



Winter 2022 Newsletter

**Roughan &
O'Donovan**

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Foreword

Article by Jim Thorpe

Welcome to our Winter 2022 Newsletter.

The headline issue at Highways UK was “the challenges in delivering a zero-carbon future for the highways sector” (p.12). Meanwhile, ROD’s Sustainability Month and the development of our formal sustainability plan aim to “maintain our focus on the high impact actions critical to meeting the UN Sustainability Development Goals” (p.24). It is therefore inspiring to see sustainability at the heart of all our projects.

At policy level, our environmental team is contributing to the draft ‘National Roads 2040’ strategy, which “aims to enable the delivery of national policy, plans and targets ...supporting the decarbonisation of the transport sector” (p.23). There is a tendency to assume that all new roads are climate negative, yet studies show that more than 90% of the emissions associated with roads are operational, the big emitters being heavy goods vehicles starting and stopping in congested areas. By removing bottlenecks, projects such as the Athy Distributor Road (p.13); Blake’s Corner (p.14); Foynes to Limerick (p16); N13 Bridgend (p.18); and the N26 Cloongullane (p.19) significantly reduce the emissions associated with essential transport. These projects and others, including Narrow Water Bridge (p.5); Whitegates to Athlone Castle Bridge (p.6); Waterford City North Quays SDZ Infrastructure (p.10); and the West Clare Railway Greenway (p.19) are making provision for local and leisure journeys to transfer to active travel, delivering energy, climate, health and community benefits.

For longer suburban commuting, the DART+ West project (p.22) provides a higher capacity alternative to the private car while replacing diesel haulage with electrification. The Waterford City North Quays SDZ Infrastructure project provides enhanced public transport facilities. As with the Athy Distributor Road and the Whitegates to Athlone Castle Bridge projects, it provides pedestrian and cycle access to public transport - both from urban areas and by connecting to local greenways, encouraging both commuters and leisure travellers to use public transport.

Delivering these infrastructure improvements involves embedded carbon, and this must be addressed on the journey to net-zero, even if it represents a relatively small proportion of the overall transport impact. Avoid , reuse, recycle are the most effective ways to reduce embedded material impacts, and the historic Barrow Rail Bridge (p.13) and West Clare Railway (p21) projects provide great examples of how existing redundant infrastructure can be reused. Our work in extending the life and use of existing bridges (p.9) and avoiding unnecessary works on Holywell Bridge (p.8) provides

further examples of how embedded material impacts can be reduced. Our research on friction modelling “allows more focused investment, thereby mitigating against the unnecessary use of scarce construction materials” (p.39) and the pilot studies on the N56 earthworks (p.36) will inform options to reduce the need to excavate peat from beneath road construction, the key challenge on the N61 Tulsk to Gortnacrannagh project (p.37). Our research on peatland rehabilitation (p.38) has the potential to go beyond reducing carbon impacts to enable peat to sequester carbon again.

Sheskin Windfarm (p.27) and grid connections to solar farms in north Co. Dublin and Co. Meath (p.28) demonstrate how the skills we have developed on roads schemes can be successfully applied within the sustainable energy field. Our work on the new road to Foynes Port (p.16) is facilitating the development of offshore wind power. Rebekkah Kaligorsky’s report on the European Maritime Hydrogen and Marine Energy Conference describes what is happening in Norway as “highly relevant to Ireland and the UK, which along with Norway, enjoy the most favourable offshore conditions for energy generation” (p.26).

Despite ongoing efforts to become carbon neutral, climate change is a reality. Our INFRALINK research project is “identifying potential extreme weather events in Ireland and related hazards, as well as infrastructure that would be affected by these events” (p.39). The flood defences that form part of the Waterford City North Quays SDZ Infrastructure (p.10); Cherrywood Regional Attenuation Pond (p.30); and the SuDS measures incorporated into the Letterkenny CNU (p.34) are designed to meet these future challenges. The Stream Enhancements at Munreevy Culvert (p.29); South Dublin Strategic Flood Risk Assessment (p.31); and Fingal Surface Water Management Plan (p.32) acknowledge that while some previous approaches to flood control failed to respect their ecological impacts, enhancing both ecology and flood control is possible by working with nature.

Sustainability is not just about climate. The UN goals also include education, wellbeing and reduced inequalities, priorities which are being addressed in our growing portfolio of schools (p.35); social housing (p.33) and community nursing units (p.34). As I wish you all a very Happy Christmas, I encourage you to look forward to the new year with pride and enthusiasm, as you reflect on the vital role engineers and environmental scientists play in delivering a sustainable world for future generations.

Jim



Model image of Narrow Water Bridge open.



Narrow Water Bridge project moves to tender stage

Article by Daniel Coleman

On 18th November 2022, the Government announced the commencement of the tender process for the Narrow Water Bridge, a major cross-border infrastructure project linking the Mourne Mountains in Co. Down and the Cooley Peninsula in Co. Louth. The bridge project is a long-standing and highly symbolic government commitment, which will improve access, strengthen North-South links and deepen connections between communities on both sides of the border. €3m in funding has been secured from the Shared Ireland Fund to see the project through the tender stage.

The bridge will cross the Newry River approximately 400m south of Narrow Water Keep at the A2 road roundabout, connecting the R173 Omeath Road south of Ferry Hill and the A2 dual carriageway. The bridge comprises a 6.0m wide single carriageway and a 3.0m wide pedestrian and cycle facility to either side of the carriageway. A new roundabout will be constructed at the junction with the R173 Omeath Road and the existing A2 roundabout will be upgraded. The total length of the scheme, including the bridge crossing, is approximately 660m. Due to the navigational requirements along the river for accessing Victoria Lock and the Albert Basin, the northern span of the bridge will be an opening movable span providing, when opened, an unlimited vertical clearance for a 20m wide navigational channel.

Visiting the site of the proposed bridge, An Taoiseach Micheál Martin underscored the significant tourism and economic benefits the project will bring to the region. He said: “Along with improving North-South connectivity, the bridge will be at the heart of a range of cross-border greenways, active travel, recreation and outdoor activity amenities planned for the Carlingford Lough area.”

The bridge itself is an iconic design, with a taller, longer fixed southern span supported by a south leaning pylon, and a second separate smaller, shorter northern span supported by twin pylons, which can open using a rolling bascule mechanism. The south fixed cable stayed span is 138m and northern cable stayed rolling bascule (opening) span is 57m. The opening span will be one of the longest, if not the longest, rolling bascule spans in the world. The asymmetry

of the span is reflected in the pylon heights, with the higher (86m) pylon located on the southern side of the crossing. The lower (33m) twin pylons on the northern side support the opening span.

The cable-stays are small diameter stays comprised of parallel wires with multiple layers of corrosion protection. Bespoke stay anchorages connect the cables stays to the pylon and the orthotropic steel deck. The south fixed pylon will be constructed from structural steel, consisting of an outer and inner steel skin which will be infilled with concrete ballast as there are no back-stays. Similarly, the steel pylons that support the bascule span will be infilled with concrete.

The south pylon and deck are fixed to the south abutment, forming an integral connection. The bridge will have a movement joint at the intermediate pier and at the north abutment, as required to allow the opening of the north bascule span and to accommodate bridge deck expansion and contraction.

The bridge will be remotely operated from a control building located on the southern approach, c.350m south of the navigable channel. The project also requires the construction of a new navigational beacon downstream of the proposed bridge, the installation of variable message signs (VMS) on the approaches, and the integration with the proposed Carlingford Lough Greenway.

ROD is leading the detailed design and management of the project. We are supported by Hardesty & Hanover on the moveable bridge and by OBFA Architects and JN&G Traynor on the control building. Having previously worked on the scheme between 2008 and 2013, we were delighted with the opportunity to support our client, Louth County Council, and the key project stakeholders reactivating the project to bring it to tender stage. Our previous work included undertaking feasibility studies, preliminary design and aspects of the detailed design, the Environmental Statement/Environmental Impact Statement, Compulsory Purchase Order/Vesting Order and both planning applications in the Republic of Ireland and Northern Ireland.



Whitegates to Athlone Castle Cycle Scheme nears completion

Article Pankaj Kumar Das

Last September, a significant milestone in the EuroVelo Route 2 Dublin to Galway Cycleway project was reached with the lifting into position of new 104m long, pedestrian and cycleway bridge across the River Shannon in Athlone town centre. The bridge is a vital link in Ireland's first ever dedicated inter-city route for cyclists and walkers.

ROD-AECOM, in partnership with sub consultants Sean Harrington Architects, developed the design of the slender, two span, steel girder bridge. In 2017, Westmeath County Council received planning approval for the new bridge crossing. ROD-AECOM Alliance was awarded the contract for the detailed design and construction stages of the project in 2019. Following the award of the main contract for construction to Jons Civil Engineering Limited, work commenced on site in August 2021. The works are expected to be completed by mid-2023.

The constrained nature of the site within Athlone's town centre added a layer of complexity to the project, and careful planning of construction logistics and execution was needed. Substantial landside works were carried out along the narrow riverbanks, including construction of the bridge abutments and the foundations for the ramp structures linking the bridge to the proposed river boardwalks.

Following the initial site clearance, the ground was prepared to receive the foundations, with the structures supported on piles. The contractor proposed the use of minipiles so the piling activity could be progressed outside of the permitted window (based on environmental restrictions) for construction activity in the river.

One of the more novel aspects of the bridge is the way it brings pedestrians and cyclists onto the roof of the Luan Gallery, a landmark structure in Athlone. This feature required an alteration to the gallery

and the location of the bridge's west abutment within a narrow strip fronting the river.

Special measures were taken to protect the existing trees along the western bank of the river while the construction works were advanced. When a portion of the historic river wall was uncovered during the works, the design was modified to incorporate the wall into the scheme.

Constructing a pier in the middle of the river while maintaining navigational access and avoiding any negative impacts on water quality presented a challenge for the project team. The central pier was founded on a combination of steel driven piles and mini pile anchors drilled five metres into rock on the riverbed. The river pier itself is elliptical in profile and extends from below the riverbed to the underside of the bridge deck. Once the pier was finished, the cofferdam was removed, and temporary supports were installed either side of it in readiness for the erection of the bridge deck components.

The structural steel for the bridge was fabricated in Spain by Tecade. The steel was transported to site in 13 separate pieces by sea and road via Dublin Port. The steelwork was assembled on site and transported downstream for installation. Openings were left in the top of the bridge deck to accommodate the final welding activity and to allow concrete to be poured into the bridge deck to stabilise the bridge when pedestrians walk across it.

Transporting the assembled units down river to the bridge location required the specialist expertise of Mammoet and Coastaway. The bridge units weighed more than 150 tonnes each. They were slid onto a barge on skids via a temporary jetty set up at the site compound.

The skids extended out into the river until the water reached a

sufficient depth to allow them to transfer onto special supports positioned on the barge. The supports incorporated jacks that helped raise the bridge deck to its final position. The jacks remained lowered during transfer and travel to ensure stability during their transportation and to facilitate the steelwork passing under the existing railway bridge between the site compound and the destination.

Multiple small motorboats were used to manage the movement of the barges, with the finest of adjustments made to the path and orientation of the assembly, when necessary.

With the first segment of the bridge installed, the riverscape changed dramatically, and crowds began to gather to wish ROD's resident engineering team of John Gregan and Rachel Harney well on the project. Rachel even made the front page of the local newspaper, the Westmeath Independent, as part of its coverage of the project!

The second and third components were installed over a period of a week. After the installation of the main bridge components, the primary connections between the components were made, the infill concrete to the deck was poured, mortar was poured at the bearings, and the temporary supports in the river were removed. The team now moves on to completion of the steelwork on the deck, installation of the approach structures and the critical finishing works.

As we approach the closing stages of the project, we would like to acknowledge the trojan efforts of the contractor's team, particularly Garry Gilsonon, David Lenihan and, indeed, Managing Director John Pentony, who has taken a personal interest in the project. Sean Harrington led the architectural team, whose contribution will become more evident as we approach the final stages of the project. Special thanks are due to our site team, who were ably supported by the technical team in the office, including Matt Ryan, Phil Cooney, Darren Quigley, Luca Giarrusso, Alisa Hayrapetova, Paul Kissane, and Zhenzhen Xu amongst others. And, finally, the dedication of the client team, including Ambrose Clarke, Michael Kelly and Darren Fulham, deserves to be mentioned, as they have been tireless in their pursuit of the best bridge solution for the people of Athlone and Westmeath.



Temporary works at pier.



Alterations to Luan Gallery.



Tree protection works.



Holywell Bridge: masonry arch bridge refurbishment works

Article by Peter Campbell



Underbridge unit in use during inspection of Holywell Bridge, Cumbria.

ROD recently worked with JBA-Bentley in tendering for the design and construction of a proposed concrete saddle over Holywell Bridge, a masonry arch bridge located in Cumbria and built c. 1860. The team was subsequently awarded the contract to restore the bridge to full capacity by Cumbria County Council.

During ROD's initial visual inspection of the bridge, our team was unable to find sufficient evidence of structural distress to merit the installation of a concrete saddle to increase its structural capacity. We scoped intrusive investigations, observed these on site and carried out an assessment for inspection. After coring through the intrados of the arch to confirm the ring thickness, we found reinforced concrete in all three cores, which suggested a concrete saddle had previously been installed. Meanwhile, trial pits progressed on top of the bridge found concrete below the existing surfacing.

While our investigations concluded that no major strengthening works were required, sections of the existing parapet walls had to be rebuilt due to significant bulging, leaning and misalignment. Drawings and specifications for the rebuilding of these sections of parapet walls were therefore produced.

This project demonstrates the value of questioning proposed works and carrying out initial analysis alongside intrusive investigations

before undertaking invasive remedial works which have the potential to damage aging structures. In this instance, the benefits of this approach were two-fold: the client's objectives were met, with reduced works for the contractor and, from a sustainability perspective, the reduced work resulted in less time spent on site, less materials used and less associated carbon.



Photo of a core from intrusive investigations.



Inspection, Assessment and Rehabilitation of Existing Bridges in Great Britain

Article by Peter Campbell



Forge Island Bridge in South Yorkshire.

Since the establishment of our UK office in Leeds, ROD has been involved in the inspection, assessment and rehabilitation of various bridges across Great Britain, including precast concrete bridges, masonry arch bridges and major suspension bridges. Two of these bridges are profiled below:

Forge Island Bridge is an existing concrete beam and slab bridge on the edge of Rotherham in South Yorkshire. It is formed of precast 'M' beams, with insitu slab and horizontal end diaphragms. The bridge provides access to a site originally earmarked for development, but due to the absence of records, the capacity of the bridge and its existing condition were unknown.

