	Notes
July 2015	Baseline bird monitoring	Bird survey undertaken between 9:30 and 11:30am by two Threatened Species Officers from OEH.	Damon Oliver and Rainer Rehwinkel (OEH) completed informal surveys for baseline bird data. More formal monitoring will be required in the future.
September 2015	Baseline NTG flora monitoring	Installation of two permanent grassland monitoring plots. Plots were assessed using the 'Revised Floristic Value Scoring	Completed by Lesley Peden (Ecologist) Kosciuszko to Coast

		Method to Assess Grassland Condition' methodology (Rehwinkel, 2014). Assessments were conducted within two 20 m x 20 m plots selected within areas of high native diversity in the Yass Gorge. Vegetation condition, distribution and abundance were recorded and a FVS and WVS were calculated.	
September 2015 - 2020	All permanent monitoring data to be entered into NSW Vegetation Information System (VIS) including photo monitoring data.		
LATE SPRING/EARLY SUMMER	Treat herbaceous, invasive exotic species such as St John's Wort, Paterson's Curse, Serrated Tussock, Canary Grass and Bathurst Burr	Glyphosate/Bioactive Round up. SE LLS, Yass Valley Council or local expertise should be consulted prior to herbicide selection and use. Particularly close to water ways and sensitive areas.	
LATE AUTUMN/WINTER	Avoid sensitive and native areas. Piles to be placed on open ground or patches of Phalaris. Stacked neatly in a confined area. Cut to size. Nice neat fire.	Burning of Willow debris	
March/April 2016 October 2016	Prior to removal of clumps of woody weeds, plant Red-stemmed Wattle, Green Wattle, Silver Wattle, Native Blackthorn, Sticky Hop bush (planting mostly outside NTG, with	Recommended Planting list Appendix 4.	

	some plantings in degraded areas of NTG) to replace removal of exotic woody weeds		
January 2016 – 2020	Integrated and Targeted Pest Animal Management Program	In consultation with SE LLS refine Pest Management Plan targeting foxes, rabbits, pigs and other feral species. (LLS are currently in the process of creating a Pest Management Plan for Yass Gorge) See Appendix 5.	
January 2017 - 2020	Annual monitoring of PMP		
AUTUMN/EARLY WINTER	Patch burn (cool burn) at 2–4 year intervals. Establish annual monitoring site for burn sites.		As dictated by monitoring and adaptive management
November 2016 November 2018 November 2020	Biannual monitoring of burn sites. Photo monitoring		
January 2016 - 2020	Adaptive management: evaluate management practices to optimize management used. Liaise with all relevant organisations including South East Local Land Services, Yass Valley Council, Yass Landcare Group, NSW Office of Environment and Heritage and Friends of Grasslands.		

7. ADDITIONAL READING MATERIAL

Much more information is available on native grasslands and in particular Natural Temperate Grasslands. The following field guides and booklets are recommended sources of additional information (See **9.0 References**).

- Woodland Flora: a field guide for the Southern Tablelands (NSW & ACT).
- Grassland Flora: a field guide for the Southern Tablelands (NSW & ACT).
- Land of Sweeping Plains: Managing and restoring the native grasslands of south-eastern Australia
- Understanding our Native Grasslands: agricultural, environmental and indigenous values and management for the future
- Marshall A. (2014) start with the grasslands: design guidelines to support native grasslands in urban areas.

8. ACKNOWLEDGEMENTS and DISCLAIMER

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Disclaimer

9. REFERENCES AND FURTHER READING

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- Appendix 1. Complete list of flora species recorded at Yass Gorge.

The following list was developed from surveys of the study area by Rainer Rehwinkel and Lesley Peden. The list includes all species of vascular plants observed on the study area. Not all species are readily detected at any one time of the year, therefore the list will not necessarily include all plant species likely to occur in the study area. Many species flower only during restricted periods of the year, and some flower only once in several years. In the absence of flowering and fruiting material, many species remain to be identified and some species may remain detected.

