ROD
ROUGHAN & O'DONOVAN

2025 Sustainability Report

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1.0 Introduction

1.1 Executive summary

Roughan & O'Donovan (ROD) is pleased to present our annual sustainability report, outlining our progress towards meeting our corporate sustainability targets and actions, as set out in our Sustainability Plan (2023). The report highlights our achievements to date and the challenges we face in delivering and improving sustainability for our clients and across our organisation.

This report is prepared with reference to the Global Reporting Initiative (GRI) Standards and the United Nations (UN) Sustainable Development Goals (SDGs) under the following headings:

- Energy and carbon
- Biodiversity
- Travel and transport
- Water and effluents
- Materials and waste
- Training and education

Recent global climate assessments underscore the growing urgency of climate action. According to the World Meteorological Organization, 2024 was the warmest year ever recorded, with global temperatures reaching approximately 1.55°C above the 1850–1900 baseline. 2024 was also the first calendar year to exceed the 1.5°C threshold identified in the Paris Climate Agreement 2015. The past three years (2023–2025) collectively averaged more than 1.5°C above preindustrial levels, marking the first time a multiyear period has surpassed this limit. These findings highlight an unmistakable long-term warming trajectory and reinforce the need for coordinated climate mitigation and adaptation across the globe.

In the 12 months to October 2025, we continued to integrate sustainability across our business, in our internal operations and in the way we design and deliver projects. We remain committed to meeting our ambitious sustainability goals by:

- making meaningful, long-term changes to how we work;
- investing in sustainability training for our people; and
- developing client solutions that are environmentally, economically and socially sustainable.

Key milestones achieved

2025	Preparing Draft Carbon Reduction Plan Prepared Draft Mobility Management Plan Joined the Sustainability Supply Chain School
2024	Preparing Draft Carbon Reduction Plan Developed an internal, whole life-cycle carbon calculator for our bridges group
2023	Published our first Sustainability Plan Published our first annual Sustainability Report Joined Pledge to Net Zero
2022	Developed our Sustainability Objective
2021	Held our first annual Sustainability Month (in place of our annual Green Week)
2020	Developed our Sustainability Policy
2017	Launched our first Annual Green Week
2012	Launched our first Annual Green Day
2008	Began implementing our Environmental Management System I.S. 14001:2004

1.2 ROD Sustainability Plan: An overview

Our sustainability plan provides a blueprint for action and a monitoring framework that measures our progress towards achieving our sustainability goals.

Sustainability commitments

Achieve net-zero emissions by 2050

We are committed to becoming a climate-neutral company by 2050. We will achieve this goal by reducing emissions across scopes 1, 2 and material scope 3 sources and by investing in credible offsetting or removal solutions only for residual emissions.

Reduce our environmental footprint through responsible operations

We will integrate sustainability outcomes into our financial and operational decision-making processes, prioritising actions that reduce waste, energy consumption, travel emissions, resource use, and wider environmental impacts across our offices and project work.

Innovate

We will invest in new technologies, systems and processes that support low-carbon design, digital transformation, circular economy principles, more efficient workflows, and evidence-based decision-making for our clients and organisation.

Collaborate

We will work in partnership with our staff, clients, supply chain, and industry peers to advance sustainability knowledge, share learning, and deliver projects that contribute to our climate, biodiversity, adaptation and resilience goals.

Key sustainability goals

Embed sustainability across all areas of the company

Continue integrating sustainability into our culture, decision-making, project delivery, governance, and day-to-day operations, ensuring it becomes a core part of how we work.

Establish a science-based target (SBT) pathway to net zero

Develop and adopt a robust net-zero standard and science-based targets (SBTs), including interim emission-reduction milestones, and aligning with Ireland's national climate objectives and international best practice.

Build capability to deliver climate-resilient and nature-positive solutions

Promote training and development and/or research initiatives aimed at supporting the delivery of design and environmental solutions that assist the transition to a climate-resilient, biodiversity-rich and climate-neutral economy.

1.3 GRI standards

The GRI is an independent, not-for-profit organisation that leads a global, multi-stakeholder process to develop and refine rigorous yet practical sustainability reporting.

The GRI standards cover a range of topics, including energy, emissions, water and effluents, biodiversity, and training and education. Figure 1.0 below sets out our six areas for action together with the relevant GRI standards and UN SDGs.

In the following sections, we provide a summary of our progress towards meeting our targets, within our six areas of action, over the past 12 months.

- One-off action completed
- Annual action completed
- Progress made toward end goal
- Action not started
- NEW — New action identified in response to the changing environment

The symbols above illustrate the status of our actions.

Action areas	GRI Standards	United Nations Sustainable Development Goals
Energy and carbon	• GRI 302: Energy • GRI 305: Emissions	
Travel and transport	• GRI 302: Energy • GRI 305: Emissions	
Biodiversity	• GRI 304: Biodiversity	
Water and effluents	• GRI 303: Water and effluents	
Materials and waste	• GRI 301: Materials • GRI 306: Waste	
Training and education	• GRI 404: Training and education	

Fig 1.0: Action areas aligned with GRI standards and UN SDGs.

Certifications and Accreditations

In order to ensure a systematic and reliable quality in our designs and in the service which we provide, Roughan & O'Donovan have put in place appropriate environmental, health and safety and quality procedures and quality resources included as part of our Integrated Management System.

These include:

- Quality Management System certified to IS EN 9001:2015 accredited with the National Standard Authority of Ireland.
- Environmental Management System to IS EN ISO 14001:2015 accredited with the National Standard Authority of Ireland.
- Safety Management System to ISO 45001:2018 accredited with the National Standard Authority of Ireland.
- BIM ISO 19650

We are also operate a Continuing Professional Development programme for our staff that is accredited by Engineers Ireland.

These integrated quality procedures inform our design and deliverables to our clients.

ROD Social Value Group

Our Social Value Group was established in 2023 and reports to our board of directors.

A strong social value ethos has long been embedded within ROD, as evidenced by:

- our trainee technician programme, which was established over 25 years ago to provide a pathway for school leavers to combine working at ROD with the pursuit of a bachelor of engineering degree;
- our support for Engineers Ireland's STEPS programme, which encourages primary and secondary school students to consider careers in STEM; and
- our continuous engagement with the third-level sector, including provision of guest lecturers for civil and structural engineering programmes, sponsorship of student prizes and awards, and organisation of site visits for engineering societies.

In 2025, we proposed the following social value pillars:

- Employment and skills
- Supply
- Environment
- Community
- Diversity and inclusion

Our social value pillars span multiple working groups within the company, in particular our Sustainability Task Group and our Diversity, Equality and Inclusion (DEI) Task Group. We mapped our pillars against the UK Social Value Model themes, the UN SDGs and the GRI Standards to align with our current work and to identify key metrics that could be developed and monitored in the future. Following this mapping exercise, we prepared a Social Value Policy, submitting it to our board of directors for approval, and a Social Value Plan, setting out our pillars, aims and reporting metrics. The plan is due to be formalised and rolled out across the company in 2026.

Diversity, Equality and Inclusion Group

ROD recognises that a truly diverse workforce and an open culture, where different backgrounds, experiences and perspectives are celebrated, is fundamental to attracting and retaining top talent, driving innovation, and maintaining strong relationships with our clients, partners and stakeholders.

At the start of 2025, we established a DEI Task Group to advance our commitment to fostering a more diverse, equal and inclusive work environment based on fairness and respect. The task group's responsibilities include translating our vision for DEI into practical actions, overseeing their implementation across the organisation and reporting our progress to the board.

In August 2025, the Irish Centre for Diversity recognised our success in building a strong foundation in DEI within our organisation, awarding us the Investors in Diversity Bronze accreditation. The Bronze accreditation is an important stepping stone in our journey towards fostering a culture where all colleagues feel valued, respected, and supported, and sets us on a path to achieve further milestones, including alignment with the Association of Consulting Engineers of Ireland (ACEI) Diversity and Inclusion (D&I) Charter, which provides members with a clear framework for embedding best practices in diversity, equity, and inclusion within their organisations.

Back row (L–R): Barry Corrigan, John Daly, Cristina Tanasie, Deirdre Neff, Chidinma Nwanja, and Marc Jones.
Front row (L–R): Havin Arslan Gursoy, Mark Glaysher, David Torrado, Fatima Quadri and Ciaran Downes.

2.0 Energy and carbon

Goal	Relevant GRI Standards	Relevant UN SDGs
Deliver design and environmental solutions that support the transition to climate-resilient, biodiversity-rich and climate-neutral economies	GRI 302: Energy GRI 305: Emissions	

2.1 Targets and actions

In 2024, for the first time on record, global average temperatures temporarily surpassed the 1.5°C threshold set by the Paris Agreement. The impacts of extreme weather such as heatwaves, floods, and droughts are already being experienced by countries and communities worldwide. Immediate and decisive action is required across all sectors to reduce emissions. This is particularly critical in the built environment, which accounted for 37% of global energy related carbon dioxide emissions last year, a figure expected to continue rising.

A summary of our progress, including key targets, actions, and performance in energy and carbon reduction, is presented below.

Target: Achieve net-zero emissions and become a climate-neutral company by 2050

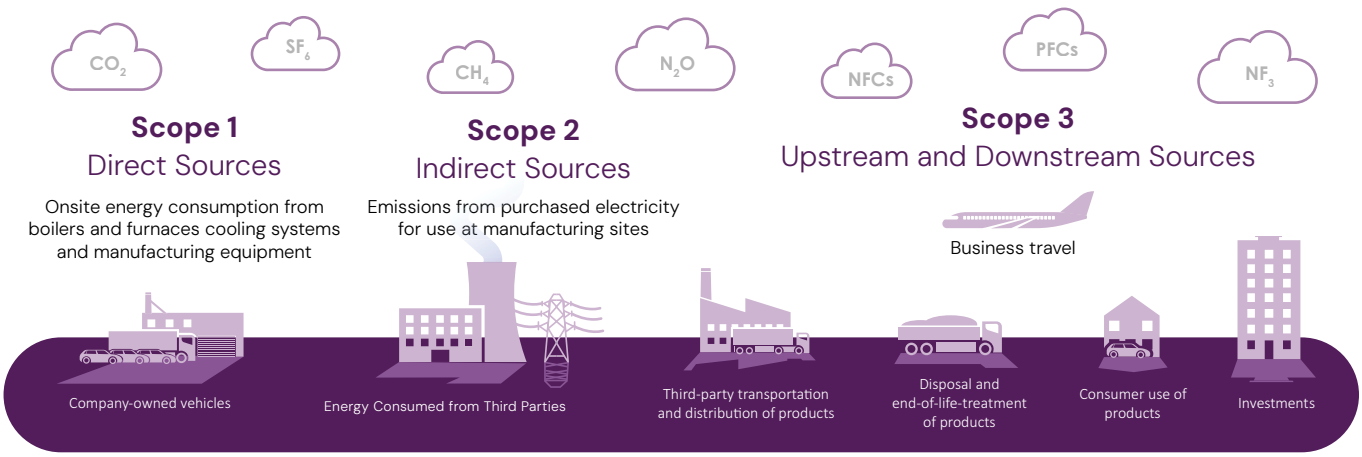
Action: Develop a Carbon Reduction Plan (CRP)

To support our net zero commitments, we have been developing a Carbon Reduction Plan (CRP) that sets out clear and practical actions to improve sustainability across our operations and projects.

Work on the CRP is ongoing, we are currently experiencing challenges with data collection and consolidation, which has delayed its finalisation. We are actively addressing these issues to ensure the information underpinning the plan is accurate, consistent, and robust.

Once complete, the CRP will be published and reviewed on an annual basis. It will outline our approach to reducing carbon emissions and establish a framework for tracking progress toward our long-term objective of achieving net zero by 2050.

The plan will incorporate current initiatives as well as future measures to drive continuous improvement. Key performance indicators (KPIs) will be introduced to support effective monitoring and transparent reporting, ensuring accountability as we progress our sustainability commitments.emissions performance, in alignment with the organisation's objective of achieving net zero emissions by 2050.



Action: Develop a science-based net-zero decarbonisation target

ROD is developing a science-based net-zero target to support our long-term goal of achieving net-zero operational GHG emissions by 2050. This target aligns with the 1.5°C Paris Climate Agreement scenario and will be validated by the SBTi, a globally recognised body enabling credible climate action in the private sector.

Our CRP outlines the practical steps we are taking to reduce emissions across our operations and projects and will form the basis of our science-based targets. We will publicly report progress against our targets annually, reinforcing transparency and accountability in our journey toward a net-zero future.

2.1.1 Target: Promote the use of carbon calculation tools to understand and reduce operational carbon and embodied carbon on projects

Action: Use the following tools as part of the design and environmental assessment process:

- Transport Infrastructure Ireland (TII) Carbon Tool
- PAS 2080 Guidance
- Carbon Designer for Ireland
- The Institution of Structural Engineers (IStructE) Structural Carbon Tool
- Whole Life Cycle Analysis (WLCA) carbon calculator

TII Carbon Tool

The TII Carbon Tool is widely used in ROD, particularly by our transport group, as its output is a requirement on road schemes. The Dundalk Bay to Carlingford Greenway and the DART+ Depot projects are examples of schemes where it was used as part of the options assessment process.

PAS 2080 Guidance

With the 2023 update to PAS 2080 including the management of infrastructure within the remit of the guidance document, ROD has been exploring its implementation across the company. To better understand the processes involved, the buildings group has selected a trial project which will see them undertake carbon assessments at two schools and then feed the information back to the design team to optimise carbon emissions. This will enable us to establish a baseline for carbon emissions on future school projects. It is our intention to use the information gathered from this trial to roll out PAS 2080 across the wider company. Training sessions aimed at communicating the findings will be held internally. See Section 2.2 Case Study A for further detail.

Carbon Designer for Ireland

Carbon Designer for Ireland is a free, early-stage carbon assessment tool produced by OneClickLCA. Over the past year, the tool has been used by our buildings group to inform their design process, particularly in assessing the carbon emissions associated with building components or construction materials.

We recently purchased the full version of this software for use in carbon assessments, and its output will be used to inform planning and early-stage design, with a view to minimising carbon emissions over the lifetime of our projects.

