

**INQUIRY INTO RATIONALE FOR, AND IMPACTS OF,  
NEW DAMS AND OTHER WATER INFRASTRUCTURE IN  
NSW**

**Organisation:** Hovells Creek Landcare Group

**Date Received:** 22 September 2020

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Wyangala, NSW 2808

September 2020

The Chair  
PORTFOLIO COMMITTEE NO. 7 – PLANNING AND ENVIRONMENT  
Legislative Council, NSW Parliament  
Sydney NSW

Honourable Chair,

**Wyangala Dam on the Lachlan River, NSW**

This response to the NSW Government proposal to raise the height of the Wyangala Dam wall by some 10 metres is submitted on behalf of the Hovells Creek Landcare Group Incorporated and its 94 landholder members.

The Hovells Creek Landcare Group has been actively improving land and environmental management and production agriculture in the area immediately to the south west and abutting Wyangala Dam since 1995 <https://hovellscreeklandcare.org.au/>. In 2019 Hovells Creek Landcare Group was a finalist for two awards at the State Government's Green Globe Awards. Our members include landholders whose properties will be flooded by the dam redevelopment proposal, members upstream of the dam, adjacent the Lachlan River immediately downstream of the dam wall and in the Hovells Creek / Boorowa River catchments which enter the Lachlan immediately below the dam. Our members include key landholders within the area designated to be directly or indirectly impacted as designated in Figure 2.2 of the proposal Scoping Report.

In our role we collaborate with the respective divisions of the NSW Department of Planning, Industry and the Environment, the NSW Biodiversity Conservation Trust, the CSIRO, Sustainable Farms at the Australian National University, Charles Sturt University, University of Melbourne and our Landcare neighbours up and down the river. One of our current projects addressing erosion in the Hovells Creek catchment, and resultant silt loads in the Lachlan River system, is funded by the NSW Environment Trust. Another addressing erosion along the Lachlan immediately below the dam is funded through Central Tablelands Local Land Services by the Commonwealth's National Landcare Program.

In compiling this response, we have liaised with our Landcare members, their landholder neighbours, Upper Lachlan Landcare Inc (representing catchment landholders to our east and upstream of the dam), Lachlandcare Inc (representing Landcare Groups throughout the Lachlan catchment and especially downstream), and local branches of NSW Farmers.

To date we have limited information on the proposal by NSW Water on behalf of NSW Government. Even our Landcare members who are directly impacted by the proposal have had limited contact. Others within the designated 10 kilometre environmental impact study area have not been contacted. Hovells Creek Landcare has not been consulted. The information we have been able to access through Water NSW or online is limited to preliminary 'concepts' or preliminary environmental impact assessments and superficial assessments of the 'need' for extra water in the

Lachlan basin. To Hovells Creek Landcare the proposal raises more questions than it answers, including:

(a) the need for the project, including the historical allocation of water and consideration of other options for ensuring water security in inland regions

### **1) Is the extension of the Dam a good investment for NSW – does it pass the pub test?**

This is the key question being asked by the local community, and on which there is scant information from Water NSW.

Wyangala Dam and the Lachlan regulated river system supplies water for irrigation, stock and domestic, town water supply and industrial purposes in the valley. NSW Water argue that the Lachlan Valley has some of the poorest levels of water security and reliability in NSW in terms of regulated irrigation and urban water supply. They say the region was severely impacted by the Millennium Drought and is equally affected by the recent drought (ref Wyangala Dam – Wall Raising Project – Scoping Report). The CSSI declaration, under the NSW Water Supply (Critical Needs) Act 2019 (WSCN Act) states that the dam is critical to NSW for environmental, economic or social reasons.

However, the original dam and the 1969 extension (the current dam) were constructed to alleviate downstream flooding, and to provide reliable supplies of irrigation and urban water. Throughout the recent drought years local downstream urban communities have not been short of water, though water for irrigation has been limited, particularly for the general allocation licensees. Monthly maximum storage data provided to us from Water NSW shows that since July 1969, the dam was 100% or greater in 58 months. That is 9.3% of all that time. However, in only 4 months since January 2000 has the dam reached 100%. This data is not easy to find online, and Water NSW will have better information about the amount of inflows and released water during those periods of 100% storage. For example, during the floods of mid-2016 the total release in ML was 100%, while the dam was kept at 103.5%. Nevertheless, the inflows to the dam in the last 20 years have dramatically dropped, drawing into question the logic behind raising the dam wall, when compared to the logic of improving water use efficiency.

The catchment for Wyangala Dam is limited to 8,300 sq. kilometres and is not getting any larger. However, it is becoming increasingly urbanised, with many more, small rural lifestyle holdings and their concomitant needs for water harvesting from their small parts of the catchment.