Locally indigenous species

Scientific name	**Common name**	**Family**
Acacia dawsonii	Poverty Wattle	Fabaceae
Acacia dealbata	Silver Wattle	Fabaceae
Acacia rubida	Red-stemmed Wattle	Fabaceae
Acaena ovina	Sheep Burr	Rosaceae
Alternanthera sp .A	Dwarf Joyweed	Ameranthaceae
Aristida ramose	Purple Wire-grass	Poaceae
Asperula conferta	Common Woodruff	Rubiaceae
Asplenium flabellifolium	Necklace Fern	Aspleniaceae
Austrostipa bigeniculata	Tall Speargrass	Poaceae
Austrostipa densiflora	Brush-tailed Speargrass	Poaceae
Austrostipa scabra	Corkscrew Grass	Poaceae
Beyeria viscosa	Sticky Wallaby-bush	Euphorbiaceae
Boerhavia dominii	Tarvine	Nyctaginaceae
Bossiaea buxifolia	Box-leaved Bossiaea	Fabaceae
Bothriochloa macra	Red Grass	Poaceae
Brachychiton populneus	Kurrajong	Malvaceae
Brachyscome dentata	Lobe-seeded Daisy	Asteraceae
Brachyloma daphnoides	Daphne Heath	Ericaceae
Bulbine bulbosa	Bulbine Lily	Asphodelaceae
Bulbine glauca	Rock Lily	Asphodelaceae
Bursaria spinosa	Sweet Bursaria	Pittosporaceae
Callistemon sieberi	River Bottlebrush	Myrtaceae
Calotis lappulacea	Yellow Burr-daisy	Asteraceae
Calytrix tetragona	Common Fringe-myrtle	Myrtaceae
Carex appressa	Tall Sedge	Cyperaceae
Carex sp.	a sedge	Cyperaceae
Cassinia aculeata	Dogwood	Asteraceae
Cassinia quinquefaria	Sifton-bush	Asteraceae
Casuarina cunninghamiana	River Oak	Casuarinaceae
Cheilanthes distans	Bristly Cloak Fern	Pteridaceae
Cheilanthes sp.	Rock Fern	Pteridaceae
Chloris truncata	Windmill Grass	Poaceae
Chrysocephalum apiculatum	Golden Buttons	Asteraceae

Scientific name	Common name	Family
Clematis microphylla	Old-Man's-Beard	Ranunculaceae
Convolvulus erubescens	Australian Bindweed	Convolvulaceae
Crassula sieberiana	Australian Stonecrop	Crassulaceae
Cryptandra amara	Bitter Cryptandra	Rhamnaceae
Cryptandra propinqua	Star Cryptandra	Rhamnaceae
Cymbopogon refractus	Barbed-wire Grass	Poaceae
Cynodon dactylon	Couch	Poaceae
Cynoglossum australe	Austral Hound's-tongue	Boraginaceae
Cynoglossum suaveolens	Sweet Hound's-tongue	Boraginaceae
Desmodium varians	Variable Tick-trefoil	Fabaceae
Dianella longifolia	Smooth Flax-lily	Phormiaceae
Dianella revoluta	Black-anthered Flax-lily	Phormiaceae
Dichanthium sericeum	Queensland Bluegrass	Poaceae
Dichelachne sp.	a plumegrass	Poaceae
Dichopogon sp.	a chocolate-lily	Anthericaceae
Dillwynia sp.	a parrot-pea	Fabaceae
Dodonaea boroniifolia	Fern-leaved Hopbush	Sapindaceae
Dodonaea viscosa	Sticky Hopbush	Sapindaceae
Dysphania pumilio	Crumbweed	Chenopodiaceae
Einadia nutans	Nodding Saltbush	Chenopodiaceae
Elymus scaber	Common Wheatgrass	Poaceae
Enneapogon nigricans	Nine-awn Grass	Poaceae
Eragrostis brownii	Brown's Lovegrass	Poaceae
Erodium crinitum	Native Stork's-bill	Geranaceae
Eucalyptus camaldulensis	River Red Gum	Myrtaceae
Eucalyptus melliodora	Yellow Box	Myrtaceae
Galium gaudichaudii	Rough Bedstraw	Rubiaceae
Geranium sp.	a native geranium	Geranaceae
Glycine clandestina	Twining Glycine	Fabaceae
Glycine tabacina	Vanilla Glycine	Fabaceae
Gonocarpus tetragynus	Common Raspwort	Haloragaceae
Goodenia pinnatifida	Scrambled Eggs	Goodeniaceae
Hardenbergia violacea	False Sarsparilla	Fabaceae
Hydrocotyle laxiflora	Stinking Pennywort	Apiaceae
Indigofera adesmiifolia	Tick Indigo	Fabaceae
Juncus spp.	rush species	Juncaceae
Kunzea ericoides	Burgan	Myrtaceae
Lepidosperma laterale	Dryland Sword-sedge	Cyperaceae
Leptorrynchus squamatus	Scaly Buttons	Asteraceae
Leucopogon fletcheri	Fletcher's Beard-heath	Ericaceae
Lomandra filiformis	Wattle Mat-rush	Lomandraceae
Lomandra longifolia	Spiny-headed Mat-rush	Lomandraceae
Lomandra multiflora	Many-flowered Mat-rush	Lomandraceae
Melichrus urceolatus	Urn Heath	Ericaceae
Microlaena stipoides	Weeping Grass	Poaceae
Oxalis perennans	Grassland Wood-sorrel	Oxalidaceae
Pellaea falcata	Sickle Fern	Pteridaceae
Scientific name	**Common name**	**Family**

