



## FOGO Behaviour Change Business Case

*Final version*

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**Education, Training, Research**

## Project Undertaken by



**Education, Training, Research**

42 McKechnie Drive  
Eight Mile Plains, Qld, 4113

[P] (07) 3457 2400

[F] (07) 3457 2478

[E] [gld@envirocom.com.au](mailto:gld@envirocom.com.au)

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## Acknowledgments

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EnviroCom would like to thank the staff at Moyne Shire Council, Corangamite Shire Council and Southern Grampians Shire Council and also the Barwon South West Waste and Resource Recovery Group for their valuable assistance and cooperation during this project.

## Project Team

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**Project Manager:** Anna Ricketts (Business Development & Learning Advisor)

**Reporting and Editing:** Anna Ricketts (Business Development & Learning Advisor)  
Glenn Eales (General Manager)

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## 1.0 Rationale

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Moyne, Corangamite and Southern Grampians Shire Councils (the Councils) have provided a kerbside FOGO service to their residents for a number of years, however all three Councils have experienced very low diversion rates of food organics into the FOGO stream. The results from the BSWRRG 2018 regional waste stream assessment indicated that the majority of FOGO bins being presented for collection across the three Council areas were either more than 75% full, at or beyond capacity with garden waste being almost exclusively observed.

In the 2019 follow up waste stream assessment, garden materials remained the highest contributing material by type of the FOGO stream, representing on average ~93% of the material by mass. Improvement in the range of food types being presented to the FOGO stream were observed. However, on average only ~3.5% of the materials (by mass) presented to the FOGO bin was food across the three Council areas with the remainder being a combination of contamination and other acceptable materials (e.g. newspaper, pizza boxes etc.). Concurrently, loose and containerised food on average comprised 34% by mass of the residual waste stream and was the highest contributing material type (by mass) across all three Council areas.

These results indicate that increases in the diversion of food waste materials into the FOGO stream have been observed. These changes follow the implementation of limited educational interventions in early 2019. Despite the observed behavioural improvements, the FOGO service is continuing to be used (and possibly perceived by many users) primarily as a GO service.

## 2.0 Project needs and opportunity

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The introduction of a FOGO service is providing the community with an opportunity to divert existing waste materials into three rather than two different streams (general waste, recycling and FOGO). The perceived convenience of a FOGO service and the potential misconception of its purpose, has resulted in additional recovery of organic materials. The introduction of a FOGO service is not synonymous with the creation of 'new waste' and the FOGO service should not be seen as a disruptor of, or a replacement for, existing alternative home management strategies for organic materials.

This observed behaviour of 'additionality' while leading to high or increased levels of garden organics diversion is also resulting in very low levels of food organics diversion across all three Council areas. This can increase the costs of recovering organics but without necessarily contributing to a matching reduction in landfill costs. While a kerbside FOGO service is convenient, it is imperative that residents who currently (or previously, before FOGO) manage their organic waste materials at home through green waste stockpiling, mulching, composting, worm farming or backyard pets, are encouraged to continue to do so. FOGO is designed to complement existing at home organic management mechanisms and not replace them.

Project results also indicate that residents are either unwilling to divert food on mass through this system or are unaware of the acceptability of food waste in FOGO. Additionally, residents may consider that food waste could not fit in their FOGO bin based on their current generation and disposal behaviours of garden organics or are unaware of the amount of food waste generated and disposed through the kerbside

collection systems. Each of these possible behavioural influences are not likely to act in isolation and it is expected that combinations of these influences are acting concurrently on individuals and households.

The focus for FOGO should therefore be on maximising diversion of organic materials from landfill rather than promoting the additional recovery. As the FOGO service is continuing to be used primarily as a GO service there is an opportunity to challenge this perception by targeting and addressing food waste generation and disposal practices in the household maximising opportunities for the diversion of food waste materials away from landfill.

### **3.0 Behaviour Change Implementation Plan summary**

Based on the results from the research and intervention phases of the project and the data collection and comparison from the 2014, 2018 and 2019 waste audit assessments, EnviroCom has developed a Behaviour Change Implementation Plan (BCIP) that has one overarching objective supported by six critical and interconnected behaviour change drivers.

