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Publication date:
2023

Document Version
Author accepted manuscript

Link to publication in ResearchOnline

Citation for published version (Harvard):
McConvey, P, McIntyre, T, Lydon, C, Vucinic, L, Hare, T & Ni Chonchubhair, R 2023, 'A hydrogeological assessment of the Sherwood sandstone aquifer within the Moneymore region of Mid-Ulster, Northern Ireland', 66th Irish Geological Research Meeting, Belfast, United Kingdom, 3/03/23 - 5/03/23.

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Download date: 12. Jan. 2024

A Hydrogeological Assessment of the Sherwood Sandstone aquifer within the Moneymore region of Mid-Ulster, Northern Ireland

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The geology and hydrogeology of the Lagan Valley is well documented and the hydrogeological properties of the Sherwood Sandstone well known. A recent groundwater supply investigation in the Moneymore area has advanced our understanding of the Sherwood Sandstone aquifer in the Mid-Ulster region. Unlike the same aquifer unit in County Antrim, the Mid-Ulster unit is poorly understood owing to it not having been used for water supply when compared to its Lagan Valley counterpart.

Tetra Tech were involved in the specification, design and drilling of two deep boreholes for the purpose of abstracting groundwater from the Sherwood Sandstone aquifer near Moneymore. The first of two boreholes (BH01) was drilled to 100 metres below ground level (mbgl) and the second (BH02) to a depth of 260 mbgl. The two boreholes are approximately 10 metres apart from each other, but their respective open hole response zones are 20 metres apart vertically. Despite this, the two boreholes had little to no connectivity as demonstrated by the pumping test data. This is consistent with observations made during drilling, with intermittent mudstone and sandstone bands of rock confining water at depth. This demonstrates local compartmentalisation within the Sherwood Sandstone aquifer in the Mid-Ulster region.

Combined pumping tests and monitoring of observation wells nearby allowed the aquifer properties to be calculated. Currently, long term monitoring within the area is ongoing to confirm the results of the hydraulic assessment. The results to date suggest that the Triassic sediments of the Mid-Ulster sandstone aquifer have lower transmissivity and storativity relative to the Lagan Valley system. Similar to the Lagan Valley, the Mid-Ulster aquifer reaches a thickness in excess of 260m and compartmentalisation permits the abstraction from upper (unconfined) and lower (confined) portions of the same aquifer. The data gathered as part of this investigation will provide valuable information to future generations who wish to avail of this natural resource within the Mid-Ulster region.