



Michael Rattley

PhD BEng

Personal Information

Profile	A dedicated professional with over 15 years of experience in onshore, nearshore and offshore geotechnical engineering. Expertise includes site characterisation, laboratory testing, foundation design and advanced numerical analysis.
Email	mjr@geowynd.com
Phone	+44 (0)7803048911
Nationality	British
Education	Oct 2003 – March 2007: University of Southampton Oct 2000 – June 2003: University of Southampton
Qualifications	PhD Geotechnical Engineering BEng (Hons) Civil Engineering
Additional Training	IOSH Managing Safely Mental Health First Aider (MHFA England approved)

Experience

Sep 2020 – Present	Geowynd Limited – Director / Geotechnical Consultant Geotechnical consultant supporting offshore wind farm developments from concept to detailed design. Focusing on site characterisation, optimised laboratory test scheduling and interpretation, offshore foundation design (concept to detailed), advanced FEA and development of state-of-the-art design tools.
April 2008 – Sep 2020	Fugro GB Marine Limited – Principal Engineer, Geotechnics Technical Lead Responsible for the technical output of a team of up to ten engineers working on projects related to offshore foundation design and soil:structure interaction analyses. The role also included consultancy on site characterisation and advanced laboratory testing, including provision of detailed test specifications and quality assurance of parameters derived from advanced testing for use in complex numerical analyses and foundation design projects. Mike was a recognised expert within the Fugro group on constitutive modelling and advanced laboratory testing techniques. Project experience with Fugro included site investigation, advanced laboratory testing, soil characterisation, geotechnical design, and engineering analysis of offshore structures worldwide. Engineering analyses have included jacket pile and monopile design and axial/lateral response assessments including cyclic pile analysis, pile driveability, fatigue and buckling analysis, mudmat capacity, cyclic response of shallow foundations, conductor axial/lateral stability and fatigue assessments, suction caisson capacity and installation studies, foundation settlement analysis, jack-up leg penetration predictions, spudcan-pile-interaction studies and the re-evaluation of pile capacity and back analysis of pile driving records for platform re-certification.
2003 – April 2008	University of Southampton – Research Fellow The role included coordination of a large-scale research project involving centrifuge, laboratory and full-scale field tests. Data analysis and interpretation for all aspects of the project. Specifying and supervising demonstration and tutorial sessions for undergraduate course modules involving laboratory testing and finite element analysis.

2000 – 2003

Vinci PLC – Site Engineer

Site surveying including setting out for earthworks, monitoring existing structures and locating and identifying underground services. Supervision of on-site construction and ensuring project design specifications, including continued monitoring of health and safety standards. Presentation of project progress and reporting.

Awards

Ground Engineering Award for Technical Excellence Finalist 2020

BGA Cooling prize Finalist 2007

Trant Engineering Prize – Best Individual Project (Civil Engineering): 2003 (Dissertation Title: Uplift capacity of transmission tower footings)

Publications

I have been the lead or co-author on over 20 technical publications in respected geotechnical journals and well-regarded conference proceedings. I have also delivered a significant number of invited presentations and seminars for industry bodies and training organisations. Full list available on request.

Key Projects and Experience

Since 2011, Mike has had overall technical responsibility for over 200 geotechnical studies including all aspects of geotechnical analysis for offshore foundation systems and related infrastructure. His approach to such geotechnical analysis has always been rooted in a firm understanding of fundamental soil mechanics principles, ensuring rigorous calibration and benchmarking of analysis methodologies. Details of some offshore wind project highlights are given below.

Westermost Rough and Walney Extension Offshore Wind Farms: Led the development of advanced pile analysis methods in chalk and mudstone, which were subsequently applied for design of wind turbine foundations and published as case studies. The work included a detailed review of geotechnical characterisation in each of the weak rock types and development of parameterisation frameworks in each case.

East Anglia ONE and East Anglia TWO Offshore Wind Farms: Developed a laboratory-based methodology for analysis of pile response under axial cyclic loading in sand and clay for application to wind turbine foundation design.

Hornsea One Offshore Wind Farm: Principal engineer for the FEED and post-FEED geotechnical design of suction bucket jackets, which included laboratory test interpretation and complex numerical analysis of suction bucket response under tension biased cyclic loading.

