

Report card for the Sydney Basin Nepean Groundwater Source

Report card 7 of 10

Water source context

Water Sharing Plan:	The Greater Metropolitan Region Groundwater Sources
Management Zones:	Nepean Management Zone 1 and Nepean Management Zone 2
High priority groundwater-dependent ecosystems:	Identified at the commencement of the plan
Average annual rainfall recharge:	161,763 ML/year
Total recharge area:	3,944.7 km ²

Current groundwater requirements

Basic landholder rights

Domestic and stock rights estimate:	5,776 ML/year
Native title rights:	0 ML/year

Licensed water entitlements

Aquifer access licence entitlements:	31,446 shares
Domestic and stock access licence entitlements:	13 ML/year
Local water utilities entitlement:	0 ML/year
Major water utility licence entitlement:	0 ML/year

Rules

Managing access licenses

Each water access licence has its own share component (outlining the shares in the available resource) and a water allocation account that acts like a bank account where water is credited or debited.

- Water is credited to an account by an available water determination or if water is traded in (purchased) during the water year from other licence holders
- Water is debited from the account when water is extracted or traded out (sold). Total extraction from a work (pump, bore, etc.) will be measured via metering or logbooks.

Table 1. Draft rules for granting access licenses

Type	Current rules	Proposed rules
<p>There are limited purposes for which a new licence will be granted. It is anticipated that most water needs will be sourced from the market. One purpose a licence may be granted is for Aboriginal cultural uses. Other purposes are identified in Clause 10 of the <i>Water Management Act General Regulation 2018</i>.</p>		
Aboriginal cultural access licence	Allowed to a limit less than or equal to 10 ML/year.	No change.
Aboriginal community development access licence	Not permitted	No change.
Major water utility licence	Permitted.	No change.
Local Water Utility	Not permitted	Permitted

Table 2. Draft water allocation account rules

Type	Current rules	Proposed rules
<p>Account rules outline the maximum amount of water that can be carried over in water allocation accounts from one water year to the next. The actual amount carried over will depend on the volume remaining in the account at the end of the water year.</p> <p>The plan also outlines the maximum amount of water in a water year that can be debited from an account (by taking groundwater or trading water from the account). If there is more water in the account than this maximum amount, it cannot be taken or sold in that water year.</p>		
Maximum carryover	<p>Not permitted for:</p> <ul style="list-style-type: none"> • Local water utility • Domestic and stock access licence 	<p>No change:</p> <ul style="list-style-type: none"> • Local water utility • Domestic and stock access licence <p>Aquifer access licence:</p>

Type	Current rules	Proposed rules
	<p>Aquifer access licence:</p> <ul style="list-style-type: none"> permitted up to 0.1 ML/share if metering equipment has been installed. 	<ul style="list-style-type: none"> carryover allowed without metering. <p>The rule which prevented carryover unless metered has been removed. The risks of overextraction have been reviewed and these will be managed according to the non-urban metering framework and regulations.</p>
<p>Maximum volume that can be debited from a water allocation account in a water year</p>	<p>The sum of:</p> <ul style="list-style-type: none"> the volume of water allocated to the account in that water year from available water determinations the allocations carried over from the previous water year water allocation assigned (purchased through trade) to the account in that water year water allocations re-credited into the account in that water year. 	<p>No change.</p>

Table 3. Draft long-term average annual extraction limit

This is the volume of water that can be extracted under all access licences and basic landholder rights within the water source on average during a water year.

Type	Current rules	Proposed rules
<p>Long-term average annual extraction limit</p>	<p>99,568 ML/year</p>	<p>64,785 ML/year</p>
<p>Non-compliance with extraction limit</p>	<p>If 5-year average extraction exceeds the long-term average annual extraction limit by 5%</p>	<p>No change.</p>
<p>Action if there is non-compliance with extraction limit</p>	<p>Reduce available water determinations.</p>	<p>No change.</p>