As part of our initial analysis of the bridge, our team carried out a desktop study, visual inspection and cover meter survey. This informed the scoping of intrusive investigations, including a 2m long horizontal core to obtain further information about its condition and load bearing capacity, including the existing prestressing arrangement. This practical approach enabled us to gather sufficient evidence to confirm that the capacity of the existing bridge is adequate without the need for costly structural alterations or strengthening. ROD also produced a remedial works specification



Structural works on Humber Bridge.

for the replacement of the bridge deck waterproofing, expansion joints, surfacing, concrete repairs and bearings to provide a 50-year design life.

ROD has undertaken several pieces of work on the 2220m long Humber Bridge, a Grade I listed bridge across the River Humber Estuary. In addition to the Barton Tower side span, A-frame temporary replacement works previously reported upon, our commission was extended to include Hessle Tower side span A-frame temporary replacement works.

ROD also carried out a visual inspection of the bridge, including anchorages, deck box and towers, to identify potential hidden defects. We assessed these hidden areas qualitatively, ranking their potential to contain defects according to the likelihood of their occurrence and their potential consequences. This will enable our client, Humber Bridge Board, to prioritise future inspections of this large structure.

As part of the works, ROD reviewed the archive information of general inspections and principal inspections and advised our client on how future inspections could be planned to maximise their benefit whilst also driving value.



Waterford City North Quays SDZ Infrastructure reaches construction stage

Article by Christian Smith



Photomontage of the River Suir Sustainable Transport Bridge from North Quays.

In November 2022, the Government approved €170m in funding for the Waterford City Public Infrastructure Project. The project will deliver the infrastructure necessary to service the Waterford North Quays Strategic Development Zone (SDZ) and facilitate the expansion of the city to the north side of the River Suir. The decision enabled Waterford City and County Council (WCCC) to proceed on 28th November 2022 with the appointment of BAM Ireland Ltd as the contractor for the main works contract, the most significant works package relating to the scheme to date, including a major new opening bridges across the river. The works will commence on site in Q1 2023, with a 40-month construction period.

The works comprise:

- 1.3km of urban dual carriageway and local road upgrades, including new cycle and pedestrian infrastructure in the Ferrybank area, north of the SDZ site. Significant road junctions and bridges will also be delivered to provide the necessary connections to the SDZ across the Waterford to Rosslare Railway on its northern periphery;
- a major multimodal, sustainable transport interchange hub (including a train station to replace the existing Plunkett station) located directly adjacent and central to the northern edge of the SDZ site;
- a 207m long pedestrian and cycle bridge across the River Suir (Sustainable Transport Bridge), with an opening span to accommodate river traffic. The bridge will provide the vital link between the city centre, SDZ site and transport interchange hub and connect the Waterford and New Ross greenways;
- the creation of a large public plaza on the south side of the river to act as the gateway to the new river bridge and the SDZ beyond from the existing city centre;

- 1km of flood defences along the SDZ northern boundary, which will link in with a further 1.1km of new flood defences west of the SDZ development (subject to an An Bord Pleanála approval) to future-proof both the new and the existing public infrastructure on the north side of Waterford.

The works will dovetail with planned Irish Rail track upgrade works, which will integrate the main works contract infrastructure with the railway network, and eight advanced works contracts progressed by WCCC over the past four years. These enabling works packages were developed to reduce project risk and the level of traffic disruption in the city during these major regenerative infrastructure works.

Two significant advanced works contracts currently being progressed on site consist of:

- Rockface stabilisation works: Stabilisation of 400m of rock cutting along the Waterford to Rosslare Railway adjacent to the existing Plunkett railway station. The works are being undertaken by Cumnor Construction Ltd., and the planned completion date is Q1 2023. This will allow passenger trains to access the new train station planned at the SDZ site; and
- Ferrybank Pumping Station Works: Construction of a new foul and surface water pumping station and connecting drainage network and river outfall. The works are being undertaken by David Walsh Civil Engineering Ltd., and the planned completion date is Q1 2024.

The Government decision to fund the project marked a significant milestone for the project team, who have been working on the planning, design and procurement phases since 2016. Great credit is due to WCCC Chief Executive Michael Walsh and his team for working tirelessly with the National Transport Authority (NTA) and numerous government departments to progress the project to the construction stage.



ROD Sponsors Emerging Professional of the Year Award at CIHT Yorkshire and the Humber Awards

Article by Jim Thorpe

ROD was pleased to sponsor the Emerging Professional of the Year Award at this year's Chartered Institution of Highways & Transportation (CIHT) Yorkshire and the Humber Awards. Known as the 'Blind Jack' award, it commemorates John Metcalfe of Knaresborough in Harrogate, North Yorkshire, who designed and helped build nearly 300km of highways across northern England, despite losing his eyesight at the age of six years old.

The winner of the award was Tom Place, a project manager with National Highways, who created peer groups and lesson sharing seminars for new recruits at National Highways who might otherwise have felt overwhelmed by how much there can be to learn and how many people to get know to when working on projects. These two initiatives proved so successful in supporting knowledge sharing, building team spirit and fostering mutual support that they were rolled out across the organisation's northern teams before being taken up by its southern teams.



Pictured (L-R) : Neil Johnstone, CIHT President; Jim Thorpe, ROD Managing Director; Tom Place, National Highways Emerging Professional of the Year; and Thomas Howard, CIHT Yorkshire and Humber Chairman.

"Looking back on my career, the most successful projects were those where good people worked together in strong and consistent teams and took full ownership of the project. The problem projects that suffered delays and budgetary over-runs were those where too many changes in team membership broke that sense of ownership and pulling together to achieve delivery. It highlights the importance of getting the right people, with the right skills, into strong committed teams; they are the key to project success.

ROD Managing Director Jim Thorpe



ROD supports IABSE British Group event

Article by John Collins

ROD enjoys close ties with the International Association of Bridge and Structural Engineering (IABSE), the scientific/technical association that aims to advance, through the exchange of knowledge, the practice of structural engineering. Our Chief Bridge Engineer Tony Dempsey was elected a fellow of IABSE last year, ROD Consultant Ciarán Hanley is Secretary of its Irish Group while I am a member of the British Group's Executive Committee.

On 1st November 2022, I chaired an IABSE British Group event in Leeds, which was sponsored by ROD. Aimed at early career

professionals, the event, titled 'Journey to Success', showcased the careers of four pre-eminent engineers: a bridge engineer, a building services engineer, a moveable bridge specialist and a rail permanent way engineer. The key message delivered by the speakers was that surrounding yourself with good people and sometimes saying 'yes' where you might otherwise say 'no' are critical to developing a successful career. Our UK team thoroughly enjoyed the networking opportunities the evening provided.



ROD Exhibits at Highways UK 2022

Article by Jonathan Llywelyn-Jones



Pictured (L-R): Jim Thorpe, Richard Spencer, Marc Jones and Michael Chung.

In November 2022, ROD exhibited at Highways UK, a two-day event held at the National Exhibition Centre (NEC) in Birmingham. This annual conference and exhibition has established itself as the sector's must-attend event, bringing together those responsible for planning, developing, managing, maintaining and future-proofing the UK's road network. With over 7,500 attendees, 200 exhibitors and 300 speakers present, it provided a great opportunity for ROD to engage with national and local authorities, contractors, and consultant engineers across Great Britain (GB), including National Highways, Department for Transport (DfT), Graham, Ferrovial, Kier, Sisk, Morgan Sindall, AECOM, Amey and Jacobs.

Our main objectives in exhibiting at the event were to highlight the capabilities of our GB team in Otley and showcase our growing portfolio of relevant projects, including the award-winning Northern Spire Bridge in Sunderland, the A6 Randalstown to Castlesdawson ECI and the A6 Dungiven to Drumahoe dualling scheme in Northern Ireland.

ROD team members who attended the event found several presentations, talks and panel discussions of interest, particularly those exploring multimodal transportation and the challenges in delivering a zero carbon future for the highways sector. National Highways' Chief Executive Nick Harris highlighted the following themes in his keynote speech:

Achieving net zero carbon travel on the strategic road network by 2050

- Building the infrastructure to support the transition from internal combustion powered vehicles to electric vehicles and the innovation required to achieve this
- Evaluation of smart motorway upgrades and public perception of smart motorway safety
- Decreasing the time required for a project to pass through the Development Consent Order (DCO) process

- Designing for the future and reducing the impact on the end user through fewer, less frequent roadworks

A panel discussion, titled 'Holistic network planning for users of the future', explored how net zero carbon could be achieved on the local road network by 2050. National Active Travel Commissioner Chris Boardman, representing Active Travel England, spoke about the need to make both public transport and alternative modes of travel, such as cycling, more user friendly to reduce carbon emissions. There was broad consensus that greater consideration should be given to cycle lanes and how they link into the existing infrastructure, with panellists describing how cycle lanes often switch from being on the left side of the road to the right, requiring cyclists to navigate across several lanes of traffic. It was proposed that stakeholders, including Active Travel England, participate in the early stages of design and that designers give due consideration to how new designs integrate with the existing infrastructure.

A second presentation covered the impact that the UK Government's new Procurement Bill will have on the highways sector. Since leaving the EU, the UK Government has taken the opportunity to replace the existing governance provided by the Public Contracts Regulations 2015 – which implements the 2014 EU Public Sector Procurement Directive – with the Procurement Bill. Laura Wisdom, a Partner of Burges Salmon LLP, wrote part of the new legislation; she advised that the legislation was designed to simplify public procurement and to increase the early engagement of potential providers. The new Bill is currently at Committee stage in the House of Lords and is expected to become an Act of Parliament by Q2 2023, with secondary legislation due by Q4 2023. The Government will provide training to help the industry adjust to the new legislation.

The conference and exhibition was a great success and we look forward to arranging follow-up meetings with those we met to explore opportunities and projects where we can work together in the future.



Marc Jones and Richard Spencer pictured speaking to an attendee at the event.



Athy Distributor Road Progresses

Article by Daire Ó Riagáin



80m long braced steel plates girders.

Works are progressing on the construction of the Athy Distributor Road Project, which will provide a new 3.4km single carriageway distributor road around the southern side of Athy. The route largely follows the line of the disused Athy to Wolfhill Colliery railway line. The project includes 3.4km of shared cycleway/footway, including the refurbishment of the disused railway bridge over the River Barrow, which was built in 1918. The existing railway bridge was the first reinforced concrete railway bridge over a river in Ireland and is a protected structure. There are dedicated cycleway links to the Barrow Way and Athy Train Station, supporting the objectives and actions contained in Smarter Travel.

This image above shows two 80m long braced steel plates girders, constructed of weathering steel, for a new road crossing over the River Barrow and Grand Canal. The River Barrow is designated a

Special Area of Conservation (SAC) and the Grand Canal is designated a proposed Natural Heritage Area (pNHA). The bridge was designed as a single span structure to minimise its impact on the SAC, and weathering steel was selected to mitigate the health and safety risks associated with maintenance regimes on a painted structure. The bridge was manufactured in Co. Laois and transported to site in six sections. During November and December 2022, these sections were welded together ready for transportation and lifting into their final position, 20m downstream of the existing railway bridge.

In addition to acting as the Employer's Representative, ROD-AECOM is also providing a team of Resident Engineers to administer and supervise the contract through the construction and handover stages. Works are being carried out by Bam Civil Ltd., with completion due in 2023.



An Bord Pleanála confirms CPO on Blake's Corner scheme

Article by Deirdre Neff



Blake's Corner CGI.

We are pleased to report that the Compulsory Purchase Order (CPO) for the N67 / N85 Ennistymon Inner Relief Road (Blake's Corner) scheme has been confirmed by An Bord Pleanála. The decision marks an important milestone in the journey towards alleviating longstanding traffic issues within Ennistymon. It follows Clare County Council's approval of the Part VIII planning application for the scheme in April 2018.

CLlr Tony O'Brien, Cathaoirleach of Clare County Council, welcomed the news, saying: "I look forward to [seeing] progress on this important project, which will enhance and open up North Clare to more visitors, and will make the experience of visiting the area more enjoyable."

Traffic congestion at Ennistymon's historical Blake's Corner has been a cause of serious concern for many years. Over 1,100 vehicles an hour traverse the junction during busy periods, and larger vehicles require all other traffic to stop to complete a turning manoeuvre. The junction causes particular difficulty for coaches bringing tourists to one of Ireland's favourite visitor attractions, the Cliffs of Moher, as it is on the principal access route to Lahinch and North and West Clare. Currently, there are no continuous safe pedestrian footpaths provided through the junction and onto the bridge, which itself only has a narrow footpath on one side.

The proposed scheme involves the construction of a new bridge approximately 80m upstream of the existing seven-arch masonry Michael Conway Bridge. This will divert the N67 National Secondary Route away from the bottom of the Main Street, and will facilitate the pedestrianisation of the existing bridge. New plazas will be

created on each side of the existing bridge, extending the town centre across to the west side of the river. The scheme features enhanced crossing arrangements for pedestrians on all approaches, complementary landscaping, lighting and services enhancements and other ancillary elements. As well as benefitting traffic, the works will greatly benefit schoolchildren moving between the residential areas on the east side of the river and the schools on the west side. The children currently have to negotiate their way between stopped or slow vehicles at the junction.



"It's brilliant news to finally have the CPO confirmed, thereby completing the planning phase of the project. An extensive amount of optioneering, modelling, design and assessment was undertaken to get to where we are now, and we look forward to now delivering a safer and more inclusive environment for the people of Ennistymon."

Project Director, Eoin Ó'Catháin



Athlone to Dublin Cycleway nears completion in Leinster

Article by Séamus MacGearailt



The Galway to Dublin Cycleway will herald a new era of long-distance cycle commuting in Ireland.

The completion of the new bridge over the River Shannon in Athlone marks a key milestone for the proposed Galway to Dublin cycleway, which is part of Euro-Velo Route 2.

ROD-AECOM was appointed by Westmeath County Council (for TII, Waterways Ireland and 5 other local authorities) to plan and design the 136km length of route across Leinster now nearing completion. The route extends westwards from Maynooth at the edge of the Dublin metropolitan area, along 91km of the Royal Canal towpath and 45km of The Old Rail Trail on the disused railway line from Mullingar to Athlone. It aims to bring visitors to generate revenue and jobs into economically disadvantaged, rural areas of the country, in much the same way that the very successful Great Western Greenway in Mayo and the Waterford Greenway have done in their regions.

