



Sydney Water

Ecological & Carbon Footprints Overview FY20 to FY22

Background

The land disturbance-based Ecological Footprint (EF) methodology was originally developed in the Integrated Sustainability Analysis Research Group at the University of Sydney. It is an extension of the original ecological footprint approach developed by Wackernagel and Rees. More than ten years ago this ecological (and carbon) footprinting approach was tailored to the needs of Australian water organisations through a collaboration between the University of Sydney and the Water Services Association of Australia (WSAA).

Building on the previously published work, Areté Sustainability have created a new web-based sustainability tool. The tool uses the comprehensive economic input-output tables and environmental accounts from the Australian Industrial Ecology (Virtual) Laboratory (IELab). The combination of the Areté Sustainability tool and the IELab data allows Sydney Water (SW) to efficiently undertake extremely powerful life cycle assessments across an arbitrarily-defined entity, such as the whole organisation, project, site, or any number of sub-activities.

In this report we summarise the ecological footprint (and carbon footprint) results for the last three financial years for SW, creating a consistent time-series measurement of overall environmental impact. EF results are presented as equivalent land disturbance in hectares (ha).

The value of the Ecological Footprint

The EF methodology combines detailed direct organisation impacts (SW land use data, Scope 1 and Scope 2 emissions) with full supply chain carbon emissions (Scope 3 sources) and all supplier land disturbance impacts from the Australian economy, to yield comprehensive ecological and carbon footprint measurements. For supply chain impacts, the Areté Sustainability system works from detailed expenditure accounts, enhanced by the use of physical data as and when they are available.

The EF is commonly used as an aggregate measure of environmental pressures associated with populations, products, projects and organisations. The EF is a measure which has been developed to be sophisticated enough to capture all the important effects (across physical and temporal scales), practical enough to put into place and maintain, relevant across all levels of the organisation, and appropriate for communication to all stakeholders. The Areté Sustainability expertise, developments and capability provide the basis for a much more operational approach to sustainability analysis and reporting.

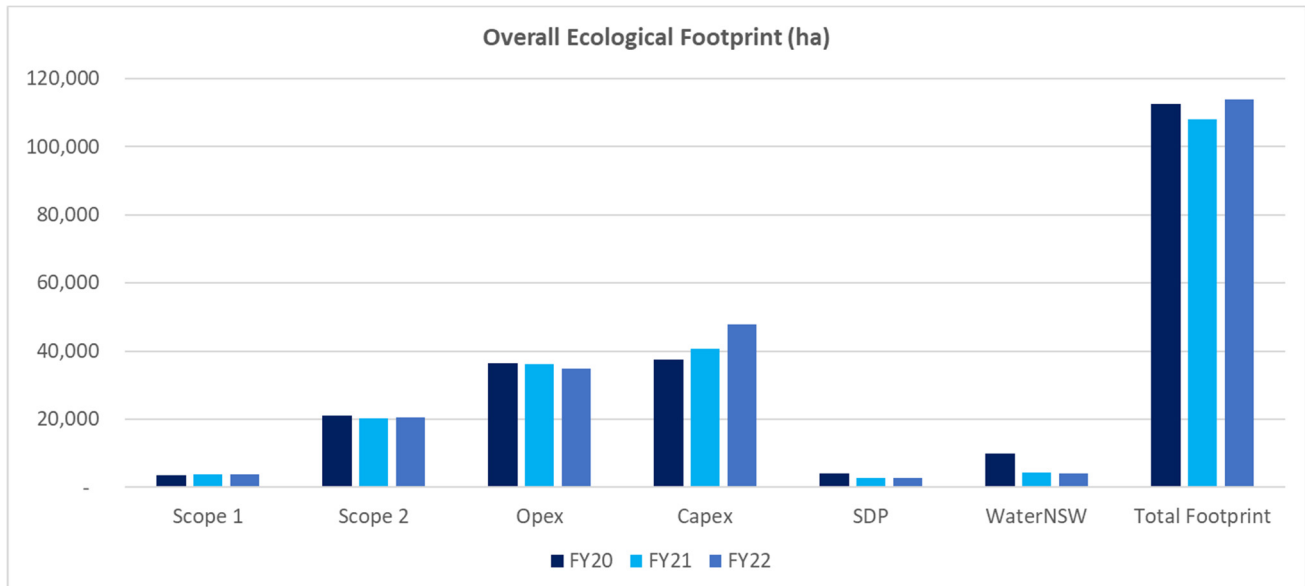
The sources of the components of Sydney Water's Ecological Footprint

