Submission on

EPBC Act referral 2020/8653: WaterNSW Wyangala Dam Wall Raising

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Table of Contents

1. Executive Summary

The proposed enlargement of Wyangala Dam by WaterNSW has been referred to the Australian Government for assessment against Matters of National Environmental Significance (MNES). The referral acknowledges that the proposed action is "likely to have a significant impact, so impacts to MNES will be assessed under the EPBC Act".

- First, the referral acknowledges that the proposed action is likely to have a direct or indirect impact on nationally listed threatened species or their habitat or any threatened ecological community, concluding that this impact is significant. This submission supports this conclusion, based on the scientific evidence but points out the inadequacy of the proponent's preliminary assessment.
- Second, the referral acknowledges that the proposed action is likely to have a direct or indirect impact on the members of any listed migratory species or their habitat but then concludes that this impact is unlikely to be significant. This is clearly wrong and contradicts the overwhelming scientific evidence for these species and river management and the evidence presented in this submission.

Further WaterNSW prefers "that the proposed action be assessed using an accredited process" in NSW. This 'preferred' approach should not be followed, given the significance of this development: it is likely to have a significant impact on matters of national environmental significance. This is a national obligation and needs to be an independent process, not one where the NSW Government is assessing its own project – a clear conflict of interest. Further, the NSW assessment process is not equivalent for assessing on matters of national environmental significance, given some limitations of Part 5 of the Environmental Planning and Assessment Act 1979 in NSW: particular in relation to rigour, independence, public consultation, enforceability and ability to adequately assess on matters of national environmental significance.

The proposed development, an increase of 53% in the storage capacity of Wyangala Dam, is likely to have a significant impact on a range of matters of national environmental significance, particularly nationally threatened species and migratory species under the EPBC Act. Further, it will significantly degrade downstream ecosystems already in decline because of the building of the dam and diversion of water.

Recommendation: This proposed development is nationally significant and needs to be assessed by the Australian Government under the EPBC Act 1999, not through an accredited process in NSW. The Wyangala Dam Wall Raising proposal 2020/8653 should be designated a controlled action under the EPBC Act 1999 and require assessment by public inquiry.

2. Lachlan River and dependent ecosystems

The Lachlan River rises in the Great Dividing Range around Goulburn, Yass and Canberra and then flows west to Forbes, becoming one channel, before overflowing in large floods to fill Lake Cowal, a nationally important wetlands (Fig. 1). The river continues to flow to the south west, filling Lake Cargellico and Lake Brewster, a re-regulating storage (Fig. 1).

In the lowland regions, the Lachlan River has five main branches in its downstream floodplain: first, Willandra Creek; the second is Middle Creek; third, Merrowie Creek and the fourth distributary system supplies the Booligal wetlands through Merimajeel Creek and Muggabah Creeks with the final branch remaining as lower Lachlan River (Fig. 1). This extensive delta systems support extensive floodplain areas (Fig. 1), providing critical habitat for many different organisms, including migratory species of waterbirds and nationally significant colonies of waterbirds. The Booligal wetlands start to flood when Merrimajeel and Muggabah Creeks when flows at Booligal Weir on the Lachlan River exceed about 300 ML/d (Armstrong et al., 2009). There is extensive flooding of the Booligal wetlands when there is more 2,500 ML/d over a month or more (Driver et al., 2010). The Lachlan River continues to flow south-west to eventually reach the Great Cumbung Swamp (Fig. 1). In large floods water spreads out across the floodplain around the Great Cumbung Swamp, flooding an extensive river red gum forest *Eucalyptus camaldulensis*, before joining up with the Murrumbidgee floodplain, flowing west along the Murrumbidgee to reach the River Murray.

There is 471,000 ha of wetlands dependent on flows from the Lachlan River (Kingsford et al., 2004), predominantly in lowlands of the Lachlan River catchment, including major nationally important wetlands: Lake Cowal, Great Cumbung Swamp and Booligal wetlands. Nine wetlands dependent on flows have particular value for waterbirds, including threatened species, and migratory waterbird habitat, and are listed in the Directory of Important Wetlands in Australia (Department of Environment and Energy, 2018; NSW Department of Industry Water, 2018).

