FEASIBILITY SUMMARY

FOGO – a food and garden organics service for the ACT

Prepared by Transport Canberra and City Services March 2022



Everyday climate choices



Waste Sorted www.act.gov.au/wastesorted



ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the traditional Custodians of the ACT, the Ngunnawal people. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

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FOGO A food and garden organics service for the ACT

Our commitment to reuse food waste and reduce emissions

The ACT Government has committed to providing a new food and garden waste collection and processing service for all households. Food organics from household kerbside collection is currently rotting away in landfill. In the future, a new food organics and garden organics (FOGO) collection service will enable ACT households to capture food and garden scraps and turn them into valuable compost to nourish soils in farms and gardens.

Food waste is an important sustainability challenge for the ACT. When food waste is sent to landfill it produces methane and contributes to greenhouse gas emissions. The ACT is working towards a target of reducing emissions by 50-60% by 2025 and reaching net zero emissions by 2045¹. To meet this target, and play our part in tackling climate change, the ACT Government needs to address all sources of emissions.

This is an important upcoming change to waste services. The ACT Government is working to ensure we get the right system for our community.

The purpose of this update is to share the progress that has been made so far, and the next steps on our journey towards a FOGO service for the ACT.

¹ <u>ACT Climate Change Strategy - Environment, Planning and Sustainable Development Directorate -</u> <u>Environment</u>

What is FOGO?

FOGO is short for food organics and garden organics. With a FOGO collection service, food scraps and garden waste can be disposed of in a dedicated green lid FOGO bin.





Why are we designing a new FOGO service?

FOGO makes sense

In the ACT around 26,000 tonnes of household food waste goes to landfill each year². When food waste rots in landfill it produces methane – a powerful greenhouse gas emission contributing to climate change. FOGO services help to reduce greenhouse gas emissions and turn food waste into valuable compost.

It's worth noting that around 30% of Australians already benefit from a FOGO service³ with many more jurisdictions moving to provide a FOGO service in the coming years. We are learning from the experiences of other local governments to design the future roll-out of the FOGO collection service as well as a processing facility for the ACT.



² https://www.cityservices.act.gov.au/recycling-and-waste/love-food-hate-waste/about
³ https://www.environment.gov.au/protection/waste/food-waste/recovering-organic-waste



Delivering on our commitments

The ACT Government is working to reduce waste to landfill and increase resource recovery. In 2018, the <u>Waste Feasibility Study</u> examined options to drive better resource recovery in the Territory. A key recommendation was the implementation of a kerbside FOGO collection.

The ACT Climate Change Strategy 2019-25 commits to net zero emissions by 2045. The strategy identifies a new FOGO collection for all households as a key action for the waste sector.

Australia's *National Waste Policy Action Plan* sets targets to halve the amount of organic waste sent to landfill by 2030⁴. To play our part in meeting this national target, the ACT needs to create a new pathway to reuse household food waste.

It is also a Government election commitment and is outlined in the <u>Parliamentary and</u> <u>Governing Agreement</u> of the 10th ACT Legislative Assembly.

The future FOGO service will help the ACT deliver on these targets and commitments by reducing the amount of food waste disposed in landfill and lowering greenhouse gas emissions.



⁴ https://www.environment.gov.au/protection/waste/publications/national-waste-policy-action-plan



What about avoiding food waste in the first place?

We need to avoid food waste whenever we can. When edible food goes to waste many resources are wasted and damaging greenhouse gas emissions are created. Some food waste is unavoidable such as bones, fruit cores, vegetable peelings, and coffee grounds.

The ACT Government encourages Canberrans to reduce food waste. Approximately 5,000 ACT households participated in the three-week **Food Waste Challenge** which provides simple tips for reducing food waste and saving money. Of those who completed a final survey, 90% saw a reduction in their food waste following the challenge.

How does FOGO work?

Piloting a new FOGO service

A FOGO collection pilot is currently underway with 5,000 households in selected Belconnen suburbs taking part. The pilot households are a mix of houses, townhouses and apartments. The pilot is providing valuable insights on how a city-wide FOGO service could work in future.

As part of the Belconnen FOGO pilot:

- households separate garden waste and food scraps and place them in the lime green lidded FOGO bin or a shared waste hopper
- the FOGO bin is collected every week for houses or when required for multiunit dwellings
- FOGO material is then taken to a composting facility.



Under the pilot arrangements, FOGO material is taken to an existing waste processing facility. But in future, the ACT Government is proposing to deliver a dedicated in-vessel (enclosed) composting facility capable of cleanly and safely processing large volumes of organic material.

