FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 1.1

CURRICULA VITAE

Jim Hughes

Director of Energy & Planning

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Jim Hughes is the Director responsible for the Energy and Planning Department. Jim has a BA in Public Administration (Development) from the University of Limerick, a Masters in Town Planning from Queens University Belfast and a Diploma in EIA/SEA Management from University College Dublin. Jim is also a member of the Irish Planning Institute.

Jim is a Qualified Town Planner with over 16 years post qualification planning experience in both the private and public sector. He has extensive experience in providing strategic level advice to clients and negotiating with and presenting to local authorities. Jim has experience in the management and coordination and the preparation of planning applications, masterplans and Environmental Impact Statements for mixed use schemes and renewable energy projects throughout Ireland. He also has experience in the preparation of retail impact studies, planning appeals, Section 5 declaration applications and zoning submissions. Jim has represented clients on planning enforcement matters and as expert witness at oral hearings. He is also experienced in peer review and preparation of independent planning assessments and appraisals on behalf of clients. Jim has also experience in delivering seminars to the Financial Sector on planning matters on the importance of protecting the planning asset.

Key Skills

Jim experience includes:

- Project Director for multiple renewable energy projects throughout Ireland
- Lead planning consultant for major road infrastructure projects and waste projects.
- Highly qualified and experience in Irish and European planning and environmental law.
- Over 16 years as an IPI accredited Town Planner
- Acted as expert witness at ABP Oral Hearings and in Judicial Review Hearings and High Court Cases.

Previous Experience Essentials for This Project

2020

- Project Director for Croaghaun Wind Farm, Co. Carlow
- Project Director for Coom Green Energy Park, Co. Cork
- Project Director for multiple solar farm planning applications
- Project Director for Dernacart Wind Farm, Co. Laois

2019

- Project Director on the Kipaddogue Peaking Plant ancillary grid infrastructure development, Co. Kerry. Planning Strategy and Environmental Report
- Project Director on a 12 wind turbine development in Co. Kildare, Drehid Wind Farm.
- Project Director on the carrying out of masterplan and feasibility assessment on brownfield industrial sites in Nenagh and Roscrea on behalf of Zinc Properties
- Project Director on up to 10 Solar Farms
- Portfolio management of Shannon Commercial Properties portfolio of properties in mid-west region, including planning appraisals, zoning submissions and masterplan.

Key Information

Qualifications

BA in Public Administration (Development), University of Limerick (2002)

MSc. Town Planning, Queens University Belfast (2004)

Diploma in EIA/SEA Management, University College Dublin (2008)

Professional Memberships

Member of the Irish Planning Institute

Employment History

2015- Present

Fehily Timoney & Company
Associate Director

2007 – 2015

Cunnane Stratton Reynolds (SCR)
Senior Planner

2004 – 2007

Cork County Council
Area Planner

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Director of Energy & Planning

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2018

- Planning Lead on the South Kerry Greenway EIAR
- Project Director for Derrysallagh Wind Farm Grid Route rEIAR
- Project Director for Raragh Wind Farm Grid Route EIAR.
- Project Director on Kilbarry Residential Development, consisting of 800-unit residential scheme
- Project Director on 19 no. unit residential development, Cork South Docklands
- Project Director 100-unit Roxborough Residential Scheme, Co. Wexford
- Project Director 100-unit Bettystown Residential Scheme, Co. Meath.
- Project Director 300-unit Enniscorthy Residential Scheme, Co. Wexford
- Project Director for Derrysallagh Wind Farm EIA.

2017

- Review of Strategic Environmental Assessment and Appropriate Assessment for the nationwide Catchment Flood Risk Assessment and Management Plans
- SEA Screening for the Bandon Transportation and Public Realm Enhancement Plan
- Provision of planning advice on substitute consent applications for wind farm, Derrysallagh Wind Farm
- Provision of planning advice on the successful Maighne Wind Farm Judicial Review
- Provision of planning advice on the preparation of an EIA for the Raragh Wind Farm cable route planning application
- Project manager for Moanvane Wind Farm proposal, Co. Offaly.

2016

- Preparation of and SEA and AA in conjunction with CAAS Ltd. of the Wind Energy Strategy for Co. Tipperary 2016
- Project Management of Castletownmoore Wind Farm SID application Co. Meath
- Project Director on the preparation of approximately 20 no. solar farm planning applications nationwide
- Preparation and coordination of planning application for 50 no. dwelling units in Croom Co. Cork
- Planning Advice and negotiation for a 49,000 tonne Metal Recycling Facility, Limerick
- Planning advice on the Derragh Wind Farm Judicial Review
- Preparation of an integrated tourism masterplan for tourism site on the banks of the River Shannon Co. Clare
- Preparation and submission of planning application for a recreation facility at the old Burlington Plan, Co. Clare
- Development Plan submissions and retained Planning Consultant for Shannon commercial Properties, provide planning advise and strategy for the management of portfolio of property in the mid-west region.

2015

- Management and coordination of a design team for An Bord Pleanála Oral Hearing in Cork for a mixed-use Retail Development, Ballyvolane, Co. Cork
- EIS, RIA and planning application for a mixed-use District Centre Development, Cork
- Project Manager Ardglass Wind Farm, Co. Cork.

2008 – 2014

- SID Pre-Planning consultation with An Bord Pleanála for a Local Authority Marina development in Cork
- Strategic Review of Dursey Island and Cable Car. In conjunction with AECOM and TDI, an overall economic and tourism development strategy was developed for Dursey Island
- Development Plan Monitoring and submissions on behalf of a large international Financial Institution
- EIS, RIA and planning application for a mixed-use retail development, Clonmel
- Feasibility Assessment for Waste to Energy facility, Co. Clare
- Co-ordinating a multi-disciplined team; contributed to EIS and planning submission for the regeneration of the south-western docklands area of Waterford City. The scheme consisted of 11 no. development blocks ranging in height from one floor to thirty floors over basement level
- Coordinated a multi-disciplined team of 5 Architects and preparation of EIS and planning submission for the regeneration of the south docklands area of Cork City. The proposed development was the largest planning application ever to be lodged with Cork City Council. 2007

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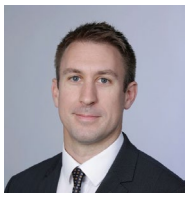
- Coordinated the lodging of a planning application, contributed to EIA and response to Third Party appeal for a mixed-use development consisting of retail, commercial, residential, tourism, leisure development, Waterford City
- Contribute to EIA for Road and Bridge Infrastructure for Cork City Council including preparation of a scoping document and public consultations.



Trevor Byrne

Principal Engineer and Project Manager

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Trevor works as a Principal Engineer for Fehily Timoney and Company. Trevor holds a master's degree in Sustainable Energy Systems from the University of Edinburgh and an honours degree in Civil Engineering following his studies at Edinburgh Napier University and Cork Institute of Technology. Trevor is part of the Energy and Environment division at FT and is a chartered member of Engineers Ireland. His primary area of expertise is in planning, design and construction of renewable energy projects and urban developments.

Trevor gained much of his experience in renewables working on a large number of projects in the UK renewable energy industry over the past number of years and has a helped to deliver a variety of projects employing different technologies including onshore wind, hydro and solar PV. He also has experience working in the Irish construction industry and has worked in the US on a variety of environmental projects.

Trevor has considerable environmental engineering and environmental impact assessment experience and is a proven project manager. He also has significant on-site experience relating to managing the construction of renewable energy developments and environmental coordination roles.

Trevor has experience in the following:

- EIAR, EIA, NIS
- Project Management
- Environmental Coordination
- Statutory and Public Consultation
- Oral Hearing
- Renewable Energy Development Design and Construction
- Site Supervision
- Detailed Design
- Strategic Infrastructure Developments

Meeting the Minimum Requirements of the Role

- ✓ BSc. (Hons) in Civil Engineering, Edinburgh Napier University (2008), BEng. In Civil Engineering, Cork Institute of Technology (2005)
- ✓ Chartered Engineer (Engineers Ireland) 2017
- ✓ More than 5 years' experience in preparing EIA and NIS reports

Previous Experience Essentials for This Project

- **Croaghaun Wind Farm, 2020**
  Croaghaun is a large scale onshore wind development in Co. Carlow comprising up to 7 wind turbines with a total installed capacity of up to 40MW. FT prepared a planning application and EIAR for the project on behalf of Coillte. Trevor project managed all aspects of the environmental impact assessment and planning application for the project. As well as this Trevor also lead the environmental coordination and engineering design of all onsite and offsite infrastructure for the proposed development including all infrastructure associated with the wind farm, grid connection and turbine delivery route. The application was successfully submitted to the local authority in early 2020.

Key Information

Qualifications

MSc. Sustainable Energy Systems
University of Edinburgh
2008-2009

BSc. (Hons), Civil Engineering
Edinburgh Napier University 2006-2008
BEng in Civil Engineering
Cork Institute of Technology
2002-2005

Professional Memberships

Chartered Engineer, 2017

Member of Engineers Ireland, 2010

Employment History

2016- Present

Fehily Timoney & Company
Senior Engineer

2012 – 2016

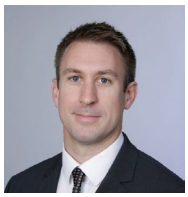
Greenspan, Edinburgh, UK
Project Manager

2010 – 2012

Cardinal Resources LLC,
Pittsburgh, PA, USA
Project Engineer

2005 – 2007

O'Shea Leader Consulting Engineers,
Cork
Graduate Engineer



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FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Coom Green Energy Park, 2020**
  Coom Green Energy Park is a large scale onshore wind and battery storage development in Co. Cork comprising up to 21 wind turbines with a total installed capacity of up to 120MW. FT prepared a planning application and EIAR for the project on behalf of Coillte and Brookfield Renewables Ireland. Trevor project managed all aspects of the environmental impact assessment and planning application for the project and acted as environmental coordinator for the EIA. As well as this Trevor also lead the engineering design of all onsite and offsite infrastructure for the proposed development including all infrastructure associated with the wind farm, grid connection and turbine delivery route. The application was successfully submitted to an Bord Pleanála in early 2020 through the strategic infrastructure developments (SID) consents process.

- **South Kerry Greenway (Kerry County Council) 2019**
  South Kerry Greenway (SKG) is a 32km long proposed recreational trail in Co. Kerry. Trevor produced the construction and environmental management plan for the greenway as part of the environmental impact assessment for the project as well as preparing the traffic impact assessment for the project on behalf of Kerry County Council.

- **Teevurcher Windfarm, 2018**
  Teevurcher is a development in Co. Meath. FT are acting as designer to the Design and Build contractor, Roadbridge, for the construction of all onsite infrastructure associated with the development. Trevor successfully project managed all aspects of the detailed design for the project, liaising with the main contractor's management and coordinating the design team including the development's environmental design commitments.

- **Moanvane Windfarm, 2017**
  Moanvane is a development in Co. Offaly. FT acted as the planning consultant for the client and project supervisor for the design stage of the project. Trevor produced the outline construction and environmental management plan for the site as part of the environmental impact assessment for the project as well as producing the traffic and transportation section of the environmental impact assessment including a traffic impact assessment.

- **Knockacummer Windfarm Grid Connection, 2017**
  Knockacummer is a 20km long 110kV grid connection project in Co. Cork for which FT acted as Employer's Engineer for the client. Trevor managed the coordination and supervision of full time site staff throughout the construction stage to ensure that the project was delivered in accordance the engineer's designs and specifications, the client's health and safety framework as well as statutory obligations, and the project's environmental management plan.

- **Gortfinbar Wind Farm, 2016**
  Gortfinbar is a 5 no. wind turbine development in Co. Tyrone. FT are acting as designer to the Design and Build contractor, DMKL, for the construction of onsite roads, hardstandings, substation and all other infrastructure associated with the wind farm development. Trevor successfully project managed all aspects of the detailed design for the project, liaising with the main contractor's management and coordinating the design team.

- **Sliabh Bawn Wind Farm, 2016**
  Sliabh Bawn is a 20 turbine project in Co. Roscommon. FT acted as designer to the Design and Build contractor, Alexander for the construction of a series of walking trails, riding tracks and recreational areas throughout the wind farm. Trevor is managing the design contract on behalf of FT for this project and ensured the project design was delivered in accordance the engineer's the client's health and safety framework as well as statutory obligations, and the project's environmental management plan.

- **Moanvane, 2017**
  Moanvane is a development in Co. Offaly. FT acted as the planning consultant for the client and project supervisor for the design stage of the project.

  Trevor produced the outline construction environmental plan for the site as part of the environmental impact assessment for the project as well as producing the traffic and transportation section of the environmental impact assessment including a traffic impact assessment.

- **Rosspile Solar PV, 2019**
  Rosspile is a ca. 75MWp ground mounted solar PV scheme on a site of approximately 153 hectares in County Wexford.

  The project consists of solar photovoltaic panels on ground mounted steel frames, an electrical control building and associated compound, inverter/transformer stations, underground power and communication cables, boundary fencing, internal access tracks and associated drainage infrastructure, CCTV cameras and all associated site services and works.

The project also incorporates significant battery storage on site as part of its design. A Natura Impact Statement accompanied the planning application.

Trevor acted as project manager for this project which successfully achieved planning permission in 2019 and is one of the largest consented projects of its type in Ireland to date.

Duties included coordination of all environmental assessments for the project.

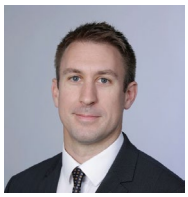
The comprehensive environmental report included assessments of potential impacts on hydrology, water quality, biodiversity, traffic and transportation, population and human health, cultural heritage, landscape and visual, and glint and glare.

- **Millvale Solar PV, 2017**
  Millvale is a 15MWp solar photovoltaic generation scheme near Rathnew in Co. Wicklow for which FT were appointed by the client, BNRG, to gain planning permission. Trevor project managed the planning application and associated Environmental Report for the proposed Wicklow Solar Farm, including a 38 kV substation and associated ancillary works. Lead contributor to the Environmental Report, and responsible for coordination of overall project team members, including landscape and visual, ecological and archaeological sub-consultants. Responsible for extensive consultation during the planning process, including attendance at meetings with key stakeholders.
- **Ralphtown Solar Farm, Co. Wexford – Planning Application, 2016**
  Project Engineer responsible for site layout design for the proposed 16 MW Ralphtown Solar Farm comprising approximately 61,500 photovoltaic (PV) panels on ground mounted steel frames within a site area of approximately 32 hectares. Key contributor to the Environmental Report, and responsible for preparation of the Construction and Environmental Management Plan (CEMP).
- **Brookhill Solar Farm, Co. Wexford – Planning Application, 2016**
  Project Engineer responsible for site layout design for the proposed 40 MW Brookhill Solar Farm comprising approximately 154,000 photovoltaic (PV) panels on ground mounted steel frames within a site area of approximately 90 hectares. Key contributor to the Environmental Report, and responsible for preparation of the Construction and Environmental Management Plan (CEMP).
- **Dennistown Solar Farm, Co. Wexford – Planning Application, 2016**
  Project Engineer responsible for site layout design for the proposed 20 MW Dennistown Solar Farm comprising approximately 77,000 photovoltaic (PV) panels on ground mounted steel frames within a site area of approximately 40 hectares.

  Key contributor to the Environmental Report, and responsible for preparation of the Construction and Environmental Management Plan (CEMP).
- **Cashile, Hydro, 2015**
  Cashlie is an estate near the upper end of Glen Lyon in the Perthshire Highlands in Scotland. Trevor successfully project managed the construction of 2no. run of river hydroelectric generation schemes concurrently and the schemes were successfully commissioned in December 2015.

  Trevor managed all aspects of the development detailed design and construction stage on behalf of the client as well as compliance with the project's environmental plan and various planning conditions. Challenges included working in remote location in extreme conditions and the use of helicopters for the lifting of construction materials to the intakes.
- **Dow Corning Silicon Plant, Brazil, 2011**
  The project involved the design and construction of a storm water system for a large silicon smelting plant in southern Brazil incorporating green infrastructure engineering for sustainable storm water management.

  Trevor acted as a design engineer for the project and made visits to the site for the purposes of project evaluation and inspection of constructed infrastructure.
- **Cairnmore Solar Park, Scotland, 2015**
  Cairnmore is a 4MW solar PV park in North Aberdeenshire. The site is located on a farm with a pre-existing wind farm with which the SPV scheme shares a grid connection. Trevor acted as project manager and coordinated the design, construction and procurement of the project on behalf of the client. The scheme was commissioned in early 2016 and is now generating successfully in tandem with the existing wind farm. This was the largest combined technology scale project of its type in Scotland at the time of commissioning.