IStructE Structural Carbon Tool

The IStructE Structural Carbon Tool provides a relatively quick way to assess emissions on part of a project or on a whole scheme. It is a free, spreadsheet-based carbon calculator with an easy-to-use interface. We used the tool to develop and assess structural options for the Motorway Contract Audit and Advisory Services (MCAAS) project. See Section 2.3 Case Study B for detail on the project.

Implement the WLCA Carbon Calculator

In 2024, ROD developed a bespoke WLCA carbon calculator to address the lack of suitable tools for bridge infrastructure projects in the marketplace. Our tool aligns with industry best practices including the UK's PAS 2080 guidance. Designed for internal use, its implementation has produced more efficient and consistent carbon calculations across our bridge portfolio.

Work has recently begun on establishing baseline carbon metrics for bridge projects. This will support the development of meaningful reduction targets for future designs.

2.1.2 Target: Share knowledge and create systems change

Action: Develop an embodied carbon design checklist for projects

As embodied carbon calculation becomes an integral part of our Stage 1 design process, it will serve as a key tool for tracking embodied carbon across projects and identifying design strategies that deliver measurable improvements. To ensure proposed approaches are validated and impactful, the calculation will be applied to our current Sustainable Design Opportunities Register, enabling direct comparisons with conventional construction methodologies.

The case studies presented in our previous sustainability reports laid the foundation for an embodied carbon design checklist, now being formalised for project use. A dedicated task group has been appointed to develop a comprehensive reference guide for designers, with the goal of expanding the checklist to cover all sectors within the company. The guide will provide staff with access to lessons learned from past project experiences and support informed, low-carbon design decision-making across the business.

Action: Hold knowledge-sharing workshops on how to reduce operational and embodied carbon on projects

We will continue to hold knowledge-sharing workshops aimed at:

- raising staff awareness of the strategies available to reduce embodied carbon on projects;
- PAS 2080 trial and implementation;
- inspiring collaboration between team members to reduce embodied carbon on projects;
- training bridge team members on using the WLCA carbon calculator; and
- sharing updates on the various carbon calculation solutions available in the marketplace.

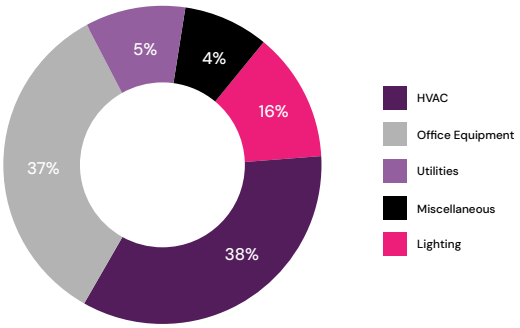
2.1.3 Target: Increase energy efficiency and renewable energy in projects and business activities

Action: Integrate energy efficiency into designs

An excellent example of energy-efficient design integration is the Dublin Mountains Visitor Centre project. This multidisciplinary scheme comprises a visitor centre, trail and road upgrades, environmental enhancements, and conservation works at Massey's Estate and the Hellfire Club. Although still in early design stages, the design team is committed to reusing existing materials and embedding sustainable practices throughout. The visitor centre will be delivered as a Nearly Zero Energy Building (NZEB), with extensive use of timber structural elements. Earthworks will be reused locally to reduce transport emissions, and the forest walkway will prioritise timber construction, with minimal use of steel to lower embodied carbon.

Action: Reduce the energy requirements of our offices to net zero by 2050

After moving our North Dublin office from Northwood to Woodford in 2023, we applied for a Sustainable Energy Authority of Ireland (SEAI) energy audit. The audit established our energy consumption and GHG emissions and identified opportunities for savings. The Woodford office uses 100% imported electricity. The main energy users include heating, ventilation and air conditioning (HVAC) and office equipment, followed by lighting.



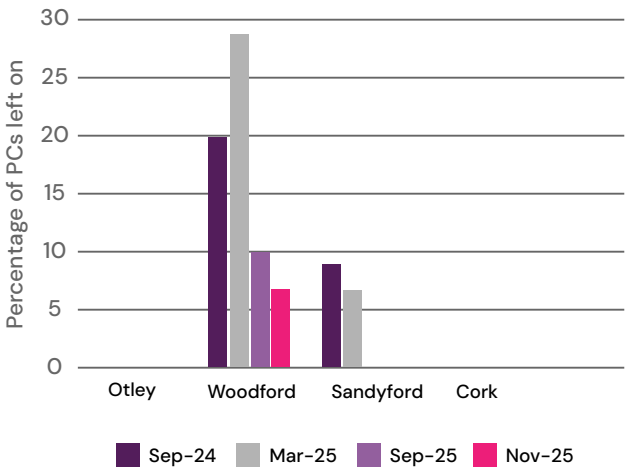
Over the past year, we have been applying the learnings we took from the Woodford office audit to our Sandyford, Cork and Leeds offices, tracking our energy usage through a review of our electricity bills and working on opportunities to reduce our energy consumption. As our Leeds office is based in a refurbished woollen mill with an energy performance certificate rating of D, we are considering undertaking an energy audit for this office to measure our GHG emissions baseline and better understand how we can promote energy efficiency and reduce emissions. We are also seeking advice from the West Yorkshire Combined Authority on opportunities to reduce our carbon footprint in the office.

As we do not own any of our offices, we have limited control over how energy is operated. We continue to work with our landlords, however, to encourage and promote energy efficiency through a variety of means, including changing to renewable sources of energy and promoting energy conservation generally across the management of our office buildings.

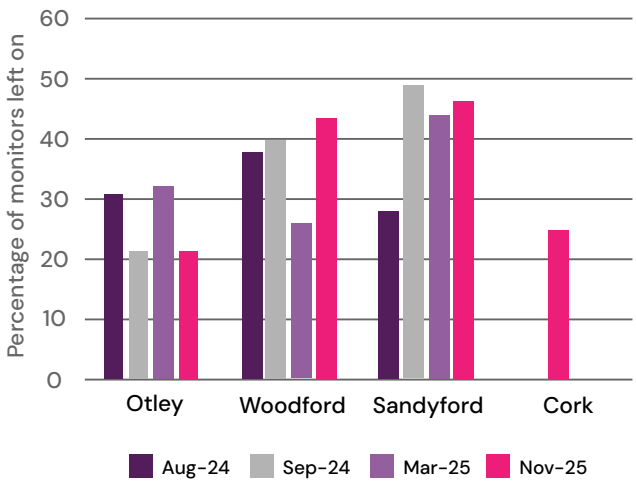
Action: Promote and support individual awareness and behavioural change

We host regular knowledge-sharing sessions aimed at raising awareness of the steps individual staff members can take to help reduce our energy consumption. We also hang posters in our offices to encourage staff to turn off lights, air conditioners, printers, and PCs and monitors when leaving the offices and to take the stairs instead of lifts, where feasible.

In March 2025, we conducted our biannual audit of monitors left on overnight across our offices. Our 2025 audit results reflect strong performances by our Otley and Cork offices, where no computers were left powered on overnight. However, opportunities for improvement remain within our Dublin offices. While our headquarters in Sandyford showed a modest reduction, Woodford experienced a slight increase. To encourage positive behaviour and drive progress, we will continue to share audit outcomes with staff and promote practical energy-saving tips.



PCs left on standby overnight.



Monitors left on standby overnight.

Action: Avoid, reduce and, if necessary, mitigate the environmental and climate impacts of projects

As part of our options assessment, design and environmental services, ROD seeks to avoid, reduce and, if necessary, mitigate the environmental and climate impacts of projects. An effective way to minimise the carbon impact of infrastructure projects is to maintain existing stock, so the emissions associated with new construction can be avoided.

ROD's inspection and refurbishment services focus on assessing any ongoing maintenance issues present and designing a schedule of maintenance works and repairs to keep structures such as bridges operating well, avoiding the need for new construction.

Shandon Island Bridge in Dungarvan, Co. Waterford, is an example of a successful bridge rehabilitation project, where strengthening of existing piers and bearing replacement was undertaken, as well as more minor repairs, such as concrete patching and masonry repointing.

Shandon Island Bridge in Dungarvan, Co. Waterford.

Gaelcholáiste Phort Láirge, Collage : View Looking East Towards front of building and main exit.

2.2 Case Study A
PAS 2080 implementation

PAS 2080 is a guidance document published by the British Standards Institution that will allow for a standard to be rapidly developed, but it is not itself a standard, nor has it been formally adopted in Ireland. PAS 2080 outlines a carbon management process that enables value chain members (asset owners/managers, designers, constructors and product/material suppliers) across the built environment to work collaboratively towards the common goal of net-zero transition by or before 2050 and contribute to limiting global warming to 1.5 °C, as per Paris Climate Agreement. It promotes reduced carbon, increased value delivery, more collaborative ways of working, and a culture of challenging conventional and traditional practices for decarbonisation.

As PAS 2080, or a similar standard, is likely to be brought into effect in Ireland in the future, we are trialling the implementation of a standard methodology to achieve conformity with PAS 2080. The project chosen for the trial is ADAPT (Accelerated Delivery of Architectural Planning & Tendering) Lot 3a for the Department of Education (DoE).

In addition to providing civil and structural design services on the ADAPT scheme, ROD has been appointed as embodied carbon consultant for the design and construction of two schools: Gaelcholáiste Phort Láirge, Waterford, Co. Waterford and De La Salle College, Macroom, Co. Cork. As such, we have been instructed to carry out carbon assessments of the schools, which involves the calculation of total embodied and operational carbon emissions broken down into Life Cycle Assessment (LCA) stages and the identification of the highest contributors to the carbon emissions.

To conform with PAS 2080, the following methodology was developed:

- Ask the client to engage in setting a target for this project. Ask the client if they have set a network level reduction target and if we can align with that target, or in the absence of a network level reduction target, offer to help set one.
- Carry out a baseline carbon assessment based on the Stage 1 and Stage 2A Reports.
- Analyse the baseline carbon assessment and identify carbon hotspots and alternative materials.
- Demonstrate consideration of reduction hierarchy (do nothing, build less, build clever, build efficient).
- Create a report with our recommendations and issue to the client and design team.
- Ensure the appointed contractor provides construction activity data to assess the accuracy of the construction stage calculations.
- Develop a report detailing the lessons learned from the process and share it internally.

M20 Patrickswell, Co. Limerick.

2.3 Case Study B
MCAAS Pavement Renewal Services

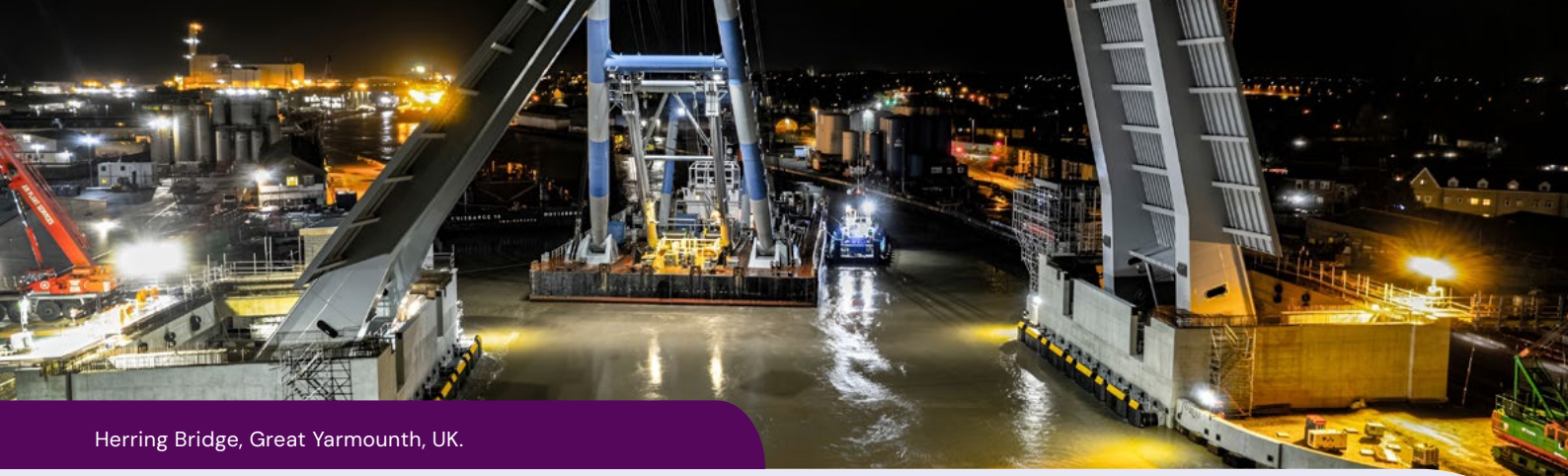
ROD has been providing a range of services to TII on the MCAAS Region West contract since May 2021. One of these services is the development of designs for road pavement renewals. Road pavements represent a considerable asset investment and a significant maintenance responsibility for road authorities. Our services on these projects included preparation of design proposals through the Pavement Asset Repair & Renewal (PARR) process set out in TII's AM-PAV-06049 standard, which aims to maintain the overall asset value for minimum lifecycle cost by ensuring optimal management of the pavement.

The M6 Junction 2 to 3 included renewal of the hot rolled asphalt (HRA) surface course of trafficked lanes over approximately 14.5km, with the hard shoulder pavement retained. The latter provided carbon savings by reducing overall pavement quantities, reducing haulage trips and minimising waste material. Warm mix stone mastic asphalt (SMA) surface course was specified for the pavement renewal. It is produced at lower temperatures than traditionally manufactured hot mix asphalt, reducing energy consumption and carbon emissions.

In 2024, ROD provided support services to TII and its maintenance contractor Colas for a pavement preservation trial on the N4 between Collooney and Sligo. Using the TII Carbon Tool, we quantified the carbon savings of the pavement preservation system compared to conventional mill and replace methods. Our assessment highlighted the effectiveness of the pavement preservation system in reducing carbon emissions and extending road pavement life with reduced environmental impact, making it a favourable option for consideration in future pavement preservation projects.

Our 2025 pavement renewal projects incorporate the CO_2 Performance Ladder, which will act as a green procurement instrument and a carbon management system. Successfully piloted by TII in 2024, this initiative is expected to be expanded to other TII High Speed Pavement Framework call-offs, helping tenderers embed green procurement into their organisations while providing a framework to make significant carbon reductions in projects.