Table 4. Draft groundwater access rules

Type	Current rules	Proposed rules
<p>Cease to take</p>	<p>Groundwater taken under:</p> <ul style="list-style-type: none"> • a major utility or local water utility access licences that nominates a new water supply work or • an aquifer access licence from a location at or less than 40m of the high bank of a river <p>are subject to the same access rules which apply to take under an unregulated river access licence according to the <i>Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011</i>.</p>	<p>No change to intent. The same access rules that apply to extraction from unregulated rivers apply to groundwater extraction in areas adjacent to rivers.</p> <p>However:</p> <ul style="list-style-type: none"> • Rules now only apply to aquifer access licences. • The area where these rules apply is now described as “waterfront land”¹. • Rules no longer apply to new water supply works nominated by local water utility or major water utility access licences. This is because other rules in the plan manage the potential impacts from any new water supply works including those nominated by local or major water utility access licences. These are: <ul style="list-style-type: none"> ○ New water supply works are not permitted on waterfront land unless they cause no more than minimal impact (see Table 6). ○ Any water supply work that causes no more than minimal impact is exempt from access rules (see Table 5)– any new approved bore would satisfy this criteria. <p>Cease-to-pump rules</p> <p>Groundwater can’t be taken under an aquifer access licence from a bore on waterfront land if there is no visible flow in the river at the location closest to the bore unless the location is—</p> <ul style="list-style-type: none"> • an in-river pool at or above full capacity, or

¹ Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

- an in-river dam pool, if —
 - the in-river dam is at or above full capacity, or
 - the take is otherwise permitted according to the approval for the in-river dam

In some areas additional rules apply and groundwater can't be taken under an aquifer access licence from a bore on waterfront land if both of the following apply —

- the river is in a water source or management zone within the meaning of the *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2023*, and
- flows in the water source or management zone are in the Very Low Flow Class or take is not permitted under other access rules.

In the Sydney Basin Nepean Groundwater Source, the areas are:

- Broughton Creek Water source
- Kowmung River Water Source
- Little River Water Source
- Lower Wingecarribee River Water Source
- Lower Wollondilly River Water Source
- Maguires Crossing Water Source
- Maldon Weir Water Source
- Mid Nepean Weirs Water Source
 - Brownlow Hill Weir Management Zone
 - Camden Weir Management Zone
 - Cobbity Weir Management Zone
 - Menangle Weir Management Zone

- Mount Hunter Rivulet Weir Management Zone
- Sharpes Weir Management Zone
- Theresa Park Weir Management Zone
- Wallacia Weir Management Zone

- Nattai River Water Source
- Shoalhaven River Gorge Water Source
- Stonequarry Creek Water Source
- Upper Wingecarribee River Water Source
- Warragamba River Water Source
- Werriberri Creek Water Source

The Report Cards for the Greater Metropolitan Unregulated River Water sources provides detail of the rules that apply in these areas and any changes to those rules. The report cards can be found [here](#).

Commence-to-pump rules

Also, if the adjacent river is in a management zone or water source where rules prevent unregulated river access until flows have exceeded the very low flow class for at least 24 hours, groundwater can't be taken from a bore on waterfront land until 24 hours of flow above the very low flow class have passed.

Commence to pump rules apply in the:

- Broughton Creek Water Source,
- Little River Water Source,
- Maguires Crossing Water Source,
- Nattai River Water Source, and
- Werriberri Creek Water Source.

Table 5. Exceptions to groundwater access rules

Type	Current rules	Proposed rules
Health and hygiene	<p>For an access licence specified in clause 1 of Schedule 2 of the plan for any of the purposes listed below. Providing that water taken does not exceed 20 kl/day per access licence:</p> <ul style="list-style-type: none"> • Fruit and vegetable washing • Cleaning of dairy plant and equipment for the purpose of hygiene • Poultry watering and misting • Cleaning of enclosures used for intensive animal production for the purpose of hygiene. 	<p>No change</p> <p>Licences are now identified by their Water Access Licence number (WAL) and listed in Schedule 1.</p>
Works deeper than 30m in underlying parent material	<p>If the water supply work being used to take water from these groundwater sources is drilled into the underlying parent material, and the slotted intervals of the work if deeper than 30 metres.</p>	<p>No change.</p>
Works that cause no more than minimal harm to surface water	<p>If the Minister is satisfied that a hydrogeological study, submitted by the applicant and assessed as adequate by the Minister, demonstrates that the water supply work being used to take water from these groundwater sources will have no more than minimal impact on base flows in a river.</p>	<p>No change.</p>
Local water utility and major utilities and town water supply	<p>No exception for new water supply works nominated by these types of access licences.</p> <p>Exception for existing licences listed in Schedule 2</p>	<p>Access rules are no longer required for new water supply works nominated by Local or Major Water utility access licences.</p> <p>New water supply works are not permitted on waterfront land where these rules would apply.</p> <p>Exception retained for the licences listed in Schedule 2 from Sydney Basin Nepean Groundwater Source. These are domestic and stock licences and access rules do not apply to these.</p>