Trevor Byrne

Principal Engineer and Project Manager

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- **Barnahely Battery Energy Storage, 2018**
  Barnahely is a battery energy storage system (BESS) project in County Cork. Trevor carried out the outline civil engineering and drainage designs for the site. Trevor also prepared the outline construction and environmental plan for the project along with carrying out the traffic impact assessment.

Tom Clayton

Principal Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Tom is a Chartered Engineer with a total of 12 years of experience within the geotechnical sector having developed excellent skills in analytical design (including finite element analysis), project and team management. Tom has significant experience designing deep foundations (including deep shafts) in the London area as well as the Middle East and various transport and energy projects within the Irish market.

Tom also specialises in earthwork stabilisation and has worked in asset management and design consultancy roles for both highways and rail projects. More recently, Tom has worked closely with contractors on Design & Build and planning projects throughout the UK and Ireland, including several wind farms, waste facilities and other infrastructure schemes.

H&S

Tom has been responsible for the management of Design Health and Safety at all stages of projects from conception to construction completion both in the UK and Ireland. Tom has overseen Design Stage Health and Safety across different sectors, including ground engineering, roads and rail projects. Tom has undertaken the role of PSDP on a number of projects.

Key Skills

Tom's experience includes:

- Geotechnical Engineering
- Geotechnical Design
- Site Inspections
- Deep Excavations & Underground Structures
- Geotechnical Asset Management & Slope stabilisation

Previous Experience Essentials for This Project

Deep Excavations

- **Thames Tideway Tunnel Tender (West & Central Station) – Ferrovial Laing O'Rourke – January 2014 – April 2014**
  Geotechnical Designer producing geotechnical interpretative and tender design notes for Thames Tideway Tunnel West & Central section tender (total value approximately £300M – 500M for each section). Interpretation of ground investigation, production of characteristic design values, designer's risk assessment, preliminary design and input into the contractor's risk analysis. Leading a team of two engineers.
- **STEP Tunnel, Abu Dhabi – Samsung - Jul 2011 – Aug 2011**
  Design of circular shafts using Plaxis2D including uplift calculations and consideration of internal water pressure and structures. Mentoring a trainee engineer.
- **Whitechapel Station (Crossrail) – Crossrail - Jan 2010 – Nov 2011**
  Undertook geotechnical design on structures at Whitechapel Station. Work included finite element modelling and pseudo finite element modelling of deep box structures constructed using diaphragm walls with incoming and adjacent tunnels, pile design, 2D PFE modelling and design of multi-propped contiguous pile walls and preparation of geotechnical baseline reports.

Key Information

Qualifications

MEng. (Distinction) Civil Engineering, University of Surrey, 2008

Chartered Engineer (CEng) 2015

Professional Memberships

Institution of Civil Engineers (Member) 2015

Employment History

2016- Present
Fehily Timoney & Company
Principal Geotechnical Engineer

2008 – 2016
Arcadis UK (Formerly Hyder Consulting)

2004 – 2008
Hyder Consulting (Undergraduate)

- **Botanica Tower, Dubai & Al Quds Tower - Doha Select Group - Sep 2008 – Jan 2010**
  Completed a piled raft foundation design for a 40 storey structure in Dubai with 3 basement levels and a 100 storey tower with 5 basement levels and associated podium structures. Tom produced a finite element models (in MidasGTS) of the tower foundations in order to calculate settlement and pile forces and verified the results using several other computer packages.
- **Khatt Hotel, Ras Al Khaimah - Khatt Hotel - Jun 2007 – Aug 2007**
  On site as the supervising engineer at the Khatt Hotel, a ground and structural stabilisation project in the United Arab Emirates. Tom's responsibilities included daily supervision of micro-piling and retaining wall construction, monitoring of structural cracks and slope movements and general liaison with the Contractor's engineers on site to ensure compliance with specification
- **Borough Green to Trosley Pipeline Directional Drilling – Sep 2009 – Jan 2010**
  Specification and supervision of ground investigation, preparation of a design report including settlement calculations for a directionally drilled pipeline below the M20 motorway in Kent. Liaison with the Highways Agency to ensure approval. Supervision of directional drilling works to ensure specified settlement criteria were met.

Roads

- **Dunkettle Interchange** 2018 - Present
  Principal Engineer for the reconfiguration of the Dunkettle Interchange to a free flowing interchange including:
  - A series of direct road links between the N8, the N25 and the N40 and links to the R623 Regional Road in Little Island and Burys Bridge in Dunkettle;
  - 1 grade separated junction arrangement at the existing N25 to the east of the existing Dunkettle Interchange;
  - 4 roundabouts – 2 at the grade separated junction and 2 at tie ins with the existing road network;
  - 51 major structures of various forms;
  - Several culverts where the scheme crosses watercourses or intertidal area
  - Pedestrian and cyclist facilities; and
  - Modification of the existing Silversprings junction on the N8 Lower Glanmire Road
- **A737 Dalry Bypass - Farrans-Roadbridge 2017 - Present**
  Tom has been responsible for project management of the design of the Dalry Bypass during the latter design phase and through construction to date. He has acted as a geotechnical auditor and internal checker for earthworks packages delivered. Tom also undertook design of a pipeline protection slab related to SGN infrastructure crossing the proposed alignment.
- **Manchester Smart Motorway - Highways England 2013 - 2014**
  Completion of a Preliminary Sources Study and detailed design for gantries and retaining structures for a £208M "Smart motorway" scheme on the M60/M62. Leading a team of two graduate engineers and up to three engineers based in India. The role involved the development of characteristic design values, pile group analysis for all gantries and design of retaining structures on sloping ground. Preparation of Design Risk Assessments for all designs.
- **Geotechnical Asset Management Plan – Highways England – November 2011 – October 2013**
  Tom completed a full review of the asset inventory in Mac Area 3, prioritised earthwork repairs based on the Value Management Plan, risk profiling and available economic and physical resources and produced a five-year plan for earthwork remedial works across the area.
- **Area 3 Value Management Plan – Highways England – May 2013 – August 2013**
  Tom undertook detailed design a sheet pile based widening scheme to facilitate a new slip road at Milton Interchange which was in turn related to a new housing development adjacent to the site. This included the use of retaining wall design software, specification, Designer's risk assessments (in accordance with CDM regulations) and all other documentation for a "For Construction" set of documents.
- **EM47609 – M4 J10 Granular Repair – Highways England**
  Project Manager and design lead for a granular repair adjacent to a highway bridge at M4 J10. Tom undertook scoping and management of site investigation, supervision of site clearance and site investigation, undertook the role of Contractor on site from a health and safety perspective. Carried out detailed design and liaised with the site team to ensure compliance with the design.

Tom Clayton

Principal Engineer

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Rail

- **Allington – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager for this railway embankment stabilization project in Hampshire, UK. The design utilized sheet piles and regarding to provide cess retention and stabilize a slope which had been subject to signification rotational failures and track misalignment. This project was completed through Network Rail's GRIP process from conception to final detailed design.
- **BKE Line – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom used his extensive experience in earthwork slope stability in the London area to develop a set of key indicators for slope instability (including geology, slope geometry, ballast depths, train rough ride reports etc.) and then, using the extensive data available in the Network Rail records, developed a rating system for the BKE line which identified areas of high risk for slope instability. This system was developed using ArcGIS Online and provided Network Rail with realtime access to the information in graphical format as information layers on a map.
- **Bracknell Slope Stability Assessment – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this slope stability assessment for a failing slope at Bracknell, Berkshire, UK. Tom carried out a visual inspection, scoped ground investigation and undertook monitoring of adjacent drainage and structural assets in order to determine the likely cause of the slope failure.
- **Cess Retention Improvement – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this report which investigated cess retention measures (including gabions, king post walls, ruglei system, sheet piles etc.) and looked at their advantages and disadvantages. Standard details were also provided.
- **Firwood – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this slope stabilisation project at Firwood, UK. The project involved the construction of a king post cess retention system to prevent further movement of the tracks due to overfilled ballast. The project was completed from conception to completion on site.
- **Grayswood – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this slope stabilisation project at Grayswood, Hampshire, UK. The project involved the use of sheet piles and a combined cess / surface water drainage system in order to provide stability for a long stretch of railway which had been the site of several slope failures in recent years. The project was completed from detailed design stage up until completion on site.
- **Liphook Station – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this slope stabilisation project at Liphook, Hampshire, UK. The project was split into two sections, the first was an emergency works scheme where a temporary bagwork support system was installed prior to a permanent works design consisting of a gabion wall and regrade solution. The project was completed from detailed design stage up until completion on site.
- **Wessex Rapid Response – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for the development and management of the Wessex Rapid Response system which involved the generation of standard designs and a rota system for weekend and holiday periods during the winter. Solutions involving gabions, bagwork and sheet piles were proposed and designed for standard situations that could be used in an emergency situation. Tom also administered the rota and responded to emergency schemes during this time. Notable emergency projects included the Liphook Embankment, Botley Embankment Failure and Wrecclesham slope failure.
- **West Clandon – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager/Lead for this slope failure at West Clandon, Surrey, UK. The project involved the repair of an existing repair which was failing and encroaching on the tracks at West Clandon. The solution involved the use of sheet piles to the rear of the cut and a regrade to the front to ensure a sufficient factor of safety and divert substantial surface flows to a nearby stream. Tom completed this project from initial site visit to completion on site.
- **Withy Beds Feasibility Study – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom undertook a feasibility study for this 1.5km long site in Surrey, UK which had been subject to multiple slow failures throughout recent times. Tom proposed a set of solutions, including cess retention, soil nailing and sheet piling at different areas depending on local conditions. Tom used GPR to identify the depth of ballast and as an indicator for potential slope stability issues and previous settlement.

- **Wrecclesham Emergency Works – Osborne (Network Rail Framework) – June 2014 – April 2016**
  Tom was the Project Manager and Geotechnical Design Manager / Lead for this emergency works slope failure at Wrecclesham, Hampshire. Tom undertook a site visit, scoped ground investigation and managed the procurement of site investigation. Tom then provided Network Rail with a temporary design and permanent design for the scheme and liaised with Network Rail and the contractor throughout the construction of the temporary design (which consisted of a tied back sheet pile wall with deadman anchors).

Wind

- **Kilgallioch Wind Farm, Farrans, Jun 2017 – Dec 2018**
  Tom took over the Project Manager role for this award winning 96 turbine wind farm project in Scotland towards the end of the construction stage and was responsible for closing out as-built drawings. Tom also undertook the role of Geotechnical Design Lead for a replacement turbine foundation at one location and undertook the formation inspection during the construction of this turbine
- **Derrysallagh Wind Farm Substitute Consent – Kilronan Wind Farm Ltd, Jun 2017 – May 2018**
  Tom was the Geotechnical / Geology Lead for the preparation of a Soils, Geology and Hydrogeology chapter for a retrospective EIS relating to the construction of an electrical cable route from Derrysallagh Wind Farm to a nearby electrical sub-station. As part of this assessment, Tom undertook a full desk study, site visit and provided an assessment of potential and cumulative impacts of the development (including with the wind farm development itself) and mitigation measures that could be implemented.
- **Gortfinbar Phase 2 – Moriarty Civil Engineering Contractors, September 2016 – May 2017**
  Tom acted as Category III checker for a piled turbine base foundation at this Northern Irish Wind Farm. Tom carried out an independent set of calculations and provided comments to the Designer. Tom also provided slope stability assessments for access road rock cuttings.
- **Teevurcher Wind Farm - Roadbridge, October 2016 – May 2017**
  Tom was the Lead Geotechnical Designer for this 5 turbine wind farm in Co. Meath and carried out full interpretation of the ground investigation and geotechnical design for all turbine foundations, hardstandings, access roads, substation foundations and met mast. Tom also provided construction stage support, formation inspections and verification of geotechnical testing for all of the above elements
- **Meenwaun Wind Farm - Roadbridge, June 2016 – April 2017**
  Tom was the Lead Geotechnical Designer for this 4 turbine wind farm in Co. Offaly and carried out full interpretation of the ground investigation and geotechnical design for all turbine foundations, hardstandings, access roads, substation foundations and met mast. Tom also provided construction stage support, formation inspections and verification of geotechnical testing for all of the above elements.
- **Proposed Wind Farm, Co. Kerry – Joam Consulting Ltd., Oct 2016 – Dec 2016**
  Tom was the Project Manager for this peat stability assessment for a proposed wind farm in Co. Kerry. Tom oversaw the conducting of peat probing and field visits to the site and the preparation of a peat stability assessment in line with Scottish guidance on the preparation of Peat Stability Assessments. This project also involved the 3rd party check of a soil, geology and hydrogeology chapter prepared by others.
- **Raragh Wind Farm – Mainstream Renewables, Jul 2016 – Dec 2016**
  Tom was the Geotechnical / Geology Lead for the preparation of a Soils, Geology and Hydrogeology chapter for an EIS relating to the construction of an electrical cable route from Raragh Wind Farm to Kingscourt, Co. Cavan. As part of this assessment, Tom undertook a full desk study, site visit and provided an assessment of potential and cumulative impacts of the development (including with the wind farm development itself) and mitigation measures that could be implemented.
- **Proposed Wind Farm, Co. Donegal – Element Power, Oct 2016 – Dec 2016**
  Tom was the Geotechnical / Geology Lead for the preparation of a Peat Stability Assessment for an EIS relating to the construction of a Wind Farm in Co. Donegal which was a proposed as an 8 turbine site. Tom oversaw the conducting of peat probing and field visits to the site and the preparation of a peat stability assessment in line with Scottish guidance on the preparation of Peat Stability Assessments

Tom Clayton

Principal Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Contaminated Land and Waste

- **Dublin Airport Environmental Assessment – daa (on behalf of Roadbridge), Mar 2017 – Oct 2018**
  Tom has been Project Manager for this environmental investigation project which involved the use of a mix of geophysical and intrusive investigation to map buried waste across a 261-hectare area on the outskirts of the Airport and then the use of environmental sampling to inform disposal and re-use of the materials encountered. Tom led a team including geo-environmental and waste teams and liaised with site investigation contractors.
- **Timoole Landfill Remediation Tender Design – Priority Construction, Dec 2017 – Mar 2018**
  Tom has been the Project Manager and Geotechnical Lead for this remediation design for the removal of 40,000+m^3 of assorted waste materials from a site in Co. Meath. The project involved use of the Observational Method for the ongoing assessment of slope stability, with mitigation measures including sheet piling and the construction of berms and dewatering trenches included in the design should signs of instability occur.
- **Dublin Airport Stockpile Soil Classification – daa (on behalf of Ramboll), Dec 2017 – Mar 2018**
  Tom was the Project Manager for this Soil Classification project relating to 70,000+m^3 of mixed stockpiles and made ground at Dublin Airport. Tom undertook the management of environmental engineers, site investigation contractors and laboratories in order to produce a Soil Classification Report as part of the tender for removal and disposal of these soils as waste materials.
- **Newhaggard Soil Classification – Fingal County Council, Nov 2017 – Feb 2018**
  Tom was the Project Manager for this Soil Classification project near Lusk, Co. Dublin. 41,000m^3 of soil had been deposited previously within the Rogerstown Estuary and the project involved the classification of these soils for re-use, both in terms of contaminants and from a geotechnical point of view. Tom managed sub-contractors to carry out site investigation and staff to prepare a Soil Classification Report.
- **Ballyogan Landfill – Dec 2016 – Dec 2017**
  Tom was the Geotechnical Slope Inspector for this landfill, which included a visual inspection of all side slopes and reporting on any slope stability issues to satisfy the EPA waste licence criteria.
- **Balleally Landfill, Dec 2016 – Dec 2017**
  Tom was the Geotechnical Slope Inspector for this landfill, which included a visual inspection of all side slopes and reporting on any slope stability issues to satisfy the EPA waste licence criteria.
- **Dunsink Landfill – Dec 2016 – Dec 2017**
  Tom was the Geotechnical Slope Inspector for this landfill, which included a visual inspection of all side slopes and reporting on any slope stability issues to satisfy the EPA waste licence criteria.
- **Gortadroma Landfill Slope Stability – Oct 2016 – Oct 2017**
  Tom was the Geotechnical Slope Inspector for this landfill, which included a visual inspection of all side slopes and reporting on any slope stability issues to satisfy the EPA waste licence criteria.