#### ***BCIP overarching objective***

**Eliminate the presentation of food waste materials to the residual waste stream**

#### ***BCIP behaviour change drivers:***

1. **Terminology-** use of consistent terminology & effective language across all platforms & mediums to eliminate confusion & enhance user recall
2. **Material acceptability-** improve knowledge & understanding of material acceptability and encourage the 'practicing of knowledge' to maximise diversion and minimise contamination
3. **Material separation-** encourage effective & efficient use of material separation options (caddies & liners) and/ or DIY solutions to maximise diversion & minimise contamination
4. **Barriers to diversion-** provide practical tools and approaches to address barriers related to odour and capacity
5. **At home organics diversion mechanisms-** support for at home mechanisms for organics diversion through education & engagement to mitigate issues related to garden waste 'additionality'
6. **Environmental benefits-** share composition monitoring results & promote environmental benefits of landfill diversion & end use of FOGO materials as behaviour change motivators

A range of community engagement approaches and tools have been considered to address each of the behaviour change drivers and meet the needs of the target audience. Used strategically, these approaches will effectively encourage the community to transition from an improved knowledge and understanding of FOGO to achieving and sustaining the required behaviour change i.e. eliminate the presentation of food waste materials to the residual waste stream. These community engagement approaches include:

- FOGO related media
- FOGO related collateral, promotional materials and giveaways
- FOGO related workshops/ training and tours
- FOGO related events and displays
- FOGO related community campaigns

- FOGO servicing restructure

Using these community engagement tools and approaches, a range of prioritised actions and initiatives have been proposed. Underpinning and supporting these activities, are mechanisms for evaluating, monitoring and assessment that allows for the capture and reporting/ sharing of relevant data.

In combination, these processes provide the overarching strategic BCIP framework. Having an integrated framework helps ensure that the needs and expectations of FOGO users across the three Council areas are met, while providing triggers that prompt continual improvements. The continual improvement is important so that the FOGO service is consistently 'fit for purpose' and can respond to changes in community composition over time. The combination of the areas of focus, highlighted in the framework, will work to meet the overarching BCIP objective: to eliminate the presentation of food waste from the residual waste stream.

## 4.0 Options

EnviroCom suggests that the Councils have two options in relation to the existing kerbside FOGO service:

**Option 1: Business as usual**- This would involve the Councils not actively promoting the FOGO service or implementing any additional strategic, targeted or measured community education and engagement measures to address, change or influence FOGO related behaviours.

**Option 2: Adopt the BCIP**- This would involve the Councils reviewing and accepting the key BCIP objective and the supporting behaviour change drivers and implementing the prioritised actions and initiatives by utilising the community engagement approaches and tools suggested to positively influence FOGO related behaviours.

## 5.0 Risk assessment of options

### Option 1: Business as usual

Risk	Impact (high/med/low)	Likelihood (high/med/low)
Increase in volumes of garden organics materials diverted into FOGO stream	Medium	High
Increase costs for organics recovery	High	High
Resource loss to landfill (increasing volumes of FOGO eligible food materials in residual stream)	Medium	High
Increase costs for landfill disposal	High	High
Increases in greenhouse gas emissions (methane) at landfill	High	Medium
Increase in waste disposal fees in Council rates	High	High
Increase in negative community feedback	Medium	High
FOGO bin capacity complaints- community	Medium	Medium
Increase risk of FOGO contamination	High	Low

**Option 2: Adopt the BCIP**

Risk	Impact (high/med/low)	Likelihood (high/med/low)
Increase in volumes of organic waste diversion to FOGO stream	Low	High
Changes in costs for organic recovery	Medium	Medium
Resource loss to landfill (increasing volumes of FOGO eligible food materials in residual stream)	Medium	Low
Increase costs for landfill disposal	High	Low
Contamination levels in FOGO change/ increase	High	Medium
Increases in greenhouse gas emissions (methane) at landfill	High	Low
Increase in FOGO bin capacity & odour complaints-community	Medium	Medium
Increase in general negative community feedback	Medium	Low
Council staff/ project managers change during project implementation	Low	Medium
Delays in project implementation	Low	Medium
Increase in project delivery costs & capital expenditure	Medium	High
Inadequate resourcing or staff skillsets to deliver project	Medium	Medium
Changes required to waste service and collection schedules	Medium	High

## 6.0 Behaviour Change Implementation Plan value analysis

Adoption of the BCIP is likely to continue to deliver improved participation in the diversion of food waste to the FOGO stream. An examination of the data collected in 2014, 2018 and 2019 has allowed for the development of generation and diversion models for food waste. These models allow for decreasing rates of additional drift of food from at-home systems to the kerbside systems but anticipates no specific reduction in the rate of growth of food waste generation within the household. Furthermore, the models allow for decreasing rates of uptake of change behaviour within the community over time to model a reducing number of households adopting new behaviours as the changed behaviours become normalised.

