



**Civil Engineering Research in Ireland 2024 conference
Galway, 29-30th August 2024**

Venue: Alice Perry Engineering Building, University of Galway

Conference Programme

Day 1: Thursday, 29th August 2024		
08:30	Registration, with tea/coffee, <i>Foyer</i>	
09:30	Welcome Address by Laoise McNamara and Kieran Ruane, ENG-G018 Chair: William Finnegan	
09:45	Joe O'Donovan Memorial Keynote Lecture: Dr Colin Caprani, ENG-G018 Chair: Ciarán Hanley	
10:30 to 12:15 - Parallel session 1	Dr Paul Cahill Memorial Session, ENG-2001 , Chairs: Vesna Jaksic & Ciarán Hanley Ayaz Ahmad Evaluating the structural changes during physical testing of a full-scale 13 metre long wind turbine blade Shuoshuo Xu Integrating Vibration and Image Data Analytics for Road Condition Monitoring: the Roadphone System Solution Russell Gentry Full-scale Testing of a Footbridge Constructed with Repurposed Wind Turbine Blades in Draperstown, Northern Ireland Russell Gentry Numerical Modelling of a BladeBridge in Draperstown, Northern Ireland Mahmoud Abdelhak An unsupervised learning-based method for scour detection in offshore wind turbine foundations Meisam Gordan A data mining approach for wheel defect detection of railway vehicles	
	Sustainable cities and climate action 1, ENG-2002 , Chair: Paul Moran Rosanne Walker The Influence of Paint on the Thermal and Moisture performance of Traditional Solid Walls Anna Hofheinz A comparative study of the hygrothermal performance of solid limestone walls and their effect on internal insulation strategies: Portland Limestone versus Irish Blue Limestone Construction Youssef Elkhayat A Procedure for attaining Low Embodied Carbon Buildings Compatible with RIBA and AIA Plan of Work Michael Quilligan Whole-Life Carbon Assessment of Cross-Laminated Timber in an Irish Context Emily McAllister Development of Cross-Laminated Timber Composite Panels from C16 Timber Keith Fahy Circular interventions during the demolition and enabling phase: An Irish Case Study Caitriona de Paor Measuring Impact of Climate Events on Infrastructure Resilience	
	Modern Methods of Construction, ENG-2003 , Chair: Daniel McCrum Anna Juda Testing and Finite Element Analysis of Composite Cold-Formed Steel and Timber Flooring Systems Adhban Farea Macro BIM Adoption: Global Initiatives and Strategies Enda McTiernan Modern Methods of Construction in the Irish Construction Industry: A study to identify skills gaps of construction graduates and professionals. John Hickey On the Need for Increased Adoption of 'Design for Reuse' Principles in Irish Construction Rahat Ullah Navigating Digital Maturity: Analysis of Digital Maturity Assessment Tools Sohini Mishra Experimental comparison of axial-compressive behavior of bare cold-formed steel studs with semirigid track and theoretical-hinged boundary conditions Brian Broderick DfMA as an Enabler of MMC for Housing in Ireland	
	Structures 1, ENG-2033 , Chair: Michael O'Shea Hatim Alwahsh Design procedures and guidelines for a novel self-centring concentrically braced steel frame (SC-CBF) based on displacement-based design approach Hollie Moore Controlling the wind-induced response of modular high rise buildings using Distributed Multiple Tuned Liquid Dampers Hatim Alwahsh Extremely Low-cycle Fatigue Testing of Structural Carbon Steel for a Novel Self-Centring System Hatim Alwahsh Nonlinear time-history analysis of a novel self-centring concentrically braced steel structure Tahreer Fayyad Decoding Structural Damage: Fusion of Frequency Analysis and Vision-Based Monitoring in Structural Health Patrick Crean A novel approach to the construction of a hotel with single storey basement using semi-top down construction	
	12:15	Lunch & networking, <i>Foyer</i>
	13:00	Keynote address: Mr. Conall Boland, ENG-G018 Chair: Jamie Goggins
	13:45 to 15:30 - Parallel session 2	Bridges 1, ENG-2001 , Chair: Ciarán Hanley Pablo Vizcaíno Analysing the effects of high-turbulence flow on 5:1 bluff bodies through numerical simulation García Michael O'Shea Stress ribbon bridges – a review + case study Wei Liu Risk Assessment for Construction of a Widening Bridge Thanh Tran A Bayesian approach to the detection of bridge scour damage using 'drive-by' measurements Chongze Li Probability of detecting damage in simply supported beams from corrupted mid-span displacement due to a crossing quarter-car Ben Millar ArchIMEDES: Predicting scour by investigating the relationship between the structural response of a masonry arch bridge experiencing scour to loading. Amanda Fenerich A Multicriteria Decision-Making framework for prioritizing bridge maintenance interventions
		Structures 2, ENG-2002 , Chair: Patrick McGetrick Paul Officer Strength Assessment of Historic Timber Using Non-Destructive Methods Thomas Walsh An Initial Evaluation of the Creep Performance of Glued-Laminated Timber Beams after Long-Term Loading and Unloading Patrick McGetrick Assessment of Existing Timber Structures. Part 1. Understanding the use of Non-Destructive tools Patrick McGetrick Assessment of Existing Timber Structures. Part 2. A Case Study in Ireland Afnan Nafees Empirical investigation of withdrawal capacity of staples for experimental design of Irish timber Rimjhim Kashyap Experimental and numerical analysis of CLT-to-CLT connections in a multi-storey modular building using Irish timber Muhammad Yasir Review of comparative analysis of experimental testing and finite element (FE) analysis of cross-laminated timber (CLT) exposed to fire
		Geotechnical 1, ENG-2003 , Chair: Alan Duggan Asad Wadood Selected collective learnings from a pipe-jacking drive database Daniel M Cagney Modelling Wet-Dry Cycles in Irish Solar Farm Pile Foundations Using the Barcelona Basic Model Eric Gilroy Numerical modelling of rigid inclusion beneath embankments Luke Molloy Numerical modelling of the attenuation of ground borne vibration from piling Eoghan Healy Modelling The Behaviour Of Rammed Earth Walls Using Finite Element Analysis Roy Costello N70 Gleensk Embankment Repairs Qasim Khan Geophysical characterization of fine-grained soils using electrical resistivity and shear wave velocity (Vs) measurements