<p>Aquifer interference</p>	<p>An aquifer access licence that nominates an aquifer interference approval and an access licence for a project under Part 3A, or State significant infrastructure approved under Part 5.1, of the <i>Environmental Planning and Assessment Act 1979</i>.</p>	<p>Take of water under an access licence in relation to an aquifer interference activity if –</p> <p>(a) for an aquifer interference activity for which a planning approval is in force – the licence holder complies with a water management plan, if any, required under the planning approval in relation to the aquifer interference activity, or</p> <p>(b) in the Minister’s opinion, “the licence holder is not reasonably capable of complying with the access rule concerned.”</p>
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Table 6. Draft rules for groundwater water supply works

Type	Current rules	Proposed rules
<p>Rules to minimise interference between bores</p>	<p>Water supply works (bores) cannot be granted or amended to be within:</p> <ul style="list-style-type: none"> • 400 m from a bore that is nominated on an aquifer access licence on another landholding • 100 m from a bore that is used to extract basic landholder rights on another landholding • 50 m from a property boundary • 1,000 m from a bore nominating a local or major water utility access licence • 200 m from a government monitoring bore. <p>These restrictions do not apply if the bore:</p> <ul style="list-style-type: none"> • is used solely for basic landholder rights • is a replacement bore • is used for monitoring, environmental remediation activities or emergency services • is located at a lesser distance but will have no more than a minimal effect on existing extraction 	<p>No change.</p>

Type	Current rules	Proposed rules
<p>Rules for bores located near contamination sources</p>	<ul style="list-style-type: none"> the local water utility or major utility gives written consent to the construction of the bore. <p>Water supply works (bores) must not be granted or amended within:</p> <ul style="list-style-type: none"> 250 m from the edge of a plume of a contamination source listed in the plan (these include on-site sewage disposal systems) 250 m and 500 m from the edge of a plume associated with a contamination source identified within the plan, unless no drawdown of water will occur within 250 m of that plume <p>These distances restrictions do not apply if:</p> <ul style="list-style-type: none"> the distance of the bore is adequate to protect the water source, its dependent ecosystems, and public health and safety, or the bore is used for the purpose of monitoring, environmental remediation activities or emergency services. 	<p>Reference for contamination sources updated.</p> <p>On-site sewage disposal systems now have separate rules to other contamination sources.</p> <p>Rules revised as follows:</p> <ul style="list-style-type: none"> within 500m from contamination a source within 250 m from the edge of a plume of a contamination source between 250m and 500m from the edge of a plume associated with a contamination source unless no change in groundwater level will occur within within 250m of an onsite sewage disposal system unless the bore is: <ul style="list-style-type: none"> constructed with cement grout in the borehole annulus to a minimum depth of 20 m from the ground surface located at a sufficient distance from the on-site sewage disposal system to prevent migration of septic contamination in the aquifer
<p>Rules for bores located near high priority groundwater-dependent ecosystems</p>	<p>Water supply works (bores) are not allowed within:</p> <ul style="list-style-type: none"> 40 m of the top of the high bank of a lagoon or any third order or higher order stream 40 m of the high bank of a first-, second- or third-order stream unless the water supply work is drilled into bedrock and screened to at least 30m or a hydrogeological study, submitted by the applicant demonstrates that the water supply work will have no 	<ol style="list-style-type: none"> The term “within 40m of the high bank of a river” has been replaced by “on waterfront land”. This is consistent with the definition of the area in the Water Management Act. The distance restrictions from sensitive environmental areas were retained. These are now referred to as high priority groundwater dependent ecosystems. Additional high priority groundwater dependent ecosystems have been identified. The distance restrictions

Type	Current rules	Proposed rules
	<p>more than minimal impact on base flows in the river,</p> <ul style="list-style-type: none"> • 100 m of any high priority, groundwater dependent ecosystem in the case of a bore solely for basic landholder rights • 200 m of any high-priority, groundwater-dependent ecosystem in the case of a bore not solely for basic landholder rights • at a distance specified by the Minister that is more than 200 metres from a high priority groundwater dependent ecosystem listed in clause 1 of Schedule 4 • 500 m of a Karst environment • within 100 metres from the top of an escarpment. <p>These restrictions do not apply if the bore:</p> <ul style="list-style-type: none"> • is not likely to cause drawdown at the perimeter of that groundwater dependent ecosystem listed in clause 1 of Schedule 4 • is not likely to cause drawdown at the perimeter of that high priority karst environment groundwater dependent ecosystem • is a replacement bore • is used for monitoring, environmental remediation activities or emergency services. • replaces an existing bore that is part of a network for a major utility or local water utility for the purpose of town water supply • is located at a lesser distance but would result in no greater impact on these groundwater sources and their groundwater dependent ecosystems. 	<p>that apply to these new areas are as follows:</p> <ul style="list-style-type: none"> • 200m of a high-priority groundwater-dependent vegetation ecosystem identified on the High Priority Groundwater Dependent Ecosystem Map unless, in the Minister’s opinion, there is not a high probability of groundwater dependence for the relevant ecosystem • 200m of a coastal wetland. <p>4. The exemptions are simplified and apply to the existing and newly identified areas. The distance restrictions do not apply if the bore:</p> <ul style="list-style-type: none"> • is used only for basic landholder rights, • is a replacement groundwater work, • is for monitoring, environmental remediation activities or emergency services, • location is likely to cause no more than minimal harm to a high priority groundwater dependent ecosystem. <p>Note - rules for basic landholder rights bores can be found in their own section below.</p>