H&S

- **Loughshinny Waterbath Upgrades, Ongoing**
  Tom is currently undertaking the role of H&S Coordinator for this gas upgrade project.
- **Gormanstown Boiler Upgrades, Ongoing**
  Tom is currently undertaking the role of H&S Coordinator for this gas upgrade project.
- **Diswellstown AGI Upgrades, Ongoing**
  Tom is currently undertaking the role of H&S Coordinator for this gas upgrade project.
- **Belview AGI Upgrade**
  Tom undertook the role of PSDP for the upgrade of this Above Ground Installation (AGI) at Belview, Dublin.
- **Nangor Road AGI Upgrade**
  Tom undertook the role of PSDP for the upgrade of this Above Ground Installation (AGI) at Nangor Road, Dublin
- **4Bar in Building Upgrade Programme, Going**
  Tom is currently undertaking the role of PSDP for the upgrade of this extensive residential and commercial property gas upgrade programme throughout Ireland.

Tom Clayton

Principal Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **A737 Dalry Bypass – Farrans Roadbridge, June 2017 - Present**
  Tom is currently undertaking the role of Principal Designer during the construction stage of this 4km long new build Bypass in Scotland which includes a multi-span viaduct structure, roundabouts, overbridges, underbridges and other associated highway infrastructure. This role includes liaison with multiple design teams and contractor's temporary works coordinator.
- **Dublin Airport 5H Apron, Ramboll**
  Tom undertook the role of PSDP for Fehily Timoney on this extension to the existing apron at Dublin Airport. Tom has liaised with all Designer's at design phase to ensure compliance with the regulations and prepared Preliminary health and safety plans for various works packages.
- **Centre Parcs Feeder Main - Fingleton White**
  Tom acted as PSDP for this new gas main linking Center Parcs into the gas grid. The scheme is in multiple phases, with ground investigation phase, 1st phase and 2nd phase being undertaken. Tom's role includes liaison with designers and contractors, attendance at all progress meetings, site visits and other communication required to undertake the role.
- **Ballincollig AGI Upgrade - Fingleton White**
  Tom undertook the role of PSDP during the construction phase for the upgrade of this Above Ground Installation (AGI) at Ballincollig, including preparation of the safety file and liaison with the contractor.

Aaron Clarke

Principal Geologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Aaron is a Principal Geologist with Fehily Timoney's Infrastructure Team, providing specialist advice for multi-disciplinary projects across Ireland and the UK, including the scoping, procurement and management of large-scale ground investigations.

He has over 18 years' experience working as a geologist; of which, nine years' have been spent within ground engineering. Aaron holds contractor experience working within the ground investigation sector as well as a background in the supervision of earthwork operations on highways projects such as the M11 extension and M7 upgrade schemes as Designers Site Representative.

He is result-driven and analytically minded with broad experience leading and assisting with large multidisciplinary projects within the ground engineering and mineral exploration sectors. He is a highly motivated and experienced geologist, enabling him to identify and critically assess potential geohazards likely to affect the design and implementation of engineering projects and mining operations.

Key Skills

- Strong written and verbal communication
- Stakeholder management
- Ground model development
- Assessment of geohazards
- Geological mapping
- Rock mass assessments
- Desk studies & site surveys
- Earthwork & piling supervision
- Project Management
- Scoping & management of ground investigations & drilling programmes
- Karst assessment
- Input into EIARs (Land & Soils Chapter)
- Rock & Soil logging
- Developed report writing skills
- GIS
- CAD
- RocScience.

Publications

- Clarke A, Parkes M, Gatley S, (2007) The Geological Heritage of Fingal, Geological Survey of Ireland Publications
- Clarke A, Parkes M, Gatley S, (2007) The Geological Heritage of Meath, Geological Survey of Ireland Publications
- Clarke A, Parkes M, Gatley S, (2007) The Geological Heritage of Kilkenny, Geological Survey of Ireland Publications
- Parkes M, Clarke A, (2005) The Geological Heritage of Kildare, Geological Survey of Ireland Publications

Key Information

Qualifications

MSc. Applied Geotechnics
Camborne School of Mines, UK
2012

BSc. (Hons) Earth Sciences,
NUI Galway
2004

Professional Memberships

PGeo – Institute of Geologists of Ireland

EurGeol – European Federation of Geologists

Employment History

2022 – Present
Fehily Timoney & Company
Principal Geologist

Jan 2018 – Jan 2022
AECOM Ireland
Senior Engineering Geologist

2016 - 2018
ARUP Ireland
Assistant to the Designers' Site Representative

2015 – 2016
Geo Consulting Engineering Ltd.
Senior Engineering Geologist

2012 – 2015
EM Highway Services Ltd.
Engineering Geologist

2008 – 2011
Teck Resources
Lead Geologist

2007 – 2008
GHD Group Pty Ltd
Site Engineer

2004 – 2007
Geological Survey Ireland
Consultant Geologist

Aaron Clarke

Principal Geologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Previous Experience

- **Tynagh Power Station, EP UK Investments, Tynagh, Co Galway, June 2021 – Feb 2022**
  Lead Engineering Geologist. AECOM were commissioned to prepare an Environmental Impact Assessment Report (EIAR) in relation to a planning application for a new Open Cycle Gas Turbine (OCGT) plant and associated infrastructure. As part of the works a ground investigation was completed to inform the EIAR and OCGT design. As lead engineering geologist Aaron was responsible for scoping, procurement and management theground investigation. He was also responsible for input into the Land and Soils chapter as well as other chapters andappendices within the EIAR. The proposed development is located within the former Tynagh Mine site, which posed significant challenges with respect to geotechnical and environmental constraints. Aaron's background within the mineral extraction industry allowed him to appropriately assess available mining data and to convey this information to the different specialties within AECOM'sworking group.

- **SCPX Erosion Report, South Caucasus Pipeline Company, Azerbaijan, September – August 2021**
  Lead Engineering Geologist/Technical Lead. Following construction of the South Caucasus Pipeline in Azerbaijan, an annual programme of erosion control monitoring surveys was completed. AECOM were commissioned to report the findings of these surveys, which were undertaken by a third party appointed by the Client. The objective of the reports was to summarise the findings of the erosion control monitoring survey and to analyse the findings in the context of the local ground conditions and recommend remedial actions to rectify significant erosion observed and/or to prevent deterioration of erosion control measures that are in place. Aaron was responsible for reporting on the second round of erosion control monitoring.
  This required a detailed understanding of soil erosion processes and appropriate control measures. Aaron recognised the limitations associated with reviewing and analysing third party data and made a number of key recommendations to improve the data transfer process thereby reducing overall risk to both the Client and AECOM.
  Value: <€10K.

- **Derraghadoan Slate Quarry - Environmental Monitoring Plan, Lafarge Ireland Ltd, Dungannon, Co. Tyrone, May – June 2021**
  Lead Engineering Geologist. AECOM on behalf of their Client (Lafarge Ireland Ltd) was commissioned to develop a suitable Environmental Management Plan (EMP) which was required as part of the Client's planning application to extend Derraghadoan Quarry by four hectares. Aaron was responsible for the production of the EMP, which outlined the monitoring programmes for relevant environmental media to include monitoring of dust, groundwater levels, abstracted water discharge volumes and water quality. Development of the environmental monitoring plan consisted of a review of requirements in relation to relevant legislation, guidance and good monitoring practice for the extractive industry in Northern Ireland.

- **Lower Thames Crossing Phase 3 Ground Investigation, Highways England, London, UK, April 2020 – March 2021**
  Senior Engineering Geologist/Deputy Deliverables Manager . AECOM was acting as Principal Contractor to deliver one of the largest Ground Investigation schemes inthe UK, with multiple delivery packages and sub-contractor partners. The scheme will: provide a new road linking Kent, Thurrock and Essex; connect the existing A2/M2,A13 and M25; and will include construction of the largest road tunnel in the UK. Aaron was responsible for managing the Deliverables Team to ensure all ground investigation deliverables were checked under AECOM's quality management systems before issue to the client. His experience with large scale site investigations and highways projects improved the productivity ofhis team and allowed for: greater understanding of the project as a whole; succinct communication between site teams and the deliverables team; and a faster flow of high-quality deliverables to the client.
  Value: €65M.

- **Carrick-a-Rede Rock Face Inspection, National Trust, Co. Antrim, UK, January 2020**
  Lead Engineering Geologist / Project Lead. In response to a rock fall and subsequent closure of Carrick-a-Rede rope bridge in January 2020, AECOM was asked to complete an assessment of the rock faces immediately below and adjacent to the rope bridge supports. Aaron was lead engineering geologist on this project, responsible for the site assessment and subsequent reporting. Aaron's involvement allowed for a quick, yet accurate, assessment of the affected bridge abutments, allowing reopening of the bridge, which is an important revenue source tothe National Trust.
  Value: <€10K.

- **Bus Connects, National Transport Authority (NTA) | Dublin, Ireland, October 2019 – March 2020**
  Senior Engineering Geologist. In June 2018, the NTA published the Core Bus Corridors Project Report. The report outlined

proposals for the delivery of a core bus corridor network across Dublin, providing 230km of dedicated bus lanes and 200km of cycle lanes/tracks on sixteen key bus corridors. AECOM and Mott McDonald were awarded Package A, comprising four bus corridor routes: Clongriffin to City Centre; Lucan to City Centre; Clondalkin to Drimnagh; and Greenhills to City Centre.Aaron was responsible for producing a Preliminary Source Study Report (PSSR) for the Clongriffin route and assisting with the production of PSSRs for the remaining routes. He also assisted the geotechnical lead with scoping the ground investigation for Package A.

- **N4 Mullingar to Longford (Roosky), Westmeath County Council & TII, Longford/Westmeath, Ireland, February 2020**
  Senior Engineering Geologist. ROD-AECOM on behalf of Westmeath County council was commissioned to provide Options Selection and Preliminary Design for the proposed N4 realignment route between Mullingar andRoosky. The scheme will deliver approximately 50km of new and upgraded carriageway along with several new bridge structures. As part of the works, AECOM's Ground Engineering Team produced a Preliminary Source Study Report (PSSR). Aaron's input as an engineering geologist has given considerable added value to this project. He contributed significantly to several sections of the PSSR as well as undertaking a site walkoversurvey. His understanding of the site's geology, geomorphology as well as his local knowledge of land use was invaluable to this study and ensured that associated geohazards/geotechnical liabilities (includingkarst) were adequately captured and assessed.

- **N63 Liss to Abbey Realignment Scheme, Galway County Council | County Galway, Ireland, October 2019 – March 2020**
  Lead Engineering Geologist. Site investigation to inform the Preliminary Design for the N63 Route Alignment Scheme, comprisingrealignment of approximately 2.3km of the N63 from Liss to the eastern edge of Abbeyknockmoy village. Aaron was lead engineer responsible for: producing a Desk Study Report; undertaking a site walkover survey to identify potential geotechnical liabilities in advance of site works; and scoping and tendering the ground investigation works, to include both invasive and non-invasive methods.

  Due to the sites' underlying geology, there was potential for karst, Aaron's choice of investigation methods and location of exploratory holes used to target and identify potential karst features likely to affect the design and construction of this scheme was a significant contribution. His extensive experience working as a geologist on Irish highway schemes, to include projects suchas the M7 Upgrade and Sallins Bypass, M11 Extension and N4 Mullingar to Roosky provided greatbenefit to the project in understanding of ground conditions and associated constraints.
  Value: €350K.

- **Blackhorse Inn Redevelopment, New Line Homes, Dublin, Ireland, September 2019**
  Senior Engineering Geologist. Geotechnical assessment of an existing embankment adjacent to the former Blackhorse Inn locatedin Inchicore, Dublin. The site was being proposed for the development of a multi-storey apartment complex, including an underground parking facility. The purpose of the assessment was to evaluate the stability of the slope during the construction phase and following completion of the development. Aaron assisted the lead geotechnical engineer on this project and was responsible for: carrying out aninspection of the site and adjacent slope to identify any significant geotechnical liabilities likely to influence the proposed development; producing a site walkover report; and creating a conceptual ground model based on existing ground investigation data and findings from the site walkover survey. Aaron's strong site observational skills and ability to quickly produce a meaningful ground model allowed for an accurate analysis of the slope, thereby allowing the Client to proceed with their planningapplication.

- **Kinnegar to Donaghadee Greenway, Ards and North Down, Co. Down, N. Ireland, September 2019**
  Senior Engineering Geologist. AECOM were commissioned to investigate the proposed site of a steel pedestrian/cycle bridge alongan approximate 133m long coastal section at St. Helen's Bay, County Down. To better understand the challenges associated with the site's geology and in particular the outcrops,which will form the foundation to the proposed bridge, a site walkover and preliminary desk top study was completed by Aaron. Recommendations based on his assessment directly resulted in the initial bridge design to be revisited due to the inherent instability in the observed rock mass. The involvement of Aaron in this project removed the requirement for using external geotechnicalspecialists saving time and reducing overall costs to the client.

- **M7 Upgrade/R407 Sallins Bypass Scheme, Kildare County Council & TII, Co. Kildare, Ireland, January 2018 – July 2019**
  Designers Site Representative Online upgrade of 16km of the M7 between J8 and J11, and construction of the Sallins Bypass

(R407)and Sallins Link Road. Works also included extensive earthworks, five new bridges and new/updated drainage networks. Aaron was responsible for inspection and approval of all elements of the earthworks to include material assessment and inspections of pavement subgrade and the formation to structures. Aaron's experience with large earthworks operations was invaluable in the day-to-day operations of this project. It enabled him to advise the Contractor (SIAC/Colas JV) as to material acceptability and placement requirements. His efforts during inspections ensured that the highest quality of work was completed and also reduced liabilities associated with poor construction practices. His in-depth knowledge of the site's geology allowed for quick and decisive assessment of ground conditions; this was particularly evident during piling operations where over drilling was kept to a minimum thereby reducing overall piling costs.
Value: €100M.

- **M11 Extension Scheme, Wexford Co. Co. & TII, Co. Wexford, Ireland, 2016 – 2018**
  Designers Site Representative. The project involved construction of 27km of new motorway (M11), 11km of new single carriageway (N30) and 4km of new dual carriageway (N80). Works also included mass earthworks (cut/fil) operations, construction of multiple structures (including the River Slaney Underbridge) and an extensive new drainage network. Aaron was responsible for inspection and approval of all elements of the earthworks to includematerial assessment and subgrade inspections to structures. Aaron's experience with large earthworks operations was invaluable in the day-to-day operations of this project. It enabled him to advise the Contractor (BAM/Dragados JV) as to material acceptability and placement requirements. His efforts during inspections always ensured that the highest quality of work was completed and alsoreduced liabilities associated with poor construction practices. Aaron's background in rock mechanics and knowledge of the site's sometimes complex geology perfectly positioned him to undertake rock mass inspections at proposed structure locations and tosupervise piling operations at the locations of two of the largest underbridges on site. This removed the requirement to bring in external technical personnel saving time and reducingoverall budget costs.
  Value: €350M.

- **Ground Investigation for Wolborough Barton Residential Development, PCL Transport Planning Ltd, Newton Abbot, UK, 2015 – 2016**
  Geotechnical/Geo-environmental Lead. Phase 1 Desk Study and Phase 2 preliminary intrusive investigation of an 89Ha. parcel of land at Wolborough Barton, Newton Abbot, Devon. The land was being developed for 1,200 residential properties and associated amenities and infrastructure. The phased investigation resulted in the development of a detailed conceptual site model and a preliminary assessment of the geotechnical/geo-environmental liabilities likely to affect the site. Aaron's extensive experience as a geologist allowed him to critically assess and accurately interpret the site's varied and complex geology; and to develop an accurate conceptual site model showing theinteraction between the proposed development, the sites superficial and solid geology and associatedgroundwater regime. The resulting report allowed the client to successfully advance their planning application.
  Value: €300K.

- **Ballinalack Exploration Drilling Programme, Teck Resources Ltd., Co. Westmeath, 2008 – 2011**
  Project Geologist. Large-scale multi-disciplined mineral exploration programme targeting economic base metal depositsover an area of 300km2.Works comprised deep borehole operations, multiple soil sampling surveys and geochemicalanalyses, land based geophysical surveys and airborne geophysical surveys. As Project Geologist, Aaron was responsible for managing this project and overseeing all staff andactivities. He was also tasked with facilitating several technical presentations to Teck staff and their JV partnersNonfemet. His accrued knowledge of the area's regional geology and his ability to lead a multidisciplinary team ofgeoscientists, resulted in the successful development of a comprehensive geological ground model used to further develop drill targets within and adjacent to the existing Ballinalack deposit.
  Value: €4.6M.

