
Northern Tasmanian Waste Management Group (NTWMG)

Five-year strategy: 2017–2022



Abbreviations

ABS	Australian Bureau of Statistics
CDS	Container Deposit Scheme
CoL	City of Launceston
CO ₂ e	Carbon dioxide equivalent
CCWMG	Cradle Coast Waste Management Group
C&D	Construction and demolition waste
C&I	Commercial and industrial waste
E-waste	Electronic waste
EPA	Environment Protection Authority
FOGO	Food and garden organics
HHW	Household hazardous waste
HVLT	High volume low toxicity
LGAT	Local Government Association of Tasmania
LVHT	Low volume high toxicity
MSW	Municipal Solid Waste
NTWMG	Northern Tasmanian Waste Management Group
RWMA	Regional Waste Management Agreement
WMRG	Waste Management Reference Group

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Executive summary

The role of the NTWMG is to provide advice, funding and education on better managing waste and recycling within northern Tasmanian communities, businesses and local governments. The NTWMG is able to provide these services through a \$5/tonne levy on waste disposed to landfill from northern Tasmania.

The NTWMG formed in 2007 and its members include seven councils from northern Tasmania: Break O’Day, Dorset, George Town, Launceston, Meander Valley, Northern Midlands and West Tamar.

The NTWMG’s current five-year strategy expires on 30 June 2017. The 2012–2017 strategy was the first long term strategy for the NTWMG and enabled the NTWMG to undertake research on waste management best practice to inform its activities. The 2012–2017 strategy also included a range of projects that have evolved and grown into well-established projects that reduce waste to landfill from the north using a mix of education and infrastructure.

The 2017–2022 strategy builds on established projects but provides an updated set of goals and targets that better reflect the shifting waste theme priorities of the group (Figure 1.)