	Environmental Engineering 1, ENG-2033 , Chair: Edelle Doherty
Abdul Majed Sajib	Assessing Remote Sensing Data Quality and Alignment with In-Situ Measurements in Ireland: A Cloud Coverage Analysis Using Multi-Dataset Integration
Gary Littler	Using CFD Modelling to Determine Hydrodynamics and Sediment Dynamics at a Shipwreck Site
Jenny Harmon	Probabilistic assessment of pesticide health risks via drinking water under future climatic conditions
O'Driscoll	
Fatimatuj Zohara	A review on drought indices: types, analysis and applicability
Sonny	
Rodhraí Crowley	The Application of the SWAT+ Model for Simulation of Runoff and River Discharge in the Owenabue Catchment, Co. Cork, Ireland
Declan Cullagh	Man-made barriers in Irish watercourses – a study of the impacts of barrier removal or modification
Noreen Durning	The potential impact of rainwater harvesting discharge control for improved stormwater management in an urban catchment

15:30 Break & networking, with tea/coffee, *Foyer*

16:00 to 17:00 - Parallel session 3	Energy 1 - Tidal, ENG-2001 , Chair: William Finnegan	
	Kai Xu	CFD analysis of hydrodynamic loadings on tidal turbines under wave conditions
	Tenis Ranjan	Advancing Tidal Energy Generation: A Comprehensive Approach Towards Sustainable and Scalable Solutions
	Alireza Eftekhari	Advancing Tides: A Global Review of the Current Status of the Tidal Stream Energy Sector
	Alireza Eftekhari	Evaluating the Added Value of the Predictability of Tidal Stream Energy Resources
	Transport 1, ENG-2002 , Chair: Myra Lydon	
	Alexandra Micu	A Bayesian network-based probabilistic digital twin model for inland waterway transportation systems
	Lorcan Connolly	LIAISON – Innovative solutions reducing environmental impact of Transport Infrastructure using a Dynamic Multi-Infrastructure Governance Framework
	Eugene O'Brien	Irish Policy for Abnormal Load Movements
	Jingyu Wang	Climate Risk on the National Road Drainage Systems in Ireland Considering Climate Change
	Concrete 1, ENG-2003 , Chair: Sree Nanukuttan	
	Nikki Maria Shaji	Derivation of fly-ash glass phase equations for use in thermodynamic models
	Pat Moore and	
	Fergal Cahill	Load Testing and Structural Monitoring of M50 Westlink Bridge (East)
	Daniel McCloskey	Glass-Derived Sodium Silicate used as an Activator for Cement Free Binders to Rival Commercial Sodium Silicate
	Su Taylor	Toward Green Precast Concrete Production with BFRPmf: Latest Insights on the Effect of Fibre Dosage on Fresh and Hardened Properties
	Sustainable cities and climate action 2, ENG-2033 , Chair: Jennifer Keenahan	
	Danillo V.A. Reis	The impact of climate change on the performance of residential buildings from an occupant-centric perspective – A systematic review
	Lala Rukh	Evaluating Residential Buildings Performance: A Categorical Analysis of Temperature, Humidity, and CO2
	Song Ge	A top-down approach to determine embodied carbon caps for Irish residential buildings
Danuka Jeewan		
Piyumal Dalpadadu	Green Public Procurement as a Catalyst for Sustainable Cities and Climate Action	
Anagipura		

