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Nature Conservation Saves for Tomorrow

Greater Metropolitan Region Water Sharing Plan
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Re: Greater Metropolitan Region Groundwater Sources Water Sharing Plan

The Blue Mountains Conservation Society (the Society) is a community-based volunteer organisation with over 900 members. Our mission is to help protect, conserve and advocate for the natural environment of the Greater Blue Mountains. In fulfilling its mission, the Society advocates for the protection of the Greater Blue Mountains World Heritage Area.

This submission is made in response to the public exhibition of the draft replacement of the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2023 (the Draft Plan). We note that the Draft Plan proposes to amalgamate the Sydney Basin Blue Mountains groundwater sources with others, to form the Sydney Basin West Groundwater Source. However, the Society submits that there are some unique features relating to groundwater sources within the Greater Blue Mountains, which should be recognised in the Draft Plan and/or other legislation.

1. GROUNDWATER DEPENDENT ECOSYSTEMS IN THE BLUE MOUNTAINS

The Blue Mountains is home to unique and fragile Groundwater Dependent Ecosystems (GDEs), including:

- Blue Mountains Swamps
- Newnes Plateau Shrub Swamps (NPSS), and
- Wet cliff-face vegetation.

Blue Mountains Swamps and Newnes Plateau Shrub Swamps are included in the EPBC-listed Temperate Highland Peat Swamps on Sandstone (THPSS) Endangered Ecological Community. In addition, NPSS are listed under the *Biodiversity Conservation Act 2016* (NSW) as an endangered ecological community, and Blue Mountains Swamps are listed as a vulnerable ecological community.

All these communities contain threatened species, for example:

- Microstrobos (*Pherosphaera fitzgeraldii*) - Wet cliff face vegetation
- Giant Dragonfly & Blue Mountains Water Skink – Blue Mountains Swamps

The Society also notes that the Greater Blue Mountains World Heritage Area has been listed for its biodiversity, which is internationally significant. This underscores the importance that adequate ground water is maintained for vegetation communities, flora and fauna that are reliant on it. Where there is uncertainty about matters such as the extent of groundwater, the amount of take or the likely rate of recharge, the Society submits that the **precautionary principle** should be applied, and every effort made to avoid potential adverse impacts, which can be 'serious, long-term and sometimes permanent'.¹

It appears that none of the above-listed GDEs located in the Blue Mountains appear to have been listed as High-priority groundwater-dependent ecosystems in the Draft Plan.² The *Report card for the Sydney Basin West Groundwater Source* states that high priority groundwater-dependent ecosystems will be 'Identified at the commencement of the plan'. It is unclear what this means, or whether the above-listed GDEs will be included as high priority for the purposes of the Draft Plan. It is also unclear whether there is a further process planned for adding additional High-priority groundwater-dependent ecosystems in the Sydney Basin West area, and if so, what that process will be and whether those additional ecosystems will be added before the commencement of the plan.

It appears that without being classified as a High-priority groundwater-dependent ecosystem under the Draft Plan, there will be no specific protections in the Draft Plan for these unique and fragile areas.

¹ NSW Government, Department of Primary Industries (Water), *Macro water sharing plans – the approach for groundwater: a report to assist community consultation* (November 2015), p 1.

² Note – the dictionary in Schedule 5 of the Draft Plan states that a high-priority groundwater-dependent ecosystem means an area specified in s 33(1). This is confusing and should be clarified, but it appears to refer to ecosystems listed in 'Schedule 3' or identified on the High Priority Groundwater Dependent Ecosystem Map. Schedule 3 does not appear to be relevant, and it appears this reference should instead be to Schedule 4. This should be rectified.

2. KEY GROUNDWATER ISSUES IN THE GREATER BLUE MOUNTAINS AREA

Loss of groundwater, including due to over-extraction, poses a significant risk to Groundwater Dependent Ecosystems (GDEs). In addition to threats that may affect some or all groundwater sources (including as a result of climate change),³ loss of groundwater to supply GDEs occurs in the Blue Mountains from:

- **Cumulative impact of extraction from many domestic bores, particularly from those that are used to maintain large exotic gardens.**
During the 2001-09 drought, a number of large “exotic gardens” flourished in the Blue Mountains area (displaying signs of ‘bore water in use’), while the natural areas of bushland, including swamps, struggled.
- **Existing sewer tunnel and horizontal bores (part of the sewerage system from Mt Victoria to Winmalee).**
Thousands of litres/sec of water is lost to the landscape by infiltration into the sewer and tunnel network potentially affecting aquifer recharge (Brown et al 2007). The inflow measured at the Lawson portal in October 1995 was 22 litres/sec (1901 m³/day).
- **Mining.**
This includes currently operating mines on the Newnes Plateau, and historic mines which are no longer operating but continue to release groundwater. The catastrophic impact of lowering water tables as a result of longwall coal mining in the Sydney Basin has been well documented (Keith et al., In press; Mason et al. 2021; Krogh et al., In press), and highlights the extremely high risk posed to these GDEs from lowering water tables, regardless of the cause.