The scoping report recognises that ‘natural rainfall variability in NSW is large and the State has a history of drought and flooding events. The most severe drought events include the Federation Drought (1896 to 1902), 1979-1983 and the more recent Millennium Drought (2001-2009) and most recently 2017-2019. Severe flooding events across NSW followed during 2010, 2011 and 2012. In the future, ‘longer, drier periods and less frequent but more intense rainfall events are expected’. Climate change modelling by the ANU suggests the Wyangala catchment might well be drier in the future than currently (Professor Mark Horton. HCLG presentation, August 2019). The data provided to us by Water NSW also indicates that 62% of all months when the dam reached 100% storage have occurred in spring. The predictions for our changing climate indicate that winter and spring rain will decrease, which is likely to further reduce the possibility to make full use of the new dam wall.

Given the history of Wyangala Dam, i.e. it is rarely filled to capacity, the economic modelling of the proposal (as implied in paras 3.2.1 of the Scoping Report) to raise the dam wall at a cost of \$650

million to provide an additional 650 gigalitres (GL) storage, to the existing 1,218 GL of capacity, needs public exposure.

Does the Dam proposal pass the pub test? Not currently.

(b) the environmental, cultural, social and economic impacts of the projects, including their impact on any national or state water agreements, or international environmental obligations,

## **2 ) The impact of increased heavy traffic on local roads, especially during dam reconstruction**

The close second issue of concern to local landholder ratepayers and Landcare members, after the impact of flooding on agricultural and environmental assets, is the impact of heavy construction traffic, and longer-term recreational traffic on local roads, and the local community generally (safety and noise).

Local access roads to Wyangala, e.g. Frogmore, Darbys Falls, Trout Farm, Tarrant's Gap and the Reg Hailstone Way are in only fair condition at best. The Tarrant's Gap road is gravel and treacherous, certainly not suited to construction traffic. Frogmore Road, which is the primary access route to the dam from the south is being progressively widened and resealed by Hilltops Council but is not rated for heavy or long load traffic. Nor is it being reconstructed for heavy construction traffic. It requires significant maintenance after each heavy rainfall event. It is a major access road to the dam for recreational users and cruising motorbike riders.

We note that the current scoping study does not address road access to the construction site, the suitability of local roads for heavy construction traffic, the impact of road-widening on old, established roadside trees, nor road safety or noise impact on local residents, i.e. the operating environment. It needs to do so.

## **3) Flooding and consequent loss of existing conservation efforts and habitat**

This issue is of significant concern to local residents, especially the potential loss of huge river red gums some of which must be centuries old and with hollows which are home to many native birds and animals. Bird surveys regularly demonstrate more than 120 species of bird inhabit the river region, including migratory birds and endangered and declining species.

It is the number one concern to the Hovells Creek Landcare Group who have invested significant time, energy and financial resources over the past twenty five years into redressing habitat decline for Australian native species, and in rehabilitating the local native landscape consistent with sustainable farming best practice.

The primary focus of HCLG work in recent years has been on the importance of the Wyangala / Hovells Creek region as the interface between the east- west Kanangra-Boyd to Wyangala flyway with the north – south inland flyway for migratory birds (referenced below). The area is also significant for many less mobile, primarily ground dwelling species including frogs and lizards, and for local iconic species including the endangered Superb Parrot.

With financial assistance through the NSW Environment Trust, the NSW Saving our Species program, Local Land Services, OEH and the National Landcare Program, HCLG members have re-established some 42 kilometres of habitat corridors, stepping-stone cluster plantings and protected areas of remnant vegetation on their properties. This work is on-going.

Our HCLG efforts are supported by the biennial surveys of the Cowra Woodland Birds Group (Appendix 1) which have four long term (25 years) survey sites within the region. The group also supports the reptile surveys on HCLG member properties by the ANU Sustainable Farms (Appendix 2). The Cowra region also appears to be a stronghold for Pink-tailed Worm-lizard, which is threatened at both the state and national level. The population at Wyangala dam is a key population in this area and are clearly threatened by increased water storage capacity.

#### **4) Unaddressed erosion in the catchment leading to siltation of the dam and Lachlan river System**

Soil and gully erosion in the upper Lachlan catchment, including the river and creek systems flowing into the Lachlan below Wyangala, has a long history going back as far as the earliest days of European settlement and a NSW legislated and enforced requirement that settlers clear and 'develop' the landholdings they occupied. Over clearing of land for fencing, housing, cropping and livestock production was exacerbated by the rabbit plagues of the 1900 to 1950 period, the accompanying 'drought' every summer and the following high summer storm rainfall events.

However, even to the casual observer erosion continues, gullies are getting longer, wider and deeper and our streams continue to carry excessive silt loads into Wyangala Dam and the broader Lachlan River system.

