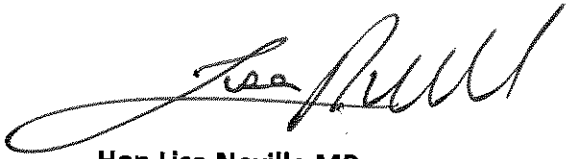


MINISTERIAL GUIDELINES FOR GROUNDWATER LICENSING AND THE PROTECTION OF HIGH VALUE GROUNDWATER DEPENDENT ECOSYSTEMS

I, Lisa Neville MP, as Minister administering the *Water Act 1989*, issue the following Guidelines.



Hon Lisa Neville MP
Minister for Environment, Climate Change and Water

Date: 13/4/15

PART 1 GENERAL

1. CITATION

These Guidelines may be cited as the Guidelines for Groundwater Licensing and the Protection of High Value Groundwater Dependent Ecosystems.

2. COMMENCEMENT

These Guidelines come into operation seven days after the date they are signed.

3. DEFINITIONS & INTERPRETATION

"the Act" means the *Water Act 1989*.

"approved groundwater management plan" means:

- a. a groundwater management plan approved under section 33A of the Act; or
- b. a local groundwater management plan.

"confined" means an aquifer that is separated from land surface by 40 metres or more of aquitard thickness.

"delegate" means the Minister for Water or delegate responsible for issuing licences under section 51 and their transfer under section 62 of the Act.

"drawdown" means is the change in head or water level relative to background condition.,

"feature" means any physical feature that groundwater is a part of, or interacts with, such as an aquifer, discharge to spring, rivers or wetlands.

"gaining" means the process whereby groundwater is flowing into surface water, whether on a temporal or permanent basis.

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"groundwater dependent ecosystems" means those ecosystems that require access to groundwater to meet all or some of their water requirements so as to maintain the communities of plants and animals and ecological processes they support, and ecosystem services they provide.

"groundwater level" is defined for unconfined and confined aquifers as follows:

- a. For an unconfined aquifer it is the depth below the surface where the groundwater pressure equals the atmospheric pressure.
- b. For a confined aquifer it is the potentiometric pressure, the level to which a column of water rises within a bore intersecting the aquifer.

"groundwater licence" means a licence issued under section 51 of the Act for taking and using water from a bore.

"Guidelines" means the Ministerial Guidelines for Groundwater Licensing and the Protection of High Value Groundwater Dependent Ecosystems (this document).

"high value ecosystems" means those ecosystems that are recognised by State and National Governments as being significant for their environmental values; including but not limited to:

- a. Ramsar listed wetlands as identified in the Australian Wetlands database of the Commonwealth Government wetlands listed in the Directory of Important Wetlands in Australia of the Commonwealth Government
- b. Heritage river areas under Schedule 1 of the *Heritage Rivers Act 1992*
- c. species and communities listed under the *Flora and Fauna Guarantee Act 1988* of the Victorian Government or the *Environment Protection and Biodiversity Act 1999* of the Commonwealth Government
- d. priority environmental values set by waterway managers, including those identified in Regional Waterway Strategies (or previously, Regional River Health Strategies) or their relevant sub-strategies.

"hydraulic gradient" means the gradient or difference between two or more measurements of hydraulic head over the length of a groundwater flow path.

"Hydraulic head" means a measurement of water pressure, or depth to water table, commonly level of water based on surface elevation.

"local groundwater management plan" means any management plan prepared and approved by a delegate for managing groundwater in an area.

"licence application area" means the area within which measurable groundwater drawdown occurs.

"perched water table" means an aquifer that occurs above the regional water table, in the unsaturated zone. This occurs when there is an impermeable layer of rock or sediment or

relatively impermeable layer above the main water table/aquifer but below the surface of the land.

“Q90” is a reference to a flow frequency curve; a Q90 flow rate means that 90% of the time, the flow exceeds the stated flow.

“unconfined aquifer” means an aquifer that is at or connected to the land surface, including via other overlying aquifers. An unconfined aquifer has a vertical connection to the surface, unlike a confined aquifer.

4. SCOPE

4.1 These Guidelines apply to an application made under:

- a. section 51 (1) of the Act for a licence to take and use groundwater in an area that is not managed under an approved management plan; or
- b. section 62 of the Act to transfer a groundwater licence for use at a different location, in an area that is not managed under an approved management plan.

4.2 These Guidelines shall be applied where an application is made under section 51 (1) of the Act for a licence to take and use groundwater or its transfer under section 62 of the Act in an area that is managed under an approved groundwater management plan insofar as they are not inconsistent with the requirements of that management plan.

4.3 These Guidelines do not apply to an application made under section 67 of the Act for a licence to construct, alter, remove or decommission a bore identified on an existing groundwater licence.

Part 2 POLICIES

5. RISK ASSESSMENT

5.1 A delegate should assess the risk of the groundwater licence application to high value ecosystems dependent on groundwater, having regard to the need to protect those ecosystems. Schedule 1 provides guidance to the delegate on undertaking a risk assessment.