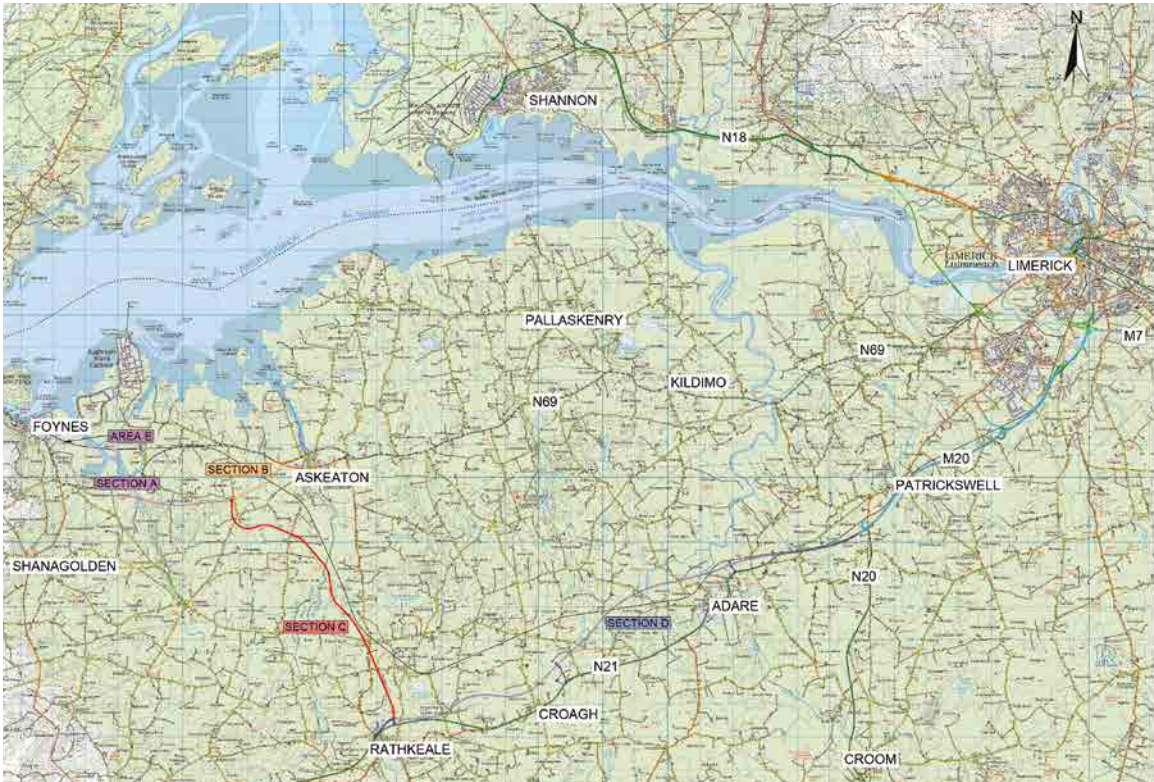
We adopted a holistic approach to the planning of the project, assembling a multidisciplinary design team comprising engineers, architects, ecologists, archaeologists and landscape architects. In delivering the project, the team drew upon international best practice in cycling infrastructure to overturn the conventional wisdom that the 'shortest route is best' and to champion the 'slow and interesting' route instead.

A total of ten agencies came together, under the management and coordination of Transport Infrastructure Ireland (TII), to deliver the project. These included Waterways Ireland, CIE/Iarnród Éireann, Fáilte Ireland and six local authorities, namely, Westmeath, Meath, Kildare, Roscommon, Galway County and Galway City.



Planning approval granted for Foynes to Limerick Road

Article by Gemma Rothwell



Map of proposed development.

Last August, An Bord Pleanála (ABP) granted planning approval for the Foynes to Limerick Road (including Adare Bypass) project. The news was warmly welcomed by the ROD-AECOM project team, as we have been involved in the project since 2014, when we were engaged by Limerick City and County Council to undertake the planning, design and environmental assessment of the proposed development. We are delighted the project has achieved this significant milestone and to see Limerick City and County Council’s vision for greater connectivity within County Limerick and the wider Mid-West Region move a step closer to reality.

The New Road Scheme

The proposed road development will provide a new M21 motorway to replace the single carriageway section of the existing N21 route between Patrickswell and Rathkeale over a length of 17.5 km, including the long-awaited bypass of Adare. This section of the scheme will relieve the long traffic delays through Adare and greatly shorten the journey time to west Limerick and County Kerry.

From Rathkeale the new road will extend in a northwest direction

with 15.6 km of Type 2 dual carriageway to link to the Tier 1 European Port at Foynes, along with a 1.9 km single carriageway connection to Askeaton. It is a key European and National level objective to enable the continued growth and expansion of Foynes Port, which is expected to play a major role in the economic development of the western region, including logistical support for the planned off-shore wind power generation sector.

The combined 35km long road scheme will greatly improve connectivity within the Mid-West Region, boosting competitiveness for inward investment and supporting the ongoing development of the tourism sector in the area.

Junctions will be provided at Foynes, Ballyclogh (for Askeaton), Rathkeale, Croagh and Adare. A Heavy Goods Vehicle Service Area will also be provided at the Foynes terminus.

Major Bridges

The proposed road includes five large river bridges, including a bridge in excess of 200m long over the River Maigue, which is designated as part of the Lower River Shannon Special Area of Conservation (SAC).



Bridge Crossing over the River Maigue.

There will also be 3 bridges over the disused Limerick to Foynes railway line, for which there is a separate EU objective to reinstate a freight railway link to Foynes Port, which is to be progressed in the coming years.

Environmental Challenges

West Limerick has an unusually high density of protected ecological sites, including Special Areas of Conservation, Special Protection Areas and Natural Heritage Areas. The proposed road is routed around these sites and a proposed bridge will clear-span over the River Maigue SAC. Associated environmental sensitivities included flight-paths for bats, including the Lesser Horseshoe Bat, as well as Barn Owls for which the scheme will implement the latest protective mitigation measures.

Other environmental constraints included numerous cultural heritage sites such as ring-forts, cashels, and demesne landscapes, as well as intensive dairy and equine farming on high-quality agricultural lands.

The terrain is generally very flat, with high-groundwater and complex hydrogeological conditions. This posed a particular challenge for

the earthworks balance along the route with few opportunities for cuttings to win materials for embankment construction across the flat and low-lying floodplains of the Rivers Maigue and Deel.

Climate Impact

The Direction from An Bord Pleanála to approve the proposed road development included specific consideration of the potential for climate impact as follows:

“approval for the proposed development would be consistent with national climate ambitions and with the relevant provisions of the Climate Action Plan 2021 and, noting in particular Chapter 15 which states that the Climate Action Plan for transport will support and build from several key national policy plans that are driving the necessary changes, including inter-alia Project Ireland 2040 and the National Planning Framework.”

This aspect of the planning approval is of broad relevance to the future development of national road improvement schemes, and it demonstrates how new and improved roads can play their part in the sustainable development of Ireland.

“I greatly welcome the successful outcome of the application for approval of the proposed Foynes to Limerick Road scheme. It is of particular personal relevance to my family because, with our roots in Kerry, we have shared the hard road across County Limerick for too many years. I would like to congratulate our project team who worked hard over an eight-year period to achieve this success. There are too many to mention them all, but I would particularly like to highlight the major contribution of our Project Manager Michael Conroy (a proud Limerick man), our Land Liaison Officer John Murphy and our Environmental Coordinator Gemma Rothwell. Our work was greatly assisted by an expert group of environmental specialists, many of whom have been partners for us on numerous other projects. Great credit is due to our client team in the Limerick National Roads Design Office, especially Tim Fitzgerald and David Leahy. We look forward to the day when the new road is completed.”

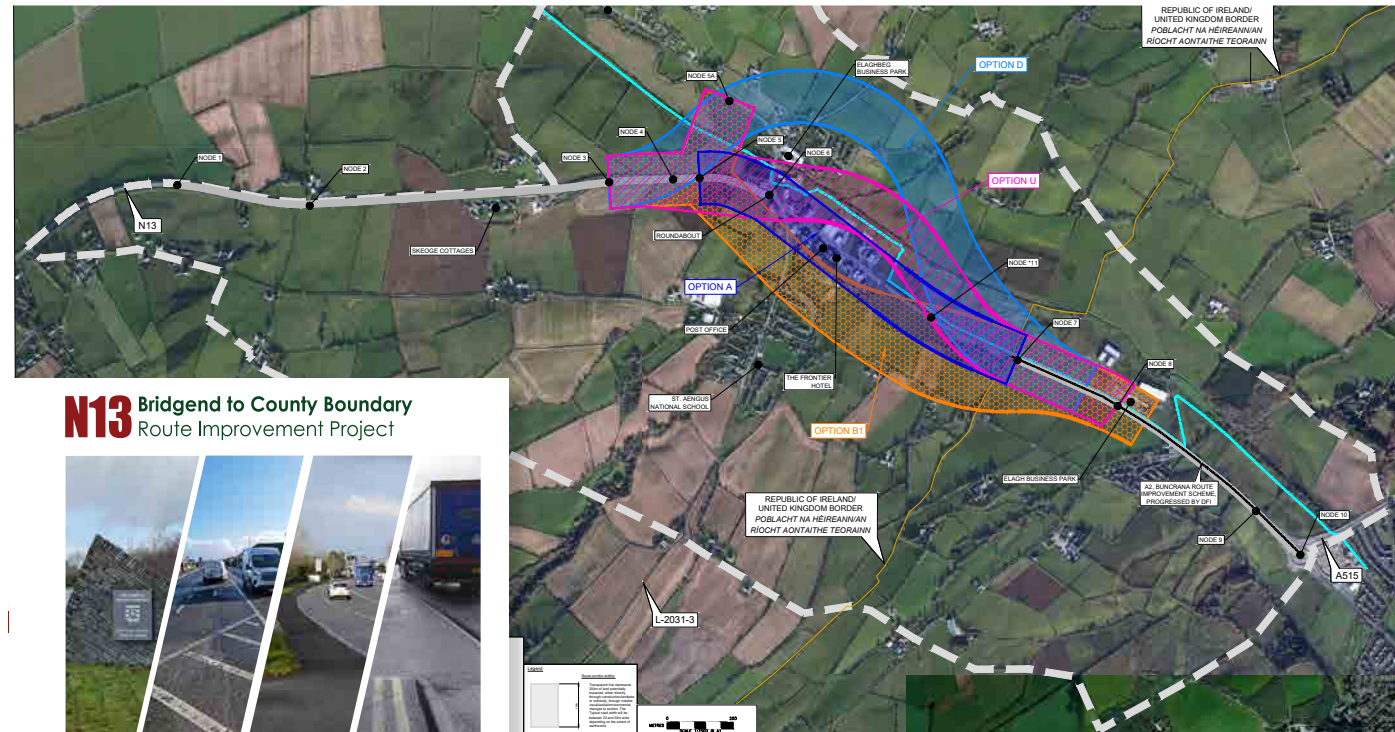
Reaction to the ABP decision

Project Director Séamus MacGearailt (for ROD-AECOM)



N13 Bridgend to County Boundary Route Improvement Project, Donegal

Article by Claire Cable



N13 Bridgend to County Boundary Route Improvement Project



PUBLIC CONSULTATION 2 OPTION IDENTIFICATION



N13 Bridgend to County Boundary Route Improvement Project, which comprises a 1.2km length of the TEN-T Comprehensive Road Network in County Donegal. The project aims to safeguard the operational effectiveness of the strategically important border crossing between Donegal and Derry, which provides vital access to employment, education, retail, commercial and health services and international markets via ports and airports. It also aims to improve the quality of life of people living in Bridgend village, which sits on the border crossing and is bisected by the N13/A2 transboundary route, by removing congestion, improving air quality and reducing noise. The improvements will tie into the A2 Buncrana Road project currently being developed by the Department for Infrastructure (DfI)

in Northern Ireland. ROD Design Engineer Ernest Etim described cross-border coordination with DfI as “critical to ensuring the N13 Bridgend scheme and the A2 Buncrana Road project marry together at the right time.”

The project is currently in Phase 2 Project Management Guidelines (PMGs), with assessments being carried out on several improvement options prior to the selection of an Emerging Preferred Option in early 2023. A public consultation on the route corridor options was recently held at An Grianán Hotel, Burt, close to Bridgend.

The project is one of several road schemes in Donegal for which ROD-AECOM is delivering engineering services. We will soon commence work on the Letterkenny Southern Network Improvements project, Barnsmore Gap Greenway, Burtoncourt to Letterkenny Greenway, and the N15 Corcam Bends Improvement Project. These contracts provide a welcome opportunity for ROD / ROD-AECOM to continue our association with the project team in Donegal NRDO, following our success in bringing the following roads projects to completion: the N56 Letterilly to Kilraine project; N56 Drumbeigh to Inver project; N56 Mountcharles to Drumbeigh Improvement project; N15 Blackburn Bridge Phase 1; N14-N15-A5 Link Study; and the N56 Cloghbolie to Boyoughter Improvements.



N26 at Cloongullane Bridge Project in Mayo is officially opened

Article by Conor Lehane



An aerial view of the newly installed bridge in Cloongullane. Image courtesy of Mayo County Council.

The Realignment of the N26 at Cloongullane Bridge Project was officially opened by Minister of State at the Department of Transport, Hildegard Naughton, on Thursday, 13 October 2022. The €16m infrastructure project will provide significant long-term safety benefits for all road users. The scheme includes 1.8km of Type 2 single carriageway road, an 83-metre, clear span, steel composite bridge over the River Moy, two new culverts over tributaries of the river, local road realignments and facilities for pedestrians and cyclists along sections of the pre-existing road and the realigned N26 road. The new infrastructure will improve safety, reduce journey times, improve journey time reliability and connectivity and promote sustainable industrial, economic and tourism development in the region.

Speaking at the opening, Minister Naughton, expressed her pleasure in seeing the completion of the long-awaited scheme, saying: “I congratulate everyone involved in bringing this critical project from concept to delivery. Getting the scheme through the various stages from design to planning, construction and completion took a lot of work, and it is very positive to see the project come to fruition”. Councillor Seamus Weir, Cathaoirleach of Mayo County Council, echoed her sentiments, saying: “The bridge is a magnificent feat of engineering. This project will make a significant difference to the wider community and all road users of the N26, which services a wide catchment area”.

ROD-AECOM was engaged by Mayo County Council to provide

engineering and environmental services for the project in 2015. Developing a bridge solution that minimised impacts on the sensitive River Moy SAC presented a significant challenge for the project team, led by ROD Managing Director, Jim Thorpe. Early engagement with the National Parks & Wildlife Service and Inland Fisheries Ireland helped identify the best solutions for the watercourse crossings. Extensive ecological and environmental surveys were also undertaken to inform the environmental assessment.