The need to address soil erosion in the Lachlan catchment has been well documented in the respective strategic plans of the former Lachlan Catchment Management Authority, the current South East Local Land Services and within local Landcare strategic studies and strategic plans (as referenced below), however with scant coordinated effort to address the problem until the recent (2019-20) initiatives by Hovells Creek Landcare with funding from the NSW Environment Trust and CT LLS. Many local landholders have also undertaken work on their own behalf with advice from the NSW Soil Conservation Service or the former NSW Department of Land and Water Conservation.

A 2018 Study by NSW Fisheries for the Central Tablelands Local Land Services identified a 150 kilometre long sand slug in the Lachlan River between Wyangala and Forbes (reference below), i.e. downstream from Wyangala Dam and the Hovells Creek - Lachlan River confluence, which has filled riverine waterholes and is impacting on every fish habitat in this part of the river.

The impact of reduced flooding on scouring silt out from the river onto adjacent floodplains or into downstream swamps is not addressed in the scoping report. The reduced flood scouring also means silt from the smaller Lachlan tributaries, i.e. the Boorowa River, Hovells Ck, Milburn Ck and the Belubula River also remains in the riverbed impacting on stream ecology and downstream water quality. This proposed project will further disconnect river and floodplain from dam wall to Great Cumbung, which is already an issue. Many wetland systems are entirely dependent on flooding and will be directly impacted. Major bird breeding events will be critically impacted, for example.

If Water NSW is responsible, not only for Wyangala Dam but also the broader Lachlan regulated river system supplying water for irrigation, stock and domestic, town water supply and industrial purposes

in the valley (ref the Scoping Study), then the environmental health of the greater catchment and the river channel itself should be of concern and addressed in this proposal.

HCLG has been advised that the removal of silt from river water is a significant component of the cost of water treatment for the Cowra urban water supply.

Management of the Lachlan river system by NSW Water seems to Landcare observers, to be in stark contrast to the management of the Sydney catchments and their support for erosion control and land management by Sydney Water. To the casual observer the Lachlan River seems to be treated as a mere drain, or convenient channel to deliver water from Wyangala Dam via the river to downstream fee-paying irrigators and urban users.

Best practice in riparian waterway management and rehabilitation is referenced in the recent Natural Resources Commission report for the NSW Environmental Trust and includes:

- That projects too often address the symptoms of a problem rather than the cause;
- Remedial actions are not always implemented in the right combinations (e.g. channel rehabilitation plus riparian vegetation planting) or at locations that would optimise benefits
- Decision-making is commonly ad hoc and planned at too local a scale
- Failure to consider drivers of problems at a scale adequate to capture the ecological processes involved, and
- lack of consideration of socio-economic aspects

**5) Discharge of cold water, and silt, from the lower depths of the dam impacting of the downstream ecology and river health;**

This has been an issue for local downstream residents for years, and seemingly not addressed by NSW Water. Water discharges from the current dam is muddy and cold. NSW Fisheries has advised in talks to HCLG members that this severely constrains the window for successful reproduction for the native fish and other aquatic species in the Lachlan River system below the dam. The river water needs to be warm for breeding, not cold. The water released from Wyangala is too cold and reduces the breeding window to just a few weeks, instead of several months.

This issue is addressed in passing but not in detail in the proposal scoping studies.

**6) Loss of natural flooding of downstream swamps and natural wetlands – impact on habitat for rare / endangered species and existing land use enterprises**

The current focus of the Wyangala Dam proposal is on raising the dam wall, the increased water holding capacity to provide water for downstream irrigators, and to a lesser extent urban residents, i.e. the economic benefits for inland NSW, but this is only a mere couple of pieces within a more complex ecological and environmental jigsaw, and the big picture is not addressed in the current scoping report for the proposal.

In this context, Hovells Creek Landcare references the development of the more comprehensive Lachlan Catchment Action Plan (2013-23) and its background appendices, referenced below, during

which landholders from the length and breadth of the catchment met together with technical advisors to address, and respect, the need for collaboration between different types of land managers, both public and private, within the whole of the river system for the ultimate benefit of a connected NSW community.

HCLG has empathy with the concerns of landholders in the lower catchment and the submission by the Inland Rivers consortium and the Lachlan Floodplain and Wetlands Group on the dam proposal. Avian species common to the lower Lachlan wetlands are regular visitors to local farmlands.

Furthermore, recharge of downstream groundwater systems will be impacted, which is expected to lead to issues for Groundwater Dependent Ecosystems, consumptive users including irrigators and critical needs, such as town water supplies.

