

Session 6: Decarbonisation & Other Topics

Chair: Mary Flynn, Regional Manager, TII

11.15 am	Legal Hot Topics in Infrastructure Projects	Michelle Doyle and Nathan Walsh, McCann Fitzgerald LLP
11.35 am	Transition of ZEV to TII and Spotlight on Regional and Local Plan: and Local Authority EV charging project roll out	Donal Minnock and Michael McGrath, Zero Emission Vehicle Ireland - TII
11.55 am	PFAS: Understanding the Risks for TII Projects	Christopher Newton, Senior Hydrogeologist, Arup
12.15 pm	Q&A	
12.35 pm	Conference close and lunch	

TRANSPORT INFRASTRUCTURE IRELAND

Regional and Local Plan: Local Authority EV charging project roll

Donal Minnock and Michael McGrath, TII Alternative Fuels Projects Unit

ARUP

PFAS: Understanding the Risks for TII Projects

Christopher Newton, Senior Hydrogeologist

PFAS: Understanding the Risks for TII Projects

Christopher Newton | Leila Bowe | Joy Wamagata

2 October 2026

PFAS: Understanding the Risks for TII Projects

Question

- Can a chemical stop a major project?
- For over a year?...
- West Gate Tunnel Project, Melbourne¹
- No suitable disposal location for ~3,000,000 tonnes of spoil contaminated with PFAS
- Cost increase (billions \$'s)
- Project delay (Over 1 year)

West Gate Tunnel toxic soil decision paves way for multi-billion-dollar transport project

By Jackson Peck

ABC Ballarat

Land Pollution

Posted 25 Jun 2021 at 2:17am, updated 25 Jun 2021 at 3:30am



An artist impression of the northern tunnel portal at Footscray for the West Gate Tunnel Project. (Supplied: Victorian Government)

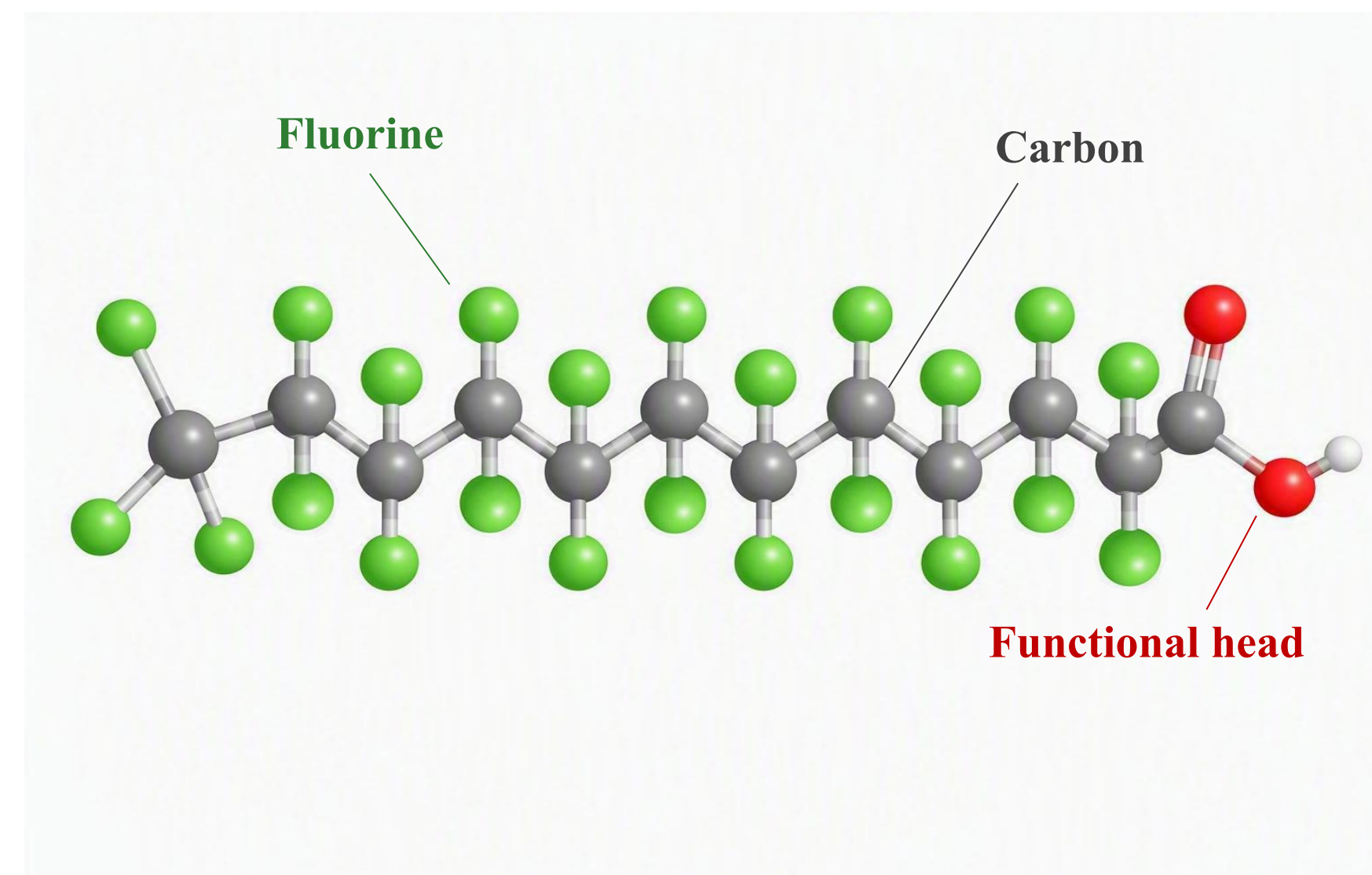
¹ West Gate Tunnel – Delays, Cost Blowout and Opening Date, 2026, Australia Pulse. <https://australiapulse.net/politics/west-gate-tunnel-delays-costs/>