The CO_2 Performance Ladder was developed in the Netherlands, where it has been successfully used in recent years. It is compliant with EU procurement legislation.



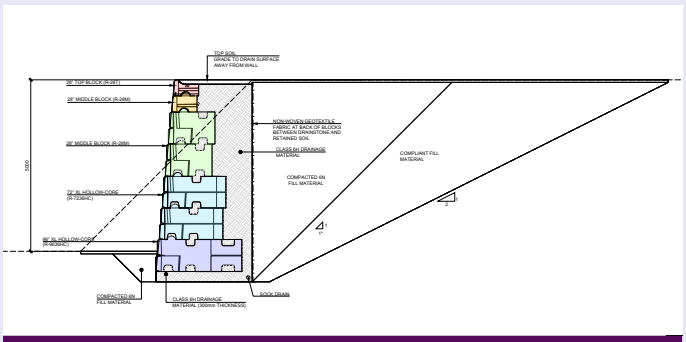
Herring Bridge, Great Yarmouth, UK.

2.4 Case Study C

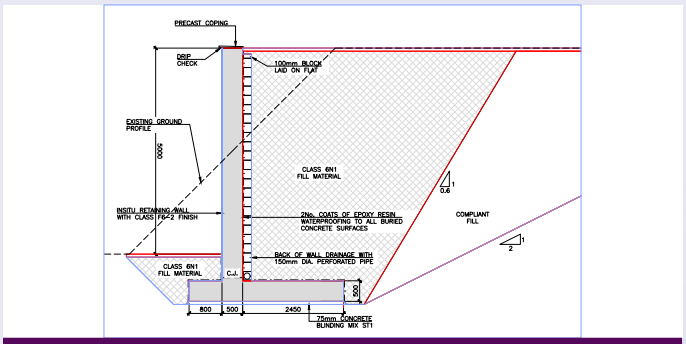
Assessing carbon emissions for standard bridge components

In 2025, we established dedicated task groups to investigate the carbon emissions associated with key structural components of bridges, such as abutments and retaining walls. The task groups have been tasked with conducting comparative analyses of our baseline specimen designs, using standard forms typically deployed across projects, to determine which structural solutions offer the most carbon-efficient outcomes and value for money. This will enable us to present the most favourable options to clients wishing to meet their carbon goals while managing costs. Future work will focus on optimising these specimen designs to further reduce embodied carbon and enhance the sustainability performance of our bridge projects.

The first task group, which focused on retaining walls, is nearing completion of its initial study. Findings will be presented to Europengineers, a European network of independent engineering and consulting companies dedicated to best practice knowledge-sharing and collaboration. This collaborative approach supports industry-wide learning and strengthens our internal design strategies.



Five-metre gravity wall drawing.



Five-metre cantilever wall drawing.

3.0 Biodiversity

Goal	Relevant GRI Standards	Relevant UN SDGs
Deliver design and environmental solutions that support the transition to a biodiversity-rich environment	GRI 304: Biodiversity	

3.1 Targets and actions

In England and Wales, a 10% BNG is mandatory on certain projects. In Ireland, there is no metric or guidance related to achieving NNL or BNG.

In 2023, TII commissioned a research project to produce a BNG metric for their projects. The metric, which includes a separate metric applicable to options selection, is due to be published in November 2025. A new biodiversity standard mandating the use of the metric on all major TII schemes is expected to follow in May 2026.

In pre-planning consultations, TII indicated that for smaller schemes and projects that had, at the time of publication, already commenced planning and design, the metric and standard will be treated as advisory, meaning they will only be required to be implemented as far as practicable. This is to avoid delays where specific surveys required for the metric have not been carried out. TII advised that the BNG metric and standard will not require projects to achieve a specific gain in biodiversity units, and that project managers should take direction from county development plans and other policy documents for the level of BNG required.

TII's introduction of the metric represents a significant step change in Ireland and an exciting opportunity for our design and environmental teams to implement positive biodiversity measures on many of the schemes we are working on, including N26 Ballina Bypass, the Barnesmore Gap Greenway and the N4 Mullingar to Roosky Road scheme.

A summary of our progress towards achieving our sustainability goals in respect of biodiversity - together with our associated targets and actions - is outlined below.

3.1.1 Target: Deliver solutions that support a biodiversity rich environment

Action: ROD will promote the implementation of no net loss (NNL) and/or biodiversity net gain (BNG–UK) on all major projects for which we have been engaged as environmental consultants

In December 2023, the Chartered Institute of Ecology and Environmental Management (CIEEM) published a briefing paper titled **'Biodiversity Enhancement for New Developments in Ireland,'** recommending adoption of a primarily qualitative approach to biodiversity enhancement until such time as a quantitative metric is developed for Ireland.

ROD has been adopting this qualitative approach where feasible on projects until such time as a quantitative assessment is made available.

3.1.2 Target: Continue to use our integrated, multidisciplinary design approach to protect and enhance ecosystems services on projects

Action: Avoid, reduce and, where necessary, mitigate impacts on biodiversity during the Environmental Impact Assessment (EIA) and design stages of all projects

ROD is working on several projects at the early stages of planning and design, including the Dundalk to Carlingford Greenway, the West Clare Greenway Section 2 (Ennis to Ennistymon) and the Arklow to Shillelagh Greenway. These greenways traverse European and nationally designated sites. In accordance with TII guidelines, ROD's environmental team compared the route corridor options, highlighting particularly sensitive areas to the design team. Certain corridors were adjusted to avoid Annex I habitats or design assumptions for the centreline were factored into the assessment. The West Cork Greenway (Skibbereen sections) is an example of another greenway project where early Phase 3 surveys were undertaken in Baltimore and sensitive habitats were avoided at Options Stage.

The Enniscorthy Flood Relief Scheme (Phase 1) in Co. Wexford involves the construction of a new road bridge and pedestrian footbridge and the removal of the Seamus Rafter Bridge. The new bridge spans the Slaney River Valley Special Area of Conservation (SAC) and is upstream of the Wexford Harbour and Slobs Special Protection Area (SPA). Our ecologists and engineering team worked closely together to select an option for the bridge that avoided the direct loss of alluvial woodland and floating river vegetation, which would have impacted the SAC.

ROD's ecologists are progressing Phase 3 EIA habitat surveys on several infrastructure projects to identify rare and/or protected habitats along preferred route corridors. These surveys will make clear, at the earliest stage possible, any ecologically sensitive habitats that should, where feasible, be avoided; the implication of the potential loss of these habitats; and potential impacts on species.

3.1.3 Target: Promote and raise awareness of the benefits of ecological design and nature-based solutions (NbS) during the design, construction and operation phases

Action: Consider and apply NbS on all designs, where appropriate

ROD's water group, which consists of hydrologists, hydrogeologists and drainage engineers, delivers a wide range of water and wastewater consulting services to clients across Ireland. The group promotes solutions aimed at enhancing drainage and reducing the potential for flooding on projects. We incorporate a variety of sustainable urban drainage systems (SuDS) measures into our designs, such as restoring river corridors, installing rain gardens, and protecting and connecting, where feasible, natural habitats/ecosystems that serve to enhance biodiversity. See Section 5.0 Water and Effluents for examples of NbS on our projects.

Action: Deliver biodiversity and NbS CPD presentations to demonstrate practical solutions implemented on projects and lessons learned

In addition to availing of biodiversity and NbS CPD/training opportunities, our environmental team continues to deliver internal CPD presentations aimed at sharing practical solutions implemented on past projects and the lessons learned for future projects.

To launch Sustainability Month 2025, ROD's Sustainability Committee organised a Biodiversity "BioBlitz" for staff. See Section 7: Training and Education of this report for information regarding the event.

Members of ROD's Environmental and Water Groups pictured in early 2026.

Curracloe Beach, Co Wexford.

3.2 Case Study A
Fáilte Ireland Environmental Surveying and Monitoring Programme

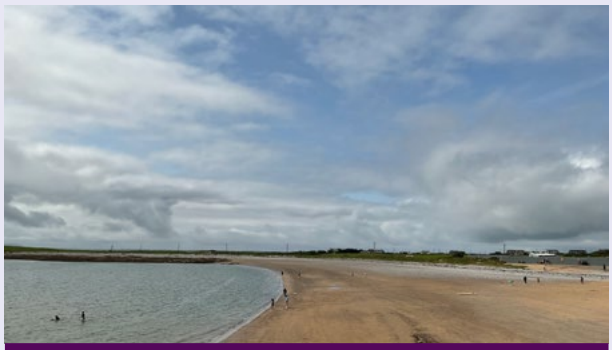
Fáilte Ireland started its Wild Atlantic Way Operational Monitoring Programme in 2014. Initially, the programme aimed to conduct research into the environmental impacts of tourism on the environment, but in 2021, it was expanded and became the national Environmental Surveying and Monitoring Programme. It now includes sites in all Fáilte Ireland's regional areas, namely, the Wild Atlantic Way, Ireland's Hidden Heartlands, Ireland's Ancient East and Dublin. Since the programme's inception, 70 sites have been monitored (excluding the 2025 surveys).

Fáilte Ireland commissioned ROD to undertake environmental monitoring at eight key tourism sites in 2025:

1. Ards Forest Park, Co. Donegal
2. Banagher, Co. Offaly
3. Bull Island, Co. Dublin
4. Curracloe Beach, Co. Wexford
5. Dursey Island, Co. Cork
6. Fenit Strand, Co. Kerry
7. Hodson Bay, Co. Roscommon
8. Keem Bay, Co. Mayo

As part of our ecological surveys, we recorded pathway conditions, features of interest, signage, habitats and habitat conditions along the trails. Following the completion of the surveys, we made several recommendations to Fáilte Ireland aimed at improving the visitor experience and ensuring the continued protection and preservation of the natural environment. These included providing signage related to local biodiversity and formalising sections of trails where habitat degradation or erosion were present.

By monitoring visitor sites and their usage, Fáilte Ireland hopes to facilitate tourism in a safe and sustainable manner.



Fenit Strand, Co. Kerry.

Dursey Island, Co. Cork.

Keem Bay, Co. Mayo.

Clara Bog County Offaly. Image credit: Gareth McCormack.

3.3 Case Study B
Bord na Móna Peatland Rehabilitation Programme

The Peatland Climate Action Scheme (PCAS), also known as the Enhanced Decommissioning, Rehabilitation and Restoration Scheme (EDRRS), benefits the ecosystem in terms of carbon storage, carbon emission reduction, biodiversity and water. It also provides a space for people to spend time in nature.

The key objective of peatland rehabilitation is environmental stabilisation. Measures such as drain blocking aim to raise the water level and re-wet the peat. Wetter conditions will result in improved water quality, biodiversity and a reduction in carbon emissions. Over time, it is hoped that naturalised peatlands can be restored, with Sphagnum mosses and peatland plants recolonising the bogs.

Following its cessation of peat production in 2020, Bord na Móna committed to rehabilitating and restoring around 33,000 hectares of peatland across 80 of its bogs.

Ten bog groups are included in this scheme:

1. Ballivor
2. Ballydermot
3. Blackwater
4. Boora
5. Coolnagun
6. Coolnamona
7. Derryfada
8. Derrygreenagh
9. Hort Bog Group
10. Mountdillon

ROD was commissioned by Bord na Móna to produce Appropriate Assessment Screening Reports for the project and assess the potential impacts of any rehabilitation measures on European sites, such as SPAs and SACs, in the vicinity of the bogs.

Ballydangan Bog in Co. Roscommon was rewetted in 2010 as part of conservation project targeting populations of red grouse, curlew and other species of national significance. This type of project is also central to Ireland's Climate Action Plan and extends to many other Bord na Móna sites.

Blue fleabane (Erigeron acer) flowers.

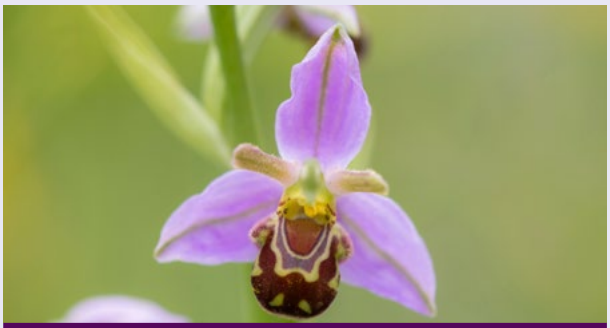
3.2 Case Study C

Ecological Mitigation to Prevent Loss of Biodiversity

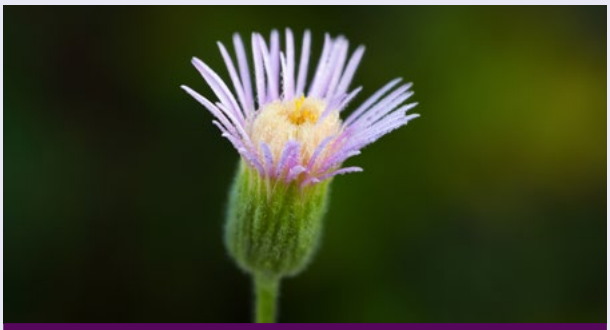
As part of our work on the Cherrywood strategic development zone (SDZ), it was necessary to remove an existing attenuation pond and construct a new pond. During site surveys, our ecological team identified two rare species adjacent to the existing pond: bee orchid (*Ophrys apifera*) and blue fleabane (*Erigeron acer*). As these species are associated with low nutrient and well-drained soil, their presence indicated ecologically valuable soil. Mitigation was required to protect not only the bee orchids and fleabanes but the soil in which they were established, thus avoiding their permanent loss.

During construction, our ecologists worked closely with the contractor, Clonmel Enterprises Ltd, to excavate individual bee orchids and the surrounding topsoil, which contains the local seedbank for blue fleabane and the nutrients essential for the plants' successful establishment elsewhere on the site. The plants and soil were then translocated to a receptor area within the site but away from the new development.

Retaining the soil and storing it onsite was important because replicating it artificially can be difficult as it takes time and a specific maintenance routine to achieve a low-nutrient profile. Our team subsequently monitored the receptor site to assess the plants and the surrounding soil, checking for signs of growth, health and proper development.



The bee orchid - a rare plant species recorded during ecological surveys.



Blue fleabane (Erigeron acer) flower.