The current environmental issues of the river system are a serious threat to the system and its ecosystems. The Murray Darling Basin Authority refers to the Sustainable Rivers Audit 2, which reports that the overall ecosystem health of the Lachlan River Valley was very poor. Drought severely affects species abundance and diversity of fish, with the health of the fish community rated extremely poor. The macroinvertebrate community was rated as moderate condition throughout the valley. Riverine vegetation was rated as poor condition in the valley overall; however, condition was good in the lowlands zone but very poor in the slopes, upland and the montane (lower mountain) zones. The physical form of the river was rated good but there was widespread channel straightening and enlargement, in the slopes zone in particular. Sediment loads have also increased since European settlement. Flow seasonality and variability was rated moderate in the valley overall, but poor in the lowland zone where flows were impacted by seasonality and extraction of supply for irrigation.

**7) Uncontrolled weeds, especially blackberries and serrated tussock in the dam surrounds, impacting on surrounding properties;**

The control of weeds around the dam is a significant concern to adjoining landholders. Weed seeds know no boundaries and are readily carried by wind, in water, on animals and by vehicles accessing the dam surrounds. The biosecurity threat posed by the dam workforce and construction equipment is of concern to Landcare and local landholders.

The current dam surrounds are notorious for rampant blackberries and Serrated Tussock, both problem weeds in the Hilltops, Cowra and Upper Lachlan Council areas.

Water NSW has not been a good neighbour - weed control is a tenure neutral responsibility under NSW legislation. Water NSW's responsibility for control of weeds on lands and riverine systems under their control is not addressed in the Scoping Report.

Weeds are a significant concern to most private landholders. Hovells Creek Landcare has been collaborating with trials on biological control of blackberries and has a current program, with Commonwealth funding, to support local landholders control Serrated Tussock.

**8) Uncontrolled feral animals, e.g. foxes, cats and deer in the dam surrounds impacting on surrounding properties;**

Likewise, Water NSW has not been a good neighbour for feral animal control which is also a tenure neutral responsibility.

(c) the economic rationale and business case of each of the projects, including funding, projected revenue, and the allocation and pricing of water from the projects,

**9) Cost benefits of the proposal – who really benefits – Australians, local residents, foreign owned enterprises, or recreational water skiers on Wyangala dam;**

In this submission, Hovells Creek Landcare has mainly addressed the community concerns, i.e. the potential community, individual and environmental costs of the proposal.

We recognise, however that there are also potential benefits of the proposal, some of which are set down briefly in the Scoping Report, i.e. more water and more reliable water especially during dry times for economic development. Just who benefits and by how much is unclear. Are the beneficiaries Australian residents or international investors, e.g. in the dairy and almond industries, do they generate local jobs and profits or do such benefits accrue in Sydney or offshore? These are some of the many questions being asked by the locals who are expected to bear the costs of the proposal to which there are few answers from Water NSW.

The apparent 21 GL water efficiency/reliability benefit saving is estimated to cost \$650M. This is equivalent to \$31,000/ML. Will all costs be passed on to consumptive users and valley communities? There appears to be no mention of alternate water efficiency measures to make reasonable comparisons. We fully support investments that improve water quality, habitat quality and water use efficiency.

The potential benefits to the Lachlan catchment environment are not addressed in the Scoping report. The CSSI declaration, under the NSW Water Supply (Critical Needs) Act 2019 (WSCN Act) states that the dam is critical to NSW for **environmental**, economic or social reasons. The potential environmental benefits need to be addressed – what are they?

**10) Alternatives to the proposal**

Alternatives to the proposal need to be considered. These could include:

- Changes to rules in the Regulated Lachlan River Water Sharing Plan that determines annual water allocations
- Improved efficiencies in water use
- Improved management and design of on-farm storage
- Diversification of industry and crops in the region and
- Retro-fitting of siltation-controlling technology for the existing dam

**11) Issues with process**

There are several processual and legislative issues with the project, including:

- Work on the project to be started in October 2020 while the EIS is not due until mid-2021 and the feasibility study is not completed
- As above with the report from the Parliamentary enquiry not due until 2021



- Is the loss of planned environmental water under the proposal is contrary to the objects of the Murray Darling Basin Plan which was established to address over-extraction of water?
- Will the proposal compromise NSW and Commonwealth obligations under international treaties (JAMBA, CAMBA, KRAMBA)
- The proposal has the potential to compromise objectives regarding the management of water quality and soil erosion in various local and regional plans including the Boorowa / Hovells Creek Catchment Management Plan (2005–10), the Lachlan CMA Catchment Action Plan (2013-23) and the South East LLS Region Strategic Plan 2016 – 2021

## **12) Compensation for those individuals and communities adversely impacted by the proposal to raise the dam wall - offsets**

In this submission, Hovells Creek Landcare has mainly addressed the community concerns, i.e. the potential community, individual and environmental costs of the proposal.

The compensation mechanisms for landholders directly affected by inundation of their land are well established in NSW law and practice. The compensation mechanisms for private individuals, landholders and the community in general adversely affected by this proposal are less well established and not addressed in the scoping report.

