

Assessing groundwater applications

The potential impact of groundwater extraction is managed through the assessment of all applications for groundwater dealings (trade) and water supply work approvals (bores). Either WaterNSW or the Natural Resource Access Regulator receives applications and then refers them, as required, to the NSW Department of Industry—Lands & Water for hydrogeological assessment. This fact sheet outlines the assessment process and the criteria applied.

Procedure for assessing a groundwater application

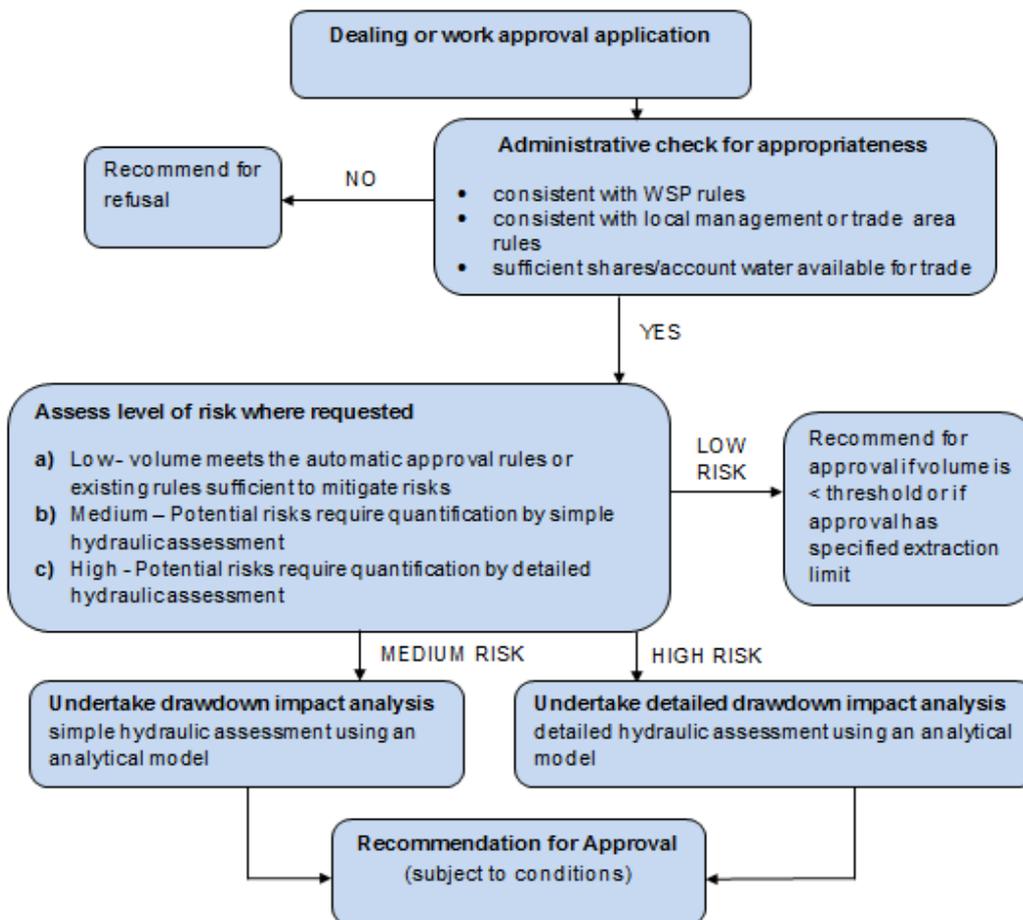


Figure 1. Procedure for assessing an application

Specific hydrogeological assessment

Once an application for a dealing or a water supply work approval has been checked and accepted, it is then prioritised for assessment. Prioritisation is based on the level of risk to the groundwater source and its dependent ecosystems. The risk categories are:

- low risk—no further impact assessment is carried out and the application is approved
- medium risk—a simple hydraulic assessment required (analytical model)
- high risk—a detailed hydraulic assessment required (analytical model).

The hydraulic assessment involves the analysis of expected drawdown impacts compared to the acceptable levels of impact specified for each groundwater source.

Applications that require hydrogeological assessment

Table 1. Types of applications requiring assessment

Water Management Act 2000 provision	Application type	Description
92	Water supply works approval	Approval to construct a new or additional groundwater work
71P	Subdivision and consolidation of access licences	Division of a licence into two or more licences (usually so a portion can be sold); combining of licences
71Q	Assignment of rights under access licence dealing	Reduction of the share component on a licence and the increase by the same amount on another (previously referred to as a permanent trade)
71R	Amendment of share component of access licence	Cancel an access licence and grant a new licence in another water source or management area
71S	Amendment of extraction component of access licence	Change the times or rates at which water can be extracted (not generally applicable to groundwater)
71T	Assignment of water allocations	Reduction of allocation in a licence account and increase by the same amount in another (previously known as a temporary transfer)
71U	Interstate transfer of access licences	Same as 71Q dealing except it is between two interstate access licences
71V	Interstate assignment of water allocations	Same as 71T dealing except it is between two interstate access licences
71W	Nomination of water supply works to access licence	Nomination of a works removed from or added to an access licence, irrespective of ownership and location.

