Narromine Shire Council

Waste Management Strategy 2020-2028

March 2021

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1. Introduction

1.1 Overview

Narromine Shire Council (Council)'s previous waste management strategy covered the period 2014 to 2016 and therefore requires a substantial review and update. Council engaged GHD Pty Ltd (GHD) to undertake a review of Council's current waste management operations and develop a new waste management strategy.

This waste management strategy (Strategy) considers Council's existing waste operations and current relevant regulatory frameworks, NSW and regional policies to ensure that Council will have access to funds under the State Government Waste Less, Recycle More program.

1.2 Purpose of this report

The purpose of this report is to:

- Review the previous waste management strategy
- Provide an overview of the results of the situational analysis – which included a review of the current:
  - waste management services, operations and facilities
  - community education and engagement
  - performance of waste services, infrastructure and assets
  - costs and cost recovery relating to waste management
- Identify Council's vision and strategic objectives for its waste management services, operations and facilities, and
- Prepare a waste management action plan for the local government area for the years 2020 to 2028.

2. History

Waste Management Strategy 2014-2016, Narromine Shire Council

The *2014-2016 Waste Management Strategy* prepared by Geolyse, identified the following objectives:

- Improve community education to bring about a reduction in waste generation;
- Increase the reuse and recovery of materials;
- Ensure that all waste related activities are delivered in compliance with relevant legislative and environmental framework;
- Minimise the adverse impacts of waste operations on public and environmental health and safety;
- Ensure the provision of NSC's waste services are cost effective and equitable; and
- Ensure that residents understand the Council's vision for waste management and that it accords with their own views of what is important; and
- Maintain a strong relationship with NetWaste to the benefit of Narromine.

The *2014-2016 Waste Management Strategy* outlines targets and an action plan for Council to improve its waste management services. These targets and associated action plan were reviewed to understand the current status and inform future actions and targets.

Table 2.1 below outlines financial, environmental, community education, resource recovery and NetWaste targets stated in the existing waste management strategy prepared by Geoloyse and Council's current status in achieving these targets.

Table 2.1 Council's waste management strategy (Geolyse, 2014) – Target review

Key area	Council's Target	Current status
Finance	Within 6 months of the adoption of the Geolyse Waste Management Strategy, Council targets the development of a robust financial model to inform and provide Council with accurate information on cash-flow, sustainability and opportunities for waste management.	Not completed
Environment	Ensure that Annual EPA returns are accurately compiled and submitted on time.	Ongoing
	Within the life of the Geolyse Waste Management Strategy investigate the use of phyto - capping as an alternative means of divert organics from landfilling.	Not completed
	Conduct yearly audits of all facilities to ensure compliance with EPLs and EMPs	Council commissioned a compliance audit for the Narromine Waste Facility in 2018
Community education	Each year for the life of the Geolyse Waste Management Strategy commits to directly engaging with the community through targeted actions including newspaper advertisements, surveys, Councillor engagement and open days.	The community engagement and education activities associated with the FOGO contract supersede

Key area	Council's Target	Current status
Resource recovery	By 2016 it is the aim of Council to target the increase of recovery and use of secondary materials in the three major waste streams in line with the WARR Strategy, as follows: • Municipal waste – 66% • Commercial and Industrial (C&I) waste – 63% • Commercial and Demolition (C&D) waste – 76%	July 2019 to December 2019 data indicates that Council is currently achieving 48% resource recovery.
NetWaste	Maintain and continue to develop the relationship with NetWaste.	Ongoing
	Within the life of the Geolyse Waste Management Strategy, Council will engage with NetWaste to investigate the viability of becoming involved in the development of a regional waste management facility.	Council has participated in the regional FOGO contract

Table 2.2 summarises the proposed actions and Council's current status for each listed action. In consultation with Council, relevant actions that have not been completed have been carried forward and captured in the new action plan.

Table 2.2 Council's waste management strategy (Geolyse, 2014) – Action plan review

Key Area	Proposed action	Current status
Community Education	CE1 - Develop a framework for ongoing community education and collection of feedback on waste management initiatives.	Not completed – superseded by the joint waste communications and education initiative under the FOGO contract
	CE2 - Investigate the most appropriate manner in which community representatives that are enthusiastic about waste management can contribute to, and support Council, with the ongoing management of waste and development of waste initiatives.	Not completed
	CE3 - In consultation with NetWaste, develop an anti-littering waste education plan.	Not completed – superseded by the joint waste communications and education initiative under the FOGO contract
Environmental	E1 - Develop an audit framework that can be applied to all waste infrastructure sites.	Not completed
Financial	F1 - Develop a financial model to inform waste management including provision of future infrastructure and ongoing service needs.	Not completed
Reaching municipal recovery targets	MR1 - Maintain affiliation with NetWaste to facilitate implementation of waste reduction projects accessible to Council.	Ongoing – regular meetings (every 2-3 moths) with NetWaste as well as regular meetings with Mid-western and Dubbo Councils

Key Area	Proposed action	Current status
	MR2 - Investigate and prepare cost estimates for the establishment of drop-off facilities in Narromine and Trangie to improve recovery of recyclable materials.	Not completed
	MR3 - Investigate and prepare cost estimates for the bulk purchase of home compost bins for access by the community. Undertake a cost/benefit analysis and risk assessment to determine the sustainability of this action coupled with ongoing community education.	Not completed – superseded by the FOGO collection service
	MR4 - In consultation with NetWaste and Dubbo City Council, determine the respective benefits of developing a regional composting facility in Dubbo and support the application of grant funding for the construction of infrastructure.	Completed – as part of the joint FOGO facility with Mid-western and Dubbo Councils
	MR5 - Investigate and prepare cost estimates for the establishment of a kerbside collection service of organics waste.	Completed – as part of the joint FOGO facility with Mid-western and Dubbo Councils
	MR6 - Investigate the possibility of providing smaller bin sizes with a variable charging scheme for smaller bins.	Ongoing – The red general waste bin will retain weekly collections up to June 2021. An audit will then be conducted to assess bin capacity utilisation and identify options to suit.
Reaching C&I recovery targets	CIR1 - Initiate discussions with local businesses including Coles Supermarket to phase out plastic bags and promote the use of compostable bags.	Not completed
	CIR2 - Investigate and prepare cost estimates for the drop off facilities in Narromine CBD and industrial areas.	Not completed
Reaching C&D recovery targets	CDR1 - Prepare development controls to introduce requirements for builders and developers to prepare “Waste management Plans” when submitting development and construction certificate applications to Council to improve and increase separation. This could include preparation of a template to simplify the process and guide developers;	Not completed
	CDR2 - Expansion of Narromine WMF into adjacent property (Lot 7002 in DP 1029073) via acquisition.	Not completed

3. Strategy development process

This Strategy was developed in a collaborative manner with Council to capture its vision and intended outcomes. Prior to finalisation of this Strategy, a draft will be presented to Council's Executive Management Group for feedback.

The development of this strategy involved:

1. Data collection and review of available documentation provided by Council to understand Council's current waste management operations and situation (as outlined in Section 4).
2. Site inspections to Council's three (3) waste management facilities to observe and understand operations, assess compliances and environmental management at the facilities
3. Financial and cost recovery review associated with Council's waste management facilities and services including development of a simple financial model to provide a snapshot of current financial expenses and cost recovery.
4. Undertaking a gap analysis, opportunities and options identification exercise. Key issues and opportunities identified during the document review, site inspections and financial review were documented in GHD's *Narromine Shire Council Waste Management Strategy – Interim Report* (2020). The results of this exercise forms the basis of this Strategy and the action plan.
5. Distillation of key issues and opportunities to identify broad strategies and a series of draft actions for presentation to Senior Council staff and the Executive Management Group.

4. Situational review

4.1 Population

4.1.1 Current population

The Narromine LGA is made up of the following localities:

- Bundemar
- Burroway
- Dandaloo
- Gin Gin
- Narromine
- Tomingley
- Trangie.

The latest (2018) estimated residential population for Narromine LGA is 6,600 people (ABS, Regional Population Growth). In the 2016 Census, the population of the Narromine LGA was approximately 6,489 (ABS, 2016), showing a decrease of 2.9% from the 2011 Census, which indicated a population of 6,682 people (ABS, 2011).

4.1.2 Population projection

The NSW Department of Planning, Industry and Environment (DPIE) has developed population projections for the state, regions and all local government areas in NSW. The current projections are based on Local Government Areas as at 30 June 2019, with data based on the ABS and Australian Statistical Geography Standard (ASGS) 2019. DPIE forecasts the population profile in the Narromine LGA to be in decline.

There is a positive indication of growth in the agricultural and mining sectors, hence Council expects a reverse in the decline of population in the future census data As a result, Council plans for a 1% increase in population each year. Table 4.1 shows the incremental population size and dwelling projection for Narromine LGA based on Council's predicted growth rate of +1%.