Perhaps the Sydney Water practice might therefore be taken as a guide to the development of ‘best practice’ in the relationship between a public service utility such as Water NSW and its local community. Incentives or community compensation, or offsets, which might be included within this Wyangala proposal include:

- Support for catchment landholders to address erosion and to manage their lands in ways to optimise runoff of clean water into Wyangala Dam and the Lachlan river system;
- Support for local community groups supporting ‘best practice’ land management in the broader catchment in ways complementary to Water NSW interests;
- Support for catchment landholders to improve the management and design of their on-farm storage and improve efficiencies in water use
- Support for local Councils to upgrade and maintain local roads;
- Control of weeds and feral animals within the lands controlled by Water NSW, and support for adjoining landholders to also do so
- Support for local communities and relevant research agencies to better understand and manage the broader Lachlan catchment environment; and
- Guarantee access for locals to parts of their property holdings where their traditional access points are restricted due to inundation

The NSW Water Supply (Critical Needs) Act 2019 (WSCN Act) declared the Wyangala Dam wall raising (the project) as critical State significant infrastructure (CSSI) **under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act)**. The CSSI declaration states that the dam is critical to NSW for **environmental, economic or social reasons**. The proposal represents a step-change for the hydrology and ecosystem function of the entire Lachlan Catchment.

The NSW Government and Water NSW have embarked on what appears to be a deliberate and misleading campaign to expedite the proposed project whilst circumventing due process, e.g. Scope of EPBC Referral is only limited to the immediate footprint of the project with no acknowledgement of the potential downstream impacts (environmental, economic or social). Consultation is virtually non-existent and together, these are bitterly disappointing and unacceptable approaches to governance.

HCLG believes that, given the significance of this declaration, the broader environmental impacts of both the current dam and the proposed enlarged dam on the Lachlan catchment as a whole need full public exposure and not just the quoted economic and social benefits for NSW. The proposal to spend \$650 million on an enlarged dam warrants the full picture not just a small part of it.

HCLG shares the concerns of many others that works are set to commence at the dam in October 2020, before the feasibility study is complete and long before the EIS is to be submitted. This suggests to us that the feasibility of the proposal or its environmental impacts have no relevance to the process.

In conclusion, the members of the Hovells Creek Landcare Group would be pleased to assist the Review in any further way including expansion on the concerns or issues raised above, or provision of supplementary information.

Yours sincerely,

Chair  
Hovells Creek Landcare

September 2020

## **References: Electronic access citations**

Birds Australia / Cowra Woodland Birds Group, Trends in Bird Population of the Cowra – Hovells Creek Area 2002–2008

<https://hovellscreeklandcare.org.au/resources/trends-in-bird-population-of-the-cowra-hovells-creek-area-2002-2008>

Boorowa / Hovells Creek Catchment Management Plan (2005–10)

<https://hovellscreeklandcare.org.au/images/Boorowa%20Catchment%20Map%208%20%20Soil%20and%20Gully%20Erosion.pdf>

Map 8: Soil and Gully Erosion

HCLG, Action Plan for K2W Habitat Management and Landcare (2013 – 14)

<https://hovellscreeklandcare.org.au/past-projects/119-action-plan-for-k2w-habitat-management-and-landcare-2013-14>

Professor Mark Howden, ANU Climate Change Institute; Vice Chair, IPCC Working Group II. Managing a Changing and Variable Climate. Address to the HCLG 'Managing Dry Times' workshop, Frogmore, NSW August 2019.

[https://hovellscreeklandcare.org.au/images/1\\_MH\\_Hovells\\_Ck\\_Landcare\\_Group\\_Howden\\_final.pdf](https://hovellscreeklandcare.org.au/images/1_MH_Hovells_Ck_Landcare_Group_Howden_final.pdf)

Lachlan Catchment

<https://www.mdba.gov.au/discover-basin/catchments/lachlan>. Accessed 18 September 2020

Lachlan CMA Catchment Action Plan (2013-23)

[https://archive.ils.nsw.gov.au/data/assets/pdf\\_file/0009/495486/archive-lachlan-catchment-action-plan-2013-2023.pdf](https://archive.ils.nsw.gov.au/data/assets/pdf_file/0009/495486/archive-lachlan-catchment-action-plan-2013-2023.pdf). T17. Improved water quality by increased gully stabilisation and upland catchment protection

OEH, Threatened Species (Habitat and Food Sources) Review in the K2W - Hovells Creek Area

<https://hovellscreeklandcare.org.au/past-projects/116-threatened-species-review-for-the-k2w-link-hovells-creek-catchment-2014-15>

South East LLS Region Strategic Plan 2016 – 2021

<https://southeast.ils.nsw.gov.au/our-region/local-strategic-plan>. A priority for the Southern Tablelands sub-region to 'Improve soil health and manage erosion to protect priority industries and aquatic assets' (ref p21)

Wyangala Dam – Wall Raising Project – Scoping Report

<http://epbcnotices.environment.gov.au/entity/annotation/4cd0b453-049b-ea11-a236-005056842ad1/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1599470461049>

## **References: Print resources**

Lachlan River Habitat Mapping - Inundation heights for key habitat features and management recommendations for Wyangala Dam to Cottons Weir reach of the Lachlan River. DPI Fisheries for CT Local Land Services (2018)

Natural Resources Commission (2020). Good Practices in Riparian Rehabilitation. Report for the NSW Environmental Trust, Department of Planning Industry and the Environment, Parramatta, NSW.