In November 2016, a planning application, Natura Impact Statement (NIS) and Compulsory Purchase Order (CPO) were submitted to An Bord Pleanála (ABP). An Oral Hearing was held in March 2017 and, following the submission of further information, the scheme was approved in December 2018. Advanced works, including tree felling, fencing, archaeological excavations and testing and services diversions, got underway in 2019. ROD provided ecological monitoring and support services for these activities.

The main construction contract was awarded to BAM Civil Ltd. in October 2020. Contract administration services were provided by ROD Technical Director, Patrick Grennan, as Employer’s Representative. ROD Technical Director, Ed Warren, expressed his thanks to the project team in the Mayo County Council’s National Roads Office for their support, saying: “The commitment and collaborative approach demonstrated by Senior Engineer, Paul Hyland, Senior Executive Engineer, Pat Staunton, and their colleagues in the NRO proved critical to the project’s successful delivery.”



Making tracks on the West Clare Railway Greenway

Article by Brian Feighan



The Greenway will enhance Clare's tourism offering while providing a new recreational facility for people living in the county.

Work is progressing on the West Clare Railway Greenway project to develop an attractive cycling and walking facility for tourists and locals along the route of the old West Clare Railway. The 85km greenway will be delivered in four sections: Kilrush to Kilkee, Ennis to Ennistymon, Ennistymon to Miltown Malbay and Miltown Malbay to Moyasta.

ROD is progressing the option selection, design and assessment phases of the first and second sections between Kilrush and Kilkee and Ennis and Ennistymon respectively. As part of the design and planning process, our transportation and environmental teams have been working closely with Clare County Council and specialist subconsultants to identify and assess the constraints along both sections of the greenway, with a view to minimising, where possible, the impacts of the project on the surrounding environment and communities. Extensive winter surveys are being carried out as part of this process. The projects are being progressed in line with the Code of Best Practice for National and Regional Greenways and Transport Infrastructure Ireland's (TII) new Active Travel Guidelines.

Section One: Kilrush and Kilkee

A second round of public consultation took place in September 2022, with ROD and Clare County Council presenting route options for the greenway to the public. There was very constructive landowner engagement throughout, with both the positives and negatives of the scheme as viewed by the affected landowners being aired. This is invaluable feedback to the design team in seeking to optimise the routing and layout of the scheme. This, together with more detailed topographical and environmental surveys, is informing the development of the emerging preferred route corridor. A third public consultation, at which this emerging preferred route corridor will be displayed, will take place in early 2023.

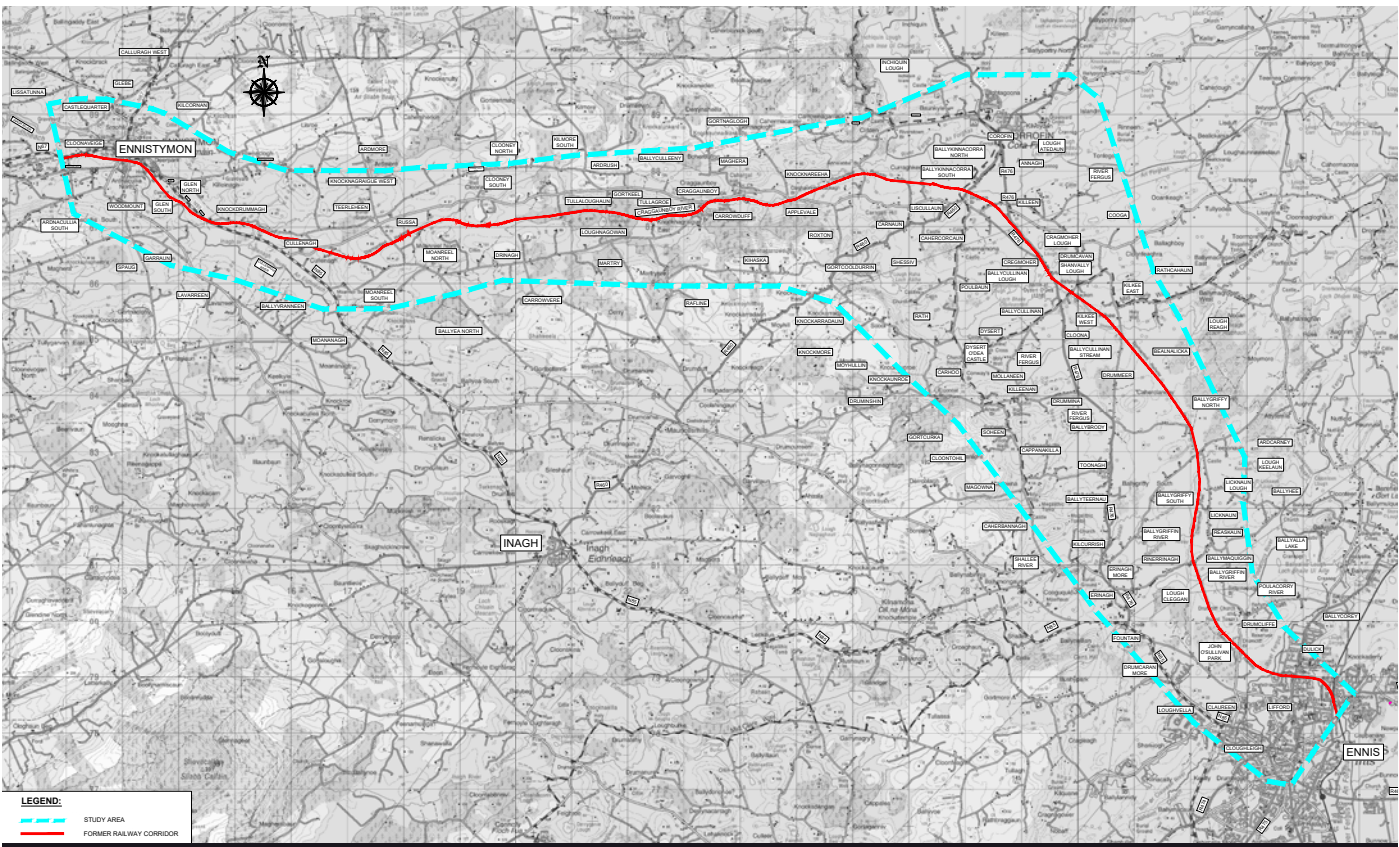
Section two: Ennis to Ennistymon

The second section of the route consists of approximately 25km of greenway. The scheme study area was displayed at a public consultation in October 2022. The design team is now assimilating the project constraints as defined by our team of environmental specialists, and this will be used to develop feasible route corridor options. A second public consultation on these potential route corridor options will take place in the first half of 2023.

It is hoped that planning applications for both schemes can be made to An Bord Pleanála in the next 12-18 months.



Section One: Kilrush and Kilkee.

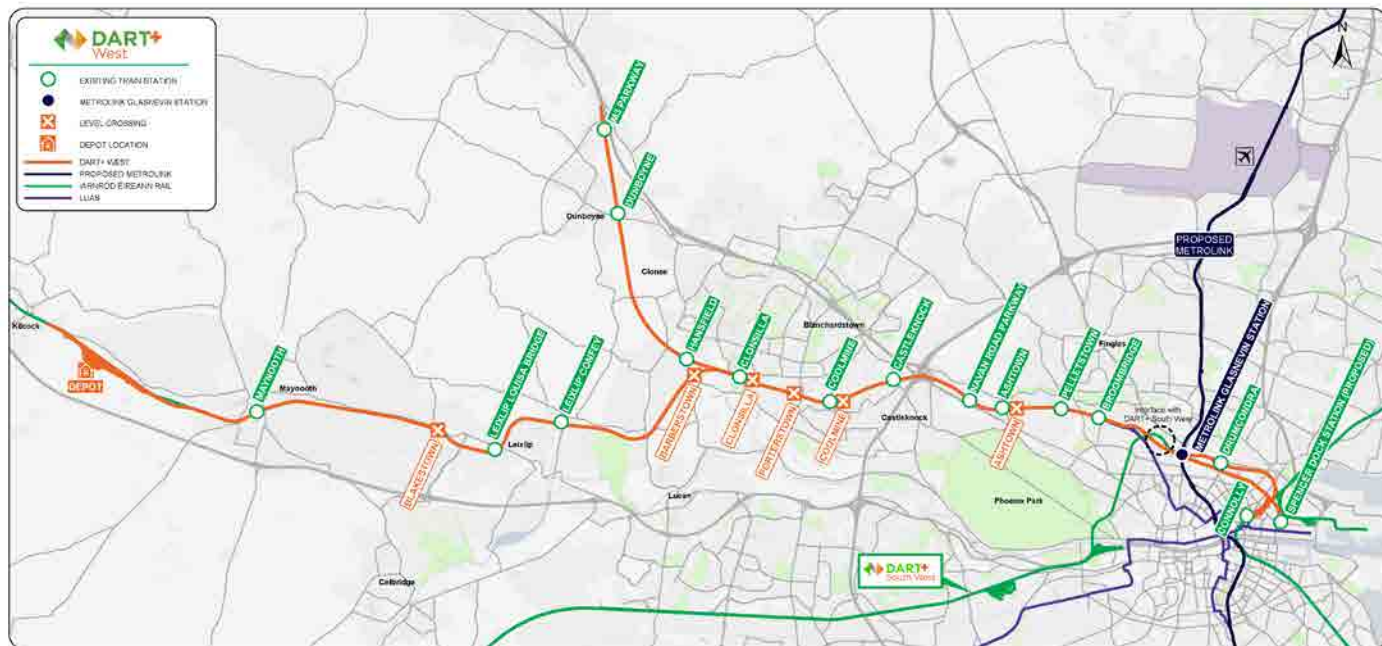


Section two: Ennis to Ennistymon.



Railway Order application for DART+ West submitted

Article by Victoria da Silva Pereira



In July 2022, a Railway Order application to develop the €1 billion DART+ West project was submitted to An Bord Pleanála (ABP). The application seeks permission to extend the electrified DART network from Connolly/Spencer Dock area to west of Maynooth, Co Kildare and to M3 Parkway, Co Meath. It is the first of the DART+ Programme applications to be submitted for planning. The DART+ Southwest application is expected to be submitted in early 2023, with DART+ Coastal to follow.

Funded by the National Transport Authority (NTA), the DART+ West project will provide a sustainable, electrified, reliable and more frequent rail service to Irish Rail customers and improve capacity on the Maynooth and M3 Parkway to city centre rail corridors. The project passes within the functional areas of Dublin City Council, Fingal County Council, Meath County Council and Kildare County Council.

Planned infrastructure improvements include:

- Approximately 40km of electrification and re-signalling of the Maynooth and M3 Parkway lines to the city centre;
- Capacity enhancements at Connolly Station, including modifications to junctions, to facilitate increased train and passenger numbers;
- Provision of a new station at Spencer Dock to better serve the north Docklands area and improve the interchange with the Luas;

- Closure of level crossings and provision of replacement bridges, where required;
- Construction of a new DART depot facility west of Maynooth for the maintenance and parking of trains;
- Interventions at existing bridges over the rail line where insufficient clearances for overhead electrification equipment exist; and
- Substations, electrical buildings and all other civil and ancillary works necessary to accommodate the project.

As Railway Order lead on the project, ROD worked closely with IDOM and Iarnród Éireann's delivery team to deliver the Environmental Impact Assessment Report (EIAR), Appropriate Assessment (AA) and draft Railway Order. Prior to the submission of the Railway Order application, two non-statutory virtual public consultations and one in-person consultation were held. The virtual consultations took place in 2020 while COVID-19 restrictions were in place, and the physical consultation event took place in Ashtown in 2022. The statutory consultation period (i.e., the formal consultation as part of the ABP process) closed in October 2022, and the project team is now awaiting receipt of submissions from ABP.

Construction is expected to begin on the project in 2024 subject to receipt of the necessary planning and funding approvals.



Environmental Assessments of the draft National Roads 2040 Strategy

Article by Frances O'Kelly

National Roads 2040 (NR2040) is Transport Infrastructure Ireland (TII) long term strategy for planning, operating, and maintaining the National Roads network. The strategy aims to enable the delivery of 'Project Ireland 2040', National Planning Framework. It aligns and supports the Department of Transport's National Investment Framework for Transport in Ireland (NIFTI) and other government policy, including the Climate Action Plan 2021 (CAP). The CAP is required to be reviewed and updated annually and is currently being updated to ensure alignment with the State's legally binding economy-wide carbon budgets and sectoral ceilings.

ROD's environmental team informed the development of the draft Strategy, working closely with TII and AECOM (the strategy development team), on the various iterations of the strategy, identifying potential environmental issues. The draft strategy was published for public consultation from August to October of this year, for a period of 10 weeks. The environmental assessments with the strategy and include: -

- Strategic Environmental Assessment (SEA) Environmental Report (ER)
- Draft Natura Impact Statement (NIS)
- Strategic Flood Risk Assessment (SFRA)

TII's vision is for the National Roads network to be an evolving sustainable transport system focused on safety, innovation, accessibility and mobility of people, goods, and services. The strategy will be delivered by TII in collaboration with other government agencies and transport stakeholders and will provide a consistent approach to achieve this vision.

NR2040 aims to enable the delivery of national policy, plans and targets including supporting the decarbonisation of the transport sector (51% target reduction by 2030). It defines TII investment portfolios for coming years and provides guidance to Sponsoring Agencies and Local Authorities.

Ireland's transport system is heavily dependent on road transport. The national road network facilitates approximately 3.5 million private vehicle trips and 82,000 heavy goods vehicle trips daily. It supports the movement of people and goods for a range of purposes, including providing access to health, education, employment and tourism services by car, public transport and active travel.

The SEA process is recognised as a central legislative framework for environmental assessment of plans and embeds sustainability into the policy making process. SEA integrates with the AA and

SFRA processes and collectively helps raise awareness of significant environmental issues.. The environmental assessments undertaken by ROD's environmental team collectively identified potential significant environmental impacts resulting from NR2040. The teams suggested changes to the strategy text or mitigation measures to be applied as part of the implementation of the strategy. The Public consultation feedback on the draft strategy and environmental reports is currently being analysed and any changes to the strategy will be screened for environmental impacts. The final strategy is due to be completed in early 2023 and will be supported by the appropriate environmental assessments.





Sustainability Month at ROD

Article by Claire Cable and Frances O'Kelly



The month of October marked our annual celebration of all things sustainable. Our environmental team took the lead, delivering an engaging, informative programme of activities with sustainability as the core component. The programme included a series of lunchtime presentations on topics including climate change, emissions reductions that can be achieved through the design process, the circular economy, and sustainable concrete.