Council's combined focus on economic development, industry growth and improving the standard of living to help retain a younger workforce across the Narromine LGA, provides employment opportunities along with the lifestyle that is desired, all contributing to a stable community with long term sustainability. Council has a primary focus on the provision of desirable and competitive standard of living with improvements in a range of services and facilities, along with the available education opportunities that entice new residents and businesses.

Table 4.1 Population and dwelling projections

	2016	2021	2026	2031	2036	2041
Total population	6,600	6,930	7,280	7,640	8,020	8,420
Dwelling projection	3,050	3,200	3,360	3,530	3,710	3,890

4.2 Current waste management services

4.2.1 Collection frequencies and capacity

Council provides kerbside collection services for residential and C&I areas. The collection service is for general waste (one 240L bin) and recyclables (one 240L bin). General waste is collected on a weekly basis, whereas recyclables are collected on a fortnightly basis. The recyclables collection service occurs on the same day as general waste on alternate weeks. As of 1 July 2018, Council commenced FOGO services for residential areas, replacing the garden organics only service.

C&D waste is dropped off at the Narromine and Trangie WMF as Council does not offer a collection service for C&D waste.

General waste collection (240L bins) for public areas such as parks and streets within Narromine and Trangie occurs every Monday and Friday. The general waste is sent to the Narromine WMF.

Table 4.2 below summarises collection services, frequencies and capacities provided within the Narromine LGA. The residential organics collection commenced in July 2018. All collection services stated in Table 4.2 are provided by JR Richards & Sons.

Table 4.2 Collection frequencies and capacity

Service Area	Service type	Frequency	Capacity	Average no. of services households per collection (2018-2019)***
Residential	General waste	Weekly****	One 240L bin	2,694 households
	Recyclables	Fortnightly (on the same day as general waste on alternate weeks)	One 240L bin	2,261 households
	Food and garden organics (FOGO)	Weekly	One 240L bin	1,961 households
C&I*	General waste	Weekly	One 240L bin	-
	Recyclables	Fortnightly (on the same day as general waste on alternate weeks)	One 240L bin	-
C&D	C&D waste	Nil*	Nil*	-
Parks and streets (within Narromine and Trangie)	General waste	Every Monday and Friday	240L bins	-

*Council intends to roll-out FOGO collection services to commercial businesses with frequencies determined on a case-by-case basis using 240L bins.

**Council does not offer a collection service for C&D waste. C&D waste is dropped off at Narromine and Trangie WMFs by responsible parties.

*** Sourced from JR Richards & Sons (JRR&S), (2019), Waste Management Services Contract Management Report, dated June 2019.

****As of 1 July 2020, Council intends to reduce the frequency of general waste collection in residential areas to fortnightly collections.

4.2.2 Contracts

Collection

The kerbside general waste and recycling collection service for residential and C&I areas for the Narromine LGA is carried out by JR Richards & Sons, who have been contracted up to 1 July 2028.

Council's FOGO collection services operate under a three-way joint contract with the Dubbo Regional Council and Mid-Western Regional Council.

Processing

All collected cardboard and paper are transferred from Trangie WMF and Tomingley transfer station to Narromine WMF where it is pressed before being sent to AMCOR in Sydney for processing.

All scrap metal collected at the three (3) waste facilities is picked up by Sims Metal Management for processing via a NetWaste Contracts for the participating councils.

Collected commingled recyclables are sent to a materials recovery facility nominated by the party providing the collection service (JR Richards & Sons).

4.2.3 Supporting services

The Narromine WMF, Trangie WMF and Tomingley Transfer Station accept drop-offs from residents and businesses for general waste and recyclables. All drop-offs are charged a gate fee.

DrumMUSTER program

The DrumMUSTER program involves collection and recycling of eligible, cleaned (via triple wash) agricultural and veterinary chemical containers. The Narromine WMF, Trangie WMF and Tomingley transfer station collect drums for recycling which are then recycled by a third-party into re-usable products.

Illegal dumping & littering

Council previously provided a program to manage illegal dumping in conjunction with NetWaste (funded through a grant). Upon conclusion of this program, Council now provides the Regional Illegal Dumping (RID) tool and hotline services for residents to report illegal dumping.

Litter clean-up is carried out on main streets around townships of the Narromine LGA, however no formal litter clean-up reduction program has been updated by Council.

An initiative run by members of a local fishing club of the Narromine LGA involves pick-up of litter in local river precinct and drop-off to any of the three (3) waste facilities.

Table 4.3 shows the number of illegal waste disposal complaints received by Council from 2015 to 2019.

Table 4.3 Number of illegal waste disposal complaints (State of the Environment Snapshot 2018-19)

	2015-16	2016-17	2017-18	2018-19
Number of illegal waste disposal complaints to Council	6	3	5	43

Electronic waste disposal

Disposal of batteries and mobile phones is available in local post-offices.

Return and earn

'Return and Earn' services are provided at a limited capacity within the Narromine LGA. The Courthouse Hotel in Narromine receives 'Return and Earn' containers periodically. Further, a local member of the public (commonly known by others as the 'Trangie Can Man') actively picks up recyclables around the townships for deposition at the 'Return and Earn' service.

Bulky waste disposal

Council currently implements a token system for bulky waste disposal, where two (2) tokens per household per year is provided for residents to drop-off bulky waste at any of the three (3) waste facilities. Council has indicated that these tokens are specifically distributed for use of in-house residents or tenants, and not the property owners.

4.3 Current waste management infrastructure and assets

The Narromine LGA is serviced by two (2) waste management facilities (WMFs) and one (1) transfer station, as follows:

- Narromine Waste Management Facility
- Trangie Waste Management Facility
- Tomingley Transfer Station

4.3.1 Narromine Waste Management Facility

Location and operation hours

The Narromine MWF is located on Gainsborough Road, Narromine NSW, which is approximately three kilometres from the Narromine township, and covers an area of twenty-six hectares. The Narromine WMF operates under the Environment Protection Licence (EPL) No. 6055, as issued by the Environment Protection Authority (EPA).

The Narromine WMF is open to public on Mondays, Wednesdays, Fridays, Saturdays and Sundays between 8am to 5pm.

Waste accepted

Narromine WMF is licensed by EPL No. 6055 to receive the following waste types for landfilling (as defined in Schedule 1 of the *Protection of the Environment Operations (POEO) Act 1997*):

- General solid waste (putrescible)
- General solid waste (non-putrescible)
- Asbestos waste
- Waste tyres
- Clinical and related waste
- Waste received onsite that is below licensing thresholds in the Schedule 1 of the POEO Act.

The Narromine WMF also receives recyclables, organics, scrap metal and waste oil. Recyclables are compacted before being sent to a processing facility. Organics collected, which mainly constitutes of garden waste, is mulched for use within the waste facility. Processed organics not used for mulch is used an intermediate cover for landfilling works.

The Narromine WMF receives the majority of waste within the Narromine LGA and accepts approximately 4,000 m^3 per annum or 3,000 tonnes per annum (tpa) (Robert Bailey, 2018).

Existing site infrastructure and assets

Existing site infrastructure at Narromine WMF include the following:

- Gatehouse and boom gate
- Site office
- Staff room
- Materials storage shed
- Toilet
- Waste oil facility
- Small vehicle transfer station
- DrumMUSTER compound
- Problem waste storage enclosure
- Fenced compound
- Litter fencing, and
- Two stormwater ponds.

The small vehicle transfer station is used for drop-off of residential general waste and recyclables. Narromine WMF has the greatest capacity for recyclables with bins provided for recyclables dropped-off.

Photos from the site inspection are shown in Photo 4.1.

Photo 4.1 Narromine WMF site photos

During GHD's site visit in February 2020, existing plant observed at Narromine WMF included:

- 2 x collection trucks for small vehicle drop-off
- 1 x bobcat
- 1 x dozer / front-end loader
- 1 x compactor
- 1 x watering truck

Refer to Figure 4.1 for the Narromine WMF existing site layout.