## Appendix 1

### SUMMARY OF BIRD COUNT RESULTS FOR SURVEYS AT GRASMER WOODLAND (AKA MIDLANDS) UNDERTAKEN BY COWRA WOODLAND BIRDS GROUP (CWBG), 2002 - 2018, PLUS A BIRD COUNT BY DAMON OLIVER OF OEH IN JUNE 2015

		200	200	200	200	200	200	200	200	201	201	201	201	201	201	201	201	201	Tota	Oliver,
	Common Name	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	l	2015
1	Australasian Pipit		x																1	
2	Australian King-Parrot											x							1	
3	Australian Magpie	x		x	x			x	x	x	x	x	x	x	x	x	x	x	14	
4	Australian Raven	x	x			x	x	x		x		x		x	x	x	x		11	
5	Australian Wood Duck					x	x												2	x
6	Barking Owl					x													1	
7	Black-chinned Honeyeater**	x			x		x						x						4**	
8	Black-faced Cuckoo-shrike	x	x					x	x	x		x	x			x			8	
9	Black-faced Woodswallow																	x	1	
10	Black-shouldered Kite			x															1	
11	Blue-faced Honeyeater																		0	x
12	Brown Falcon											x							1	
13	Brown Goshawk															x			1	
14	Brown Thornbill										x	x		x	x	x		x	6	x
15	Brown Treecreeper**	x	x	x	x	x	x	x	x	x	x	x							11*	x
16	Brown-headed Honeyeater																			
17	Buff-rumped Thornbill						x	x			x	x	x		x	x		x	9	
18	Chestnut-rumped Thornbill																			
19	Common Bronzewing											x							1	x
20	Crested Pigeon	x			x							x			x				4	
21	Crested Shrike-tit*	x			x	x											x		4*	
22	Crimson Rosella	x				x			x	x	x	x	x	x	x	x	x		11	
23	Diamond Firetail**			x	x					x				x					4**	

24	Dollarbird								X	X			X			X			4	
25	<b>Double-barred Finch*</b>												X						1*	
26	<b>Dusky Woodswallow*</b>			X	X														2*	
27	Eastern Rosella				X		X		X			X		X	X			X	7	X
28	Eastern Spinebill						X									X			2	
29	<b>Eastern Yellow Robin*</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17*	X*
30	Fan-tailed Cuckoo	X															X		2	
31	<b>Flame Robin**</b>										X								1**	
32	Fuscous Honeyeater					X	X						X						3	
33	Galah	X		X			X	X	X		X		X	X	X	X	X	X	12	
34	Golden Whistler	X	X					X			X	X	X	X		X			8	
35	<b>Grey-crowned Babbler**</b>																			X**
36	Grey Butcherbird						X		X			X	X			X			5	
37	Grey Fantail		X		X		X	X		X	X	X	X	X	X	X	X	X	13	X
38	Grey Shrike-thrush	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17	X
39	<b>Hooded Robin**</b>	X										X							2**	
40	Horsfield's Bronze-Cuckoo	X																	1	
		<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>Total</b>	
		<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>l</b>	
41	<b>Jacky Winter*</b>		X	X	X	X		X	X		X	X		X		X	X	X	12*	X*
42	Laughing Kookaburra	X		X	X			X	X	X		X	X		X	X	X	X	12	
43	Leaden Flycatcher						X												1	
44	Little Corella							X		X		X		X	X	X		X	7	
45	Little Eagle					X													1	
46	Little Friarbird					X			X	X		X	X		X			X	6	
47	Magpie-lark	X	X		X			X	X	X		X		X	X	X	X		11	
48	Masked Lapwing																		0	X
49	Masked Woodswallow					X													1	
50	Mistletoebird	X			X	X		X		X		X		X	X		X		9	X
51	Musk Lorikeet												X						1	
52	Noisy Friarbird	X						X	X	X	X	X	X		X	X		X	10	
53	Noisy Miner							X				X		X		X		X	5	

