Baseline summary Padeswood CCS

A Preliminary Risk Assessment (PRA) was undertaken by RSK Geosciences along with a summary of existing reports and assessments.

Preliminary Risk Assessment, RSK Geosciences, February 2023

Based on the results of the desk-based Preliminary Risk Assessment the contaminant linkages that have been identified to be potentially complete and to require further action are listed below:

- Risks to groundwater in superficial and bedrock deposits from on-site contamination (historical and current sources), via leaching and migration (moderate to low risk);
- Risks to surface waters on-site from on-site contamination (historical and current sources), via lateral migration, site run-off and drainage (moderate to low risk);
- Risks to site workers due to accumulation of ground gases or mine gases, potentially resulting in asphyxiation or explosion (moderate risk); and
- Risk to buildings and infrastructure due to accumulation of ground gases or mine gases, followed by explosion (moderate to low risk).

It should be noted that the information provided in this report covers the full Padeswood Cement Works site, and the Proposed Development works will be limited to set locations within the main site.

On the basis that a site investigation has been completed by EEG for the south-western area of the site, the following comments are made regarding the risks identified above in terms of whether sufficient data has been provided to determine whether these risks remain viable within that part of the site.

- Risks to groundwater or surface water from on-site contamination (historical and current sources), via leaching and migration (moderate to low risk). In the south-west area of the site it is concluded that this risk has been assessed, and that there is not a complete linkage relating to controlled waters;
- Risks to site workers or buildings and infrastructure due to accumulation of ground gases or mine gases, potentially resulting in asphyxiation or explosion (moderate or low risk). In the south-west area of the site there is not considered to be a risk from ground gases from the nearby landfill site (for which a closure report has been submitted and approved by NRW); and coal mining infrastructure has not been identified within this site area, so mine gases are unlikely to cause a risk.

Contaminated Land Assessment, Cement Mill 5, Golder Associates, May 2017

This report covered a section of the central area of the main Site as part of an Environmental Statement submission prior to construction of new sections of the cement works. A watercourse shown across the south and east of the site is labelled as Foundry Drain, which flows into Black Brook off-site to the south.

Previous intrusive works are referred to, dating from 1995 to 2007. Superficial geology is reported as comprising glacial till (sandy, gravelly clay), with made ground composed of kiln dust, silty sand, clayey silt, gravel, brick, plastic, wood, concrete, coal and shale.

Coal seams were identified during works in 2007 at around 26.00m to 29.00m below ground level (bgl).

The Site has been an operational cement works from 1949, with areas of raised made ground, waste storage, fuel and chemicals storage, vehicle servicing and substations. There was also a rail line transporting coal onto Site, a tank near the rail cabin and the report indicated that there were no records of spills or leaks.

Ground investigation in the areas of raised made ground and railway track, Golder Associates, June 2017

This work was completed as part of planned re-profiling works to facilitate a new development area. The report referenced 14 trial pits excavated within made ground and the railway track area, with 23 samples having been submitted for laboratory analysis (Exova Jones report 1773079). The report assessed the made ground material and determined that it was appropriate for re-use on Site.

An historical landfill is located in the centre south of the Site, with the reference 152/87, NOW-439-L (issued on 4 November 1987). This was reportedly used for household and industrial waste (data taken from Envirocheck report, dataset from the Environment Agency (EA)).

The Site also had a waste licence issued in 2016 to permit the burning of waste to generate heat for industrial processes (permit licence BP3594FN, waste management licence 37012). The report also mentioned a diverted watercourse in the north eastern section of the Site, with the original channel having potentially been infilled.

Updated site characterisation and baseline report, WSP Golder, May 2022

As a requirement of the environmental permit for the Site, nine new monitoring wells were installed in boreholes in moderate or high risk-defined areas. Two trial pits were excavated and gas monitoring was undertaken. Slight contamination was observed in soil and groundwater (slight hydrocarbon odours, chemical and organic odours and some chemical impacts to groundwater). Groundwater was measured at depths varying from 0.50m to 3.30m bgl.

The report noted that the southern landfill did not occur within an excavation, but involved deposition of waste on the existing ground surface. It is understood that waste was moved out of the development area, to be placed further south. The landfill in the northern area was noted to have accepted waste from the late 1950s, and was not expected to have been lined. The report recommended installation of one new monitoring well and ongoing groundwater monitoring.

Ground investigation report, Tier Consult, October 2022

A site investigation was completed which comprised four window sample boreholes, two cable percussive boreholes, three trial pits and four plate load tests. The work focused on an areas to the south east of the main operational buildings. Monitoring wells were installed in three boreholes, with two visits for groundwater monitoring.

The investigation identified clay over sandstone bedrock, with deep made ground (gravel and clay) in some locations and some layers of possible relict topsoil.

Padeswood Water Supply Feasibility, Envireau Water, May 2022

This report provided a feasibility assessment relating to providing additional water abstraction capacity for the site. The options considered were the currently operated abstraction boreholes in Kinnerton (off-site to the east by 4.5km), or new boreholes within the Padeswood site boundary.

The report included a review of the baseline conditions within the Padeswood site boundary, details of which have been integrated into the relevant sections of this report, where appropriate. The report recommended that additional extraction from the existing Kinnerton boreholes would be the best technical option.

Geotechnical Site Investigation, Padeswood Works Part B, Earth Environmental and Geotechnical, July 2023

This report was prepared by Earth Environmental and Geotechnical (EEG) as part of the support works for the proposed development. The area covered by the investigation is the south western section of the Padeswood site, where the main project structures are intended to be located. The work involved drilling 13 rotary boreholes to depths of 30m and five shallow boreholes along the access road along the western site boundary.

The boreholes identified superficial units comprising layers of sand and clay, overlying bedrock formed by sandstone and mudstone. In the area of the site that was investigated, bedrock was measured to be at 17.8m to 32.5m bgl.

The investigation included both a geotechnical assessment and contamination assessment, and provided the following conclusions:

- Shallow foundations are possible for lightweight structures
- Heavier structures will need friction piles or end-bearing piles
- Risks from contamination are assessed to be low in relation to construction workers and future site users
- No remedial measures are recommended with respect to contamination
- The site is within an area where naturally occurring radon potentially presents a risk within future buildings. The report recommended either radon gas remedial measures in buildings, or commissioning a site-specific soil gas survey
- No coal mining related issues are identified in the section of the site that was assessed
- A flood risk assessment was indicated to be a requirement of a future planning application.