4.0 Travel and transport

Goal	Relevant GRI Standards	Relevant UN SDGs
Design and promote cleaner, safer and sustainable mobility solutions.	GRI 302: Energy GRI 305: Emissions	

4.1 Targets and actions

ROD continues to advance its sustainable travel and transport objectives to lower our transport-related GHG emissions. We recently replaced our existing diesel pool car with a hybrid vehicle, and we now have access to six EV charging points, two at our Sandyford head office and four at our Otley office in Leeds, to charge it and our existing hybrid and EV vehicles.

In 2025, we produced a draft Mobility Management Plan (MMP) to support the roll out of our sustainable transport and travel policy. By encouraging staff to consider the most sustainable modes of transport when travelling to and from work, our sustainability policy and MMP will help reduce our GHG emissions from company transport by 51% by 2030.

A summary of our progress towards achieving our sustainability goals in respect of travel and transport, together with our associated targets and actions, is outlined below.

4.1.1 Target: Support the decarbonisation of the transport system and reach net zero by 2050

Action: Design solutions that promote the use of safe, sustainable and active modes of transport

We continue to deliver public transport, pedestrian and cycle-priority projects that not only meet current needs but anticipate future demand.

Action: Integrate carbon sequestration and biodiversity gain into our designs, where possible

The challenges posed by climate change and biodiversity loss are deeply interconnected and, as such, integrated solutions are needed. Our multidisciplinary design team comprises environmental scientists, planners, ecologists, hydrologists, hydrogeologists and engineers who collaborate to create developments that protect and enhance the environment, supporting sustainable development.

Action: Design to support positive behavioural change and future technological advances e.g. electric vehicles, autonomous vehicles, car sharing, etc.

Through ongoing partnerships with academic and industry leaders, ROD remains at the forefront of emerging technologies. Our work on cooperative intelligent transport systems (C-ITS) with TII continues to enhance the safety and reliability of Ireland's road network while delivering several environmental benefits, including reduced congestion, lower emissions, and improved air and noise quality.

Action: Continue using the TII Carbon Tool and PAS 2080 to assess life-cycle carbon emissions for road, highway and rail infrastructure projects

In addition to our use of the TII Carbon Tool, we are expanding our use of PAS 2080 to evaluate carbon performance through all project stages. From early design through to Environmental Impact Assessment Report (EIAR) preparation and planning approvals processes, this ensures that embodied and operational carbon are considered, enabling informed, low-carbon design decisions. See Section 2.0: Energy and Carbon for further detail.

4.1.2 Target: Reduce transport and company travel emissions

Action: Undertake staff travel surveys and continue to encourage staff to choose walking, cycling, public transport, carpooling, EVs and hybrid/remote working

In 2025, we undertook our annual travel survey to better understand the travel patterns of our staff and inform our mitigation strategies related to staff travel, including actions to promote walking, cycling, public transport, car sharing, flexible working practices, and the use of technology in place of business travel, where appropriate.

To encourage staff to choose sustainable transport modes when travelling to work, we took the following steps:

- A shared bike was made available to staff in our Dublin offices for work-related travel;
- Covered bike parking was provided across our offices;
- The National Transport Authority's Walktober Step Challenge was promoted;
- The Cycle to Work and Taxsaver Commuter Ticket schemes were promoted; and
- A survey to determine the level of interest in carpooling was issued on foot of a recommendation by the NTA.

NEW action: Prepare and Publish Mobility Management Plan for staff and visitor use

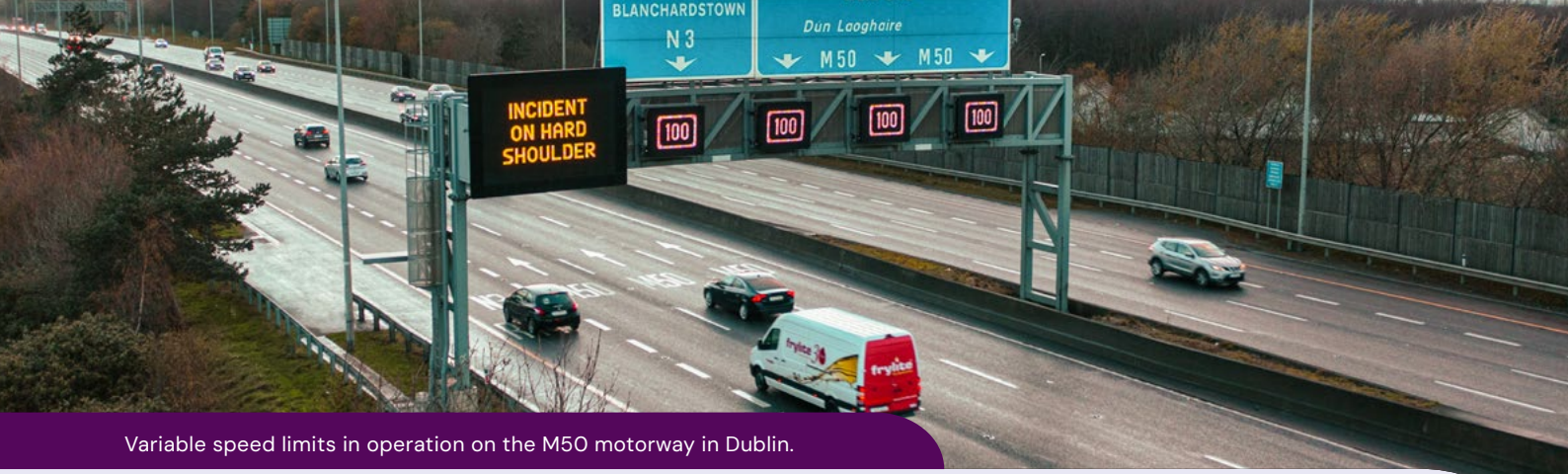
Our draft MMP encourages staff and visitors to consider the most sustainable modes of transport when travelling to and from work or for work-related activities. It was informed by the results of our staff travel survey. The draft Plan was communicated to staff during sustainability month. Feedback from staff will be considered when finalising the plan. To support the roll out of the MMP, we identified sustainable travel ambassadors in each of our offices. The ambassadors champion low-carbon travel options and are helping us to build momentum for lasting behavioural change across the company. Once the MMP is finalised it will be circuited to all staff and included as part of staff induction process. The MMP will be reviewed and updated regularly.

Action: Quantify emissions from business travel and continue to hold virtual meetings, where possible

In 2023, we began monitoring air travel emissions to better understand and offset our carbon impact. In 2025, we introduced a new tracking system that uses the ICAO Carbon Emissions Calculator to accurately measure emissions per flight.

Going forward, we plan to compare miles travelled by public transport to miles travelled by private car, helping us to assess our year-on-year improvements and measure the effectiveness of our sustainable transport initiatives.

The shift towards virtual and hybrid working, initiated during the COVID-19 pandemic, is integral to how we operate and continues to offer benefits in terms of staff wellbeing and the environment.



Variable speed limits in operation on the M50 motorway in Dublin.

4.2 Case Study A
Data Fusion and Analytics Evaluation

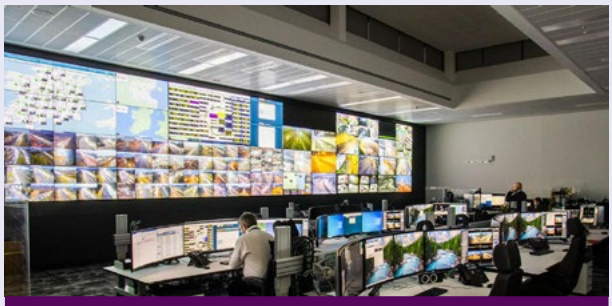
In 2023/2024, TII piloted the Data Fusion and Analytics Evaluation (DFAE) project in collaboration with ROD-AECOM and specialist technology subcontractors. The pilot focused on deploying an AI-driven data fusion platform on two sections of the motorway network to evaluate whether it could deliver faster and more accurate responses to incidents. The M1/M50 and M6/N6 corridors were the chosen test sites.

Operators in the motorway operations control centre rely on manual decision-making to respond to incidents. They draw on reports from incident support units, calls from the public, CCTV monitoring, and third-party data sources, such as Waze, TomTom, and HERE mapping. The AI software platform used in the DFAE project fused these data streams with information from intelligent transport systems (ITS) equipment, including traffic detectors and CCTV, to create a comprehensive real-time picture of network conditions. This approach aimed to reduce reliance on manual verification, improve detection and classification of road incidents, and reduce overall response times. As the M1/M50 corridor benefits from comprehensive CCTV coverage and the M6/N6 corridor has limited camera availability, the pilot sites provided a robust test of the AI system's capabilities under different operational conditions.

The evaluation methodology included a blind-testing process using CCTV feeds, where operators would validate alerts flagged by the AI. If an incident was confirmed, it was logged and compared against manual operator detection timelines. The AI system's performance was measured on accuracy, speed, and operator confidence in the alerts.

Data collected during this period showed that the AI system achieved a 65% true alert rate, with only 11% of alerts requiring manual confirmation. Notably, the system improved overall detection times, with 47% of incidents identified faster than existing methods. A 65% improvement in detection times was observed on the M6/N6 corridor.

The pilot demonstrated that AI-driven data fusion can provide meaningful operational benefits, including improved situational awareness, faster incident response, and enhanced safety for motorway users. It also offered insights into system refinement and future scalability. The next phase of the project will focus on integrating the AI platform into control room operations to provide real-time feedback and support broader system performance insights. This continuous improvement cycle will enhance the accuracy and reliability of event detection, positioning TII to enhance the safety and sustainability of the motorway network.



The main control room in the motorway operations control centre.

4.2 Case Study B

New Ross to Waterford Greenway

The South East Greenway is a transformative cycling and walking trail linking New Ross to Waterford. The greenway is designed to serve as a recreational amenity and a catalyst for economic growth, regional connectivity, and sustainable transport. By providing safe, high-quality infrastructure for active travel, the project aims to promote healthier lifestyles, reduce car dependency, and support tourism development across the South East region.

The first section of the greenway is 24.5km in length and follows the disused Waterford to New Ross railway line. It offers an off-road, sustainable travel route through the scenic South Kilkenny countryside. The second section of the greenway, a 6.7 km stretch from Waterford North Quays to Slíabh Rua (Red Mountain), offers breathtaking views and enhanced connectivity for local communities and visitors.

The works involve extending the existing car park at Glenmore to create a new greenway access point, as well as addressing the unique challenges of the narrow, linear route. Significant attention has been given to minimising disruption to local communities and protecting biodiversity, including safeguarding a live badger sett discovered along the alignment.

4.2 Case Study C
TII Enhanced Traffic Website

In October 2024, TII launched an enhanced traffic website, www.tiitraffic.ie, giving users access to real-time, reliable data in a user-friendly format to better plan their journeys. The aim of the project was to reduce unnecessary delays, contribute to smoother traffic flows and enhance the sustainability and efficiency of the national transport network.

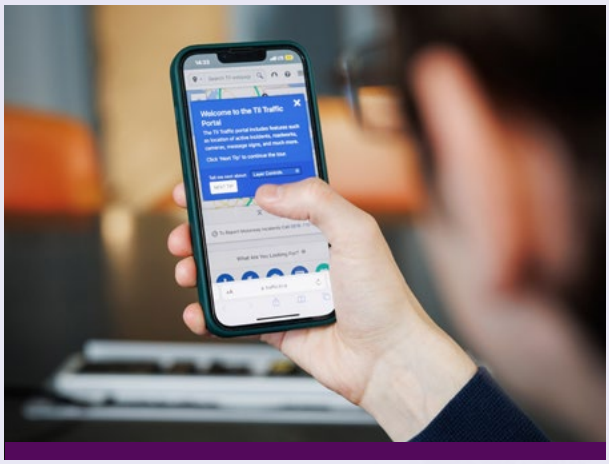
ROD-AECOM Alliance played a key role in the website development process by:

- translating TII's business goals into a clear set of website requirements;
- drawing on international best practice in motorway information dissemination;
- working closely with developers; and
- undertaking extensive testing to validate the integration of multiple data sources.

The website provides updates on incidents, weather, roadworks, and service station availability, enabling travellers to check network conditions before setting out on their journeys. It also incorporates live data from the National Incident Management System (NIMS) and various other TII systems to deliver, for example, variable message sign updates and images from hundreds of CCTV cameras across the network. The integration of multiple platforms into a single interface ensures that users receive the most reliable and timely information available.

The platform also personalises the experience for users by enabling them to create accounts, save their favourite cameras, and set route preferences for customised updates. This allows users to receive alerts about disruptions on their preferred routes, improving safety and convenience.

By combining journey planning, live travel times, toll information, and roadside updates with a modern and intuitive interface, the website provides users with a comprehensive travel planning tool, supporting lower fuel consumption and reduced emissions, thereby aligning with TII's broader sustainability and climate goals.



The Clontarf to City Centre Project reimagined the urban realm and transportation network between Alfie Byrne Road and Connolly Station.

4.2 Case Study D
Clontarf to City Centre

The Clontarf to City Centre Project was led by Dublin City Council (DCC) and funded by the National Transport Authority (NTA). It delivers 2.7 kilometres of high-quality walking, cycling, and bus infrastructure on a route that extends from Clontarf Road at the junction with Alfie Byrne Road to Amiens Street at the junction with Talbot Street.

The primary objective of the project was to provide sustainable transport infrastructure that supports cycling, walking, and bus travel while rebalancing the road hierarchy to give greater priority to vulnerable road users.

The €62 million scheme was officially opened in November 2024 following a 30-month construction programme. The completed works have transformed the corridor with new public seating, landscaping, and upgraded paving that invite people to use the space more actively. Pedestrians now benefit from safer crossings at unsignalised side roads, while heritage street lights have been rehabilitated and gaps filled with replica fittings. Cyclists benefit from a fully segregated cycle track supported by advance signals at junctions and the installation of hundreds of new bicycle parking stands. Bus users benefit from 'island bus stops' which provide safe waiting areas and improved journey times as a result of prioritised bus lanes.

Early monitoring indicates a significant increase in cycle numbers during peak travel times, while bus journey times have improved considerably, providing a more reliable service for commuters. The smoother, quieter road surface has created a safer and more pleasant environment for all users, while the landscaping and green infrastructure contribute to the city's long-term resilience.