Borssele 1 & 2 Offshore Wind Farm: Technical lead for detailed numerical analysis of monopile lateral loading response, including detailed geotechnical interpretation and parameter derivation for complex numerical analysis. This project was one of the first 3D FEA based monopile design, using the PISA approach, performed in the offshore wind industry.

Amrumbank, Butendiek, Ho He See and Veja Mate Offshore Wind Farms: Technical lead for jacket pile foundation detailed design for several offshore substations, in accordance with BSH requirements. Analysis included provision of an axial design approach considering dynamic pile load test data, incorporating consideration of cyclic loading.

Neart na Gaoithe, Saint Brieuc and Courseulles sur Mer Offshore Wind Farms: Technical lead for pile installation and drilling appraisals as input to the design of drilled and grouted jacket piles for wind turbine and substation foundations in weak rock. These studies have included consideration of drilling template stability, template-hole interaction, open-hole stability, driven and jacked casing installation resistance and installation methodology geotechnical risk assessments.

Saint Brieuc Offshore Wind Farm: Technical lead for detailed design of drilled and grouted jacket piles for an offshore substation. The piles were to be drilled into highly fractured dolerite rock, and therefore the design included a comparative analysis of various rock-socket design methodologies and determination of the most rigorous axial and lateral design approach for the bedrock conditions present.

Hollandse Kust Nord Offshore Wind Farm: Principal engineer for development of monopile design-focused geotechnical interpretive reporting, including consideration of characteristic and design soil parameters based on statistical methods.

Horns Rev 3 Offshore Wind Farm: Technical lead for development of an engineering-focused ground model and conceptual foundation design analyses as input to tender stage evaluations.

Mike has also provided recommendations to numerous offshore wind projects on site investigation and advanced laboratory testing strategies for the design of monopile, jacket pile, suction caisson and drilled and grouted pile foundations.

In addition to the above selected projects, Mike has delivered extensive geotechnical support to the offshore oil & gas sector. Details of some oil & gas project highlights are given below.

Clair Ridge Field: Principal foundation consultant for pile capacity verification and driven pile installation planning for the drilling & production and utilities platform jackets, which involved driving of piles in extremely hard glacial tills.

Mozambique Area 4: Principal engineer for interpretation of dynamic stiffness, cyclic soil response and related parameterisation and execution of nonlinear site response analysis

Azeri Central Field: Principal engineer for interpretation of advanced in situ and laboratory data and detailed dynamic soil response parameterisation for input to 2D site response analysis considering slope stability risk for a jacket platform installation.

Glengorm & Buzzard Fields: Forensic geotechnical analysis of well conductor failures, including prognosis of geotechnical issues potentially contributing to failure and recommendations for future well conductor drilling and installation practices in challenging soil conditions.

Conwy and Forties Alpha Fields: Lead foundation design engineer and offshore company piling advisor for jacket installation in challenging soil conditions (shallow mudstone at Conwy, and very soft soils at Forties Alpha)

Mungo & Marnock Fields: Technical lead for two large spudcan-footprint interaction studies, including significant numerical analysis (FEA)

Various Fields: Technical lead for jack-up rig spudcan penetration studies, and site-specific analysis of jack-up response at numerous fields across the North Sea.

In addition to his geotechnical analysis and design experience, Mike also has knowledge of a range of specialised offshore sampling, in-situ testing and soil characterisation techniques and have worked on factual and parameter reporting for number of large site investigation projects in the North Sea, offshore Angola and offshore Mozambique. Mike is a recognised industry expert on advanced laboratory testing techniques with significant experience in the specification and assignment of advanced (dynamic) testing programmes, test specifications and preparation/checking/approval of laboratory reports.

During his career Mike has always maintained a strong connection with academic and joint industry project research, wherever possible. He was the Fugro industrial supervisor for the development and implementation various proprietary constitutive models, for application in offshore wind turbine foundation design and including cyclic response. The research project was performed in collaboration with the University of Oxford under the Renewable Energy Marine Structures (REMS) Centre for Doctoral Training (CDT). Mike was also Fugro's nominated expert reviewer for the Unified CPT-based Axial Pile Capacity Project fronted by the University of Western Australia and the Norwegian Geotechnical Institute.
