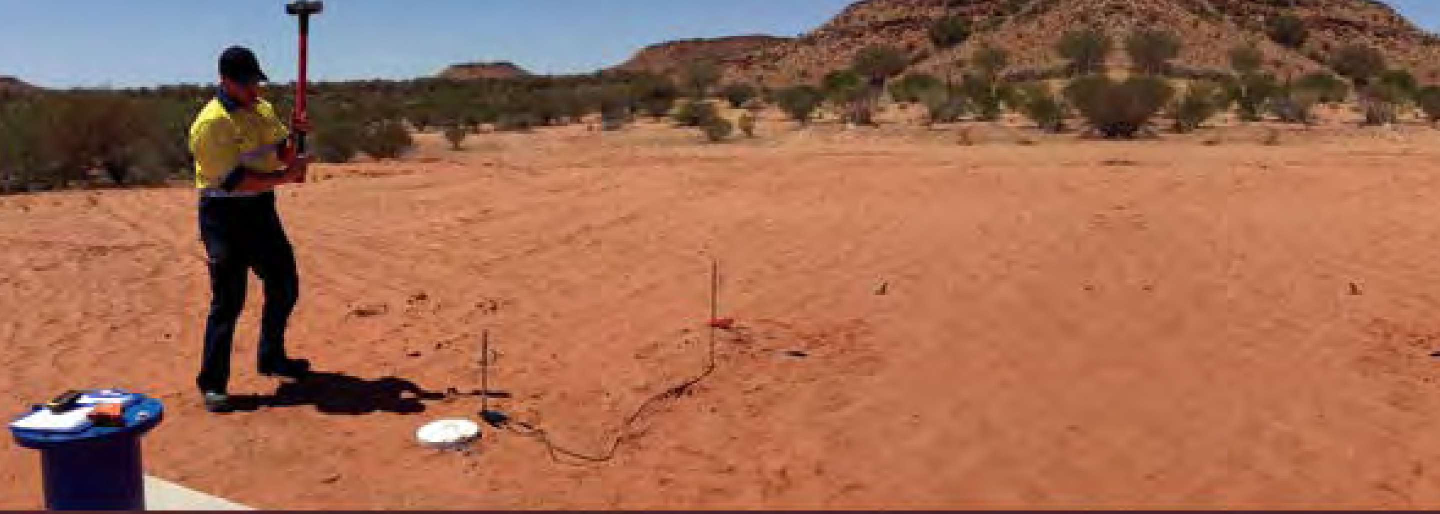


The Chandler Proposal - Groundwater

What is groundwater?

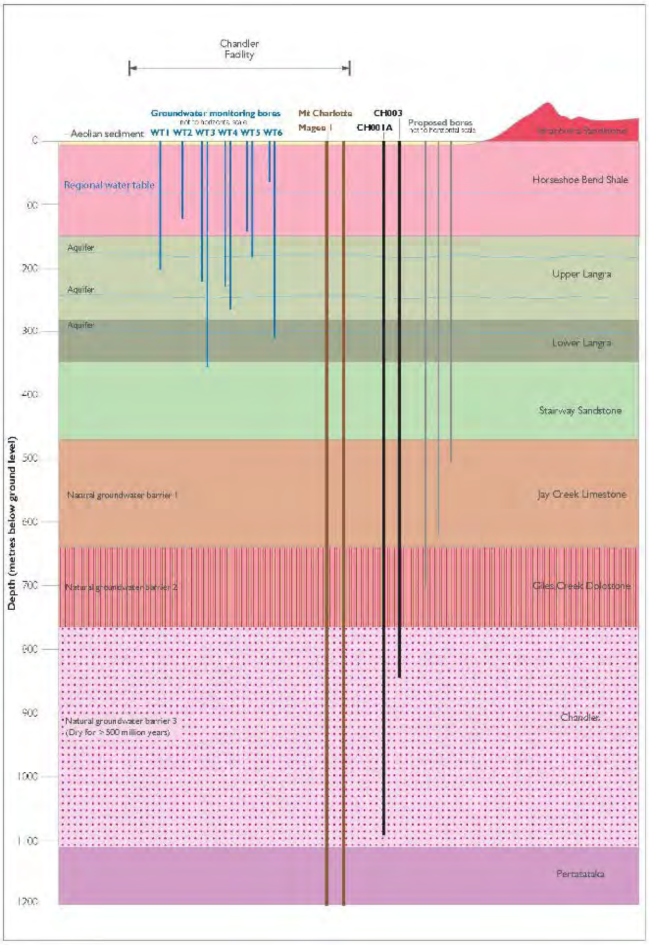
- Water that fills or saturates all the available pore space within soils or rocks is called groundwater.
- Below the surface, where groundwater is stored and is free to move, it is called an aquifer.
- The upper surface of groundwater is called the water table.
- Sometimes, groundwater within an aquifer is naturally rich in salts that have dissolved from surrounding rocks or soils. This is commonly called the measure of groundwater salinity.

