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Dear David,



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**RE: Draft Climate Change Sectoral Adaptation Plan for Water Quality and Water Services Infrastructure**

In line with Section 6 and Section 11 of the Climate Action and Low Carbon Development Act 2015 (the Climate Act), it is a function of the Climate Change Advisory Council to provide advice and make recommendations in relation to adaptation policy and Ministers are required to consult with the Council in the preparation of their sectoral adaptation plans.

The Council welcomes the publication of the draft Climate Change Sectoral Adaptation Plan for Water Quality and Water Services Infrastructure and believes that the sectoral adaptation planning process offers a valuable opportunity for sectors to build resilience to the impacts of climate change by identifying vulnerabilities, adaptive capacity, risks and opportunities, and developing adaptation plans to address them.

The Council has agreed criteria of assessment for sectoral adaptation plans and the draft Climate Change Sectoral Adaptation Plan for Water Quality and Water Services Infrastructure has been considered by the Climate Change Advisory Council and its Adaptation Committee with reference to these.

The Council wishes to outline the following observations on the draft.

General Comments

- The draft plan is laid out around the key adaptation steps set out in the Sectoral Planning Guidelines for Climate Change Adaptation. The main emphasis of the draft is on the impact chains identified and the subsequent listing of potential adaptation

options. While the draft contains many positives and is largely to be commended, the emphasis below is on aspects that require further consideration.

- A statement at the beginning of the plan demonstrating how the Climate Act, National Adaptation Framework and the sectoral guidelines have been considered would be useful.
- In the introduction it is important to set out the pressures faced by the sector in addition to climate change (e.g. demographic and societal change stressors such as urbanisation) and how climate change compares and relates to these pressures both positively and negatively. It is important that adaptation actions and planning do not happen in a vacuum and that other pressures are also taken into account, recognising that climate action may be synergistic or complementary. This may be useful in the identification of adaptation options whereby 'win-win' measures can be pursued.

#### Trends and Projections

- Further detail is required when setting out observed trends in key climate variables, for example terms like 'chronic' increase in temperature need to be clarified. Rather than explaining the distribution of temperature/precipitation etc. across Ireland the draft could distil findings of research on variability and change within these variables. Elsewhere terms like 'planned drivers' and 'existing drivers' should be explained more clearly.
- The draft takes a welcome precautionary approach in considering the worst case from a wide range of scenarios for mid-century as represented by range of CMIP5 models in IPCCAR5 in combination with Irish scenarios. This is important to avoid over confident assessments of future impacts in the screening process. The screening is undertaken on a national level. Subsequent work on key assets and critical infrastructure and identified vulnerabilities will need to be undertaken in developing more case specific adaptation plans.
- It should be noted that the narrative of regional variations in precipitation between the east and the west depends on which regional/global climate model combination is used. It should therefore be used carefully and referenced and is subject to uncertainties. Furthermore, changes in precipitation will not translate linearly to changes in river flows or groundwater changes upon which resources are based.

Lakes and groundwater sources can also be exposed to multi-year effects of drought, this is a key vulnerability currently being revealed.

- The draft considers climate change projections to mid-century and promotes an adaptation pathway approach with a watching brief tracking climate scenarios for after mid-century (as beyond mid-century uncertainties are larger). However the latter is not in line with the precautionary approach detailed above and it is not sufficient for major infrastructural investments (which are listed as adaptation responses) which will take place over the coming years and have a design life and expected service level beyond mid-century. It is critical that an approach to stress testing such investment/infrastructure be put in place or at a minimum included in the adaptation plan as an action to be taken forward. There are many examples in the scientific and water sector literature and practical guidance as to how this can be done – e.g. Decision Scaling and guidance of UKWIR for water planning.

### Implementation

- Adaptation options identified are not given a costing or implementation plan with any timeline. In addition, it is not clear how specific adaptation actions are to be selected from the portfolio available, nor is it clear what characteristics (e.g. robustness to uncertainties, cost effectiveness etc.) are to be used to identify suitable adaptation options.
- The impact of adaptation actions on the source and receiving waters should be included in the selection of actions. Many of the adaptation options identified will need information on design standards (such as sewer size in response to increased rainfall intensity), which will need to be assessed. Responsibilities and timelines for this are unclear in the draft. Design standards will need to be addressed in terms of how climate change may be accommodated. A clear plan with measurable objectives, targets and costs needs to be identified to realise this.
- Use of 'softer' adaptation responses such as rainwater harvesting to reduce demand or new approaches to using grey water to meet needs should be considered further. Considerable integration with building standards and increased public understanding would be required to see meaningful deployment of such measures and targets to monitor their implementation should be included. The ambition for leakage reduction should also be clear.