Persicaria prostrata	Creeping Knotweed	Polygonaceae
Phragmites australis	Common Reed	Typhaceae
Pimelea curviflora	Curved Riceflower	Thymelaeaceae
Plantago varia	Variable Plantain	Plantaginaceae
Pleurosorus rutifolius	Blanket Fern	Pteridaceae
Poa labillardierei	River Tussock	Poaceae
Poa sieberiana	Common Snowgrass	Poaceae
Pomaderris sp.	a pomaderris	Rhamnaceae
Portulaca oleracea	Pigweed Purslane	Portulacaceae
Rubus parvifolius	Native Raspberry	Rosaceae
Rumex brownii	Swamp Dock	Polygonaceae
Rumex dumosus	Wiry Dock	Polygonaceae
Rytidosperma carphoides	Short Wallaby-grass	Poaceae
Rytidosperma spp.	wallaby-grass species	Poaceae
Senecio quadridentatus	Hoary Fireweed	Asteraceae
Senecio sp.	a fireweed	Asteraceae
Sida corrugata	Corrugated Sida	Malvaceae
Solenogyne dominii	Smooth Solenogyne	Asteraceae
Solenogyne gunnii	Hairy Solenogyne	Asteraceae
Sorghum leiocladum	Native Sorghum	Poaceae
Sporobolus sp.	a rat's-tail grass	Poaceae
Stackhousia monogyna	Creamy Candles	Stackhousiaceae
Stellaria pungens	Prickly Starwort	Caryophyllaceae
Themeda australis	Kangaroo Grass	Poaceae
Tricoryne elatior	Yellow Rush-lily	Anthericaceae
Triptilodiscus pygmaeus	Austral Sunray	Asteraceae
Vittadinia cuneata	Fuzzy New Holland Daisy	Asteraceae
Vittadinia muelleri	New Holland Daisy	Asteraceae
Wahlenbergia sp.	native bluebell species	Campanulaceae
Westringia eremicola	Slender Westringia	Lamicaeae
Wurmbea dioica	Early Nancy	Colchicaceae

Exotic and non-local native species

Scientific name	**Common name**	**Family**
Acacia baileyana	Cootamundra Wattle	Fabaceae
Acer negundo	Box Elder	Aceraceae
Acetosella vulgaris	Sheep Sorrel	Polygonaceae
Aira spp.	hair grass species	Poaceae
Arctotheca calendula	Capeweed	Asteraceae
Avena spp.	wild oat species	Poaceae
Briza maxima	Quaking Grass	Poaceae
Bromus molliformis	Soft Brome	Poaceae
Bromus spp.	brome species	Poaceae
Capsella bursa-pastoris	Shepherd's-purse	Brassicaceae
Carthamus lanatus	Saffron Thistle	Asteraceae
Celtis australis	Nettle-tree	Ulmaceae

Centaurium erythraea	Pink Stars	Gentianaceae
Cerastium glomeratum	Mouse-eared Chickweed	Caryophyllaceae
Chamaecytisus palmensis	Tagastaste or Tree Lucerne	Fabaceae
Chondrilla juncea	Skeleton-weed	Asteraceae
Cirsium vulgare	Spear Thistle	Asteraceae
Conyza spp.	fleabane species	Asteraceae
Cotoneaster glaucophyllus	Cotoneaster	Rosaceae
Crataegus monogyna	English Hawthorn	Rosaceae
Dactylis glomerata	Cock's-foot	Poaceae
Echium plantagineum	Paterson's Curse	Boraginaceae
Echium vulgare	Viper's Bugloss	Boraginaceae
Eragrostis curvula	African Lovegrass	Poaceae
Erodium sp.	a stork's-bill	Geranaceae
Eschscholzia californica	Californian Poppy	Papaveraceae
Fumaria sp.	a fumitory	Fumariaceae
Galium aparine	Goose-grass	Rubiaceae
Grevillea rosmarinifolia	Rosemary Grevillea	Proteaceae
Grevillea spp. and hybrids	grevillea species and hybrids	Proteaceae
Hirschfeldia incana	Buchan-weed	Brassicaceae
Hypochaeris glabra	Smooth Cat's-ear	Asteraceae
Hypochaeris radicata	Cat's-ear	Asteraceae
Lactuca serriola	Wild Lettuce	Asteraceae
Narcissus sp.	Daffodil	Amaryllidaceae
Nassella trichotoma	Serrated Tussock	Poaceae
Onopordum acanthium	Scotch Thistle	Asteraceae
Opuntia sp.	a prickly pear	Cactaceae
Orobanche minor	Lesser Broomrape	Scrophulariaceae
Panicum effusum	Hairy Panic	Poaceae
Papaver aculeatum	Bristle Poppy	Papaveraceae
Papaver sp.	a poppy	Papaveraceae
Paspalum dilatatum	Paspalum	Poaceae
Petrorhagia nanteuilii	Proliferous Pink	Caryophyllaceae
Phalaris aquatica	Phalaris	Poaceae
Pinus pinea	Stone Pine	Pinaceae
Plantago lanceolata	Ribwort Plantain	Plantaginaceae
Poa bulbosa	Bulbous Poa	Poaceae
Prunus spp.	plum species	Rosaceae
Pyracantha sp.	a firethorn	Rosaceae
Romulea rosea	Onion-grass	Iridaceae
Rosa rubiginosa	Sweet Briar	Rosaceae
Rubus fruticosus	Blackberry	Rosaceae
Rumex crispus	Curly Dock	Polygonaceae
Salix spp.	willow species	Salicaceae
Salvia verbenaca	Wild Sage	Lamicaeae
Sanguisorba minor	Sheep's Burnett	Rosaceae
Schinus areira	Peppercorn- tree	Anacadiaceae

