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Dublin, Ireland

New facility to recover Phosphorus from wastewater in Dublin's Ringsend is ranked among the top 15 global infrastructure projects for 2024

- The Phosphorus Fixation Facility was developed for Uisce Éireann by a consortium of leading engineering firms from Ireland and the Netherlands
- Recovered Phosphorus can be reused as nutrients or agricultural fertiliser within the circular economy, helping to minimise nutrient discharges to Dublin Bay
- Only European entry to be shortlisted in the International Federation of Consulting Engineers' Global Infrastructure Project Awards programme, and the winner of one of only three awards
- Other shortlisted projects included Jakarta-Bandung High Speed Railway in Indonesia, Boryeong Subsea Tunnel in South Korea and the My Thuan 2 bridge construction project in Vietnam

An Irish engineering project that removes and recovers phosphorus from treated wastewater and allows it to be used as agricultural fertiliser has won a major global infrastructure engineering award.

The Phosphorus Fixation & Recovery Facility (P Fix) was developed for Uisce Éireann as part of the ongoing upgrade of the Ringsend Wastewater Treatment Plant in Dublin.

It involves the removal of phosphorus from treated wastewater to enhance the water quality in Dublin Bay and its conversion to a pelletised product for potential reuse in a specified Phosphorus fixation reactor. This facility is the first of its kind in Ireland and the largest of its kind in Europe.

The project was commissioned in 2023 by Uisce Éireann, the state-owned water utility company as part of the €500 million upgrade of the Ringsend Wastewater Treatment Plant. The P Fix Project was developed by the 3JV engineering consortium involving TJ O'Connor & Associates, a Dublin-based firm, JB Barry & Partners, part of Egis Group, a global engineering and operations firm, and Netherlands-based, global consulting and engineering firm Royal HaskoningDHV.

It forms an integral part of the upgraded facility allowing for the recovery of Phosphorus from wastewater. The process forms pearly coloured granules, which can be used as a slow-release agricultural fertiliser.

Earlier this year, the P Fix Project was named Project of the Year by the Association of Consulting Engineers of Ireland at the organisation's Engineering Excellence Awards.

It was subsequently shortlisted among 15 leading entries for the International Federation of Consulting Engineers' Project Awards 2024 and was named the overall winner in the small to medium category, making it one of three winners announced at a gala event in Geneva on Tuesday 10 September.

The project was the only one in Europe to be shortlisted and faced competition from other major developments across nine other countries including the Jakarta-Bandung High Speed Railway in Indonesia, Boryeong Subsea Tunnel in South Korea and the My Thuan 2 bridge construction project in Vietnam.

The International Federation of Consulting Engineers (FIDIC) is the global representative body for national associations of consulting engineers and represents over one million engineering professionals and 40,000 firms in about 100 countries worldwide.

The Project Awards recognise the achievements and successes of consulting engineering member firms and their clients across the globe and the important impact their projects have on social, economic and environmental quality of life around the world.

In total, the project was one of three winners. The other two winners were Réseau Express Métropolitain (REM) - South Shore segment in Canada and Viaduct Quanzhou Bay Sea-crossing Bridge on Fuzhou-Xiamen High-speed Railway in China, under the megaproject and medium to large project categories, respectively. All other entrants were highly commended.

Eddie Fitzgerald, Project Director for TJ OConnor, said: "The Phosphorus Fixation Facility in Ringsend is a significant development as part of the overall treatment plant upgrade and one of which we are very proud. It's a great example of the circular economy in action and it's rewarding to see it being recognised alongside other leading projects worldwide."

Marcus Fagan, Project Director for Egis, said: "At Egis we are focussed on building bigger and better with an emphasis on sustainability and resilient infrastructure. The P Fix project is a great example of how engineering can drive the circular economy. This new and much-needed development facilitates growth while ensuring environmental standards are met, but it is also specifically designed to recover a useable product that used to go to waste."

Paul Janssen, Project Director for Royal HaskoningDHV said: "This is the first time phosphorus is being extracted from wastewater in Ireland and being turned into a valuable resource. The scale and the numbers on the Ringsend wastewater facility are always impressive, as is the case for the P fix plant. We are proud that the project's innovation and its impact have been recognised as being of global importance."

Photo captions

Pictured in Geneva with the FIDIC Global Infrastructure Project Award for Ringsend 'PFix' facility were (L to R): Ronan Doyle, TJ O'Connor & Associates, Anne-Marie Conibear, Egis, and Eddie Fitzgerald, TJ O'Connor & Associates.

The project picture: Ringsend Wastewater Treatment Plant where the award-winning 'PFix' phosphorus fixation facility has been commissioned. C. 3JV

ENDS

Issued by Murray on behalf of the 3JV consortium.

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Editor's Notes:

About the Phosphorus Fixation Facility

The P Fix facility at Ringsend Wastewater Treatment Plant is the first and only one of its kind in Ireland. It's also the largest in Europe and the second largest in the world. When operating at full capacity, it can recover about 25% of all the phosphorus contained in municipal wastewater in Ireland and provide 4,000 tonnes of product each year. Globally, phosphorus is a finite resource with supplies in Ireland usually obtained from imported natural rock phosphate. The sourcing of rock phosphate is industrially intensive.

Phosphorus is a nutrient and when discharged in wastewater, it can cause significant ecological and environmental damage in rivers and the sea e.g., by promoting algal blooms.

Its removal, recovery and reuse as a valuable product is an important part of Ireland's circular economy. Further environmental benefits are realised as local recovery of Phosphorus displaces the need for rock phosphate production and import and reduces the harmful potential of discharges to the Dublin Bay area.