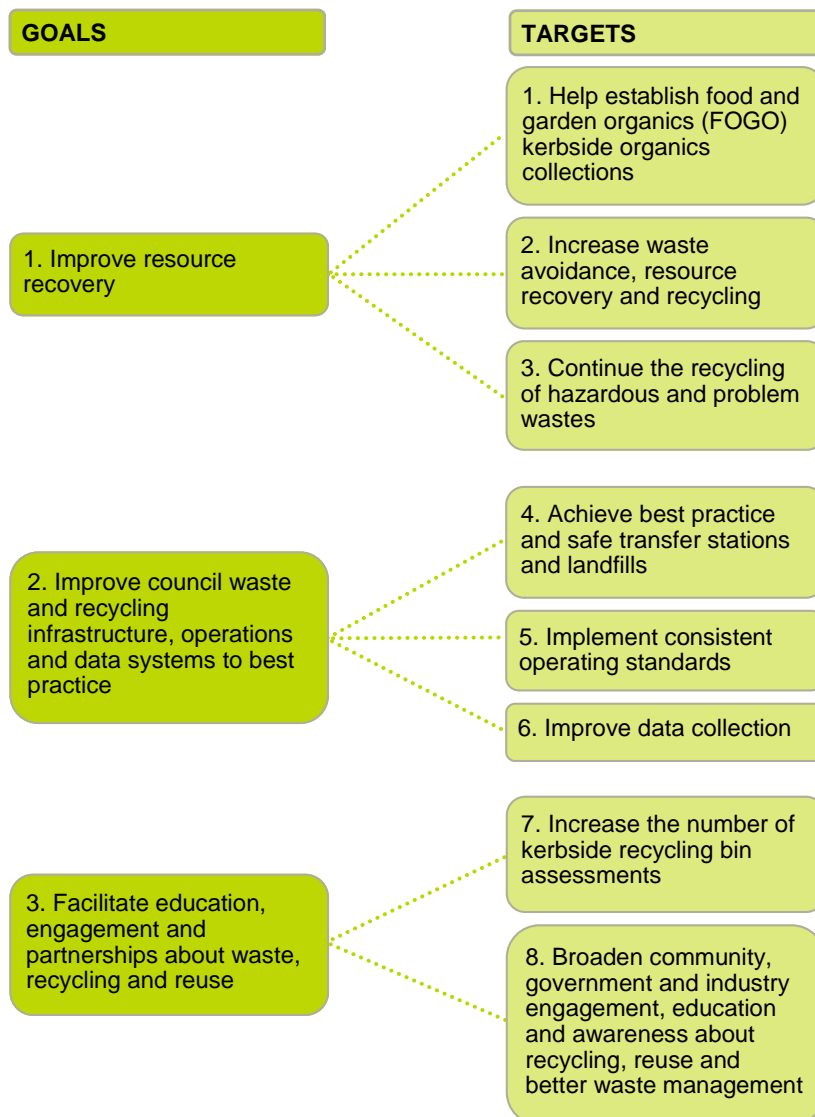


Figure 1: Goals and targets, 2017–2022

The over-arching principle guiding this strategy continues to be the waste hierarchy, an internationally accepted guide for prioritising waste management practices. The principles of ecologically sustainable development also inform this strategy.

Since the 2012 strategy began, the NTWMG has achieved some significant improvements in resource recovery. Notable achievements include assessing over 19,000 households as part of the kerbside recycling assessment program, increasing recycling services for batteries, paint and e-waste, and awarding \$221,000 in grant funding for resource recovery infrastructure and education which has diverted 2,943 tonnes of waste from landfill.

A levy on all waste generated in northern Tasmania disposed to landfill provides the major funding for the NTWMG and its projects. Starting at \$2/tonne in 2007, the levy currently sits at \$5/tonne. The landfill levy provides an economic signal that waste disposal is less preferable to alternatives such as reducing/avoiding waste or recycling. Over the financial years 2010/11 – 2015/16, the landfill levy raised \$2.36 million for the NTWMG.

The regional levy is currently the only source of funding for the NTWMG. This 2017–2022 strategy has founded its budget on the gradual increase of the levy from \$5/tonne to \$10/tonne. The Tasmanian Government's decision not to introduce a state waste levy continues to limit funding opportunities for worthy waste diversion and recycling projects. The NTWMG has a unique position to work independently to achieve a prosperous economy and better environment for the residents and businesses of northern Tasmania.

Evidence from across Australia presents a compelling argument for higher landfill levies. States with a high landfill levy appear to be achieving greater rates of waste diversion than those without. This is because landfill levies provide an economic incentive to reduce waste to landfill.

Accordingly, the NTWMG proposes to increase the levy to \$10/t in two increments over the 2017–2022 period. This is still significantly lower than levies in other parts of Australia. However, it will double the income of the NTWMG and allow the NTWMG to implement more comprehensive projects and infrastructure.

The changes to the levy are proposed in two stages:

Increase 1: \$7.50/tonne by 1 July 2019

Increase 2: \$10/tonne by 1 July 2022

Raising the levy to \$7.50/t by 2019 and \$10/tonne by 2022 allows the NTWMG to implement a range of projects to achieve better practice across the priority waste themes, as well as generate jobs and provide for a thriving economy and environment in northern Tasmania.

Introduction

The aim of the NTWMG 2017–2022 strategy is to increase diversion of waste from landfill into more beneficial uses to realise economic, social and environmental gains for northern Tasmania. Through the 2017–2022 strategy, the NTWMG will provide advice, funding and education to improve waste management and recycling within northern Tasmanian communities, businesses and local governments.

Effectively managing our waste contributes positive benefits to our economy, society and environment. The Australian Bureau of Statistics (ABS) estimates that the supply of waste management services in Australia in 2009–10 was worth \$9.5 billion (ABS 2013). This includes a range of waste management components including collection, transport, recycling, treatment, processing or disposal of waste. In addition to this, waste products supplied to the economy were valued at \$4.5b in 2009–10 (ABS 2013).

Given that Tasmania contributes 2% to Australia's gross domestic product, the NTWMG estimates that waste services and waste products contribute \$190 million and \$90 million respectively to Tasmania's economy (ABS 2013, Department of Treasury and Finance 2015).