Is there groundwater at the site of the proposed Chandler Facility?

Yes. Drilling for groundwater within the proposed mine infrastructure area begun in June 2015. Eight boreholes were drilled and 10 monitoring stations installed.

Groundwater at shallow depths were found between 80 metres and 100 metres below ground level (mbgl). The water table is at about 90 mbgl.

Three aquifer systems were found during drilling. The aquifers all occur at different depths below the surface. The first aquifer occurs at about 120 mbgl. The second between 160 mbgl and 220 mbgl. The third aquifer is between 280 mbgl and 360 mbgl.



Tellus investigation bores in relation to geology and aquifers

Is groundwater monitored and tested at the site of the proposed Chandler Facility?

Yes. Groundwater levels are monitored across the drilled boreholes within the proposed mine infrastructure area. Water chemistry tests have been carried out at various times. The water quality is very salty. On average it is about 12,600 microSeimens per centimetre (µS/cm). This quality of water can not be consumed by livestock or humans without being treated.

Generally, the salt levels in the groundwater increase with depth at the site of the proposed Chandler Facility. At about 360 mbgl, water salinity is about 21,000 µS/cm (in comparison, sea water is about 30,000 µS/cm). The pH of the groundwater is slightly alkaline.

Groundwater at the site of the proposed Chandler Facility is very salty. It cannot be consumed by livestock or humans without being treated.

Is the groundwater at the site of the proposed Chandler Facility connected to drinking water sources or other groundwater basins?

No. The groundwater and aquifers at site of the proposed Chandler Facility lie within a separate system to Alice Springs' groundwater supply and to Titjikala's groundwater supply.

Tellus has developed a conceptual groundwater model to demonstrate this (see over-leaf).

Consistent with topographic gradients, hydraulic gradients are very gentle in the south-eastern extent of the Amadeus Basin, and the broad flow direction in all groundwater systems is generally from north-west to south-east which is not in the direction of Alice Springs or Titjikala.

How can you be sure that the groundwater is not connected ?

There are four key reasons why Chandler's groundwater supply is not connected to other sensitive systems:

1. The local geology of the site of the proposed Chandler Facility is different to the local geology of Alice Springs and to Titjikala.
2. It does not lie within a defined NT Water Control District. Alice Springs' water supply comes from the Mereenie Aquifer System.
3. The quality of water within aquifers at the site of the proposed Chandler Facility is, very salty. Water within the Mereenie Aquifer System is not as salty. Water from the Titjikala groundwater bore can be consumed by humans.
4. The groundwater flows in a direction away from sensitive receptors like Alice Springs and Titjikala.

At what depth will groundwater be taken from?

The aquifer that is likely to be used to supply drinking water, construction and operation water, is located about 140 mbgl. It is known as the Upper Langra Formation. Water in the Upper Langra Formation has been around for a very long time. In fact, it is likely around 250 million years old when this part of Australia was less arid than it is today.

Will the aquifers be contaminated by isolating waste in the salt?