5.2 If all other matters relevant to the application have been considered and found acceptable, then on the basis of the risk assessment the delegate may:

- a. if the risk is low, approve the groundwater licence application; or
- b. if the risk is medium, develop risk treatment options to manage risk and approve the groundwater licence application with conditions; or

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- c. if the risk is high, develop risk treatment options to reduce the risk to medium, or decide to accept the risk and fully document the reasons, or refuse the groundwater licence application.

6. REFERRAL

6.1 A groundwater licence application shall be referred to the relevant Catchment Management Authority in line with Schedule 2.

7. DECISION MAKING

7.1 The delegate should consider the advice provided by the relevant Catchment Management Authority prior to making a final decision on the groundwater licence application.

SCHEDULE 1 A GUIDE TO RISK ASSESSMENT

A. PURPOSE

The purpose of Schedule 1 is to provide guidance on assessing the risk posed by a groundwater licence application to high value ecosystems that depend on groundwater.

B. RISK ASSESSMENT PROCESS

The assessment of a licence application's risk to high value ecosystems that depend on groundwater requires the following steps:

- STEP 1.** Determine the licence application area and identify high value ecosystems. Determine that the aquifer is unconfined and identify any features within that area, such as rivers, springs, soaks or terrestrial vegetation containing high value ecosystems. If the aquifer is unconfined and high value ecosystems are identified, go to step 2, otherwise assess the risk as low.
- STEP 2.** Determine the likelihood that the proposed groundwater extraction will interact with the feature.
- STEP 3.** Determine the consequence of the proposed groundwater extraction on the feature.
- STEP 4.** Determine the risk to the high value ecosystems dependent on groundwater.
- STEP 5.** Determine how risk will be managed for groundwater licence applications with a risk assessment of medium or high.
- STEP 6.** Consult with relevant Catchment Management Authority in line with Schedule 2.
- STEP 7.** Make final decision.

STEP 1. Determine the licence application area and identify high value ecosystems

- i. The licence application area is determined by the areal extent of drawdown arising from the proposed groundwater extraction and the adjacent licensed entitlement. The application area will extend to the point at which a drawdown of less than 0.1m, which is considered the limit for measurable impact, is estimated.
- ii. The delegate will assess whether or not the aquifer is unconfined and identify features including rivers, springs, soaks, wetlands or terrestrial vegetation containing high value ecosystems within the licence application area. Identification can occur through a desktop GIS search of the area, any field investigation conducted as part of

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the application process, information and comment provided by a CMA and/or local knowledge, or features identified in a management plan.

- iii. If the aquifer is unconfined and a high value ecosystem is identified, go to step 2, otherwise assess the risk as low.

STEP 2. Determine the likelihood that groundwater will interact with the feature

- i. The likelihood the proposed groundwater extraction will interact with a feature is to be determined by delegates using Table 1 and Table 2.

Table 1 Likelihood – Depth to water table

Likelihood	Description	Feature	Measures
Unlikely	A disconnected ecosystem	Aquifer	The groundwater is "confined"
		Terrestrial vegetation	Depth to water table > 6m from surface
		Rivers	"Disconnected" or intermittent or naturally cease to flow regularly during summer ($Q_{90}=0.0$)
Possible	A poorly connected ecosystem	Terrestrial vegetation	Depth to water table between 2m-6m from surface
		Rivers	Assessed as losing or variably gaining stream
Certain	A well-connected ecosystem	Terrestrial vegetation	Depth to Water Table <2 m from surface
		Rivers	Assessed as a gaining or strongly gaining stream

Table 2 Likelihood – Surface flow

Likelihood	Description	Feature	Measures
Unlikely	A disconnected ecosystem	Rivers	>12 months' time lag until 60% of extraction comes from river
		Floodplain or non-floodplain wetlands	Perched water table in all conditions
		Springs or soaks	None identified; or identified and only discharge intermittently in wet climate
Possible	A poorly connected ecosystem	Rivers	Between 3 and 12 months' time lag until 60% of extraction comes from river
		Floodplain or non-floodplain wetlands	Perched water table in summer / dry conditions
		Springs or soaks	Identified and discharges in average or wet climate
Certain	A well-connected ecosystem	Rivers	<3 months' time lag until 60% of extraction comes from river
		Floodplain or non-floodplain wetlands	Water table at or above base of wetland in summer / dry conditions
		Springs or soaks	Perennial springs or soaks identified and discharge in dry conditions

STEP 3. Determine the consequence of the proposed groundwater extraction on the feature

- i. Delegates shall use Table 3, Table 4 and Table 5 to determine consequence.
- ii. The consequence table used should be consistent with the relevant likelihood table above.