The project demonstrates how transport investment can deliver multiple sustainability outcomes, including reducing carbon emissions by encouraging active travel and improving wellbeing through the provision of greener, safer public spaces. It highlights the value of effective planning to deliver sustainable infrastructure along one of Dublin's busiest commuter routes.

The scheme provided high quality, continuous, protected cycling facilities to meet existing and future demand.

The scheme delivered improved pedestrian facilities by upgrading footpaths and installing additional pedestrian crossings along the route. Image courtesy of Dublin City Council.

5.0 Water and effluents

Goal	Relevant GRI Standards	Relevant UN SDGs
Protect and improve water quality and ensure projects are resilient to climate change	GRI 303: Water and effluents	

5.1 Targets and actions

Background
Our rivers, lakes, and groundwater are crucial sources of the drinking water essential for our society, economy, and environment. It is vital we actively protect, preserve and, where possible, improve these vital water resources through our project work.

Ireland and the UK continue to make strides in implementing their respective water policies. In Ireland, the Environmental Protection Agency's **Drinking Water Quality in Public Supplies Report 2024** confirmed that public drinking water quality remains very high, with over 99.8% compliance with standards.

Uisce Éireann is continuing its substantial investment in water services infrastructure, with over €1.3 billion invested in 2024, and a commitment to a multi-billion euro investment up to 2029, as outlined in its Strategic Funding Plan 1.

The updated National Development Plan, published in July 2025, outlines significant investment in water and wastewater infrastructure to support economic development as well as housing requirements across Ireland. Key investment includes €12.2 billion for water and wastewater services.

Recognising the potential impact development can have on water quality and quantity, ROD's water group offers sustainable, comprehensive solutions for water, wastewater and flood risk management across all project stages.

A summary of our progress towards achieving our sustainability goals in respect of water and effluents - together with the associated targets and actions - is outlined below.

5.1.1 Target: Promote sustainable water use, avoid pollution and improve water quality and aquatic eco-systems

Action: Integrate the requirements of the Water Framework Directive (WFD) on projects where we are involved in drainage design

ROD integrates the requirements of the WFD, where appropriate, on all projects. On the proposed Point Pedestrian and Cycle Bridge and Tom Clarke Bridge Widening Project, an assessment of the potential effect on the water environment was undertaken due to the requirement for instream works in the River Liffey during the construction stage. The assessment identified that the proposed works would not cause a deterioration in the status of the Liffey Estuary Lower and the Dublin groundwater body, which were reported as 'moderate' and 'good' respectively (as defined under the WFD 2016-2021). We took a systematic approach to the assessment, considering each aspect of the project, identifying the potential impacts, and ensuring suitable mitigation measures were implemented as part of the design, construction and operation phases.

Continue to undertake hydrology and hydrogeology assessments on projects and work with multidisciplinary teams to avoid, reduce and, if necessary, mitigate impacts

ROD's water and environmental groups provide support during all stages in the design and development of our projects. They also support private developers and state bodies in undertaking the EIA process, highlighting and addressing potential environmental impacts, including those related to the hydrology and hydrogeological environment, and feeding into constraints studies, option selection reports and EIARs.

Action: Use NbS including SuDS as the default drainage design and/or flood management approach when designing infrastructure projects, public spaces, etc.

ROD designs projects with NbS, where possible. This includes implementing measures such as riparian restoration and wetland creation as part of the flood compensatory storage. When combined with the WFD assessment of the subject water bodies, these measures will ensure NbS becomes the default design, improving water quality and availability in addition to flood management.

ROD understands the importance of NbS and broader natural resilience in managing societal challenges. We provide solutions to conserve and protect available water resources, as evidenced by our innovative drainage designs for buildings, roads and bridges that change how water flows are absorbed and reduce its exposure to contaminants. By collaborating with ecology professionals and product suppliers, we promote a wide range of solutions, enhancing drainage and reducing the potential for flooding.

5.1.2 Target: Avoid flood risk and design resilient infrastructure that takes account of the effects of climate change

Action: Integrate flood risk assessments (FRAs) into design considerations and continue to design climate-resilient infrastructure

Flooding, with its associated impacts on built assets, communities and businesses, is one of the most obvious and damaging risks presented by climate change in Ireland and the UK. A Flood Risk Assessment (FRA) provides an assessment of the flood risks to a proposed development over its expected lifetime and, in estimating flood flows, flood storage capacity and runoff, the potential flood risks to the surrounding areas.

Our water team offers expert services for identifying and managing flood risk throughout the project lifecycle. This includes conducting strategic and site-specific flood risk assessments (SSFRAs) to facilitate developments across all planning and design stages. As part of the preliminary design process for the BusConnects Cork project, ROD carried out numerous SSFRAs to support proposed developments.

ROD provides recommendations aimed at reducing future flood risk at proposed developments and proposes flood risk management options, where required. Allowances for the predicted effects of climate change are also considered when preparing an SSFRA. This is usually done by obtaining available modelled data or by conducting in-house hydraulic modelling to estimate the likely depth, speed and extent of flooding for each allowance of climate change over time, taking the allowances for the relevant epoch into consideration. Our flood risk management strategies are informed by a thorough understanding of the requirements of a project, local and national guidelines, codes of practice, commercial realities and local data.

A combined promenade, cycleway and flood defence project.

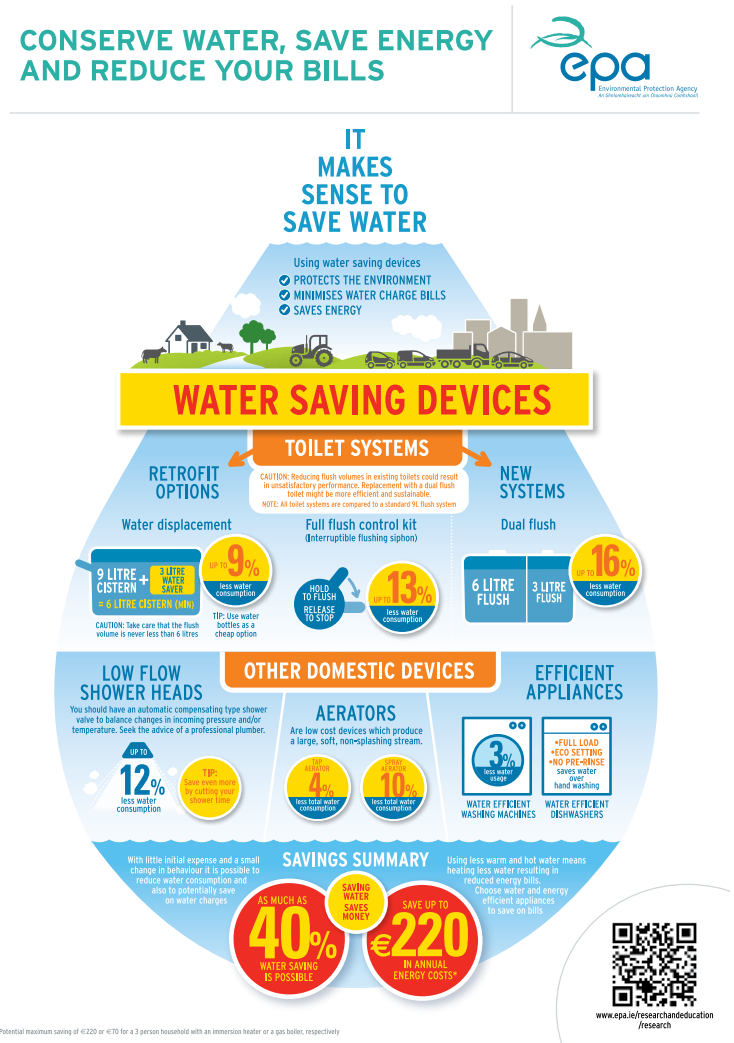


Image source: EPA Ireland

5.1.3 Target: Promote water conservation across our company activities

Action: Continue to encourage staff to conserve water

While we are blessed with an abundance of rainfall in Ireland and the UK we still experience water shortages. During Sustainability Month 2025, we encouraged staff to consider the myriad ways in which to live more sustainability including by conserving water.

Goal 14 of the UN SDGs is to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development.'

Approximately 70% of the planet's surface comprises ocean water bodies while 97% of the Earth's water is found in our oceans. In addition to providing half of the oxygen in our atmosphere, our oceans regulate our climate and form valuable ecosystems. They also support social and economic development by providing a means of transportation for international trade, a source of food and recreation, and a place to live for many plant and animal species.

The average person uses 140 litres of water every day. Controlled drinking water dispensers have been provided throughout our offices to improve water conservation. We have also retrofitted the taps within our common service areas with simple pushbuttons and automatic cut off to save water.

Action: Procure appliances with lower water demand when upgrades are required

In addition to promoting water conservation among our staff, we continue to procure 'A' energy-rated appliances only for our offices.

The launch of the Liffey-Tolka Project by Minister for Transport Darragh O'Brien TD in early 2026.

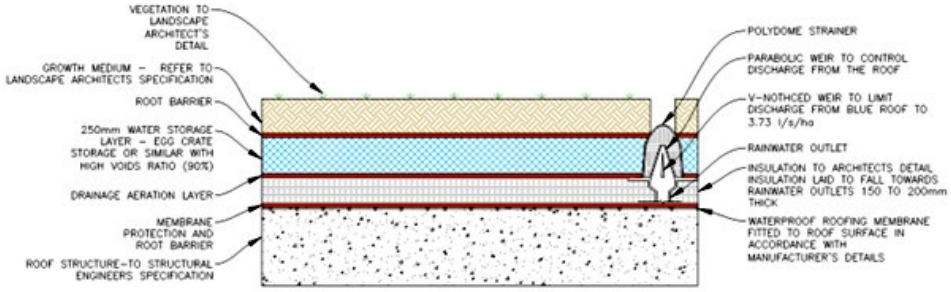
5.2 Case Study A
Liffey Tolka Project, Dublin

ROD acted as consultant engineers on the Liffey Tolka Project, preparing the preliminary design, engineering planning documentation, detailed design and construction stage documents for 1.4km of segregated linear public realm, including new footpaths, cycle paths and landscaping. The route runs between the River Liffey and the Tolka Estuary and through Dublin Port and Dublin City Council lands. ROD is now providing site supervision staff throughout the construction of Phase 1 of the scheme (River Liffey to Alexandra Road). Phase 2 (Alexandra Road to Tolka Estuary) detailed design is ongoing.

The project was led by our transportation team, with support from our water services team. A SuDS-based approach, comprising gently sloping surface water attenuation/conveyance swales and tree pits, was adopted. Approximately 1.4km of SuDS retrofit was undertaken through a heavily urbanised, tidal environment. As the receiving waterbodies were dominated by tidal events, storage was provided throughout the scheme for a one-in-100-year, six-hour rainfall event, with an allowance for climate change.

The implementation of SuDS retrofitting measures offered several advantages, including:

- providing additional capacity to the existing public drainage infrastructure by reducing the existing hard standing area within the drainage catchment;
- providing evapotranspiration through the vegetated SuDS network;
- providing treatment to surface water runoff prior to discharge to the surface water drainage network;
- ease of access for routine maintenance, negating the need for petrol interceptors along the scheme;
- managing runoff volumes and flow rates from hard surfaces at source, reducing the risk of flooding on the downstream network;
- enhancing end users' sense of safety by segregating pedestrians and cyclists from road vehicles through the provision of vegetated swales; and
- enhancing the aesthetics of the area and creating habitats for wildlife.



Proposed blue/green roof build up (apartment blocks).

5.3 Case Study B
Parkmore, Dublin 12

ROD provided engineering services for a proposed 436-apartment, large-scale residential development (LRD) planning application at lands located at Parkmore Industrial Estate, Long Mile Road, Dublin 12. The proposed development comprises demolition of existing industrial units and construction of a mixed use, residential-led development within four blocks, ranging in height from six to ten storeys over semi-basement.

To minimise the impact on the water quality and water quantity of the runoff and maximise the amenity and biodiversity opportunities within the site, several SuDS measures were proposed, including:

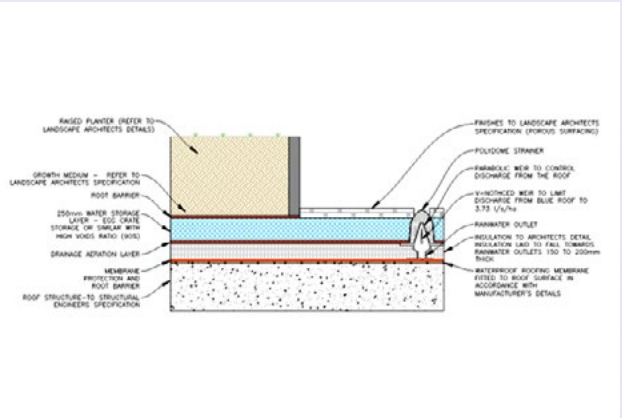
- blue/green roof systems to all building blocks and areas above basements;
- rain gardens to manage runoff at the surface from the central pathway through the site;
- vegetated swales; and
- flow control devices to limit discharge.

The measures were chosen and designed in accordance with South Dublin County Council's **Sustainable Drainage Explanatory, Design & Evaluation Guide (2022)**. They will maximise the potential for surface water attenuation, reducing the impact on the existing surface water drainage network downstream. The proposed techniques offer a high level of treatment processes and nutrient removal of the runoff, particularly during the 'first flush', and significant amenity and biodiversity opportunities compared to other drainage systems.

The proposed SuDS strategy included source control measures as part of a management train whereby the surface water is managed locally in small sub-catchments instead of being conveyed to and managed in large systems further down the catchment.

Attenuation for a one-in-100-year rainfall event (including a 20% allowance for the effects of climate change) was provided for, with discharge restricted to QBAR i.e. the mean annual flood flow from a rural catchment (m3/s). The development also provided for SuDS retrofitting within the existing Parkmore Estate. This took the form of roadside conveyance swales along the existing estate access road.

The scheme received planning approval in December 2025.



Proposed blue/green rood build up (podium slab level).

5.5 Case Study C
TII Peatland Rehabilitation Project

Ireland's peatlands represent increasingly rare ecosystems with high intrinsic conservation value. Growing environmental awareness has resulted in increased understanding of the contribution these areas provide in terms of ecosystems services, including carbon sequestration, biodiversity, water flow and water quality regulation.

