



## Questions and concerns

Questions have been raised by the community relating to concern about the impact the brine discharge will have on marine life and activities such as fishing. Many people, including local fishermen, have stated that the brine discharge will have a devastating impact on fish and other marine life, not just in the area around the outfall pipe but up into Morecambe Bay and beyond. There is also concern about any change in salinity upsetting the well-established food webs of the area.

The potential impacts of the brine discharge have been carefully assessed during the planning application process and the assessment scrutinised by the Planning Inspectorate and relevant competent authorities such as the Environment Agency and Natural England. Brine dispersal modelling, recently supported by independent modelling by the Environment Agency, indicates that levels of salinity expected to be lethal to marine organisms will be restricted to within 50 metres of the diffuser, and by 250 metres distance will not be more than 10% above ambient salinity. These predictions are passed back to Halite Energy as firm conditions enshrined within project consents and will be subject to monitoring. If the underpinning modelling is found to be wrong, and limits are exceeded, then the project will need to reduce brine discharge levels to remain within permitted limits. This will serve as a safeguard for marine life.

The brine discharge will not only impact on marine life, it will also have a devastating impact on seabirds.

Such an impact would require effects on the food sources of seabirds, e.g. molluscs and fish, to occur over wide areas. Fish are expected to avoid lethal concentrations of brine close to the diffuser and loss of sessile invertebrates, such as small molluscs preyed upon by diving seabirds, is predicted to be restricted to a distance of not more than 50 metres. These predictions are enshrined within the discharge consent and will be confirmed by monitoring, with reductions to brine discharge required if higher levels of salinity than are predicted occur.

How will the brine discharge change the salinity levels around the diffuser?

Salinity at any depth must not exceed 260 parts per thousand at the point of release, 40 parts per thousand at up to 50 metres and no more than 10% above ambient salinity at up to 250 metres.

The Discharge Consent was granted in 2007. How can you be sure that the surveys and information that informed the Consent are not out of date and take account of changes in the tides and environment?

New modelling has recently been completed by the Environment Agency. The results support the original modelling; the long-term assessment by the Environment Agency is that over a 10-year period the maximum accumulation of salt would be 0.08% and their conclusion was that all the models show that the criteria for 'no significant effect' would be complied with. Furthermore, baseline environmental monitoring surveys have commenced and will be completed prior to brine discharge which will inform the operational monitoring.

You have consent to pump out 19,000 tonnes of brine every day into the sea. Does Halite intend to pump out this amount in the first phase of cavern development?

The consent allows for discharge of up to 80,000 cubic metres a day of brine at up to 260 parts salinity per thousand. It will not be permitted to exceed this amount and at times the levels will be less depending on the rate of leaching.

Modelling of the brine discharge on computers is meaningless. How can you be sure that these results will translate into what actually happens when you start pumping the brine into the sea?

Very strict conditions have been applied through the discharge consent. Halite will need to monitor the water around the brine outfall to ensure it meets these stringent conditions. This monitoring will be closely scrutinised by the Environment Agency.

How will the salinity around the outfall be checked and monitored?

A Marine Environmental Monitoring Plan is being developed and will include details including timing, location, frequency, duration and reporting around compliance with the discharge consent. This will be agreed with the Environment Agency. Further, an independent Brine Discharge Monitoring Group is being established which will include representatives from such bodies as the Environment Agency, the Marine Maritime Organisation and the North Western Inshore Fisheries and Conservation Authority.

What happens if specified salinity levels are exceeded?

In the unlikely event that levels are exceeded discharge must be reduced or stopped until thresholds are complied with.

What measures have been taken to minimise the impact of the brine discharge process?

Before the project could gain consent it had to be demonstrated that there would not be an unacceptable impact to the marine environment. This required careful evaluation of the effects on water quality which were scrutinised by the Planning Inspectorate and competent authorities such as the Environment Agency who have issued a discharge consent. There will be comprehensive monitoring to ensure that permitted water quality thresholds are not exceeded and that the marine environment is protected.

Local fishermen are concerned that surveys are inadequate in terms of timing, duration, season and weather.