The modelling assumptions and change behaviour modelling for each Council area have been presented in Appendix One. The models indicate that resource recovery rates (the proportion of food waste disposed in FOGO service compared to the total amount disposed in the kerbside systems) to approach those observed in the recycling streams in Council areas with a mandatory FOGO service by approximately 2025. Where the FOGO service is optional, this level of diversion is not expected. Table One summarises the potential outcomes based on two prediction models. The first uses the rate of change observed from 2014 to 2018 to model the business as usual case. This case assumes the rates of change observed over the four-year period were continued from 2018 onward. The second model utilises the additional 2019 data to model the adoption of the BCIP case. This data is used to represent a community changing its approach to food diversion based on communication efforts, normalised behaviours and other behavioural change incentives.

**Table One – Modelling of possible changes from BCIP**

	Moyne SC	Corangamite SC	Southern Grampians SC
<b>BAU (2025)</b>			
Resource Recovery	15-20%	4-6%	3-5%
Food Waste Generation (total)	3.0 - 3.5 kg/bin/wk	2.5-3.0kg/bin/wk	3.0-3.5kg/bin/wk
FOGO Recovery	0.50 - 0.55kg/bin/wk	0.1-0.15kg/bin/wk	0.1-0.15kg/bin/wk
Resource Loss (Residual Containers)	2.5-3.0 kg/bin/wk	2.5-3.0kg/bin/wk	3.0-3.5kg/bin/wk
<b>BCIP (2025)</b>			
Resource Recovery	60-65%	60-65%	45-50%
Food Waste Generation (total)	4.5-5.0kg/bin/wk	5.5-6.0kg/bin/wk	4.5-5.0kg/bin/wk
FOGO Recovery	3.0-3.5kg/bin/wk	3.5-4.0kg/bin/wk	2.0-2.5kg/bin/wk
Resource Loss (Residual Containers)	1.5 -2.0kg/bin/wk	2.0-2.5kg/bin/wk	2.5-3.0kg/bin/wk

As Shown in Table One, the modelled outcomes from extension of the observed behaviour changes could result in significant changes to the waste stream mix. Whilst in all cases, the amount of food waste to landfill is likely to increase in the very short term, over the longer timeframe (to 2025) this is predicted to reduce.

In all modelled scenarios, no allowance has been provided for effective food waste avoidance behaviours and, as such, the total amount of food waste generated and disposed is expected to continue to increase. Perversely, in the BCIP scenario, this is expected to grow at greater rate than the previous BAU case. This is expected to be, in part, a response to the additional convenience of FOGO kerbside disposal having an increased pull factor over at-home treatment methods. In the modelling, the additional communication regarding food waste disposal is considered, while the efforts in this communication to reduce the impact of the pull factor is not.

Furthermore, the modelling allows for a continued decrease in the adoption of diversion behaviours over time. This is expected, as there are likely to be fewer 'new' households to adopt behaviours over time, as the behaviours become the social norm.

Despite building these 'limiting' factors into the modelling, significant diversion is still observed in all the areas, with the greatest outcomes believed to be available to areas with mandatory diversion services. The modelling does not anticipate significantly 'better' results than those expected and observed within kerbside recycling behaviours across the country, however, based on the rates of change observed between 2014-2018, 2014-2019 and 2018-2019, the modelling indicates these outcomes could be achieved within the period to 2025 if supported by the BCIP.

The same modelling predicts limited growth through the 'business as usual' programs, with the best results likely to be observed in the Moyne region. This may be a further indication of the potential for intervention to influence the waste stream results, with previous educational interventions already implemented in the 2014-2018 period in this region.

Tempering these positive results is the underlying amounts of food waste that may remain in the residual waste system. Based on the observed behaviours, Moyne Shire



Council is likely to manage less food through the residual waste stream, while Corangamite and Southern Grampians Shire Councils are expected to manage approximately the same amount of food waste in this system in 2025 as they were in 2018. In Corangamite this would be a reduction on the 2014 levels, but in Southern Grampians, it appears that without a mandatory FOGO diversion system, significant improvements are unlikely over the 2014 and 2018 food to landfill volumes.

