Spoil to Topsoil

Applied circular economy wins: not your typical research approach

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Challenge

Icon Water generates around 2,000 tonnes of water treatment solids every year (or alum sludge, a by-product generated when treating raw water from catchments to generate drinking water).

Similar to other water utilities around Australia, we sent this 'waste material' to landfill due to limited knowledge on how to reuse it.

Additionally, we purchased topsoil to use in our restoration activities to maintain the water and sewer network in the Canberra region.

Solution

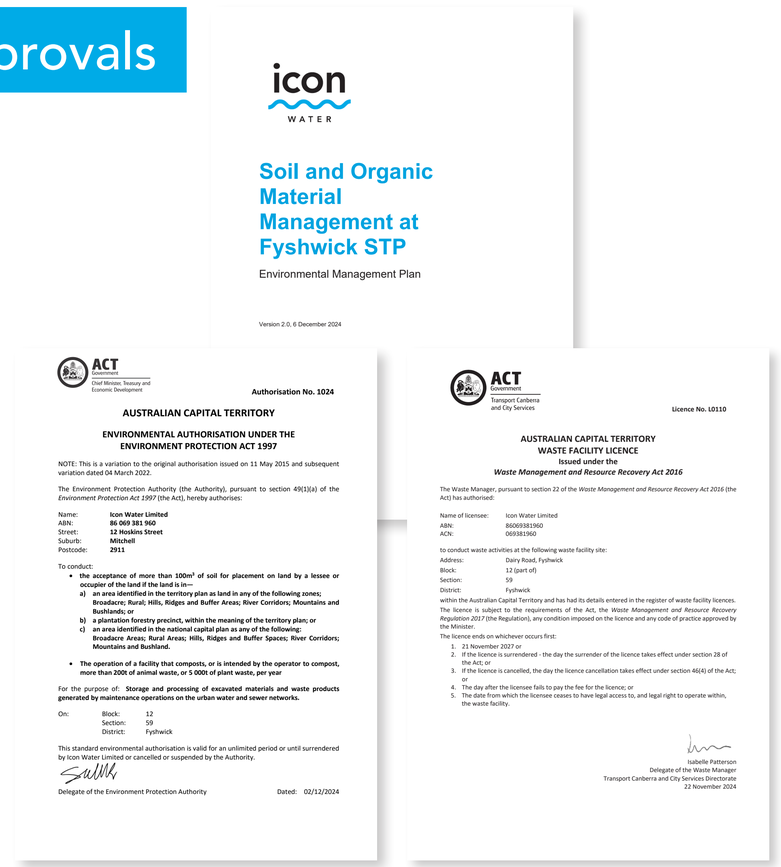
The **Spoil to Topsoil** project, in operation from Jan 2025, combines two different product streams generated by Icon Water (IW) with possibility of third product stream produced by the ACT Government:

Soil/spoil from the organisation's network maintenance excavation activities – **IW**

Water treatment solids (WTS) from water treatment plants – **IW**

Compost made from food organics and garden organics (FOGO) collected from green waste bins across Canberra – **ACT Government**

Approvals



icon WATER

Soil and Organic Material Management at Fyshwick STP

Environmental Management Plan

Version 2.0, 6 December 2024

ACT Government
Chief Minister, Treasury and Economic Development

Authorisation No. 1024

AUSTRALIAN CAPITAL TERRITORY

ENVIRONMENTAL AUTHORISATION UNDER THE ENVIRONMENT PROTECTION ACT 1997

NOTE: This is a variation to the original authorisation issued on 11 May 2015 and subsequent variation dated 04 March 2022.

The Environment Protection Authority (the Authority), pursuant to section 49(1)(a) of the *Environment Protection Act 1997* (the Act), hereby authorises:

Name: **Icon Water Limited**
ABN: **86 069 381 960**
Street: **12 Hoskins Street**
Suburb: **Mitchell**
Postcode: **2911**

To conduct:

- **the acceptance of more than 100m³ of soil for placement on land by a lessee or occupier of the land if the land is in—**
  - **a) an area identified in the territory plan as land in any of the following zones; Broadacre; Rural; Hills, Ridges and Buffer Areas; River Corridors; Mountains and Bushlands; or**
  - **b) a plantation forestry precinct, within the meaning of the territory plan; or**
  - **c) an area identified in the national capital plan as any of the following: Broadacre Areas; Rural Areas; Hills, Ridges and Buffer Spaces; River Corridors; Mountains and Bushland.**
- **The operation of a facility that composts, or is intended by the operator to compost, more than 200t of animal waste, or 5 000t of plant waste, per year**

For the purpose of: **Storage and processing of excavated materials and waste products generated by maintenance operations on the urban water and sewer networks.**

On: Block: 12
Section: 59
District: Fyshwick

This standard environmental authorisation is valid for an unlimited period or until surrendered by Icon Water Limited or cancelled or suspended by the Authority.