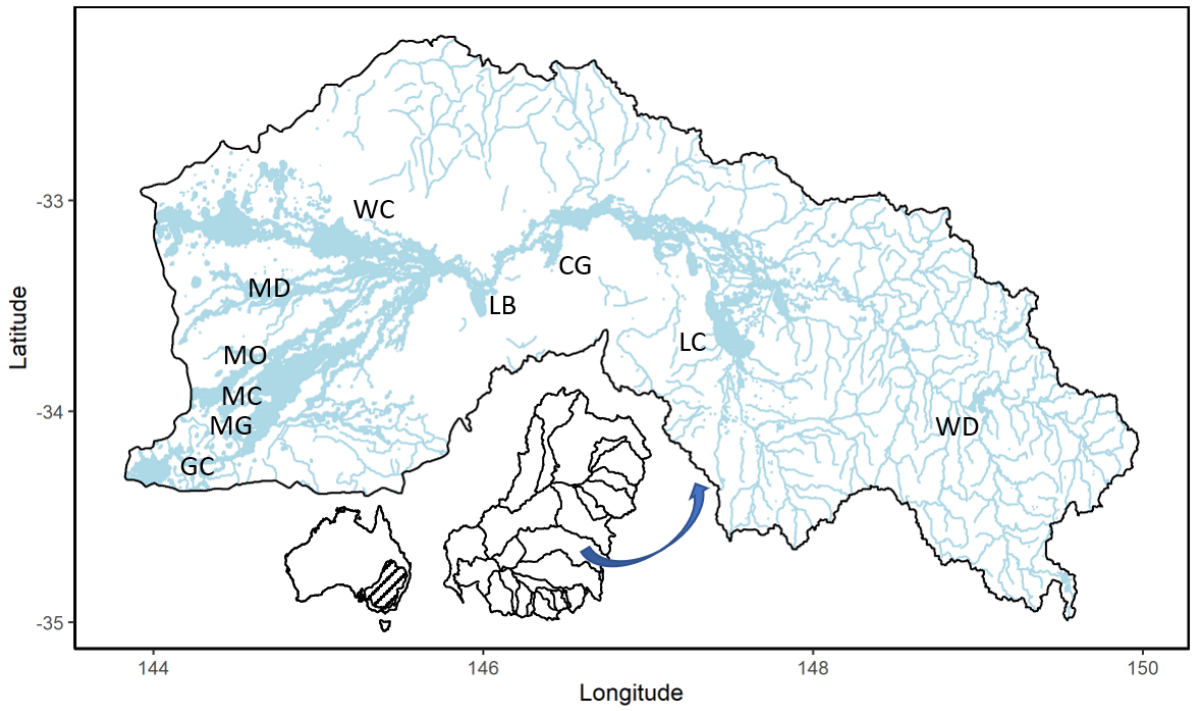

Fig. 1. Lachlan river catchment in the Murray-Darling Basin (insets), showing location of Wyangala Dam (WD), where the proposed enlargement will occur, and mapped downstream ecosystems (Kingsford et al., 2004) affected by this proposal, including Lake Cowal (LC), Lake Cargellico (CG), Lake Brewster (LB) and four main distributary lowland branches of the Lachlan River including: Willandra Creek (WC), Middle Creek (MD), the Booligal wetlands supplied by Merrimajeel Creek (MC), Merowie Creek (MO) and Muggabah Creek (MG) and the Great Cumbung Swamp (GC).

The Lachlan River provides critically important habitat for dependent aquatic species including many plant and animal species. It is critical for breeding waterbirds, given the size of the colonies, particularly those supported by the Booligal wetlands. The Lachlan River also provides important habitat for native fish species including threatened species. The Lachlan River floodplains are among the more important large-scale inland floodplains for migratory shorebird species and threatened waterbird species.

For these reasons, the Murray-Darling Basin Authority identified that the Booligal wetlands and the Great Cumbung Swamp met all five criteria for identification as environmentally important assets in the Murray-Darling Basin, requiring management of environmental water (Murray-Darling Basin Authority, 2012b; a). First, these water-dependent ecosystems were formally recognised in international agreements or, with environmental watering, capable of supporting species listed in those agreements. Second, these ecosystems were natural or near-natural, rare or unique. Third, the ecosystems provided vital habitat that supported Commonwealth, State or Territory listed threatened species or communities. Finally, they were capable of supporting, significant biodiversity when they had water.

