



Ensuring the protection of Environmental Water in the Cape Flattery area

The Queensland Government designated the Northern Silica Project (NSP) as a coordinated project in early 2024. An Environmental Impact Statement (EIS) will be required to be undertaken for the project using an accredited process under both State and Federal legislation. This follows the Federal Government's decision (following referral of the project in mid-2023) that the NSP is a controlled action.

These processes recognise the scale of potential environmental impacts from the project that need to be studied and mitigated, but also the economic and social benefits a project such as the NSP can provide to local and regional communities and its alignment with Government policies such as the Queensland Critical Minerals Strategy.



Why is water important?

The Project study area contains high value wetlands, watercourses and waters of the Great Barrier Reef Marine Park and World Heritage Area. Protecting the interconnection between the wetlands, the water table, aquatic habitats, and the Great Barrier Reef marine waters is recognised as an important issue for the Project. The Terms of Reference for the EIS require Diatreme to assess the impact of the Project on waters and aquatic habitats in and around the Project area, including:

- Freshwater ecology
- Marine ecology
- Surface water quality
- Ground water quality
- Groundwater aquifer levels
- Connection between aquifers and wetlands/lakes
- Groundwater dependent ecosystems
- Cultural heritage values



Surface water quality is important for the health of the aquatic ecosystems both on the site and the surrounding area, including the Great Barrier Reef. Groundwater quality and aquifer levels are important for the ecological health of any connected wetlands and lakes, groundwater dependent ecosystems, and for the Great Barrier Reef where groundwater is discharged from wonky holes (freshwater springs flowing from the seabed).

Cultural heritage surveys have recognised locations in and around the Project where waters have cultural significance for the Traditional Owners of the area.

Aquatic Ecosystem Studies



Studies of freshwater and estuarine ecosystems have been undertaken to identify the aquatic species inhabiting the creeks, lakes and wetlands, and groundwater (Stygofauna) in the study area. The study has found that the species density and diversity is consistent with the type of low nutrient and shallow waters found in sand dune systems.

Desktop studies have identified the likely presence and distribution of marine species around the Project area, in particular marine megafauna (turtles, dugongs and cetaceans).

Water Monitoring and Analysis

Monitoring and analysis of surface water and groundwater quality in the Project area shows that it is low pH, low nutrient water, free of contaminants, and with high tannin levels as expected in a relatively undeveloped dune system. Monitoring of groundwater and lake levels shows natural seasonal fluctuations between wet and dry season conditions.

Testwork of processing water from the silica sand production process have been analysed to determine the likely quality of processing water prior to being recharged into the groundwater aquifer. The silica production process is generally mechanical in nature and does not require the input of chemicals other than a flocculant (water soluble polyelectrolyte) and a coagulant (typically a polyaluminium chloride) added to the final stage of process water. Flocculants and coagulants bind to and remove suspended solids from end stage processing water resulting in cleaned water that has a similar biochemistry to the environmental waters. The clean water is recharged into the groundwater aquifer by filtering through reject sand stockpiles.

Water monitoring results will be included in the EIS and will inform the Project's Management Plans as a baseline for maintaining water quality and functional groundwater levels.

What are the expected impacts to environmental waters from the Project?

There are extensive studies being undertaken by suitably qualified experts as part of the EIS to understand how the Project may impact the waters in the area.

Potential impacts from the construction and operation of the Project include:

- Contaminants (e.g. fuel) in surface water runoff from the construction and operation areas
- Extraction of water from the groundwater aquifer for the silica processing
- Recharge of used silica processing water into the aquifer
- Disturbance of creeks and wetlands by construction of roads and other infrastructure



How are impacts to waters and aquatic ecosystems being managed by the Northern Silica Project?

The potential impacts, including predictive modelling of groundwater extraction and recharge, and associated mitigation measures will be outlined in the Draft EIS and assessed and conditioned as part of the Government approval process.

During the Project design stage, care has been taken to position roads, mining infrastructure, and mine panels where direct impact to wetlands and watercourses is either avoided or minimised. For example, a minimum 100m buffer will separate mining operations from wetlands.

Based on the results of studies of water and aquatic ecology on the Project site and surrounding area, Diatreme will develop and implement water quality management plans, so the mine is operated in a way that prevents contaminated runoff or other potential pollutants from entering the surrounding waters and consequently flow into the waters of the Great Barrier Reef.

The EIS will outline mitigation measures to protect the surrounding waters. Measures may include:

- Management and treatment of wastewater (e.g. sewage from mine village, processing water)
- Compliant storage of potential contaminants on the site (e.g. diesel)
- Erosion and sediment control measures in place (e.g. during rehabilitation of mined areas and construction of mine infrastructure)
- Installing culverts and other creek crossing structures to an appropriate standard for waterway barrier works to protect the movement of fish in the waterway.
- Ensuring groundwater that is extracted for processing is carefully monitored and then recharged into the aquifer
- Avoiding development in areas of cultural significance

There are State and national water quality standards and guidelines that will apply to the approved mine (*Qld Environmental Protection (Water and Wetland Biodiversity) Policy 2018*, and *Australia and New Zealand Water Quality Guidelines for Fresh and Marine Water Quality*). The conditions of an Approval for the construction and operation of the mine will require the baseline quality of environmental water to not be significantly impacted by the Project. It is likely an Approval will have site-specific water quality measures the Project must comply with. Ongoing water monitoring during the Project's operation will be necessary to ensure compliance with the conditions of approval.

For more information



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