² West Gate Tunnel toxic soil decision paves way for multi-billion-dollar transport project, 2021, ABC News. <https://www.abc.net.au/news/2021-06-25/west-gate-tunnel-toxic-soil-decision/100243366>

The challenge

PFAS Definition

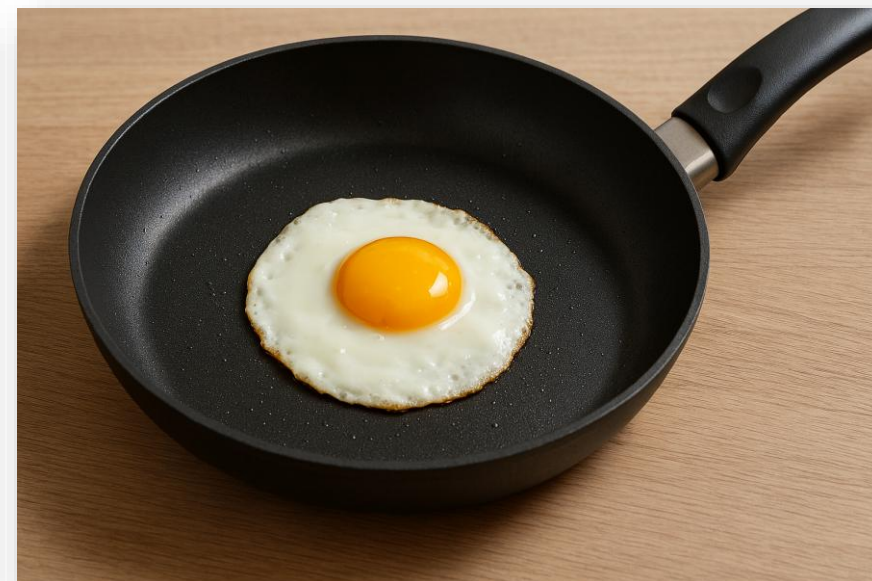
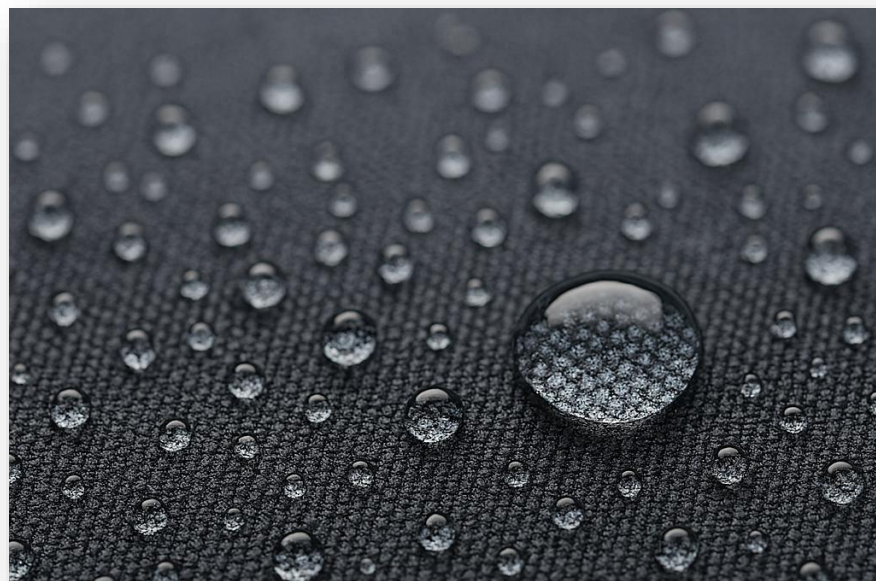
- PFAS is an acronym for group of chemicals:
‘per- and polyfluoroalkyl substances’
- They contain fluorine atoms bonded to carbon atoms
- one of the strongest known bonds
- The bond gives PFAS unique properties and make it very durable and hard to break down in the environment
- The “functional head” can make the chain soluble and very mobile in water
- Hard to break down + very mobile = PFAS can be transported to receptors far from the source
- Sources can be outside of conventional study areas



