10 GROUNDWATER

This chapter describes the existing state of the known groundwater resources in the vicinity of the proposed LNG Facility and provides an assessment of the potential impacts that may arise as a result of the Project.

10.1 DESCRIPTION OF PROJECT ENVIRONMENTAL OBJECTIVES

The Project environmental objective for groundwater resources is: groundwater resources need to be protected from contamination to ensure that the ecological health, public amenity or safety of those that rely on groundwater is maintained.

10.2 METHODOLOGY

Groundwater data was obtained through a desktop search for previous available studies undertaken and a review of the Queensland Groundwater Database.

10.3 EXISTING ENVIRONMENT

A search of the Queensland Government Groundwater Resource Information Database[1] indicated two groundwater bores (registration numbers 91325 and 91326) registered within 3 km of the proposed LNG Facility site. These are sub-artesian bores registered for water supply.

Aquifer details provided from the Groundwater Database indicate relatively poor groundwater quality, with quality listed as conductivity of 12,000 microSiemens per centimetre (μScm^{-1}) for bore 91325 (indicating brackish water) and similar salinity for bore 91326. For both wells the standing water level is listed as 10.6 m, with yield ranging from 0.52 litres per second (ls^{-1}) (bore 91326) to 3.0 ls^{-1} (91325). Water bearing zones range between 22.22 metres below ground level (mbgl) to 27.27 mbgl (91325) and 15.0 mbgl to 30.30 mbgl (91326).

Location of groundwater bores are shown in *Volume 5, Chapter 9, Figure 5.9.1* with borehole registration, including groundwater quality result, attached as *Annex 5.4*.

Detailed assessment of groundwater across the site, including groundwater quality and potential interaction between standing water levels and site cut and excavations, is ongoing.

1 Data sourced via Queensland Department of Natural Resources and Water

10.4 IMPACT ASSESSMENT

QGC does not propose to extract groundwater during either the construction or operational phases of the LNG Facility, therefore, impacts on groundwater quality are not anticipated by the proposed development. However, there is potential for accidental releases or spills of fuels or chemicals stored on site to seep into groundwater. These are discussed further in *Volume 5, Chapter 17*, where management and mitigation measures are also addressed.

Based on preliminary cut and fill levels and standing water levels in the order of 10 mbgl (based on registered bores 91325 and 91326) little significant interaction between groundwater and site excavations (including both benching and excavations for foundations) is anticipated. However, further assessment of this (including installation of groundwater monitoring bores) is ongoing as part of detailed design.

Draft management and mitigation measures to address impacts arising from disturbance of acid sulfate soils (ASS) are outlined *Volume 11.*

10.5 MANAGEMENT AND MITIGATION MEASURES

Goundwater monitoring bores will be installed on the site during the detailed design phase of the Project to provide data on groundwater levels and groundwater quality (pH, electrical conductivity and dissolved metals) on an ongoing basis.

Draft Groundwater Quality Management Plans for construction and operations are included in *Volume 11*.

10.6 CONCLUSION

The overall impact of LNG Facility construction and operational activities on groundwater resources is expected to be minor.

No groundwater will be extracted during construction or operation of the LNG Facility as water demands will be met by a reverse osmosis plant. Site stormwater containment measures will be employed, with monitoring for potential contamination proposed, and further control measures are not considered necessary at this time.

Overall, impacts on groundwater quality are not expected. A summary of the impacts outlined in this chapter is provided in *Table 5.10.1*.

Table 5.10.1 Summary of Impacts for Groundwater Resources

Impact assessment criteria	Assessment outcome
Impact assessment	Negative
Impact type	Direct
Impact duration	Long-term
Impact extent	Local
Impact likelihood	Unlikely

Overall assessment of impact significance: Minor, provided that mitigation measures are implemented for the storage and handling of fuel and chemicals and ASS.