Report card for the Central Coast Coastal Floodplain Alluvial Groundwater Water Source

Groundwater source description

The Central Coast coastal floodplain alluvial deposits generally consist of fine-grained sand, silts and clays. They occur downstream of the tidal limit of the Wyong River, Ourimbah Creek, Erina Creek and Narara Creek. Bore yields are generally low and are typically only suitable for stock purposes. The water quality of the water source can be variable, with some areas being fresh and others being affected by estuarine environments resulting in higher salinity.

Coastal floodplain alluvial deposits are underlain by potential acid sulphate soils (ASS). Dewatering of potential acid sulphate soils (by groundwater extraction, for example) can have effects including the acidification of groundwater, corrosion of infrastructure and dieback of flora. This water source can be affected by saltwater intrusion if subject to excessive take. Groundwater levels within the coastal floodplain alluvial water source are typically close to the surface, resulting in a higher level of dependence of groundwater-dependent ecosystems.

Area	
3,903 ha	Area of the groundwater source (excluding national parks and drains).
Groundwater-dependent ecosystems	
Present in this water source.	
Average Annual Recharge	
4700 ML/yr	The average annual recharge estimate is calculated based on average rainfall, across the area of the water source (excluding national parks) and an infiltration rate of 10%.
Proposed planned environmental water	
3665 ML/yr (average) plus water in storage	The volume of groundwater proposed to be reserved for the environment: • 100% of average annual recharge generated over lands with high environmental value such as National Parks= 140 ML/yr • 75% of recharge generated over remainder of the aquifer area = 3525 ML/yr • The total volume of groundwater in storage.

Proposed Long-term average annual extraction limit

1175 ML/yr	The volume of water that can be extracted annually. For this water source, it is proposed that the long-term average annual extraction limit (LTAAEL) is 1175 ML/year, which is the equivalent to 25% of the average annual recharge. This volume can provide for: • Current entitlements and rights = 359 ML/yr • Estimated future water requirements = 509 ML/yr, which includes provision for future increases in basic landholder rights (BLR), growth in agricultural groundwater use, and Aboriginal community development licences.

Current groundwater entitlements and rights

Currently, there is 359 ML/yr of groundwater entitlements and rights within the proposed alluvial water source.

- 14% of this volume is licensed for basic rights (51 ML/yr), and 86% for access class purposes (308 ML/yr).
- 2 groundwater licences currently exist in the water source.
- This makes up 100% of the Central Coast Coastal Floodplain Catchment Extraction Management Unit.

Groundwater basic landholder rights

Currently 51 ML/yr is volume of groundwater estimated to be taken under basic landholder rights (BLR) from the proposed alluvial water source.

This estimate is used for accounting purposes within the water sharing plan and in no way affects the actual volume of groundwater that may be taken under BLR.

Unassigned water

The volume of water currently unallocated within the LTAAEL is known as unassigned water. A proportion of this may be made available through a controlled allocation for future extraction. The volume available will be reviewed periodically, based on updated recharge calculations, environmental needs, and current and future water needs.

Draft access rules for alluvial aquifers

Cease to pump	Due to the groundwater in this water source not being highly connected to surface water, no cease to pump rules are proposed for the Central Coast Coastal Floodplain Alluvial Groundwater Source.

Limits to the availability of water	
Assessment of average annual extraction against the long-term average annual extraction limit	Entitlement and other water rights volumes, including estimated growth, are not expected to exceed the LTAAEL. If usage exceeds LTAAEL growth in extractions will be assessed against the LTAAEL over a 3 year period with a 5% tolerance
Available water determinations	Available water determinations (AWDs) will be made at the commencement of each water year for: • Specific purpose access licences—100% of share component. • Aquifer access licences—1 Unit/ML of share component or lower amount as a result of a growth in use. **Note:** In critical water shortages, AWDs for domestic and stock (subcategory domestic) specific purpose access licences may be reduced below 100%.