Sherardia arvensis	Field Madder	Rubiaceae
Sonchus sp.	a milk thistle	Asteraceae
Trifolium angustifolium	Narrow-leaved Clover	Fabaceae
Trifolium arvense	Hare's-foot Clover	Fabaceae
Trifolium campestre	Hop Clover	Fabaceae
Trifolium spp.	clovers and trefoils	Fabaceae
Ulex europaeus	European Gorse	Fabaceae
Verbascum thapsus	Great Mullein	Scrophulariaceae
Verbascum virgatum	Twiggy Mullein	Scrophulariaceae
Vicia spp.	vetch species	Fabaceae
Viola odorata	Sweet Violet	Violaceae
Vulpia spp.	a rat's-tail fescue	Poaceae
Xanthium spinosum	Bathurst-burr	Asteraceae

- Appendix 2. A complete list of fauna species recorded at Yass Gorge.

A detailed fauna survey has not been conducted at Yass Gorge. Full fauna surveys for mammals, birds, reptiles and selected invertebrates are recommended.

The following table shows species known to occur and those recorded on the NSW Bionet Atlas of NSW Wildlife. The Atlas records are of those species recorded within a ten kilometer radius of Yass Gorge (NSW Government, 2016).

Status refers to whether the species is listed as threatened under NSW (Threatened Species Conservation Act, 1995, TSC Act) or Commonwealth (Environment Protection and Biodiversity Conservation ACT, 1999, EPBC Act) legislation.

Scientific name	**Common name**	**Family**	**Status**	**Exotic (*)**
Acanthiza chrysorrhoa	Brown Thornbill	Acanthizidae		
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	Acanthizidae		
Accipiter fasciatus	Brown Goshawk	Accipitridae		
Alisterus scapularis	Australian King-Parrot	Psittacidae		
Anas castanea	Chestnut Teal	Anatidae		
Anas superciliosa	Pacific Black Duck	Anatidae		
Aquila audax	Wedge-tailed Eagle	Accipitridae		
Cacatua galerita	Sulphur-crested Cockatoo	Cacatuidae		
Carduelis carduelis	European Goldfinch	Fringillidae		*
Chenonetta jubata	Australian Wood Duck	Anatidae		
Christinus marmoratus	Marbled Gecko	Gekkonidae		
Colluricincla harmonica	Grey Shrike-thrush	Pachycephalidae		
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Campephagidae		
Corcorax melanorhamphos	White-winged Chough	Corcoracidae		
Corvus coronoides	Australian Raven	Corvidae		