The challenge

Origins

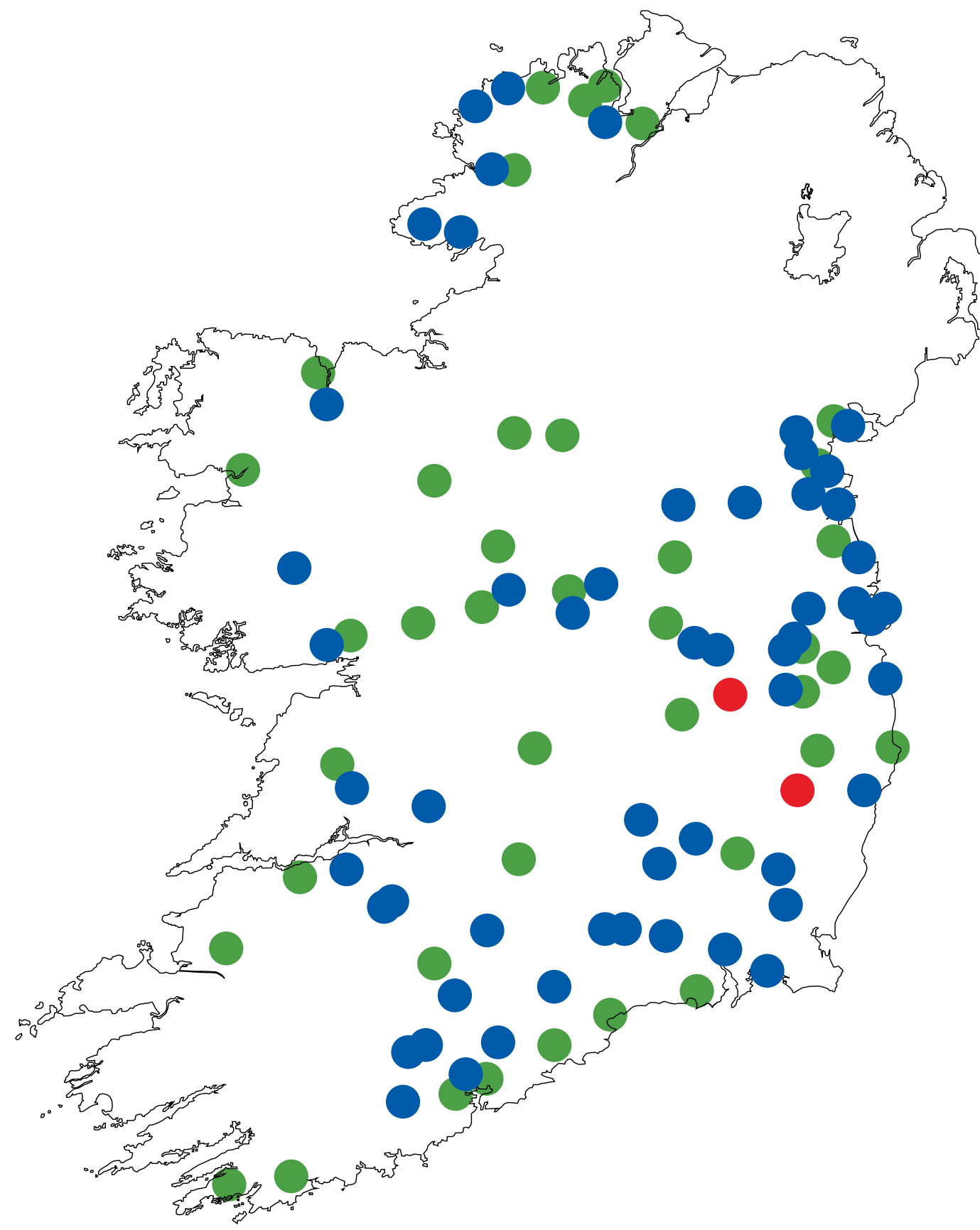
- **First produced** in 1940s by materials and technology companies (DuPont and 3M)
- **Some properties** – Inert, low coefficient of friction, waterproof, and stable at high temperatures
- **Use** – Numerous including textiles, non-stick pans, batteries and fire fighting foams etc...
- **‘Dark Waters’** – 2005 DuPont settled a \$200 million claim for contaminating a water supply
- **Health effects** (Certain PFAS) – Reduced fertility, cancer, neurotoxicity & endocrine disruption
- **Bioaccumulates** – Not broken down in the body