From a social-economic perspective, recycling creates jobs. For every 10,000 tonnes of materials processed, 9.2 full time equivalent jobs are created. This compares to only 2.8 jobs for sending that waste to landfill (Access Economics 2009). Approximately 140,000 tonnes of waste from northern Tasmania is disposed to landfill each year at the opportunity cost of considerable job creation.

Environmentally, the benefits of waste diversion are substantial. Recovering and reprocessing organic material significantly reduces greenhouse gas emissions. About 250kg of greenhouse gas emissions are avoided with each tonne of food and garden organics we recycle (Department of Environment, Climate Change and Water NSW 2010).

If we composted the 31,000 tonnes of green and food organics currently sent to landfill from northern Tasmania, we could achieve a greenhouse gas saving of 7,750 tonnes of CO₂e per annum. This is the same as removing 1,861 cars permanently off the road or saving 126,167 wheelie bins of waste (Environment Protection Authority NSW 2016). Recycling also achieves significant reductions in water and energy use, not to mention reducing harm to our native flora and fauna, and improving the quality of our waterways and air.

This strategy outlines the history and successes of the NTWMG to date, as well as background information on the NTWMG's funding model. It then goes on to provide information on the goals and targets for the next five years as well as the specific priority waste themes and associated projects that will help meet the goals and targets.

The 2017–2022 regional strategy sits within the context of state and federal waste policies, as outlined in Appendix 5. It also uses data on waste composition, as well as information from multiple consultancy reports prepared for the NTWMG, to guide its goals, targets and annual projects. A summary of the waste data used to inform this strategy is in Appendix 6 and a list of the consultancies is in Appendix 7.

Background

About the NTWMG

The role of the NTWMG is to facilitate regional collaboration and consistency in waste and recycling services and to implement regional projects in a cost effective way. The NTWMG provides advice, funding and education to improve waste management and recycling to northern Tasmanian communities, businesses and local governments. These activities are funded through a \$5/tonne levy on waste disposed to landfill from northern Tasmania.

The NTWMG formed in 2007 and its members include seven councils from northern Tasmania: Break O'Day, Dorset, George Town, Launceston, Meander Valley, Northern Midlands and West Tamar. The region covers north eastern Tasmania and is bounded by Deloraine to the west, Ross to the south, St Helens to the east and George Town and Bridport to the north.

The NTWMG is established under the *2012 Regional Waste Management Agreement (RWMA)* between the seven member councils. The RWMA outlines the organisational structure, roles and responsibilities, and financial management of the group, including payment of the landfill levy. Member councils are responsible for approval and authorisation of amendments to the RWMA and to the five year strategy. The current RWMA is due for renewal in 2018.

A decade of achievements

The NTWMG has implemented a range of initiatives since its inception in 2007. These achievements include introducing a waste levy through to increasing the scale and type of recycling services offered to northern Tasmanians.

Introduction of a waste levy

The NTWMG successfully saw the introduction of a waste levy in 2007. The levy started at \$2/tonne and provided the income and incentive to develop projects to improve resource recovery in northern Tasmania. In collaboration with the Cradle Coast Waste Management Group (CCWVG), the levy increased in 2013 to \$5/tonne, more than doubling the annual income of the group to approximately \$500,000. This enabled the NTWMG to expand its role and services, including employing four part time staff. Two part time staff undertake daily kerbside recycling bin assessments and community education. The other two staff implement the NTWMG's annual projects, support member councils and provide administration support through managing the budget.

Kerbside recycling bin assessments

Since 2013, the NTWMG has been undertaking continuous assessments of kerbside recycling bins across six northern Tasmanian councils¹. Two officers assess recycling bins on collection days to identify households that place incorrect items in their recycling bins. The officers then provide specific feedback to residents on correct recycling practices. Valuable data on kerbside recycling behaviour across northern Tasmania is also collected through the assessments.

The assessment program is primarily one of educating people and encouraging behaviour change to achieve better recycling. Assessment officers have found that most people want to recycle and they want to do it well.

¹ All councils except Break O' Day Council (BODC) participate in the assessments. BODC will be introducing domestic kerbside recycling in 2018 after which they will be included in the regular assessment program.

