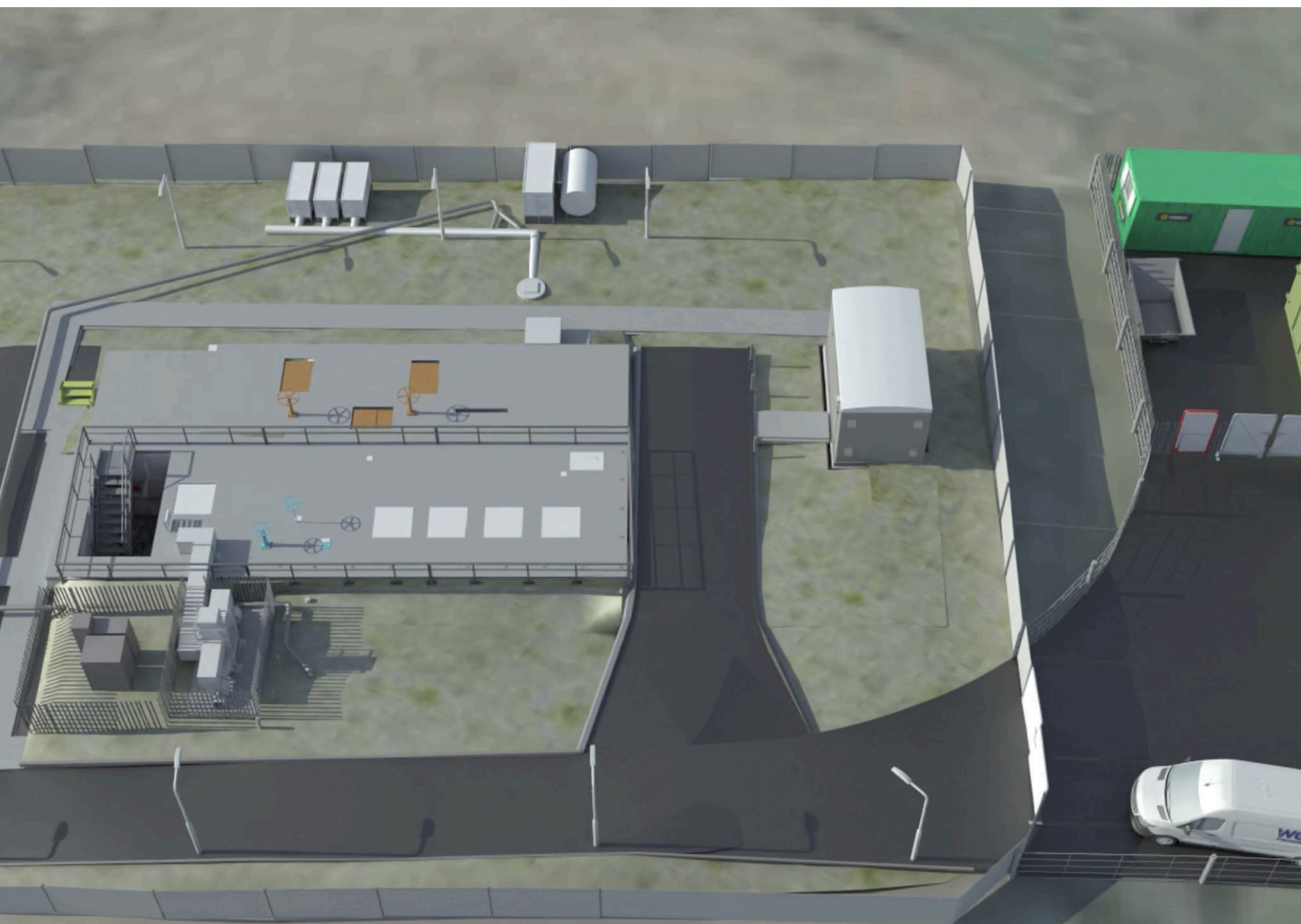


Leveraging 4D Modelling to Enhance On-Site Health and Safety

Majenta partnered with WGM Engineering to provide 4D modelling services for an extensive refurbishment and renovation project, at Scottish Water's Inchinnan Pumping Station. The project involves work on two underground dry wells and wet wells. These older assets presented challenges due to limited and outdated documentation.



Project background

The station, featuring a basement pump arrangement beneath an outbuilding, requires extensive restoration due to restricted access and resulting neglect. Complicating factors include a dilapidated building, a non-compliant stairway to the basement, and recurring pump failures causing flooded dry wells and leaking pipework. An outdated Motor Control Center and hazardous working-at-height risks during pump maintenance further complicate the project.



Creating the 4D model

Majenta utilised WGM's point cloud survey, which provided accurate site measurements to build a detailed 4D model of the site, both above and below ground – eliminating the need for time-consuming and potentially inaccurate manual measurements, which also require significant time on site and confined space access. This proved particularly helpful at Inchinnan, where reliable and recently updated plans were unavailable.



Benefits of the 4D model

Benefits

The completed 4D model offers a highly detailed view of the interior and exterior aspects of the project site, with real-time visualisation of planned changes over the project lifespan. This allows stakeholders to simulate, evaluate and plan key elements of the construction process, including logistics, plant movement, access and egress, health and safety, and material storage.

Enhancing health and safety

Majenta's 4D solution enhances health and safety provision by enabling better planning for site access, cabin placement, and vehicle parking. The below-ground visualisation has proved particularly helpful at Inchinnan for planning work in confined spaces and assessing risk.

Clash detection

The solution facilitates clash detection, identifying potential issues that might be missed in 2D drawings, improving safety and reducing the need for rework. At Inchinnan, this feature helped identify safety issues, such as areas where exposed steelwork encroached onto access routes.

Visualisation and client engagement

The clear and engaging above and below-ground project visualisations help improve client understanding and buy-in. This is particularly helpful for complex projects, as at Inchinnan – making client design reviews more efficient and engaging than is possible with 2D drawings or plans.

Project planning and tracking

The 4D solution's timeline feature offers a comprehensive visual overview of the project schedule – facilitating better coordination between teams and allowing them to anticipate potential conflicts, optimise resource allocation, and ultimately stay on track throughout the project lifecycle.

Optioneering and adaptability

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Impact

With the project still in the pre-construction phase, substantial resource and cost savings have already been realised. Further savings are expected as WGM continues to leverage the 4D model for rehearsal and continuous analysis as work begins.



Testimonials

"Majenta's 4D modelling solution has been instrumental in navigating the complexities of the Inchinnan pumping station project. Its accuracy and visualisation capabilities have significantly improved our design process and client engagement. As we move into construction, the model will be invaluable for coordinating activities, tracking progress, and mitigating potential on-site risks."

Wallace Rodger, Lead Mechanical Engineer, WGM Engineering



"We're delighted to have partnered with WGM on this challenging project. The 4D model proved its capabilities in communicating the intricate details of the project to all stakeholders, building shared understanding and facilitating informed decision-making. We believe this approach, which is being actively encouraged as part of Scottish Water's i-Twin programme, is key to successfully delivering projects in high-risk or challenging environments."

Sam Lissaman, Senior Account Manager, Majenta

Contact

Get in touch with Majenta

Connect with us for consultancy that makes a difference. Speak to one of our team today to discuss how Majenta can assist in achieving your business goals.

Get In Touch



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