



CASE STUDY

DQRA AND PILING RISK ASSESSMENT

LOCATION: SCOTLAND

CLIENT: CONFIDENTIAL

HIGHLIGHTS

- Water Environment DQRA
- Contaminated Land Assessment
- Piling Risk Assessment

THE CHALLENGE

Arthian was appointed to support the discharge of contaminated land planning conditions for a Purpose-Built Student Accommodation (PBSA) development in Glasgow city centre. Previous site investigations and remedial works had been undertaken by another consultant to address an identified light non-aqueous phase liquid (LNAPL) plume; however, following cessation of LNAPL extraction, further assessment was required to demonstrate that residual contamination did not pose an unacceptable risk to groundwater, surface water or future development.



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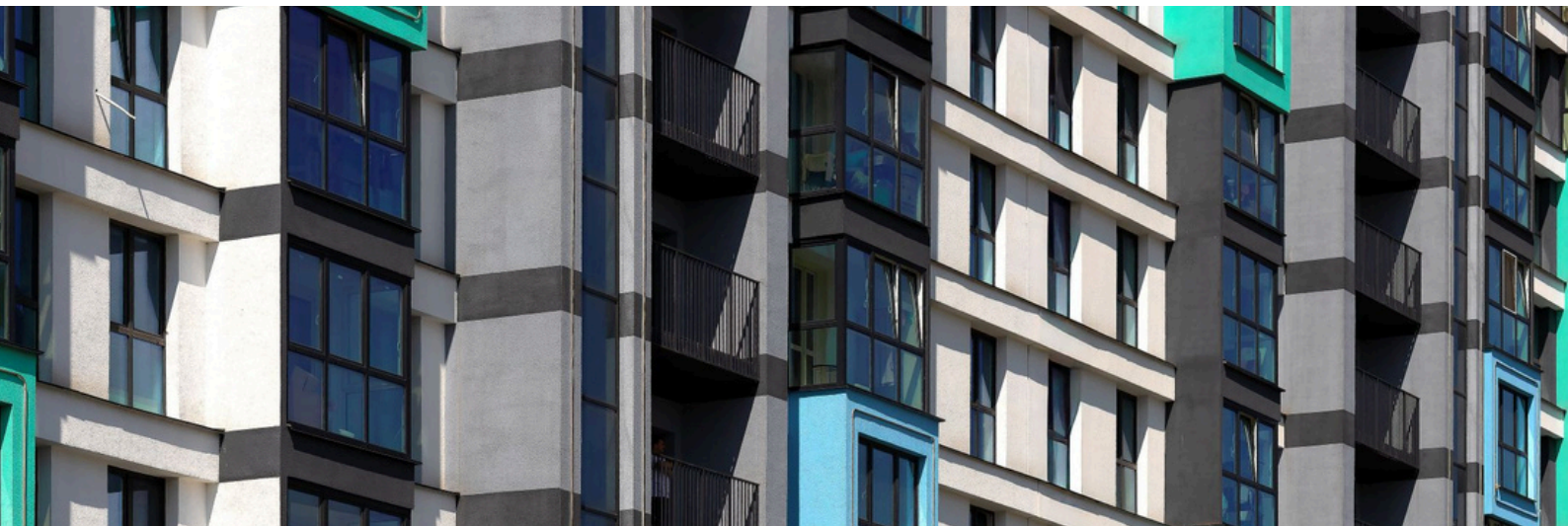


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THE CHALLENGE, CONTINUED

The site presented a complex environmental risk profile, requiring a robust understanding of pollutant linkages and the potential impacts of residual contaminants within groundwater, unsaturated soils and the remaining LNAPL plume. In addition, the proposed piling design introduced the potential for new contaminant migration pathways that needed to be assessed and managed to satisfy regulatory requirements and support planning condition discharge.



THE SOLUTION

Arthian undertook a comprehensive Water Environment Detailed Quantitative Risk Assessment (DQRA), drawing on existing site investigation and monitoring data to develop a refined Conceptual Site Model (CSM) and identify the pollutant linkages relevant to groundwater and surface water receptors.

An initial Generic Quantitative Risk Assessment (GQRA), completed in accordance with SEPA guidance, confirmed that contaminant concentrations exceeded relevant Generic Assessment Criteria and that a detailed assessment was required. Arthian subsequently evaluated risks associated with the residual LNAPL plume, dissolved groundwater contaminants and contaminants within unsaturated soils. LNAPL mobility was assessed using the SoBRA LNAPL Mobility Screening Tool alongside historical and ongoing groundwater monitoring data, applying a multiple-lines-of-evidence approach to support technical decision-making.



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THE SOLUTION, CONTINUED

To establish site-specific remediation objectives, Arthian derived Remedial Target Values (RTVs) for groundwater and surface water receptors using Environment Agency Remedial Targets Methodology models. The assessment incorporated site-specific parameters wherever possible and was supported by detailed sensitivity analysis to ensure the modelling outputs were robust, representative and defensible.

The findings enabled refinement of the CSM and pollutant linkage assessment, informing a proportionate risk management strategy and targeted recommendations for follow-on works. Arthian subsequently prepared a Piling Risk Assessment in accordance with current Environment Agency and CL:AIRE guidance, evaluating potential contaminant migration pathways associated with the proposed piling design and identifying mitigation measures where required.

Working closely with the client, design team, specialist consultants and regulators throughout the project, Arthian delivered a robust suite of risk assessments that secured approval from SEPA and the Local Planning Authority, supporting the successful progression of the development.



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