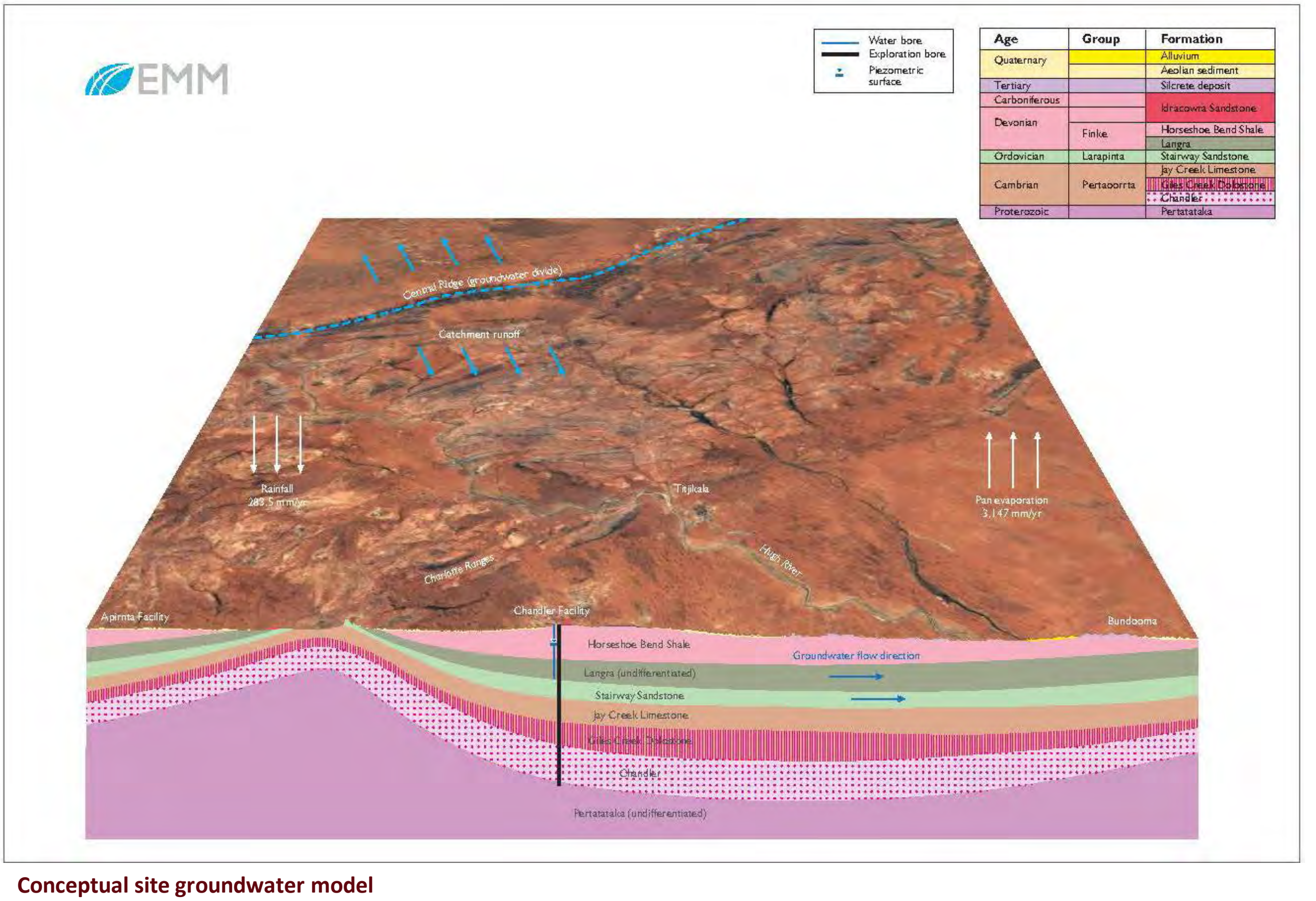
No. The aquifers would not be contaminated by placing waste materials into the salt. The salt is 500 million years old and on average 300 metres thick with no groundwater or aquifer within it. Lying above the salt bed are natural geological barriers. They in the form of the Jay Creek Limestone and Stairway Sandstone. Together, they provide a natural barrier of rock which is about 450 metres thick from the nearest known aquifer. In addition, Tellus has undertaken detailed groundwater modelling of "unlikely" groundwater contamination scenarios. The results indicate that it would take at least 10,000 years before a serious contamination event could even reach Australian Groundwater Quality Guideline values 10 kilometres away.

How much groundwater will be used?

It would be necessary to abstract groundwater during construction, operation and mine closure. During construction, about 70 megalitres of groundwater would be required per annum. During operation, this figure increases to about 113 megalitres per annum.