In addition, the Society notes that a highway bypass tunnel has been proposed for part of the Great Western Highway in the Blue Mountains. This tunnel, if it proceeds, is likely to significantly and detrimentally impact groundwater sources in the Blue Mountains and their dependent ecosystems.

The threat to these GDEs also includes a number of NSW Biodiversity Conservation Act-listed Key Threatening Processes (NSWSC 2000, 2002, 2005). These include:

- Alteration of habitat following subsidence due to longwall mining
- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands
- Anthropogenic Climate Change

3. RECOMMENDATIONS

3.1 LANDHOLDER ‘RIGHTS’

There is a lack of knowledge about the hydrogeology of the sandstone aquifers in the Blue Mountains, with many being highly localised and/or perched. The **Precautionary Principle** should therefore be applied, and the Draft Plan should reflect this.

³ See for example, *Australia 2021: State of the Environment*, ‘Inland water’, page 19.

The Society submits that as a result, the “landholder’s right” to a domestic/stock bore should be withdrawn, at a minimum where it risks impacting on GDEs in the Blue Mountains.

The Society recommends:

1. The immediate re-instatement of the Moratorium on new bores, both domestic and commercial, in the Blue Mountains LGA.
2. The introduction of penalties for boring contractors who sink new or replacement bores which do not have proof of approval or other legal permission.
3. Changes in the *Water Management Act 2000* (NSW) and/or the relevant Water Plan to:
 - exempt the Blue Mountains LGA from any entitlement to a domestic bore;
 - change the condition for approval of any new application for a bore to reverse the onus of proof i.e approval should be dependent “on proof that no adverse environmental impact would be caused, including to GDEs”;
 - disallow replacement of existing bores unless the applicant can “prove that no adverse impact to GDEs would be caused”;
 - instigate a program to close down existing domestic bores in the Blue Mountains LGA.

The Society therefore objects to:

- **The provisions in the Draft Plan that permit bores to be located near any groundwater-dependent ecosystem, and particularly high-priority groundwater-dependent ecosystems**

The Draft Plan appears to have no specific restrictions on the use of water supply works near GDEs that have not been classified as high priority, despite the vision and objectives of the Draft Plan being to protect, enhance and restore groundwater sources and their dependent ecosystems.

The Draft Plan only restricts water supply works within 200m of most high-priority GDEs (and 500m for karst environments), which is reduced to 100m for works used for ‘basic landholder rights’ (ss 33 and 36 of the Draft Plan). It is unclear what the scientific basis is that justifies the 100 and 200m buffers, and it does not appear to be tailored to the specific features of each high-priority GDE.

- **The proposal in the Draft Plan to allow replacement of bores, where the impact is known to be damaging.**

The Draft Plan permits water supply works to be constructed in close proximity to GDEs where they are replacement works. That is, existing bores within the 100, 200 or 500m ‘buffer zones’ of high-priority groundwater-dependent ecosystems may be replaced. Noting that these protections of vulnerable and important ecosystems are already limited and inadequate, the Society submits that these exceptions in ss 33 and 36 should be removed.

3.2 WATER RESTRICTIONS

The Society recommends that in areas where town water is available and water restrictions have been declared, these same water restrictions should apply to all 'domestic/stock' bore users.

The reasons for this are as follows:

- Risk to threatened or vulnerable communities – when water restrictions are imposed it is an indicator of the lack of aquifer recharge and therefore the vulnerability of swamps. When town water restrictions are imposed there is also likely to be greater use of groundwater, and hence less groundwater available to GDEs.
- Surface water and town water are part of one integrated system, and groundwater in the Blue Mountains area is even more scarce due to its slow rate of movement through aquifers.
- Due to the lack of information as to amounts 'domestic' users are taking (there is no metering or other reliable recording), there is a risk of over-extraction, and for this reason, continued extraction cannot be justified.
- Equity between residents, and removal of incentives to use (over-extract) groundwater.

3.3 EXTRACTION LIMITS

The Society objects to the proposed increase in the extraction limits from 25% of rainfall recharge to 70% in the Sydney Basin West Draft Plan (as set out in the relevant Report Card), for at least the Blue Mountains LGA.

The BM report card

(https://www.industry.nsw.gov.au/_data/assets/pdf_file/0003/516927/sydney-basin-west-groundwater-source.pdf) states that 95% of recharge is set aside for the environment in 'high conservation value areas'. This does not appear to be defined in the Act or in the draft plan. How is this implemented?

The Society recommends that the extraction limit remains at 25% for the Blue Mountains LGA, until there is reliable information on:

- actual extraction, by requiring all bores to be effectively metered, and small amounts (which may be cumulatively significant) can be measured;
- measures of environmental impact can be reliably correlated with extraction rates.