The scope of the monitoring, and associated surveys, is defined by the requirements of the discharge consent and the Development Consent Order. Initial surveys relate to the construction of the brine discharge pipeline and are being timed to take into account both ecological considerations and the project construction programme. Methods for ongoing monitoring in relation to the brine discharge will be developed in consultation with the Environment Agency and Brine Discharge Monitoring Group; these will necessarily need to focus around the period of first brine discharge but ongoing monitoring will provide appropriate seasonal coverage also. The project also has data from previous marine environmental surveys completed to inform the original planning application.

Is Halite aware of the new island that has formed 2 km offshore from Fleetwood which is becoming a sanctuary for seals? Brine could potentially come straight across to this island.

Halite is aware of the feature which is to the north of the discharge outfall. A recent bathymetric survey in the area of the pipeline has confirmed that there has not been significant change in water depths on site and it is not expected that this feature will affect dispersal of the plume.

Halite say there will be a 50 metre dead zone around the outfall pipe. Local fisherman say the area will be much greater. How can you be sure as to the extent of this dead zone?

The 50 metre dead zone is based on the precautionary assumption agreed within the project impact assessment that salinity above 40 parts per thousand will be lethal to sessile marine life in that zone.

This is precautionary because some organisms are expected to tolerate higher salinities. The extent of this area is agreed with the Environment Agency through the discharge consent. Biological sampling within 50 metres of the discharge, and beyond, linked to water quality monitoring, will confirm the validity of these predictions. Brine discharge rates will need to be adjusted if impacts occur more widely than are permitted by the strict conditions of the brine discharge consent.

What is the extent of fish and marine life that will die each year as a result of the brine discharge plans?

The overall extent is expected to be very limited. Concentrations of brine that could be lethal to marine life are expected to be limited to within 50 metres of the diffuser point and largely restricted to sessile fauna. This will be confirmed by monitoring and brine discharge controlled to remain within this permitted limit.

We are concerned that the brine will lie at the bottom of the sea like a toxic lake in low tides and on a big tide will be lifted into Morecambe Bay, over to Blackpool or possibly even further.

The modelling, which has been verified by the Environment Agency, has taken into account different tidal conditions. The discharge consent states that the project is not permitted to exceed salinity of 40 parts per thousand beyond 50 metres of the outfall. We will be sampling to ensure there are no such widespread effects and the project will need to manage brine discharge to remain within the permitted limits.

Due to changing tides in recent years we are worried that the water around the outfall pipe is now shallower, meaning that the brine will be pumped into the sea at insufficient depths leading to toxic levels of brine.

The area of the proposed brine discharge diffuser at Rossall was re-surveyed in December 2017. This confirmed no change in the depth of water in that area.

We are concerned about the effect of water being pumped out of the dock on the marina.

The effect of pumping water from Fleetwood fish dock is considered to pose no significant impact on the marina. Pumping will temporarily reduce the water level daily by no more than one metre as agreed with the dock operator and regulator. There are protective measures in place such as a requirement to use a filter screen to protect against entrainment of fish.

There is oil and other pollutants in the dock area as it is not currently dredged. Will these pollutants be pumped back into the sea after the water has been used to create the caverns?

The discharge consent requires sampling of both influent (dock water) and effluent (discharge water) which includes relevant contaminants to ensure that levels are safe.

Why can't Halite consider other methods of disposing of the brine – such as selling it on the commercial market?

Different options for brine dispersal, including selling it on the commercial market, were considered extensively during the application period. Discharging brine in to the Irish Sea was accepted as the appropriate method of disposal and prescribed within the approved Development Consent Order.

What experience is there of the effects of concentrated brine discharges into the sea?

Solution mining to create gas storage is relatively new but this is not the first project in the UK. For example, SSE have operated a facility at Aldbrough and Holderness in Yorkshire and EON has also used

solution mining with brine discharge to the North Sea. The ecological impacts of this project have been studied and will inform the monitoring for the Halite project. Brine discharge is also associated with seawater desalination plants and there is experience within the UK and worldwide in this area.

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