More specifically, the Booligal Wetlands and Great Cumbung Swamp were formally recognised in or capable of supporting species listed in the Japan–Australia Migratory Bird Agreement, the China–Australia Migratory Bird Agreement or the Republic of Korea–

Australia Migratory Bird Agreement (Murray-Darling Basin Authority, 2012a; b). They also support particularly large concentrations of breeding ibis (Magrath, 1992; Lyons et al., 2019). The Great Cumbung Swamp is also a different ecosystem with its extensive reedbeds, reflected in its frequent flooding, also supporting an extensive river red gum forest many plant species and waterbirds (Murray-Darling Basin Authority, 2012b). As a result of this importance both sites were identified as important hydrologic indicator sites.

3. Proposed Project – raising the dam wall of Wyangala Dam

The project aims to build additional storage of Wyangala Dam to provide about 650 gigalitres of additional storage capacity. This represents a 53% increase in storage capacity. There is no assessment of the likely impact on the dependent ecosystems downstream of the dam or the organisms that rely on these river and floodplains, including threatened species. There is not even an assessment of the hydrological effects, except to identify that it will make 21.05 gigalitres per annum of general security water available for diversion to irrigation.

No rigorous assessment can be made of the environmental impacts of this development without information on downstream effects. This includes river flows downstream of the proposed increased dam to its most downstream extremities of the floodplain, including the Booligal wetlands and the Lower Lachlan River, down to the Great Cumbung Swamp. The proponents acknowledge that no hydrological assessment has occurred (p. 28, Scoping Report). Further any assessment needs to be in the context of the environmental impacts already affecting the river as a result of building Wyangala Dam and the diversion of water on the river and its dependent ecosystems and species, including threatened species.

The enlargement of Wyangala Dam will impact on dependent downstream ecosystems (Fig. 1) and their dependent species. These systems are already affected reductions in flows causing poor condition in dependent floodplain vegetation (Armstrong et al., 2009). The fragmentations of river regulation, including decline in aquatic habitats was also recognised by the NSW Government (NSW Department of Primary Industries, 2006). The flood regime is significantly reduced in terms of number of inundation days per year (Murray-Darling Basin Authority, 2012a), causing substantial reductions in breeding of colonial waterbirds (Driver et al., 2010). River regulation has also increased the maximum period between large flows triggering waterbird breeding events and response of flood dependent organisms from 18.7 to 22.2 years (CSIRO, 2008).

Additional floodwater captured by raising the dam wall of Wyangala Dam will exacerbate ecosystem decline in Booligal and Merimajeel floodplain creek systems and the lower Lachlan River. Already, the widespread loss of river red gums and other aquatic vegetation

and animals will continue, despite the Murray-Darling Basin Plan aiming to return flows to the rivers of the Basin for their environmental health.

4. Matters of National Environmental Significance (MNES)

This enlargement will is likely to have a significant impact on Matters of National Environmental Significance under the EPBC Act 1999, including populations of threatened species and migratory species through loss of habitat which will occur with reduced flooding. The preliminary assessment provided for referral under the EPBC Act 1999 by the proponent WaterNSW is clearly inadequate in assessment of the likely impacts of the proposed development on Matters of National Environmental Significance, under the EPBC Act 1999. It inadequately assesses the likely impacts on threatened species or migratory species, including a range of species which occur downstream of the dam and are water dependent. Many of them are distributed on the most important habitats of the catchment in the downstream dependent ecosystems.