- **Wonthaggi Desalination Plant Scheme, Victoria Dept. of Sustainability & Environment, Wonthaggi, Victoria, Australia, 2007 – 2008**
  Graduate Geologist. Ground investigation and monitoring programme for the proposed desalination plant near Wonthaggi. Aaron was responsible for the supervision of all site personnel involved in ground investigationactivities as well as logging soil and rock samples to relevant Australian engineering standards.
  Value: $3.1 Billion.

Ben O'Dwyer

Senior Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Ben O'Dwyer is a Senior Project Ecologist working as part of the Energy and Environment Team at Fehily Timoney and Company. He Holds a fist class honours Bachelor of Science (BSc) in Wildlife Biology from Institute of Technology Tralee, obtained in 2016. His degree focused on conservation of habitats, flora and fauna, with strong emphases on European and international legislation, and practical field skills.

Since joining FT, Ben has carried out numerous habitat surveys, including surveys of peatland, woodland, grassland, and riverine habitats, and also qualitative assessments and mapping of the same. He has carried out bird surveys for a number of wind energy projects, including summer & winter vantage point surveys, breeding bird surveys, and tailored surveys for particular groups and species.

He has also carried out numerous mammal surveys including bat, badger, otter, and general mammal surveys, and acted as ecological clerk of works on a cable route construction project.

A large portion of his work is focused on the survey and assessment of proposed wind and solar energy development sites, and he has carried out comprehensive ecological work on a number of sites, from plant and animal surveys and habitat mapping to Ecological Appraisals, AA Screening Reports, and Ecological Enhancement Plans.

Key Skills

- Bat identification using bat detectors, behavioral characteristics & software-based analysis of recorded calls
- Bird identification (by sight & sound), behavioral observations & flight line mapping
- Bat roost survey
- Plant identification
- Habitat mapping
- Invasive species survey
- Mammal identification (field signs, live sightings & trail camera survey)
- Habitat assessment
- Report writing and impact assessment (Ecological Impact Assessment, AA Screening & Stage 2 Natura Impact Statement)
- Derogation Licence applications
- Ecological supervision, collaboration with other disciplines at both planning and construction stages.

Project Experience

Wind Energy Projects

- Confidential wind farm Co. Cork – VP surveys, breeding bird and wader surveys, Habitat survey, Mammal survey, Static bat detector survey, Ecological walkover, grid connection and TDR survey, Biodiversity Chapter for EIAR
- Confidential wind farm Co. Carlow – NIS, FI Response
- Bilboa wind farm Co. Carlow (rotor modification) – Biodiversity Chapter for EIAR; FI Response
- Confidential wind farm Co. Laois – Biodiversity Chapter for EIAR
- Coom wind farm, Co. Cork – Turbine delivery route nodes survey, passive bat detector survey, replant lands survey, AA screening reports for TDR route & replant lands

Key Information

Qualifications

BSc. Wildlife Biology (1st Class Hons.), ITT, 2016

Employment History

2016- Present

Fehily Timoney & Company
Ecologist

2015

Malachy Walsh & Partners, Tralee
Work Placement

Ben O'Dwyer

Senior Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- Confidential wind farm Co. Laois (2) – Summer & Winter VP surveys; Bird Survey Data Collation; Bat Surveys (activity, emergence & passive detector surveys); Habitat Survey; Mammal Survey
- Confidential wind farm Co. Meath – Winter VP Survey
- Drehid wind farm Co. Kildare – Summer & Winter VP surveys; Dawn/Dusk Winter VP Survey
- Barranafaddock Windfarm – Post-Construction Collision Monitoring Survey & Scavenger Trial; Remedial AA Screening
- Moanvane Windfarm – Bat Survey; Bird Survey Data Collation; Habitat Surveys; Mammal Survey; Replant Lands Habitat Survey
- Meenwaun Windfarm - Pre-Construction Badger, Otter & Bat Surveys; Badger Sett Hard-blocking & Monitoring
- Moanincha Windfarm – Post-Construction Collision Monitoring Survey; Bat Survey; Post-Construction VP Surveys
- Confidential Windfarm Co. Cork (2)- Summer & Winter VP surveys; Breeding Bird Surveys; Breeding Moorland Bird Surveys; Merlin Survey
- Raragh Windfarm – Habitat Survey and Bat Survey (Cable Route)
- Galway Wind Park – Doon Bypass Habitat Survey
- Dromada Windfarm – Baseline Vegetation Survey for Hen Harrier Breeding Habitat Management Programme
- Knockacummer Windfarm Grid Connection Cable Route - Ecological Clerk of Works; Invasive Species Survey; Otter Survey; Hen Harrier winter roost surveys
- Derragh Windfarm- preconstruction ornithological and mammal surveys, preconstruction survey report
- Garryhinch Wind farm – Hen harrier roost watches

Solar Energy Projects

- Keiloge Solar Farm - AA Screening Report
- Glenamoy House Solar Farm - Habitat Survey and Desktop Study for AA Screening
- Ballyhale Solar Farm –Bat Survey
- Barrowsiders Solar Farm Carrigtwohill –Habitat Survey and AA Screening Report
- Casteltownbere Solar Farm – Habitat Survey and Ecological Feasibility Assessment
- Piercetown Solar Farm – AA Screening Report
- Meelshane Solar Farm – Habitat Survey, Site Walkover, Ecological Appraisal & Ecological Enhancement Plan.
- Furryhill Solar Farm – Habitat Survey, Site Walkover, AA Screening Report, Ecological Appraisal & Ecological Enhancement Plan. Cable Route Section 5 Application – AA screening Report
- Clondardis Solar Farm – AA Screening Report
- Ballyduff Solar Farm – Habitat Survey, Site Walkover, Cable Route Survey
- Johnstown North Solar Farm – Habitat Survey, Site Walkover, Cable Route Survey, AA Screening Report, Ecological Appraisal & Ecological Enhancement Plan.
- Rosspile Solar Farm – Habitat Survey, Site Walkover, Cable Route Survey, Bat Survey, Mammal Survey, NIS & Ecological Appraisal.
- Middleton House Solar Farm - Habitat Survey, Site Walkover, Cable Route Survey, Mammal Survey, Ecological Appraisal.
- Middleton House Solar Farm (additional lands)- Habitat Survey, Site Walkover, Cable Route Survey, Mammal Survey, Ecological Appraisal. Report for AA Screening

Miscellaneous Projects

- Dunkettle Interchange – preconstruction mammal & botanical surveys, reporting, otter & badger surveys and mitigation measures, rare plant and moth foodplant translocations, bat surveys, ornithological surveys, amphibian surveys
- N4 Sligo – preconstruction mammal, bat & amphibian surveys, ecological supervision, wildlife licence applications (frog, bat, badger, smooth newt), ecological design
- Cork County Bridge Rehabilitation, South & West Regions- AA Screening Reports
- Tipperary Town Historic Landfill Remediation - Habitat & General Ecology Surveys, Invasive Species Survey, Appropriate Assessment Screening, Invasive Species Management Plan
- Knockharley Landfill – Bat Survey & Desktop Study for EIS, Botanical & Habitat surveys and FI response Botanical & Habitat report
- Monart Spa – Q sampling (Aquatic Macroinvertebrate Identification & Analysis), biological water quality report
- Ballyogan Landfill – Aquatic Macroinvertebrate Identification & Analysis (Q values, SSRS)
- Dunsink Landfill – Aquatic Macroinvertebrate Identification & Analysis (Q values, SSRS)
- North Kerry Line – Habitat & General Ecology Surveys
- Burlington Facility - Habitat & General Ecology Surveys, AA Screening Report
- Center Parcs Gas Pipeline Route - Habitat & General Ecology Surveys
- Enniscorthy Residential Development - Habitat & General Ecology Surveys, with focus on hydrological connections for AA
- Kilbarry Residential & Solar Development EIAR - Habitat & General Ecology Surveys, Ecological Appraisal.
- Waterford Airport Runway Extension - Habitat & General Ecology Surveys
- Monaghan Historic Landfills- AA Screenings for Tier 3 Assessments
- Great Southern Trail Greenway - General Ecology Survey (Barnagh Tunnel Section)

Ben O'Dwyer

Senior Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- IDA National Technology Park, Limerick - NIS for flood defence berm
- Ballaghveny Landfill- Baseline Biodiversity Survey & Report
- Cúl Na Móna Gasto Grid Plant – Vantage point surveys, Breeding Bird Surveys.
- Corduff FlexGen Gas Piline & AGI – AA Screening for Section 5 Application
- Rogerstown Park (former Baleally Landfill) – AA Screening for maintenance shed
- Thorpes & Oldcourt Historical Landfill Monitoring - AA Screening
- Stewarts Hospital Front Terrace Restoration – Mammal Survey, Bat Roost Survey

Chandra Walter

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Chandra holds a BSc in Ecology and an MSc in Organic Horticulture, both degrees were awarded with Honors by University College Cork.

Chandra is a dedicated ecologist, with excellent report writing and data management skill. She is skilled with QGIS and SPSS statistics. Chandra has good plant and insect identification skills, particularly for pollinators and freshwater macro-invertebrates.

Chandra is experienced in both terrestrial and freshwater ecology.

Key Skills

- Data Management in Excel
- Habitat surveys
- Bat activity surveys
- Freshwater Macro-invertebrate surveys
- Pollinator surveys, focused on Hymenoptera, Lepidoptera and Syrphidae
- Mapping in QGIS
- Statistics – SPSS
- Preliminary Ecological Appraisal
- Appropriate Assessment
- Ecological Impact Assessment

Previous Experience Essentials for this Project

- **Graduate Ecologist at Fehily Timoney 2021-Present**
  Chandra has been working on several wind and solar farm projects, as well as on numerous civil and commercial infrastructure projects. Her role involves surveying, data management, mapping and report writing.

  - **Garryhinch Wind Farm (Bord na Móna) (ongoing)**
    Bat activity survey required for the Strategic Infrastructure Development application to An Bord Pleanála for a proposed wind farm comprising up to 12 turbines in counties Laois and Offaly.

  - **Dunkettle Interchange (TII)**
    Breeding survey for Grey Heron and Little Egret as part of the ecological mitigation requirement for a large road project. This project involves a series of direct road links between the N8, the N25 and the N40 and links to the R623 Regional Road in Little Island and Burys Bridge in Dunkettle; 1 grade separated junction arrangement at the existing N25 to the east of the existing Dunkettle Interchange; 4 roundabouts – 2 at the grade separated junction and 2 at tie ins with the existing road network; 51 major structures of various forms; several culverts where the scheme crosses watercourse or intertidal area; pedestrian and cyclist facilities; and modification of existing Silversprings junction on the N8 Lower Glanmire Road.

Key Information

Qualifications

MSc Organic Horticulture,
University College Cork,
2017

BSc Ecology,
University College Cork,
2014

Employment History

2021 – Present
Fehily Timoney & Company
Graduate Ecologist – Energy & Planning Team

2019 – 2021
German speaking technical support at Telus International

2018 – 2019
Environmental Lab Technician and Ecological Fresh Water surveyor

Chandra Walter

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

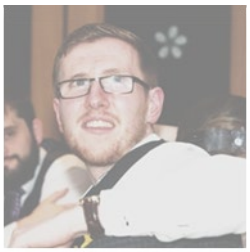
- **Cork Bridge Rehabilitation, Cork, Ireland / Cork County Council (2016 – 2022**)
  Bat emergence survey at a Bridge near Dunmanway as part of ecological mitigation for the repair of approximately 50 road bridges located around the Cork region. Development of an Invasive species management plan for repair works to a bridge in Co. Cork. The list of structures included predominately masonry structures dating from the 13th to 19th centuries, including a number of protected structures.

- **Littleton Wind Farm (Bord na Móna) (ongoing)**
  Management of bird data for a large wind project across bogland in Co. Tipperary. Bat activity surveys required for the planning application for a proposed wind farm comprising up to 12 turbines.

- **Fahybeg Wind Farm (RWE) (ongoing)**
  Survey of oak woodland to find preferred suitable route for access road. Other surveys at this site included mammal surveys, invasive species surveys, habitat assessment and bat roost assessment along the proposed cable route.

- **Maynooth rotating stabilizers (Statkraft) (2021)**
  Preparation of the Ecological impact section for an NIS for the proposed development of a synchronous compensator and ancillary equipment at Maynooth Co. Kildare. Challenges included a hydrological link that was identified to the Rye Water Valley/Carton SAC.

- **Acorn Water, 2018 — 2019**
  Chandra was a freshwater macro-invertebrate surveyor, responsible for evaluating long term water quality around dairy plant discharge sites which are under license from the EPA. Chandra also had responsibilities as a lab technician, analysing private and industrial water samples for biological and chemical parameters, and involved in developing quality control procedures for lab procedures and water samples.



Conor Crowther

Senior Project Planner

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Conor is a Senior Project Planner with Fehily Timoney and Company and works as part of the Energy and Environment Team.

Conor is an experienced planning professional, and a Spatial Planning graduate of Dublin Institute of Technology and a Coastal & Marine Management masters graduate of the University Centre of the Westfjords/ University of Akureyri, Iceland. Conor is demonstrably skilled at report and policy writing in both an academic and practical capacity, with clearly evidenced ability to effectively manage a variety of topics and workloads. Conor is a fluent Irish speaker, possessing a full clean driving license.

Key Skills

- Report writing
- Strategic planning advice and inputs
- Project management and delivery
- Policy writing and research

Project Experience

- **Fehily Timoney and Company**

  Manage and oversee solar farm related applications, including liaison with the relevant planning authority.

  Advise on planning-related issues for infrastructural developments.

  Contribute to and write various chapters of EIARs.

- **AOS Planning (CAAS Ltd.)**

  Engage and liaise with clients from various sectors regarding planning advice for infrastructural development.

  Provide high level strategic planning advice on a diverse range of multi-disciplinary projects.

  Manage and attain planning compliance for infrastructural developments.

  Manage and help to deliver renewable energy strategies.

  Participate in and manage tenders for large infrastructural projects.

- **East Suffolk Council**

  Project management of the Community Infrastructure Levy Spend and a Cross Boundary Water Cycle Study.

  Policy research and writing for various sections of the Local Plan.

  Presenting reports to members of Cabinet and the Local Plan Working Group.

  Participating in stakeholder engagement through 'drop-in' events and 'one-to-one' meetings with Town/Parish Councils and members of the public.

  Developing the Infrastructure Delivery Framework for the Local Plan.

Key Information

Qualifications

Coastal & Marine Management MRM (Frist Class Hons.), 2016

Spatial Planning BSc. (Hons.), 2013

Professional Memberships

Corporate Member of the Irish Planning Institute

Employment History

July 2022 — Present

Fehily Timoney and Company, Dublin

March 2020 – June 2022

AOS Planning (CAAS Ltd.)

Jan. 2017 – Feb. 2020

East Suffolk Council, UK

Nov. 2013 – March 2014

Stephen Little & Associates

June 2013 – Aug. 2013

An Bord Pleanála Internship

Kate Mahony

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Kate holds a degree and a PhD in Zoology from University College Cork and an MSc in Marine Biology.

Kate is a dedicated ecologist, with excellent project management skills as evidenced by completion of her PhD in three years. She has skills in data analysis, stakeholder engagement, statistics, mapping and EU legislation, which have been strengthened through collaborative research and employment. She is utilising her data skills by incorporating the R programming language into FT processes.

Kate is experienced in both terrestrial and marine ecology, with particular expertise in intertidal and estuarine ecology. Since starting at FT, Kate has gained experience in a variety of ecological skills, including Appropriate Assessment Screening reports, EcIA reports, Invasive Species Management Plans, Habitat Management Plans and detailed Ornithology report. She has conducted habitat surveys, bat surveys, bird VP surveys and mammal surveys in a range of habitats including peatland, woodland, grassland and rivers.

Kate's work at FT focusses on wind and solar energy developments, in addition to landfill remediation, residential developments and infrastructure projects.