Delegate of the Environment Protection Authority Dated: 02/12/2024

ACT Government
Transport Canberra and City Services

Licence No. L0110

AUSTRALIAN CAPITAL TERRITORY
WASTE FACILITY LICENCE
Issued under the
Waste Management and Resource Recovery Act 2016

The Waste Manager, pursuant to section 22 of the *Waste Management and Resource Recovery Act 2016* (the Act) has authorised:

Name of licensee: Icon Water Limited
ABN: 86069381960
ACN: 069381960

to conduct waste activities at the following waste facility site:

Address: Dairy Road, Fyshwick
Block: 12 (part of)
Section: 59
District: Fyshwick

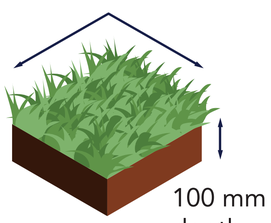
within the Australian Capital Territory and has had its details entered in the register of waste facility licences.
The licence is subject to the requirements of the Act, the *Waste Management and Resource Recovery Regulation 2017* (the Regulation), any condition imposed on the licence and any code of practice approved by the Minister.
The licence ends on whichever occurs first:

1. 21 November 2027 or
2. If the licence is surrendered - the day the surrender of the licence takes effect under section 28 of the Act; or
3. If the licence is cancelled, the day the licence cancellation takes effect under section 46(4) of the Act; or
4. The day after the licensee fails to pay the fee for the licence; or
5. The date from which the licensee ceases to have legal access to, and legal right to operate within, the waste facility.

Isabelle Patterson
Delegate of the Waste Manager
Transport Canberra and City Services Directorate
22 November 2024

Trial

Each mix = 35 m³



Canberra Turf Seed Blend

80% Fescue, 15% Rye, and 5% Kentucky blue at 250 kg/hectare

Oct 2023 — **Nov 2023** — **Dec 2023** — **Jan 2024**

Monitoring conducted

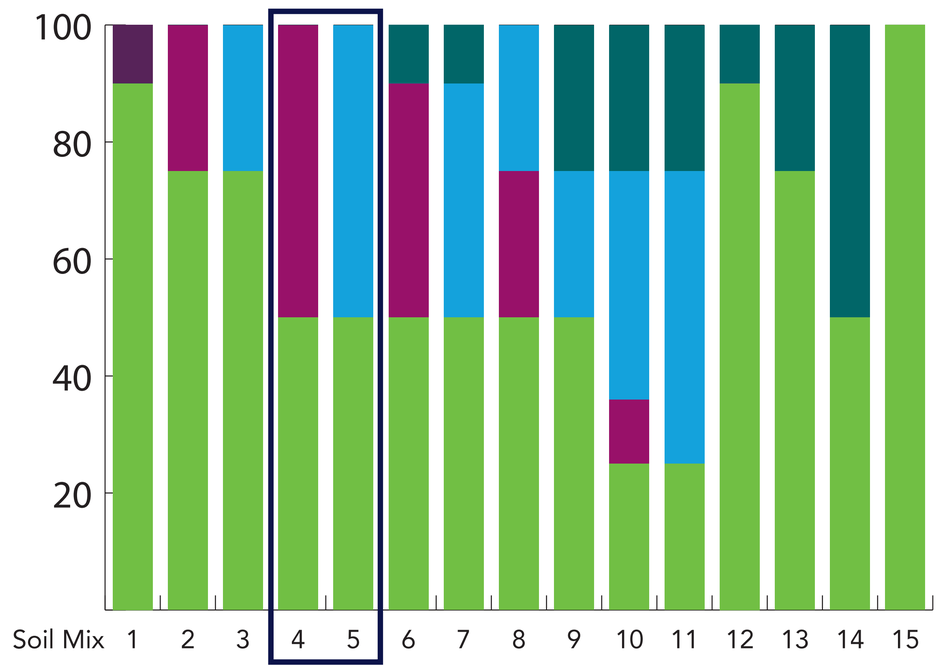
Tests to analyse physical and chemical properties of the soil mixes + Visual monitoring: Grass growth coverage and weed coverage through weekly monitoring

The winner - **Soil Mix 4 and 5**

Current process

Water Treatment Solids (WTS) and FOGO Compost

Table: Proportion of different materials in the 15 mixes created



Lessons learnt

1. **Collaboration is key**
   Work together to leverage everyone's key strengths
2. **Iterative process**
   Pivoted from using biosolids to water treatment solids
3. **Be prepared for unexpected challenges and delays**
   Climate change is real!

Benefits

- Beneficial reuse of around 2,000 tonnes of water treatment solids each year, which would otherwise go to landfill
- Financial savings by eliminating landfill fees and buying less virgin topsoil
- More streamlined restoration

Collaborators and Regulators

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ACT City and Environment Directorate (CED)

- ACT Environmental Protection Authority
- Transport Canberra and City Services