Hydrogeological assessment criteria

Groundwater is managed to allow for some level of drawdown within the groundwater source. Determining the magnitude of this impact in order to set assessment criteria has been largely based on water resource management experience. Considerations when deciding the level of impact on the groundwater source and its dependent ecosystems include impacts on:

- connected surface water sources
- culturally significant sites
- neighbouring water supply bores
- groundwater quality.

Cumulative drawdown from existing authorised works and entitlements and the likely compaction of sediments within the groundwater source are also considered.

The assessment criteria applied for groundwater source and aquifer type are provided in Table 2.

For dealings, the same assessment criteria are applied to both assignment of allocation (temporary trade) and assignment of share component (permanent trade) however the impact period considered is different, being one year and ten years respectively.

Table 2. Groundwater criteria for acceptable level of impacts

Groundwater source	Impact on water table (unconfined aquifers)	Impact on groundwater pressure (confined/semi-confined aquifers)
<p>1. Alluvial groundwater sources</p> <p>These criteria apply to all alluvial groundwater sources except those listed at items 1.1 to 1.2</p>	<ol style="list-style-type: none"> 1. Less than 0.1 metre cumulative drawdown in the water table, 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater-dependent ecosystem, or b. high-priority, culturally significant site. 2. An additional drawdown of not more than 10% of the pre-development Total Available Drawdown (TAD) above the base of the water source to a maximum of 2 metres at any: <ol style="list-style-type: none"> a. 3rd or higher order surface water source measured at 40 metres from the high bank, or b. water supply works (excluding those on the same property) subject to negotiation with impacted parties. 3. A cumulative drawdown of not more than 10% of the pre-development TAD of the water source to a maximum of 2 metres at a distance of 200 metres from any water supply works (including the pumping bores) subject to negotiation with impacted parties. 	<ol style="list-style-type: none"> 1. A cumulative drawdown of not more than 40% of the pre-development TAD above the base of the water source at a distance of 200 metres from any water supply works including the pumping bores. 2. An additional drawdown of not more than 10% of the pre-development TAD above the base of the water source to a maximum of 3 metres at any water supply works (excluding those on the same property), subject to negotiation with impacted parties.
<p>1.1 Lower Murrumbidgee, deep groundwater source and Lower Murray groundwater source</p>	<p>Not applicable</p>	<ol style="list-style-type: none"> 1. A cumulative drawdown of not more than 70% of the pre-development TAD above the top of the productive aquifer at a distance of 200 metres from any water supply works including the pumping bores. 2. An additional drawdown of not more than 10% of the pre-development TAD above the top of the productive aquifer to a maximum of 3 metres at any water supply works (excluding those on the same property), subject to negotiation with impacted parties.

Groundwater source	Impact on water table (unconfined aquifers)	Impact on groundwater pressure (confined/semi-confined aquifers)
<p>1.2 Lower Gwydir and Lower Namoi groundwater sources</p>	<ol style="list-style-type: none"> 1. Less than 0.1 metre cumulative drawdown in the water table, 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater dependent ecosystem, or b. high-priority, culturally significant site. 2. An additional drawdown of not more than 10% of the pre-development TAD above the base of the water source to a maximum of 2 metres at any: <ol style="list-style-type: none"> a. 3rd or higher order surface water source measured at 40 metres from the high bank, or b. water supply works (excluding those on the same property) subject to negotiation with impacted parties. 3. A cumulative drawdown of not more than 10% of the pre-development TAD of the water source to a maximum of 2 metres at a distance of 200 metres from any water supply works (including the pumping bores) subject to negotiation with impacted parties. 	<ol style="list-style-type: none"> 1. A cumulative drawdown of not more than 40% of the pre-development TAD above the base of the water source at a distance of 200 metres from any water supply works including the pumping bores. 2. An additional drawdown of not more than 10% of the pre-development TAD above the base of the water source to a maximum of 2 metres at any water supply works (excluding those on the same property), subject to negotiation with impacted parties.