Type	Current rules	Proposed rules
Rules for bores located near potential acid sulfate soils	None	New bores are not allowed, unless there is not likely to be a significant risk of acidification of the groundwater source as a result of the construction and location of the bore.
Rules for bores located near groundwater-dependent, culturally significant sites	<p>Water supply works (bores) are not allowed within:</p> <ul style="list-style-type: none"> • 200 m of groundwater-dependent, culturally significant sites if the bore is not solely for basic landholder rights. <p>This restriction does not apply if the Minister is satisfied that the bore:</p> <ul style="list-style-type: none"> • is a replacement bore • is used for monitoring, environmental management or remediation works • replaces an existing bore that is part of a network for a major utility or local water utility for the purpose of town water supply • is sealed off to the nearest impervious layer above the slotted intervals of the work with an impermeable seal constructed between the casing and the bore hole in accordance with any requirements specified by the Minister • is located at a lesser distance, but would have no more than a minimal impact on these water sources and their groundwater dependent culturally significant sites. 	No change.
Rules for bores used solely for basic landholder rights	<p>Water supply works (bores) used solely for basic landholder rights are not allowed within:</p> <ul style="list-style-type: none"> • 40 m from the top of the high bank of a river or lagoon • 100 m of a high-priority, groundwater-dependent ecosystem listed in a schedule 	<ol style="list-style-type: none"> 1. The term “within 40m of the high bank of a river” has been replaced by “on waterfront land”. This is consistent with the definition of the area in the Water Management Act. 2. The distance restrictions from sensitive environmental areas were retained. These are now referred to as

Type	Current rules	Proposed rules
	<ul style="list-style-type: none"> 100 m of a groundwater-dependent, culturally significant area within 100m from the top of an escarpment 500m of a high priority karst environment <p>These restrictions do not apply if the bore:</p> <ul style="list-style-type: none"> is a replacement bore is located at a lesser distance, but would result in no more than minimal harm to any high-priority, groundwater-dependent ecosystem is located at a lesser distance, but would result in no more than minimal harm to any groundwater-dependent, culturally significant area. 	<p>high priority groundwater dependent ecosystems.</p> <p>3. Additional high priority groundwater dependent ecosystems have been identified. The distance restrictions that apply to these new areas are as follows:</p> <ul style="list-style-type: none"> 100m of a high-priority groundwater-dependent vegetation ecosystem identified on the High Priority Groundwater Dependent Ecosystem Map unless, in the Minister’s opinion, there is not a high probability of groundwater dependence for the relevant ecosystem 100m of a coastal wetland. <p>4. The exemptions apply to the existing and newly identified areas.</p> <p>5. New rules prevent basic rights bores within:</p> <ul style="list-style-type: none"> 100m of a Government monitoring or observation bore.
<p>Replacement groundwater works</p>	<p>A replacement water supply work (bore) must be located within:</p> <ul style="list-style-type: none"> 20 m of the existing bore no closer to the river than the bore being replaced if within 40 m of the top of the high bank of the river. <p>The replacement bore must not have a greater internal diameter or excavation footprint than the existing bore, unless the existing bore’s internal diameter is:</p> <ul style="list-style-type: none"> no longer manufactured, in which case it may be no greater than 120 % of the current internal diameter less than 100 mm, in which case the internal diameter must be no more than 100m. 	<p>No change.</p>

