

P2: Water Supply

Ecosystem Service Definition

The extent to which surface flow and groundwater recharge are impacted by soils and vegetation through processes of run-off and filtration.

Baseline Methods & Rationale

A non-relational baseline dataset was produced to map the Water Supply ecosystem service baseline within Gloucestershire. The rationale for not selecting a modification layer for the Water Supply baseline was the absence of an available dataset that could be used as a spatial modifier for the ecosystem service.

Opportunity Methods & Rationale

A relational opportunity dataset was produced to map Water Supply ecosystem service opportunity within Gloucestershire. The Environment Agency's (2020) Water Resource Availability and Abstraction Reliability Cycle 2 dataset was used as a spatial modification layer. This layer was selected as a proxy for water supply.

Table P2.1: Multiplier values applied for each classification of water resource availability

Water Resource Availability (% of time)	Multiplier
>= 95	1.2
94-70	1.4
69-50	1.6
49-30	1.8
<30	2.0
No available data	1.0

Limitations and Further Development

It is recognised that the ability for habitats to supply water is impacted by other spatial factors. However, a meaningful dataset that represented these factors could not be identified at the time of this study. Future work should further explore the availability of suitable modification layers to the baseline analysis to account for spatial variation of water supply provision. These datasets may include climate datasets (i.e. temperature, sun exposure, precipitation) and geological datasets (i.e. porosity, and aquifer location).

The opportunity methods modification dataset is not factual or measured, but rather modelled and estimated by the Environment Agency (2020) using best available data. Replacing this dataset with one which contains measured variables relevant to the potential capacity of a given area of habitat to supply water. In addition, the dataset is not fully contiguous and does not provide full coverage for Gloucestershire; where this is the case, a modifier value of 1.0 has been used.

The use of the water resource availability data as a modifying dataset also assumes that water resource availability is only impacted by habitat type and does not account for extraction activities in these regions.

Future work should therefore also consider the degree to which water extraction activities are undertaken. This will also provide greater insights into how the benefits of water supply are captured for use by people, allowing further refinement of the baseline layer.

References

Environment Agency, 2020. *Water Resource Availability and Abstraction Reliability Cycle 2*. Available at: <https://data.gov.uk/dataset/b1f5c467-ed41-4e8f-89d7-f79a76645fd6/water-resource-availability-and-abstraction-reliability-cycle-2>