17:00 End of day

19:00 to 23:00 Conference Dinner at the Dean Hotel, Galway City Centre

Day 2: Friday, 30th August 2024

08:30 Registration, with tea/coffee, *Foyer*

08:45 **CERAI AGM, ENG-G047**

Keynote address: Dr Rubina Ramponi, ENG-G018

09:30 Chair: Jennifer Keenahan

10:15 to 12:00 - Parallel session 4	Other Civil Engineering Research, ENG-2001 , Chair: Magdalena Hajdukiewicz	
	Hannah O'Sullivan	An Analysis of Employee Attitudes to Organisational Change Management Practices when Adopting New Technologies within the Architectural, Engineering, and Construction Industry: A Case Study
	Niall McNamara	Progressive Track Construction Assurance - The Road to Higher Speed Handbacks
	Nuala Hayes	The Evolution of Building Control in Ireland and Directions Towards Improvements
	Waqas Ahmad	An overview of the resource availability in the European region to develop eco-efficient biocomposites for construction applications
	Mohammed Zajeer	Review of green public procurement in construction
	Ahmed	
	Monica Loughnane	Quantifying the Effect of Temperature on FWD Deflections on Irish Asphalt Pavements
	Alice Kavanagh	The Development of Construction Legislation in Ireland
	Geotechnical 2 - ENG-2002 , Chair: Pat Naughton	
	Keith Nell	Multilayers of woven/grid geotextiles in a granular base mattress for access roads and working platforms - recent experience
	Muhammad Saqlain	DAS based active seismic survey to monitor railway embankment performance under seasonal variation
	Shane Donohue	InSAR as a promising tool for monitoring geotechnical infrastructure slopes
	Ewa Dwojak	Road construction and rock stabilisation on the N22 Macroom – Cork
	Christopher	
	O'Donovan	Geotechnical characterisation of offshore floating wind energy test sites on the west coast of Ireland
	Ciaran Reilly	The impact of the second generation of Eurocode 7 on reinforced soil design
	Sathwik	
	Sarvadevabhatla	Understanding Pile Ageing Mechanisms in Sands through Shear Box Testing
	Bridges 2, ENG-2003 , Chair: Robert Corbally	
David Lim	Towards A Hardware-in-the-Loop Simulation Test Bed for Bridge Structural Health Monitoring System Testing and Validation	
John Gamble	Deeps Bridge Remediation	
Robert Corbally	Machine Learning Applications for Drive-By Bridge Monitoring	
Ramin Ghiasi	An automated indirect bridge condition monitoring using a wrapper-based feature selection strategy	
Ghazaleh		
Yousofizinsaz	Sustainable management of bridges using probabilistic optimisation and Bayesian updating for enhanced reliability	
Martin Bosak	Design and Construction of Bohill River Bridge	
Energy 2 - Wind, ENG-2033 , Chair: Abdollah Malekjafarian		
Farzaneh		
Azarkaman	A hybrid Method to estimating the rain erosion rate in wind turbine leading edge.	
Mitra Abed	A Visual Inspection Tool for Wind Turbine Blades: Fitness for Repurposing	
Cormac Ó Cadhain	Composite Material Database for Fixed-Wing Airborne Wind Energy Kites	
Mohadeseh		
Ashkarkalaei	Detecting Structural Blade Damage in an Operating Wind Turbine Under Environmental Effects: an Unsupervised Learning Approach	