- Overall, the role demand side adaptation responses can play in offsetting future risk should be more explicit with consideration of what mix or combination of different strategic approaches is likely to be required. In addition, there are opportunities that will need to be taken to increase the connectivity of supplies so that shortages can be offset. While referenced, these are not considered in sufficient detail. If these aspects are to be part of a new national water plan, then it is important to link future iterations of the sectoral adaptation plan with this.
- In terms of adaptation options in response to low flows and reduced dilution capacity of surface waters, the adaptation options considered are limited. Integrated catchment management is mentioned but how this is to be overseen and implemented is not specified. Also further information on the role of discharge licencing, EPA and Water Framework Directive should be provided.
- Monitoring programmes are consistently listed as an adaptation response but it is not clear who is responsible and how these networks will be operationalised and maintained.
- The example of new sources such as Shannon extraction for Dublin is listed as an adaptation option. Such actions are major investments and have long project lifespan beyond mid-century. For expensive options listed, such as this, it is critical that decision making under uncertainty protocols are established to assess the design of such measures and potential negative impacts on source areas. This is important given the potential for drought events in particular to have an island wide impact simultaneously. It is also important that climate change is considered in the context of other pressures such as population growth and increased demand from multiple water use sectors.
- The presented linkages with the SDGs are very useful but more information should be provided on how these will be monitored and reported on.

#### Data

- The draft mentions flood forecasting as being important but there may be other tools available that would help in water sector adaptation decision making, such as developing capacity in seasonal and decadal hydrological forecasting. These are especially important in water resource planning. Insights from ongoing research in

Ireland and Europe should be integrated into planning as an adaptation strategy and a mechanism identified for ensuring this is done. The establishment of a drought monitor, as widely implemented in other countries should also be prioritised.

- It is not clear if the findings of the 'Critical Infrastructure Vulnerability to Climate Change' or 'National Risk Assessment of Impacts of Climate Change' research projects which have examined critical infrastructure including water have been considered.

#### Coherence and Cross Sectoral Considerations

- It is important that adaptation options in water services and supply do not create pressures for water quality and that the spatial aspects and pressures brought about by identified adaptation options are adequately assessed. For example extraction of new resources should not impede water quality and the ability of others (human and natural) to meet water needs and not affect capacity to deal with droughts or extreme events.
- Some further detail could be given in terms of consultation with the sector and how views were integrated, especially in the identification of adaptation options. This helps establish whether this draft is representative of the views of key stakeholders.
- Water is a critical sector and has strong interdependencies both with other sectors and with mitigation. It is essential that adaptation actions do not increase fossil fuel consumption to meet increased energy demands. It is also important to assess how land use change driven by national mitigation policy may impact on the water sector (for example afforestation). It is also important that links are drawn to adaptation in other sectors. For example during the drought of 2018 a key feature was the reported increase in water demand from agriculture (for drinking water for livestock). This will be a growing pressure if the trend in the expansion of the national dairy herd continues. Such cross sectoral linkages are not fully realised in the plan so far, although it is recognised that this is difficult to do. The demand for water in manufacturing for cooling due to rising temperatures and the water needs of different low carbon technologies – e.g. carbon capture and storage, biofuels and solar power should be considered further.

- Given recent experience, the Council considers that further consideration should be given to clear measures regarding the linkages between how power outages can lead to water and wastewater disruption.
- Regarding pathogens, further information on the engagement with the Department of Health as they develop their adaptation plan should be provided.
- While there is reference to aligning adaptation planning with emergency planning further information on what this means in practice for the sectors should be provided.
- Further analysis of the implications of coastal erosion for any water and wastewater infrastructure at risk should be provided.

The Council looks forward to the publication of the final statutory sectoral adaptation plan in the coming months.

Yours sincerely,

**Prof. John FitzGerald**

Chair

Climate Change Advisory Council

Cc. John O'Neill, Department of Communications, Climate Action and Environment