The lunchtime presentations comprised:

- Engineering a Reduced Carbon World presented by John Collins; Michael Chung; and Rebekkah Kaligorsky of ROD.
- Circular Economy in Engineering Practice: Balancing short and long-term gains by Assistant Professor in Environmental Systems Modelling at the Department of Civil, Structural and Environmental Engineering, Trinity College Dublin, Dr. John Gallagher.
- Sustainable Concrete Facing Brick presented by Specifications Consultant at Acheson & Glover, Gareth McBrearty

The team also arranged weekly quizzes to test our knowledge of global to local sustainability issues which centred around the United Nations (UN) Sustainable Development Goals (SDGs). Information was shared summarising progress that Ireland and the UK have made towards achieving the seventeen SDGs. It also provided suggestions on how individual actions and links to organisations working in the area can help deliver the SDGs and affect change on the ground.

Through ROD's staff participation in the quizzes, we helped raise money supporting the work of several organisations including: the World Food Programme; UNICEF; Engineers Without Borders; and Choose Love.

A presentation was also given by Managing Director Jim Thorpe and Sustainability Manager Frances O'Kelly to consult with staff on our draft Sustainability Plan. The Plan is our long-term roadmap that will help shape the company's activities and support our commitment to achieving net zero emissions and becoming a climate-neutral company by 2050. It will help us maintain our focus on the high impact actions critical to meeting the relevant SDGs and current intergovernmental targets, while still being flexible enough to enable us to respond to changing environmental and climate commitments. It provides for a coordinated response across our buildings, bridges, transportation, environmental, water and research teams, thereby ensuring high levels of employee engagement in actions aimed at delivering a more sustainable, safer, healthier, and climate resilient society and environment.

Director and Environmental Manager Joe Kelly also presented an update on the changes to our Environmental Management System (EMS), which is currently being integrated into an Integrated Management System (IMS) This includes both Environmental Management and Quality Procedures, which will be rolled out in the coming year.



Sustainability Quiz



1. The World Bank's international threshold for extreme poverty is:

- a) 1.25 dollars
- b) 1.90 dollars
- c) 5 dollars



2. Food production will need to increase by what percentage to feed the world in 2050?

- a) 20%
- b) 40%
- c) 60%



3. What is the average life expectancy in the world in 2022?

- a) 51 years
- b) 61 years
- c) 71 years



4. How many adults around the world are unable to read and write?

- a) 2 in 10
- b) 3 in 10
- c) 4 in 10



5. Worldwide, how many young women were married in childhood in 2021?

- a) 1 in 10
- b) 1 in 5
- c) 1 in 8



6. How many people in the world do not have access to basic drinking water?

- a) 785 million
- b) 1.3 billion
- c) 2.1 billion



7. How many people in the world did not have access to electricity in 2020?

- a) 733 million
- b) 1.3 billion
- c) 3 billion



8. What percentage of the world's population works in the informal economy?

- a) 41%
- b) 51%
- c) 61%



9. What percentage of the population of the world's least developed countries have access to the internet?

- a) 19%
- b) 26%
- c) 34%



10. How many people have experienced discrimination on at least one of the grounds prohibited under international human rights law?

- a) 1 in 4
- b) 1 in 5
- c) 1 in 6



11. How many people are projected to live in cities in 2030?

- a) 4.2 billion
- b) 5 billion
- c) 5.5 billion



12. How much food is wasted worldwide each year?

- a) 1.2 billion tonnes
- b) 1.3 billion tonnes
- c) 1.4 billion tonnes



13. How many people worldwide will be displaced by drought by 2030?

- a) 700 million
- b) 800 million
- c) 850 million



14. What fraction of global annual CO2 emissions is absorbed by oceans?

- a) 1/3
- b) 1/4
- c) 1/6



15. How many hectares of forest are destroyed around the world each year?

- a) 8 million
- b) 9 million
- c) 10 million



16. What percentage of the global population lives in conflict-affected countries?

- a) 25%
- b) 33%
- c) 42%



17. How much foreign direct investment was provided to support sustainable development in 2021?

- a) 1.28 trillion
- b) 1.38 trillion
- c) 1.58 trillion



European Maritime Hydrogen and Marine Energy Conference

Article by Rebekkah Kaligorsky



Fjord Base, Florø, Norway.

Hydrogen and ammonia are gaining increasing international focus as a means of storing and distributing surplus energy from major wind and solar generation facilities. In September 2022, Eoin Ó Catháin and Rebekkah Kaligorsky attended the International Conference on Maritime Hydrogen and Marine Energy in Florø, Norway. The conference focused on current and emerging technologies for the production, storage and transport of hydrogen and ammonia, as well as discussing the latest developments in terms of delivery and servicing of offshore wind energy facilities. The conference brought together Scandinavian expertise and world-leading players in the fields of maritime technology and renewable energy to discuss the challenges harnessing offshore wind power will present over the coming decade. The conference was a great opportunity to see and participate in sharing knowledge about the contribution we can make to solving the technological challenges of our era to deliver sustainable and clean energy supply to regions around the world.

The first day primarily focused on storage, transportation and bunkering (i.e. ship fuelling) and panel discussions on the current hydrogen production technologies and the direction we should be taking as we develop these technologies. There is still considerable debate regarding which form is most financially efficient for distribution and storage - Liquid Organic Hydrogen Carrier (LOHC); liquid hydrogen; compressed hydrogen; or conversion to ammonia. The various pros and cons of each was discussed, along with updates on results of various ongoing trials.

The second day of the conference focused on offshore wind, with presentations on future technologies and concepts for the offshore renewables industry. The current target in Norway for 2040 is for 30GW, but this is likely to be further increased. The wind availability on the coast of Norway is abundant, and opportunities and plans for

offshore wind energy production are progressively escalating. This is highly relevant to Ireland and the UK, which along with Norway, enjoy the most favourable offshore conditions for energy generation.

A particular highlight of the conference was a trip to the Fjord Base – Norway's largest supply base for the offshore energy industry. This facility has been built over the past 6 years, availing of the favourable topography and bathymetry provided by the natural fjord, and incorporating deep berths and quays designed specifically for the needs of the offshore energy sector. During the trip, we were guided around the areas designated for future activities in hydrogen production, ammonia production, reuse and recycling, fishing industry, and support to oil, gas and offshore wind energy facilities.

Norway is seeking to establish itself as a leader in emission-free solutions and renewable energy across its economy, including green hydrogen production. The UK has already made great strides in terms of offshore wind energy, and is similarly focussed on exploiting hydrogen and ammonia to harness surplus energy. The area is gaining increasing attention and momentum in Ireland, and one will see significant investment in the coming years.



Sheskin Windfarm Receives Planning Consent for Grid Connection Works

Article by John Ahern



Sheskin Windfarm.

Last September, An Bord Pleanála granted planning permission for grid connection works at the proposed Sheskin Windfarm, located at Sheskin forest in Co. Mayo. The works involve connecting the eight-turbine windfarm to the nearby Bellacorick substation via 10km of 38kV cables.

ABO Wind Ltd. was originally granted planning permission for eight wind turbines up to 150m in height and associated infrastructure at Sheskin forest in December 2016. Mayo County Council subsequently granted the company permission to increase the tip heights of their eight wind turbines from 150m to 176m (turbines 1-3) and from 150m to 165m (turbines 4-8).

ROD's involvement in the successful planning application was

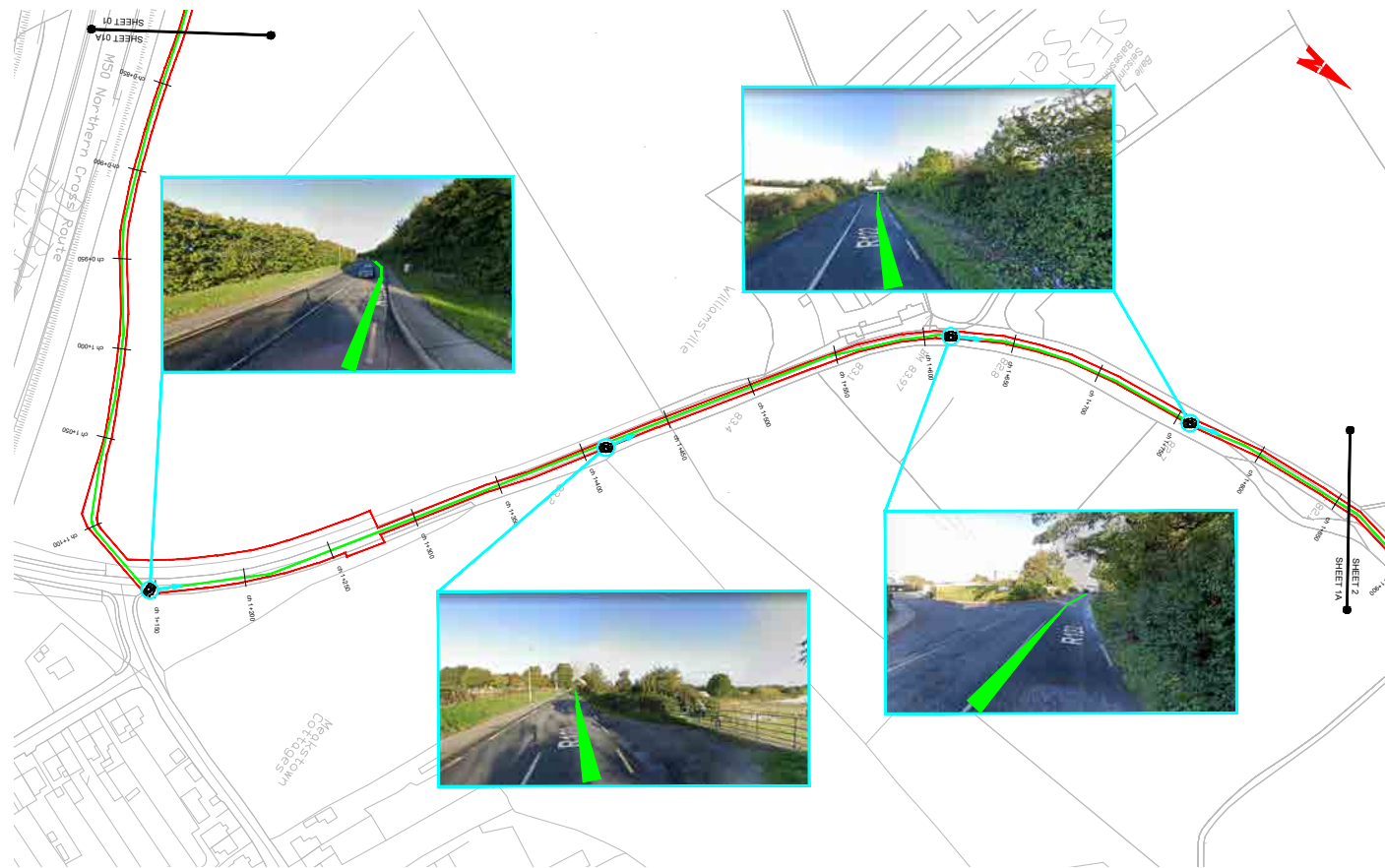
instrumental in ABO Wind Ltd.'s subsequent decision to engage us for the proposed grid connection works. The trench reinstatement works for cabling and the works stage traffic management along 3km of the N15 national road were of particular concern for the planning authority. These concerns were fully addressed in our design solution.

Working with ABO Wind Ltd. provides a welcome opportunity for ROD to build on our growing portfolio within the energy sector. Previous projects in the sector include Knockroe Windfarm in Co. Tipperary, Ballymanus Windfarm in Co. Wicklow, and the Flagford battery storage facilities in Co. Roscommon, as well as various grid connection projects for Energia Renewables and high voltage cable design works for the ESB and others.



Grid Connection Works for Energia Renewables

Article by Ernest Etim



Our work for Energia Renewables to provide 110kV connections to two proposed solar farms in north Co. Dublin (Fingal) and Co. Meath from existing ESB 220kV substations at Huntstown and Ballycoolin respectively is ongoing. The work is being undertaken by Energia Renewables on behalf of the ESB and Eirgrid, who will energise the connection and own the infrastructure when it is complete. The connections will also benefit the wider national interest by extending the electricity transmission grid to the new substations required at the proposed solar farms. Increasing renewable power supply to the national grid cannot be achieved without grid connections such as these.

The 110kV connections will require the construction of a bank of five ducts (three power with two communications above) approximately 1.0 m wide x 1.2m deep, with a continuous 4m wide right of way along its entire route. In addition to the trench itself, major joint bays

are required every 650m approx. The nature of this construction is destructive to existing roadways, and full lane resurfacing is standard along any such in-road installation. Therefore, construction stage traffic management is a significant consideration. Furthermore, crossing of obstacles such as bridges, culverts, and major motorways require careful consideration.

With a ground investigation (GI) contract awarded to IGSL Ltd, onsite works, including intrusive and non-intrusive surveys, have begun. This includes the implementation of ground penetration radar (GPR) surveys, investigation through slit trench and borehole surveys and relevant testing. The results of the investigation will confirm the route of the proposed connection, whilst also providing greater certainty in relation to crossing obstacles, including by directional drilling. All of this will generate confidence in the deliverability of the preferred route, giving certainty to the Client, funders and Local Authorities.



Stream Enhancements at Munreery Culvert

Article by Warren Vokes



Munreery culvert.

As part of our commission on the A6 Dungiven to Drumahoe dualling scheme in Northern Ireland, ROD, in conjunction with Paul Johnston & Associates fisheries consultants, was engaged to upgrade Munreery culvert – a large box culvert with a flat concrete bottom.

Munreery culvert is a good example of common hydromorphological pressures negatively affecting watercourses. In low flow conditions, the depth of flow in the culvert was so low (<4cm) that it prevented the migration of fish, including salmon and trout. Conversely, in high flow conditions, the high velocities at the outlet resulted in erosion of the downstream channel.

ROD undertook a hydraulic assessment of the culvert and was successful in obtaining Schedule 6 approval for a series of baffles to allow the migration of sensitive fish species without adversely increasing flood risk.

Channel morphology and habitat restoration

As our understanding of hydrological and hydraulic processes developed over the 20th century, sizing proposed river crossings to enable them to convey extreme flows became commonplace. While this focus on conveyance was done with the best of intentions, it led to degradation of the channel morphology, which negatively impacted biodiversity.