## 7.0 Assumptions

The FOGO Behaviour Change Business Case and associated FOGO Behaviour Change Implementation Plan (BCIP) make a number of assumptions. These include:

- That Council staff currently responsible for waste education and community engagement will be primarily responsible for delivery of the BCIP
- That the Barwon South West Waste and Resource Recovery Group (BSWRRG) will be available, and will continue to be available, to all three Councils to provide ongoing support in the delivery of the actions and initiatives outlined in the BCIP
- That the Councils have the necessary resources and skillsets to be able to develop and deliver the actions and initiatives outlined in the BCIP, or have the ability/ funding to be able to outsource these to external parties/ contractors as required
- That the Councils will review the proposed actions and initiatives as outlined in the BCIP and develop an annual plan for the strategic implementation of actions and initiatives based on available budget, staff availability, resources and skillsets
- That the Councils will allocate sufficient time to develop and implement the actions and initiatives as outlined in the BCIP within the timeframes stipulated, in addition to delivery of current and upcoming projects and existing workloads
- That the Councils will have the support of other Council departments, Council executive team and Councillors for the implementation of actions and initiatives as outlined in the BCIP
- That effective communication channels between external stakeholders including existing waste contractors and FOGO end use processors will continue to exist so that any changes regarding material acceptability or service schedules (as examples) are communicated in a timely manner so that appropriate action can be taken in regards to the implementation of actions and initiatives outlined in the BCIP
- That the Councils will undertake regular monitoring, evaluation and assessments processes (as proposed in the BCIP) and use these results to shape the strategic delivery of the BCIP actions and initiatives to ensure the BCIP remains 'fit for purpose' and responsive to community needs over time

## 8.0 Cost estimates

The costs to implement the initiatives and activities outlined in the BCIP will be very much dependent on staffing availability, staff skillsets, access to inter-departmental support and access to resources. As a result, it is not possible to provide detailed costs against each of the actions and initiatives due to the numerous perceived variables and Council specific considerations. The BCIP has prioritised each of the actions as either low, medium or high, providing the Councils with an indication of the actions considered to be of greatest priority, so allocated budget should be assigned

to these actions. The BCIP has also provided an indication of whether costs for development and delivery of the initiatives and activities are anticipated to be low, medium or high.

Within the BCIP, EnviroCom has provided a budgetary consideration (education only and excluding service changes) as a guide for the Councils in implementing the Plan over the next three to five years.

## 9.0 Appendix One – Change Behaviour Modelling

### 9.1. Modelling Assumptions

Waste composition assessments have been undertaken in the focus areas in 2014 and 2018 with a smaller assessment undertaken in 2019. The rate of change in food presentation to the FOGO system was examined across these three assessments.

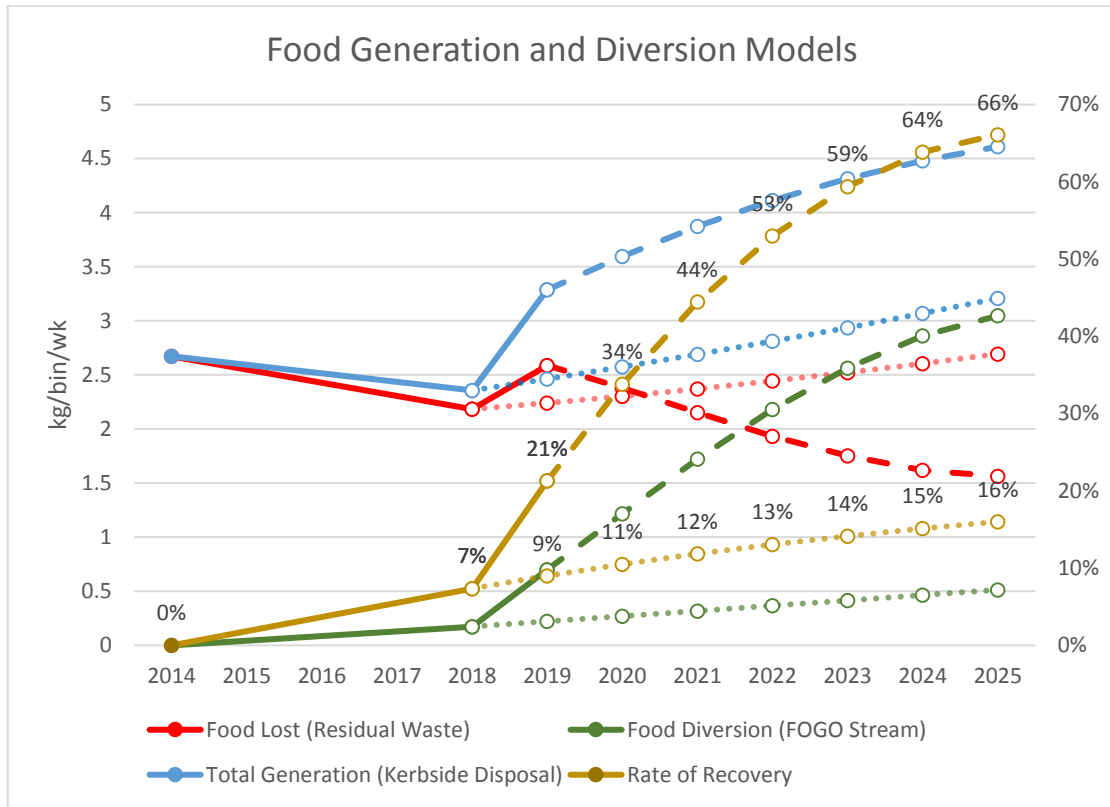
The assessments noted limited increases in the amount of food waste presented to the FOGO stream in the period between 2014 and 2018. However, in all areas the rate of change in presentation (difference over time) was observed to increase between the 2018 and 2019 assessments. These rates are represented by the solid lines in the graphs below.