	Amiya Ranjan Pandit	Tuned liquid column dampers for dynamic stability of damaged spar type floating offshore wind turbines.
	James McAuliffe	A co-simulation modelling approach for fatigue analysis of offshore wind turbines
	Kavya Rajagopal	Future climate effects on Ireland's offshore wind energy resources
12:00	Break & networking, with tea/coffee, <i>Foyer</i>	
12:30 to 13:45 - Parallel session 5	Structures 3, ENG-2001 , Chair: Richard Barrett	
	Jemma Williams	Designing Out Waste through Off-site Construction
	Lucia Calvo Orte	Digitalisation in the design of precast façade using parametric algorithm models
	Dylan Whelan	Bursting stress in post-tensioned stone structures
	Terence Ryan	Assessing the Benefits of Alternative Approaches to the Design of Earthquake Resistant Concentrically Braced Frames
	Richard Barrett	Towards a Chemical Composition-Independent Model for Grain Growth Prediction
	Energy 3, ENG-2002 , Chair: Abdollah Malekjafarian	
	Paul Moran	A Study of Occupant Behaviour and Its Influence on Energy Consumption: A DEAP and DesignBuilder Software Analysis
	Soheil Fathi	A scoping review of how smart window technologies impact classroom indoor climate
	Orlaith McGinley	Evaluating the householder's retrofit journey: Findings from in-depth interviews with householders in Ireland
	Hugh McDonagh	Performance Evaluation of Residential Heat Pumps in Ireland.
	Ciaran Kennedy	Recycling wind turbine blades into building materials
	Masoud AzimiSechoghaei	Empowering Sustainable Living: A BIM- Based Tool for Energy Monitoring and Carbon Footprint Management in Residential Buildings
	Structures 4, ENG-2003 , Chair: Patrick McGetrick	
	Ciarán Hanley	Strategies to reduce capital carbon of flat slabs in the design phase
	Pedram Parandavar	Numerical analysis of multi-pass thermo-mechanical control processing (TMCP) for offshore wind support structures
	Kamran Ali Bhatti	Recent developments in novel steel connections including intermeshed steel connections
	Michael Macken	PPVC inter-connections and the design and analysis of a new generalised structural form
	Michael Macken	Global modelling of a PPVC modular structure and inclusion of a concrete core
	Sustainable cities and climate action 3, ENG-2033 , Chair: Catriona De Paor	
Muhammad Khizar Barakzai	Development of List of Products and Services for Green Public Procurement in Construction	
Huitian Liu	Promotion strategies for battery electric vehicles in China under climate change and air pollution: a regional differentiation perspective	
Md Arman Habib	Laboratory measurements of mean overtopping rates at Eco-Engineered Seawalls	
Paul Moran	Environmental life cycle assessment of building elements designed to NZEB and Passive house standards	
13:45	Lunch & networking, <i>Foyer</i>	
14:30 to 16:15 - Parallel session 6	Environmental Engineering 2, ENG-2001 , Chair: Edelle Doherty	
	Carlos Bachour	Market driven materials selection and testing of thermoplastic flexible riser pipelines used in offshore and subsea applications