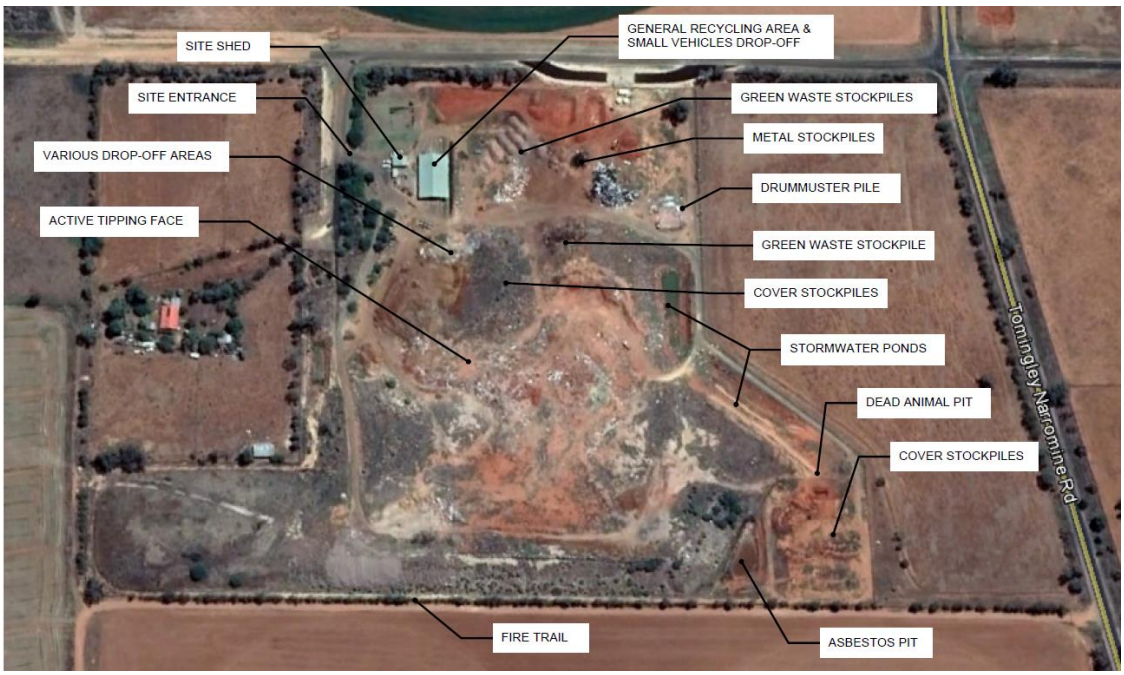

Figure 4.1 Narromine WMF existing site layout

Available landfill airspace

Council's existing design report by Robert Amaral (2018b), *Staged Landfill Design and Volume Calculations (Landfill Maximisation): Gainsborough Road Landfill Narromine,* provides a filling plan which has estimated that the Narromine WMF would provide approximately 19 more years of landfill life (up to 2038). This is consistent with the LEMP (2013).

The Robert Amaral design report (2018b) also states that by raising the landform by 4m, an additional 16 years of landfill life expectancy could be achieved (up to 2054). A design and filling plan for this extended landfill life does not yet exist.

Volumetric surveys are carried out every six months to keep record of landfilling works. Based on available volumetric surveys, the following fill volumes (includes waste and capping material) were noted:

- 3,291 m^3 of fill was added between September 2019 and July 2020;
- 10,247 m^3 of fill was added between September 2018 and March 2019; and
- 8,711 m^3 of fill was added between January 2014 and July 2014.

4.3.2 Trangie Waste Management Facility

Location

The Trangie WMF is located on Trangie Tip Road, Trangie NSW 2823, which is approximately three kilometres from the Trangie township and thirty-five kilometres from the Narromine township. The Trangie WMF covers an area of eight hectares and does not operate under an EPA licence. The Trangie WMF operates under guidelines of its LEMP dated April 2008.

Waste accepted

The Trangie WMF accepts the following waste types:

- General solid waste (putrescible)
- General solid waste (non-putrescible)
- C&D waste

- Recyclables
- Organics
- Waste oil
- Asbestos
- Scrap metal
- Others (Batteries, timber, dead animals, whitegoods, machinery and plants)

The Trangie WMF services the township of Trangie and accepts less than 1,000 tpa of waste (LEMP, 2008). The Trangie WMF allows for separation of paper and cardboard. However, all other recyclables such as glass, plastics and aluminium are co-mingled. Recyclables are compacted before being sent to a processing facility.

Organics collected, which mainly constitutes of garden waste, is mulched for use within the waste facility. Processed organics not used for mulch is used an intermediate cover for landfilling works. Scrap steel is recycled under a contract with NetWaste. Waste oil and chemical drums are also recycled. Concrete and brick are stockpiled and crushed into gravel and fill.

Existing site infrastructure and assets

Existing site infrastructure at Trangie WMF include the following:

- Site office
- Toilet
- Waste oil facility
- DrumMUSTER compound
- Fenced compound

During GHD's site visit in February 2020, existing plant observed at Trangie WMF included:

- 1 x front-end loader

It is noted that no plant and equipment are stored on the site. Plant is brought to the site on a campaign basis – as required.

Photo 4.2 Trangie WMF site photos

Refer to Figure 4.2 for the Trangie WMF existing site layout.

Figure 4.2 Trangie WMF existing site layout

Available landfill airspace

The LEMP (2013) states that the life expectancy for Trangie WMF is approximately 50 years (up to 2058).

Other site observations

The facility was not operational at the time of the February 2020 site inspection, the following observations were made:

- The tipping face was left open (waste exposed)
- The external boundary fence appeared to be in good condition, however the internal fences were in poor condition
- Significant amounts of windblown litter was evident throughout the site and beyond the fence line
- Recyclable waste was observed in various locations around the site and generally segregated/separated but mostly stockpiled on the ground uncovered
- Storage of gas cylinders, fluorescent tubes/lights, smoke detectors and batteries and a waste oil was observed within the storage sheds
- A number of (presumably empty) containers and barrels were observed being stored outside the shed/cages on the ground
- Car batteries were stored in uncovered skip bins
- Yellow lid 240 L recycling bins were stored within a separate storage cage
- Signage was present for the majority (but not all) waste stockpiles
- Where signage was present it is mostly clear and in relatively good condition, however some signs are not visible or have fallen over
- No notable odours were observed

4.3.3 Tomingley Transfer Station

Location

The Tomingley Transfer Station is located on Obley Road, off Newell Highway, Tomingley NSW, which is approximately four kilometres from the Tomingley township and thirty-five kilometres from the Narromine township. The Tomingley Transfer Station covers an area of eight hectares and operates under guidelines of the Tomingley Transfer Station Management Plan (April 2008).

Waste accepted

The Tomingley Transfer Station accepts similar waste types to those accepted at the Narromine and Trangie WMFs and has separate disposal areas for each waste type received.

The Tomingley Transfer Station services the township of Tomingley and accepts approximately 500 tpa of waste.

The Tomingley Transfer Station allows for separation of paper and cardboard. However, all other recyclables such as glass, plastics and aluminium are co-mingled. Organics and scrap timber are chipped and used for mulch and cover material at other sites. Scrap steel is recycled under a contract with NetWaste. Waste oil and chemical drums are also recycled. Concrete and brick are stockpiled and crushed into gravel and fill. Recyclables and batteries are collected for processing. Tyres are stockpiled.

Existing site infrastructure and assets

The Tomingley Transfer station consists of a former landfill area, metal stockpiles, various piling areas and site infrastructure.

The existing site infrastructure at Tomingley Transfer Station include the following:

- Site shed
- Drop-off facilities (including large skip bins)
- DrumMUSTER compound

During GHD's site visit in February 2020, no plant or other equipment were observed at the Trangie WMF. Photos from the site inspection are provided below in Photo 4.3.

Photo 4.3 Tomingley WMF site photos

Figure 4.3 shows the existing site layout of the Tomingley Transfer station.

Figure 4.3 Tomingley Transfer Station existing site layout

The Tomingley Transfer Station has been operating for a few decades and it is understood that its former landfill area predates licensing and planning controls.

Other site observations

The facility was not operational at the time of the February 2020 site inspection, the following observations were made:

- Signage was clear and in good condition
- The site was clean and well maintained
- The gate and fences were in good condition
- No notable odours were observed

4.4 Community education and engagement

4.4.1 Overview

Education programs for Year 2019

Throughout the year 2019, Council carried out the following community education and engagement initiatives:

- Schools education program
- Recycling information advertisements, such as ‘Keep It Simple’ and ‘Recycle Right’
- Household problem waste information advertisements covering topics such as spring cleaning and wastes from household renovations.
- Social media announces to advertise Council’s FOGO anniversary

- Narromine Show
- ‘Love Food Hate Waste’ campaign
- ‘Holiday Recycling’ campaign which consisted of reruns of the existing information advertisements such as ‘Recycle Right’ and ‘Compost Right’
- Community newsletter

School education programs

Community education campaigns through NetWaste are facilitated annually at local schools to promote the benefits of recycling and educate the community on which items are recyclable. For the year 2020, programs offered to schools by Council shall focus of various aspects of waste including collection and recycling services. Council has planned to implement the following waste communications and education campaigns for schools:

- School Waste Education – Promote school programs offered by Council via social media, websites and letters to schools.
- School Sustainability – Public art companies to work with selected schools to create waste-themed murals.
- School Waste Facility Tours – Schools within the Narromine LGA may book tours at the Whylandra Waste Facility.
- School Waste Mentor Pilot – School can work with a facilitator to help achieve waste management goals.

Community newsletter

Council currently publishes electronic community newsletters with printed copies available at local libraries. Among other themes, the newsletter includes information on topics regarding waste, resource recovery, recycling and litter reduction.

Australian Recycling Industry

A television campaign that profiles and celebrates Australian companies making new products using recyclables diverted via kerbside collection has been planned for year 2020. This televised campaign is aimed to be aired mid-March 2020 to mid-April 2020 and mid-October 2020 to mid-November 2020.