Of households that fail the first of three recycling bin assessments (i.e. bins that have more than 10% contamination), fewer than 50% then go on to fail the third assessment. Some areas revisited 12 months after the initial visits have shown long term, positive behaviour change.

By mid-2016, the officers had visited 19,000 houses, or about 35% of households, in the participating council areas.

Increased recycling services

A range of recycling initiatives have been implemented across northern Tasmania since 2012 with support from the NTWVG including:

- expanded polystyrene (EPS) recycling using an EPS compactor at the Launceston Waste Centre (2,290kg diverted since February 2016)
- domestic battery collections at each NTWVG council (2,716kg diverted since 2014)
- waste paint collections from three NTWVG councils (8,010kg diverted since 2015)
- a regional biennial household hazardous waste collection (681kg of hazardous materials diverted at the February 2016 collection)
- regional fluorescent light collection (1,134kg diverted since 2016)
- colour sorted glass recovery from one member council's transfer station with glass shipped directly to Melbourne for use in beverage glass manufacture
- e-waste collections continuing at four councils, paid for by the NTWVG, following failure of the federal scheme to operate effectively in northern Tasmania.

Community engagement

Since 2013, the NTWVG has been providing education to the community on waste and recycling by attending events such as Agfest, rural shows and Seniors Week activities. The NTWVG also sets up displays in community spaces, including shopping centres, libraries and civic centres, and engages with a broad spectrum of the region through community group and school presentations (both primary and secondary). The NTWVG also regularly presents information on recycling to newly arrived refugees as part of their basic language classes at TAFE in Launceston.

Rethink Waste

In collaboration with the CCWVG, the NTWVG developed Rethink Waste, a statewide brand and website which acts as a central portal for sharing and disseminating waste and recycling information. Through the partnership with the CCWVG (and the Southern Waste Strategy Authority before it disbanded), Rethink Waste provides a one-stop-shop website for people to access information about waste and recycling while at home, at school, at work and while out and about. It also avoids duplication by having a single website for waste and recycling information for all Tasmanians.

Waste funding

The NTWVG has awarded \$221,000 in grant funding since 2012/13. Primary schools, private waste companies and member councils have all received grants. Projects have included, among others, a machine to recover polystyrene, bin infrastructure at schools to recover organic waste, and the construction of sheds to increase resource recovery. Since 2012/13, the NTWVG grants program has helped to divert 2,943 tonnes of waste from landfill.

NTWVG landfill levy

Levy income: contributors

A levy on all waste generated in northern Tasmania disposed to landfill provides most of the funding for the NTWVG's administration and projects. Starting at \$2/tonne in 2007, the levy currently sits at \$5/tonne. The main focus of the levy is to generate funding to promote waste

reduction and increase recycling in the region. The landfill levy also provides an economic signal that waste disposal is less preferable to alternatives such as reducing/avoiding waste or recycling.

Over the financial years 2010/11 – 2015/16, the landfill levy raised \$2,365,880 for the NTWWMG (Table 1). The City of Launceston was the major contributor of funds through its transfer stations and kerbside collections (accounting for 38% of all levy funds generated, or \$905,000). Three private companies collectively contributed the next largest amount over the five financial years, at 28% (or \$651,000). Together these three sources have contributed 66% of all levy income over the six financial years to 2015/16 (see Figure 2).

The source of the levy is indicative of the amount of waste generated by the contributor.