Peatlands account for approximately 21% of Ireland's land cover and represent a globally significant biodiversity resource. Of the approximately 1.4 million hectares of peatlands, 82% has been degraded or drained, principally for peat extraction, agriculture, and commercial forestry activities.

While the last remaining examples of Annex 1 habitats have been afforded statutory protection by designation as SACs and NHAs, the National Parks and Wildlife Service's **National Peatlands Management Strategy (2015)** recognises that designated sites make up a small proportion of peatlands nationally. According to the strategy, the restoration of non-designated degraded peatland sites represents an important climate change mitigation opportunity at national level, and that restoration of these sites provides an opportunity to preserve in-situ archaeological materials and paleo-climate records.

The goal of the technical guidance is to provide project managers and designers with comprehensive methodological tools to enhance the sustainability of national roads, greenways and motorway service areas (MSAs) for projects located in or interacting with peatlands.

ROD is leading a peatland rehabilitation research project on behalf of TII. The objective of the project is to establish a hierarchy of peatland conservation, rehabilitation and restoration outcomes for national road projects that protect and enhance peatland ecosystem services.

We are bringing our experience of the design, construction and maintenance issues associated with national road construction together with our eco-hydrology expertise to the project. Our experience in road construction and earthworks will inform guidance on how earthworks can impact drainage conditions in affected peatlands. Our eco-hydrological experience will inform guidance on assessing impacts on peatland hydrological and bio-geochemical cycles and on establishing feasible conservation, rehabilitation and restoration outcomes for peatlands impacted by road construction projects. There is a fundamental link between hydrology, biodiversity and the optimum solution in terms of carbon, whether currently decaying in poor or degraded peatlands or for future sequestration where rewetting is the objective.

The research determined that the options for excavating peat or not are best assessed once both the ecology and water levels are understood. A range of examples of peatland projects (i.e. those where peatland was excavated and those where peatlands were not excavated) were presented at the Transportation Research Arena 2024 Conference. See Section 3: Biodiversity Case Study A for more information.

6.0 Materials and waste

Goal	Relevant GRI Standards	Relevant UN SDGs
Embed the principles of the circular economy into our systems and services	GRI 301: Materials GRI 306: Waste	

6.1 Targets and actions

Decarbonising the economy is a foundational component of transitioning toward a sustainable production and consumption model, moving away from the "take-make-waste" linear model. This shift, often termed the circular economy, aims to maintain the value of products, materials, and resources for as long as possible. The President of the European Parliament, Roberta Metsola, has called for a new Circular Economy Act, which aims to 'create market demand for secondary materials and a single market for waste'. This measure is designed to support current policies aimed at promoting a sustainable, competitive, circular economy in Ireland and the UK.

A summary of our progress towards achieving our sustainability goals in respect of materials and waste - together with the associated targets and actions - is outlined below.

6.1.1 Target: Reduce resource requirements on projects

Action: Promote the use of recycled materials on projects including, for example, recycled aggregates in concrete, road pavement, ground granulated blast-furnace slag (GGBS)

We use the latest technologies and techniques to reduce material consumption and embedded carbon. Where appointed we advise and support clients in developing solutions that reduce resource requirements and support theb circular economy. For example, We use GGBS as a substitute for cement as standard on our projects. As a designer of major infrastructure projects, ROD operates within frameworks such as Transport Infrastructure Ireland's circular economy guidance, which promotes the reuse and recycling of construction materials in road and civil engineering works. This ensures that recycled materials are considered and incorporated where feasible across projects.

We use GGBS as a substitute for cement as standard on our projects.

Action: Promote awareness of our use of these recycled materials on projects

We use our website, social media channels and biannual company newsletter to raise clients' awareness of our use of recycled materials on projects. We also work hard to ensure our wider team understands the importance of circularity in design.

6.1.2 Target: Design for circularity

Action: Develop a concrete specification that incorporates recycled aggregates

Our buildings group has conducted a full review of their standard structural and civil specification to allow for the use of low-carbon cement alternatives including recycled concrete aggregates (RCA) in our projects.

Action: Develop a checklist of circular design measures that could reduce or prevent future waste/ material usage

A sustainable design checklist for all sectors of the company is being developed. The checklist will provide staff with access to information related to all aspects of sustainable design including circular design measures on projects, past and present. It will include insights gained through experiences on projects.

An environmental product declaration (EPD), compliant with ISO 14025 standards, details a product's environmental impact, including resource use, emissions and waste. While not universally mandated in Ireland, EPDs are increasingly encouraged, especially in the construction and building sectors, to support sustainability goals and comply with environmental regulations such as the Climate Action Plan. They are often required for green building certifications, such as LEED and BREEAM, and help demonstrate environmental responsibility.

EPDs are becoming significant for pavement contractors and infrastructure projects. They enable better tracking and management of materials used throughout the

development process, promoting transparency and sustainability. ROD uses EPDs to support informed decision-making and to help integrate circular economy principles focused on resource efficiency and waste minimisation throughout a product's lifecycle.

6.1.3 Target: Influence downstream activities through contract documents

Action: Integrate circularity into construction activities through construction environmental management plans and waste management plans, as appropriate

Our design and environmental teams collaborate with one another and with clients to develop solutions that avoid or minimise the use of materials, including natural resources and environmental impacts. Our environmental team is highly skilled in all stages of the design, options assessment and EIA process, including preparing EIARs and associated construction environmental management plans (CEMPs) and/or construction waste management plans (CWMPs). These plans are adopted and further developed by contractors at the construction stage of projects. In this way, commitments made through the planning application process, policies and/or regulations are delivered as part of the project lifecycle process.

Action: Integrate circularity principles on projects through procurement and contract documents Ireland's Green Public Procurement (GPP) Strategy and Action Plan (2024-2027) was adopted in April 2024.

It aims to accelerate the implementation of GPP in all tenders using public funds and introduces a comply or explain approach to the use of environmental criteria in tenders. GPP continues to inform requirements and contracts, including low carbon construction-related components, sustainable building processes and lifecycle costings. In the UK, the National Procurement Policy Statement (NPPS), underpinned by the Procurement Act 2023, and is supported by Procurement Policy Notes (PPNs). This includes 'Taking Account of Carbon Reduction' (PPN 06/21) and Social Value (PPN 06/20).

ROD helps clients integrate circularity principles on projects through the development of procurement and contract documents, as in the examples below:

The CIRIA Bridge Detailing Guide

ROD and Hewson Consulting are currently updating the guide, making sustainability, climate change and net zero key focus areas.

The Dublin Port Tolka Estuary Greenway

ROD worked with Dublin Port Company to create a flagship active travel project featuring a 2.2km walking and cycling route through the port, enhanced public access to the Tolka Estuary and significant public realm upgrades.

The project was shortlisted for the ACEI Engineering Excellence Awards 2025 in the Sustainability-Natural Environment award category.

The greenway offers locals never-before-seen views of Dublin Bay.

6.1.4 Target: Continue our membership of and contribution to Europengineers

Action: Continue to contribute to the Europengineers (SEED) database

ROD is a member of Europengineers, a European network of independent engineering and consulting companies dedicated to best practice knowledge-sharing and collaboration. ROD was heavily involved in the development of the network's Sustainability Europengineers Database (SEED), a platform for sharing best practice in the application of circular economy principles on building projects.

In April 2025, two of our design engineers, Laura Fernandez and Nicholas McCann, attended a Europengineers Design Sprint hosted by Bureau Greisch in Liège, Belgium. The design sprint gathered engineers from the member companies together to explore the application of parametric design for buildings projects. As part of the workshop, they were tasked with the design challenge of providing a high-level design of a multi-storey city centre building using a parametric design approach. The aim was to understand how parametric tools can, by supporting the early stages of the design process, optimise the structural design of a building and set up a workflow that could be applied to other projects.

Nicholas McCann and Laura Fernandez pictured at the Europengineers Design Sprint in Belgium.

Supporting the Circular Economy Transition in the Irish Construction Sector. The need to understand and embed circular economy principles: A view from practitioners in the sector

As part of the ACEI's Construction Sector Group (CSG) Innovation & Digital Adoption's Subgroup-Sustainability and Climate Action Consultative Committee, ROD Associate Frances O'Kelly contributed to the development of a publication titled, "*Supporting the Circular Economy Transition in the Irish Construction Sector*." Launched by Minister of State Ossian Smith in July 2024, the document sets out a sectoral perspective on why the construction sector should embed circular economy principles in its projects and provides recommendations for stakeholders across the sector, including industry; government departments and agencies; local authorities; non-governmental organisations; academia; and others starting the process of bringing circular economy thinking into the mainstream of construction and demolition practices across buildings and infrastructure. It can also be used by the Department of the Environment, Climate and Communications (DECC) in the formulation of the statutory Circular Economy Roadmap for the Construction Sector (CERCS), in line with the provisions of the Circular Economy Act 2022. The document is available to download from the ACEI website: www.acei.ie

6.1.5 Target: Continue to reduce, reuse and recycle all waste streams in our offices

Our efforts to reduce, reuse and recycle our office waste streams have become more firmly embedded over the past 12 months. Waste management, staff engagement, and collaboration with eco-conscious partners form key components of our waste reduction strategy.

We continue to separate all general, recycling and compost waste in our Irish offices. The Separation of Waste (England) Regulations 2025 have recently been implemented, requiring all commercial and business premises to separate waste into separate waste streams.

Sandyford.

Woodford.


Otley.


Cork.

A crane grab on the Dublin Port Tolka Estury Greenway.

6.2 Case Study A
Dublin Port Tolka Estuary Greenway

The Dublin Port Tolka Estuary Greenway project is a landmark public realm project that allows visitors to safely enjoy the Tolka Estuary via a 2.2km cycle and pedestrian route along the northern coastline of Dublin Port. The greenway opens up access to never-before-seen views of Dublin Bay, including Clontarf, Bull Island and Howth Head, and will link the Galway to Dublin Cycleway to the wider world via the Dublin Port ferry terminals.

The scheme respects, conserves and enhances the natural environment of Dublin's greatest amenity, Dublin Bay, while opening it up to the local community and visitors. It was delivered in a fully sustainable manner; incorporated several innovative features to avoid adverse impacts on the environment; was achieved in a severely constrained, industrial port environment; and comprehensively addressed a myriad of health and safety and security risks at the construction and operation stages.

The project was shortlisted for the ACEI Engineering Excellence Awards 2025 in the Sustainability-Natural Environment award category.

ROD adopted a holistic approach to the project, assembling a multidisciplinary design team comprising engineers, ecologists, landscape architects, and Ireland's leading ornithologist, Richard Nairn. We established that impacts on birdlife could be avoided through the provision of an 1100mm screen past the sensitive areas – particularly the two corners where, as the tide fills, the mudflats remain exposed for longest – and devised a scheme that avoided a lengthy planning process.

Dublin Bay is an EU-designated Special Protection Area, Special Area of Conservation and a UNESCO biosphere. Creating a world-class amenity without impacting the environmental sensitivities of the site was challenging and was only achieved through careful design, comprehensive assessment, and robust construction planning.

Sustainability was a cornerstone of the scheme design, with the preservation and enhancement of the existing environment for pedestrians, cyclists and nature a key requirement. The scheme incorporates energy-efficient lighting; low maintenance, native planting; additional ducting to future-proof construction needs; and provision of a 220kV high voltage energy connection to support the country's power needs. It features various heritage materials, including crane grabs, granite blocks and mooring rope spools salvaged from the port, and uses them to highlight the port's rich maritime history.

6.2 Case Study B
Áras Sláinte

The Health Service Executive (HSE) has an extensive estate comprising approximately 2,500 sites and 4,500 individual buildings and equating to almost 1.8 million sqm of floor area.

The HSE's Decarbonisation Pilot Pathfinder Project was developed in partnership with the SEAI and in response to the requirements of the Government's Climate Action Plan, which states that all public sector buildings must achieve the following:

- A 50% improvement in energy efficiency by 2030;
- A 51% reduction in carbon emissions by 2030;
- A Building Energy Rating of B or higher; and,
- A clear pathway/recommendation to achieve net-zero carbon.

The project identified 10 healthcare sites, across four regions of the country, with building types and sizes representative of the HSE's wide range of building stock. These included single-storey residential units on rural sites and acute hospital campuses on compact urban sites.

ROD was appointed by the HSE to advise on the proposed solutions developed by the design team in respect of civil and structural engineering requirements in three regions i.e. Dublin North-East, the West Region and the South Region.

The Áras Sláinte campus in Cork City (South Region) comprises a four-storey office block constructed in the 1970s, with parking to the rear. During early project stages, consideration was given to demolishing and reconstructing the building but a package of works is now being progressed to conserve the existing building through repair works and retrofitting while ensuring the site is future proofed. This will significantly offset the materials and waste associated with demolition and reconstruction, estimated at approx. 200 tCO_2e.

The structure is a concrete frame comprising of in-situ reinforced concrete (RC) beams and columns. The floor plates are in-situ ribbed slabs spanning from the front elevation to the rear elevation. There are concrete stair cores at either end of the building and a lift and stair core in the centre of the building. Visible issues with concrete spalling and lack of cover in columns and walls/beams have been identified, and extensive concrete repair work will be required.

The design proposals include installing external insulation to the façade and increasing the depth of insulation at roof level. Following the repairs to the existing concrete façade, it may be possible to fix insulated panels to the repaired concrete. The design proposals include solar photovoltaic (PV) panels and the provision of additional plant at roof level.

6.2 Case Study C

Tay Lane Footbridge Rehabilitation Works

The N7 Tay Lane Footbridge in Rathcoole, Co Dublin is a 49m long, cable-stayed, steel bridge that allows pedestrians to safely cross the busy N7 national road. Constructed over 25 years ago, it required significant upgrade works to secure its future. The works were funded by TII.

ROD was responsible for designing the rehabilitation works and for ensuring the structure was stable during dismantling and reassembly. Our team also provided site supervision during critical stages of the works.

Challenges

- The original deck's almost perfect horizontal construction led to drainage issues and ponding across the bridge. Similar issues were encountered at ramp landings.
- Parapets on the main deck and approach ramps and stairs did not meet today's design standards, and the existing arrangement hid the main stringer beams on the ramps and stairs, making inspection of these elements impossible.
- The protective paintwork to the steel superstructure had begun to deteriorate and needed major maintenance, particularly at the access stairs where corrosion to the steelwork was present on the treads and risers.
- The RC piers supporting the bridge had cracked. If not addressed, this had the potential to cause significant long-term durability issues such as corrosion of reinforcement.