The challenge

PFAS Monitoring

- Published information confirms that PFAS compounds can be found throughout the country
- Concentrations are mostly low
- Concentrations are linked to anthropogenic sources:
 - Landfill Leachate
 - Biosolid from Waste-Water Treatment



PFAS detections

- Groundwater ¹
- Sediment/Biosolid ²
- Leachate ³

¹ EPA. *Ireland's National Water Quality Monitoring Programme 2022-2027*. https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WFD_MonitoringProgramme_2022_2027.pdf

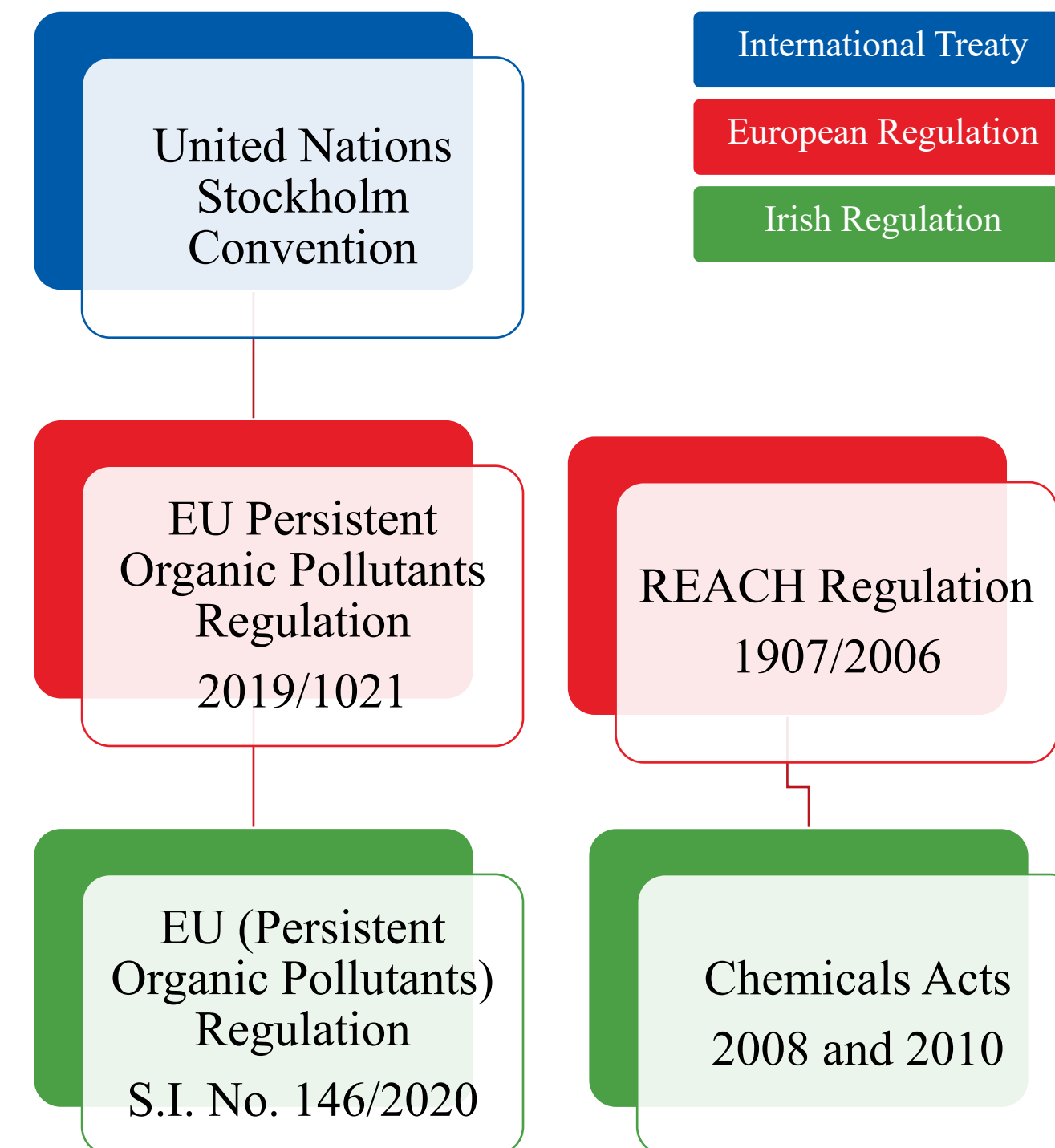
² Ma, Y.; Sharkey, M.; Coggins, A. M.; Stubbings, W.; Healy, M. G.; Harrad, S. Concentrations of Perfluoroalkyl Substances in Sediments and Wastewater Treatment Plant-Derived Biosolids from Ireland. SSRN 2024. <https://doi.org/10.2139/ssrn.5043591>

