NSW Department of Climate Change, Energy, the Environment and Water

Our ref: OUT25/13365

Allison Sharp
Planning Group
NSW Department of Planning, Housing and Infrastructure

Email: Allison.Sharp@planning.nsw.gov.au

13 October 2025

Subject: **Holcim Salt Ash Sand Operations (SSD-9099356) – Response to Submissions**

Dear Allison Sharp,

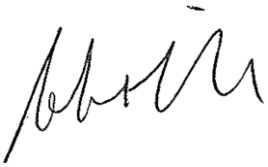
I refer to your request for advice sent on 22 September 2025 to the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) Water Group about the above matter.

NSW DCCEEW Water Group has reviewed the Response to Submissions and maintains key concerns raised in the previous submission related to potential impacts to the groundwater source and dependent ecosystems. It is acknowledged the proponent has provided significant supporting information, however this does not adequately to address the risks and policy matters raised. DCCEEW Water group therefore recommends the project be modified to maintain a sand extraction buffer above the groundwater table, consistent with other approved developments in the region.

Please see Attachment A for more detail.

Should you have any further queries in relation to this submission please do not hesitate to contact the DCCEEW Water Assessments team at water.assessments@dcceew.nsw.gov.au.

Yours sincerely



Rob Brownbill,
Manager Water Assessments
NSW Department of Climate Change, Energy, the Environment and Water

Attachment A

Detailed advice to DPHI Planning & Assessment regarding the Holcim Salt Ash Sand Operations (SSD-9099356) – Response to Submissions

1.0 Groundwater impacts

1.1 Recommendation – pre-determination

That Department of Planning, Housing and Infrastructure requests the proponent to maintain a 1 m sand extraction buffer above the groundwater table.

Explanation

The additional information provided in the Response to Submissions (RTS) it does not adequately addresses water related planning and policy requirements, and key issues remain that present ongoing risks to the groundwater source and dependent ecosystems. These issues are outlined below.

Water Sharing Plan setback requirements

The proponent has not addressed the requirement of Clause 41 (1c) of the Water Sharing Plan for the North Coast Coastal Sands Groundwater Source 2016 (WSP) for a buffer from the boundary of Worimi National Park.

The water take at the project site is predicted to exceed 100 ML/yr with a maximum water take stated in the RTS of 489 ML/yr in Stage 7 and an ongoing water take post closure of initially 107.3 ML/yr and up to 119 ML/yr by 2090.

Under the WSP where a water supply work takes more than 100ML/yr and is located closer than 800 m to the boundary of lands reserved under the *National Parks and Wildlife Act 1974,* it must be demonstrated that this will result in no greater impact to ecosystems within the reserved lands.

Drawdown at high priority Groundwater Dependent Ecosystems (GDEs)

A 1 m drawdown is predicted at the property boundary with the Worimi National Park and the drawdown extends to high priority GDEs.

The drawdown predictions exceed the level 1 minimal impact criteria of the NSW Aquifer Interference Policy of less than or equal to 10% cumulative variation in the water table 40 m from any high priority GDEs. Based on a natural yearly water table variation of around 2 m, the 10% cumulative variation criteria should not exceed 0.2 m to be deemed a level 1 impact. However, section 7.12.5 of Appendix K (Groundwater Impact Assessment) indicates the groundwater model predicts drawdown exceeding this threshold for high priority GDEs.

Water quality risks and mitigation measures

The proposed mitigation measures of sub-aqueous fines return, acid sulfate management, and lime dosing are commonly used at other coastal sand dredging sites. Although lime dosing may help manage pH levels within the pit void lake, it has not been shown to prevent

increased metal migration, primarily iron which may mobilise due to other processes (e.g. increased oxygenated water moving from the lake into the aquifer).

DCCEEW Water are of the view that that the proposed mitigation measure are unlikely to prevent adverse outcomes. Apart from some outliers, baseline iron concentrations in the undisturbed Stockton Sand aquifer are generally low, typically below 2 mg/L. At other coastal dredge pond sites, iron concentrations are elevated to 10-40 mg/L due to the open hydraulic connection between the dredge pond and the surrounding aquifer, which facilitates metal mobilisation from in-situ sediments beyond the pit itself.