To rectify these issues, the entire structure had to be dismantled and removed offsite to steelwork subcontractor Thompson's fabrication yard in Carlow.

Solution

The existing bridge deck plate was replaced to correct the drainage issue. A new deck, incorporating a vertically curved plate at midspan, was fabricated. This tied into inclined plates falling towards either end of the deck.

Drainage channels were added to capture water at each end of the deck. Parapets were raised to a minimum height of 1.25m above the walkway surface, in line with today's design standards.

Parapet infill panels were trimmed above the stair and ramp stringers to allow future visual inspection of these elements and to prevent a build-up of debris at these locations. New treads and risers were fabricated for the access stairs, as the originals were heavily corroded due to a breakdown of the original paint system.

The existing steelwork was stripped back to bare steel and repainted. TII opted to trial a paintwork system with a fluoroethylene vinyl ether (FEVE) fluoropolymer topcoat. As a first for Irish road infrastructure, it required an agreed departure from standards. The new paint system allows up to 60 years before major maintenance (the standard is 20 years) and has the potential to significantly lower the life-cycle maintenance cost for steel structures.

Cracks in the RC piers were injected with resin to prevent durability issues associated with water and chloride ingress, which can lead to corrosion of the reinforcing steel. Slip membranes between the superstructure and substructure were replaced to allow movement under expansion and contraction and to help prevent future cracking of the piers.

Removal of the steel approach ramps and stairs was relatively straightforward. The challenging part was the removal of the bridge itself. Following traffic management setup and night-time lane closures, the cables were destressed using hydraulic rigs before being taken down over two nights. In addition to developing the design drawings and the specification for the rehabilitation works, our design team developed models of the bridge in MIDAS to analyse the various construction stages and to demonstrate that the bridge was stable under its own self-weight without the cables. This eliminated the need for temporary supports under the main bridge deck.

7.0 Training and education

Goal	Relevant GRI Standards	Relevant UN SDGs
Support training and innovation by combining people, processes and technology	GRI 404: Training and education	3 GOOD HEALTH AND WELL-BEING, 4 QUALITY EDUCATION, 8 DECENT WORK AND ECONOMIC GROWTH, 13 CLIMATE ACTION

7.1 Targets and actions

At ROD, we invest heavily in our team's personal and professional development at every career stage. We believe that a proactive approach to CPD is essential for maintaining a motivated, high-performing and growth-focused workforce. Encouraging staff to upskill in new and emerging areas is a crucial first step in building the knowledge and abilities necessary to deliver sustainable solutions for our clients and to work towards our sustainability goals. To support our CPD efforts, we conduct annual performance and training reviews with all staff across the organisation.

7.1.1 Target: Continue investing in our people as leaders in climate action and sustainability

Action: Support our sustainability champions

Our sustainability champions are highly skilled and experienced professionals who lead by example, highlighting and sharing best practice, building connections internally and externally and promoting our commitment to sustainable development. They are supported to share knowledge and lead on initiatives across the organisation.

Action: Support training, development and/or research initiatives aimed at reducing emissions, promoting climate resilience and adaptation

ROD continues to provide training and research opportunities across a wide range of disciplines including sustainability. Some of the key trainings are detailed across this report including, PIARC and AI in the road sector research presented in the EUROSTRUCT Conference detailed in the sections below.

Action: Support advances in design, software and technological innovation

ROD has been actively involved in several sustainability-related research initiatives over the past 12 months, including the EUROSTRUCT Conference 2025. The conference brought together the leading minds in structural engineering from across Europe. The three-day event showcased cutting-edge research, thought leadership and innovation in the quality control of bridges and structures.

ROD played a prominent role in the event, with ROD Director Joe Kelly delivering the keynote address, which charted the evolution of bridge construction in Ireland, from ancient timber and stone spans to the steel and concrete structures that shape our modern transport networks.

ROD Principal Engineer Robert Corbally delivered a presentation on the transformative potential of AI in the road sector while Ghazaleh Yousofizinsaz, a PhD researcher at UCC, showcased the ROD-UCC research project, PRODIGI, which seeks to create calibrated digital twins of existing bridges to better understand their response to changing climate and traffic demands.

ROD's Joe Kelly and Robert Corbally pictured at EUROSTRUCT 2025.

Action: Review and address sustainability gaps through annual performance reviews and training reviews

Our annual performance and training review process continues to play a key role in identifying staff development needs. In 2025, we placed particular focus on upskilling in areas such as carbon tool assessment, NbS, biodiversity no nett loss (NNL) and restoration.

Our involvement with The Supply Chain Sustainability School Ireland (SCSSI), which offers training and information-sharing on relevant sustainability topics, such as energy, carbon waste and social impact, has strengthened over the past year with more staff signing up for training.

In 2024, Europengineers introduced a trainee exchange programme to provide engineering graduates within its eight member companies an opportunity to gain international experience with another member company. Seán Bartlett, design engineer at ROD, was the first ROD staff member to avail of the programme. Seán spent six months with Schüßler-Plan's Mannheim office in Germany. Among the projects Sean worked on was the upgrade of a local rail line to allow passenger trains to run at 250km/hr instead of 120km/hr.

In 2025, ROD Graduate Engineer, Elaine Cogley, undertook a six-month internship in Paris with the French multidisciplinary engineering consultancy, Setec. Elaine worked with Terrasol, a geotechnical consultancy within the Setec group, where she got involved in projects, carried out independent checks for rock and slope stability, and gained exposure to some of the software Terrasol produce and use, including Talren and K-Réa.

ROD's Sean Bartlett was the first ROD staff member to participate in the Europengineers Trainee Exchange Programme in Germany.

ROD's Elaine Cogley pictured in Paris during her six-month Europengineers internship with Setec in Paris.

Action: Support and encourage further education in sustainability, including in embodied and operational carbon activities

As an Engineers Ireland CPD Accredited Employer, we provide training opportunities to staff in sustainability and embodied and operational carbon. Staff who participate in training courses share acquired information and resources with their respective teams and across the wider company. See Section 2: Energy and Carbon for additional information about our ongoing work in this area.

Action: Support advances in design, software and technological innovation

Our research group continues to bring greater understanding to pressing global and local challenges in engineering, the environment and climate action. Examples of our work are detailed in the boxes below and include:

- PIARC Special Project: Artificial Intelligence in the Road Sector.
- PRODIGI - Probabilistic Digital Twins for Bridges
- Data Fusion and Analytics Evaluation. See 4.2: Case Study A

PIARC Special Project: Artificial Intelligence in the Road Sector

The PIARC Special Project explored opportunities for AI adoption across all stages of the road asset lifecycle, from planning and design to maintenance and operations. With a vision extending to 2030, it identified how AI can transform the management and operation of road infrastructure. Download the summary report here.

PRODIGI - Probabilistic Digital Twins for Bridges

PRODIGI is an ROD-University College Cork (UCC) collaboration that seeks to create calibrated digital twins of existing bridges to better understand their response to changing climate and traffic demands. In so doing, it hopes to advance the digitalisation of bridge management. Funded by Construct Innovate, Ireland's National Research Centre for Construction Technology and Innovation, the project is establishing the feasibility of a scalable Probabilistic Digital Twin (PDT) that integrates real-time sensor data, structural >>

modelling and probabilistic assessment methods to enhance traditional Structural Health Monitoring (SHM) techniques and optimise predictive maintenance strategies. By introducing an innovative approach to bridge management, the project aims to set new standards for predictive, data driven maintenance, supporting ROD's position at the forefront of digital innovation in civil engineering.

A fully calibrated PDT enables hazard simulation and scenario planning through probabilistic analysis, allowing for predictive and proactive maintenance planning and ensuring the resilience of Ireland's national infrastructure in accordance with objectives set out in the National Planning Framework (2025), the National Development Plan (2025), and the Climate Action Plan (2025). The project team combines ROD and UCC's expertise in bridge engineering, risk-based asset management, SHM, probabilistic modelling, and data analysis, to deliver an outcome-oriented research programme that produces a practical tool for owners and operators of bridges and civil engineering structures.

To date, the project has focused on creating a calibrated PDT of a test-bed structure: Brownsbarn Bridge on the N7 at Citywest (a structure that underwent ROD-led rehabilitation works in 2010). The response of the bridge to test loading, measured through strain gauges, has been replicated in high-fidelity 3D structural models. Following the successful calibration of the model, load simulations are underway to establish the reliability of the bridge under increasing traffic and climate demands. In parallel with the numerical testing of this model, the scalability of the PDT is being assessed to establish its deployability to other bridges across Ireland's road and rail network.

The project aims to set new standards for predictive, data driven maintenance, thereby supporting ROD's position at the forefront of digital innovation in civil engineering.

Action: Encourage think tanks and smaller counsels to address the challenges of carbon emissions reduction

Our bridges group is maintaining its involvement in the Net Zero Bridges Group. This is a voluntary organisation made up of bridge specialists, including engineers and architects, who are committed to helping our industry reduce its carbon footprint.

Our buildings group is continuing its work in advancing carbon management by:

- identifying best practice for carbon management in the design, operation and maintenance of buildings;
- championing the tendering of decarbonisation projects internally; and
- ensuring carbon calculation is carried out at Stage 1 of buildings projects applying to participate in studies on carbon emission reduction measures, such as mass engineered timber and carbon assessment.

Our energy group continues to progress opportunities presented by the climate transition and the green economy.

Net Zero Bridges Group

In November 2025, ROD's CPD Accredited Employer status was extended to 2028.

7.1.2 Target: Maintain and improve affiliations with professional bodies

Action: Maintain our CPD Accreditation with Engineers Ireland

In November 2025, our Engineers Ireland CPD Accredited Employer status was extended to 2028 in recognition of our commitment to the continuing professional development of our people and to setting high standards in support of lifelong learning.

Action: Maintain links with professional institutions through memberships

ROD continues to maintain its links with relevant professional institutions, including Engineers Ireland; ICE; ACEI; the International Association for Bridge and Structural Engineering (IABSE); the Institute of Environmental Management and Assessment (IEMA); the Chartered Institute of Ecology and Environmental Management (CIEEM); the Irish Planning Institute (IPI); the Chartered Institution of Highways and Transportation (CIHT); and the Chartered Institution of Water and Environmental Management (CIWEM).

Over 60 ROD staff hold registered professional titles - from engineering technician to fellow - with respected professional institutions, including Engineers Ireland; IABSE; CIHT; ICE; IStructE; the Welding Institute; NEC; CIWEM; IEMA and IPI.

ROD staff are frequently invited to speak at industry conferences and events, as in the examples below.

IStructE

In 2024, Robert Corbally delivered a presentation titled, "A Machine-Learning Approach for Driveby Condition Monitoring of Bridges" to the IStructE Northern Ireland & Ireland Regional Group. Robert highlighted the challenges associated with monitoring and assessing ageing bridge stock and presented his research on the development of AI and machine learning approaches to improve bridge condition monitoring. His presentation underscored the importance of embracing new technologies to ensure sustainable bridge maintenance practices into the future. Robert's presentation was subsequently awarded the IStructE's Joseph Kindregan Prize for the best presentation of 2024.

IABSE Symposium 2024: Construction's Role for a World in Emergency

ROD was one of the silver sponsors of the IABSE Symposium, which took place in Manchester in April 2024. IABSE is a scientific/technical association that aims to advance, through the exchange of knowledge, the practice of structural engineering in the service of the profession and society. The symposium was attended by hundreds of people from around the world.

TII Cooperative Intelligent Transport Systems (C-ITS) Pilot Evaluation and Assessment Report

ROD-AECOM submitted TII's C-ITS Pilot Evaluation and Assessment Report to the European Climate, Infrastructure and Environment Executive Agency (CINEA). The report assessed the positive impact C-ITS delivers in terms of driving behaviour and the benefits it offers in terms of improving road safety, increasing traffic efficiency by reducing congestion and optimising flow, and enhancing society through reduced environmental impact.

TII Signage and Delineation Conference 2023

ROD's Technical Director Edward Warren delivered a presentation on traffic calming gateway layouts and signage at TII Signage and Delineation Conference 2023, which took place in Cavan.

Sample of RODs presentations.

Action: Continue our membership and involvement with the Net Zero Bridges Group

The Net Zero Bridges Group is an international voluntary organisation of bridge specialists, including engineers and architects, committed to helping the bridge industry reduce its carbon footprint as quickly as possible. Its mission is to 'to accelerate progress towards net zero carbon bridges by sharing knowledge and ideas and shaping best practice.' Membership of the group provides an opportunity to collaborate with leading industry professionals and helps us to stay at the forefront of carbon management in bridges.

Since joining the Net Zero Bridges Group, ROD has:

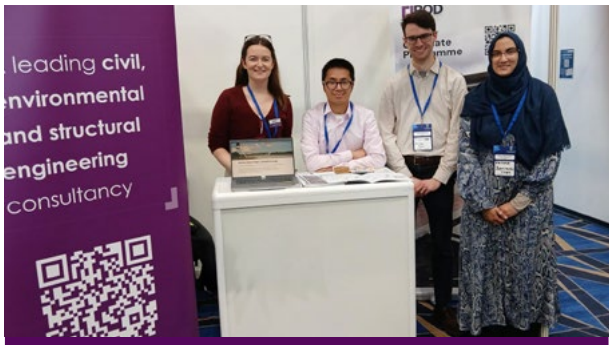
- participated in regular meetings with the group;
- shared our experiences and challenges with respect to reducing carbon emissions on our bridge projects;
- helped to develop solutions to tackle carbon calculating;
- contributed to the development of practical guidance aimed at establishing best practice in reducing emissions in the bridge sector; and
- remained at the forefront of evolving carbon management in bridges.

As embodied carbon calculations are developed, ROD will continue to contribute to the bridge embodied carbon database being developed by the Net Zero Bridges Group to help the industry establish a baseline against which to measure the carbon output of all future projects.

Action: Continue to promote engineering and sustainable development as a profession within schools and colleges in Ireland and the UK.

ROD actively supports Engineers Ireland's STEPS programme, which is Ireland's only STEM outreach programme with a focus on engineering. We also support the STEPS Young Engineers Award competition, which encourages 3rd and 4th class pupils and their teachers to explore the world of engineering by developing an engineering project to improve their local community. See Section 7.2 Case Study A for more information.