Key Skills

- Report writing
- Ecological Impact Assessment
- AA Screening and Natura Impact Statement
- Ornithology Reports
- Bat surveys (Bat detectors and software analysis)
- Data Management and Statistics
- Data Visualisaton
- Mapping (ArcGIS, QGIS, mapping through R)
- Risk Assessment
- Statistics
- Habitat and botany surveys
- Vantage Point surveys
- Invasive species surveys
- Project Management

Project Experience

Wind Energy

- **Garryhinch Wind Farm, 2022-Ongoing:** Hen harrier roost survey, bat activity and static surveys
- **Fahy Beg Wind Farm, 2022-Ongoing:** Mammal surveys
- **Annagh Wind Farm, 2021:** Habitat and Species Management Plan, Invasive Species Management Plan,

Key Information

Qualifications

PhD Zoology,
University College Cork,
2021

MSc Marine Biology,
University College Cork,
2017

BSc Zoology,
University College Cork,
2016

Professional Memberships

CIEEM Qualifying Member

Employment History

2022 – Present
Fehily Timoney & Company
Project Ecologist – Energy & Planning Team

2021 – 2022
Fehily Timoney & Company
Graduate Ecologist – Energy & Planning Team

2019 – 2021
University College Cork
Researcher

2017 – 2018
Dairy Concepts Ireland
Technical Assistant

Kate Mahony

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Shelmalere Offshore Wind Farm, 2021-Ongoing:** Habitat and mammal surveys of potential landfall sites, GIS
- **Moanvane Wind Farm, 2022-Ongoing:** Mammal surveys, GIS
- **Bilboa Wind Farm2021-Ongoing:** Contributed to Invasive Species and Habitat/Species Management Plans, bat activity and static surveys
- **Gortloughra Wind Farm, 2021-Ongoing:** Bat activity and static surveys, flightline digitization and GIS
- **Castlegarden Wind Farm, 2022-Ongoing:** Habitat and invasive species surveys of the grid route and turbine delivery route
- **Confidential Wind Farm Project, Co. Cork, 2021-Ongoing:** Bat static detector surveys
- **Derryadd Wind Farm, 2021:** Winter vantage point surveys, flightline digitization and GIS
- **Confidential Wind Farm Project, Co. Carlow, 2021-Ongoing:** Ornithology data management, mapping and reporting. Producing monthly update reports.
- **Confidential Wind Farm, Co. Cork, 201-Ongoing:** Flightline digitization and GIS, activity and static bat surveys
- **Drehid Wind Farm, 2021-Ongoing:** Cable route habitat surveys, bat static detector surveys
- **Confidential Wind Farm, Co. Laois, 2021-Ongoing:** Ornithology data management, flightline digitisation and GIS, reporting.
- **Littleton Windfarm, 2021-Ongoing:** Relevé surveys, flightline digitisation and GIS, ecological input to site layout, bat activity and static surveys
- **Dyrick Hill Windfarm, 2021-Ongoing:** Ornithology data management, flightline digitisation and GIS, reporting, bat static detector surveys
- **Milltownpass Wind Farm, 2021-Ongoing:** Habitat surveys, GIS, bat static and activity surveys

Solar Energy Projects

- **Confidential Solar Farm, Co. Galway, 2021**: Desktop study, ecology technical note
- **Confidential Solar Farm, Co. Kerry, 2021:** Site walkover for Stage II feasibility study
- **Confidential Solar Farm, Co. Galway, 2022**: Ecology walkover and technical report for Stage II feasibility study
- **Confidential Solar Farm, Co. Kerry, 2022-Ongoing**: EcIA, Appropriate Assessment Screening Report, NIS, input to site design

Waste

- **Piggery Remediation, 2022-Ongoing**: Site walkover, Appropriate Assessment Screening Report
- **Ballymaurice Historic Landfill Remediation, 2022-Ongoing**: Site walkover, Appropriate Assessment Screening Report
- **Various Historic Landfills, 2021-2022:** Invasive species Management Plans, flightline digitisation and GIS, invasive species surveys, bat static and activity survey
- **Claremorris Historic Landfill, 2022:** Ecological walkover, Invasive Species Management Plan, NIS

Miscellaneous

- **Development at Confidential Manufacturing Facility, 2022-Ongoing:** Desktop study, Appropriate Assessment Screening Report
- **Bridges, 2022:** EcIA, habitat and mammal surveys, AA screening reports, NIS
- **Mixed Use/Residential Development, Co. Westmeath, 2021:** Ecological walkover, AA/NIS reports.

Previous Experience Essentials for this Project

- **Researcher, University College Cork, 2019-2021**

Kate was a Researcher responsible for conducting desk-based assessments, laboratory work, field work and data analysis to investigate the health, reproduction and growth of shellfish across Europe (COCKLES Project).
She was responsible for leading peer reviewed papers and collaborative reports with recommendations for fisheries, aimed at a variety of stakeholders including science, industry and the public.

Kate also disseminated project outputs through a range of media, including radio, television, print, conferences, infographics and social media.

She facilitated supervision and training of international researchers and students, allowing for timely delivery of project outputs.
Kate has strong project management skills, including time management, delegation, document control and decision making, resulting in the successful completion of all project work packages.

- **Dairy Concepts Ireland, 2017 — 2018**
  Kate was a Technical Assistant responsible for optimising plant facilities, packaging and product flavouring resulting in the successful initial launch of a novel dairy product to Irish supermarkets.
  She was responsible for liaising with service providers, preparation of manufacturing and safety procedures, and administrative work facilitated the successful completion of a BRC Food Safety Audit.

Maureen Marsden

Project Acoustic Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Maureen is a Project Acoustic Engineer with Fehily Timoney & Company. She has an MEng in Acoustics and Vibration from Southampton University (Institute of Sound and Vibration Research). She is a member of the Institute of Acoustics and Engineers Ireland.

Maureen has over 20 years' experience across a broad range of acoustics & vibration. She has experience of noise and vibration measurement and assessment across a variety of sectors, including building, industrial and transportation projects.

Previous Experience Essentials For This Project

- **Transportation Projects 1994 -2011**
  Predicted operational and construction noise for a range of railway transport projects including highspeed rail and tram projects. Measurement of noise levels post construction at Docklands Light Railway extension. Measured noise from operational Docklands Light Railway Extension post completion to determine compliance. Measured internal noise of Inter-city trains for the purpose of developing a specification for new rolling stock.
  Measured in-site performance of acoustic barriers on motorways in Ireland. Predicted noise from upgrade to N19 upgrade project during the route selection stage.
  Managed baseline noise survey prior to construction of Dublin Port Tunnel.
  Projects include Sunderland Metro, UK, East Coast Main Line Upgrade (UK), Docklands Light Railway Extension. Dublin Port Tunnel, N19 upgrade route selection stage

- **Building Acoustic Projects, 2002 - 2019**
  Provided acoustic advice on a range of building acoustic projects including residential, hotel, school, commercial and entertainment developments. Advised on sound insulation requirements for meeting building regulations. Advised on external building envelope design to meet suitable internal acoustic criteria. Predicted mechanical services noise to meet Local Authority noise criteria. Provided advice on meeting internal acoustic absorption requirements for a range of projects including community halls, churches, sports halls. Sample projects include Travelodge hotels, Chelsea Academy and Hammersmith Academy Schools.

- **Industrial Noise Assessments, 2011 - 2019**
  Predicted noise from a range of industrial sites including LNG facilities, dairy facilities, water works and power plants to advise on noise control measures to meet appropriate environmental legislation. Also predicted in-plant noise contours for purposes of meeting Noise at Work requirements. Sample projects include Thames Water projects, Ballyragget Glanbia site, Jazan Refinery, Saudi Arabia. Gas Networks Ireland – multiple sites, Compressed gas installation Whitegate, Kilkenny Water Projects, Thames Water Noise Impact Assessment, Bioatlantis, Kerry.

- **Compliance Monitoring at EPA Licenced Facilities**
  Measured and analysed boundary noise measurements at licenced waste facilities to determine compliance with noise conditions of the site licence.

  Monitored noise at a variety of EPA licenced facilities including food and beverage processing facilities to determine compliance with licence.

Key Information

Qualifications

MEng. Acoustics and Vibration, Southampton University (ISVR), 1994

Professional Memberships

Institute of Acoustics Engineers Ireland

Employment History

2019- Present
Fehily Timoney & Company
Project Acoustic Engineer

2017- 2018
Resonate Acoustics
Acoustic Consultant

2015- 2017
Soundsorba
Sales Engineer

2011- 2015
Kellogg Brown and Root
Acoustic Engineer

2011- 2011
Mott Mac Donald
Acoustic Consultant

2008- 2010
Applied Acoustic Design
Acoustic Consultant

2007- 2008
Hoare Lea Acoustics
Acoustic Consultant

2002- 2006
Sound Research laboratories
Acoustic Consultant

2001- 2002
RPS
Acoustic Consultant

1998- 2001
Arup Acoustics
Acoustic Engineer

1996- 1998
Hotpoint Ltd
Acoustic Engineer

1993- 1996
British Rail Research
Sponsored Student/Research Assistant

Maureen Marsden

Project Acoustic Engineer

FEHILY TIMONEY

- **Wind Farm Projects**
  Baseline Noise Measurements and analysis to determine prevailing background noise. Compliance measurements to determine if operating windfarms meet planning conditions. Prediction and assessment of operational and construction noise from windfarms.

  Sample projects include:, Annagh Windfarm, Ballagh Windfarm, Ballinagree Windfarm , Coom Green Energy Park, Coumnagappul Windfarm, Croaghaun Windfarm, Derncart windfarm, Drehid Windfarm, Fahy Beg Windfarm, Letteragh Windfarm.

- **Solar Farm Projects**
  Predicted operational noise from proposed external equipment to determine compliance with EPA criteria, and make recommendations for mitigation, if required. Predicted construction noise from works associated with to solar farm construction.
  Sample projects include: Ballyvalode Solar Farm, Dunmurray Golf Course Solar Farm , Moortown Solar farm, Kilcurly Solar Farm.

- **Channel Tunnel Rail Link Project, 1996 - 1998**
  Member of noise and vibration team providing noise and vibration advice. Predicted operational noise using 3-D model, during the detailed design phase of the project, determining noise barrier and bund heights to assist the project in meeting noise commitments. Liaised with design team/landscape architects to develop design incorporating bunding/noise barriers. Modelled construction noise associated with railhead operation and railway construction for the purpose of obtaining Section 61 consent for construction works.

Seán Ronayne

Surveying Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Seán is self-motivated, hard-working, and analytical Ecology Graduate (MSc) with over 10 years surveying and research experience. Seán is a driven and observant team player with key knowledge and expertise in Environmental Impact Analysis, Conservation, Ecological Assessments, Ornithology, Bioacoustics, Mammals, Statistics & Reports & GIS.

Seán is experienced in conducting bird, terrestrial mammal, and bat surveys as part of Environmental Impact Statements and Appropriate Assessments. Seán has published serval papers on bird and bird diet and was a surveyor for the Irish Birds Atlas Survey, Irish Wetland Bird Survey, Buzzard Soaring Survey and National Hen Harrier survey.

In 2021, Seán founded Irish Wildlife Sounds (irishwildlifesounds.com), in collaboration with BirdWatch Ireland. This project aims to document vocalisations of Ireland's birds, mammals, and soundscapes from our wild habitats, in an effort to popularise listening and recording, with the ultimate goal of halting the loss of said sounds.

Key Skills

Seán has experience in the following:

- General avian surveys: Vantage Point surveys, breeding and winter transect surveys, hinterland surveys (I-WeBS and hen harrier winter roost).
- Species-specific avian surveys for: woodcock, hen harrier, long-eared owl, peregrine falcon, and barn owl.
- Bat activity surveys, and bat static detector surveys.
- Terrestrial mammal surveys including badger, pine marten and otter surveys.
- Report-writing: Appropriate Assessments and Ecological Impact Assessment Reports.
- Bioacoustics: passive recording to document nocturnal migration of birds as well as presence/absence surveys.
- Collision Risk Modelling

Previous Experience Essentials for this Project

- **Annagh Wind Farm, Co. Cork, 2021 - Present**
  Seán undertook avian vantage point surveys, winter transect surveys, and hinterland surveys. Seán wrote year one avian monitoring report.

- **Ashbourne Skatepark, Co. Meath, 2021**
  Seán conducted an ecological walkover and wrote an accompanying feasibility report, with desktop study.

- **Inchamore/Gortyrahilly Wind Farm**
  Seán prepared/reviewed avian monitoring reports.

Key Information

Qualifications

MSc. Ecological Assessment (Honours)
University College Cork
2017

MSc. Marine Biology (Honours)
University College Cork
2010

BSc. Zoology (Honours)
University College Cork
2009

Employment History

2021- Present
Fehily Timoney & Company, Cork
Surveying Ecologist

July 2020 – Dec 2020
Field Ornithologist – Tivissa Wind Farm, Tarragona.

Apr 2020 – June 2020
Little Bustard Census. CTFC, Lleida.

May 2019 – Dec 2020
Bird Guide, Barcelona Birding Point

Sept 2018 – May 2020
English Teacher, EZ English, El Prat de Llobregat

Nov 2017 – Mar 2018
Project Scientist, Fehily Timoney & Company

April 2017 – October 2017
McCarthy Keville O'Sullivan, Cork

2012 - 2015
Northern Ecology, Northumberland

Seán Ronayne

Surveying Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Barnadivane Wind Farm, Co. Cork 2021 – Present**
  Seán conducted avian vantage point surveys, winter transect surveys, and hinterland.

- **Cuil na Mona Wind Farm, Co. Longford, 2021 – Present**
  Seán coordinates subcontractors working in the field, on ornithological surveys.

- **Delgany to Greystones Greenway, Co. Wicklow, 2021 – Present**
  Seán conducted an ecological walkover and wrote an accompanying feasibility report, with desktop study.

- **Derryadd Wind Farm, Co. Longford, 2021 – Present**
  Seán coordinates subcontractors working in the field, on ornithological surveys.

- **Dromlivaun Solar Farm, Co. Cork, 2021.**
  Seán conducted an ecological walkover.

- **Drummin Solar Farm, Co. Clare, 2021.**
  Seán conducted an ecological walkover.

- **Dyrick Hill Wind Farm, Co Waterford, 2021 – Present**
  Seán coordinates subcontractors working in the field, on ornithological surveys.

- **Fahy Beg Wind Farm, Co. Clare, 2021**
  Seán conducted several phase I habitat surveys and produced associated reports.

- **Gortaloughra and Tullaghboy Wind Farms, Co's Cork & Galway**
  Seán undertook avian vantage point surveys, winter transect surveys, hinterland surveys and red grouse surveys.

- **Goulacullin Wind Farm, Co. Cork**
  Seán undertook avian vantage point surveys, and red grouse surveys.

- **Historical Landfill, Co. Kerry**
  Seán undertook avian vantage point surveys, winter transect surveys, and I-Webs low and high-tide bird counts.

- **Knockraha Stability Project, Co. Cork.**
  Seán conducted an ecological walkover.

- **Littleton Wind Farm, Co. Tipperary**
  Seán conducted habitat reconfirming surveys

- **Rathdrinagh Solar Farm, Co. Meath**
  Seán conducted an ecological walkover.

- **Revised Solar Farm Planning Applications, Cos Tipperary & Kilkenny, 2021**
  Seán conducted reconfirming ecological walkovers across four previously assessed sites, to ascertain whether the baseline has changed. Seán also prepared four associated reports.

- **Shelamere Offshore Wind Farm (Landfall Ecology), Cos Wexford & Wicklow, 2021 – Present**
  Seán coordinates and conducts ornithology and habitat surveys.

- **Thomond Gate Residential Development, Co. Limerick, 2021**
  Seán conducted ecological walkovers across three sites and wrote accompanying feasibility reports, with desktop studies.

Seán Ronayne

Surveying Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Project Scientist, Fehily Timoney & Company Nov 2017 – Mar 2018**
  Seán conducted several bird survey types including: Vantage Point & Winter Walkovers (2km transects, based on the Country Bird Survey method). Seán prepared Environmental Impact Assessment, and Appropriate Assessment reports and conducted mammal surveys.
  - **Fossy Wind Farm, Co. Laois, 2017-2018**
    Seán undertook avian vantage point surveys, and winter transect surveys.
  - **Inchamore/Gortyrahilly Wind Farm, 2017-2018**
    Seán undertook avian vantage point surveys.
  - **Maighne Wind Farm, Co. Kildare, 2017-2018**
    Seán undertook avian vantage point surveys, conducted badger surveys, and inspected bat boxes.
  - **Rosspile Solar Farm, Co. Wexford, 2017-2018**
    Séan conducted waterfowl survey transects.