The installation of the P-Fix reactor at Ringsend involved overcoming a number of engineering challenges including building on a very congested site and the need to maintain operations at the existing wastewater treatment plant, which is one of the largest in Europe.

The ongoing upgrade of the Ringsend Wastewater Treatment Plant is required to handle and treat the increasing volumes of wastewater arriving at the plant to the required standard, enabling future housing, social and commercial development.

Built in the early 2000s, the Ringsend plant was designed to treat the wastewater from the population of that time. A programme of upgrades will see the plant capacity increased by 50% to

handle a population equivalent 2.4 million representing over 40% of Ireland's municipal wastewater treatment capacity.

About the Project Awards 2024

The full list of successful projects in the FIDIC Project Awards 2024 are:

Winner - Project of the Year (Megaproject)

Réseau Express Métropolitain (REM) - South Shore segment in Canada

Client: CKPQ Infra. **Engineer:** CIMA+, HATCH and SETEC Canada.

Winner - Project of the Year (Medium to Large Project)

Viaduct Quanzhou Bay Sea-crossing Bridge on Fuzhou-Xiamen High-speed Railway in China

Client: Southeast Coastal Railway Fujian Co. **Engineer:** China Railway SIYUAN Survey and Design Group.

Winner - Project of the Year (Small to Medium Project)

Ringsend Wastewater Treatment Plant Upgrade in Ireland

Client: Uisce Éireann. **Engineer:** Joint Venture of TJ O'Connor and Associates, Royal HaskoningDHV and Egis.

Highly Commended - Project of the Year (Megaproject)

Jakarta-Bandung High Speed Railway in Indonesia

Client: Kereta Cepat Indonesia China. **Engineer:** China Railway Design Corporation.

Highly Commended - Project of the Year (Megaproject)

TSX Broadway and Palace Theatre Redevelopment in the USA

Client: L&L Holding Company. **Engineer:** Severud Associates Consulting Engineers.

Highly Commended - Project of the Year (Megaproject)

Hanjiang River to Weihe River Water Diversion Project in Shaanxi Province, China

Client: Hanjiang River to Weihe River Valley Water Diversion Project Construction Co. **Engineer:** China International Engineering Consulting Corporation, Shaanxi Province Institute of Water Resources and Electric Power Investigation and Design, China Railway First Survey and Design Institute Group.

Highly Commended - Project of the Year (Megaproject)

Viaduct Guiyang-Nanning High-speed Railway in China

Client: Shanghai-Kunming railway dedicated line Guizhou, Yungui Railway. **Engineer:** China Railway Eryuan Engineering Group Co.

Highly Commended - Project of the Year (Megaproject)

East-west connectivity of dedicated freight corridors in India

Client: Dedicated Freight Corporation of India Limited. **Engineer:** Oriental Consultants Global and Nippon Koei Consortium.

Highly Commended - Project of the Year (Medium to Large Project)

Pulan Airport Project in Tibetan Region in China

Client: Xizang Autonomou Regional Administration of CAAC. **Engineer:** Southwest Design and Research Institute Co of Civil Aviation Airport Construction Group.

Highly Commended - Project of the Year (Medium to Large Project)

Boryeong Subsea Tunnel (Boryeong-Taeon) Project in Korea

Client: Hyundai Engineering and Construction Co. **Engineer:** TESO Engineering Co.

Highly Commended - Project of the Year (Medium to Large Project)

Seward Highway MP 75-90 Road and Bridge Rehabilitation in the USA

Client: Alaska Department of Transportation and Public Facilities. **Engineer:** HDR.

Highly Commended - Project of the Year (Medium to Large Project)

Viaduct My Thuan 2 bridge construction project in Vietnam

Client: Project Management Unit 7 – MOT. **Engineer:** Transport Engineering Design Incorporated.

Highly Commended - Project of the Year (Medium to Large Project)

Mombasa Port Development Project Phase 2 in Kenya

Client: Kenya Ports Authority. **Engineer:** BAC Engineering Services.

Highly Commended - Project of the Year (Small Project)

Clean Ports, Clean Ocean: Improving Port Waste Management in the Philippines

Client: World Wide Fund for Nature Philippines. **Engineer:** AMH Philippines.

Highly Commended - Project of the Year (Small Project)

Restoration of Nuestra Señora Del Rosario Parish in the Philippines

Client: Bakas Pilipinas. **Engineer:** AMH Philippines.

Commenting on the list of projects, FIDIC president Catherine Karakatsanis, said: "These awards highlight the best of our industry, the difference it makes and the lasting contribution that engineers and other professionals in the infrastructure sector make to society on a worldwide scale.

"Given the wide range and quality of the entries we received from across the world, our judging panel certainly had its work cut out this year during the judging process. The list of projects not only reflects the excellence of the work of consulting engineers and the value that the whole engineering, construction and infrastructure industry brings to society by delivering world-class projects, it also demonstrates the vital impact that these projects have in making a positive difference to people's lives."

More information is available [here](#).

More information on the ACEI Awards is available [here](#).

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About Egis

Egis is an international player active in architecture, consulting, construction engineering and mobility services. We create and operate intelligent infrastructures and buildings that respond to the climate emergency and contribute to more balanced, sustainable and resilient territorial development.

Operating in 100 countries, Egis puts the expertise of its 19,500 employees at the service of its clients and develops cutting-edge innovations accessible to all projects. Through its wide range of activities, Egis is a key player in the collective organisation of society and the living environment of citizens all over the world.

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About TJ O'Connor & Associates

TJ O'Connor & Associates is a consulting engineering firm established in 1937. The company is an independent professional organisation providing clients with unbiased judgement and advice on specific projects, recommending the optimum economic and technical solutions.

www.egis-group.com