Draft rules for managing access licences	
Water allocation account management rules	No carryover of account water from one water year to the next is permitted for local water utility licences. Carryover of up to 100% of the share component or 1 ML/share is permitted for domestic and stock, unregulated river or aquifer access licences from one year to the next. This means the maximum amount of water that can be taken in any one year is equal to 200% of the share component (depending on the water allocations made each year) plus any water allocation assigned (71T trade) to the individual account. The maximum amount of water permitted to be taken by domestic and stock, unregulated river or aquifer access licences in any three consecutive years is the water allocation credited to the water access licence account in those years, plus water allocation assigned (71T trade) to the individual accounts.

Draft trading rules	
INTO water source	Not permitted.
WITHIN water source	Trades are permitted within the groundwater source, subject to assessment.

Draft rules for granting aquifer access licences	
Specific purpose access licences	Permitted, subject to assessment, under clause 10 of the *Water Management (General) Regulation 2018*. May include local water utility, major water utility, town water supply, and domestic and stock licences.
Specific purpose access licences (Aboriginal cultural)	Permitted, subject to assessment, up to a total of 10 ML per year per licence for the water source.
Specific purpose access licences (Aboriginal Community Development)	Permitted, subject to assessment.
Aquifer access licences	Permitted, subject to assessment, in line with controlled allocation orders made in relation to unassigned water in this water source.

Draft rules for granting or amending approvals for groundwater supply works	
Rules to minimise interference between bores	Water supply works (bores) are not to be granted or amended within the following distances of existing bores: • 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 (unless negotiated in writing with neighbour) • 500 m from a bore nominating a local or major water utility access licence • 100 m from a Government monitoring bore. These distance restrictions do not apply if: • the bore is used solely for basic landholder rights • the bore is a replacement bore • the bore is used for monitoring, environmental remediation activities or emergency services • the location of the bore at a lesser distance will have no more than minimal detrimental effect on existing extraction.

Draft rules for granting or amending approvals for groundwater supply works	
Rules for bores located near contamination sources	Water supply works (bores) are not to be granted or amended within: • 500 m of the plume associated with a contamination source identified within the plan • 250m from the edge of a plume of a contamination source listed in the plan • 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 • 250 m of an onsite sewage disposal system. These distances restrictions do not apply if: • the location of the bore is adequate to protect the water source, the environment and public health and safety • the bore is used for the purpose of monitoring, environmental remediation activities or emergency services.
Rules for bores located near high priority groundwater-dependent ecosystems	Water supply works (bores) are not to be granted or amended within: • 40 m of the top of the high bank of a river • 200 metres of a high priority groundwater-dependent ecosystem These distances restrictions do not apply if: • the bore is used for basic landholder rights • the bore is a replacement groundwater work • the bore is used for the purpose of monitoring, environmental remediation activities or emergency services A water supply work approval must not be granted or amended in this water source unless the Minister's opinion is that there will be no more than minimal harm to any wetland mapped under the *State Environment Planning Policy (Coastal Management) 2018.*
Rules for bores located near potential acid sulphate soils	New bores cannot be located in an area classed as having a high probability of occurrence of acid sulphate soils if there is significant risk of acidification of the water sources.

Draft rules for granting or amending approvals for groundwater supply works	
Rules for bores located near groundwater-dependent, culturally significant sites	Water supply works (bores) are not to be granted or amended within 200 m of a groundwater-dependent, cultural significant area. This location distance restriction does not apply if: • the bore is used solely for basic landholder rights • the bore is a replacement bore • the bore is used for monitoring, environmental remediation activities or emergency services • the bore replaces an existing bore that is part of a network for a major or local water utility used for the purpose of town water supply • the location of the bore at a lesser distance will have no more than minimal harm to any groundwater-dependent, culturally significant area.
Rules for bores used solely for basic landholder rights	Water supply works (bores) used solely for basic landholder rights must not be granted or amended if the bore is located within: • 100 m of a Government monitoring bore • 40 m from the top of the high bank of a river • 100 m of any high priority groundwater-dependent ecosystem • 100 m of a groundwater-dependent, culturally significant area. These location distance restrictions do not apply if: • the bore is a replacement bore • a lesser distance would result in no more than minimal harm to any high priority groundwater-dependent ecosystem • a lesser distance would result in no more than minimal harm to any groundwater-dependent, culturally significant area.
Replacement groundwater works	A replacement water supply work (bore) is located within: • 20 m of the existing bore • if within 40 m of the top of the high bank of the river then no closer to the river. The replacement bore will not have a greater internal diameter or excavation footprint than the existing bore, unless the existing bore's internal diameter is: • 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 is to be no more than 100 mm.
Rules to protect coastal wetlands	Water supply works (bores) are not to be granted or amended where there will be more than minimal harm to any wetland mapped under the *State Environment Planning Policy (Coastal Management) 2018.*