Leachability tests show iron concentrations in the D1/D2 horizons exceeding 10,000 mg/L, indicating a high risk of metal mobilisation. Similar outcomes have been observed at other dredge pond operations, including RZM, Boral Stockton and sites in the Tweed Valley.

There is no identified causal relationship between elevated iron concentrations in groundwater and acidity within the dredge pond. The mechanisms driving this mobilisation have not been effectively mitigated by the proposed controls.

Alternatives such as groundwater pump-and-treat systems and hydraulic containment are not mitigation options either as they have been identified as financially unviable.

For the past 20 years conditional requirements have been imposed on other sand quarry developments in this region to maintain an excavation depth above the water table in order to manage this groundwater quality risk and maintain the beneficial use of the resource.

Sea water intrusion and Hunter Water Corporation water supply risk

The proposed lowering of the water table within the Stockton Special Areas poses a significant risk to water security. The available head of fresh groundwater above sea level is limited to only a few metres. The lowering of the freshwater head will allow saline sea water intrusion inland. It also diminishes the volume of fresh water available for supply.

Hunter Water Corporation (HWC) holds the right to develop a borefield within the Stockton Special Areas, which are reserved for the protection of municipal water supply. Although the Stockton borefield is not currently active, cumulative risks of contamination, land use intensification (e.g. sand quarrying), and climate change are compromising the future viability of a borefield in the Special Areas

HWC water supply operations are also at risk due to past dredge pond activities at Tomago impacting groundwater resources in some locations and required operational changes affecting the reliability and security of supply. And PFAS contamination in the Williamtown area, are further constraining HWC borefield operations, leading to stricter drinking water standards and restricted access to existing infrastructure due to water quality concerns.

Groundwater modelling

The groundwater modelling conducted has a scaled root mean square error (SRMS) for the model calibration that exceeds the 10% threshold defined in the Australian National Groundwater Modelling Guidelines (2012). An SRMS above this threshold means that on average the model predictions deviate from the observed values by more than 10% of the typical observed value. This reduced confidence in the model's ability to accurately predict groundwater levels and spatial drawdown predictions across the model domain.

The absolute mean residual error is the average difference between the observed and simulated groundwater levels. A residual of 0.4m as stated is considered highly significant in coastal aquifers, where the water table is only a few metres above sea level. This error's significance is heightened by the narrow margin between safe groundwater levels and the onset of seawater intrusion. The residual error indicates the following.

- At any given location, the predicted water level could have an error of ±0.4 m.
- If the model predicts a drawdown of 1 m at the southern boundary, the actual water level could be anywhere from 0.6 to 1.4m AHD.
- Specifically applicable to this project's location and setting, this error range is critical when assessing risks to High Priority GDE, HWC borefield viability during drought, and seawater Intrusion

Given the highly transmissive and permeable nature of the aquifer (well sorted beach sand), a 1 m drawdown at the dredge site will likely cause a more pronounced and spatially extensive drawdown impact (flatter drawdown gradient) than currently predicted.

Cumulative hydrogeological impact

The groundwater modelling and supporting documentation indicate that should HWC activate its right to develop the Stockton borefield, either concurrently with or following the proponent's proposed sand dredging activities, the cumulative impact on GDEs within the Worimi National Park will be significant.

Growing demand for quarry sand may see further increase for sand dredge activities here and in similar coastal locations, further increasing cumulative hydrogeological pressures on the aquifer system and surrounding ecological and social assets.

2.0 Water take and licensing

2.1 Recommendation – pre-determination

That should the proposed sand dredging activity be considered further, Department of Planning, Housing and Infrastructure requests the proponent to demonstrate sufficient entitlement can be acquired in the relevant water source (Stockton Groundwater Source).

Explanation

The site water balance and review of water licensing requirements provided by the proponent have not considered water take of 246ML/yr from the groundwater source associated with baseflow losses. Table 1.1 of the RTS refers to 246ML/yr of baseflow loss primarily due to a reduction in flux to the surface drains. Based on current held entitlement of 582 unit shares and a total water take of 735ML/yr (489 + 246), an additional 153ML/yr of water take would need to be accounted for in the groundwater source.

Due to a limited trading history in this watersource, the proponent must demonstrate that this shortfall can be met by obtaining a new water access licence (through a controlled allocation order) or by providing evidence of the potential to trade with existing water licence holders.

End Attachment A