

# Submission to the Draft Climate Change Sectoral Adaptation Plan: Water Quality and Water Services Infrastructure

For the attention of the Water Advisory Unit, Department of Housing, Planning and Local Government

12<sup>th</sup> July 2019

## Highlights

- Engineers Ireland welcomes plans to adapt the water sector to effects of climate change
- Further information should be provided on the adaptive measures listed in the Draft Plan
- Incorporate key adaptive measures for water quality and water/wastewater infrastructure

## 1. Introduction

Engineers Ireland welcomes the publication of the Draft Climate Change Sectoral Adaptation Plan: Water Quality and Water Services Infrastructure. Climate change is one of the greatest challenges facing this and future generations and we agree that an *“understanding of the likely risks posed by climate change to the water sector is required to enable improved planning, resilience and overall social, economic and environmental sustainability for Ireland and its citizens”* (page 6). We are also glad to see the use of the UN Sustainable Development Goals, which aim to end all forms of poverty, fight inequalities and tackle climate change while ensuring no-one is left behind, as a framework for adaptive measures.

Last year, Engineers Ireland published ‘The State of Ireland 2018: A review of infrastructure in Ireland’, an independent assessment of Ireland’s infrastructure needs focusing on water, wastewater and flood risk management. The report was informed by an expert advisory group drawn from the public and private sectors, including representatives of State bodies, Local Authorities, academics, consulting engineers and related professions. The actions identified in the report were updated for the 2019 report and are listed in the Appendix. This submission is guided by these actions and supporting evidence.

## 2. Adaptation process

This Draft Plan represents Step 5 ('Develop Your Plan') of the Adaptation Process as outlined in the Department of Communications, Climate Action and Environment's Sectoral Planning Guidelines for Climate Change Adaptation. Regarding Step 5, the Guidelines state:

*"The adaptation plan will consist of establishing goals, sequencing objectives, and identifying and prioritising actions to implement the plan. In addition, the plan will identify the risks, barriers and enablers associated with the implementation of identified adaptation options."*

The document provides guidance on (i) identifying goals and objectives, (ii) identifying actions, and (iii) assessing, selecting and developing adaptation action plans.

We note that the Draft Plan states:

*"Being undertaken at a national scale and to enable the identification and prioritisation of adaptation requirements, this Plan focuses on independent impacts on the sectors rather than the broad range of coincident and downstream impacts. As such, it considers national-level statements of observed and projected changes in climate rather than impacts on individual infrastructure assets or water quality parameters and pressures"* (page 2)

and

*"A range of adaptive measures have been proposed which are envisaged to be implemented by a wide variety of organisations through a series of plans and programmes. It is through this widespread integration of these adaptive measures in water sector plan and programme making processes that effective and targeted implementation can be achieved. These national adaptive measures will need to be adopted and developed to provide the spatial and temporal specificity to ensure effective implementation."* (page 64)

Nevertheless, we are concerned that further detail on the adaptive measures has not been provided in the Draft Plan. For example, further information could be provided on the national-level goals, objectives and actions. This would help to support the development of detailed adaptation plans and the general coordination of adaptation across the water sector. A review of the structure and effectiveness of Sectoral Adaptation Plans completed by other sectors could be informative.

## 3. Key adaptive measures

The adaptive measures identified in the Draft Plan broadly align with Engineers Ireland's recommendations for the water sector. We recommend that the following actions be incorporated in the adaptive measures or future Sectoral Adaptation Plans.

### *Water quality*

Improve the protection of human and environmental health by providing groundwater and surface water Source Protection Plans for all viable supplies and upgrade wellheads and abstraction points where deficiencies are immediately apparent. Expand research and application of sustainable water resource management.

Implement effective land use management plans within catchment areas to mitigate the risks of contamination occurring, which should dovetail and be in conjunction with the work to achieve EU Water Framework Directive compliance. Fully assess the environmental sustainability of existing abstractions in the context of likely future water demand and adopt a sustainable approach to water abstraction by, for example, amalgamating inefficient water supply schemes into more appropriately located and efficient schemes.