Table 3 Conditions considered to have no consequences

Consequence	Description	Measures
NONE	No high value ecosystems affected	No high value ecosystems in the application area
	Area is managed for salinity or drainage	The licence application does not impact management objectives set for the area
	Trade reduces risk to high value ecosystems	A trade of an existing licence reduces risk of impact on high value ecosystems

Table 4 Consequences – Depth to water table

Consequence	Description	Measures
MINOR	Proposed extraction is small with respect to the aquifer's ability to supply	Water table decline of <0.1m
		Hydraulic gradient at wetland boundary remains positive
MODERATE	Proposed extraction impacts measurably with respect to the aquifer's ability to supply	Water table decline 0.1m to 2m
		Hydraulic gradient at wetland may fall to zero at boundary in dry conditions
SIGNIFICANT	Proposed extraction is large with respect to the aquifer's ability to supply	Water table decline >2m at boundary
		Hydraulic gradient at wetland reverses direction at boundary

Table 5 Consequences – Surface flow

Consequence	Description	Measures
MINOR	Proposed extraction impacts on natural or current streamflow are small	Licence application is less than 1% of minimum average seasonal baseflow
		Less than 1% reduction in the Q90 flow rate
MODERATE	Proposed extraction impacts measurably on natural or current streamflow	Licence application is between 1% and 10% of lowest seasonal baseflow
		Between 1% and 10% reduction in the Q90 flow rate
		The minimum recommended environmental flow remains above the Q90 flow rate

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SIGNIFICANT	Proposed extraction impacts significantly on natural or current streamflow	Maximum reduction in seasonal baseflow is greater than 10% of minimum average seasonal flow
		More than 10% reduction in the Q90 flow rate
		The minimum recommended environmental flow falls below the Q90 flow rate

STEP 4. Determine the risk to the high value ecosystems dependent on groundwater

- i. The risk shall be evaluated by delegates using Table 6.

Table 6 Risk evaluation

		Consequence		
		Minor	Moderate	Significant
Likelihood	Unlikely	Low	Low	High
	Possible	Low	Medium	High
	Certain	Medium	High	High

STEP 5. Risk management

- i. Risk treatment options will be developed for licence applications evaluated as medium or high risk.
- ii. If risk is evaluated as medium or high, the delegate may consider refusal of the application, licence conditions or further hydrogeological, hydrological or ecological study. Any further investigation should address parameters in the risk assessment in order to inform risk treatment options. The level of risk should inform the scope of any further study.
- iii. Risk treatment options can include actions such as:
 - Altering the area of impact (e.g. reducing the entitlement volume, locating the bore in a deeper aquifer, re-siting the bore, undertaking investigations to improve information on the local aquifer).
 - Changing the likelihood (e.g. increasing the set back distances, modifying the pumping schedule).
 - Changing the consequence (e.g. modifying the pumping schedule, developing offsets, developing options for supplementing surface water flows).
 - Reducing the risk evaluation through licence conditions.
 - Deciding to undertake further analysis to gain better information and improve the risk analysis.
 - Providing alternative supply to "at-risk" areas to maintain the high value ecosystem.
- iv. In certain circumstances the delegate may decide to accept a high level of risk to pursue a special need or opportunity. In this circumstance the delegate should fully document the reasons for accepting the risk.

STEP 6. Consultation

- i. Prior to making a final decision(s) the delegate shall provide to the relevant Catchment Management Authority a copy of the licence application, the risk assessment, and information relevant to the risk assessment, as required under Schedule 2.

STEP 7. Make final decision

- i. The delegate should consider any information and comment provided by the Catchment Management Authority when finalising its risk assessment and making its decision on the licence application.
- ii. If the proposed risk treatment (for example licence conditions) is unacceptable to either the proponent or the delegate, the application is to be refused.

SCHEDULE 2 Consultation with Catchment Management Authority

A. PURPOSE

- i. To provide a delegate with a guide to referring an application to the relevant Catchment Management Authority for additional information and comment.

B. REFERRAL REQUIREMENT

- i. An application for a licence entitlement greater or equal to 20ML that requires a risk assessment, or greater than 10ML if the risk assessment is medium or high, shall be referred to the relevant Catchment Management Authority for comment, unless:
- ii. If the application is to trade an existing entitlement that results in the point of extraction moving further from a feature (eg. more distant in the same aquifer or deeper, or into a confined aquifer) there is no need to refer the application to the Catchment Management Authority.
- iii. If the application is for a temporary transfer of less than 20ML and the application is approved, any subsequent temporary transfer equal to or less than this volume will not require a referral.

C. INFORMATION TO BE PROVIDED BY DELEGATE

The delegate will provide information to the Catchment Management Authority including:

- i. the licence application,
- ii. any site inspection report,
- iii. licence application area,
- iv. high value ecosystems identified,
- v. any modelled impact to high value ecosystems dependent on groundwater; and
- vi. its risk assessment.

D. CONSULTATION PERIOD

The Catchment Management Authority shall have 28 clear working days to respond by providing:

- i. information about any additional high value ecosystems dependent on groundwater, their water resource requirements if known, any recognised threats and any current assessment of risks to those additional high value ecosystems; and
- ii. comments on the risk assessment and proposed licence conditions.

E. CONSIDERATION OF ADVICE FROM CATCHMENT MANAGEMENT AUTHORITY

- i. Information and comment provided by the Catchment Management Authority shall be considered by the delegate when making its final decisions.