³ Harrad, S.; Drage, D.; Sharkey, M.; Berresheim, H. *Furthering Understanding of Emissions from Landfilled Waste Containing POP-BFRs and PFASs (FUEL): 2016-HW-MS-8*, Online version.; EPA Research report; Environmental Protection Agency: Johnstown Castle, Co. Wexford, Ireland, 2020

The challenge

Regulations – Restrictions and Bans

- International Convention reduce or eliminate some chemicals
- REACH prohibits and restricts sale of products containing certain chemicals
 - Regrettable substitution
 - Looming Europe wide ban for the PFAS as a group
- Persistent Organic Pollutants Regulations
 - Defines **three** PFAS waste thresholds
 - Waste must be destroyed **if above** the threshold
 - No regulations for sub-threshold waste concentrations
- Potential mis-match between waste and Environment regulations



PFAS chemicals

Regulations – Environmental limits

2026

- PFOS surface water
0.65 ng/l
- PFAS Drinking Water
100 ng/l [sum of 20]

- PFAS groundwater
100 ng/l [sum of 20]
4.4 ng/l [sum of 4]
- PFAS surface water
4.4 ng/l [sum of 25]

2027

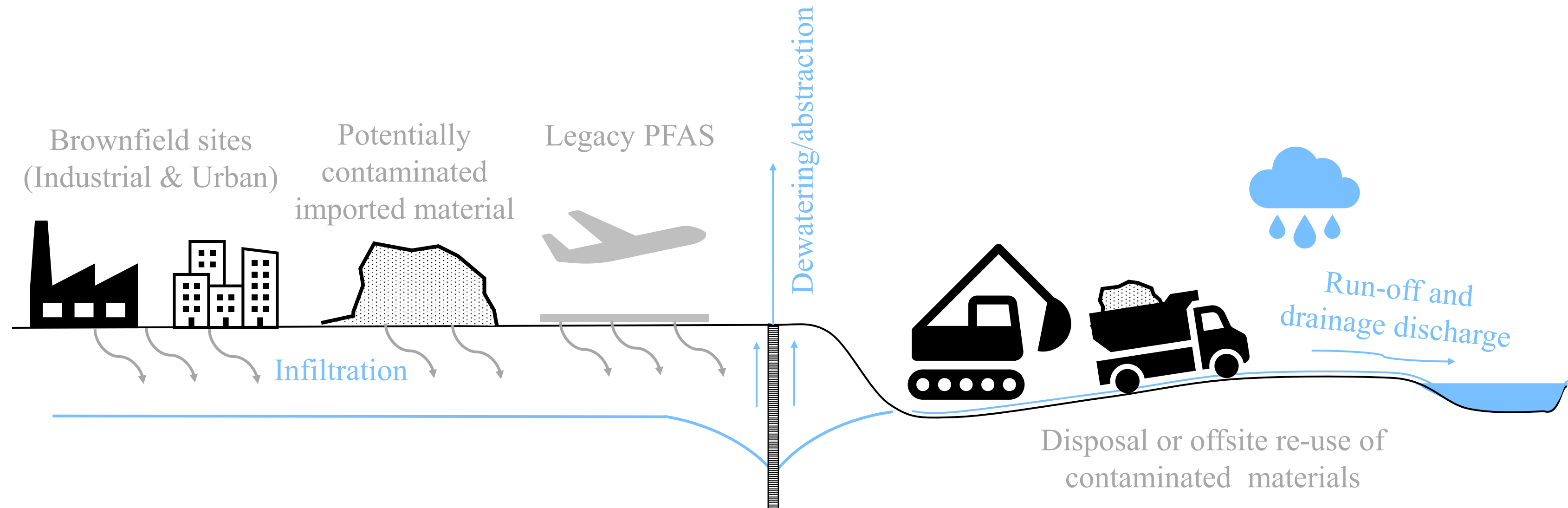
2028

- Soil Monitoring
Directive transposed
- PFAS enters EU soil
health monitoring
- PFAS soil trigger
values

PFAS in projects

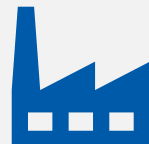
PFAS in projects

Potential PFAS interaction during projects



PFAS in projects

Sources and risks

Fire-fighting	Waste	Industrial	Agricultural	Urban & Civil
• Airports • Fire training areas • Historical fire-fighting events • Military bases • Bulk fuel and solvent storage 	• Landfills • Recycling • Solid Recovered Fuel • Compost facilities • Wastewater treatment • Biosolids 	• Chemical manufacturing • Pharmaceuticals • Paper and wood processing facilities • Data centres 	• Pesticides and herbicides • Fertilisers 	• Personal care products • Non-stick pans • Detergents • Waterproof clothing • Food and drink packaging 

