



INFORMATION NOTE #2 FLOOD RISK

Information Notes provide details of Halite Energy Group's plans in different areas of their underground gas storage project taken from the application, development consent order and other relevant documents. They do not provide analysis, commentary or community concerns, which are included in our Community Briefs published on the same topics.

Flood risk was examined as part of Halite Energy Group's preparation for the Development Consent Order included in the application in November 2011, based on site visits in 2008 and information from the Environment Agency in 2010 and 2011. It is covered mainly in the [Flood Risk Assessment](#), part of the Environmental Statement.

Flood Risk Assessment

This looks at flood risk within the application boundary from tidal/coastal, fluvial, groundwater and surface water sources as well as impacts on third party flood risks outside the application boundary and sets out proposed mitigation measures.

The development area includes designated main rivers, ordinary watercourses, land and drainage ditches.

In the report coastal flooding is described as the main risk of flooding but because of main rivers and watercourses fluvial flooding is also a risk. Maintaining temporary works at existing ground levels and stockpiling excavated materials outside Flood Zone 3 could mitigate temporary impact on existing fluvial flood conditions. Some infrastructure will be built in Flood Zone 3 (e.g. the wellheads) but these are not seen as susceptible to damage by flood water. The fire water pond is in Flood Zone 3 and should be built at or below existing ground levels to ensure no increase in third party flood risk (page 43). Studies should be carried out to see if extra flood defences are required due to water displaced by earth mounds/bunds around the development (page 1 and 46).

Sections of the main access road are in Flood Zone 3. The assessment states that flooding of the access road would not impede the operation of infrastructure and if the road is at surface level at these points the road would not have an adverse impact on existing flood conditions. The proposed road crosses a main river at NGR 336,832:495,906 which could impact third party flood risk. Further studies will be undertaken as part of the detailed design once the DCO has been granted (page 44).

A surface water drainage strategy is to be developed. There is no evidence of area-wide subsidence so a reduction in sea defence crest height is unlikely but will be monitored (page 2).

Increases in impermeable surfaces and development impacts surface water flood risk and the site is currently under agricultural use/ mainly permeable surfaces. Surface water is predominantly drained via a system of land drainage ditches and watercourses (page 28). Increases in the area of impermeable surfaces will 'slightly' increase existing rainfall runoff rates and volumes. Sustainable Drainage Systems (SUDS) will be used (page 30) to mitigate. The Environment Agency (EA) has confirmed that any increase in impermeable surfaces



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would have to be mitigated by restricting the run off to the Greenfield run off rate. However, the closeness of the tidal estuary means the EA would allow the discharge of surface water directly into the estuary at higher rates than at the time of the report. SUDS techniques will ensure that contaminated water does not enter the receiving water environment. There was a recommendation that the DCO includes a requirement to develop a surface water drainage strategy for the project to be agreed at the detailed design stage (page 30).

Dual underground circuits cross main rivers and could potentially impact third party flood risk.

Additional information is needed to finalise the height of the coastal flood defences both sides of the river and a Flood Management and Evacuation Plan is to be developed for the gas storage facility (page 33). Studies need to be undertaken to show that pipelines under the Wyre will not affect the integrity of existing defences (page 34) through an EA Flood Defence Consent Application.

The creation of the gas storage caverns has the potential to cause subsidence which may lead to a reduction in the height of the crest of the defences on the Preesall side. An annual maximum aerial subsidence rate of 2mm/yr has been estimated, the crest will be monitored and there will be regular surveys of the earth bunds to check for structural problems (page 36). A commitment may be required from the developer to ensure existing standards of performance of the defences will be maintained.

Flood risk assessment uses 2011 data on expected rises in water levels due to climate change (page 36).

Before work on the Sea Wall Crossing at Rossall commences Halite would apply for an Environment Agency Flood Defence Consent. There were plans for new hinged concrete storm gates to be installed and the finished sea wall would remain in keeping with the new sea defences (page 13).

Flood defence consent applications would include up-to-date habitat and species surveys of each and every watercourse crossing, identifying key features and in particular the presence of important and protected habitats and species. A detailed construction method statement will need to be submitted for each crossing (page 50).

Under the terms of the Water Resources Act 1991 and Land Drainage Byelaws the written consent of the EA is needed for any proposed works or structures in, over above or within 8m of the top of banks of designated Main Rivers (page 50). Prior formal consent is also needed for any works to watercourses that involve the infilling, diversion, culverting or restrict the flow. Culverting other than for access is unlikely to receive consent if it does not fully mitigate for loss of flood storage and habitat.



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The Works Plan

The [Technical Explanation of the Draft DCO Schedule 1 \(Authorised Development\) and Works Plan](#) includes more specifics on where watercourses and other relevant structures will be affected.

The Gas Compressor Compound is the largest part of the infrastructure for the scheme including a vent stack for use during commissioning, maintenance and during emergencies situated within the centre of a fire water storage pond. The fire water pond will be fed from surface water runoff from the facility and will drain into an existing watercourse in the vicinity (page 4).

There will be staff car-parking for 17 cars at the security and support facility at Higher Lickow Farm. The immediate area around the facility and the parking areas provided will be metalled (page 5).

Construction of a metalled private road between Hall Gate Lane and the security gatehouse to the gas storage compound will cross Grange Pool via a culvert or bridge and the crossing of or modifications to other minor watercourses or culverts or realigned ditches. The road will be drained by pipes or ditches into existing watercourses via interceptors where required (page 5). The new access road from the security and support buildings at Higher Lickow farm to the gas compressor compound area will be the same (page 6). Permanent access tracks will link the wellhead compounds and gas compressor compound. No positive drainage will be provided for these tracks save where necessary (page 7).

The seawater pump station compound will include a positive piped drainage system discharging surface water to the dock and foul water to the adjacent sewers in Herring Arm Road (page 9).

The works for the brine discharge pipeline at Rossall promenade include modifications to the promenade rear flood wall including the provision of flood gates and the making good of all areas of the sea wall and promenade affected by the works (page 11).

The gas pipeline from the compound to A588, Lancaster Road, Bradshaw Lane, Bone Hill Lane, Black Lane and Station Lane will cross numerous minor watercourses, drains, Mill Pool (designated as a Main River) and an unnamed watercourse designated as a main river (Page 14-15).

The Development Consent Order

[Schedule 9](#) Requirements:

Ground/Surface Water and Pollution Prevention



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No stage of the authorised development shall commence until:

Requirement 18 (1) written details of the surface and foul water drainage system (including pollution control) have been submitted and approved by the relevant planning authority;

(2) no diversion of any stream or watercourse until a scheme and timescale has been consulted with Natural England and the Environment Agency and approved by Wyre Borough Council;

(3) Unless permitted under (1) or (2) all ditches, watercourses, field drainage systems and culverts shall be maintained so that water flow is not impaired and the drainage onto adjoining land is not affected;

(4), (5) and (6) ensure that any oil, drilling mud and cuttings are contained or disposed of in an approved manner.

Ground subsidence monitoring Scheme

This is covered by Requirement 35 and includes the development of a monitoring scheme and mitigation. The monitoring will include how ground subsidence will be monitored and the extent and timescales. Within six months of any subsidence being identified by the monitoring a ground subsidence mitigation scheme shall be submitted for approval.

Documents published by Wyre Council

Wyre Council is publishing documents on its [website](#) as they are submitted by Halite as part of the finalisation of the details of the project. As of 7th February 2018 documents had not been published by WC on requirements 18 or 35.