We also attend careers fairs in third-level institutions in Ireland and the UK to promote the opportunities in our offices for engineering graduates, environmental scientists and planners.



ROD team members pictured at the UCD Science, Engineering and Technology Careers Fair in September 2025.

Action: Support staff aiming to achieve chartership

ROD is focused on attracting, developing, engaging and retaining talented individuals in the company. To this end, we guide staff on their journey towards achieving their professional qualifications, such as incorporated or chartered membership of their relevant professional body, e.g. CEng, IEng, CIEEM, IEMA, CIWEM, IPI, CIHT, etc.

The pathway to chartership programme provides staff with a combination of project experience, formal training and mentoring support to help build the technical experience and professional practice skills they need to achieve their chosen professional qualification.

Senior Engineer Ilaria Bernardini (centre) was shortlisted for the prestigious Chartered Engineer of the Year Award 2023.

7.1.3 Target: Share knowledge and build capacity across the company

Action: Continue to hold in-house CPD sessions
Between November 2024 and October 2025, ROD hosted 20 lunchtime CPD presentations. The presentations addressed a variety of subjects, from hydrology to AI in the road sector.

To mark Sustainability Month 2025, we held a series of sustainability-themed initiatives during the month of October. These included:

- A biodiversity blitz;
- A presentation on ROD's MMP delivered by ROD's Fatima Quadri;
- A presentation on 'Integrated Solutions for the Climate and Biodiversity Crisis,' delivered by Yvonne Buckley, Professor of Zoology at Trinity College Dublin;
- A presentation on ROD's Peatland Rehabilitation project delivered by ROD's Paul Kissane; and
- An IMS presentation delivered by ROD's Joe Kelly.

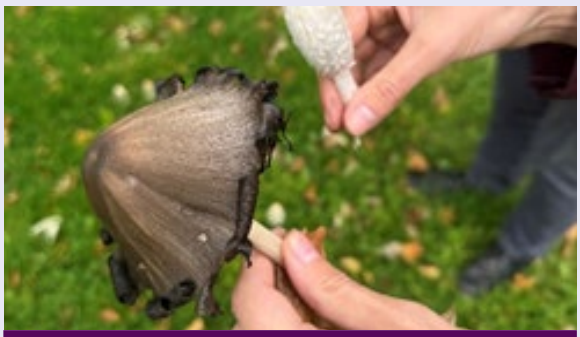
Lunchtime Biodiversity Blitz

Our Sustainability Committee kicked off Sustainability Month with a BioBlitz (Biodiversity Blitz) co-hosted by our ecology team. A BioBlitz is an event in which participants find and record as many plant and animal species as they can over a short period of time. It was designed to test the wider ROD team's knowledge of ecology and to encourage staff to reconnect with nature.

After a brief presentation, our participants headed 'into the wild' to explore the grassy verges, hedgerows and amenity areas in the proximity of their respective offices. Using field guides, online guides, apps and a 'cheat sheet' featuring urban flora and fauna, they identified and recorded the plants, animals and fungi they came across.

The data collected by our Dublin and Cork teams was submitted to the National Biodiversity Data Centre (NBDC), which collects, manages and publishes data on Ireland's biodiversity to better understand and assist with its protection. In addition to documenting wildlife resources and monitoring and recording changes over time, it frequently feeds into desk studies of environmental reports, including Environmental Impacts Assessment Reports and Appropriate Assessment Screening Reports. The data collected by our UK team in Otley was submitted to iNaturalist.com, a website that uses species records submitted by users to contribute to scientific data repositories around the world. Some pictures of the biodiversity recorded during the event are included below.

Biodiversity blitz photos



A mature (left) and young (right) Shaggy linkcap mushroom.

Maidenhair Spleenwort growing in crevices in a stone wall.

A Red Kite in flight.

Participants of the Lunchtime biodiversity blitz in Woodford

Integrated Solutions for the Climate and Biodiversity Crisis by Yvonne Buckley, Trinity College Dublin

Drawing on her roles with the Climate Change Advisory Council and the new AIB Trinity Climate Hub, Professor Buckley showed us how Ireland's climate action and biodiversity conservation efforts are fundamentally linked. She presented data on declining habitats and water quality and revealed her laboratory's finding that human land use is as powerful as climate change in influencing global ecosystems.

Key takeaways

- There is an urgent need for integrated land-use planning in Ireland.
- Climate action that degrades biodiversity is not a sustainable option.
- NbS plays an essential role.
- Trade-offs in forestry, sustainable food systems, and renewable energy deployment can be difficult to navigate.
- Every individual's choice, from diet to civic engagement, is crucial in pursuing a climate-resilient, biodiversity-rich, environmentally sustainable future.

Mobility Management Plan Presentation by Fatima Quadri

Graduate Engineer Fatima Quadri, delivered a presentation in the Sandyford boardroom and online, providing practical accessibility information about each office. This was aimed at helping staff easily understand what is available across the various offices. This is particularly useful for new starters and for colleagues travelling between offices. The session covered topics such as the location of showers and changing facilities, parking arrangements, the initiatives we run throughout the year, and the range of tax incentives available to support sustainable travel.

Our draft Mobility Management Plan (MMP) examines the accessibility of our four offices, across all the available modes of travel, and presents the measures we have implemented to support sustainable travel, including promoting walking, cycling, public transport, carpooling, the use of technology, and flexible working practices. The development of the MMP supports our target to reduce greenhouse gas (GHG) emissions in transport and travel by 51% by 2030. The preparation of this MMP supports this ambitious target and supports our company Sustainable Transport and Travel Policy. Our MMP is informed by the guidance set out in **The Workplace Travel Plan: A Guide for Implementers,** published by the NTA, our annual staff travel survey and feedback recieved from staff during sustainability month.

The MMP underscores our commitment to reducing our transport emissions, encouraging a shift to less carbon-intensive transport options, such as walking, cycling, car-sharing and public transport. Staff participation and behavioural change is identified as essential if we are to reduce emissions from company transport and travel by 51% by 2030 and net zero by 2050, as defined in our company sustainability plan. See Section 4: Transport and Travel for more information.

Peatland Rehabilitation Research Project

ROD's Paul Kissane presented his research on TII's peatland rehabilitation project, the objective of which is to provide a new technical guidance document to inform the options assessment, design and management of existing and/or future projects located in peatland areas. See Section 3.3 Case Study B for further detail.

Peat deposition area constructed as part of N59 project near Maam Cross, Co. Galway.

Integrated Management System presentation

ROD Director Joe Kelly delivered a presentation on our IMS, which integrates various internal processes, including ISO Standards- QMS: ISO 9001, EMS ISO 14001 and OHSMS ISO 45001, and provides a structured and process approach for project execution including environmental and safety procedures.

Action: Raise awareness of sustainability and climate action

ROD's Sustainability Committee ran weekly quizzes during Sustainability Month 2025 to test our people's understanding of the topics covered in our presentation series. For every quiz entry submitted, ROD donated €5 to two environmental charities, Sonairte and the Yorkshire Dales Millennium Trust. A total of €1000 was raised for the two charities.

Sonairte is an environmental charity established in Dublin in 1988. The charity runs Sonairte Visitor Eco-Centre, a visitor experience that aims to promote a love of the outdoors, organic produce, eco-awarenessw and sustainable living.

Yorkshire Dales Millennium Trust is a small charity based in the Yorkshire Dales. The trust works to conserve and restore native habitats and wildlife, such as wildflower-rich meadows, wetlands and broadleaf woodlands. Its projects safeguard and celebrate the special landscape and its unique heritage, from limestone caves to dry stone walls.

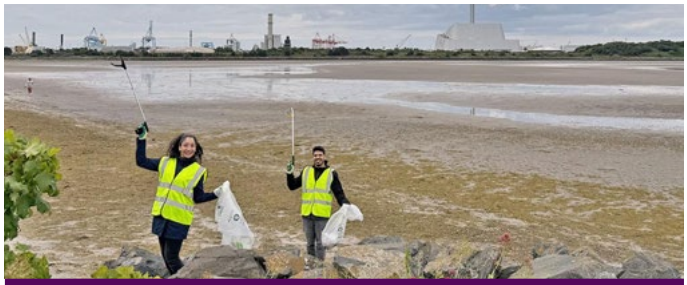
Raising awareness of environmental damage due to marine litter and promoting community intervention

In the summer of 2025, our Sustainability Committee brought our team together to clean up Sandymount Beach. Their aim was to contribute to the significant community effort to keep this natural amenity litter-free, ensuring it can be enjoyed by locals and visitors alike. The committee had the support of Dublin City Council, who supplied the protection gloves, collection bags, collection bag holders and some of the litter pickers.

ROD has a particular interest in this area, as we are currently working on the 'Point Bridge and Tom Clarke Bridge Widening', 'Dodder Bridge' and various Dublin Port projects. The area also falls within the South Dublin Bay Special Area of Conservation (SAC) and South Dublin Bay and River Tolka Estuary Special Protection Area (SPA).

The beach clean-up served as a valuable reminder of the environmental impact of littering and highlighted the importance of both individual and collective actions in preserving our natural environment.

Fatima Quadri, Samira Islam, Louise-Marie Lanaud and John Daly picking up litter on Sandymount Strand.



Emeline Lafortune and Aymen Rzigui with their litter pickers and collection bags on Sandymount Strand.

Did you know?

- Approximately 10 million tonnes of litter end up in the world's oceans and seas each year. Plastics make up 85% of all marine litter from surface waters to deep sea sediments.
- It is estimated that 70% of marine litter is on the seabed, 15% is floating in the water column and 15% is what we find on our shores.
- Scientists estimate that 1 million sea birds and 100,000 marine mammals die every year because of marine litter, through entanglement or ingestion.

Pictured (L-R): Niall Hanratty, Clodagh Rea, Fatima Quadri, Ramin Ghiasi, Zara Craig, Aoife O'Sullivan and Samira Islam.

7.2 Case Study A
Engineers Week 2025

During Engineers Week 2025, our graduate engineers and student interns visited Scoil San Treasa, Mount Merrion; St. Raphaela's Primary School, Stillorgan; Cnoc Liamhna Gaelscoil, Knocklyon; and St. Mary's Boys' National School, Booterstown. Their aim was to open the students' eyes to the engineering hiding in plain sight around them and to encourage them to see science, technology, engineering and maths as cool and interesting subjects that can lead to exciting and rewarding careers. They started each day with a talk on what engineering is and how scientists, technicians, engineers and mathematicians have shaped the world around us. While some students were familiar with engineers like Thomas Edison, others had never given any thought to the engineering - or the women and men - behind everyday things, from phones and cars to hospitals and schools.

To help the children connect the dots and see engineering in action, they were first divided them into teams of four; then set the challenge of creating the tallest tower they could using lollipop sticks, pipe cleaners and straws - but one stable enough to hold as many toy cars as possible; and all within 30 minutes. Before the children began, the group explained the importance of teamwork and creativity in engineering, and showed them how bracing works, how to identify the weak points in their towers and where to add reinforcement. And then they were off, throwing themselves into the task with great gusto. When the time was up, the children stood back and admired their designs. The sense of pride in the classroom was palpable.

ROD's Maha Riad, Geethu Bennyson, Ciaran Carey and other delegates pictured at the ITS Ireland 'Women in ITS' celebration in March 2025.

7.3 Case Study B
Celebrating Women in Engineering

International Women in Engineering Day 2025

To mark International Women in Engineering Day 2025, ROD's Maryann Nwankwo, Deirdre Neff, Ines Domingues and Katie McLoughlin came together to deliver four inspiring presentations to our staff. They covered several topics including what motivated them to choose careers in engineering, how they are challenging the stereotypes that exist within the profession and how they keep their passion for engineering alive. They also highlighted the importance of maintaining a work culture that encourages women to reach their full potential.

Top (L-R): Ines Domingues, and Maryann Nwankwo. Bottom (L-R): Katie McLoughlin, and Deirdre Neff.

Women in Project Management Summit 2025

ROD's Iwona Formanowska and Victoria Da Silva Pereira attended the Women in Project Management Summit 2025, where nine speakers from a variety of industries shared their experiences of working in project management.

International Women in Engineering Day 2025

To mark International Women in Engineering Day 2025, ROD's Iwona Formanowska shared her career story in an article charting her journey from engineering student to principal engineer. We published the article on our website and in our biannual newsletter and shared it across our social channels.

Victoria da Solva Periera and Iwona Formanowska at the Women in Project Management Summit 2025.

ITS Ireland 'Women in ITS' celebration

ITS Ireland held a 'Women in ITS' event in the Wayfinding Centre in March 2025. It brought women from across the ITS industry together to discuss diversity, inclusion, and accessibility, subjects very appropriate to the setting, given the centre's focus on making public transport more accessible for everyone. As vice-chair of ITS Ireland, ROD's Ciaran Carey welcomed everyone to the event while ROD's Maha Riad and Geethu Bennyson contributed to the lively and interesting discussion.

Environmental Scientist Emeline Lafortune pictured at the Women in STEM Summit 2025.

The Wayfinding Centre in Glasnevin is the world's first accessible transport training centre.

7.4 Case Study C
Wayfinding Centre Training Course

In 2025, 18 students, graduates and technicians from ROD attended a training course at the Wayfinding Centre in Dublin, the world's first interactive, multi-mode, transport training facility. Delivered by Vision Ireland in collaboration with The National Sight Loss Agency, the course aimed to raise awareness of the daily challenges that people with disabilities face when using public transport.

The course provided an invaluable learning opportunity for our younger team members, immersing them in the full range of transport modes available within the facility and testing their skills on the interconnected roads, crossings, and streetscapes that link various forms of transit. It gave the attendees a deeper understanding of the barriers to travel for people with disabilities and a deeper appreciation of how much easier and safer facilities designed to be universally accessible can be.

Following the course, our team had a keener sense of their responsibility for ensuring equity and inclusion are at the forefront of their designs, particularly as we work towards a more sustainable Ireland, one in which bus, rail and light rail make up a greater share of the population's primary means of transport.

Vision Ireland's Jody Morris and Kevin Kelly pictured at the Luas platform in the Wayfinding Centre.

ROD's Cathal Ó Gréagóir navigating a wheelchair ramp with the assistance of ROD's Killian McLoughlin.

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