Highest

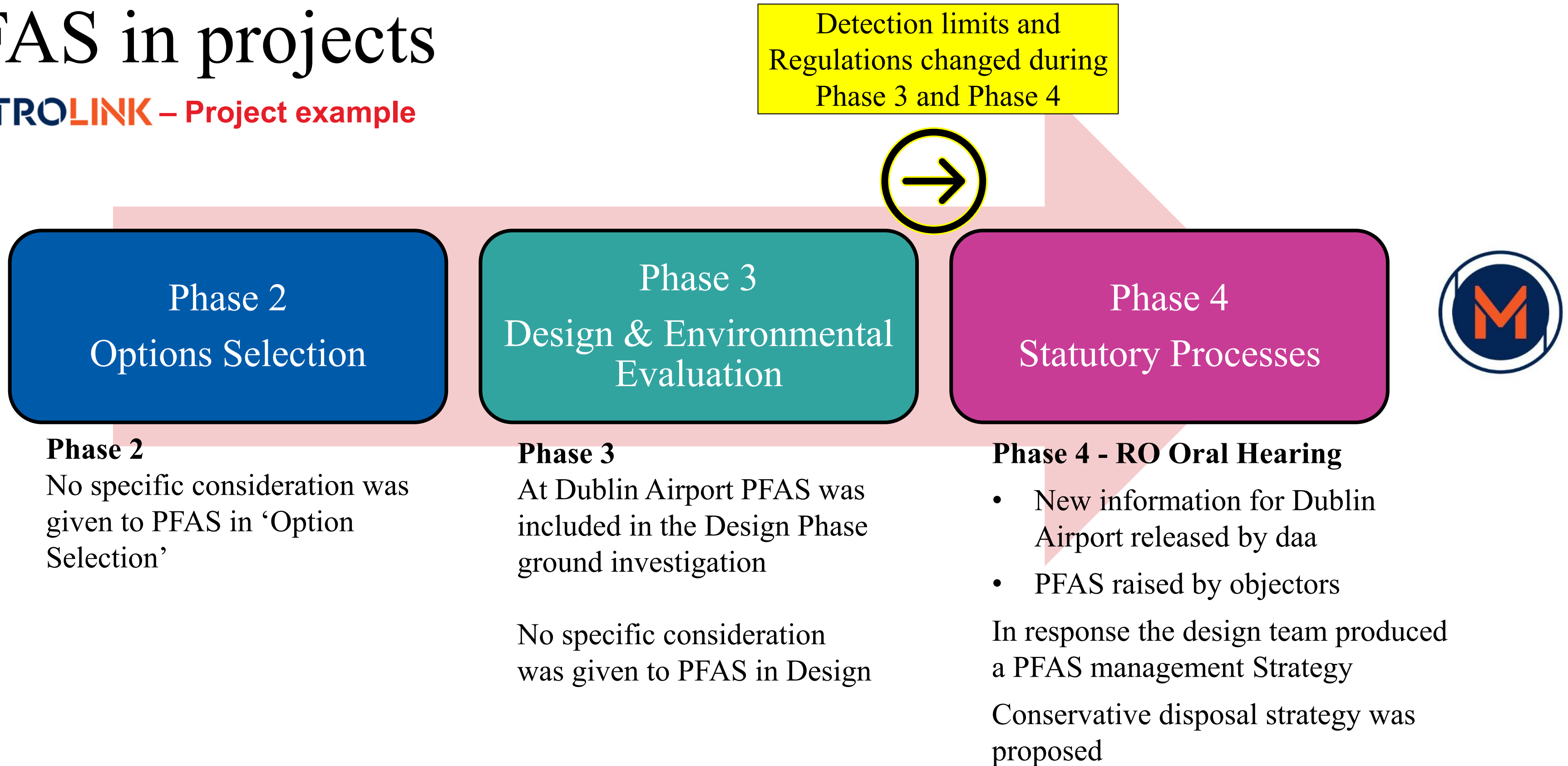


Risk of dispersion into the environment

Lowest

PFAS in projects

METROLINK – Project example



Lack of guidance - When should PFAS be considered and how to manage the risks

PFAS in projects

Existing guidance

Strengths

PFAS behaviour, fate and site investigation

Lab analysis, quality procedures and detection limits

Risk assessment and remediation options appraisal

Waste classification and regulatory controls

Weaknesses

Limited relevance to Ireland and infrastructure projects

No corridor-scale screening

No guidance for Non-Persistent Organic Pollutants PFAS waste or soil re-use

Earthworks and material management, construction dewatering and discharge do not consider PFAS risks

PFAS in projects

Proposed PFAS TII Guidance

- TII are proposing to prepare a Technical Guidance Document to support project managers to proactively manage the risk of PFAS
 - Consider TII Project Phases and ensure it is identified, assessed, and mitigated at the appropriate stage of the project.
 - Aid early screening and consistent risk-management frameworks of legacy PFAS
 - A benchmark guidance for other national road, light rail, metro and active travel projects.
 - Guidance should be based on principles to allow for a changing regulatory environment
- The project is active and aimed to be completed in Q3 2027