Coturnix pectoralis	Stubble Quail	Phasianidae		
Cracticus tibicen	Australian Magpie	Artamidae		
Crinia parinsignifera	Eastern Sign-bearing Froglet	Myobatrachidae		
Crinia signifera	Common Eastern Froglet	Myobatrachidae		
Dacelo novaeguineae	Laughing Kookaburra	Alcedinidae		
Delma impar	Striped Legless Lizard	Pygopodidae	Vulnerable (TSC Act, EPBC Act)	
Delma inornata	Patternless Delma	Pygopodidae		
Dicaeum hirundinaceum	Mistletoebird	Nectariniidae		
Egernia cunninghami	Cunningham's Skink	Scincidae		
Egretta novaehollandiae	White-faced Heron	Ardeidae		
Elanus axillaris	Black-shouldered Kite	Accipitridae		
Eolophus roseicapillus	Galah	Cacatuidae		
Eurostopodus mystacalis	White-throated Nightjar	Caprimulgidae		
Falco berigora	Brown Falcon	Falconidae		
Falco cenchroides	Nankeen Kestrel	Falconidae		
Falco peregrinus	Peregrine Falcon	Falconidae		
Felis catus	Feral Cat	Felidae		*
Gallinula tenebrosa	Dusky Moorhen	Rallidae		
Gambusia holbrooki	Mosquito Fish	Poeciliidae		*
Grallina cyanoleuca	Magpie-lark	Monarchidae		
Haliaeetus leucogaster	White-bellied Sea-Eagle	Accipitridae		
Hieraaetus morphnoides	Little Eagle	Accipitridae	Vulnerable (TSC Act)	
Hirundo neoxena	Welcome Swallow	Hirundinidae		
Lepus capensis	Brown Hare	Leporidae		*
Limnodynastes dumerilii	Eastern Banjo Frog	Myobatrachidae		
Limnodynastes peronii	Brown-striped Frog	Myobatrachidae		
Limnodynastes tasmaniensis	Spotted Grass Frog	Myobatrachidae		
Macropus giganteus	Eastern Grey Kangaroo	Macropodidae		
Macropus robustus	Wallaroo	Macropodidae		
Malurus cyaneus	Superb Fairy-wren	Maluridae		
Manorina melanocephala	Noisy Miner	Meliphagidae		
Melanodryas cucullata	Hooded Robin	Petroicidae	Vulnerable (TSC Act)	
Morethia boulengeri	South-eastern Morethia Skink	Scincidae		
Neochmia temporalis	Red-browed Finch	Estrildidae		
Ocyphaps lophotes	Crested Pigeon	Columbidae		
Ornithorhynchus anatinus	Platypus	Ornithorhynchidae		
Oryctolagus cuniculus	Rabbit	Leporidae		*
Pardalotus punctatus	Spotted Pardalote	Pardalotidae		
Pardalotus striatus	Striated Pardalote	Pardalotidae		
Passer domesticus	House Sparrow	Passeridae		*
Pelecanus conspicillatus	Australian Pelican	Pelecanidae		
Petroica boodang	Scarlet Robin	Petroicidae	Vulnerable (TSC Act)	
Petroica goodenovii	Red-capped Robin	Petroicidae		
Phalacrocorax varius	Pied Cormorant	Phalacrocoracidae		

Phaps chalcoptera	Common Bronzewing	Columbidae		
Platycercus elegans	Crimson Rosella	Psittacidae		
Platycercus eximius	Eastern Rosella	Psittacidae		
Polytelis swainsonii	Superb Parrot	Psittacidae	Vulnerable (TSC Act), vulnerable (EPBC Act)	
Psephotus haematonotus	Red-rumped Parrot	Psittacidae		
Pseudocheirus peregrinus	Common Ringtail Possum	Pseudocheiridae		
Ptilotula penicillatus	White-plumed Honeyeater	Meliphagidae		
Rhipidura albiscapa	Grey Fantail	Rhipiduridae		
Rhipidura leucophrys	Willie Wagtail	Rhipiduridae		
Sericornis frontalis	White-browed Scrubwren	Acanthizidae		
Smicrornis brevirostris	Weebill	Acanthizidae		
Stagonopleura guttata	Diamond Firetail	Estrildidae		
Strepera graculina	Pied Currawong	Artamidae		
Sturnus tristis	Common Myna	Sturnidae		*
Sturnus vulgaris	Common Starling	Sturnidae		*
Synemon plana	Golden Sun Moth	Castniidae	Endangered (TSC Act); critically endangered (EPBC Act)	
Tachybaptus novaehollandiae	Australasian Grebe	Podicipedidae		
Tachyglossus aculeatus	Short-beaked Echidna	Tachyglossidae		
Taeniopygia bichenovii	Double-barred Finch	Estrididae		
Taeniopygia guttata	Zebra Finch	Estrildidae		
Threskiornis molucca	Australian White Ibis	Threskiornithidae		
Trichosurus vulpecula	Common Brushtail Possum	Phalangeridae		
Vespadelus vulturnus	Little Forest Bat	Vespertilionidae		
Vombatus ursinus	Common Wombat	Vombatidae		
Vulpes vulpes	European Fox	Canidae		*
Wallabia bicolor	Swamp Wallaby	Macropodidae		
Zosterops lateralis	Silvereye	Timaliidae		

- Appendix 3. Flora species list and the FVS and WVS of monitoring plots at Yass Gorge

GDA Zone 55 northings and eastings location are shown for each plot.