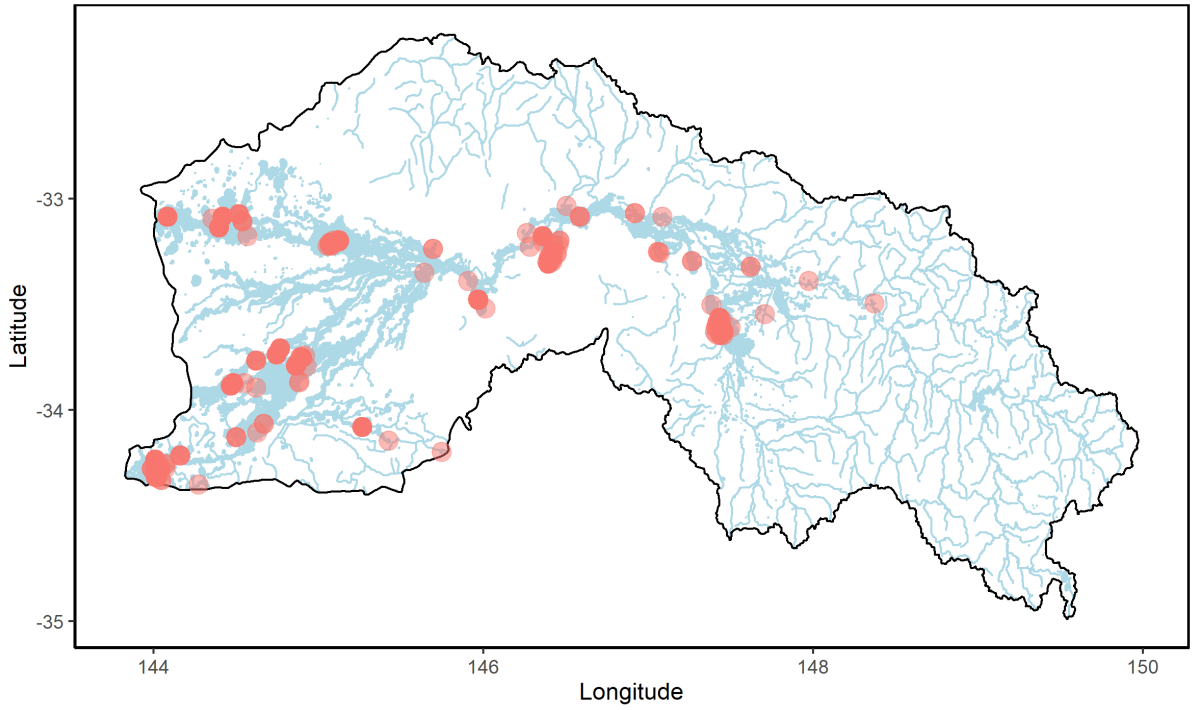

Fig. 2. Distribution of records (n=355) of water dependent species listed as Matters of National Environmental Significance under the EPBC Act 1999 likely to be affected by the proposed enlargement of Wyangala Dam. Data were sourced from the Global Biodiversity Information Facility (https://www.gbif.org/) for the Lachlan Catchment region, which includes data from NSW OEH surveys, Atlas of Living Australia, museum specimens and citizen-science datasets,, including species-level records from 1970-2020 (spatial uncertainty of 0-20 km).

The biodiversity assessment report provided with the referral from WaterNSW is extremely poor in adequately defining out the range of issues for a development of this size. It identifies that "*the downstream environment may be affected by greater capture of flows*". This clearly misrepresents the extent of scientific knowledge on the impacts of dams both in Australia and around the world. It is well known that the building of dams

has significant environmental and socio-economic impacts downstream on dependent biological and human communities (Kingsford, 2000; Lemly et al., 2000; Vorosmarty et al., 2010). It is inevitable that a range of threatened species under the EPCB Act 1999, including fish, frog, mammal, plant and waterbird species will be affected negatively by this development. In addition, under the NSW Biodiversity 2016 Act the A*quatic ecological community in the natural drainage system of the lowland catchment of the Lachlan River* is an endangered ecological community, under the NSW Fisheries Management Act 1995. This is virtually ignored by not considering the potential impact of reductions in flow downstream. Instream structures, such as dams, pumping and diversion are also acknowledged as a key threatening process under the NSW Fisheries Management Act 1994.

In short, the impact assessment provided is completely inadequate, focusing primarily on only the 'ecological footprint' of the actual enlargement of the dam on terrestrial communities. There is little assessment of the impact on downstream communities, dependent threatened species listed under the EPBC Act 1999 or migratory species. Only one site on the Lachlan River, downstream of the dam was assessed, not the full continuum of the river and its most important floodplains (Fig. 1). There was no assessment of the hydrological or flooding impact on threatened species' or migratory species' habitats. This development will inevitably lead to declines in flow and water dependent species, as it is capturing significant amounts of water which would have flowed downstream and flooded river and wetland habitat.