At the new future composting facility, microorganisms will break down the food and garden waste into compost under controlled conditions. The process naturally heats up the waste to over 60°C, eliminating any weeds or pathogens. Using an enclosed facility ensures no odour can escape.

By the end of the process, the material looks like rich soil. Finished compost can be sold for gardening and agricultural uses in the ACT and beyond.

Dedicated FOGO bins

As part of the Belconnen pilot, participating households have been provided with a dedicated lime green lidded bin. In addition, they have also received a 'caddy' that can be placed on kitchen counters to collect food waste, the contents of which can then be emptied into the FOGO bin.

This matches the household equipment provided in other communities which have already rolled out FOGO services more widely.

Separating waste is easy

Many households in the ACT are already separating garden waste. The ACT introduced an opt-in collection service for garden waste in 2017. Over 98,000 households are benefitting from this service, including those household in the pilot area. This service collects around 147kg per year per household of green garden waste which is 14,400 tonnes per year across the city. With FOGO services, garden waste can be collected together with food waste in the same bin.

How can households use FOGO?

We are designing a FOGO service that can cater for the needs of different households. For example, in the Belconnen pilot:

• residents can put food scraps and garden waste in the FOGO bin



- residents who already compost their scraps at home can use the FOGO bin for food waste that they don't put in home compost – including meat, bones, and cooked food which does not compost well at home
- residents in apartments or multi-unit dwellings can put their food scraps into a kitchen caddy and then into the complex's new FOGO bin or hopper.

Choosing the right system for the ACT

Understanding our waste

Based on data from ACT household bin audits and the garden waste collection service, on average, houses in the ACT disposed of:

- 4kg of garden waste per week over a year
- 3.1kg of food waste per week over a year for houses
- 1.2kg of food waste per week for apartments.

A new FOGO processing facility

To process FOGO material and turn it into valuable compost, the ACT Government is scoping a new processing facility. Research and analysis indicate the new facility will need the capacity to process up to 50,000 tonnes of FOGO material per year in an efficient and cost-effective way. It will also need to adhere to strict environmental controls. The facility will need to be designed to process fluctuating quantities of FOGO materials over time. For example, the facility will need to process more FOGO material as households get better at separating kitchen scraps and when gardens are growing well in spring and summer. Designing for 50,000 tonnes of capacity will ensure that, in addition to household food waste, the facility can also process household garden waste and potentially also commercial FOGO material.

Locating the new facility

The ACT Government has identified available land at the Hume Resource Recovery Estate as a potential location for the FOGO processing facility. The land is adjacent to the existing Mugga Lane Landfill and the Materials Recovery Facility where recyclable materials from the yellow lid recycling bin are sorted and sold. The nearest residential area is 1.5km away. Locating the FOGO processing facility alongside existing waste infrastructure will minimise impacts, specifically odour impacts, on the community and reduce transportation needs.

The feasibility study recommended that the facility be sized with at least 50,000tpa of processing capacity from day 1 of operations and no major expansion works are expected within the first 15 years of operations.

A larger facility footprint based on 70,000tpa, was recommended reflecting both the upper limit of feedstock estimates based on the uncertainty in the available information, and growth over time. This larger value has been adopted for site selection, in order to ensure that the FOGO site has room to accommodate future expansion.

A detailed Environmental Impact Statement will be prepared to assess any potential community and environmental impacts. This process includes a public exhibition and consultation stage to allow members of the public, and other interested parties, to read the assessment and make formal submissions.

Choosing a composting method

There are many ways to process FOGO. The ACT Government conducted detailed research and a feasibility study into processing methods to find out which method is best suited to the type of waste, and the proposed location in the ACT.

A range of high-level options for processing technology and feedstock were considered:

- Open windrow composting the simplest form of composting where organic waste is composted in 'piles' known as windrows with aeration to promote maturation provided through occasional mixing or via a blower with perforations under the windrows.
- In-vessel composting (IVC) the composting process is contained within a vessel or building and aeration and temperature is controlled to optimise the composting process.
- Anaerobic digestion (AD), with energy offtakes in the form of electricity, injection to the natural gas grid or gas compression as transport fuel. AD occurs in the absence of oxygen in a fully enclosed vessel with controlled

temperature to produce biogas (rich in methane). 'Wet' AD is most common and is suitable for liquid or slurry organic feedstocks, whereas 'dry' AD is less common and can treat a proportion of solid organic content.

 Co-processing of ACT FOGO material with other feedstocks such as commercial food waste, wastewater treatment sludge, agricultural residues or FOGO feedstocks from neighbouring local government areas (LGAs), using any of the technology options outlines above.