TII Publications

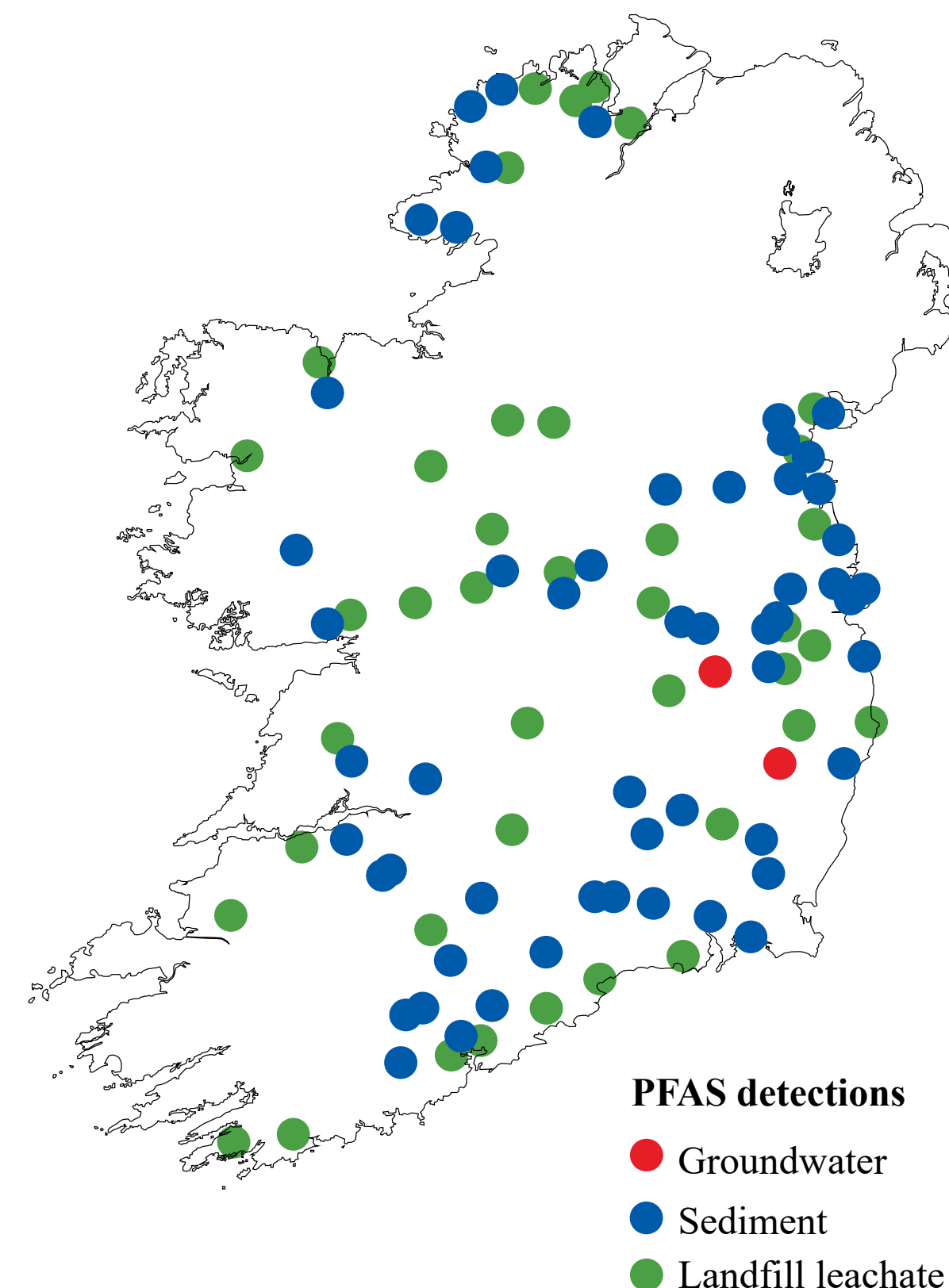


Summary

PFAS: Understanding the Risks for TII Projects

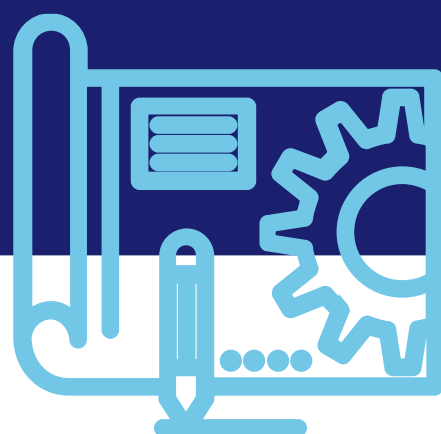
Summary

- PFAS are a group of commonly used chemicals which are heavily regulated
- Science and Policy on PFAS is rapidly evolving and Regulations are becoming more restrictive
- PFAS is present in Ireland and is recorded in the Irish environment
- It has already been and can be a future challenge on projects
- Current guidance is insufficient to support decision making in projects and not specific to Ireland
- TII are actively working to prepare a dedicated guidance to support future project teams in proactively managing the risk of PFAS
- Proposed guidance will provide consistency, reduce project risk, support proportionate decision making across TII projects



ARUP

Q&A



Session 6: Sustainability & Other Topics

Q&A

Chair: Mary Flynn, TII Regional Manager

- **Anthony Duffy, TII**
- **Michelle Doyle, McCann Fitzgerald LLP**
- **Nathan Walsh, McCann Fitzgerald LLP**
- **Donal Minnock, TII**
- **Michael McGrath, TII**
- **Christopher Newton, Arup**

Conference Close

Lunch starting at 1pm