Groundwater source	Impact on water table (unconfined aquifers)	Impact on groundwater pressure (confined/semi-confined aquifers)
<p>2. Coastal sands groundwater sources</p>	<ol style="list-style-type: none"> 1. Less than 0.1 metre cumulative drawdown in the water table 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater-dependent ecosystem, or b. high-priority, culturally significant site. 2. An additional drawdown of not more than 10% of the pre-development TAD above the base of the water source to a maximum of 2 metres at any: <ol style="list-style-type: none"> a. 3rd or higher order surface water source measured at 40 metres from the high bank, or b. water supply works (excluding those on the same property) subject to negotiation with impacted parties. 3. Maintain a positive water table head of greater than or equal to 0.5 metres above mean sea level at 40 metres landward side from any: <ol style="list-style-type: none"> a. seawater body/saline water body b. tidal river or creek c. tidal wetland d. tidal estuary, or e. tidal drains. 4. A cumulative drawdown of no more than 10% of the pre-development TAD of the water source to a maximum of 2 metres at a distance of 200 metres from any water supply works including the pumping bores subject to negotiation with impacted parties 	<ol style="list-style-type: none"> 1. A pressure level decline of not more than 40% of the pre-development pressure level above the base of the water source at a distance of 200 metres from any water supply works including the pumping bores. 2. An additional drawdown of not more than 2 metres of at any water supply works (excluding those on the same property), subject to negotiation with impacted parties.

Groundwater source	Impact on water table (unconfined aquifers)	Impact on groundwater pressure (confined/semi-confined aquifers)
<p>3. Porous and fractured rock groundwater sources</p> <p>These criteria apply to all porous rock sources except those listed at items 3.1 to 3.2</p>	<ol style="list-style-type: none"> 1. Less than 0.1 metre cumulative drawdown in the water table 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater-dependent ecosystem, or b. high-priority, culturally significant site. 2. An additional drawdown of not more than 10% of the pre-development TAD to a maximum of 2 metres at any: <ol style="list-style-type: none"> a. 3rd or higher order surface water source measured at 40 metres from the high bank. b. water supply works (excluding those on the same property), subject to negotiation with impacted parties. 3. A cumulative drawdown of no more than 10% of the pre-development TAD of the unconfined aquifer at a distance of 200 metres from any water supply works including the pumping bores. 	<ol style="list-style-type: none"> 1. A cumulative drawdown of not more than 40% of the pre-development TAD at a distance of 200 metres from any water supply works including the pumping bores. 2. An additional drawdown of not more than 3 metres at any water supply works (excluding those on the same property) subject to negotiation with impacted parties.
<p>3.1. Great Artesian Basin (GAB)</p> <p>Eastern recharge groundwater source, and southern recharge groundwater source</p>	<ol style="list-style-type: none"> 1. Less than 0.1 metre cumulative drawdown in the water table relative to natural variation 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater-dependent ecosystem, or b. high-priority, culturally significant site. 2. An additional drawdown of not more than 10% of the pre-development TAD to a maximum of 2 m at any: <ol style="list-style-type: none"> a. 3rd or higher order surface water source measured at 40 metres from the high bank. b. water supply works (excluding those on the same property), subject to negotiation with impacted parties. 3. A cumulative drawdown of no more than 10% of the pre-development TAD of the unconfined aquifer at a distance of 200 metres from any water supply works including the pumping bores. 	<ol style="list-style-type: none"> 1. Less than 0.2 metre drawdown in the groundwater pressure relative to natural variation 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater dependent ecosystem, or b. high-priority, culturally significant site. 2. Pressure level decline should not: <ol style="list-style-type: none"> a. cause any flowing bore to cease to flow b. be no more than 1 metre at any flowing water supply work, or c. be no more than 2 metres at any non-flowing water supply work. 3. A pressure level decline of not more than 15 metres at a distance of 200 metres from any water supply works including the pumping bores. 4. The cumulative pressure level decline of no more than 10% of the 2008 pressure level above ground surface at the NSW state border.

Groundwater source	Impact on water table (unconfined aquifers)	Impact on groundwater pressure (confined/semi-confined aquifers)
<p>3.2. Great Artesian Basin</p> <p>Surat, Warrego, and central groundwater sources</p>	<p>Not applicable</p>	<ol style="list-style-type: none"> 1. Less than 0.2 metres drawdown in the groundwater pressure relative to natural variation 40 metres from any: <ol style="list-style-type: none"> a. high-priority, groundwater-dependent ecosystem, or b. high-priority, culturally significant site. 2. Pressure level decline should: <ol style="list-style-type: none"> a. not cause any flowing bore to cease to flow b. be no more than 1 metre at any flowing water supply work, or c. be no more than 2 metres at any non-flowing water supply work. 3. A pressure level decline of not more than 30 metres at a distance of 200 m from any water supply works including the pumping bores. 4. The cumulative pressure level decline of no more than 10% of the 2008 pressure level above ground surface at the NSW state border.

More information

More information is provided in the following fact sheets at industry.nsw.gov.au/water-resource-plan-consultation:

- *Groundwater available water determinations*
- *Groundwater-dependent ecosystems*
- *Water resource plans in NSW*

Have your say

Community input is an important part of the development of each water resource plan. As part of the consultation process, stakeholders and the broader community will be able to make written submissions on the draft water resource plans. All submissions received will be used to inform each final plan.

Draft water resource plans will be placed on public exhibition and information sessions held at several locations throughout the plan area.

Draft plans will be available on the department's website, along with a range of supporting information, details of public exhibition points and stakeholder feedback.

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