

Report card for the Hawkesbury Alluvium Groundwater Source

Report card 2 of 10

Water source context

Water Sharing Plan:	The Greater Metropolitan Region Groundwater Sources
High priority groundwater-dependent ecosystems:	Identified at the commencement of the plan
Average annual rainfall recharge:	10,469 ML/year
Total recharge area:	150.6 km ²

Current groundwater requirements

Basic landholder rights

Domestic and stock rights estimate:	268 ML/year
Native title rights:	0 ML/year

Licensed water entitlements

Aquifer access licence entitlements:	1,172 shares
Domestic and stock access licence entitlements:	0 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	Permitted.
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	Not permitted for: <ul style="list-style-type: none"> Local water utility: Aquifer access licence Domestic and stock access licence 	No change.
Maximum volume that can be debited from a water allocation account in a water year	The sum of: <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 	No change.

Type	Current rules	Proposed rules
	<ul style="list-style-type: none"> water allocation assigned (purchased through trade) to the account in that water year water allocations re-credited into the account in that water year. 	

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
Long-term average annual extraction limit	2,456 ML/year	5,103 ML/year
Non-compliance with extraction limit	If 5-year average extraction exceeds the long-term average annual extraction limit by 5%	No change.
Action if there is non-compliance with extraction limit	Reduce available water determinations.	Reduce available water determinations.

Table 4. Draft groundwater access rules

Type	Current rules	Proposed rules
Cease to take under an Aquifer Access Licence	<p>Water taken under an aquifer access licence or a local water utility or major water utility licence nominating a new water supply work from the Hawkesbury Alluvium Groundwater Source if the water supply work is located:</p> <ul style="list-style-type: none"> at or less than 40 metres from the top of the high bank of a river is subject to the same access rules as those applying to the taking of water under an unregulated river access licence from the Upper Hawkesbury (Grose River to South Creek) Management Zone 	<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. These rules apply elsewhere in the groundwater source if low flow conditions last for 30 days.</p> <p>However:</p> <ul style="list-style-type: none"> The very low flow class no longer refers to the Upper Hawkesbury (Grose River to South Creek) Management Zone, it refers to the Upper Hawkesbury River Water Source. Refer to the Upper Hawkesbury River Water Source Report Card for the reason for this

<p>contained in clause 57 of the <u>Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011</u>,</p> <p>Water taken under an aquifer access licence from the Hawkesbury Alluvium Groundwater Source if the water supply work is located:</p> <ul style="list-style-type: none"> more than 40 metres from the top of the high bank of a river is subject to the same access rules as those applying to the taking of water under an unregulated river access licence from the Upper Hawkesbury (Grose River to South Creek) Management Zone contained in clause 57 of the <u>Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011</u>, except that the rules will commence to apply 30 days after they apply to surface water licences 	<p>change, the rules, and changes to the rules.</p> <ul style="list-style-type: none"> Rules now only apply to aquifer access licences. The area adjacent to rivers 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.
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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, or such lower amount specified on the access licence in accordance with subclause (6):</p> <ul style="list-style-type: none"> Fruit and vegetable washing 	<p>No change</p> <p>Licences are now identified by their Water Access Licence number (WAL) and listed in Schedule 1.</p>

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.

Type	Current rules	Proposed rules
	<ul style="list-style-type: none"> • 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. 	
Works deeper than 30m in underlying parent material	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.	This does not apply to this groundwater source. Any works drilled into bedrock are within one of the underlying Sydney Basin Groundwater Sources and must be screened to this according to bore construction rules.
Works that cause no more than minimal harm to surface water	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.	No change.
Local water utility and major utilities and town water supply	<p>No exception for new water supply works located within 40m of the high bank of a river, nominated by these types of access licences.</p> <p>Exception for licences more than 40m from the high bank of a river and existing licences listed in Schedule 2 however, none of these are in the Hawkesbury Alluvium Groundwater Source.</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>
Aquifer interference	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>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>

Type	Current rules	Proposed rules
		(b) in the Minister’s opinion, “the licence holder is not reasonably capable of complying with the access rule concerned.”

