

**National Water Resources Plan -  
Framework Plan  
Technical Appendices**

**Appendix M  
Environmental  
Costing**

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### **Data Disclaimer:**

This document uses best available data at time of writing. Some sources may have been updated in the interim period. As data relating to population forecasts and trends are based on information gathered before the Covid 19 Pandemic, monitoring and feedback will be used to capture any updates. The National Water Resources Plan will also align to relevant updates in applicable policy

## 1.1 Environment and Social Costings Methodology

The options we consider and implement have the potential to affect environmental and social receptors. To account for these affects within our options methodology, we seek to calculate a financial cost of an option on the receptors it affects.

Our assessment follows an ecosystem services approach, and uses data relating to both UK and Irish-based studies.

All values used were uplifted to 2018 prices using GDP Deflators (World Bank, 2020). These uplifted values were then converted into euros using the Bank of England's annual average spot exchange rate.

The aim of the calculations is to capture and value significant residual impacts in relation to ecosystem services. The availability of the required options data and the availability of robust ecosystem services values, mean that the following potential impacts can be valued:

- Climate regulation – woodland
- Food – crops and livestock
- Traffic impacts – opportunity cost of time due to road congestion from roadworks

The valuation of potential impacts on recreation are excluded from the environmental and social costs to avoid double counting, as potential effects on recreational amenities are captured within the Multi-Criteria Analysis.

The following section looks at the individual impact categories in more detail.

### 1.1.1 Climate regulation - woodland

Impacts on climate regulation examine the potential effects of options on woodland and therefore carbon sequestration.

Impacts relating to pipe laying are considered to be temporary in nature, while those relating to land take for new structures are considered to be permanent.

### 1.1.2 Food – crops and livestock

The area of land take for each option is calculated using information on the proposed new infrastructure – water treatment plants, desalination plants, pumping stations, groundwater treatment plans, boreholes and reservoirs. As the geographic information for each option is only indicative at this stage, it is assumed that all the proposed land take is from agricultural land.

The value of the agricultural land is calculated using information on the indicative monetary estimates of the gross margins (£/hectare) for selected crops from the Multi-Coloured Manual (Flood Hazard Research Centre, 2018). An average of the gross margin for different arable land types is used. This is uplifted to 2018 prices using the Irish GDP deflator, and converted to euros using the Bank of England's euro/sterling spot exchange rate.

### 1.1.3 Traffic related impacts

Traffic disruption/congestion impacts are considered for laying a pipeline in the verge of a made road. The length of pipe laid is provided from GIS data.

It is assumed that the speed of pipe laying is 30m/day for a built-up area and 40m/day for a non-built-up area. The time of delay at roadworks is calculated by the type of road i.e. motorway, National (N) road, Regional (R) road, minor road – averaging the values for urban and rural roads. The average value of time per hour is calculated using the value of time from Transport Infrastructure Ireland's appraisal guidance and apportioning it by the vehicle miles by type of vehicle for Great Britain (Road Traffic Estimates: Great Britain 2017). Data for Ireland for vehicle kilometers is not currently available.

## 1.2 Summary

The environmental and social costs for each option will be calculated and used to add to the Average Incremental Costs (AIC) to generate the Average Incremental Social Cost (AISC), which inputs to the full economic balance of supply and demand (EBS D) and EBS D Lite models.