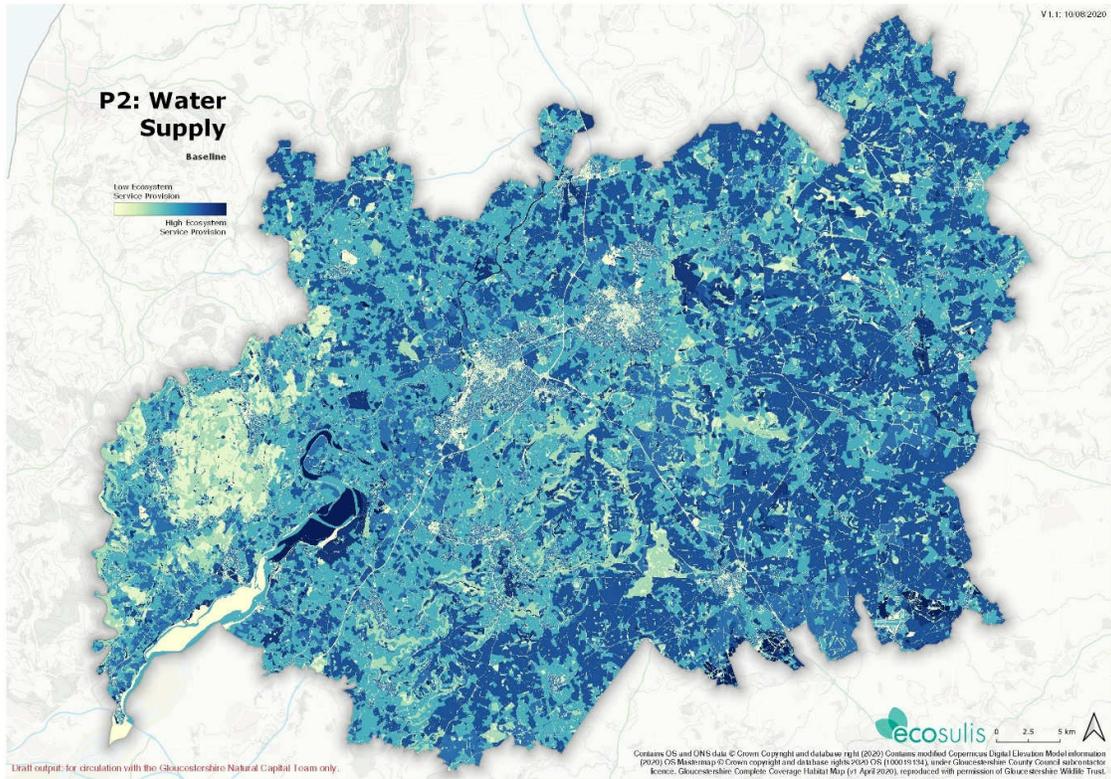


Figure P2.1: Water Supply Baseline (non-relational)

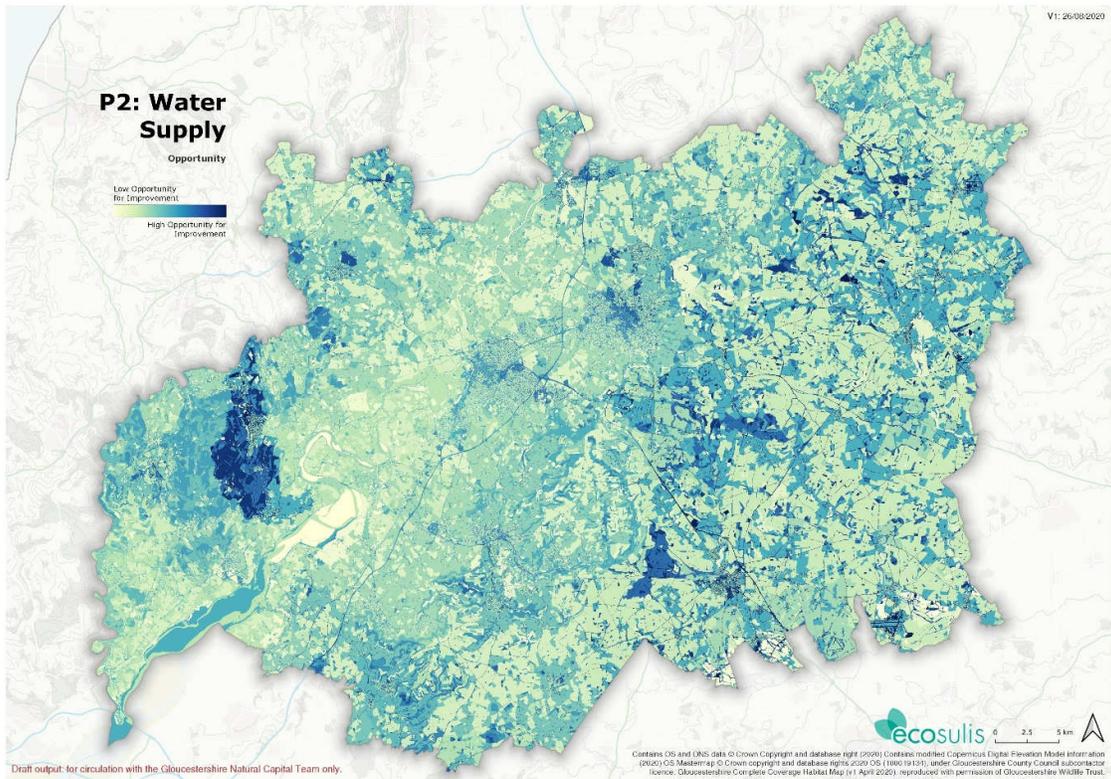


Figure P2.2: Water Supply Opportunity (relational)