Abstracted groundwater would service key activities including:

- Water supply for human consumption (following treatment via an onsite reverse osmosis plant).
- Dust suppression at the proposed Chandler Facility and Apirnta Facility.
- Haul and access road dust suppression.
- Vehicle wash-down.



Conceptual site groundwater model

What is the expected yield of the groundwater at Chandler?

The average water yield for the upper Langra Formation was 4.2 litres per second (L/s). The middle Langra Formation was 7.5 L/s and the lower Langra Formation was 11 L/s. A constant rate pumping test was conducted at groundwater bore PB1 in the upper Langra. The low pumping rate achieved 4 L/s.

Will local groundwater bore use be impacted by the Proposal?

In total, 36 landholder registered bores were identified within the 25 kilometre spatial buffer (including the Titjikala groundwater bore) and 193 were identified within the 75 kilometre spatial buffer. Not all of these bores operate today.

The groundwater levels within the 25 kilometre spatial buffer were mostly relatively shallow with a range between 6.44 and 18.4 mbgl. As mentioned above, the target horizon for the Tellus water source would be about 140 mbgl. Based on results obtained through the drilling and monitoring program, a groundwater drawdown rate of 0.2 metre has been calculated at a distance of one kilometre from a bore continuously pumping in excess of the proposed water demand of 1.7 L/s. This means there would be a negligible impact on local groundwater bores as a result of the Proposal.

Groundwater dependant ecosystems

The absence of permanent surface water features across the proposed development footprint and vicinity indicates that the groundwater and surface water systems are not connected in the vicinity of the Chandler Facility or the Apirnta Facility.

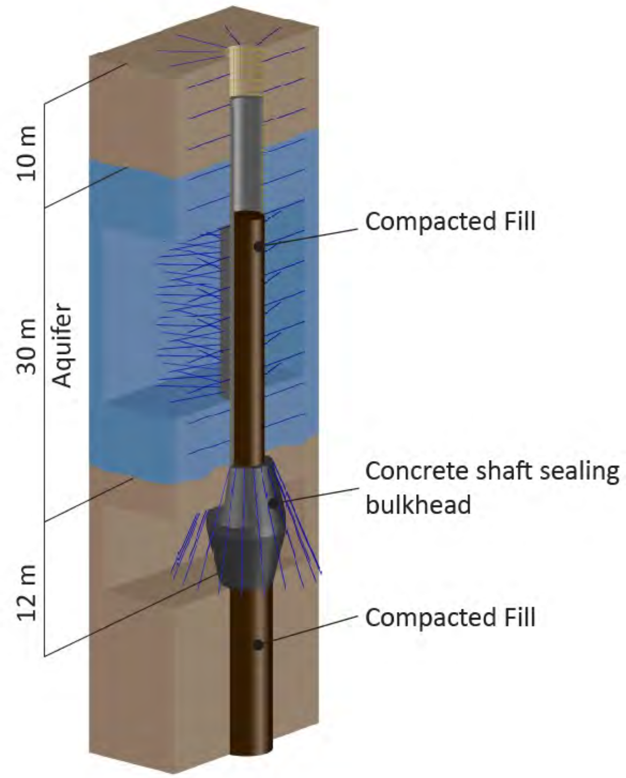
Management measures

To avoid and minimise and to prevent any leakage down the mine shafts or the mine decline, sophisticated shaft sealing techniques, that use special clay and cement grout would be adopted. These are shown in the figure opposite.

Tellus will apply for a water abstraction licence and permit under the NT Water Act to ensure sustainable use of groundwater resources.

Tellus will monitor local groundwater systems using data loggers in monitoring bores. This will be done to verify predicted negligible impacts on local groundwater users.

Tellus will provide an Annual Groundwater Environmental Monitoring Report (that is governed by an overall Water Management Plan) to the NT EPA and DPIR.



Shaft sealing techniques post closure

Conclusions

The Chandler Syncline is a separate groundwater system to the Alice Springs Mereenie Aquifer. The proposed Chandler Facility occurs within the Chandler Syncline. The Mereenie Aquifer occusr within the Northern Amadeus sub-basin and Orange Creek Syncline.

The evidence presented in the EIS demonstrates that groundwater associated with the Chandler Proposal is distinct and separate from Alice Springs and Titjikala in terms of:

- local geology
- lithological units,
- groundwater flow properties,
- hydraulic gradients
- water chemistry.