Plastic Free July

For the month of July, Council aim to carry out a number of initiatives including community workshops, giveaways of hand-sewn reusable bags and the ‘Plug and Play’ campaign.

Community workshops

Talks and workshops for the community run by Eco-organiser are scheduled to occur mid-2020.

4.4.2 FOGO service

Council’s FOGO collection services operate under a three-way joint contract with the Dubbo Regional Council and Mid-Western Regional Council. Waste education programs carried out by Council are part of this joint FOGO contract and are implemented throughout the three council LGAs.

Roll-out of the new FOGO service on 1 July 2018 was supported by community education and engagement including, pre-service surveys, FAQ sheets for customers, a project launch press release, updates to Council’s website and the ‘A new Service is coming’ campaign to inform

customers of the FOGO service via social media. Information advertisements in newspapers and local radio stations were used to educate the community and inform residents of the new service. Prior to commencement of the service, the following initiatives were also implemented:

- Distribution of bin roll-out packs consisting of magnets, a calendar and instruction guide for residents.
- Pop-up displays over a timeframe of one week consisting of FOGO banners, flyer handouts and tally enquiries.
- Caddy Campaign, which included flyer hand outs to residents, website updates, radio announcements, newspaper advertisement and a video clip for social media.

Ongoing post roll-out education to support and improve FOGO service diversion rates are carried via radio announcements, television advertisement broadcasts and social media posts. Information advertisements used to date include:

- 'Caddy Liners'
- 'What Goes In'

Community surveys were carried out before and after roll-out of the FOGO service. Findings from these surveys are discussed in Section 4.5.5.

4.5 Performance of waste services

Based on waste performances outline in this section, Councils overall landfill diversion rate from recycling and organics processing in 2018/19 was 48%.

4.5.1 General waste

Table 4.4 provides a summary of the tonnages, number of bins collected, serviced households and presentation rates of general waste collected in the red bin for kerbside residential collection services at Council's LGA.

Table 4.4 General waste performance

	2018/2019 (July – June)	2019/20 (July 2019 to Dec 2019 only)
Total collected	965 tonnes	581 tonnes
Average collected per household per week	6.91 kg/hh/wk	8.12 kg/hh/wk
Base households per service	2,694 households	2,752 households/service
Presentation rate	Limited data	71.63%
Average number of bins collected per service	Limited data	8,550 bins/service

Source:
JR Richards & Sons, Waste Management Services Contract Management Report - June 2019
JR Richards & Sons, Waste Management Services Contract Management Report - December 2019.

4.5.2 Recyclables

In 2018/19, Council's recycling diversion rate for residential collection was 20%. The calculated recycling diversion rate is representative of the net total of recyclables sent for processing from all kerbside collections including general waste, recyclables and organics.

Table 4.5 provides a summary of the tonnages, number of bins collected, serviced households and presentation rates of recyclables collected in the yellow bin for kerbside residential collection services.

Table 4.5 Recycling performance

	2016/17	2017/18	2018/2019	2019/20 (July 2019 to Dec 2019 only)
Total collected	496 tonnes	432 tonnes	412 tonnes	182 tonnes
Contamination rate (%)	7.95%	7.95%	6.87%	7.70%
Recycling diversion rate[1] (%)	Limited data	Limited data	19.84%	17.24%
Base serviced households per service	Limited data	Limited data	2,260	2,315 households/service
Presentation rate	Limited data	Limited data	Limited data	51%
Average number of bins collected per service	Limited data	Limited data	Limited data	3,387 bins/service

1. Diversion rate is calculated based on net amount of recyclables sent for processing from total tonnages of general waste, recyclables and organics from kerbside collections.

Source:
JR Richards & Sons, Narromine Collection & Processing of Recyclables Report – December 2016.
JR Richards & Sons, Narromine Collection & Processing of Recyclables Report – December 2017.
JR Richards & Sons, Narromine Collection & Processing of Recyclables Report – June 2018.
JR Richards & Sons, Waste Management Services Contract Management Report - June 2019.
JR Richards & Sons, Waste Management Services Contract Management Report - December 2019.

4.5.3 Organics

In 2018/19, Council's organics diversion rate for residential collection was 28%. The calculated diversion rate is representative of the net amount of organics sent for processing, from all kerbside collections including general waste, recyclables and organics.

Table 4.6 provides a summary of the tonnages, number of bins collected and presentation rates of organics collected in the green bin for kerbside residential collection services at Council's LGA.

Table 4.6 Organics performance

	2018/2019	2019/20 (July 2019 to Dec 2019 only)
Total Collected	558 tonnes	213 tonnes
Contamination rate (%)	3.01%	0.78%
Organics diversion rate[1] (%)	27.98%	21.63%
Base serviced households per service	1,961 households/service	2,020 households/service
Presentation rate	Limited data	31%
Average number of bins collected per service	Limited data	2,727 bins/service

1. Diversion rate is calculated based on net amount of organics sent for processing from total tonnages of general waste, recyclables and organics from kerbside collections.

Source:
JR Richards & Sons, Waste Management Services Contract Management Report - June 2019.
JR Richards & Sons, Waste Management Services Contract Management Report - December 2019.

4.5.4 Supporting services

Table 4.7 states the waste generation from DrumMuster collections and household hazardous/liquid waste collected in the Council's LGA from year 2015 to 2019.

Table 4.7 Hazardous/liquid waste collection

		2015-16	2016-17	2017-18	2018-19
Hazardous/Liquid Waste	DrumMuster collections (number of drums)	0	19,749	22,321	-
	Household Hazardous Waste collected (kg)	2,888	3,351	3,769	2,454

Source: State of the Environment Snapshot 2018-19.

4.5.5 Kerbside bin audits

Pre-rollout of FOGO service

A kerbside bin audit was carried out by JustWaste Consulting prior to commencement of the FOGO service to understand the composition and contamination for the residuals bin and recycling bin. A sample size of 110 residuals bins and recycling bins each was used.

Findings from JustWaste's Kerbside Bin Audit Report (2018) are summarised as follows:

Residuals bin

- Residual bins were filled to an average of 87% of bin capacity.
- The material collected in the residuals bin weighed an average of 8.5 kg/bin/wk, corresponding to 1.8 kg/hh/wk, with the following average compositions:
  - Residual waste – 1.8 kg/bin/wk (21% by total weight of residuals bin)
  - Recycling – 1.7 kg/bin/wk (20% by total weight of residuals bin)
  - Organics – 5.0 kg/bin/wk (59% by total weight of residuals bin)
- The breakdown of organics with potential for diversion found in the residuals bin:
  - Food scraps – 26% (by total weight of residuals bin)
  - Garden organics – 26% (by total weight of residuals bin)
- The breakdown of recyclables (% by total weight of residuals bin) with potential for diversion found in the residuals bin:
  - Paper and cardboard – 9%
  - Glass – 3.5%
  - Plastics – 5.2%
  - Metals – 2.3%

Recycling bin:

- Recycling bins were filled to an average of 92% of bin capacity.
- The material collected in the recycling bin weighed an average of 5.2 kg/bin.
- Contamination rate of 17%, with the following items classified as contamination:
  - Domestic waste
  - Bagged recyclables
  - Soft plastics
  - Textiles

- E-waste

Post-rollout of FOGO service

A kerbside bin audit carried out by JustWaste Consulting after commencement of the new FOGO service to investigate the impact of the introduction of the new FOGO service in July 2018. A sample size of 220 residual bins, FOGO bins and recycling bins each was used.

Findings from JustWaste's Kerbside Bin Audit Report (2019) are summarised as follows:

Findings

- FOGO bin compositions indicated some success in diverting garden organics, however there was poor use of the FOGO bin for kitchen organics.
- A significant number (20) of non-contaminated plastic bags filled with organic material was identified in the FOGO bin, indicating a poor understanding of the FOGO service.
- The residuals bin contained an average of 20.94% of recyclables, indication potential for increased diversion.

Residual bins

- Residual bins were filled to an average of 76% of bin capacity.
- The material collected in the residuals bin weighed an average of 10.74 kg/bin/wk, with the following average compositions:
  - Residual waste – 2.79 kg/bin/wk (26% by total weight of residuals bin)
  - Recycling – 2.25 kg/bin/wk (21% by total weight of residuals bin)
  - Organics – 5.70 kg/bin/wk (53% by total weight of residuals bin)
- The breakdown of organics (% by total weight of residuals bin) with potential for diversion found in the residuals bin:
  - Food scraps (unavoidable) – 24%
  - Food scraps (avoidable food wastage) – 11%
  - Garden organics – 4.49%
- The breakdown of recyclables (% by total weight of residuals bin) with potential for diversion found in the residuals bin:
  - Paper and cardboard – 12.98%
  - Glass – 3.64%
  - Plastics – 3.00%
  - Metals – 1.04%

Recycling bin:

- Recycling bins were filled to an average of 71% of bin capacity.
- The material collected in the recycling bin weighed an average of 5.5 kg/bin.
- Contamination rate of 11.89%, with the following top items classified as contamination:
  - Clothing & wearables
  - E-waste
  - Non-recyclable soft plastic
  - Scrap metal
  - Soiled food packaging.