Table 6. Draft rules for groundwater water supply works

Type	Current rules	Proposed rules
Rules to minimise interference between bores	<p>Water supply works (bores) cannot be granted or amended to be within:</p> <ul style="list-style-type: none"> • 200 m from a bore that is nominated on an aquifer access licence on another landholding • 200 m from a bore that is used to extract basic landholder rights on another landholding • 100 m from a property boundary • 500 m from a bore nominating a local or major water utility access licence • 100 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 • the local water utility or major utility gives written consent to the construction of the bore. 	No change.
Rules for bores located near contamination sources	<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) 	<p>Reference for contamination sources updated.</p> <p>On-site sewage disposal systems now have separate rules to other contamination sources.</p> <ul style="list-style-type: none"> • Rules revised as follows: within 500m from contamination a source

Type	Current rules	Proposed rules
	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 more than minimal impact on base flows in the river, 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 	<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 that apply to these new areas are as follows: <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

Type	Current rules	Proposed rules
	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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>
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. 	No change.

Type	Current rules	Proposed rules
	<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. 	
<p>Rules for bores used solely for basic landholder rights</p>	<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 • 100 m of a groundwater-dependent, culturally significant site • 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 	<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 high priority groundwater dependent ecosystems. 3. Additional high priority groundwater dependent ecosystems have been identified. The distance restrictions that apply to these new areas are as follows: <ul style="list-style-type: none"> • 100m of a high-priority groundwater-dependent vegetation ecosystem identified on the High Priority Groundwater Dependent Ecosystem Map

Type	Current rules	Proposed rules
	<p>harm to any high-priority, groundwater-dependent ecosystem</p> <ul style="list-style-type: none"> is located at a lesser distance, but would result in no more than minimal harm to any groundwater-dependent, culturally significant area. 	<p>unless, in the Minister’s opinion, there is not a high probability of groundwater dependence for the relevant ecosystem</p> <ul style="list-style-type: none"> 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.
Replacement groundwater works	<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 100 mm. 	No change.

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>		
INTO water source	Trading into the groundwater source is prohibited.	No change.
WITHIN water source	Trading within groundwater sources in the Greater Metropolitan Region Groundwater sources is allowed.	The exception has been removed. Impacts of dealings on an aquifer, groundwater dependent ecosystems or other

Type	Current rules	Proposed rules
	Except when - <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. 	users are managed under the Water Management Act 2000.
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, the Hawkesbury Alluvium Groundwater Source is considered moderately connected. It is largely dependent on rainfall recharge but may impact on surface water flows. For this reason, only rainfall recharge is considered as the basis of sharing water. Access rules manage impacts

The Hawkesbury Alluvium Groundwater Source is moderately connected to the Hawkesbury River. For this reason:

- rainfall recharge is used as the basis for sharing water
- take by aquifer access licences on waterfront land is dependent on flows in the Hawkesbury River at the time of extraction

- take by aquifer access licences elsewhere depends on flows in the Hawkesbury River for the previous 30 days.

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](#)
- Between 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. The risks to the environment determine the maximum portion available for extraction. The socio-economic risks determine if the maximum is needed to meet demand. 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 50% 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%	60%
	Low	Hawkesbury Alluvium Groundwater Source 50%	60%	70%
		Low	Moderate	High
Socio-economic risk				

Figure 1 Sustainability factor for the Hawkesbury Alluvium 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	L
Risk of groundwater extraction inducing connection with poor quality water on groundwater-dependent ecosystems	L
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
What is the effect on the water source by a change in the freshwater/saltwater interface	L
Risks of groundwater extraction impacting on structural integrity (and access for consumptive users)	L
Highest environmental risk	L
Socio-economic risk	Risk Outcome
Risk to security of access from extraction	L
Risk to ongoing groundwater access	L
Risk to dependence on town water supply	L
Risk to dependence on groundwater related activities	L
Highest socio-economic risk	L

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](#).