It is unclear how various extraction losses of groundwater in the Blue Mountains area are accounted for in the modelling under the Draft Plan. For example:

- sewerage tunnel and feeder bores (including disused sewer pipes)
- disused mines (such as small coal mines in South Katoomba)
- below ground pipes & construction which interfere with aquifers, for example, building footings, and the water pipe to Cascade dam.

The Society recommends that all construction (public and private) be required to be assessed for the likelihood of interference with groundwater. If any interference with groundwater is found to be possible, an application for a licence should be mandatory, and therefore a thorough assessment under this Water Sharing Plan undertaken. An extraction licence would therefore be a requirement before any project could proceed which may potentially redirect groundwater.

The planned and proposed road tunnels through the Blue Mountains are an example of where a requirement to obtain an extraction licence would allow for a proper assessment and approval/rejection within the context of total groundwater extraction limits.

3.4 HIGH-PRIORITY GROUNDWATER-DEPENDENT ECOSYSTEMS

The Society recommends that all 3 Blue Mountains Groundwater Dependent Ecosystems (GDEs), be identified as high priority, viz :

- Blue Mountains Swamps
- Newnes Plateau Shrub Swamps (NPSS), and
- Wet cliff-face vegetation.

It is the Society's view that identification of all High-priority groundwater-dependent ecosystems should occur before the commencement of the plan. It appears that GDEs that are identified as being of 'high ecological value', and which are currently under threat of groundwater extraction are identified as being high priority for the purposes of the plans.⁴

Hatton and Evans (1998, p. 4) and Clifton and Evans (2001) identified five classes of groundwater dependence for GDEs, including ecosystems with proportional dependence on groundwater. In relation to these, they suggest that "it is likely that a unit change in the amount of groundwater will result in a proportional change in the health or extent of that ecosystem". This category included swamp heaths on the Hawkesbury sandstones in the south-eastern uplands.

Commenting on the level of groundwater dependency of wetland ecosystems, Clifton and Evans (2001) highlighted the importance of maintaining adequate groundwater levels in unconfined aquifers and adequate groundwater discharge flux for most wetland ecosystems to maintain the necessary level of wetness or waterlogging for key ecological stages: "Changes in water table level may have important implications for these communities. Prolonged lowering or raising of the water table is likely to result in changes in species composition, favouring species adapted to drier or wetter conditions, respectively". Serov et al. (2012) and the NSW Government (2002) similarly identified these Blue Mountains Swamps as GDEs and noted the high risk to these GDEs from reduction in groundwater availability.

⁴ NSW Government, Department of Primary Industries (Water), *Macro water sharing plans – the approach for groundwater: a report to assist community consultation* (November 2015), p 42.

The Society submits that all Blue Mountains GDEs are covered by definition, and not mapping alone, in order that small areas not mapped can be captured. For example of the less than 3000 ha remaining of Blue Mountain Swamps, they vary in size from 0.1 ha to 70 ha. There is no possibility that all the smaller swamps can be mapped. They should be defined in such a way that they all remaining swamp and clifftop vegetation, irrespective of whether they have been mapped or not are captured and protected.

3.5 CLIMATE CHANGE

The threat from climate change in terms of altered hydrology, particularly from lowering of water tables, has been highlighted by various authors (e.g. Keith et al. 2010, 2014; Ramp & Chapple 2010). Reduction in groundwater availability to peat swamp ecosystems as a result of groundwater extraction for commercial or residential purposes will further compound impacts associated with a rapidly changing climate.

However, it is unclear how climate change has been taken into account for the purposes of the preparation of the Draft Plan. There is no reference to climate change in:

- the Draft Plan;
- NSW Government, Department of Planning and Environment, 'Report card for the Sydney Basin West Groundwater Source';
- NSW Government, Department of Planning and Environment fact sheet, 'A new water sharing plan for the greater metropolitan region: A summary of proposed changes included in the draft *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2023*';
- NSW Government, Department of Primary Industries, *Macro water sharing plans – the approach for groundwater: A report to assist community consultation* (November 2015).

The cumulative impact of climate change and groundwater extraction must be incorporated into any assessment of vulnerability for these GDEs. In view of the lack of detailed knowledge and characterisation of the complex hydrogeology and aquifer systems of the Blue Mountains, the Precautionary Principle must be applied.

The Society recommends that climate change should be explicitly referred to in the Draft Plan, and taken into account in the assessment of the identification of, and rules relating to GDEs. It would be appropriate to include a reference to climate change in the vision statement, objectives and/or strategies of the Draft Plan. For example, the s 8 objectives could be amended to include: 'to recognise and protect groundwater sources and their dependent ecosystems from the effects of climate change'.

Thank you for the opportunity to provide a submission to this plan.

Yours sincerely



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