FOGO bin:

- FOGO bins were filled to an average of 50% of bin capacity.
- Composition dominated by garden waste (90.73%)
- The material collected in the FOGO bin weighed an average of 10.32 kg/bin
- No contamination was found in the FOGO bin.
- The average composition in FOGO bins were:
  - Garden waste – 90.74%
  - Food organics – 8.92%
  - Soiled paper, cardboard and food packaging – 0.34%

4.5.6 Surveys

Pre-rollout of FOGO service

A community benchmarking survey was conducted April 2018, prior to commencement of the FOGO service to provide insights into the practices and knowledge of the target community. The study was undertaken by WRI via online surveys and telephone interviews.

A total of 245 residents within the Narromine LGA partook in the survey. Results from the surveys conducted by WRI in 2018 suggested that:

- 44% of respondents place some or all of their organics waste in the general waste bins
- 68% of respondents place some or all their food waste in the general waste bins. The next most popular response was feeding it to animals.
- 59% of respondents were aware of the new FOGO service
- 77% of respondents felt that their household did not produce too much food waste
- 82% of the respondents did not want to learn about how to reduce food waste
- 20% of the respondents did not see themselves using the FOGO service
- On average, respondents reported a rating of 5.8 for importance of the FOGO service (Based on a scale of 0 to 10, where 0 is not important at all and 10 is very important)

Post-rollout of FOGO service

A follow-up survey was conducted in March 2019, after rollout of the FOGO service to identify differences in community behaviour and understand the effectiveness of community engagement undertaken for the new FOGO service.

A total of 237 residents within the Narromine LGA partook in the survey. Results from the surveys conducted by WRI in 2019 suggested that:

- 99% of respondents were aware of the new FOGO service
- 85% of respondents dispose of garden organics waste using the new FOGO service
- 69% of respondents dispose of food waste using the FOGO bin, 25% reported feeding it to animals, 15% compost or mulch the waste and 14% dispose of it in the general waste bin. This shows an improvement from the pre-rollout survey which found that 68% of the respondents put their food waste in the general waste bin.
- Respondents who dispose of food waste into the general waste bin (69%) indicated that they do so for the following reasons:

  - Using general waste bins is more convenient (33%)
  - The hygiene, smell and vermin attracted by the FOGO bin was not acceptable (13%)
  - Insignificant amounts of food waste generated to warrant use of the FOGO bin (13%)
- Respondents who do not use the FOGO bins regularly (23%) indicated the following reasons for their behaviour:
  - Insignificant amounts of food waste generated to warrant use of the FOGO bin (55%)
  - Food waste is used for compost or animal feed (27%)
  - The hygiene, smell and vermin attracted by the FOGO bin was not acceptable (8%)
- 88% of respondents did not want to learn about how to reduce food waste
- On average, respondents reported a rating of 7 for importance of the FOGO service (Based on a scale of 0 to 10, where 0 is not important at all and 10 is very important)
- Pre-rollout and post-rollout surveys showed that community understanding of items that can go into the FOGO have improved. The percentage of respondents who understood that the following items can be put into the FOGO bin are:
  - Lawn clippings (98%)
  - Fruit and vegetable waste (97%)
  - Woody garden material (90%)
  - Meat waste (85%)
  - Council's caddy liners (84%)
  - Soiled paper and cardboard (65%)
  - Animal manure (56%)
- The preferred methods of communication are as follows:
  - Pamphlet (34%)
  - Council newsletter (24%)
  - Council website (15%)
  - Facebook (10%)
  - Council Customer Service Centre (9%)

4.6 Performance of waste infrastructure and assets

4.6.1 Environmental performance

Groundwater

Based on environmental monitoring at Narromine WMF conducted in June 2019 by Premise NSW Pty Ltd, flow direction from groundwater levels could not be determined from collected data. However, the surrounding topography of the region is relatively flat, and groundwater connectivity with local drainage is considered to be highly unlikely.

Groundwater quality samples were also taken and assessed to criteria (where relevant) adopted from Australian and New Zealand Environment and Conservation Council (ANZECC) Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* 2000 – Primary Industries: Water quality for irrigation and general water use (Premise, 2019).

Surface water

Surface waste sampled were unable to be collected during the June 2019 monitoring round (Premise, 2019).

4.6.2 Regulatory compliance

Narromine WMF

The Narromine WMF operates under EPL No. 6055 and it is subject to compliance of the licence requirements.

Key findings from a general EPL compliance audit conducted for the Narromine WMF in June (Robert Baily Consulting) and Council's actions in addressing non-compliances are as follows:

- Offensive odour was generally not apparent at site boundaries. However, odour emanating from the deceased animal trench was observed which may be non-complaint to the EPL requirement for offensive odours to be confined within the site boundaries (Condition L4.1).
  - To address this, Council decommissioned the trench and now landfills deceased animals in the general landfill cell.
- The plant used onsite was unlikely to be achieving desired compaction rates, which is non-compliant to the EPL requirement to minimise utilisation of airspace through compaction (Condition L3.3). The Narromine LEMP also states a requirement to achieve a minimum of 650 kg/m^3 for waste compaction.
  - To address this, Council now uses a Landfill Compactor daily to achieve the compaction rate in accordance with the EPL.
- Filling plans were not prepared, which is non-compliant to the EPL requirement maintain a filling plan (Condition O6.6).
  - To address this, Council engaged a consultant to develop filling plans and final landform plans (Robert H. Amaral 2018a and 2018b)

Key findings from a general compliance audit of the Pollution and Incident Response Management Plan (PIRMP) conducted for the Narromine WMF in June (Robert Baily Consulting) are as follows:

- A copy of the PIRMP was not held at the site's gatehouse
  - Council currently keep a copy if the PIRMP at the site's gatehouse.
- The inventory of potential pollutants kept at the premises or used in carrying out activities at the premises required an update.
- A description of the safety equipment or other devices that are used to minimise the risks to human health or the environment and to contain or control a pollution incident required at update.
- Details of the mechanisms that will be used for providing early warnings and regular updates to the owners and occupiers of premises who may be affected by an incident occurring on the premise required an update.
- Staff had not received suitable training in accordance with the PIRMP.
- The PIRMP for Narromine WMF was not made available to the public through the Council's website.

In addition to the above, a general review of the operational activities At Narromine WMF and its compliance with licence requirements was conducted in 2013 by Blue Sky Environmental). Key findings from the review that may still be currently relevant are as follows:

- Tyres were stockpiled in a clearly defined area, however records of the tonnages of tyres received onsite were unclear. The total tonnes of tyres stored onsite should not exceed 20 tonnes at any one time.
  - To address this, tyres are now stored within a cage prior to being collection for processing as part of the NetWaste tender.
- Appropriate monitoring and reporting requirements were maintained.
- The Narromine WMF has six (6) groundwater monitoring bore locations under the EPL, two (2) of which are located on private land and may have access issues. It was recommended for Council to continue its groundwater monitoring and investigate the effectiveness of the groundwater monitoring requirements.
- It was observed that both leachate and surface water at the site were treated similarly. It was recommended that the sediment dams should not to be contaminated with leachate.
- The landfill operational staff were observed to be appropriately trained. However it was identified that were on-site activities that were non-compliant with the EPL and LEMP.

4.7 Current finances

4.7.1 Contracts

Collection & processing

JR Richards & Sons was awarded a ten (10) year contract starting April 2010 to June 2020 for collection and processing services for domestic properties commercial properties and schools, as agreed with Council. This contract has been extended up to June 2028. Collection and processing fees based on the initial ten (10) year contract (*Recyclables Collection and Processing Services Contract*) dated 23 April 2010 states the following collection rates:

Collection fees

- Residential recyclables (240L bins) – $1.51/service
- Commercial recyclables (240L bins) – $1.51/service
- Recyclables Public drop-off (3 m^3 bin) – $22.65/service
- Public Places (Recycling) – $3.53/service

Processing fees

- Recyclables (compaction rate of 180 kg/m^3) – $144.29/tonne

4.7.2 Residential kerbside fees

Council charges the following residential kerbside fees for 2020/21 to cover collection costs of residuals bins and recycling bins:

- $395 per bin per annum for weekly domestic waste collection
- $105 per bin per annum for fortnightly recyclables collection
- $84 per bin per annum for weekly FOGO collection

A charge of $88 per annum exists for all rural land (for residents outside the service area) for waste depots.