In overall terms, Sydney Water's EF results from the following main components:

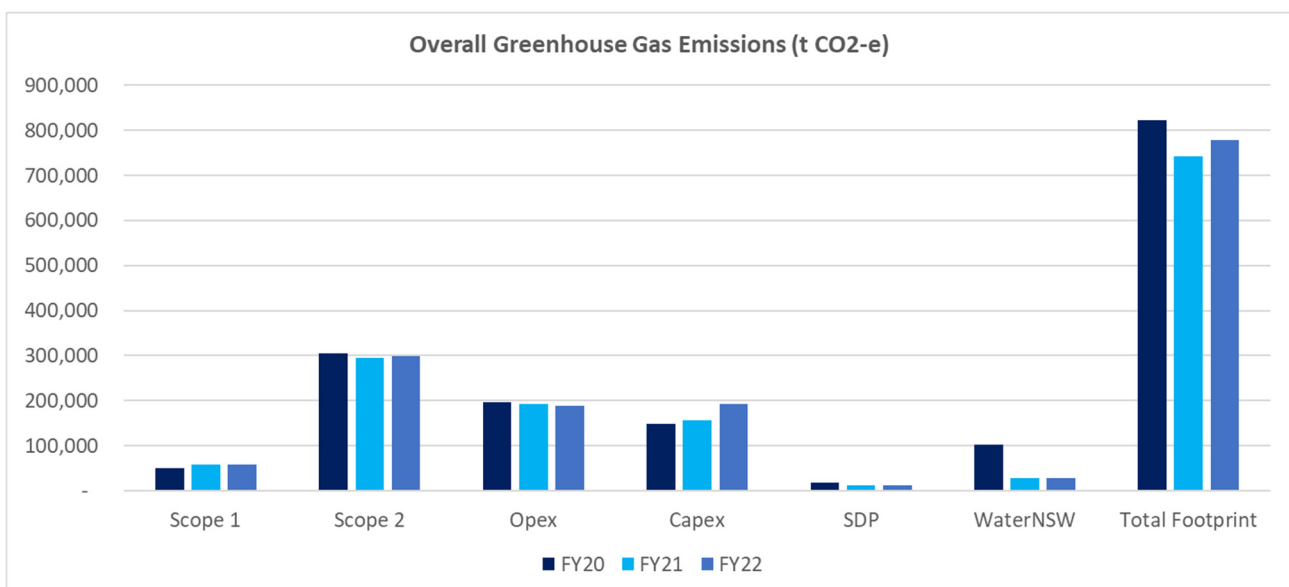
- Direct land disturbance (or influence) of approximately 5,000 ha
- Direct Scope 1 and 2 greenhouse gas emissions (in 2021-22 totalling 356,626 t CO₂-e)
- Operational expenditure (in 2021-22 an impact-related amount of ~\$1,081 m)
- Capital expenditure (in 2021-22 an impact-related amount of ~\$1,186 m)
- Desalinated water supply expenditure (in 2021-22 ~\$207 m)
- WaterNSW bulk water delivery (in 2021-22 ~\$197 m)

Ecological Footprint Overall Results

For 2021-22, SW's total ecological footprint from all sources (including direct, indirect, and Scope 1, 2 & 3 sources) was 113,800 ha. The breakdown of this total footprint is shown below. Both the footprints from the desalinated water purchase and the water delivery from WaterNSW decreased from FY20 to FY22 as drought conditions eased.



For 2021-22, SW's total carbon footprint from all sources (Scope 1, 2 & all Scope 3 sources) was 778,000 t CO₂-e. The breakdown of this total footprint is shown below. Scope 2 emissions are relatively much more important than for the EF, as are general operationally-related Scope 3 emissions (from such components as materials & chemicals). Electricity emissions associated with water delivery from WaterNSW decreased by nearly 50,000 t CO₂-e from FY20 to FY21 (& were similar in FY22). Capital expenditure increased significantly from FY21 to FY22, being the main driver of the increase in the capital activity components of both the ecological and carbon footprints.



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