To extrapolate the potential for improvement into the future, the observed rates of change (both between the individual assessments and across all assessments) were utilised. Two extrapolations have been generated; the dotted extrapolation represents the observed rates of change from the 2018 assessment in a 'business as usual' scenario. These models demonstrate primarily linear changes, however, the model does include decreasing behavioural adoption over time as has been observed across many waste diversion systems.

The dashed lines focus on the forecast if ongoing and effective education initiatives were implemented. This model observes the changes in behaviour observed (both increased diversion and increased generation of food and total waste) and extrapolates these changes with increasingly diminishing effect. The tapering or flattening of the change is generated from assumptions about the changing rates of growth in:

1. Total food waste generation to kerbside – the most recent assessments indicate that the amount of food waste being generated in the household and presented for diversion to the kerbside systems has increased. This increase provides for greater volumes of materials to be diverted to FOGO. However, the current rate of increase is not considered appropriate or sustainable in the current climate of food waste reduction strategies. As a result, the rate of increase has been created at a rate of 10% compounding per annum to reflect a conservative consideration of the food waste stock available for diversion.
2. Rate of change in presentation behaviours – the current model observes the rate of change 2018-2019 and decreases the rate of change by 5% per annum (compounding) for the initial 4 years of forecast and then 20% in the fifth year. These rates of change are considered to acknowledge that number of non-participating households that may adopt change will decrease over time providing for only incremental improvements in the medium to longer term.