Table 7. Draft water trading (dealing) rules

Type	Current rules	Proposed rules
<p>Trading covers conversion of access licence to a new category (for example from unregulated river to aquifer), assignment of rights dealings (trading of a licence), share component dealings between water sources (trading of entitlement between water sources), water allocation dealings (trading an annual allocation) and water supply works dealings (relocation of an extraction point).</p>		
<p>INTO water source</p>	<p>Trading into the groundwater source is prohibited.</p>	<p>No change.</p>
<p>WITHIN water source</p>	<p>Trading between Nepean Management Zones 1 and 2 in the Sydney Basin Nepean Groundwater Source.</p> <p>Trading that involves an assignment causing the total share components of access licences in Nepean Management Zone 1 to exceed the total share components of access licences in that management zone at the commencement of this Plan.</p>	<p>No change to the rules. The share component at the commencement of the 2011 plan is now identified as 12,465 shares,</p>
	<p>Trading within groundwater sources in the Greater Metropolitan Region Groundwater sources is allowed.</p> <p>Except when -</p> <ul style="list-style-type: none"> • In the Minister’s opinion the dealing would adversely affect - <ul style="list-style-type: none"> ○ the water levels in an aquifer, ○ the quality of water in an aquifer, ○ the ability to prevent land subsidence or compaction in an aquifer, ○ groundwater dependent ecosystems, ○ or the pressure or pressure recovery of an aquifer to the extent that a temporary water restriction order may need to be made under the Act. 	<p>The exception has been removed.</p> <p>Impacts of dealings on an aquifer, groundwater dependent ecosystems or other users are managed under the <i>Water Management Act 2000</i>.</p>

Type	Current rules	Proposed rules
Conversion to a new category	Not permitted	No change

Key factors for decisions

- Key factors considered in decisions specific to this water source are outlined below.
- Further factors considered for all water sources are outlined in the [Factsheet – 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*.

Connectivity with surface water resources

While all aquifers may be connected to surface water resources to some degree, porous rock groundwater sources are considered less highly connected as they are largely dependent on rainfall recharge. For this reason, only rainfall recharge is considered as the basis of sharing water.

Sharing water

- In this water source the long-term average annual rainfall recharge is used as a basis for sharing water.
- Details of how we estimated rainfall recharge and determined the sustainability factors is available in the [Factsheet – How water is shared between the environment and consumptive purposes in the Greater Metropolitan Region Groundwater Sources](#)
- 100% of average annual rainfall recharge in high conservation value areas is set aside for the environment.
- A sustainability factor is applied to rainfall recharge over the remaining area to share water between the environment and extractive users - balancing the economic benefit of groundwater extraction to a community against protecting the groundwater source and its dependent ecosystems. This approach considers:
 - the risks to the environment and to socio-economic values of communities and
 - the water management tools, other than extraction limits, that protect groundwater sources and their dependent environments from extraction.
- Figure 1 shows the sustainability factor for this water source after applying the highest environmental and socio-economic risk outcomes identified in Table 8. This means equivalent to 60% of the estimate average annual rainfall recharge outside of high conservation value areas is available for extraction and the remainder is reserved for the environment.

Environmental risk	High	5%	25%	50%
	Moderate	25%	50%	Sydney Basin Nepean Groundwater Source 60%
	Low	50%	60%	70%
		Low	Moderate	High
Socio-economic risk				

Figure 1. Sustainability factor for the Sydney Basin Nepean groundwater source.

Table 8. Risk outcomes

Environmental risks (to ecological assets, water quality and aquifer integrity)	Risk outcome
Risk of groundwater extraction causes drawdown affecting access for groundwater-dependent ecosystems	M
Risk of groundwater extraction inducing connection with poor quality water on groundwater-dependent ecosystems	L ²
Risk of groundwater extraction causes drawdown reducing access for instream environmental values	L
Risk of groundwater extraction inducing connection with poor quality water (and impacts on consumptive users)	L ³
What is the effect on the water source by a change in the freshwater/saltwater interface	N/A
Risks of groundwater extraction impacting on structural integrity (and access for consumptive users)	Nil
Highest environmental risk	M
Socio-economic risk	Risk Outcome
Risk to security of access from extraction	M

² The GHD risk outcome was medium. This risk rating was associated with mining. The risk, for the purposes of LTAAEL is intended to reflect the potential for water quality changes. The risk was assigned “low” as the water quality is not changing, it is already poor

³ The GHD risk outcome was medium. This risk rating was associated with mining. The risk, for the purposes of LTAAEL is intended to reflect the potential for water quality changes. The risk was assigned “low” as the water quality is not changing, it is already poor. This did not change the overall risk outcome.

Environmental risks (to ecological assets, water quality and aquifer integrity)	Risk outcome
Risk to ongoing groundwater access	M
Risk to dependence on town water supply	H
Risk to dependence on groundwater related activities	H
Highest socio-economic risk	H

Public exhibition

The Department of Planning and Environment seeks feedback from the public on the suitability of the proposed rules for this water source.

The draft *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2023* and supporting fact sheets are available from the department’s [Public Exhibition website](#).