4.7.3 Commercial fees

Council charges the following fees for year 2020/21 to cover collection costs of residuals bins and recycling bins for commercial premises:

- $400 per bin per annum for weekly domestic waste collection
- $105 per bin per annum for fortnightly recyclables collection
- $162 per bin per annum for weekly FOGO collection (optional)

4.7.4 Current annual expenses

Table 4.8 provides a summary of Council's waste management expenses in 2019/20.

Table 4.8 Capital costs and operational and maintenance expenses in 2018/19

		Domestic	Commercial
Capital costs	Contractors & Purchases	$1,055,944	$247,333
Operational and maintenance costs	Administration	$331,674	$59,339
	Collection	$23,027	$7,200
	Equipment maintenance	$23,108	$7,703
	Others	$74,532	$10,806
TOTAL		**$1,508,285**	**$332,380**

4.7.5 Current annual income

Table 4.9 provides a summary of Council's waste management income in 2019/20.

Table 4.9 Income in 2018/19

	Domestic	Commercial
Disposal and processing fees	$139,529	$187,839
Waste depot income	$105,168	$22,817
Waste management annual charge	$-1,175,048	$207,111
Grants	$0	$0
Others	$0	$1,460
TOTAL	**$1,419,745**	**$419,226**

4.7.6 Existing financial plans

Short-term plans

Council has developed a four-year *Delivery Program 2017-18 / 2020-21* and a ten-year Community Strategic Plan (*Narromine Shire Council Community Strategic Plan 2027*). Council has also developed annual operational plans detailing Council's activities and budget under its Delivery Program.

The *2018-19 Operational Plan* states that Council has included a provision of $51,026 for annual servicing of waste plant equipment in its Long Term Financial Plan.

Long-term plans

Council's asset management plan for waste services (*Asset Management Plan – Waste (AMP3))* details a ten-year program for new assets and upgrades to existing waste management assets. Figure 4.4 summarises the estimated expenditure for the ten-year program stated in the asset management plan. The asset expenditures listed in the asset

management plan were identified from various sources such as community requests, recommendations from strategic plans and statutory regulatory requirements.

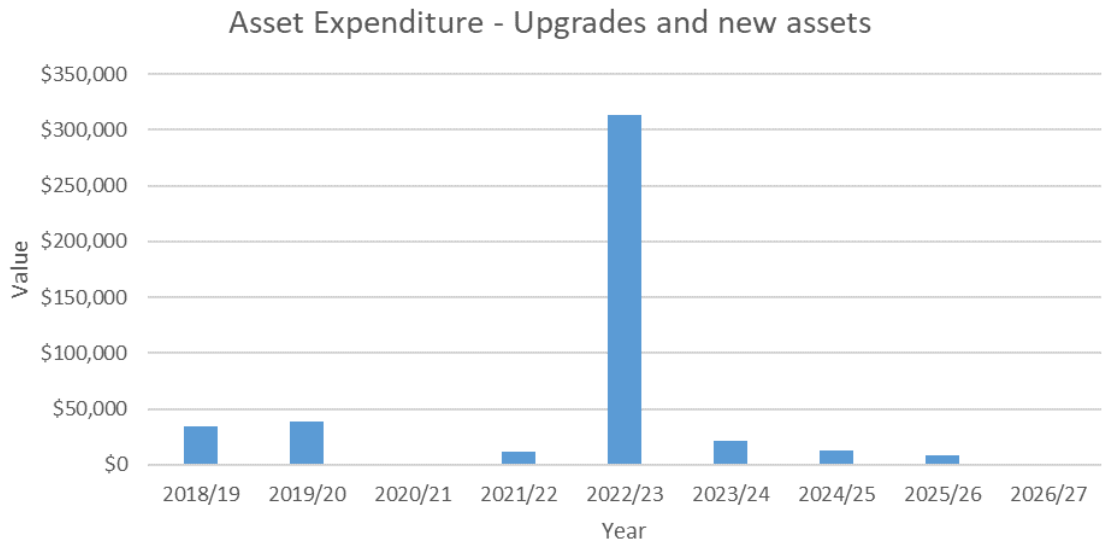

Figure 4.4 Asset expenditure - 10-year plan *(NSC, Asset Management Plan – Waste (AMP3))*

Table 4.10 summarises the projected expenditure for Council's ten-year long-term financial plan. The expenditure projections from year 2019-20 to 2026-27 are in non-inflated values from year 2017.

Table 4.10 Expenditure projections – Long-term plan (*NSC, Asset Management Plan – Waste (AMP3)*)

Year	Operations	Maintenance	Capital renewal	Capital upgrade
2017-18	$1,225,867	$108,000	$20,800	$13,643
2018-19	$2,169,668	$110,700	$38,911	-
2019-20	$2,388,071	$123,927	-	-
2020-21	$2,606,474	$137,154	-	$12,229
2021-22	$2,824,877	$150,381	$3,6890	$310,000
2022-23	$3,043,280	$163,608	$21,601	-
2023-24	$3,261,683	$176,835	$10,617	$1,957
2024-25	$3,480,086	$190,062	$8,064	-
2025-26	$3,698,489	$203,289	-	-
2026-27	3,916,891	$216,516	-	-

4.8 Financial and cost recovery review

A financial model was developed to provide a snapshot of waste and resource recovery cost rates on a per tonne and per serviced household basis for residential kerbside services. The cost rate was based on financial and collection data for year 2018/19.

Table 4.11 shows the cost rates for residential general waste, recycling and FOGO services provided by Council in year 2018/19. The costs rates include the following three (3) operational costs for residential general waste, recycling and FOGO services (refer to Table 4.8 for cost values):

- Collection costs
- Bin, caddy and liner supply costs

- Disposal and processing costs

The annual costs per serviced household assumes that households are serviced as per current collection frequency (weekly collection for general waste and FOGO and fortnightly collection for recycling).

Table 4.11 Cost rates for residential kerbside services

Waste / Resource type	Annual cost per tonne collected	Annual cost per serviced household
General Waste	$225/yr/tonne collected	$80/yr/serviced household[1]
Recycling	$525/yr/tonne collected	$95/yr/serviced household[2]
FOGO	$520/yr/tonne collected	$150/yr/serviced household[3]

Notes:
1. Assumes weekly service to households.
2. Assumes fortnightly service to households.
3. Assumes weekly service to households.

5. Strategic context

5.1 National

5.1.1 National Waste Policy

The Commonwealth Government adopted the National Waste Policy on 5 November 2009. The policy builds on the 1992 National Strategy for Ecologically Sustainable Development and attempts to reduce the impact to the environment from waste disposal. It also seeks to enhance, build on or complement existing policy and actions at all levels of government. This policy sets the direction for Australia to produce less waste for disposal and manage waste as a resource to deliver economic, environmental and social benefits.

The 2018 National Waste Policy provides a framework for collective action by businesses, government, communities and individuals until 2030. The National Waste Policy identifies the following waste management goals:

- Avoid waste
- Improve resource recovery
- Increase use of recycled material and build demand and markets for recycled products
- Better manage material flows to benefit human health, the environment and the economy
- Improve information to support innovation, guide investment and enable informed consumer decisions.

5.1.2 Australian Packaging Covenant

Australian Packaging Covenant, an agreement between Australian, state and territory governments and the packaging industry which aims to reduce the environmental impacts of consumer packaging with shared responsibility. Its goal is to optimise resource recovery of consumer packaging through the supply chain and prevent the impacts of fugitive packaging on the environment.

In 2018, APCO launched the 2025 National Packaging Targets to provide guidance to deliver a new sustainable pathway for packaging in Australia. The four targets identified are as follows:

- 100% reusable, recyclable or compostable packaging
- 70% of plastic packaging being recycled or composted
- 30% of average recycled content included in packaging
- The phase out of problematic and unnecessary single-use plastics packaging.

5.2 State

5.2.1 NSW EPA Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21

The NSW Waste and Resource Recovery Strategy 2014-21 (WARR Strategy) was released in December 2014 and is a key component of the Government's vision for the environmental, social and economic future of the state.

The strategy aims to reach the following targets for 2021-22:

- Avoiding and reducing the amount of waste generated per person in NSW
- Increasing recycling rates to:

  - 70% for municipal solid waste (from 52% in 2010-11)
  - 70% for commercial and industrial waste (from 57% in 2010-11), and
  - 80% for construction and demolition waste (from 75% in 2010-11)
- Increasing waste diverted from landfill to 75% (from 63% in 2010-11)
- Managing problem wastes better, establishing 86 drop-off facilities across NSW
- Reducing litter, with 40% fewer items by 2017 (2012 as baseline), and
- Combatting illegal dumping, with 30% fewer incidents (compared to 2011) by 2017.

5.2.2 Waste Less, Recycle More

The Waste Less, Recycle More initiative supports the NSW WARR Strategy by providing funding through the waste levy for waste and recycling improvements across NSW. The initiative provides funding for business recycling, organics collections, market development, managing problem wastes, new waste infrastructure, local councils and programs to tackle illegal dumping and litter.