9.2. Moyne City Council

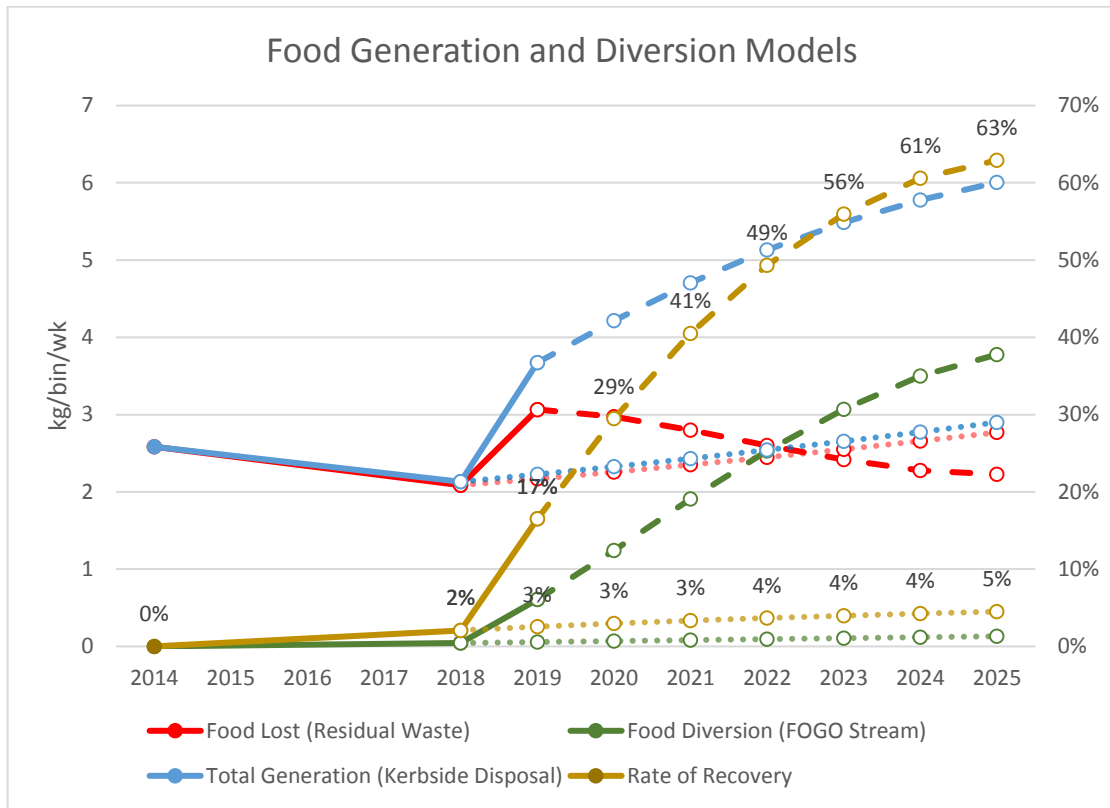


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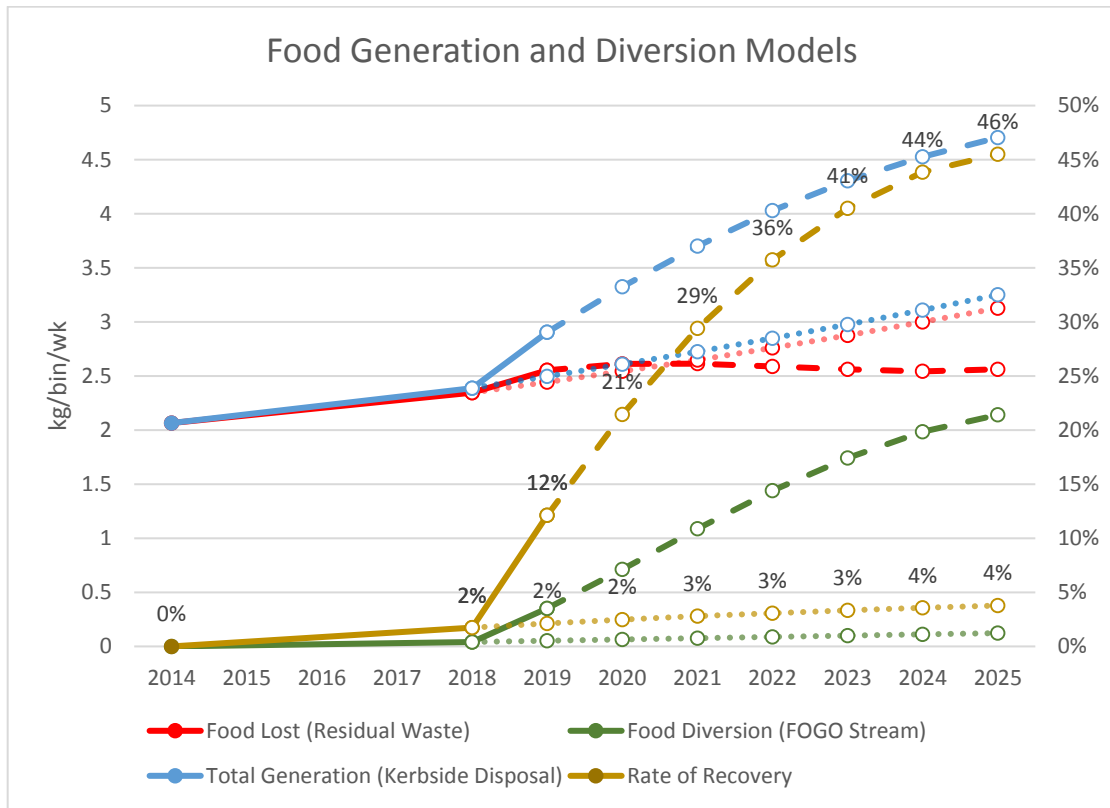
Adopt the BCIP: - - - - -

Business as Usual: . . . . .

### 9.3. Corangamite Shire Council



9.4. Southern Grampians Shire Council



**Key:**

Adopt the BCIP: - - - - -

Business as Usual: . . . . .