#### *Water supply infrastructure*

Undertake Drinking Water Safety Plan risk assessments and implement mitigation measures to address all high and very high risk hazardous events to protect public health. Within five years, achieve significant milestones in working towards a safe and secure drinking water supply for the entire country.

Upgrade existing key strategic water infrastructure such as the Vartry Water Supply Scheme (Wicklow) and the Lee Road Water Treatment Plant (Cork).

Reduce network leakage by scaling up investment in active leakage control, supported by water mains rehabilitation and replacement. Target a reduction to 40% within two years and to 35% within five years as part of a roadmap to resource efficiency.

Plan for sustainable growth, in accordance with the National Planning Framework and Regional Spatial & Economic Strategies, by progressing planning on the Eastern & Midlands Region Water Supply Project. Within five years, start construction on the WSP and other projects to ensure water capacity in all major towns and cities.

#### *Wastewater infrastructure*

Target investment at the elimination of all untreated wastewater discharges and achieving compliance with the UWWTD. Within five years, achieve and maintain compliance with the Directive.

Upgrade existing key strategic wastewater infrastructure such as the Ringsend Wastewater Treatment Plant (Dublin) and continue work on the Cork Lower Harbour Main Drainage Scheme.

Progress planning on the Greater Dublin Drainage Project (GDDP) over the next two years. Within five years, start construction on the GDDP and other projects to ensure wastewater capacity in all major towns and cities.

#### *Domestic water and wastewater*

Within two years, review the operation of new and existing domestic water supplies and wastewater treatment. Within five years, implement the recommendations of the review with a view to transferring knowledge, ownership and accountability of clean water supplies and non-polluting wastewater treatment systems on the domestic user.

## **Appendix – The State of Ireland recommendations on water, wastewater and flood risk management**

### **Water / wastewater**

#### *2-year actions*

1. Improve the protection of human and environmental health by providing groundwater and surface water Source Protection Plans for all viable supplies and upgrade well heads and abstraction points where deficiencies are immediately apparent.
2. Undertake Drinking Water Safety Plan risk assessments and implement mitigation measures to address all high and very high-risk hazardous events identified in Drinking Water Safety Plans to protect public health.
3. Carry out the identified upgrades on private Group Water Scheme (GWS) treatment facilities listed on the GWS Remedial Action List.
4. Complete an extensive review of the GWS sector to devise a rationalisation and amalgamation programme to form more sustainable water supplies.
5. Reduce network leakage from 44% to 40% (saving the equivalent of 10,000 Olympic-sized swimming pools of water per year) by scaling up investment in active leakage control, supported by water mains rehabilitation and replacement.
6. Upgrade existing key strategic infrastructure such as water supply at Vartry (Wicklow), water treatment at Lee Road (Cork) and wastewater treatment at Ringsend (Dublin) and Cork Lower Harbour.
7. Plan for sustainable growth in accordance with the National Planning Framework and Regional Spatial & Economic Strategies. Progress projects such as the Eastern & Midlands Water Supply and the Greater Dublin Drainage Project.
8. Target investment at the elimination of all untreated wastewater discharges and achieving compliance with the EU Urban Wastewater Treatment Directive.
9. Review the operation of new and existing domestic water supplies and wastewater treatment.
10. Incentivise a major expansion of desludging of domestic wastewater treatment systems and plan for the management of sludge generated.

#### *5-year actions*

11. Launch a Sustainability Education Programme on the water cycle, water quality and the value of water, targeting in particular domestic water and wastewater systems.
12. Expand research and application of sustainable water resource management.
13. Improve cross-sectoral communication on the implementation of existing water management with a longer-term vision of implementing innovative solutions to challenges such as leakage control, hydraulic performance and water quality.
14. Fully assess the environmental sustainability of existing abstractions in the context of likely future water demand and adopt a sustainable approach to water abstraction by, for example, amalgamating inefficient water supply schemes into more appropriately located and efficient schemes.
15. Implement a rationalisation and amalgamation programme for the GWS sector focusing on small private supplies with less than 100 domestic connections.
16. Develop and implement Source Protection Plans for all GWS private supplies.