i. Threatened species

a. Fish

There is little assessment of potential impacts of the enlargement of the dam on four threatened fish species, under the EPBC Act 1999, including silver perch *Bidyanus bidyanus* (Critically Endangered), Macquarie perch *Macquaria australasica* (Endangered) and Murray cod *Maccullochella peelii* (Endangered). In particular the Murray cod population in the Lachlan River is threatened by a range of factors including river regulation and poor water quality (Victorian Government Department of Sustainability and Environment, 2010). All species are affected by changes to flow and flooding regimes brought about by the building of dams and diversion of water from the river (Koehn et al., 2013; Vilizzi et al., 2013). This proposal is likely to have a significant impact on these nationally threatened fish species, a matter of national environmental significance.

b. Waterbirds

Three waterbird species, the Australasian bittern *Botaurus poiciloptilus* (Endangered), the Australian painted snipe *Rostratula australis* (Endangered) and curlew sandpiper

Calidris ferruginea (Critically Endangered) occur downstream of the proposed increased size of Wyangala Dam and are listed under the EPBC Act 1999 as threatened species. They all rely on the habitat created by the Lachlan River and its floodplains, resulting from overland flows and sufficient flows to reach the lowland areas of the river and its distributary creek systems. This proposal is likely to have a significant impact on these nationally threatened waterbird species, a matter of national environmental significance.

c. Frogs

There is no assessment of potential impacts of the enlargement of the dam on at least three threatened frog species, under the EPBC Act 1999, including Sloanes froglet *Crinia sloanei* (Endangered), booroolong frog *Litoria booroolongensis* (Endangered) and the Southern bell frog *Litoria raniformis* (Vulnerable). In particular, there was no reference to current understanding of the importance of flow regimes for Southern bell frogs published in the peer reviewed literature (Wassens and Maher, 2011). As water dependent species, frogs are highly vulnerable to reductions in overland flows and flows to the lower river, resulting from reductions in flow caused by the Wyangala Dam enlargement. Other threatened frog species may also be affected. This proposal is likely to have a significant impact on these nationally threatened frog species, a matter of national environmental significance.

d. Plants

There is no assessment of potential impacts of the enlargement of the dam on at least four threatened plant species, under the EPBC Act 1999, including spear grass *Austrostipa wakoolica* (Endangered), spike rush *Eleocharis obicis* (Vulnerable), winged pepper-cress *Lepidium monoplocoides* (Endangered), and Menindee nightshade *Solanum karsense* (Vulnerable). As water dependent species, such plant species are highly vulnerable to reductions in overland flows and flows to the lower river, resulting from reductions in flow caused by the Wyangala Dam enlargement. This proposal is likely to have a significant impact on these nationally threatened plant species, a matter of national environmental significance.

ii. Migratory species

Under Section 5 of the referral, there is an assessment by the proponent that it does not consider listed migratory species to be significantly affected. This is clearly wrong. There are at least 19 migratory species of waterbird listed under the EPBC Act 1999, which have occurred downstream of the proposed increased Wyangala Dam. There is increased understanding the development of river systems, migratory shorebirds are affected by the building of dams and diversion of water (Nebel et al., 2008). It is likely these 19 species will be significantly affected by the dam enlargement. Species listed as

migratory species for consideration as a Matters of National Environmental Significance include: common sandpiper *Actitis hypoleucos*, sharp-tailed sandpipers *Calidris cuminata*, curlew sandpipers *C. ferruginea*, pectoral sandpiper *C. melanotos*, long-toed stint *C. subminuta*, red-necked stint *C. ruficollis*, Lathams snipe *Gallinago hardwickii*, Caspian tern *Hydroprogne caspia*, black-tailed godwit *Limosa limosa* bar-tailed godwit *L. lapponica*, little curlew *Numenius minutus*, whimbrel *Numenius phaepus*, glossy ibis *Plegadis falcinellus*, Pacific golden plover *Pluvialis fulva*, gull-billed tern *Gelochelidon nilotica*, wood sandpiper *Tringa glareola*, common greenshank *T. nebularia* and marsh sandpiper *T. stagnatilis.* Further, glossy ibis frequently breed in the Booligal wetlands, potentially one of Australia's more important breeding sites for this species (Magrath, 1992). This proposal is likely to have a significant impact on these nationally threatened migratory species, a matter of national environmental significance.

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