- **Assistant Ornithologist, McCarthy Keville O' Sullivan Ltd Apr 2017 – Nov 2017**
  Seán conducted several bird survey types including: Vantage Point, Woodcock, Breeding Walkovers (adapted O' Brien & Smith, CBS), & Breeding Raptor Surveys.

- **Assistant Ecologist, Northern Ecology May'12 – Mar 2015**
  Seán conducted bat surveys at dawn/dusk and vantage point surveys of birds. He produced habitat classification and mapped habitat.

- **Survey Volunteer, Irish Wetland Bird Survey 2011 - 2012**
  Seán was responsible for monitoring of bird activity for an allocated site. He conducted winter bird survey and collected additional relevant data for further investigation. He liaised and assisted Dr. Tom Gittings (of UCC) throughout the project.

- **Assistant Ecologist, Badger Vaccine Research Project June 2011 – Nov 2011**
  Assisted in trapping of wild badgers under B.R.O.C. licence for TB vaccine development purposes and set humane traps in relevant areas. Seán supported lectures and researchers with data analysis and assessment. In addition, he collected additional relevant data for further investigation.

- **Survey Volunteer – Buzzard Soaring Survey, Irish Raptor Study Group, Mar 2011 – May 2011**
  Seán counted soaring individuals and pairs during pre-breeding period. He conducted weather evaluation to determine correct timings. In addition, he identified suitable habitat for Buzzard Soaring Survey.

Curriculum Vitae

Caroline Chestnutt
BSc MSc

Hydrogeologist

Education

- BSc (Hons) Geology and Physical Geography, 2:1 University of Edinburgh, 2011- 2015
- International Exchange at University of British Columbia, Canada, 2013-2014
- MSc Hydrogeology, Distinction, University of Birmingham, 2016-2017

Key Skills

- Hydrogeological site investigation design
- Water Resources Studies
- Groundwater monitoring design and implementation
- Borehole Design, Construction and Maintenance
- Groundwater and Surface water Interactions
- Groundwater Hydraulics
- Inorganic Chemistry and Groundwater
- Hydrogeological risk assessments for landfills
- Mine inrush event investigation

Previous Positions

- 2020 to 2021 Médecins Sans Frontières (Hydrogeologist/Water and Sanitation Specialist)
- 2018 to 2020 Groundwater Relief (Hydrogeologist)
- 2015 to 2016 ESI (*Now Stantec*) (Assistant Consultant Hydrogeologist)
- 2015 to 2015 GWP Consultants (Graduate Geologist Intern)
- 2014 to 2014 Field Assistant on Canadian Government Funded Project

Experience and Expertise

Caroline is a Hydrogeologist with an MSc in Hydrogeology with distinction from the University of Birmingham. She is currently working on both international and UK based projects tackling a diverse range of hydrogeological aspects. Caroline's international projects are predominantly focussed within the mining sector including designing hydrogeological site investigations, hydrogeological studies for Environmental and Social Impact Assessments, scoping and pre-feasibility studies for mining projects and bespoke mine inrush event investigations. Current projects in the UK include supporting hydrogeological landfill risk assessments including hydraulic contamination modelling and permitting submissions such as Flood Risk Activity Permits, Ground Investigation Consents, etc. Caroline's previous experience to joining Wardell Armstrong is within UK consultancy for extractive industries and in the humanitarian sector to resolve groundwater related water supply challenges. Her field experience includes groundwater and surface water quality sampling, hydraulic testing, borehole drilling supervision, site walkovers within UK, Ireland, Canada and Bangladesh. Caroline has also lead notable remote hydrogeological studies in Afghanistan, Syria and Ethiopia.

Selected Project Experience (additional project experience available upon request)

2022 to 2022: Koksay Scoping Study, Detailed Feasibility Study
Scoping study assessment for a large scale open pit mining concession in Kazakhstan. The study included a desk-based assessment of all hydrogeological and hydrological Information provided by the client, including information on water bearing horizons and likely groundwater inflow volumes as the depths of mine progressed. Following on for initial Scoping study involvement, Caroline completed the hydrogeology section of the Detailed Feasibility Study for Koksay green field site. This involved the review of available hydrogeological reports and data such as hydraulic tests, existing numerical groundwater model to estimate inflows to the open pit, baseline water quality and levels, etc. Based on the existing conceptualisation of the groundwater systems at Koksay, recommendations were made to address key gaps in hydrogeological understanding required to potentially develop open pit mine at Koksay.

2022: Southworth Landfill Hydrogeological Risk Assessment Report (HRAR)
Development of a hydrogeological risk assessment review subsequent landfilling of inert waste within a quarry complex. The HRAR involved reviewing groundwater and surface water elevation and quality data for the site and updating model parameters.

2018-2020: Cox's Bazar Groundwater monitoring and modelling
Field co-ordinator and hydrogeologist for the establishment of a regional groundwater monitoring network and modelling tool in the vicinity of the Rohingya Refugee Camps, Cox's Bazar, Bangladesh. This was undertaken in collaboration with Bangladesh Government Department of Public Health Engineering and the United Nations. This involved the design, installation and hydraulic testing of 20 nested multi-level piezometers within the Dupi Tila and Tipam Sandstone aquifer. Drilling supervision spanned numerous weeks on site, working alongside local contractors and colleagues to solve challenges and improve outcomes of drilling on a daily basis. Well development was a significant challenge where notable improvements were achieved. Caroline was fully field based for the majority of 2019 to implement this project.

2021: Drilling supervision and groundwater monitoring trainer
Caroline developed a drilling supervision training programme to share technical the humanitarian. She has also lead practical workshops to train numerous organisations on the use of groundwater monitoring devices, borehole cameras, geophysical investigations (VES).

2021-2022: Water Supply Drilling Programme, Camp 21, Cox's Bazar
Previous to joining Wardell Armstrong, Caroline also lead the design and construction of solar powered water supply networks within Camp 21, Cox's Bazar, Bangladesh. This involved drilling supervision of 16" diameter boreholes installed with 8" diameter casing and slotted screens to supply water to the camp's 16,000 inhabitants. This also involved water quality sample collection and analysis as well as hydraulic testing of the aquifer, typically by pump testing and rising/ falling head tests.

2018-2019: Emergency water supply hydrogeologist
Caroline supervised the drilling of numerous (50+) water supply boreholes during the influx of refugees to Kutupalong refugee camp, Cox's Bazar for both community and health care facilities. This drilling was undertaken using mud rotary methods within sedimentary geology. Caroline was responsible to specify the design of the water supply boreholes based upon drilling observations and sieve analysis results. This programme involved managing multiple drilling contractors simultaneously, educating contractors to improve health and safety standards in compromised situations and training colleagues on geological logging and hydraulic testing.

Curriculum Vitae

Rachel Graham

BSc (Hons) MSc MCIWEM MIEnvSc

Senior Environmental Scientist - Hydrology

Education

- MSc Environmental Consultancy, Newcastle University (2012)
- BSc (Hons) Geography, University of Glasgow (2011)

Professional Affiliations

- Member of the Chartered Institute of Water and Environmental Management
- Institution of Environmental Sciences
- Member of the British Hydrological Society

Key Skills

- Hydrology
- Flood Risk Assessment
- Hydrological Monitoring
- Hydrogeology
- Environmental Impact Assessment (EIA)
- Environmental Complacence Auditing

Previous Positions

2013 to 2018 Wardell Armstrong LLP (Environmental Scientist)

Experience and Expertise

Rachel joined the Environmental Management and Planning Team within Wardell Armstrong's Newcastle upon Tyne office as an Environmental Scientist in 2013, following the completion of her MSc in Environmental Consultancy from Newcastle University. She is a member of the Chartered Institute of Water and Environmental Management (MCIWEM), Institution of Environmental Sciences (MIEnvSc) and the British Hydrological Society.

Rachel's project experience includes undertaking field and desk based hydrological and hydrogeological studies, Flood Risk Assessments (FRA) and Environmental Impact Assessments (EIA) for a wide variety of developments including; mineral operations (coal, hard rock and sand and gravel), renewable energy (solar, wind and Anaerobic Digestion plants (AD)), nationally significant linear infrastructure and residential and mixed-use developments.

Selected Project Experience

2020 to date: Senior Environmental Scientist, Creyke Beck Converter Station, East Riding of Yorkshire (Hitachi ABB Power Grids)
Provided supplementary information to update the Construction Environmental Management Plan (CEMP). Provided support and advice on water quality and water management through the construction period. Successfully obtained ordinary watercourse land drainage consent for the construction compound area. Prepared a simple licence application for discharge of treated effluent from a biodigester. Prepared a bespoke discharge environmental permit for the discharge of water from excavations to surface water, which included preparing the application and supporting statement and liaison with the Environment Agency. Supervised and managed water quality sampling and provided interpreted reports on the results.

2020: Senior Environmental Scientist, Killerby Sand and Gravel Quarry, North Yorkshire (Tarmac Trading Ltd)
Prepared and managed a bespoke flood risk activity permit application for a bridge over the River Swale.

2020: Senior Environmental Scientist, HS2 Enabling Works – Area South (Costain Skanska Joint Venture)
Prepared a water framework directive (WFD) assessment for the enabling works of HS2.

2020: Senior Environmental Scientist, Network Rail structure ECM1 64 on the River Lee (Story Contracting Limited)
Produce a silt management and monitoring plan to support a Flood Risk Activity Permit (FRAP) application.

2020: Senior Environmental Scientist, Mill Rig Wind Farm, South Lanarkshire (Banks)
Prepared the Water Resources Environmental Impact Assessment Report (EIAR) and provided text for inclusion into the Scoping Report and for this wind farm development. The EIAR also included an flood risk assessment note.

2019 to 2020: Environmental Scientist, North Sea Link: Blyth HVDC Cable Route (APS Ltd)
Undertook review of water management plans including compliance auditing and provide support and advice on water quality and water management through the construction period. Prepared a Bespoke Discharge Environmental Permit for the discharge of water from excavations to a watercourse and to land, which included preparing the application and supporting statement and liaison with the Environment Agency.

2019 to date: Senior Environmental, Killoch Energy Recovery Park, East Ayrshire (Barr Environmental Ltd)
Prepared the Water Quality Monitoring Scheme for the baseline water quality monitoring, managed the water quality sampling and provided interpreted water quality results for this redevelopment of an industrial facility.

2017 to 2020: Environmental Scientist, North Sea Link: Blyth Converter Station and HVAC Cable Route (Hitachi ABB Power Grids)
Provided information to discharge a number of planning conditions including updating the Construction Environmental Management Plan (CEMP). Undertook CEMP compliance auditing and provide support and advice on water quality and water management through the construction period. Prepared two Bespoke Discharge Environmental Permit for the discharge of water from excavations to watercourse and land, which included preparing the application and supporting statement and liaison with the Environment Agency.

2018 to 2020: Senior Environmental Scientist, Berry Burn Wind Farm, Moray (Statkraft UK Ltd)
Prepared the Water Resources Environmental Impact Assessment Report (EIAR) and provided text for inclusion into the Scoping Report and for this wind farm development. The EIAR also included a watercourse assessment and Groundwater Dependant Terrestrial Ecosystem (GWDTE) assessment, which was undertaken in collaboration with the project's ecologists.

2018 to 2019: Senior Environmental Scientist, Warrington Motorway Service Area, J11 M62 (Extra MSA Group)
Prepared the Water Resources Technical Paper (EIA) and Water Framework Directive Screening Assessment and provided text for inclusion into the Scoping Report and the Non-Technical Summary for this proposed motorway services on peat resources.

2017 to 2019: Environmental Scientist, Killingworth, Moor, North Tyneside (Killingworth Moor Consortium)
Prepared Environmental Impact Assessment (EIA) for water resources for this mixed use development. Also prepared addendums to accompany planning applications for various phases of the development.

2017 to 2019: Senior Environmental Scientist, Dareduff Quarry, East Ayrshire (Advance Construction Scotland Ltd)
Prepared the Water Resources Environment Impact Assessment (EIA), Flood Risk Assessment (FRA) and a Groundwater Dependant Terrestrial Ecosystem (GWDTE) assessment for this greenfield Whin stone quarry. Due to the presence of private water supplies in the area surrounding the proposed quarry and complex hydrogeology, private water supply questionnaires were development and issued to local resident. This information as fed into a Conceptual Site Hydrogeological Model (CSHM).

2017: Environmental Scientist, Woodcote Wood Quarry: Site Access And Processing Plant (NRS)
Prepared a Water Resources environment assessment and co-authored the habitats Regulations Assessment: screening report for Midland Meres and Mosses Phase 2 Ramsar Site and Aqualate Mere SSSI. This involved working collaboratively with Ecologists to undertake an assessment of the quarry activities on this designated wetland site.

2016 to 2017: Environmental Scientist, Hawthorn Quarry, County Durham (Tarmac Trading Ltd)
Hydrological and hydrogeological impact assessment (EIA) and Flood Risk Assessment (FRA) as part of an Environmental Statement to accompany a Review of Old Mineral Permissions (ROMP) application for this limestone quarry. It was discovered that the watertable had risen above the previously permitted extraction depth so preapplication discussions were held with the Environment Agency to amend the scheme to protect the water environment and balance the client's needs.

2015 to 2016: Environmental Scientist, Beaw Field Wind Farm, Yell, Shetland (Peel Wind Farm (Yell) Ltd)
Produced the hydrological and hydrogeological impact assessment and Flood Risk Assessment (FRA) for the 17-turbine development on peatland. The Environmental Statement included a Groundwater Dependant Terrestrial Ecosystem (GWDTE) assessment, which was undertaken in collaboration with the project's ecologists.

2015: Environmental Scientist, CAR Licence Applications For Five Quarries in Dumfries and Galloway and East Ayrshire (Iberdrola Engineering and Construction Networks Ltd)
Completed the application forms and supporting documents and calculations for the Controlled Activities Regulations (CAR) Complex discharge licenses for White Hill, Well Hill, Gallow Rig, Brownhill Rig and Black Hill quarries. These quarries form auxiliary support for the South-West Scotland Renewables Connection Project.

2014 to 2019: Environmental Scientist, Western Isles Connection: Isle of Lewis Infrastructure (Scottish Hydro Electric Transmission Plc / Scottish and Southern Energy Power Distribution)
Completed water resources environmental impact assessments (EIA), environmental appraisals and Flood Risk Assessments (FRA). The project involves the assessment of potential impacts on the water resources of the area from the proposed wood pole overhead line, sections of underground cabling, proposed new grid substation and converter station site on the Isle of Lewis.

2013 to 2019: Environmental Scientist, Hedgeley Quarry (North East Concrete Ltd)
Hydrological monitoring at an active sand and gravel quarry in Northumberland. Monitoring includes (a) watertable determination from piezometer records and how this impacts on the drawdown on the adjacent river's baseflow (b) keeping a photographic record of key erosion hot spots of the adjacent river and monitoring of the river position with regard to a 50m standoff from the river's bank to the extraction boundary.

Curriculum Vitae

Craig Speed

BSc (Hons) PhD FGS

Associate Director

Education

- PhD, High-resolution Palaeoceanography of Early Pliocene Carbonate-opal Cycles in Equatorial Pacific Calcareous Oozes, University of Southampton (2003)
- BSc (Hons), Environmental Geoscience, University of Edinburgh, First Class (1998)

Professional Affiliations

- The Geological Society of London- Fellow

Key Skills

- Project Management
- Groundwater/Surface Water Monitoring
- Design of Groundwater Monitoring
- Consultation with the Environment Agency
- Groundwater Quality Data Analysis
- PHREEQC Modelling
- Review of Groundwater Monitoring Networks
- Water Framework Directive

Previous Positions

2011 to 2015	AMEC Environment & Infrastructure UK (Senior Consultant)
2009 to 2011	Entec UK Ltd (Senior Consultant)
2006 to 2009	Entec UK Ltd (Consultant)
2004 to 2006	Environment Agency (Technical Officer (Groundwater Quality Monitoring Network))
2003 to 2004	Environment Agency (Technical Support Officer (GWQMN Data Support))
2003	Environment Agency (Technical Officer (Groundwater Protection))

Experience and Expertise

Craig Speed is an Associate Director with 17 years of post-doctoral experience in hydrogeochemistry, hydrogeology and project management working both for the regulator and in consultancy. His experience includes projects on the Water Framework Directive (WFD), groundwater and surface water monitoring, hydrogeological impact assessments, contaminant fate and transport assessments, diffuse agricultural pollution assessments, the review of regional groundwater monitoring networks and mine water impact assessments. Recent experience has included significant linear infrastructure projects (EIA, water resources specialist, hydrogeology lead) for both major power distribution and national railway projects, hydrogeochemical support including PHREEQC modelling, providing key expert input as a monitoring specialist on an EU capacity building project and drainage hydrogeochemistry investigations and expert witness for a major substation water quality issue.