The Waste Less, Recycle More funding priorities for 2017-21 are as follows:

- Local government waste and resource recovery.
- Illegal dumping prevention and waste enforcement: This includes the following grant funding:
  - The Aboriginal Land Clean Up and Prevention Program, supporting Aboriginal Land Councils across NSW to clean up and prevent illegal dumping on their land and care for Country.
  - The Combating Illegal Dumping: Clean Up and Prevention program, which funds councils and other public landowners to detect, investigate and prosecute illegal dumping.
  - Reducing Illegal Dumping on NSW Charitable Recyclers Program.
- **Household problem wastes**: Funding available for households problem wastes include the following:
  - The Community Recycling Centre Fund provides $14.35 million to establish and service a network of permanent drop-off facilities for people to recycle or safely dispose of selected common household problem wastes for free.
  - Household Chemical CleanOut provides $11 million for a partnership program with local councils to support mobile collection services for safe disposal of household chemical products, including household cleaners, pool and hobby chemicals and pesticides.
- **Waste and recycling infrastructure**: The two key programs for new recycling facilities or upgrades to existing recycling or manufacturing facilities include the following:
  - Product Improvement Program provides industry an opportunity to identify new uses and markets for recyclable materials, and to develop local processing and remanufacturing capability to help ensure services are maintained in future years.
  - Major Resource Recovery Infrastructure Program for new council and private sector facilities.
- **Organics infrastructure**: Funding available for organics infrastructure include the following:
  - Organics Collections, which provides funding for new or enhanced kerbside collection services for food and garden organics waste.

  - Organics Infrastructure (Large and Small) Program, which supports new and enhanced infrastructure and on-site processing for organic waste, food donation projects and council run home composting programs.
  - Love Food Hate Waste education, which supports programs to raise awareness of food waste and help NSW households and businesses reduce the amount of wasted food sent to landfill.
  - Food Donation Education, which provides funding for awareness-raising and other education activities to increase the volume of surplus food being donated for redistribution to people in need.
  - Organics Market Development grants for projects that develop new markets or expand existing markets for recycled organics.
- Littler prevention and enforcement
- **Business recycling**: Grants available for businesses include the following:
  - Bin Trim grants fund free waste assessments for NSW businesses and provide support to boost business recycling and reduce waste to landfill.
  - Bin Trim rebates fund up to half the purchase price of onsite small-scale recycling equipment for businesses, from $1,000 to $50,000.
  - Circulate, NSW EPA Industrial Ecology grants fund projects that enable waste from one company to be used as an input for another.
  - The Civil Construction Market Program improves resource productivity, reducing the costs of coordination and minimising the risks involved in making waste from one civil construction project a useful input into another civil construction project
  - The Australian Packaging Covenant co-funds infrastructure to recycle packaging and make its use more sustainable.
- Recycling Innovation Fund.
- Heads of Asbestos Co-ordinating Authorities.

5.3 Regional

5.3.1 NetWaste Regional Waste Strategy 2017-2021

NetWaste is a collaborative environmental management project sponsored by the NSW Environment Protection Authority (EPA) and the Central West (CENTROC) and Orana Regional Organisation of Councils (OROC), located in the central and western regions of New South Wales, Australia.

The region comprises 26 councils, covering a total area of 310,000 square kilometres and supports a population of more than 400,000 people, including Narromine Shire Council. NetWaste is supported financially by the NSW EPA Waste Less Recycle More initiative funded from the waste levy.

The NetWaste Regional Strategy aims to progress towards the NSW EPA WARR targets (listed in Section 5.2.1 of this report). In order to achieve these targets, the NetWaste Regional Waste Strategy includes an Action Plan to ensure improvements towards better waste management.

Key actions stated in the NetWaste Action Plan that could be relevant to Council include the following:

- Continue to Implement the priorities of the NetWaste Education Strategy (What Waste Where 2013-2022) priorities in support of the NetWaste Strategic Planning process
- Broaden reach of food waste reduction messages to smaller regional communities

- Continue to provide support for Regional Education initiatives particularly in noncontract school & community education & other relevant projects/events that support NetWaste strategic focus
- In consultation with the NetWaste Education Sub Committee identify localised community engagement strategies designed to improve participation and outcomes from recycling services in local communities
- In consultation with the Education Sub Committee undertake regional communication initiatives that support identified projects e.g. targeted social media campaigns, regional advertising promoting group identified issues (e.g. BYO cup, Love Food Hate Waste & recycling contamination)
- Support the introduction of the new Container Deposit Scheme by working with member Councils and appointed Scheme Coordinator & Network Operator
- Provide assistance to rural/ regional NetWaste Councils to develop Waste Management Strategies and Action Plans
- Develop locally appropriate initiatives to address issues with asbestos in small communities
- Investigate ways of improving collection and disposal of problem wastes in more remote LGAs
- Research and develop resources for use of chipped garden organics by Councils and community with due consideration to requirements of the NSW EPA Exemptions.
- Investigate and identify regional illegal dumping solutions

5.3.2 NetWaste Strategic Recycling Plan 2018-2023

The NetWaste Strategic Recycling Plan provides guidance for regional dry recycling services and an action plan to work towards improved and sustainable recycling services. The Plan consists of five (5) action areas as listed below.

1. Achieve greater regional independence and adaptability through a more unified approach
2. Assist and support development of greater regional processing capabilities and product reuse
3. Ensure financial viability of dry recycling services
4. Provide higher quality, less contaminated products and materials for recycling
5. Develop greater community ownership and understanding of sustainable dry recycling

Development of Strategic Recycling Plan involved a review of available data, policies and strategic action and two workshop with participating councils (including Narromine Shire Council). Consultation with contracted recycling service providers was also undertaken,

Opportunities identified in relation to recycling services in the Strategic Recycling Plan include the following:

- Space of improvement for quality of collected materials
- Development of new regional services/technologies, such as processing low-grade paper with organics and/or processing into heat bead/briquettes)
- Improvement of community knowledge on recyclable items through community education
- Add value to recycling materials locally
- The existing rail network provides options for transport of raw and/or processed materials

- Local processing of recyclables

Issues identified in relation to recycling services in the Strategic Recycling Plan include the following:

- Unforeseen increases of processing fees (Up to $60/tonne)
- Market security and demand for recyclables
- Market dominance
- Future impose of waste levy
- Consideration of future contract specifications to have greater market transparency and risk-sharing issues.

5.3.3 NetWaste Education Strategy 2013 to 2022: 'What Waste Where'

The Education Strategy provides a roadmap to facilitate councils and communities in moving towards better waste management via education. The Education Strategy works towards achieving the following outcomes:

- Increased community 'ownership' of producing less waste.
- Increased delivery of high quality education that promotes improved waste management practices that provide financial, societal and environmental benefits to NetWaste, Councils, communities and businesses.
- Increased understanding of waste issues among community leaders, including those in Councils, communities and key opinion leaders.
- Increased waste appropriate behaviours across communities, schools and business sectors within NetWaste Councils:
  - More recycling/resource recovery
  - Less dumping and littering
  - Less waste being generated
  - Improved organics management
  - Reduced waste to landfill.
- Increased Council motivation and capacity to educate about waste more effectively.

6. Drivers for change

6.1 What is working well?

Based on the situational review, the following waste management operations and services are working well for Council:

- Participation in the joint FOGO contract with the Dubbo Regional Council and Mid-Western Regional Council has resulted in a good level of diversion of garden organics from the general waste (red bin) stream. Kerbside audits showed that the proportion of garden organics in the red general waste bin reduced from 26% (pre-rollout of FOGO service) to 5% (post-rollout of FOGO service), implying that the FOGO service successfully increased garden organics diversion by 21%.
- Contamination levels in the FOGO bin are low, which indicates a good level of community understanding of what cannot be placed into the FOGO bin.
- The joint waste communications and education initiative under the FOGO contract is resulting in greater community engagement around waste management issues.
- Affiliation with NetWaste including participation in the NetWaste Contracts for pickup of recyclable materials (such as scrap metals etc) and other waste reduction projects.
- The existing three (3) waste management facilities under Council's management are sufficient in servicing the community's needs - including locations, wastes accepted and operating hours. There is no evidence of demand for Council to open a new waste management facility or transfer station or extend operating hours. However Council could consider options for rationalisation of these facilities and operational improvements, as proposed in the action plan in Section 7.3.
- The fortnightly kerbside recycling services is being well utilised with 2018 data showing that an average of 92% bin capacity being reached (JustWaste 2018). More recent data is required to confirm if current recycling bin capacities are similar.
- The weekly kerbside general waste (red lid) bins are being well utilised with 2018 data showing bins being filled to an average of 87% of bin capacity (JustWaste 2018). More recent data is required to confirm if this number has reduced further as the FOGO service matured.
- The recent change to the token system for bulky waste disposal.

