

Dr Alan Duggan	
Department	Building & Civil Engineering
Campus	GMIT Campus, Dublin Rd, Galway
Email	alan.duggan@gmit.ie
Tel	+353 (0)91 753161
Research Interests	<p>Dr Alan Duggan is a chartered engineer with experience in the academic and design consultancy environments. He has provided detailed geotechnical and structural engineering designs for major infrastructure projects, particularly within the Design and Build market. He has played a key role in projects in Ireland, the UK, and the Middle East, in sectors such as highways, marine, water and wastewater treatment plants, microtunnelling, and other heavy civil engineering projects, as well as in commercial and residential developments.</p> <p>Alan has extensive experience in earthworks, foundations, soft ground engineering, peat stabilisation, tunnelling, slope stability assessments, soil nail design, sheet pile design, rock stabilisation, port infrastructure, retaining wall analyses, RC and steel structural design, groundwater modelling, pile design, temporary works and environmental life cycle assessments. Alan also has specialist research knowledge of ground improvement techniques and foundation solutions for construction in peatlands, with his PhD focusing specifically on stabilising peat with cement and other additives, including GGBS.</p> <p>Alan has a wide range of research interests within geotechnical and structural engineering and the built environment including:</p> <ul style="list-style-type: none"> • Earthworks and soft ground engineering, especially ground improvement techniques such as dry soil mixing, lime stabilisation and peat stabilisation • Sustainable development, the circular economy and environmental life cycle assessments • Carbon capture and the carbonation process in soils and concrete • Groundwater modelling and slope stability assessments in soil and rock • Geotechnical and structural engineering in heavy civil engineering works
Publications	<p>Published peer-reviewed journal publications</p> <ul style="list-style-type: none"> • Duggan, A., McCabe, B., Goggins, J., and Clifford, E. (2020). Stabilisation for peat improvement: extent of carbonation and environmental implications. <i>Journal of Cleaner Production</i>. 271. 122540. • Duggan, A., McCabe, B., Goggins, J., and Clifford, E. (2019). Evidence of Stabilized Peat as a Net Carbon Sink. <i>Journal of Materials in Civil Engineering</i>. 31(3). 04019005. • Duggan, A., McCabe, B., Goggins, J., and Clifford, E. (2017). The use of carbonation depth techniques on stabilised peat. <i>Geotechnical Testing Journal</i>. 40(6). 1083–1100.

	<ul style="list-style-type: none"> • Duggan, A., McCabe, B., Goggins, J., and Clifford, E. (2015). An embodied carbon and embodied energy appraisal of a section of Irish motorway constructed in peatlands. <i>Construction & Building Materials</i>. 79. 402–419. • Manton, R., Duggan, A., Goggins, J., and Clifford, E. (2014). Carbon costs and savings of Greenways: creating a balance sheet for the sustainable design and construction of cycling routes. <i>International Journal of Environment and Sustainable Development</i>. 13(1). 3–19. <p>Published peer-reviewed conference publications</p> <ul style="list-style-type: none"> • Duggan, A. R., McCabe, B. A., Clifford, E., and Goggins, J. (2015). Carbonation in stabilised peat: an accelerated pilot study. In <i>Proceedings of the 16th European Conference on Soil Mechanics and Geotechnical Engineering</i>, 2383–2388. Edinburgh. • Duggan A. R., McCabe BA, Goggins J, Clifford E. (2012). Factors affecting embodied carbon and embodied energy associated with ground improvement techniques for construction on peat. In: <i>Proceedings of a conference on Bridge & Concrete Research in Ireland</i>, 147–52. Dublin Institute of Technology, Ireland. • Manton, R., Duggan, A., Goggins, J., and Clifford, E. (2012). Use of carbon calculation tools for sustainable cycle network design. In <i>Proceedings of the 7th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES)</i>, Ohrid, Macedonia.
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