Plot 1 – Rocky, upslope site

Site name & location: YASS GORGE ROCKY SLOPE SITE	Date of survey: 1 September 2015
Plot information	
Datum and Zone	**GDA Zone 55**
AMG Easting	**675219**
AMG Northing	**6143385**

Cover / abundance scores	
1	< 5 % cover and solitary (<4 individuals)
2	< 5 % cover and few (4-15 individuals)
3	< 5 % cover and numerous (>15 individuals)
4	5 % - <25 % cover
5	25 % - <50 % cover
6	50 % - <75 % cover
7	75 or greater % cover

Information for assessment purposes only	
Litter (cover %)	**data not collected**
Bare ground (% cover)	**data not collected**
Cryptogam (% cover)	**data not collected**

Species code	C/A code	Species	Species' Regional Significance Rating
acac rubi	1	Acacia rubida	**B**
acae ovin	2	Acaena ovina	**C**
anag arve	1	Anagallis arvensis	**Z**
aspe conf		Asperula conferta	**B**
aust scab	2	Austrostipa scabra	**C**
briz maxi	1	Briza maxima	**Z**
bulb glau	4	Bulbine glauca	**A**
calo lapp	1	Calotis lappulacea	**A**
care inve	3	Carex inversa	**C**
cass arcu	2	Cassinia arcuata	**C**
chei sieb	2	Cheilanthes sieberi	**A**
cirs vulg	2	Cirsium vulgare	**Y**
cony bona	2	Conyza bonariensis	**Y**
cotoneaster	1	Cotoneaster sp.	**Y**
cras sieb	2	Crassula sieberiana	**C**
dact glom	2	Dactylis glomerata	**Y**
desm vari	1	Desmodium varians	**A**
dian long	3	Dianella longifolia	**A**
echi plan	2	Echium plantagineum	**Y**
enne nigr	1	Enneapogon nigricans	**C**
gono tetr	2	Gonocarpus tetragynus	**A**
hydr laxi	1	Hydrocotyle laxiflora	**B**
hype perf	1	Hypericum perforatum	**Y**
hypo radi	3	Hypochaeris radicata	**Y**
lept squa	1	Leptorhynchos squamatus	**A**
loma fili	2	Lomandra filiformis	**A**
loma long	3	Lomandra longifolia	**A**
loma mult	2	Lomandra multiflora	**A**

	Trees with hollows	**data not collected**		micr stip	3	Microlaena stipoides	**C**	
	Woody debris	**data not collected**		oxal pere	2	Oxalis perennans	**C**	
	Woody regeneration	**data not collected**		papa somn	1	Papaver somniferum	**Z**	
	Woody regeneration	**data not collected**		pime curv	1	Pimelea curviflora	**A**	
	Rocks – surface	**data not collected**		plan lanc	2	Plantago lanceolata	**Y**	
	Rocks - outcropping	**data not collected**		plan vari	3	Plantago varia	**A**	
	Note 1: The above data are consistent with the NSW Vegetation Information Standards			poa sieb	4	Poa sieberiana	**A**	
				pyracantha	1	Pyracantha sp.	**Y**	
	Note 2: The above values do not contribute to the site's Floristic Value Score			rume brow	1	Rumex brownii	**C**	
				salv verb	2	Salvia verbenaca	**Y**	
	Note 3: In the list at right, species marked A, B & C are native; species X, Y, Z are exotic			sene quad	2	Senecio quadridentatus	**C**	
				sole domi	2	Solenogyne dominii	**C**	
				stac mono	3	Stackhousia monogyna	**A**	
				tara offi	2	Taraxacum officinale	**Y**	
				them aust	6	Themeda australis	**A**	
				trif arve	3	Trifolium arvense	**Z**	
				trif repe	2	Trifolium repens	**Y**	
				vicia	2	Vicia sp.	**Z**	
				wahlenbergia	2	Wahlenbergia sp.	**B**	
	Floristic Value Score	**36.11**				**Native Plant Species Profile of Plot**		
						Number of level A species	**15**	
	Number of indicators	**15**				**Number of level B species**	**4**	
	The yellow box above returns the number of indicators (Significance Ratings A) for this plot. This needs to be referred to only in relation assessment of the EPBC listing for Natural Temperate Grassland.					**Number level C species**	**11**	
						Total number of native species	**30**	
	Number of non-grass species	**20**						

	The yellow box above returns the number of non-grass species for this plot. This needs to be referred to only in relation assessment of the EPBC listing for Natural Temperate Grassland.									
						Number of exotic species	**17**			
						Number of significant weed species (level X species)	**0**			
						Weed value score	**5.92**			