	Blaine Whitby	Investigation into strategies for recycling construction waste in Ireland
	Tuan Booso	Enhancing Hydrological Modelling for the Belesar Reservoir Catchment in Galicia, Spain: A Case Study Utilising the MIKE HYDRO Basin NAM Model
	Mohamad Soboh	Modelling & Monitoring the Groundwater Flood Risk in Cork City
	Wenchuang Zhang	Back Propagation (BP) Neural Network Modelling for a Short-term Forecasting Tool for Wastewater Treatment Plant Influent
	Dasun Lahiru Muthumala	Numerical assessment of air entrainment and initial impingement of a plunging jet
	Jayasooriya Samaneh	Modelling nutrient emissions into waterbodies caused by various land-use
	Alighanbari	
	Concrete 2, ENG-2002 , Chair: Alan O'Connor	
	Seyedalireza Mohammadirad	Sustainable Solutions for Concrete in Aggressive Wastewater Environments: A Study on the Efficacy of Supplementary Cementitious Materials
	wan ahmad soffian bin wan mohammad	Sustainable 3D Printable Concrete: A Comprehensive Study on Nanoclay-Modified Mixtures Incorporating Seashells
	Ciarán Hanley	The place of reinforced concrete flexural members in a lower carbon industry
	Ahmed Abdalqader	Rheological and Hardened Performance of Grout containing Nano Silica
	Kate Brady	Complex Stress Behaviour of Prestressed Hollow Core Slabs on Rigid and Flexible Supports
	Muath Abu Askar	Biochar Integration in Precast Concrete: A Critical Appraisal of Sustainability and Performance Enhancement
	Murat Sahin	Performance of Low Carbon Concretes: Preliminary Results
	Transport 2, ENG-2003 , Chair: Bidisha Ghosh	
	Yutong Liu	Understanding the Mechanism and Application of the Decision Sight Distance for Freeway Diversion Areas
	Sabrina Palazzo	A data rich approach to track maintenance and renewal on the Irish Railway Network
Sylwia Kielak	Implementation of the Shared Space Concept: Insight from Ireland	
Sangeeta Sangeeta	A framework for transport network criticality assessment based on a capability-based approach	
Robert Corbally	An Overview of the Impact of Variable Speed Limits on the M50 Motorway	
Saeedeh Ghanadbashi	CAV-Enabled Ontology-Driven Evacuation Approach for Dynamic Emergency Response	
Structures 5, ENG-2033 , Chair: Kieran Ruane		
Yadong Jiang	Structural performance testing of a composite demonstrator made with recyclable composite materials	
Amrita Milling	Tensile Mechanical Response of Basalt TRM Composites Exposed to Elevated Temperatures	
Eimear Travers	Evaluating the Feasibility of Recycled Carbon Fibre Reinforced Polymer (rCRFP) in Marine Applications Compared to its Conventional Carbon Fibre Reinforced Polymer (CFRP).	
Michael Flanagan	Testing of a Carbon Fibre Reinforced Plastic Drone Airframe	
Vesna Jaksic	Physical Testing and FE Modeling of Concrete Beams Reinforced with Decommissioned Wind Turbine Blade Material Offcuts	
Pegah Amjadian	De-risking anchor installations for floating offshore wind	
Vahid Fakhari	Development of a Finite Element Model for a Composite Wing in an Airborne Wind Energy System	
16:15	Awards & Close, ENG-G018 Chair: Magdalena Hajdukiewicz	
17:00	End of day	