Key ecosystem services and habitat types cannot return to the urban catchments without river restoration measures being undertaken within the main river channel. Typical measures include:

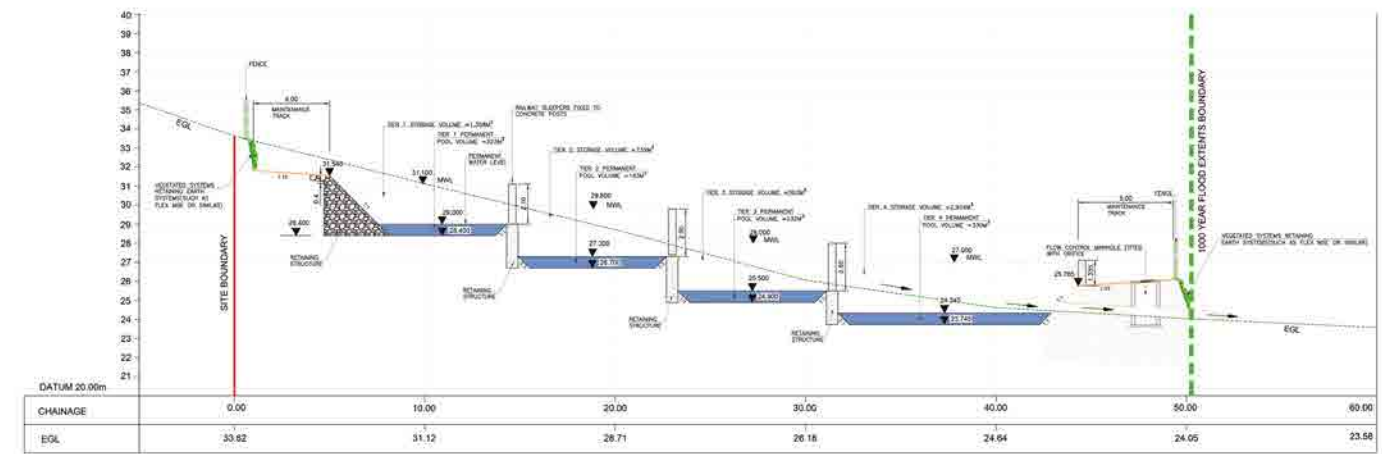
- De-culverting of watercourses;
- Introduction of large woody debris;
- Establishment of in-stream vegetation;
- Creating new meanders in impounded river channels;
- Reconnecting remnant meanders;
- Current deflectors;
- Narrowing channel with aquatic ledges;
- Creating a sinuous low-flow channel in an over-widened channel;
- Creation of on-line bays;
- Fixing whole trees into the riverbank for flow diversity;
- Gravel reworking to restore a low-flow channel;
- Weir removal; and
- Review of/reduction in maintenance.

While these measures may have varying impact on current channel morphology and maintenance practices, they will all assist us in meeting our obligations under the EU Water Framework Directive.



Cherrywood Regional Attenuation Pond

Article by Ciaran McGee



Cherrywood Regional Attenuation Pond.

Acting as consultant engineer to Dun Laoghaire Rathdown County Council (DLRCC), ROD undertook the preliminary design, Part VIII planning and detailed design stages of the Cherrywood Regional Attenuation Pond 2A, a critical piece of surface water infrastructure to facilitate the development of the Cherrywood Strategic Development Zone (SDZ) in south County Dublin. In addition to the regional attenuation pond, the project included associated inlet / outlet surface water infrastructure, access tracks and approximately 370km of greenway (preliminary design only). ROD provided engineering and environmental services on the scheme, supported by specialist archaeological, arboricultural and landscape specialists.

Following our appointment, we undertook a rigorous review of feasibility studies previously undertaken by the council to explore the design options for the proposed regional attenuation pond. These included several configurations of ponds in combination with underground attenuation tanks. Given the steep, difficult topography of the site, a tiered cascading pond, with inlet and outlet vegetated swales, was determined by our design team to be the most appropriate solution. This ensured that excavation would be kept to a minimum, reducing the impact on the existing landscape and ecology, and negating the need for underground attenuation tanks.

The regional attenuation pond and associated inlet / outlet

surface water infrastructure was designed to convey, attenuate and treat surface water run-off from the public roads in the upstream catchment. The pond was designed to attenuate to 1l/sec/ha in accordance with the Cherrywood SDZ planning scheme. The infrastructure will convey attenuated flows from the upstream private development plots within the catchment to the Cabinteely River and will enhance biodiversity in the Cherrywood area. Allowance for climate change was made in accordance with the Greater Dublin Strategic Drainage Strategy.

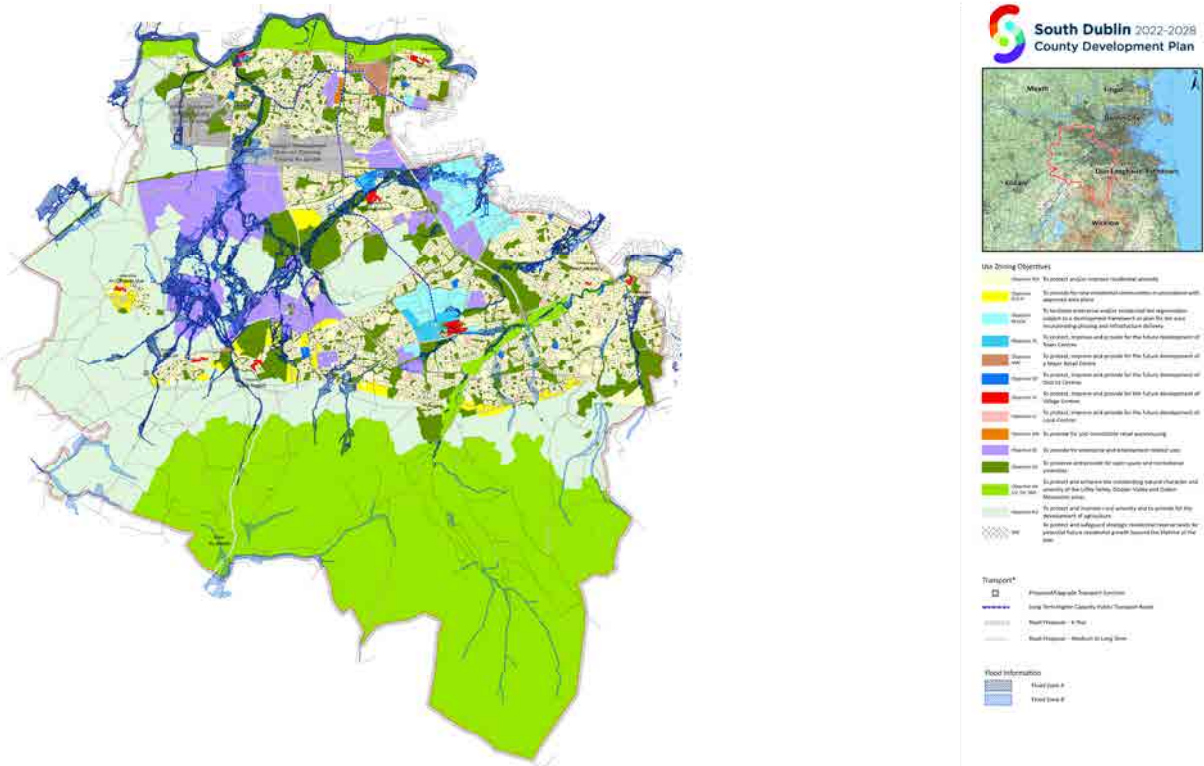
Planning permission was granted in 2021, and the scheme is currently at detailed design stage. It is being funded by the Urban Regeneration & Development Fund (URDF), established by the Department of Heritage, Local Government and Housing to support more compact and sustainable development through the regeneration and rejuvenation of Ireland's five cities and other large towns, in line with the objectives of the National Planning Framework and National Development Plan.

The project is being developed as part of the Cherrywood Parks, Greenways and Attenuation Project, the total cost of which is estimated at €17.8M. This will see the development of four distinct sub-projects, including surface water attenuation pond 2A. DHLGH formally approved 75% URDF funding for the project in June 2020, with the remaining 25% to be financed by DLRCC through other revenue streams.



South Dublin County Development Plan Strategic Flood Risk Assessment

Article by Warren Vokes



South Dublin County Development Plan Map.

The Water Framework Directive (WFD) identifies hydromorphological integrity as one of three key criteria for determining waterbody status (the other two being ecology and chemical). High status hydromorphology is an indicator of overall high-good waterbody status and resilience within the catchment.

Recent decades have seen an increased awareness of the role riparian zones play in controlling hydromorphological processes. A key driver in this has been a deeper interest in the interactions along aquatic-terrestrial fringes, initially in relation to fisheries and, more recently, in relation to the effects of ecosystem diversity and resilience on climate change. The relationship between riparian corridors and nutrient processing is also more widely understood, i.e., riparian corridors help treat pollutants by acting as buffers between upland areas and open water.

As part of the South Dublin Strategic Flood Risk Assessment (SFRA), ROD completed a strategic hydromorphological assessment of major rivers within South Dublin County. Our assessment has aided

the delineation of floodplain boundaries by using morphological features to identify functional riparian zones. It has also provided the basis for sustainable zoning policies that provide ‘room for the river’ and, over time, allow river systems to return to a state of equilibrium, with rich biodiversity, developed ecosystem service provision and resilience to future shocks such as climate change. Adopting this approach has assisted us in meeting our objectives under the Water Framework and Floods Directives.

The key finding of the strategic assessment was the delineation of riparian corridors along the major rivers within the county. Development level hydromorphological assessments are to be undertaken where lands are partially or wholly within the riparian corridors identified as part of the development plan. The development hydromorphological assessment will include an assessment of the existing river reach, identify existing hydromorphological pressures, determine deviation from a “natural” form and propose restorative measures to improve hydromorphological integrity and resilience throughout the river reach.



Surface Water Management in Fingal and South Dublin

Article by Ciaran McGee



Typical urban swale detail.

Fingal County Council

Acting as consultant engineers to Fingal County Council, ROD prepared surface water management plans to supplement the local area plans, land management plans and masterplans of the following locations across north County Dublin:

- Kinsaley Village;
- Barrysparks, Swords;
- Crowscastle, Swords;
- Estuary West, Swords;
- Fosterstown, Swords;
- Churchfields, Mulhuddart;
- Powerstown, Mulhuddart;
- Coolquay Village; and
- Rowlestown Village.

The aim of the commission was to prepare sustainable drainage strategies and undertake Stage I, II and III Flood Risk Assessments (FRAs) to inform local land use and planning policy at each location. Each sustainable drainage strategy examined the existing drainage regime and outlined site-specific measures that could protect and enhance the quantity, quality and ecological/biodiversity value of downstream water bodies. This in turn will help Ireland to achieve its obligations under the EU Water Framework Directive (WFD).

The site-specific drainage measures were tailored to suit the anticipated development at each specific area, whether residential, industrial, warehousing, commercial, retail, recreational, enterprise, healthcare, educational or community facilities. Opportunities for

Sustainable Drainage Systems (SuDS) retrofit were also identified and assessed. WFD catchment pressure studies were undertaken for Kinsaley, Rowlestown and Coolquay.

The FRAs examined the sources of flooding relevant to each location, and flood maps were produced for several pluvial (i.e. rainfall) and fluvial (i.e. river flooding) scenarios. The maps will inform future planning in the areas, such as the siting of development and the promotion of riparian corridors to protect and enhance watercourses and their natural ecological, biogeochemical and hydromorphological regimes.

The measures and strategies outlined within the Surface Water Management Plans are currently being implemented as part of the development of these areas.

South Dublin County Council

Separately, South Dublin County Council has recently commissioned ROD to prepare a surface water drainage study to assess the impact of increased surface water run-off from areas zoned for development in the Local Area Plan (LAP) within the towns of Newcastle, Rathcoole and Saggart. The study will include an assessment of the existing public surface water networks serving the aforementioned towns to determine the capacity uplift requirements necessary to facilitate the development areas zoned in the County Development Plan and LAPs. A detailed investigative review will examine existing public surface water sewers and channels to identify future remediation works to allow for the additional areas zoned for development. The review will, where possible, take account of climate change and the introduction of sustainable drainage systems (SuDS).



First Phase of O'Devaney Gardens Regeneration complete

Article by Andrew Thomson



O'Devaney Gardens was one of Dublin City Council's oldest social housing complexes in the inner city.

ROD is pleased to report that the first phase of the O'Devaney Gardens Regeneration Project, a 278-unit social housing development in inner city Dublin, reached completion in December 2022. The regeneration of the site forms part of Dublin City Council's (DCC) plans to develop vibrant 'urban quarters' in the inner city by rebuilding and renovating its oldest social housing complexes. Dolphin House and St Teresa's Gardens, both of which were constructed by the council in the 1950s, were redeveloped in 2018 and 2021 respectively.

O'Devaney Gardens is located approximately 1km west of Dublin city centre, off the North Circular Road. It was constructed by Dublin City Council in 1954. The original complex consisted of 13 five-storey residential blocks, providing a mix of social and private housing.

With a construction value of approximately €20m, the first phase of the regeneration project comprises 56 housing units in a mix of energy-efficient terraced housing and apartments above basements. Designed by DCC's Architecture Department, the buildings are punctuated externally by an attractive mix of brick and brick

expression facades which, together with the detailing of the private balconies, enhances the overall attractiveness of the development.

As Employer's Representative on the scheme, ROD led the administration of the public works contract on the council's behalf and acted as the primary point of contact for the main contractor, P.J. Carey (Contractors) Ltd. Our responsibilities included ensuring the project was fully compliant with the requirements of the public works contracts and delivering a high-quality solution for our client, with clear cost control.

The Covid-19 pandemic, coupled with fluctuating construction costs over the past 12 months, provided numerous challenges on the project which, in turn, resulted in some unexpected delays. These issues were addressed by ROD in our role as contract administrators.

With residents expected to begin moving into their new homes shortly, we would like to wish them every happiness in the years ahead.



Letterkenny CNU goes to Tender

Article by Ben Gallery



Letterkenny CNU CGI. Image courtesy of MCA Architects.

In September 2022, the HSE issued tenders for a new 110-bed community nursing unit (CNU) in Letterkenny, Co. Donegal. Planning permission for the proposed development was granted in November 2020. The CNU is part of an overall programme for the development of healthcare infrastructure in Donegal. It will provide a mix of long and short-stay, rehabilitation and dementia care, with associated on-site facilities, including dining rooms, kitchenettes, family overnight rooms etc. It will also include a purpose-built rehabilitation centre, providing physiotherapy, occupational therapy and allied health professional space.

ROD has brought the scheme through detailed design, with the support of our design partners, MCA Architects, Semple & McKillop Ltd. (M&E), FCC Fire Cert Ltd, ORS (PSDP) and AECOM (QS). The project is expected to move to the construction stage in early 2023.