Plot 2 – Low, flatter site

	Site name & location: YASS GORGE LOW FLATTER SITE		**Date of survey: 1 September 2015**		**Species code**	**C/A code**	**Species**	**Species' Regional Significance Rating**		
					aust bige	2	Austrostipa bigeniculata	**C**		
	Plot information				aust dens	2	Austrostipa densiflora	**C**		
	Datum and Zone	**GDA Zone 55**			aust scab	2	Austrostipa scabra	**C**		
	AMG Easting	**675219**			bulb glau	1	Bulbine glauca	**A**		
	AMG Northing	**6143385**			care inve	1	Carex inversa	**C**		
					cheilanthes	2	Cheilanthes sp.	**A**		
	Cover / abundance scores for data entry				conyza	1	Conyza sp.	**Y**		
1	< 5 % cover and solitary (<4 individuals)				cotoneaster	1	Cotoneaster sp.	**Y**		
2	< 5 % cover and few (4-15 individuals)				cryp amar	2	Cryptandra amara	**A**		
3	< 5 % cover and numerous (>15 individuals)				cyno dact	1	Cynodon dactylon	**C**		
4	5 % - <25 % cover				dian long	1	Dianella longifolia	**A**		
5	25 % - <50 % cover				echi plan	2	Echium plantagineum	**Y**		
6	50 % - <75 % cover				gali apar	3	Galium aparine	**Z**		

7	75 or greater % cover			gono tetr	1	Gonocarpus tetragynus	**A**			
				halo hete	1	Haloragis heterophylla	**A**			
				hypo radi	4	Hypochaeris radicata	**Y**			
				lept squa	1	Leptorhynchos squamatus	**A**			
				ligustrum	1	Ligustrum sp.	**Y**			
				loma fili	3	Lomandra filiformis	**A**			
				nass tric	1	Nassella trichotoma	**X**			
				oxal pere	2	Oxalis perennans	**C**			
				petr nant	1	Petrorhagia nanteuilii	**Z**			
				plan vari	2	Plantago varia	**A**			
				poa sieb	3	Poa sieberiana	**A**			
	Information for assessment purposes only			rosa rubi	1	Rosa rubiginosa	**Y**			
	Litter (cover %)	**data not collected**		rume brow	1	Rumex brownii	**C**			
	Bare ground (% cover)	**data not collected**		ryti eria	1	Rytidosperma erianthum	**C**			
	Cryptogam (% cover)	**data not collected**		salv verb	1	Salvia verbenaca	**Y**			
	Trees with hollows	**data not collected**		sene quad	1	Senecio quadridentatus	**C**			
	Woody debris	**data not collected**		sole domi	2	Solenogyne dominii	**C**			
	Woody regeneration	**data not collected**		them aust	6	Themeda australis	**A**			
	Woody regeneration	**data not collected**		trif arve	3	Trifolium arvense	**Z**			
	Rocks – surface	**data not collected**		trif repe	1	Trifolium repens	**Y**			
	Rocks - outcropping	**data not collected**		wahlenbergia	2	Wahlenbergia sp.	**B**			
	Note 1: The above data are consistent with the NSW Vegetation Information Standards									
	Note 2: The above values do not contribute to the site's Floristic Value Score									
	Note 3: In the list at right, species marked A, B & C are native; species X, Y, Z are exotic									

Floristic Value Score	21.03	
Number of indicators	11	
The yellow box above returns the number of indicators (Significance Ratings A) for this plot. This needs to be referred to only in relation assessment of the EPBC listing for Natural Temperate Grassland.		
Number of non-grass species	14	
The yellow box above returns the number of non-grass species for this plot. This needs to be referred to only in relation assessment of the EPBC listing for Natural Temperate Grassland.		

Native Plant Species Profile of Plot	
Number of level A species	11
Number of level B species	1
Number level C species	10
Total number of native species	22
Number of exotic species	12
Number of significant weed species (level X species)	1
Weed value score	5.21

- Appendix 4. A recommended plant list for NTG at Yass Gorge

The following list was developed to encourage the planting of locally-indigenous species suited for the various zones within Yass Gorge. Species should preferably be sourced and propagated from local provenance seed, though genetic mixing of material from other areas within the region may be beneficial for long-term survival.

When planning to remove exotic and non-local woody species, it is important to replace lost habitat before removal.

Riparian Zone

Species	**Common name**	**Layer**
Casuarina cunninghamiana	River Oak	Upper
Eucalyptus camaldulensis	River Red Gum	Upper
Acacia dealbata	Silver Wattle	Mid
Acacia rubida	Red-stemmed Wattle	Mid
Callistemon sieberi	River Bottlebrush	Mid
Calytrix tetragona	Common Fringe-myrtle	Mid
Kunzea ericoides	Burgan	Mid
Carex appressa	Tall Sedge	Lower
Dianella longifolia	Smooth Flax-lily	Lower
Dianella revoluta	Black-anthered Flax-lily	Lower
Juncus spp.	rush species	Lower
Lomandra longifolia	Spiny-headed Mat-rush	Lower
Lomandra multiflora	Many-flowered Mat-rush	Lower
Lomatia myricoides	River Lomatia	Lower
Poa labillardierei	River Tussock	Lower
Rubus parvifolius	Native Raspberry	Lower

Shrubland Zones

Species	**Common name**	**Layer**
Acacia dawsonii	Poverty Wattle	Mid
Acacia dealbata	Silver Wattle	Mid
Acacia mearnsii	Green Wattle	Mid
Acacia rubida	Red-stemmed Wattle	Mid
Bursaria spinosa	Sweet Bursaria	Mid
Indigofera adesmiifolia	Tick Indigo	Mid
Hardenbergia violacea	False Sarsparilla	Lower
Lomandra filiformis	Wattle Mat-rush	Lower
Lomandra longifolia	Spiny-headed Mat-rush	Lower
Lomandra multiflora	Many-flowered Mat-rush	Lower
Rubus parvifolius	Native Raspberry	Lower
Westringia eremicola	Slender Westringia *	Lower

*It is particularly important to re-establish this species as it was previously recorded at Yass Gorge but now appears to be extinct at the site.