Analysis in the feasibility study identified in-vessel composting as the best option for the ACT's FOGO waste.

Composting using an in-vessel system was found to be the best and most costeffective option for the ACT because:

- food and garden waste can be composted together and collected in the same bin. This option reduces transport emissions and is more cost effective than using two bins and different technologies to process waste
- · odour can be controlled easily in an enclosed facility
- this type of facility requires less land than open composting methods.

The in-vessel composting process

The ACT Government is in the process of designing and securing approvals for a new FOGO facility. Below is a description of how the process works in other comparable facilities around Australia.

1. Receival hall

Waste collection trucks drive into a large shed to deliver the FOGO material. The building is sealed to keep in odours.

2. Inspection and decontamination

Excessive contamination of non-compostable items like plastic bags or general rubbish are removed before composting.

3. Primary composting tunnels



FOGO material is loaded into enclosed 'tunnels', pasteurised and composted for a number of weeks.

4. Maturation

Compost is moved to a separate area to mature further for several weeks.

5. Post maturation processing and storage

Once mature, the compost is further processed to remove any residual contamination and to remove larger woody material. The compost can then be further matured and stored prior to export to markets such as agriculture and horticultural applications.

Capturing and managing odour

FOGO material and the first stages of composting can have a strong odour. With an in-vessel composting facility, the receival hall and the primary composting tunnels are fully enclosed. The process captures odour so that it does not affect surrounding areas. Large fans draw air from the receival hall, pass it through the tunnels to provide oxygen for the composting process, and then discharge the air through a treatment system to remove odours. Air from other areas within the building is treated in a similar way.





A mature technology

In-vessel composting for organic waste is a mature technology which has been proven to work effectively over many years. More and more councils are moving towards using composting technology for FOGO. In addition to the ACT's commitment to managing organic waste more effectively, the NSW Government has mandated all councils to move to separate FOGO collection by 2030.1 Many other states have also committed to a FOGO service by an earlier date.



Feasibility conclusions

In-vessel composting focusing on ACT household FOGO feedstock is the preferred option for the new facility funded by the ACT Government.

It is expected that around 42,000tpa of FOGO feedstock could be recovered made up of approximately 70% garden organics and 30% food organics. Based on this a FOGO facility should be sized with at least 50,000tpa of processing capacity from day 1 of operations with room to expand in the future.

If disposed to landfill, this material would generate methane emissions equivalent to around 73,000 tonnes of CO2-e5, which can only partially be captured by landfill gas collection.

In-vessel composting focusing on ACT household food and garden organics delivers on ACT objectives for resource recovery and emissions reduction, while managing environmental and commercial risks through the use of mature, controlled processing technology with a track record of project development in Australia. The ACT does not require additional feedstock to achieve a viable and efficient scale of processing for FOGO organics.

In-vessel composting is the preferred organics processing technology for the ACT, based on the objectives, constraints and risks. The value of renewable energy in various forms was investigated but found to be below the level which would be needed to justify more complex and costly dry anaerobic digestion options for FOGO material, while the lower level of control over odour and amenity in open-windrow composting was undesirable given the metropolitan context of the ACT and the availability ACT-owned sites to locate the facility.

Alternative proposals, other than in-vessel composting, will still be also considered during the procurement process.



Delivering on our FOGO commitments

The ACT government is working to design a FOGO collection service and composting infrastructure that will support our community's transition to net-zero emissions and a cleaner environment. Below is an overview of our progress so far and the key next steps.

2020

- Commitment to the FOGO collection service in the Parliamentary and Governing Agreement for the ^{10th} Legislative Assembly.
- Detailed research undertaken identifying in-vessel composting as the preferred FOGO processing option for the ACT.

2021

- Pilot plan and educational materials developed for the Belconnen pilot.
- Scoping for environmental assessment to enable the ACT Government to offer a site adjacent to existing waste and recycling infrastructure for development of the FOGO processing facility.
- Commencement of pilot FOGO services in the Belconnen region.
- Ongoing investigations of delivery models and construction options for a local FOGO facility.

What happens next?

- Households involved in the Belconnen pilot will continue to receive FOGO services and provide feedback on their experiences.
- The ACT Government will progress with design and scoping for a potential FOGO facility.
- An Environmental Impact Statement will be prepared for the potential FOGO processing facility site at Hume. This will include detailed information about the proposal and potential impacts.
- The ACT Government will begin the procurement process for the future FOGO processing facility.
- Service design and scoping will continue for the future roll-out of citywide FOGO services.



Stay up to date

To stay updated on the ACT's FOGO collection service and to access resources about the current pilot please visit <u>www.act.gov.au/fogo</u>