The scheme design reflects our aim of delivering a modern and efficient healthcare facility that addresses the need for patient privacy and dignity while providing a safe and secure environment for healthcare professionals to undertake their duties. The building comprises a part three-storey, part two-storey building, with a gross floor area of 9400sqm. Its features include:

- an internal courtyard and terrace spaces;
- associated back of house areas, including laundry rooms, staff accommodation and ancillary offices;
- associated site development works, including landscaping and an ESB sub-station;

- associated internal and external road layouts to address the difficult ground conditions and topography on site.

The structural solution adopted reflects the complexity of the site constraints, architectural layout and architectural features. As the lower ground floor level is a partial basement, reinforced concrete retaining walls were used. Where walls align from ground floor to roof, precast slabs bear on blockwork walls. As the layout of the lower ground floor does not align with the floors above, reinforced concrete transfer beams have been designed to transfer loads down to foundations. To cater for several stepped elevations, reinforced concrete beams and slabs cantilever beyond the floor below to support the external walls of the floors above.

The existing ground level varies approximately 12m from north to south, which presented challenges in terms of access gradients for vehicles, pedestrian access and orientating the building to maximise available space on site. In consideration of the varying rock levels and inconsistency of soil strata evident from the ground investigation, strip and pad foundations will be brought down to rock level with mass concrete. The lower ground floor slab is designed as a suspended slab, spanning between strip and pad foundations.

As the area surrounding the proposed development has experienced historic flood events, sustainable urban drainage systems (SuDS) measures on site have been designed to cater for a one in 1,000-year storm event. These measures will reduce the flow from the site to greenfield runoff rates, avoiding any impacts on the surface water network further downstream.



Extending our Portfolio of School Projects in Ireland

Article by Andrew Thomson



St. Benedict's National School, Ongar, Dublin 15.

ROD recently added another three schools to our growing list of educational projects in Ireland: St. Kevin's National School, Sallynoggin, Co. Dublin; Borris Vocational School, Co. Carlow; and Scoil Mhuire National School, Allenwood, Co. Kildare. Previously completed projects include Wesley College Dublin campus upgrade, which included the refurbishment of its sports hall and gymnasium; St. Benedict's National School, which included the provision of shared community facilities; and Inchicore National School, which won an RIAI award in 2016.

The St. Kevin's National School project consists of a one and two-storey extension to the existing school, with provision for nine additional classrooms, support teaching spaces, special education needs rooms, play areas and a sensory garden. The extension will connect to the main school building through covered walkways. Improvements to car parking, set down, and pedestrian and cycling facilities are also included.

Borris Vocational School has plans for a more ambitious expansion, with additional classrooms, a specialist graphics room, science laboratories, a home economics room, dining facilities, special needs facilities and a central activities space. External works

include a sensory garden for students with special needs, playing zones, and traffic management measures. Additional temporary accommodation is being provided to service the school's short-term needs while the design and construction of the extension is underway.

The Scoil Mhuire National School project involves the provision of additional classrooms and special needs units, as well as refurbishment works to existing facilities. To make the best use of the available space, the Board of Management is reviewing existing play zones and other external facilities to determine the final scope of the refurbishment works.

ROD is delighted to be involved in the provision of new and improved facilities for primary and secondary school students across Ireland. With our strong focus on delivering sustainable designs that promote student health and wellbeing, we hope to inspire the next generation of engineers. We look forward to bringing our educational project experience to other projects in the years to come through our inclusion on all the Department of Education's Frameworks for Civil and Structural Engineering services.



N56 Letterilly to Kilraine – Earthworks and Monitoring

Article by Paul Kissane



Pictured (L-R): Dr. Bryan McCabe, Farimah Masrour Gattahi and Fintan Buggy.

In 2020, Donegal County Council engaged ROD to provide civil engineering design and contract administration services on the N56 Letterilly to Kilraine project in Co. Donegal. The scheme involves the upgrade of approximately 4.1km of the N56 to Type 3 single carriageway, pavement overlay of approximately 0.6km of the N56 and the construction of a 2.5m wide cycle track adjacent to the existing road. Over the past 12 months, our contract administration and geotechnical teams have met several significant project milestones, including finishing the multistage construction of embankments over extremely low strength peat soils, the removal of surcharge materials and the completion of pavements.

As geotechnically novel projects such as this provide a wealth of opportunity for pilot studies, trials and research, we were delighted that a group of industry partners, including TII, several consultancies and the scheme contractors, Wills Bros Ltd., came together to propose a study comparing the performance of the surcharge embankment with a controlled reference test. The study is being undertaken by NUI Galway PhD student, Farimah Masrour Fattahi, and funded by Science Foundation Ireland (SFI) to analyse the performance of the surcharged peat in terms of long-term settlements.

ROD supported the study by sharing project information and data obtained during construction stage investigations, laboratory testing and monitoring. We also arranged for the installation of a mini embankment, on the natural peat soils adjacent to the

site, to provide a long-term control reference for the comparison of movements in unimproved peat soils nearby. Senior Resident Engineer Gerard Ward supervised on-site, with additional support from our retired Technical Director, Fintan Buggy.

Instruments have been installed and filling up to 1.5m height is underway, utilising basal geosynthetic reinforcements as included in the main works. This height is deemed adequate to exceed preconsolidation pressures so that creep settlements within the peat will be initiated.

Probing at the control site revealed a much deeper profile, hiding peat of up to 8m thickness, whereas the main works, located only a short distance away, typically encountered peat between 3m and 4m thick. This shows some of the risks inherent in construction through such soft ground and the variability in natural deposits.

ROD understands the technical complexity of building on such low strength organic deposits and the steps required to enable construction and meet the objectives of surcharging peat soils to reduce long-term creep settlements. We hope to undertake our own study of the stability of these embankments during construction, the amount of fill lost to settlements and how this compares in terms of environmental impacts due to geotechnical treatments.

We are excited by the prospect of engaging with colleagues and clients on this in the future. We wish Farimah and her supervisor, Dr. Bryan McCabe, all the best as they continue their long-term monitoring and studies.



ROD-AECOM Awarded N61 Tulsk to Gortnacrannagh Road Project

Article by Anthea Gombart



Site photo showing telegraph poles leaning due to poor ground conditions.

ROD-AECOM has been awarded the N61 Tulsk to Gortnacrannagh Road project in Co. Roscommon. The scheme is approximately 5km in length and links the N61 Tulsk to Clashaganny Road project in the south to the N5 Ballagherreen to Scramoge Road project to the north. The proposed development will improve the road carriageway, improving traffic safety, reducing accidents, and improving accessibility.

ROD-AECOM's commission is to provide technical consultancy services for Phases 1 to 4 of the TII Project Management Guidelines (i.e. up to planning). Phase 1 was completed last August, and we are currently in the process of mapping constraints and developing options as part of the option selection studies.

While the existing N61 alignment is relatively straight horizontally, it has two substandard curves to the north and is visibly substandard in terms of vertical alignment and cross-section. The substandard vertical alignment is due to poor underlying ground conditions in the vicinity, resulting in differential settlement of the carriageway. This makes travelling the route uncomfortable and potentially dangerous

for unsuspecting road users travelling close to the speed limit. The poor ground conditions also impact the effectiveness of the safety barrier and the foundations of telegraph poles, signs, and other street furniture.

To maintain the existing road pavement in a satisfactory condition, significant periodic structural repairs have been necessary, a solution that is not sustainable in the long-term. The issues can only be addressed by appropriate intervention in the form of a newly constructed carriageway over its length.

The underlying ground conditions comprise cut-over peat, marl, alluvium associated with watercourses, interspersed with sections of till derived from limestone. A ground investigation (GI) is ongoing to determine the depth and extent of the soft ground, which will inform the option selection process and buildability assessment. The GI logs have highlighted peat and marl deposits of up to 18.6m immediately adjacent to the existing route. Our geotechnical department will therefore play a crucial role in identifying the preferred option and developing the scheme design for planning.



TII Research Project – Peatlands Rehabilitation

Article by Paul Kissane



Photo Credit: Patrick Crushell, Wetlands Survey Ireland.

I have recently been appointed as project lead on an exciting peatland rehabilitation research project being undertaken on behalf of TII. The objective of the project is to provide a new technical guidance document for assessing - from the perspective of a wetland's long-term carbon sequestration capabilities - future interactions between national roads, greenways, motorway service areas and the landscapes adjacent to them. In my role as project lead, I am being supported by a team of specialists drawn from ROD's geotechnical, water and environmental teams, Arup, Wetlands Survey Ireland and lecturers/academic researchers from Atlantic Technological University (ATU), University College Dublin (UCD) and Trinity College Dublin (TCD).

The project will examine what can be done with surplus excavated peat arising out of current and future TII projects and the impacts earthworks and drainage infrastructure have on greenhouse gas emissions. Key areas to be explored by the project team include how peatlands can be adequately characterised at a sufficiently early stage in a project to identify project risks and opportunities; and where innovations, such as borrow pit locations and peat storage areas, can bring major benefits into future works plans. For example, elevated peat storage areas are likely to dry out where long-term groundwater levels are lower. This would cause the release of considerable volumes of greenhouse gases, remove carbon sinks and, in some cases, result in the decay of organic materials emitting further methane.

The fact that particular species are primarily responsible for the healthy functioning of peatlands has already been proven, so the project may determine that improvements in the design of deposition areas or rewetting could potentially result in more positive impacts in ecological and biodiversity assessments. It could also determine that degraded peatlands can potentially be improved by TII projects and, hopefully, begin to sequester carbon again. Wetland habitats and species may have more significant roles to play in managing carbon budgets and enabling scheme designs demonstrating net zero aspirations. Hydrology and hydrogeology disciplines will support the potential drainage and groundwater interactions also considering the likely impacts of climate change and constraints for landscape designs. Survey and assessment methodologies will be developed and presented, with inputs from the technical steering committee and stakeholder consultees.

Years ago, I was oblivious to the true carbon cost of excavating peat. I enjoyed trips to the bog during my youth, helping my cousins 'save turf'. I appreciated its peaty smell, even more so on cold winter nights. Now the time has come for engineers to step forward to help save the bogs and tip the scales in favour of leveraging them to combat climate change. With a fantastic team in place and detailed literature to peruse, I am looking forward to seeing what we can present to organisations in charge of the stewardship of peatlands and to taking their ideas onboard.



ROD-IS News Update

Article by Mark Tucker



ROD-IS team members (L-R): Mark Tucker, Marko Duranovic, Ilaria Bernardini.

INFRALINC

As part of the INFRALINC project, ROD-IS recently held two Stakeholder workshops to gather information to develop a design for a full-scale study to assess the risk posed to Critical Infrastructure (CI) in Ireland due to climate change. The workshops were attended by representatives from Local Authorities, Infrastructure owners and managers, Met Eireann the Department of Defence. This work is being funded through Ireland's Environmental Protection Agency (EPA) Research Programme 2021-2030. An overview of the project was presented at the 2022 TII winter maintenance conference in November.

The first workshop focused on identifying potential Extreme Weather Events in Ireland and related hazards, as well as the Infrastructure that would be affected by these events. The workshop also discussed the current processes and procedures utilised by the attendees in undertaking a risk assessment of their assets. The second Workshop focused on the identification of the data used to perform the risk assessments, data availability, gaps in the available data, and limitations on the use of the data. Our primary focus was to gain a fuller appreciation of the data used to evaluate the hazards in order to allow us to better assess infrastructure vulnerability.

ROD-IS presented the findings of the "Bridges and Tunnels Strikes by Oversize Vehicles" project at the Civil Engineering Research Association of Ireland (CERAi) 2022 conference in Dublin in August. Funded by PIARC, the project study identified successful technologies, approaches, and mitigation strategies to address

bridge and tunnel strikes. The presentation focused on the Cost-Benefit Analysis methodology developed in the project which can be used to assist road administrators to establish the best mitigation practices for a given strike scenario in both high and low Income Countries in both the short term and long term.

In September, ROD-IS presented our work on a friction model we developed to assist in the management of pavements, at the 9th Symposium on Pavement Surface Characteristics 2022 Conference (SURF conference) in Milan, Italy. Our work was undertaken for Transport Infrastructure Ireland. The methodology developed utilises a combination of site testing and a friction demand modelling to assess the risk of a vehicle sliding on asphalt pavements. The methodology allows sites on bends to be individually characterised by estimating friction supply and demand on a site-specific basis (the sites themselves having been identified by other asset management procedures).

The modelling was used to understand the relationship between operational speed and estimated friction supply and demand at individual road bends. The methodology will be of assistance to asset managers, allowing them to manage skid resistance more effectively, and investigating locations that are not performing as expected. The modelling process can also allow more focussed investment, thereby mitigating against the unnecessary use of scarce construction materials. This in turn will allow the life of existing assets to be maximised in keeping with the principles of the circular economy and ROD's sustainability focus.



Engineers Ireland extends ROD’s CPD Accreditation for maximum three-year period

Article by Roberta Keaney



Pictured at a parchment presentation in our head office were (L-R): CPD Manager, Daniel Coleman; HR Generalist, Gillian Bailey; Engineers Ireland CPD Associate Director, Aidan O’Flaherty; CPD Director, Edward Warren; HR Director, Marc Jones; and CPD Administrator, Jennifer Morris.

ROD is delighted to announce that Engineers Ireland has once again extended our Continuing Professional Development (CPD) Accredited Employer status for the maximum three-year period. The accreditation underscores our commitment to the professional development of our team and our dedication to setting high standards in support of lifelong learning. Speaking at a parchment presentation in our head office in Sandyford in October, ROD Director, Marc Jones, underlined the importance of training and development to ROD’s business strategy, saying: “We recognise that for our business to grow and become

more efficient, we need our employees to grow with us, learning new skills, refining the way they work and use new tools.” ROD CPD Director, Edward Warren, pointed to the company’s enthusiasm for using the latest technology to hone skills and deliver smarter, more targeted staff training, commenting: “During the COVID-19 pandemic, our people embraced the e-learning opportunities we provided, confirming for us that cloud-based e-learning systems and tailored training techniques will play a significant role in staff training and development going forward.”

“ROD continues to demonstrate an unwavering commitment to the continuing professional development of its people, be they graduate engineers or senior leaders. The company clearly recognises the strategic importance of CPD to attracting, growing and retaining the best talent, which, in turn, contributes to the delivery of its strategic objectives. Congratulations to the CPD committee and all the employees at ROD.”