54	Olive-backed Oriole								x	x						x		3	
55	Pacific Black Duck					x												1	
56	<b>Peaceful Dove*</b>	x		x		x				x				x				5*	
57	Pied Butcherbird		x		x			x				x	x			x		6	
58	Pied Currawong	x				x	x	x	x			x	x	x	x			9	
59	Rainbow Bee-eater							x	x									2	
60	Red Wattlebird					x				x	x	x			x	x		7	x
61	Red-browed Finch			x														1	
62	<b>Red-capped Robin*</b>						x	x	x							x	x	5*	x*
63	Red-rumped Parrot		x	x	x	x		x	x			x			x			8	
64	<b>Restless Flycatcher*</b>		x						x		x							3	x
65	Rufous Songlark								x									1	
66	Rufous Whistler		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16	
67	Sacred Kingfisher				x		x						x					3	
68	<b>Scarlet Robin**</b>															x	x	2**	
69	Shining Bronze-Cuckoo												x	x				2	
70	Silvereye									x	x	x	x	x				5	x
71	<b>Speckled Warbler**</b>											x	x	x		x	x	5	x**
72	Spotted Pardalote					x	x		x			x	x	x	x	x		9	x
73	Straw-necked Ibis																x	1	
74	Striated Pardalote				x			x	x	x	x	x						8	
75	Striated Thornbill													x				2	
76	Striped Honeyeater											x			x	x	x	4	x
77	Sulphur-crested Cockatoo	x			x			x	x	x		x			x	x	x	9	
78	Superb Fairy-wren	x	x	x		x	x	x	x		x	x			x	x		11	
79	<b>Superb Parrot**</b>														x	x		2**	
80	Tree Martin																	0	x
		200	200	200	200	200	200	200	200	201	201	201	201	201	201	201	201	Tota	
		2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	l	
81	Turquoise Parrot									x								1	
82	<b>Varied Sittella**</b>		x			x								x	x			4**	
83	Wedge-tailed Eagle			x					x			x		x			x	5	

84	Weebill					x				x	x	x	x	x	x	x	x	9	x
85	Welcome Swallow			x		x		x										3	x
86	Western Gerygone								x	x	x	x	x	x			x	7	
87	<b>White-browed Babbler*</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>		<b>x</b>		<b>x</b>	<b>x</b>			<b>12*</b>	
	White-browed																		
88	Woodswallow			x		x												2	
89	White-eared Honeyeater					x	x			x								3	
90	White-naped Honeyeater													x				1	
	White-plumed																		
91	Honeyeater	x	x	x	x	x	x	x	x		x	x	x	x		x		14	
92	White-throated Gerygone						x			x			x	x	x	x		16	
	White-throated																		
93	Treecreeper	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	16	x
94	White-winged Chough						x							x			x	3	x
95	White-winged Triller				x				x						x			3	
96	Willie Wagtail	x	x	x	x	x	x	x	x	x	x	x	x	x			x	15	
97	Yellow Thornbill		x			x	x			x	x	x	x	x	x	x	x	12	x
98	Yellow-faced Honeyeater						x							x				2	x
99	Yellow-rumped Thornbill						x		x		x	x	x	x		x		8	x
100	Yellow-tufted Honeyeater																	0	x
<b>Number of Species Per</b>																			
	<b>Year</b>	<b>27</b>	<b>21</b>	<b>22</b>	<b>26</b>	<b>26</b>	<b>34</b>	<b>32</b>	<b>35</b>	<b>31</b>	<b>27</b>	<b>49</b>	<b>31</b>	<b>36</b>	<b>42</b>	<b>38</b>	<b>29</b>	<b>28</b>	<b>30</b>

**Footnotes:** 1. \*\* denotes threatened bird, of which 8 were recorded over the 17 years of survey recorded here and a further 1 recorded by Oliver in 2015

2. \* denotes declining or rare bird, of which 9 were recorded over the 17 years of surveys recorded here

3. This spreadsheet is based on annual reports produced by CWBG from the results of their quarterly bird counts at 'Midlands'.  
The Grasmere Woodland (aka Midlands) is owned by John & Liz Baker and has been under a Conservation Agreement with the BCT since early-2019.

## Appendix 2

ANU Report to collaborators on Herpetofauna survey in the Cowra–Wyangala-Hovells Creek Region 2017 (The ANU Conservation and Landscape Ecology Group = now The Sustainable Farms Group)

**Conservation and Landscape Ecology Group,  
Fenner School of Environment and Society**



**RE: REPTILE SURVEYS IN THE COWRA REGION – SPRING 2017**

5 March 2018

Dear Landholder,

Firstly, thank you for allowing us to carry out fauna surveys on your property during the previous spring. Without the support and assistance of landholders like you, we would not be able to conduct our research and we are very grateful to have the opportunity to work with you.