Calculation of the LTAAEL

Determination of the 'sustainability factor'

A risk assessment (Table 1 and Figure 1) is used to determine a sustainability factor that determines the percentage of recharge made available for extraction.

The sustainability factor is derived using the groundwater risk assessment methodology.[1] The risk assessment considers environmental and socioeconomic factors and actions to mitigate risks to the groundwater source.

Table 1. Groundwater risk assessment

Aquifer (environmental) risk	
Risk to groundwater-dependent ecosystems (GDEs) from declining groundwater levels	LOW
Risk to GDEs from altered patterns of groundwater level fluctuations	LOW
Risk of increasing frequency and duration of low flows in rivers	LOW
Risk of reducing water quality in the aquifer	HIGH
Risk of contamination of (fresh) groundwater from sea or estuary water	MODERATE
Risk to beneficial use of the groundwater	MODERATE
Risk of structural damage of the aquifer	MODERATE
Overall risk to aquifer from groundwater extraction	MODERATE
Socio-economic risk	
Relative importance of groundwater supply (due to lack of alternative water sources)	LOW
Risk to ongoing groundwater usage	LOW
Risk to dependence of groundwater for town water supply	LOW
Risk to dependence on groundwater for irrigation and industry	LOW
Risk to economic investment in agriculture/groundwater industry	LOW
Risk to employment in agriculture and industry	LOW
Overall community dependence on groundwater extraction	LOW

[1] The risk assessment process is detailed in the *Macro water sharing plans—the approach for groundwater—a report to assist community consultation* (November 2015, NSW Office of Water).

Mitigation actions—potential acid sulphate soils
Strategies to manage risks to ecological and water quality assets to ensure groundwater extraction is sustainable are to be included in the water sharing plan (WSP). Provisions will require works to be installed in a manner that does not disturb potential ASS including: • no excavations permitted in areas of high probability ASS • excavations to be limited in depth with no new works below the level of the aquifer • bores to be constructed in a manner that prevents potential corrosion impacts by grouting to below any high risk level • strong setback rules from GDEs required.

Environmental risk				
	High	5%	25%	50%
	Moderate	**Central Coast Coastal Floodplain Alluvial Groundwater Water Source** ***25%***	50%	60%
	Low	50%	60%	70%
		Low	**Moderate**	**High**
		Socio-economic risk		

Figure 1. Risk assessment matrix

Sustainability factor	
25%	The Central Coast Coastal Floodplain Alluvial Groundwater Water Source is assessed as subject to moderate environmental risk and low socio-economic risk and has a sustainability factor of 25%. This means that 75% of the recharge outside of high conservation value areas is reserved as environmental water.
Surface water and groundwater connectivity	
Limited connectivity	While the Department of Planning, Industry and Environment recognises that all aquifers are connected to surface water to some degree, connectivity is only being actively managed for those groundwater sources where 70% or more of groundwater pumped within an irrigation season is derived from stream flow. Advice from the department's hydrogeologists is that the water source should not be considered highly connected due to the fine nature of the sediments and reduced potential for water exchange with the river, the minimal risk to the water source from extraction due to the small level of entitlement held in the water source, and the application of standard groundwater rules.

Public exhibition

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

The draft Central Coast water sharing plan and other fact sheets are available from www.dpie.nsw.gov.au/central-coast-wsp