Selected Project Experience

2020 to Present: Cwm Rheidol Filter Beds Remediation Options Appraisal (Natural Resources Wales, NRW), Environmental Lead/Water Specialist

With his past experience in UK former metal mine discharges, Craig is providing the role of Water Specialist and the overview for all environmental disciplines in the first stage of work; a remedial options appraisal prior to stabilising passivated limestone media filter beds receiving mine waters laden with heavy metals and causing WFD status failure of the Afon Rheidol surface water body.

2020 to Present: Nitrogen Impacts on Groundwater from Sewage Effluent Discharges – Development of a new Infiltration Spreadsheet (H1 Risk Assessment) to aid Environmental Permitting (Environment Agency), Specialist in Nutrient Pollution from Non-Mains Sewerage

Providing a review of possible risk assessment tools available to the Environment Agency to undertake risk assessments to support groundwater activity. Development of a new spreadsheet based 'H1' tool that combines fate and transport assessments for both Ammoniacal nitrogen and nitrate in treated sewage effluent. The aim is to produce a new tool and associated guidance that is suitable for external release to environmental permit applicants.

2019 to 2020: High-level review of existing risk assessment approach for impacts to groundwater from phosphate in sewage effluent discharges to ground (Environment Agency), Specialist.

The work included a review of available scientific literature and reports, to highlight current areas of uncertainty with regard to undertaking risk assessments and updating the risk assessment approach where possible (e.g. with regard to entry parameters). In addition, the availability and cost of technologies to treat phosphorus at the domestic scale in high vulnerability settings as well as a case study from the River Itchen covering local failures in phosphate concentrations in baseflow down gradient of SSDs were also covered in the final report with objectives to meet the aim outlined.

2019 to Present: HS2 Water Quality and Groundwater Support to Water Resources and Flood Risk Specialist (Skanska Costain STRABAG, SCS), Linear Infrastructure Environmental Specialist Support

Following on from his work for CSJV, Craig also works for SCS when required on the HS2 Main Works Civils Contract in Area South. His work has concentrated on support in the fields of baseline surface water quality monitoring and water resources plans for water demand and re-use by the HS2 project.

2020-present, Randle Island Hazardous Waste Cell Hydrogeological Risk Assessment (HRA), Inovyn, support on Mercury Hydrogeochemistry Support and consultation with the Environment Agency.

Literature review and presentation of hydrogeochemistry of mercury from demolition of former brine electrolysis plant, which used the Castner-Kellner Process. This included presenting the likely reactions of mercury oxidation (landfill operation) and reduction (post restoration) and its likely partitioning between solution in water and sorption to minerals, prior to LandSIM risk assessment.

2020: Tulkubash ESIA Update, Kazakhstan – Hydrogeochemistry Support to Risk Assessment on Cyanide.

Literature review and presentation of hydrogeochemistry of free cyanide, including its volatilisation, attenuation and complexation behaviour in the aquifer and groundwater environment.

2019 to Present: Electrical Substation Alkaline Drainage Water Quality Monitoring (Confidential).

Technical management of water quality monitoring of substation drainage from site affected by alkaline drainage issues and discharge compliance issues. This involved assistance in interpretation of monitoring data and interpretation of the source of alkaline drainage problem, checking on different interpretations for the cause using hydrogeochemical literature and PHREEQC hydrogeochemical modelling to account for most likely causes of drainage water with pH between 10.5 and 12.5.

2018 to Present: Electrical Substation Alkaline Drainage Adjudication (Confidential)

This work was originally a water quality and soils investigation at the substation site to investigate the cause of drainage beneath the site platform leaving the site with pH values of up to 12.5. This has since grown into a claim against the subcontractor who undertook the stabilisation of the site platform and expert witness by Craig for the geochemistry of the site construction for an adjudication.

2017 to Present: HS2 Water Resources and Flood Risk Specialist, Costain Skanska Joint Venture (CSJV), Linear Infrastructure Environmental Specialist Support

Craig is providing support to CSJV for the Enabling Works Contractor for Area South from London Euston to the Colne Valley. This is a permitting, advisory and assurance role for CSJV, working with its designers, consents team and programme managers to write management plans, set up water monitoring and plan works packages to ensure that the regulatory needs of the water environment are put in place for groundwater, surface water and flood risk.

2017 to Present: London Power Tunnels II (LPT2, National Grid), EIA Screening, Environmental Appraisal and Specialist Hydrogeological/Geological Support
Craig has project managed and provided the consultation lead for the Hydrogeology discipline on National Grid's London Power Tunnels II project for the National Grid EIA Screening and Consenting Support Phase of the project. The potential effects from this linear infrastructure project including tunnelling and shaft construction have been assessed and conceptualised in relation to the potential risks to vulnerable receptors in the groundwater environment. This role also includes supporting National Grid in consultations with statutory and key stakeholders.

2017: Former Boddington's Brewery EIA (Deloitte)
EIA for a mixed residential and commercial proposed development at a brownfield site in Manchester. Reviewer.
2016-2018, Capacity Building Support for Groundwater in Turkey (NIRAS, Turkish Government), Implementation of the Water Framework Directive for Groundwater in Akarcay and Sakarya
Key Expert in Groundwater Level and Quality Monitoring: providing training in WFD compliant monitoring, reviewing the existing monitoring network, identifying deficiencies, establishing a new programme for groundwater monitoring in the two pilot catchments and writing guidance for WFD groundwater monitoring for the Turkish Government Ministry.

2015 to 2017: North West Coastal Connection (National Grid), Preliminary Environmental Investigation and Environmental Statement
Craig has led the day-to-day EIA work for the Hydrogeology discipline on National Grid's North West Coastal Connection project at both the Preliminary Environmental Investigation (PEI) stage and the Environmental Statement stage. The potential effects from this Nationally Significant Infrastructure Project (NSIP) of pylon construction, tunnelling and shaft construction have been assessed in relation to the baseline hydrogeological conditions and vulnerable hydrogeological, hydrological and ecological receptors present along the proposed pylon route around the coast of Cumbria. Consultation has been undertaken with the Environment Agency in relation to the likely hydrogeological effects, mitigation and the completion of a Water Framework Directive Assessment for the proposed infrastructure development.

2014 to 2015: Sharnberry Extended Metal Mine Scoping Study (The Coal Authority), County Durham
Project manager and water quality specialist: A scoping study to determine potential treatment options and treatment potential for mine water discharges based on an EQS assessment from a Biotic Ligand Model.

2014 to 2015: East Allen Metal Mine Feasibility Study (The Coal Authority), Northumberland
Project manager, water quality specialist and mentor: A multidisciplinary scoping study for Beaumont Mine Water discharge near Allenheads, in which Craig mentored a colleague in the delivery of the water quality component (conceptual model refinement, EQS compliance and treatment potential determination) and reviewed reporting outputs.

2015: Moorside Surface Water Quality Monitoring, Sellafield, Cumbria (NuGEN), Baseline Monitoring and Reporting on Surface Water Quality
Technical delivery of the baseline surface water monitoring and reporting, as well as presenting the results to NUGEN and stakeholders (e.g. Environment Agency, Copeland District Council, and Natural England).

2015: Sizewell - Aldhurst Farm Flood Risk Assessment (EDF Energy)
Flood Risk Assessment lead for a site proposed as a water compatible replacement habitat for a section of SSSI that could be impacted by the nuclear new build site at Sizewell C.

2014: Chilton Wood Environmental Statement, Sudbury, Suffolk (Suffolk County Council)
Lead author for water resources, water quality and flood risk considerations into the environmental statement.

2014: Salisbury Road, Marlborough Environmental Statement (Crown Estates)
Hydrogeology lead for a housing development on an Inner Source Protection Zone for a Thames Water public water supply borehole.

2012: Mountfield Gypsum Mine - WFD Options Appraisal (Environment Agency)
Assessment of main impacts on River Line, East Sussex and failure of WFD status due to a sulphate-rich mine water discharge into the river, together with recommendations for further investigation for groundwater and surface water and mitigation on the site.

Mike Trewby BSc PGDip MCIEEM

PROFESSIONAL ACCREDITATION

Full Member
Chartered Institute of Ecology and Environmental Management (CIEEM)

CAREER HISTORY

Field Ecologist Woodrow Sustainable Solutions Ltd
March 2016 –

Project Coordinator
BirdWatch Ireland & National Parks & Wildlife Service
Summer 2016

Consultant Ecologist
Malachy Walsh & Partners
Summer 2016

EDUCATION

PGDip Environmental Studies University of Strathclyde 2002

BSc Zoology & Botany
University of Namibia 1995 – 1997

PROFILE – FIELD WORK MANAGER

Mike is a highly experienced ecologist with over 20 year's fieldwork & research experience. While specialising in avian studies, he has expanded his field skills to cover a range of survey methodologies. He is also experienced at undertaking invertebrate surveys and amphibian surveys.

Mike is regarded as one of the leading authorities on chough ecology in Ireland having produced reports detailing the ecology of several regional chough populations and assisting in the designation of Special Protection Areas (SPAs) for choughs. He has studied some of the country's iconic bird species including red grouse and important seabird colonies adorning the Irish coastline.

AREAS OF EXPERTISE

Ornithological Surveying Methods | Ecological Survey Methodology | Ecological Clerk of Works & Environmental Monitoring | Project Management | Public Liaison & Delivering Presentations | Data Analysis & Report Writing

RELEVANT EXPERIENCE

Ornithological Surveying Methods

- Wintering wetland bird – IWeBS, counts & mapping bird habitat usage, tracking of whooper swans & Greenland white-fronted geese.
- Vantage point – assessing avian collision risk, following Scottish Natural Heritage (SNH) guidelines.
- CBS – Countryside birds (RoI) & BBS - Breeding birds (Northern Ireland).
- Raptor – breeding peregrine falcon, merlin & hen harrier, as well as hen harrier roost monitoring.
- Dusk/dawn for breeding owls, nightjars, snipe & roding woodcock.
- Upland & lowland breeding wader – golden plover, dunlin, curlew, lapwing, redshank, snipe.
- Aerial bird – strong spotting, identification & navigational skills.
- Red grouse – area searches & tape-lure methodology.
- Riverine bird – including breeding kingfisher.
- Seabird monitoring – colony censuses, productivity monitoring & seabirds at sea.

Ecological Survey Methodology

- Habitat mapping applying Fossitt (2000) & Smith *et al*. (2011).
- Invasive species.
- Nigh-time lamp – badger, hares, foxes & deer, employing distance sampling methodology.

Mike Trewby BSc PGDip MCIEEM

PROFESSIONAL TRAINING & QUALIFICATIONS

- 2 Day Management Training Course, Rural Enterprise Skillnet 2019
- JNCC Seabirds at Sea Training Course, Wildeye Sep 2018
- Safepass 2020
- Emergency First Aid 2020

- Scat & field sign – deer, otter, mink, badger, pine martin, stoat, red squirrels & other rodents.
- Grey & harbour seal counts – land-based counts of seal haul-outs & breeding beaches.
- Bat – Daubenton's Bat survey, building inspections, bat transects & deployment of static bat detectors.
- Amphibian & Invertebrate – natterjack toad & protected butterfly including marsh fritillary web.

Ecological Clerk of Works & Environmental Monitoring

- Collecting water samples, taking readings using aqua-meter & monitoring water-levels.
- Monitoring breeding birds during wind farm construction & enforcing appropriate buffer zones around nest sites.
- Monitoring post-production impact of filming on coastal headlands in Counties Kerry & Cork (chough ecology).
- Post-construction compliance ornithological monitoring for wind farms, including assessment of collision (corpse searches) & scavenging rates

Project Management

- Managing small teams of field workers & on Chough Survey Ireland – ensuring monthly work orders are completed (logistical planning).

Public Liaison & Delivering Presentations

- Skilled communicator – roles informing the designation of chough SPAs in Ireland, liaison with IFA officials (Irish Farmers Association), National Parks & Wildlife Service, farm planners & landowners.
- To expert groups on chough ecology – National Parks & Wildlife Service, CIEEM Irish Section conference (2009), International Chough Conference (2008) & University College Cork.
- Running workshops & training courses on seabird monitoring to National Parks & Wildlife.
- BirdWatch Ireland groups – Irish birds (chough, seabirds & red grouse) with promotion on local radio stations.
- RTE documentary *Walking the Wildlife* – chough ecology expert.

Data Analysis & Report Writing

- Compilation of BirdWatch Ireland conservation reports on chough ecology & seabird monitoring.
- Preparation of ornithological reports.
- Reports to inform the Appropriate Assessment process.

Oisín O Sullivan BSc

ACCREDITATION

Qualifying member
Chartered Institute of Ecological & Environmental Management (CIEEM)

Member
Bat Conservation Ireland

CAREER HISTORY

Ecologist Woodrow Sustainable Solutions
Apr 2022 – Present

Assitant Ecologist Woodrow Sustainable Solutions
Nov 2021 – Apr 2022

Graduate Ecologist Woodrow Sustainable Solutions
Oct 2020 – Nov 2021

Sea Kayak Tour Guide
Atlantic Sea Kayaking
Jun – Aug 2019

English Teacher/Activity Coordinator Greystones Language School
Jun to Aug 2016 – 2019

EDUCATION

BSc Ecology & Environmental Biology First Class Honours, University College Cork (UCC)
2016 – 2020

Final Year Project assessed the habitat selection of bats within Cork City.

PROFILE –ECOLOGIST BAT SURVEYS CO-ORDINATOR

Oisín O'Sullivan is an Ecologist with Woodrow Sustainable Solutions.

He obtained First Class Honours in Ecology and Environmental Biology from University College Cork; where he gained experience in different field survey methods, knowledge of Ecological Impact Assessments and Appropriate Assessment, and familiarity with the species and protected species of Ireland.

For his final-year project he completed a survey of bat species and their habitat selection in the urban environment of Cork City. During his studies he became proficient in the use of R for data analysis and Kaleidoscope for bat call recordings and analysis.

During his time at Woodrow, he has been involved with overseeing the deployment of static detector surveys, the undertaking of transect surveys, bat roost inspection surveys, bat data analysis and bat report writing.

EXPERTISE

Ecological Surveying & Mapping | Reporting & Analysis | Project / Team Management

RELEVANT EXPERIENCE

Ecological Surveying & Mapping.

- Protected species surveys specializing in bat surveys.
- Otter & badger surveys
- Bat roost and transect surveys.
- Deployment of static bat detectors.
- Potential Roost Feature surveys using BCT (2016) roost potential classifications.
- Research and desk studies
- Licensed bat roost inspection surveys using an endoscope and thermal imaging
- Marine epibiont surveys
- Retro-fitting and developing bespoke detector set-ups for novel offshore bat surveys
- Bird acoustic surveys
- Experience in robust weather data collection for bat surveys with the use of weather stations and 3G Gateways

Oisín O Sullivan BSc

PROFESSIONAL TRAINING & QUALIFICATIONS

- Full Clean Irish Driving Licence
- Bat Call Identification webinars, Wildlife Acoustics
- Bat conservation trust roost mitigation masterclass 2021
- Bat derogation license
  - 2021 – 2022
  - 2022 - 2023
- Safepass2021
- Emergency First Aid 2020

Reporting & Analysis

- Mapping with ArcGIS and QGIS.
- Bat data analysis with Kaleidoscope Pro 5.0 and Bat Explorer.
- Statistical analysis and modelling using R.
- Data management using Excel.
- Bat data analysis using Ecobat as recommended by SNH (2019) guidelines.
- Preparation of bat activity reports for EcIA and EIAR assessments.

Project / Team Management

- Managing a team of three other graduate and assistant ecologists to ensure survey requirements are met for 12 windfarm sites, several quarry sites and miscellaneous building demolitions.
- Head Organiser for the 2017 Irish Nationals European Youth Parliament Session - led a team of organisers responsible for the transport, accommodation, food, and venues for the 150 people that attended the four-day event.