The results from our 2017 Cowra region herpetofauna (reptile and frog) surveys are in and the results from your property are enclosed here. The 2017 spring rapidly turned hot and dry and we had a reduced timeframe to work within before warmer temperatures made it difficult to detect reptiles and frogs in the region. In response to the challenging season and the shortened survey period, we surveyed fewer sites than we hoped and the herpetofauna detection rate on some sites seemed lower than we might expect under better survey conditions. Despite these challenges, we surveyed a total of 40 sites and found 26 different species of reptiles and frogs (see table one on reverse side of letter).

Along with the results from your property, we have also enclosed our field guide to frogs and reptiles of the south-eastern Australian Box-Gum Grassy Woodlands to allow you to learn about the species we found on your property and assist you with identifying reptiles and frogs you might come across in future. These field guides are not exhaustive, but contain the most common species you might encounter on a farm in the area. We have also enclosed our team's 2018 calendar, which was produced using photos taken by our field team in the woodlands around our various studies, some of which were captured during the course of these surveys.

We plan to carry out reptile surveys in the region again this spring and hope to get in contact with many of you when that time comes. Thank you again for your cooperation and enthusiasm for this project and we look forward to working with you again in the near future.

Regards,



**Conservation and Landscape Ecology Group,  
Fenner School of Environment and Society**



Table 1: Species detected during the spring 2017 herpetofauna surveys in the Cowra region, NSW.

Species Name	Common Name
<i>Aprasia parapulchella</i>	Pink-tailed Worm-lizard
<i>Carlia tetradactyla</i>	Southern Rainbow Skink
<i>Christinus marmoratus</i>	Southern Marbled Gecko
<i>Crinia parinsignifera</i>	Plains Froglet
<i>Crinia signifera</i>	Brown Froglet
<i>Cryptoblepharus pannosus</i>	Ragged Snake-eyed Skink
<i>Ctenotus spaldingi</i>	Large Striped Skink
<i>Ctenotus taeniolatus</i>	Copper-tailed Skink
<i>Diplodactylus vittatus</i>	Eastern Stone Gecko
<i>Diporiphora nobbi</i>	Nobbi Dragon
<i>Egernia cunninghami</i>	Cunningham's Skink
<i>Egernia striolata</i>	Tree (Crevice) Skink
<i>Eulamprus quoyii</i>	Eastern Water Skink
<i>Lampropholis delicata</i>	Grass Skink
<i>Lerista bougainvillii</i>	Bougainville's Skink
<i>Limnodynastes dumerilii</i>	Eastern Pobblebonk
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog
<i>Litoria peronii</i>	Peron's Tree Frog
<i>Menetia greyii</i>	Grey's Skink
<i>Morethia boulengeri</i>	Boulenger's Skink
<i>Parasuta dwyeri</i>	Dwyer's Snake
<i>Pogona barbata</i>	Eastern Bearded Dragon
<i>Pseudonaja textilis</i>	Eastern Brown Snake
<i>Ramphotyphlops proximus</i>	Woodland Blind Snake
<i>Underwoodisaurus milii</i>	Thick-tailed Gecko
<i>Varanus varius</i>	Lace Monitor

## Cowra Reptile Surveys – Spring 2017

Farm: KHYD 'Kooringle'

Site	Common Name	Species Name	Abundance	Age	Microhabitat
KHYD-1	Bougainville's Skink	<i>Lerista bougainvillii</i>	6	Adult	Under Rock
KHYD-1	Bougainville's Skink	<i>Lerista bougainvillii</i>	1	Juvenile	Under Rock
KHYD-1	Boulenger's Skink	<i>Morethia boulengeri</i>	2	Adult	Under Rock
KHYD-1	Dwyer's Snake	<i>Parasuta dwyeri</i>	1	Adult	Under Rock
KHYD-1	Eastern Stone Gecko	<i>Diplodactylus vittatus</i>	1	Adult	Under Rock Slab
KHYD-1	Eastern Stone Gecko	<i>Diplodactylus vittatus</i>	1	Juvenile	Under Rock
KHYD-1	Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	1	Adult	Under Rock Slab
KHYD-1	Thick-tailed Gecko	<i>Underwoodisaurus milii</i>	1	Adult	Under Rock Slab
KHYD-1	Thick-tailed Gecko	<i>Underwoodisaurus milii</i>	1	Sub-adult	Under Rock Slab
KHYD-1	Tree (Crevice) Skink	<i>Egernia striolata</i>	1	Adult	Under Rock
KHYD-1	Tree (Crevice) Skink	<i>Egernia striolata</i>	1	Juvenile	Under Rock
KHYD-2	Bougainville's Skink	<i>Lerista bougainvillii</i>	2	Juvenile	Under Rock
KHYD-2	Boulenger's Skink	<i>Morethia boulengeri</i>	4	Adult	Under Rock
KHYD-2	Southern Rainbow Skink	<i>Carlia tetradactyla</i>	1	Sub-adult	In Grasses
KHYD-2	Thick-tailed Gecko	<i>Underwoodisaurus milii</i>	1	Adult	Under Rock