Natural Temperate Grassland Zone

Species	Common name	Layer
Ajuga australis	Austral Bugle	Lower
Austrostipa bigeniculata	Tall Speargrass	Lower
Bothriochloa macra	Red Grass	Lower
Bulbine bulbosa	Bulbine Lily	Lower
Bulbine glauca	Rock Lily	Lower
Calotis lappulacea	Yellow Burr-daisy	Lower
Chrysocephalum apiculatum	Golden Buttons	Lower
Hardenbergia violacea	False Sarsparilla *	Lower
Lomandra filiformis	Wattle Mat-rush	Lower
Lomandra longifolia	Spiny-headed Mat-rush	Lower
Lomandra multiflora	Many-flowered Mat-rush	Lower
Pimelea curviflora	Curved Riceflower	Lower
Plantago varia	Variable Plantain	Lower
Poa sieberiana	Common Snowgrass	Lower
Rytidosperma carphoides	Short Wallaby-grass	Lower
Rytidosperma spp.	wallaby-grass species	Lower
Stackhousia monogyna	Creamy Candles	Lower
Themeda australis	Kangaroo Grass	Lower
Tricoryne elatior	Yellow Rush-lily	Lower
Wurmbea dioica	Early Nancy	Lower
Bossiaea buxifolia	Box-leaved Bossiaea *	Mid
Brachyloma daphnoides	Daphne Heath *	Mid
Bursaria spinosa	Sweet Bursaria *	Mid
Cassinia aculeata	Dogwood *	Mid
Cassinia quinquefaria	Sifton-bush *	Mid
Cryptandra amara	Bitter Cryptandra *	Mid
Cryptandra propinqua	Star Cryptandra *	Mid
Dillwynia sp.	a parrot-pea *	Mid
Dodonaea boroniifolia	Fern-leaved Hopbush *	Mid
Dodonaea viscosa	Sticky Hopbush *	Mid
Leucopogon fletcheri	Fletcher's Beard-heath *	Mid
Melichrus urceolatus	Urn Heath *	Mid
Rubus parvifolius	Native Raspberry *	Mid
Acacia dealbata	Silver Wattle *	Upper
Acacia rubida	Red-stemmed Wattle *	Upper

*Note - these shrubs and trees should only be planted sparsely within the NTG Zone

- Appendix 5: Pest Management Plan – Yass Gorge

The following document was provided by South East Local Land Services (Yass) and is currently in prep. The document will be updated to include management of rabbits and other feral animal species.

Yass River Gorge Fox Management Plan

Aim

- To reduce fox impacts on native species and domestic livestock in the river gorge and surrounding properties.

Objectives

- reduce fox populations, using best practice control techniques that are humane, effective, and efficient and provide value for effort.
- coordinate all stakeholders to achieve an effective long term reduction in fox populations.
- increase biodiversity within the river gorge, as well as reducing incidents of livestock predation by foxes.
- increase community awareness of fox impacts on biodiversity within the gorge.
- build capacity in the local community, through training and education programs in best practice pest animal control.

Management Actions

- conduct cage trapping of foxes within the river gorge.
- conduct shooting operations, via skilled professional pest animal controllers.
- coordinate surrounding rural landholders to use 1080 baits where possible.
- investigate whether Canid Pest Ejectors could be used in the river gorge.
- deliver training to volunteers in Vertebrate Pesticide Usage, Canid Pest Ejector usage and predator trapping.
- conduct field days and develop media releases.

Stakeholders

- Yass Valley Council
- South East LLS
- Yass Landcare
- Crown Lands
- Green Army
- Friends of Yass Gorge
- Private Landholders

Stakeholder Roles

- **Friends of Yass Gorge/ Yass Landcare -** coordination of management plan and funding applications.
- **South East LLS -** provision of technical advice, assist with the development of the management plan**,** coordination of 1080 baiting programs, conduct risk assessments for any 1080 usage, deliver training in Vertebrate Pesticide Usage and Canid Pest Ejectors, assist with the development of media release and field days.

More information is available by contacting Ben Serafin at South East Local Land Services Yass:
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