Tony Cummins BA MA

Senior Archaeologist & EIA Consultant
Mr Cummins is a qualified archaeologist and an EIA heritage consultant, with over 28 years' industry experience and has been involved in the preparation and production of Cultural Heritage EIAR for a wide range of large-scale projects (including renewable projects), for both public and private developments.

Professional Qualifications

- BA Degree (Archaeology) UCC, 1992
- MA Degree (Archaeology), UCC, 1994
- Licenced Archaeologist since 1998

Areas of Expertise

- Excavation Director
- Archaeological & Architectural Heritage field surveyor
- Archaeological Project Manager on infrastructure schemes
- Cultural Heritage impact assessor and EIAR competent authorship for both development and non-development led projects
- Proficient in GIS project mapping use: metadata provision and map-based assessment
- Cultural Heritage consultant/Client representative for statutory and non-statutory bodies, & Design Teams

Relevant Experience
Tony has extensive experience in preparing EIA cultural heritage assessments for large scale projects, including numerous wind farm projects as well as road schemes, greenways and housing developments. He has also directed archaeological site investigations for a number of wind farm projects, including advance test trenching and monitoring of construction phase ground works, under licences issued by the National Monuments Service. Since joining our firm one of his key roles has been liaising with state agencies, planning authorities and project design teams for the duration of our commissioned projects. Relevant wind farm project experience includes:

- **Derrybrien Wind Farm rEIAR, County Galway** (2018 - 2020): John Cronin & Associates were appointed by ESBI to undertake a retrospective appraisal of construction works associated with the development of a 71-turbine windfarm at Derrybrien, County Galway as well as post peat-slide remedial works. Tony was our project lead on this project and was responsible for client liaison, desktop studies and site survey works.

- **Littleton Wind Farm, County Tipperary** (ongoing): Tony is currently leading our team involved in carrying out studies and assessments of this proposed wind farm development. Inputs to date have included the preparation of constraints studies for the Design Team which incorporate the subject site and its environs, which included the preparation of information relating to cultural heritage visual receptors within the wider landscape for review by the LVA consultants.

- **Grousemount Wind Farm, County Kerry** (2017-2019): Along with other senior colleagues, Tony managed the design and implementation of construction-stage archaeological works at this 38-turbine wind energy scheme which included areas of upland bogs. Under Tony's direction, staff members of John Cronin & Associates undertook programmes of detailed field survey (resulting in the discovery of 60+ new upland archaeological sites); specific and bespoke strategic project planning and mitigation measures; licenced on-site archaeological testing and excavation; and retention of services for all other associated archaeological monitoring of topsoil stripping operations throughout the site.

- **EIAR Cultural Heritage assessments** of numerous other nationwide wind farm projects, each of which required detailed desk and field-based assessments and the identification of suitable and appropriate site-specific mitigation measures. These wind farm projects included, but are not limited to, the following::

- Annagh Wind Farm, Co. Cork
- Coumnagappul Wind Farm, Co. Waterford
- Gortyrahilly Wind Farm, Co. Cork
- Inchamore Wind Farm, Co. Cork
- Fahy Beg Wind Farm, Co. Clare
- Tullaghmore Wind Farm, Co. Galway
- Milltownpass Wind Farm, Co. Westmeath
- Fort East Wind Farm, Co. Limerick
- Ballykett Wind Farm, Co. Clare
- Moanmore Wind Farm, Co. Clare

- Shancloon Windfarm, Co. Galway
- Dyrick Hill Windfarm, Co. Waterford
- Gortloughra Wind Farm, Co. Cork
- Ballinagree Wind Farm, Co. Cork
- Coom Wind Farm, Co. Cork
- Croughaun Wind Farm, Co. Carlow

Jim Singleton

PRINCIPAL TECHNICAL CONSULTANT

Jim is a Principal Technical Consultant whose experience within acoustics consultancy covers a range of sectors including environmental noise, occupational noise and architectural acoustics, with particular expertise in the energy and industrial sectors.

Jim is the Team Manager of the Site Services team with a specific focus on delivering noise and shadow flicker services for windfarm developments as well as leading our non-windfarm noise assessment services.

KEY EXPERIENCE

- Noise Propagation Modelling
- Industrial Noise Assessments and compliance monitoring
- PPC Permitting
- Due Diligence
- Construction Noise Assessments
- Planning applications for commercial, industrial and residential
- Quarrying and blast monitoring (noise & vibration)
- Mixed-use Master Planning
- ETSU-R-97 Noise Assessments
- Shadow Flicker Assessments
- BREEAM Assessments
- Room acoustics modelling

EDUCATION AND PROFESSIONAL STATUS

Diploma in Acoustics & Noise Control, Institute of Acoustics (2008)

BSc. (Hons) Music Technology, First Class (2001)

Member of the Institute of Acoustics (MIOA)

Member of the Audio Engineering Society (AES)

EXPERIENCE RECORD

2014 - Current **TNEI Services Ltd**
Principal Technical Consultant & Team Manager

Energy Projects

Jim regularly works on energy projects covering a range of generation types from conventional energy through to renewables, storage and electrical infrastructure. Projects of note include:

- Roosecote 50MW battery storage facility
- Capacity Mechanism Schemes, numerous (1MW – 40+MW)
- NorthConnect (Norway / Scotland Interconnector)
- Galloper 336MW offshore wind farm onshore substation
- Aberdeen 92MW offshore wind farm onshore substation
- New Gorbals District Heating Scheme
- Wormit Solar Farm

Position in Firm:
Principal Technical Consultant

Discipline:
Acoustics

Experience:
12 years (consultancy)
6 years (lecturing)

Key Qualifications:
Diploma in Acoustics & Noise Control (IOA)

BSc (Hons) Music Technology

Professional Memberships:
MIOA
AES

Marine, Near-shore and Ports

Jim has worked both locally and internationally on marine, near shore and port projects and provided a wide range of consultancy services to this sector. Examples include;

- Umm Qasr, Iraq (ESIA studies and chapter for extension of container port and RORO services)
- Port of Cromarty Firth, Invergordon (PPC application for oil & gas decommissioning and offshore asset recovery)
- Lochmaddy/Tarbert (Harbour expansions to facilitate larger ferry on Isle of Harris and North Uist.
- Johan Castberg FPSO Module (operational noise predictions for floating production storage and offloading vessel)
- Aberdeen Offshore Windfarm landfall, Blackdog (Predictions & measurements for cable winching from offshore to landfall).

Industrial Projects

Jim has significant experience of industrial noise assessments including PPC permit applications/variations, BS4142 assessments for planning applications and noise control and management for compliance and/or complaints. Recent projects of note include;

- Confidential Site, Proposed Open Cast Coal Mine (EIA noise assessment)
- Drakelow Energy from Waste plant (EIA and PPC application)
- Great Coates Energy from Waste plant (EIA)
- Binn Farm SRF Processing Facility (PPC application and compliance)
- SGL Carbon Fibers (PPC Permit compliance monitoring)
- BSW Timber Newbridge (Planning applications)
- Port of Cromarty Firth, Invergordon (PPC applications and construction noise assessments)

Residential Developments

Jim has worked on a number of residential developments assessing site suitability, providing planning application noise impact assessments, monitoring for compliance with planning conditions and specification of building facades, barriers and other noise control measures.

Recent projects of note include;

- Gosforth Business Park – Road traffic and industrial noise studies
- Newcastle Great Park Cell A – Road traffic and aircraft noise assessments
- Newcastle Great Park Cell D – Road traffic noise assessments
- Newcastle Great Park Cell G – Compliance monitoring
- Royal Quays, North Shields – Planning application
- Cannon Street, Hull – Planning application

2011 – 2014 **Atmos Consulting Ltd, Edinburgh**
Senior Consultant (Acoustics & Noise)

Whilst at Atmos, Jim authored the ES noise chapters of several Section 36 and large scale wind farms as well as numerous medium scale and FIT scheme developments. Other renewable energy projects included a number of biomass plants, wood fuel pellet production facilities and run-of-river hydro schemes.

Jim's experience of noise assessments outside of renewable energy covered a wide range of sectors. Some interesting projects of note include:

- Hovercraft crossing feasibility studies (Kirkaldy to Edinburgh)
- Go-Kart Track, Aviemore – Impact assessment for planning application within a National Park;
- St Andrews International Golf Club – Impact assessment for planning application;
- Mixed use development, Muir of Ord – Master planning for outline planning;
- Housing development, Llandrindod wells – Site suitability assessment;

2007 – 2011 **BMT Cordah Ltd, Glasgow & New Acoustics, Glasgow**

Prior to concentrating on the energy and industrial sectors Jim worked on a significant amount of architectural acoustics projects as well as environmental noise. Architectural acoustics work has included room design, sound insulation testing, mechanical ventilation calculations, facade specifications and internal partition specification.

Interesting projects of note include;

- Acoustic design for the conversion of a Victorian warehouse space into the Kvadrat Showroom (London), as featured in Wallpaper magazine, working with Peter Saville and David Adjaye.
- Specification of internal partitions and acoustic design of specialist spaces for University of West Scotland, Ayr Campus (including recording & TV studios, radio studios, lecture theatres, performance spaces and atria).
- Acoustic design for the restoration of Triskel Christchuch, Cork, into a live music venue. Now renowned in Ireland for its acoustics.
- Mechanical ventilation calculations and design input for the Briggait, Glasgow. Coversion of former fish market into artist studios and exhibition spaces. The Briggait
- ETSU-R-97 noise assessment for the Viking Wind Farm, Shetland;
- PPC planning application and ES noise chapter for Northern Irelands' first large scale 'wood to energy' CHP.

CV: Richard Barker

MLA. BA Env. PG Dip For. MILI.

Position:	Principal Landscape Architect
Qualifications:	Irish Landscape Institute Professional Practice Qualification – 2005 MLA – Lincoln University - 2003 PG Diploma Forestry – Canterbury University - 1996 BA Environmental Science – Massey University - 1995
Professional Affiliations:	Corporate Member of the Irish Landscape Institute

Professional Experience

Richard formerly worked as a Town Planner in New Zealand, London and Dublin before moving into the field of Landscape Architecture. He has spent the last 16 years working as a Landscape Architect in Ireland and has considerable experience in the fields of both Landscape and Visual Impact Assessment (LVIA) and landscape design, covering all stages from project feasibility through to construction. This cross-over of expertise is invaluable in determining and designing the most appropriate and effective form of landscape and visual mitigation for infrastructural development projects.

Richard manages the LVIA department in Macro Works undertaking assessment work on a broad spectrum of projects from wind and solar energy, to roads and large scale industrial and infrastructural development. Richard has personally completed the landscape and visual assessment of over 90 wind farms 80 solar farms and numerous other commercial and infrastructural projects including more than a dozen SID projects. Consequently, he has considerable oral hearing training and expert witness experience.

Richard has presented several conference papers relating to sustainable landscape design and LVIA as well as delivering the inaugural workshop on the landscape and visual effects of wind energy developments on behalf of the Irish Wind Energy Association. He has also delivered guest lectures to the University College Dublin professional course in EIA Management in relation to LVIA.

Relevant Project Eperience (includes but not limited to):

St Kevin's Hospital SHD	Land Development	LVIA with associated Photomontages / CGIs for a Strategic Housing Development

	Agency	incorporating the restoration of a landmark heritage building in Cork City
Greater Dublin Drainage Scheme	Irish Water	MCA analysis of site options then LVIA for a 20ha sewage treatment facility, pipeline routes, pumping stations
Water Supply Project Midlands and Eastern Region	Irish Water	MCA analysis of abstraction options and pipeline routes and LVIA of selected option
Enniscorthy Flood Defence Scheme	Mott McDonald	LVIA for flood defence measures and new bridge at Enniscorthy
College Green Plaza	ARUP / Dublin City Co.	Full LVIA for proposed pedestrian plaza in Dublin's City Centre at College Green
South Kerry Geenway	Fehily Timoney / Kerry CoCo	LVIA and oral hearing for a Cycleway along former railway line
Bryn Cefni Biomass Plant	Ecopellets	LVIA for a large biomass facility in Llangefni, Wales plus planning enquiry
N59 Moycullen Bypass road project	NRDO	Route options appraisal and LVIA for selected route plus oral hearing
N59 Clifden to Maam Cross road project	NRDO	Route options appraisal and LVIA for selected route plus oral hearing

90+ Wind Energy Proposals
These include 9 SID projects (Shragh / Yellow River/ Emlagh / Maighne / Castletownmoor / Cluddaun / Derryadd / Barnesmore Repower / Coom)

80+ Solar Energy Proposals

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 1.2

PROJECTS CONSIDERED IN THE CUMULATIVE ASSESSMENT

Appendix 1.2: Projects Considered in the Cumulative Assessment

Development Name	Grant Date	Planning Ref. No.	Development Description	Conditions of Note	Address	No. of Turbines	Distance from Project
Carrownagowan Wind Farm	29/09/2022	Ref. ABP-308799-20	Application to An Bord Pleanala under Section 37E of the Planning and Development Act 2000 (as amended) for the following: • Nineteen (19) No. Wind Turbines (blade tip height up to 169m). • Nineteen (19) No. Wind Turbine foundations and associated Hardstand areas. • One (1) No. Permanent Meteorological Mast (100m height) and associated foundation and hardstand area. • One (1) No. Substation (110kV) including associated ancillary buildings (electrical building including control, switchgear and metering rooms, and the operational building Including welfare facilities, workshop and office), security fencing and all associated works. • Upgraded Site Entrance. • New and upgraded internal site service roads (8.4km of existing tracks to be upgraded and 11.4km of new service roads to be constructed) • Provision of an on-site Visitor cabin and parking. • Underground electrical collection and SCADA system linking each wind turbine to the proposed on-site substation. • Construction of new roadways and localised widening along turbine delivery route. • Two (2) No. Temporary construction site compounds. • Three (3) No. Borrow Pits to be used as a source of stone material during construction. • Three (3) No. Peat and Spoil deposition areas (at borrow pit locations). • Associated surface water management systems. • Tree felling for wind farm infrastructure. • All associated site development works. A 10 year planning permission, and 30 year operational life from the date of commissioning is sought.	- The developer shall appoint a suitably qualified ecologist to monitor and ensure that all avoidance/mitigation measures relating to the protection of flora and fauna are carried out in accordance with best ecological practice and to liaise with consultants, the site contractor, the National Parks and Wildlife Service and Inland Fisheries Ireland. A report on the implementation of these measures shall be submitted to the planning authority and retained on file as a matter of public record. - The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Housing, Local Government and Heritage. - The developer shall ensure that water levels are monitored at regular frequency throughout all seasons of each year over the life of the development and shall ensure that water levels are maintained at a level required to maintain viable and active peat habitat within and adjacent to the site. Details of such monitoring shall be agreed in writing with the planning authority prior to the commencement of development. Monitoring shall occur both within the site at various locations and along the development boundary of the site and shall include the use of appropriate means such as piezometers to measure ground water levels, as agreed by the planning authority. - The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed: Between the hours of 7am and 11pm: the greater of 5 dB(A) L90,1Omin above background noise levels, or 45 dB(A) L90,10min, at standardised 10m height above ground level wind speeds of ?m/s or greater, 40 dB(A) L90,1Omin at all other standardised 1Om height above ground level wind speeds. 43 dB(A) L90,1Omin at all other times. - (a) Shadow flicker arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors. - The proposed development shall be fitted with appropriate equipment and software to control shadow flicker in accordance with the above requirement. Details of these control measures shall be submitted to, and agreed in writing with, the planning authority prior to the commencement of development. - A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority, indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of commissioning of the proposed wind farm, this report shall be submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, controlling turbine rotation if necessary. A similar report may be requested at reasonable intervals thereafter by the planning authority.	Townlands of Ballydonaghan, Caherhurley, Coumnagun, Carrownagowan, Inchalughoge, Killokennedy, Kilbane, Coolready and Drummed Co. Clare.	19	4.6km N
Carrownagowan Wind Farm (Applicant - FuturEnergy Ireland Development DAC (FEID))	Pre-Application Consultation Request lodged 20/07/2022	Ref. ABP - 314127	110kV underground grid connection for Carrownagowan wind farm from Carrownagowan to Ardnacrusha, Co. Clare	Consultation has yet to be concluded as of 08.12.2022	Carrownagowan to Ardnacrusha, Co. Clare	19	Route yet to be finalised but expected to pass adjacent to site on road network.