17. Achieve significant milestones in working towards a safe and secure drinking water supply for the entire country through the implementation of mitigation measures identified in Source Protection and Drinking Water Safety Plans.
18. Implement effective land use management plans within catchment areas to mitigate the risks of contamination occurring, which should dovetail and be in conjunction with the work to achieve EU Water Framework Directive compliance.
19. Further reduce network leakage to 35% (saving the equivalent of a further 12,000 Olympic-sized swimming pools of water per year) as part of a roadmap to resource efficiency.
20. Achieve and maintain compliance with the EU Urban Wastewater Treatment Directive and EU Drinking Water Directive.
21. Start construction on the Eastern & Midlands Water Supply Project, the Greater Dublin Drainage Project and other projects to ensure water and wastewater capacity in all major towns and cities.
22. Implement the recommendations of the review of domestic water supplies and wastewater treatment with a view to transferring knowledge, ownership and accountability of clean water supplies and non-polluting wastewater treatment systems on the domestic user.

### **Flood risk management**

23. Develop a strategic plan for the efficient delivery of schemes identified in Flood Risk Management Plans (Flood Plans) and smaller schemes, drawing on international best practice and including the following key components:
  - Multi-annual budgeting for the implementation of Flood Plans and a programme of proactive maintenance of existing structures and associated waterways;
  - A multi-stakeholder taskforce to review the operation of legislation and policy governing flood risk management. Consider whether a dedicated authority with statutory powers be established to manage flood risk, pollution and land management at a catchment scale.
  - Standard methodologies for the translation of current knowledge on climate change into design guidance for resilient infrastructure;
  - A public engagement campaign on flooding causes and the full array of hard and soft risk management options, including nature-based water retention options and managed retreat. Showcase the functioning of completed flood risk projects.
  - Phasing and coordination to encourage the organisations involved to upscale their capacity to construct and deliver these projects.
24. Maintain and extend the network of permanent measurement facilities (e.g. automatic rain gauges, rainfall radar, water level monitoring, satellite / remote measurement and continuous GPS).
25. Prevent escalation of assets at risk from flooding, including coastal, especially through the implementation of the National Planning Framework, Regional Spatial & Economic Strategies and local authority development plans, in accordance with flood risk management planning guidelines.
26. Provide national guidance and put in place an overarching framework which allows different organisations to work together and to develop the most suitable solutions to surface water flooding problems under a coordinated plan (surface water management plan).
27. Compile an inventory of groundwater flood events and establish a framework for describing groundwater flooding extent, severity and frequency and calculating associated return periods.

28. Compile a register of all significant dams in Ireland. Develop and implement a system of assessment for multi-functional dams in Ireland.
29. Continue the development of the National Flood Forecasting and Warning Service and improve local warning systems to assist emergency response.
30. Progress the national Integrated Coastal Management Plan and pilot environmentally sustainable and economically feasible projects such as sand engines and sand dune generation to break up wave actions.
31. Consider wider flood risk, e.g. rural flooding and coordinated catchment-based opportunities for flood risk management as part of future cycles of the EU Floods Directive.
32. Undertake research and establish appropriate design standards for flooding infrastructure with multiple benefits, e.g. integrating with water quality and environment-supporting conditions.
33. Enhance permanent measurement and monitoring facilities as well as comprehensive data systems and analysis to reduce uncertainties in quantifying flood risks.
34. Develop a national database of flood risk management facilities to enable the protection of critical infrastructure, e.g. hospitals, power stations and wastewater treatment plants.

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**Background to Engineers Ireland**

With over 25,000 members, Engineers Ireland is the voice of the engineering profession in Ireland. Engineers Ireland was established in 1835 making us one of the oldest and largest professional bodies in the country. Members come from every discipline of engineering, and range from engineering students to fellows of the profession.

**Our responsibility is to**

- Promote knowledge of engineering
- Establish and maintain standards of professional engineering and engineering education
- Provide opportunities for Continuing Professional Development (CPD)
- Maintain standards of professional ethics and conduct
- Ensure that professional titles are granted to qualified candidates
- Act as the authoritative voice of the engineering profession in Ireland

**Our Vision Statement**

Engineers Ireland: a community of creative professionals delivering solutions for society.

**Our Mission Statement**

Engineers Ireland is an organisation that enables the engineering community to progress their professional development, make an impact on society and encourage and educate the future generations of engineers.