6.2 What can be improved?

Based on the situational review, the following can be improved:

- Infrastructure planning at the three existing waste management facilities including developing up to date filling plans and ensuring forward planning for site closure, rehabilitation and where relevant, conversion/change of use
- Operational practices at the three existing waste management facilities including reducing the size of the tipping face, reassessing capping materials, more regular reviews of compliance and reviewing the monitoring program requirements
- Future financial planning to incorporate forecast construction, closure, rehabilitation and environmental management costs

- The amount of diversion of FOGO from the residuals/garbage bin to the FOGO bin (and thereby reduce the amount of waste requiring landfill disposal) through waste education and community engagement

7. Strategies and actions

7.1 Vision

Council's vision is:

"to plan and implement actions and solutions that will assist Council in providing sustainable, cost effective and efficient waste management services to the Narromine Shire Community."

7.2 Overarching strategies

To align with Council's current waste management operations and vision, the following overarching waste strategies have been identified:

- Improve waste management infrastructure planning and operations and comply with EPA requirements and regulations
- Provide efficient, sustainable and cost effective waste management and collection services to the community of Narromine LGA
- Increase landfill diversion and recycling through community engagement – consistent with the National, State and Regional strategic and policy framework

A number of specific actions have been identified (in Section 7.3 below) for each overarching strategy objectives based on the situational review and issues identification process.

7.3 Action plan

Table 7.1 identifies the proposed actions to meet the overarching strategies.

Table 7.1 Action plan

Key area	Proposed actions	Timing
Improve waste management infrastructure planning and operations and comply with EPA requirements and regulations – Narromine Waste Management Facility	Reduce size of active tipping face at the Narromine Waste Management Facility to minimise leachate risks during landfill operations.	Short-term (3 months)
	Reassess material currently used for intermediate capping at the Narromine Waste Management Facility. Intermediate capping material should not promote erosion or sedimentation.	Short-term (3 months)
	Update the current filling plan and final landform plan for the Narromine Waste Management Facility (developed by Robert H. Amaral, 2018) every six months (at the least) in order to comply with Condition O6.6 of the site's EPL (No, 6055). The six monthly volumetric survey data can be used for this purpose.	Every six months
	Formalise an approved final landform based for the Narromine Waste Management Facility on the final landform developed by Robert H. Amaral	Short-term (3-6 months)

Key area	Proposed actions	Timing
	(2018) (with the proposed overtopping) and update the site's EPL accordingly.	
	Engage a consultant to develop a detailed design for future capping construction at the Narromine Waste Management Facility to meet the site's EPL requirements and to allow for management measures required such as surface water, leachate and landfill gas management. This will allow Council to progress towards landfill closure and source on-site and suitable materials required for capping and revegetation. The current filling plan (Amaral, 2018) lists a different capping profile than Condition O6.8 of the site's EPL. The final cap design should be in accordance with the EPL.	Short-term (3-6 months)
	Revise the groundwater monitoring bores and monitoring program at the Narromine Waste Management Facility in consultation with the EPA. This should include decommissioning bores that can no longer be monitored (due to damage/inaccessibility) and potentially installing an additional bore onsite to better assess any direct effects on landfilling works on groundwater quality. At present, only one (1) bore is located onsite.	Short-term (3-6 months)
	Investigate option to extend landfill life by an additional 16 year (up to 2054) by increasing the landfill height by 4m. A design and filling plan will be required as part of the investigation works.	Long term (approx. 2028) or ten years prior to the completion of the current landfill operations
	Undertake an assessment into the feasibility of expansion of the Narromine Waste Management Facility into the adjacent property (Lot 7002 DP 1029073). The feasibility assessment for expansion should be conducted approximately ten years prior to the completion of the current landfill operations at the Narromine Waste Management Facility. Based on the estimated life expectancy of the current operations up to 2038 (Robert A. Amaral, 2018b), the feasibility assessment should therefore be	Long term (approx. 2028) or ten years prior to the completion of the current landfill operations

Key area	Proposed actions	Timing
	conducted in 2028. However, the timing may differ based on the actual fill rates and airspace used.	
	Cease landfilling operations at the Narromine Waste Management Facility and rehabilitate the landfill in the next 15-20 years. Convert the Narromine Waste Management Facility into a transfer station (pending outcomes of the feasibility assessment for the landfill expansion into the adjacent property).	Long term (approx. 2038)
Improve waste management infrastructure planning and operations and comply with EPA requirements and regulations – Trangie Waste Management Facility	Develop a filling plan for the Trangie Waste Management Facility to facilitate a systematic approach towards landfill closure and help minimise leachate risks. The filling plan should include final landform heights, final cap arrangement and staging for final capping – with a view to cease landfilling by 2028.	Short-term (3 months)
	Cease landfilling operation at the Trangie Waste Management Facility by 2028 as per developed filling plan. This timing may differ based on actual fill rates and airspace used.	Long term (approx. 2028)
	Convert the Trangie Waste Management Facility to a transfer station upon closure. Transfer offered services to Narromine Waste Management Facility by 2028 to align with collection contract renewals with J.R.R. Richards.	Long term (approx. 2028)
Improve waste management infrastructure planning and operations and comply with EPA requirements and regulations – Tomingley Transfer Station	Continue to operate Tomingley Transfer Station with limited opening hours.	Ongoing
	Review operations in 2028 (including consideration of closure) to align with collection contract renewals with J.R.R. Richards.	Long term (approx. 2028)
Improve waste management infrastructure planning and operations and comply with EPA requirements and regulations – all	Conduct regular (e.g. yearly) internal audits of WMFs to ensure compliance with internal procedures and EPL requirements	Annually
	Develop an audit framework that can be applied to all waste infrastructure sites.	Short-term (3 months)
	Develop a financial model to inform waste management including provision of future infrastructure and ongoing service needs.	Short-term (3 months)

Key area	Proposed actions	Timing
	Prepare development controls to introduce requirements for builders and developers to prepare “Waste Management Plans” when submitting development and construction certificate applications to Council to improve and increase separation. This could include preparation of a template to simplify the process and guide developers;	Short-term (3 months)
Provide sustainable and improved waste management and collection services to the community of Narromine LGA	Update the asset management plan for waste services regularly – incorporating forecast asset replacement needs	Annually
	Investigate and monitor EPA or other grants/funding opportunities to support resource recovery programs/projects	Commence short-term (3 months) then annually
	Forecast future rationalisation costs including construction, landfill closure, rehabilitation and environmental management costs and incorporate these into a long term financial plan (and where appropriate set aside in the Reserve)	Short-term (3-6 months)
	Maintain affiliation with NetWaste to facilitate implementation of waste reduction projects accessible to Council	Ongoing
	Retain weekly collections of the red general waste bin up to June 2021	Ongoing
	Conduct an audit in June 2021 to confirm if bin capacities have reduced since the 2018 audit. Reassess frequency of general waste (red lid) bin collections from weekly to fortnightly based on findings of June 2021 audit.	Medium-term (June 2021)
	Continue to provide the existing kerbside recyclable service (fortnightly)	Ongoing
	Continue to participate in the three-way joint contract with Dubbo Regional Council and Mid-Western Regional Council for the FOGO service.	Ongoing
	Continue to roll out FOGO collection services to commercial businesses (frequencies of collection on a case-by-case basis).	Ongoing
	Investigate the possibility of providing smaller bin sizes with a variable charging scheme for smaller bins.	Medium-term (12-18 months)

Key area	Proposed actions	Timing
Increase landfill diversion and recycling through community engagement – consistent with the National, State and Regional strategic and policy framework	Continue to support the waste education program that forms part of the FOGO service and provide feedback to the coordinator seeking focus on improving diversion of food waste to the FOGO bin and contamination in the recycling bin. In particular for organics: – Increase community education and engagement on what can be included in the FOGO bin (all kitchen organics, meat, tissues), while emphasising the success of low contamination rates. – Continue 'Love Food Hate Waste' campaigns – Use stickers on bins to show what can go into the FOGO bin. Stickers should also show that garden organics should not be put into plastic bags. Kerbside audits indicated that plastic bags containing garden organics have been used in the FOGO bins – Carry out FOGO bin campaigns in schools In particular for recycling: – Use stickers on recycling bins to show what can go in. – Continue recycling information advertisements, such as 'Keep It Simple' and 'Recycle Right' – Promote recycling of soft plastics in the local supermarkets	Short to medium-term (3-18 months)
	Provide information to residents via rates notices or as part of community newsletters on services available at waste management facilities for e-waste and hazardous waste drop-off to reduce red general waste bin collections	Ongoing – with community newsletters
	Investigate the most appropriate manner in which community representatives that are enthusiastic about waste management can contribute to, and support Council, with the ongoing management of waste and development of waste initiatives	Ongoing

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9. Limitations

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12520501-31031-17/https://projectsportal.ghd.com/sites/pp01_01/narromineshirecounci2/ProjectDocs/12520501-REP_Waste Management Strategy.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A						17.09.2020
0	R. Grewal	A. Montgomery		D. Gamble		30.10.2020
1	R. Grewal	A. Montgomery		D. Gamble		03.03.2021

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