Engineers Ireland CPD Associate Director, Aidan O’Flaherty

New Recruits



Christopher McGuill

Christopher joined our graduate programme last September and is currently working with our buildings team. Prior to joining ROD, he worked on Warsaw Spire, a 50-storey commercial office building in Warsaw’s business district, helping to design aspects of the reinforced concrete superstructure during its construction stage. Christopher is a graduate of UCD, where he earned a Master’s in Structural Engineering with Architecture. His main interests outside of work include history, running and reading.



Conor Reilly

Conor joined ROD as a Graduate Graphic Designer last November. He studied at Dublin Design Institute, where he earned a Level 7 degree in Graphic Design. Conor’s previous training as a Sound Engineer helped him to discover his interest in the arts, and he quickly graduated from producing poster designs for local music events to developing brand identity designs for independent businesses. In his spare time, Conor enjoys music programming, DJing and racing model racing cars.



Niamh Moore

Niamh joined our graduate programme last September and is currently working with our environmental team. She recently graduated with a ME in Structural Engineering with Architecture from UCD, having completed a BSc in Structural Engineering with Architecture at UCD in 2020. In her spare time, Niamh enjoys running, movies and pub quizzes.



Emma Lillingston

Emma joined our UK team as an Office Administrator last June. Since then, she has been busy supporting both our administrative and bid teams. Emma is a graduate of the University of the Arts London, where she undertook a Bachelor of Arts in Sculpture. In her spare time, she enjoys walking her dog, baking and undertaking creative projects.



Sharath Jayaramu

Sharath joined our UK team as a Highway Design Engineer last October. He has over five years’ experience in highways and transportation. Prior to joining ROD, Sharath was employed by two global consultants and contractors in India. During this time, he worked on multidisciplinary projects in the UK, gaining experience in highway geometric design, road restraints risk assessment process, asset tagging, road markings and traffic signs. Sharath enjoys cooking, travelling, reading and watching/playing sports, particularly football and cricket.



Rajashekar Vemula

Rajashekar joined our transportation team as a Highway Design Engineer last August. He has over nine years’ experience working on international highway design and traffic engineering projects. Rajashekar’s main area of expertise is the geometric design of urban and rural highways, junctions and roundabouts. He holds a BE in Civil Engineering from Osmania University, Hyderabad in India and an MTech in Transportation Engineering from Indian Institute of Technology Madras, Chennai in India. Rajashekar enjoys travel, cricket and spending time with friends and family.

New Recruits



Omar Mohammed

Omar joined our bridges team as a Senior Engineer last July. Since then, he has been working on a variety of projects performing design checks, preparing design documents, and modelling bridge elements using MIDAS Civil. A Chartered Civil Engineer, Omar has more than eight years’ industry experience. He graduated with a PhD in Vehicle-Bridge Interaction and Structural Health Monitoring from University College Dublin (UCD) in 2016, having previously studied in Malaysia and Iraq, where he earned an MSc and a BSc in Structural/Civil engineering in 2016 and 2010 respectively. Omar has published four journal papers and two conference papers in the field of structural health monitoring and vehicle bridge interaction. In his spare time, he enjoys walking and watching Wales play soccer.



Yuwen Li

Yuwen joined our graduate programme last October. She is working with our highways team in the UK at present. Yuwen graduated from University of Leeds with a Master’s in Transport Planning and Engineering. In her spare time, she enjoys movies, cooking and travelling.



Síofra Sealy

Síofra joined our environmental team as an Ecologist last August. She spent her early career with Jacobs, working as an ornithological specialist in Ireland and the UK. Síofra is a keen botanist, and her hobbies include rock climbing, surfing, running and almost any outdoor activity!



Harry Jones

Harry joined ROD as a Senior Environmental Consultant last November. A Chartered Member of CIWEM (The Chartered Institution of Water and Environmental Management), Harry has six years’ experience in Environmental Impact Assessment (EIA) coordination and ecology. He graduated with a Master’s degree in Civil, Structural, and Environmental Engineering from Trinity College Dublin (TCD) in 2017 and subsequently undertook a postgraduate certificate in Ecological Survey Techniques with Oxford University. In his spare time, Harry plays dodgeball for Dublin and enjoys hiking, surfing and travelling in his campervan.



Elaine Cogley

Elaine joined our graduate programme last September and is currently working with our water team. She is graduate of UCD, where she studied Civil, Structural and Environmental Engineering. Elaine wrote her thesis on ‘Assessing Wave Overtopping of Coastal Flood Defences using a Machine Learning Approach’. In her spare time, she enjoys badminton, reading, sewing, and spending her weekends with friends and family in Tullamore.



Cristina Tanasie

Cristina joined ROD’s HR team last November and is based in our head office in Sandyford. Prior to joining ROD, she worked with EirGrid, Deciphex, Irish Distillers and Microsoft. In her spare time, Cristina enjoys dabbling in watercolour, embroidery, gardening and going to music concerts.



Making a splash: ROD’s Dublin team learns to kayak

Article by Debbie Chiu



ROD’s Dublin team pictured kayaking on the River Liffey.

As the newest member of ROD’s Social Committee, I was delighted to be entrusted with the task of organising an evening of kayaking on the River Liffey last September. The promise of a fun, outdoor challenge - completely different to anything we had done before, and yet neither extreme nor ridiculous – was just what we needed after two years of lockdowns and Covid-19 restrictions.

When I arrived at Dublin City Kayaking’s launching base beside the Jeanie Johnston Tall Ship on 2 September, I was met by a large group of equally excited colleagues. For some, the prospect of spotting some riverbank wildlife was the main draw. For others, it was the opportunity to paddle towards the heart of the city while building a little upper body strength. Me? I was looking forward to our guided tour of the city’s architectural gems – the bridges of Dublin!

Once our instructor had completed an introductory training session, we took to our kayaks, pacifically paddling under the Samuel Beckett, Sean O’Casey, Rosie Hackett, O’Connell and Ha’penny bridges. An experienced tour guide discussed the history behind each bridge with us and, from our unique vantage point on the water, we discovered a new appreciation for the magnificent feats of engineering required to bring them to life.

While the two-hour tour was over in what seemed like a heartbeat, the experience was, for a bridge engineer like me, special. The late burst of summer sunshine, the breathtaking views of the city, the closeness to nature, followed by drinks and nibbles at sunset with a great group of colleagues, all combined to make it an evening to remember!



Debbie Chiu.



Five minutes with Ernest Etim

Where are you from?

I'm from Ikot Ekpene in Akwa-Ibom, Nigeria.

Describe yourself in three words

Easy-going, punctilious and ambitious.

Why did you choose a career in engineering?

My father sowed the seeds for my career in engineering when, after I expressed an early interest in becoming a pilot, he suggested that instead of learning how to fly a plane I should consider learning how to build a plane. It made me realise that piloting was just something I wanted to do, but to leave a mark and have an impact on people's lives, engineering was a better choice for me.

Where did you study?

As an undergraduate, I studied at University of Nottingham, earning a BEng (Hons) in Civil Engineering. I subsequently completed an MSc in Structural Engineering with Management at Nottingham Trent University and a P.Grad. Dip. in Sustainable Energy at Trinity College Dublin.

What attracted you to ROD?

I first heard of ROD when one of my professors at Trinity College Dublin recommended the company to me, and I was drawn in by the variety of projects it was engaged in.

When did you start at ROD?

I joined ROD's graduate programme in September 2016.

What is your role in the company?

I am a design engineer in the transportation team. I also assist on projects outside transportation when the opportunity presents itself.

If you could work in any country, where would you like to settle?

For now, I'm quite happy in Dublin, but Donegal is fast becoming my second home. In the future, I would be very interested in developing projects similar to those I have gained experience in at ROD across various parts of the African continent. I would love to live in at least two countries on every continent (to get a chance to do some travelling), but I see myself returning to Ireland and settling here. I still have a lot of my roots to discover here!

What do you do to unwind? Do you have a hobby?

I've been playing a lot of different sports recently, including soccer and boxing, which may be the reason I get injured so often. I'm thinking of taking up golf next!

I've also picked up the habit of watching obscure B-movies thanks to a few of my colleagues (they know who they are), but I tend to spend most of my time reading philosophy books (more so just to argue).

Which three people would you most like to invite to dinner?

Sam Harris (a philosopher), Barbara Williams (an astronomer) and Russell Brand (a comedian). It might be a fun/chaotic conversation, no?

What type of work environment do you prefer?

I enjoy a quiet working environment with a little background noise or music. I can still focus when things are busy, but I've come to appreciate the benefits of having quiet time to think.

If you were to switch careers tomorrow, what would you do?

Something in aerospace. I have always been interested in the cosmos. If I had to leave engineering altogether, I would probably go into psychology or philosophy.

What is working in the Northwood office like?

Entertaining, convenient, supportive...I can go on and on. I enjoy having a small working group to bounce ideas off and ask annoying/silly/challenging questions. Fortunately, I get all that in Northwood office!



ROD wins gold at the 2022 Spirit Sandyford 5K Race

Article by Roberta Keaney



Pictured (L-R): Robert Corbally, Juliana Vasconcelos, Geethu Bennyson, Sriji Unni, Charlie Johnston, Paul Kissane

On 29 September, the Sandyford Business District 'Spirit Sandyford 5k' race, organised by Dundrum South Dublin Athletic Club, returned as a physical event for the first time in three years. Over 300 runners participated in the race, which was run in partnership with The Down Syndrome Centre, a charity providing clinical services and support to children with Down syndrome from three months to 18 years.

With ROD having finished in the top three companies in the race almost every year since it began, the twelve members of the Dublin team who toed the starting line could have been forgiven for choking

under the pressure to perform. Happily, that did not happen, and Daniel Coleman, Charlie Johnston, Paul Kissane and Robert Corbally emerged as comprehensive winners of the team prize while our eight remaining runners returned excellent finish times.

It was great to see the company flag on top of the podium, but it was even better to be part of the live event again, with friends and family cheering on from the sidelines! Well done to the event organisers and everyone who participated.

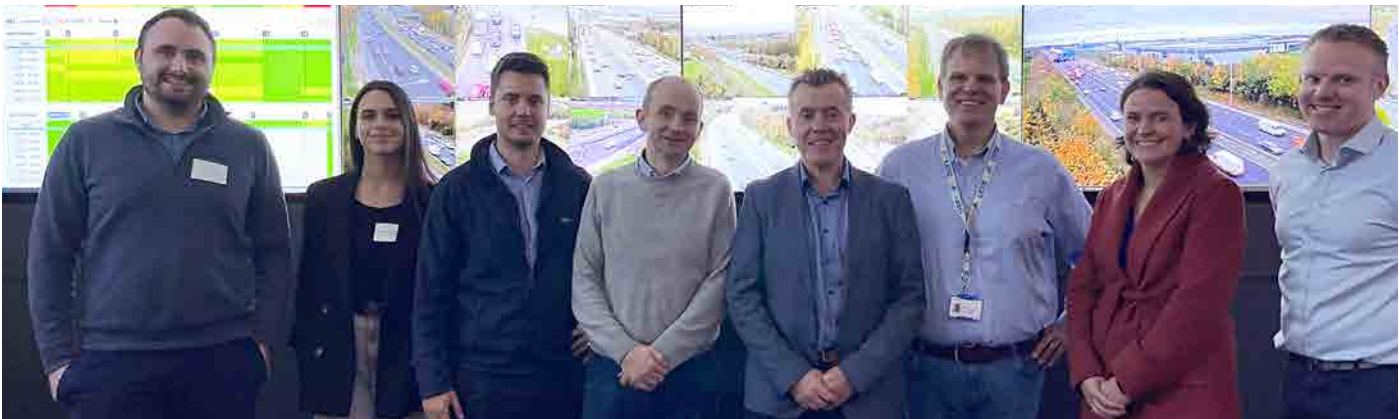
Image Gallery



ROD Associate Andrew Thomson pictured with Minister for Housing, Local Government and Heritage Darragh O'Brien TD and OBFA Director Ciaran O'Brien at the official sod turning on the Women's Refuge Centre project in Maudlintown, Co. Wexford, on 25 November 2022. Image courtesy of OBFA Architects.



Pictured at the Trinity College Dublin Careers Fair in October were (L-R): Christopher Fitzsimons, Debbie Chiu and Cliona Rogan.



TII, ERT0, ROD and John Paul Construction staff pictured at a joint presentation and tour of the Motorway Operations Control Centre project for third year civil engineering students at Trinity College Dublin in November 2022.



Members of ROD's Dublin team wearing their jerseys with pride on GOAL Jersey Day 2022.

Sustainability Quiz Answers



1. The World Bank's international threshold for extreme poverty is:

- a) 1.25 dollars
- b) 1.90 dollars**
- c) 5 dollars



2. Food production will need to increase by what percentage to feed the world in 2050?

- a) 20%
- b) 40%
- c) 60%**



3. What is the average life expectancy in the world in 2022?

- a) 51 years
- b) 61 years
- c) 71 years**



4. How many adults around the world are unable to read and write?

- a) 2 in 10**
- b) 3 in 10
- c) 4 in 10



5. Worldwide, how many young women were married in childhood in 2021?

- a) 1 in 10
- b) 1 in 5**
- c) 1 in 8



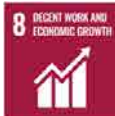
6. How many people in the world do not have access to basic drinking water?

- a) 785 million**
- b) 1.3 billion
- c) 2.1 billion



7. How many people in the world did not have access to electricity in 2020?

- a) 733 million**
- b) 1.3 billion
- c) 3 billion



8. What percentage of the world's population works in the informal economy?

- a) 41%
- b) 51%
- c) 61%**



9. What percentage of the population of the world's least developed countries have access to the internet?

- a) 19%**
- b) 26%
- c) 34%



10. How many people have experienced discrimination on at least one of the grounds prohibited under international human rights law?

- a) 1 in 4
- b) 1 in 5**
- c) 1 in 6



11. How many people are projected to live in cities in 2030?

- a) 4.2 billion
- b) 5 billion**
- c) 5.5 billion



12. How much food is wasted worldwide each year?

- a) 1.2 billion tonnes
- b) 1.3 billion tonnes**
- c) 1.4 billion tonnes



13. How many people worldwide will be displaced by drought by 2030?

- a) 700 million**
- b) 800 million
- c) 850 million



14. What fraction of global annual CO2 emissions is absorbed by oceans?

- a) 1/3
- b) 1/4**
- c) 1/6



15. How many hectares of forest are destroyed around the world each year?

- a) 8 million
- b) 9 million
- c) 10 million**



16. What percentage of the global population lives in conflict-affected countries?

- a) 25%**
- b) 33%
- c) 42%



17. How much foreign direct investment was provided to support sustainable development in 2021?

- a) 1.28 trillion
- b) 1.38 trillion
- c) 1.58 trillion**



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