Table 1: Levy income received 2010/11 – 2015/16 by contributor

ACCOUNT	LEVY CONTRIBUTION (\$)	LEVY CONTRIBUTION (%)
City of Launceston - All	\$904,722	38.2%
Private companies 1, 2 & 3	\$651,183	27.5%
Meander Valley Council - All	\$258,707	10.9%
Other contributors incl. other private companies (688)	\$195,861	8.3%
West Tamar council - All	\$122,670	5.2%
Break O'Day Council - All	\$66,841	2.8%
George Town Council - All	\$57,489	2.4%
Dorset Council - All	\$52,949	2.2%
Northern Midlands Council - All	\$46,399	2.0%
Flinders Council - All	\$9,058	0.4%
	\$2,365,880	100.0%

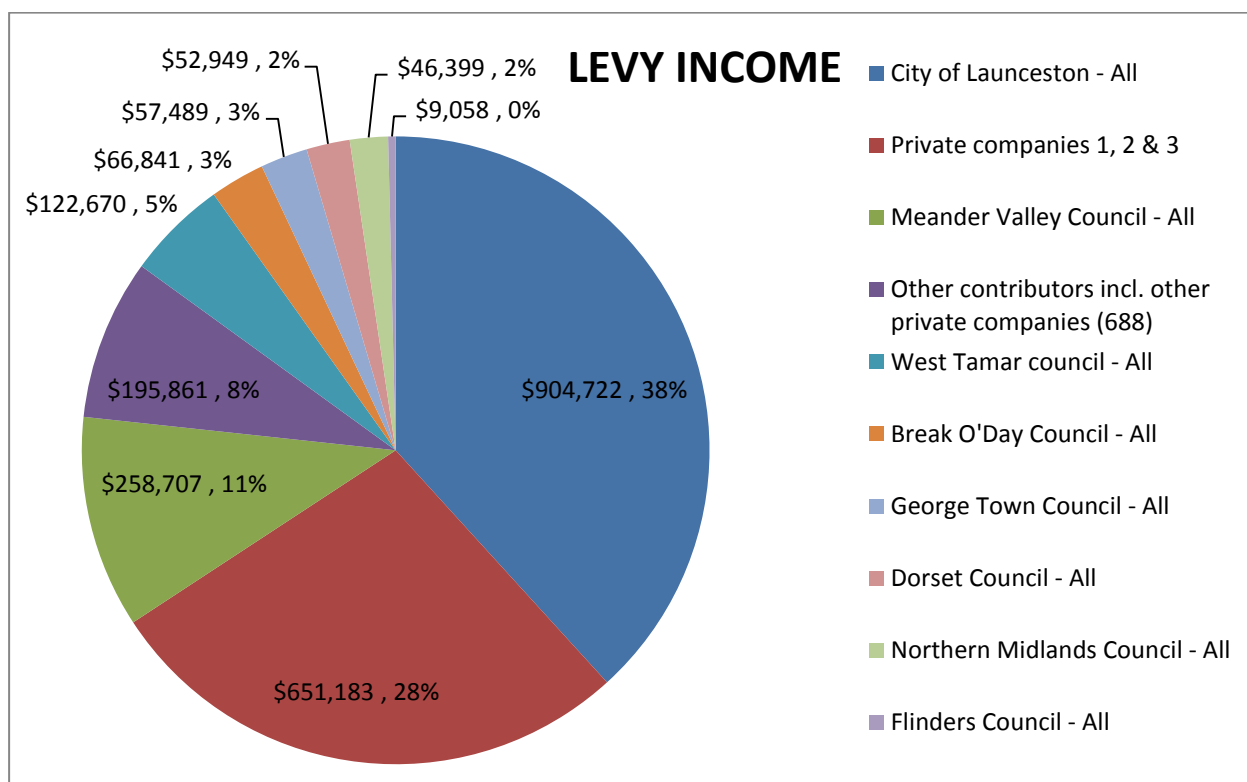


Figure 2: Levy income received 2010/11 – 2015/16, by contributor

Current and future levy income

The 2017–2022 strategy focuses on implementing projects that increase recycling and waste diversion and stimulate the local economy. The current levy income at \$5/tonne will result in a shortfall in funding for each year of the 2017–2022 strategy. As such, the preferred option is increase the levy rather than cut projects.

Evidence from across Australia presents a compelling argument for increasing the levy. As Figure 3 shows, states with a high landfill levy appear to be achieving greater rates of waste diversion. This is because landfill levies provide an economic incentive to reduce waste to landfill. Other states have used levies to fund activities such as recycling infrastructure, market development, and assistance to industry to recycle more (Blue Environment 2014a).

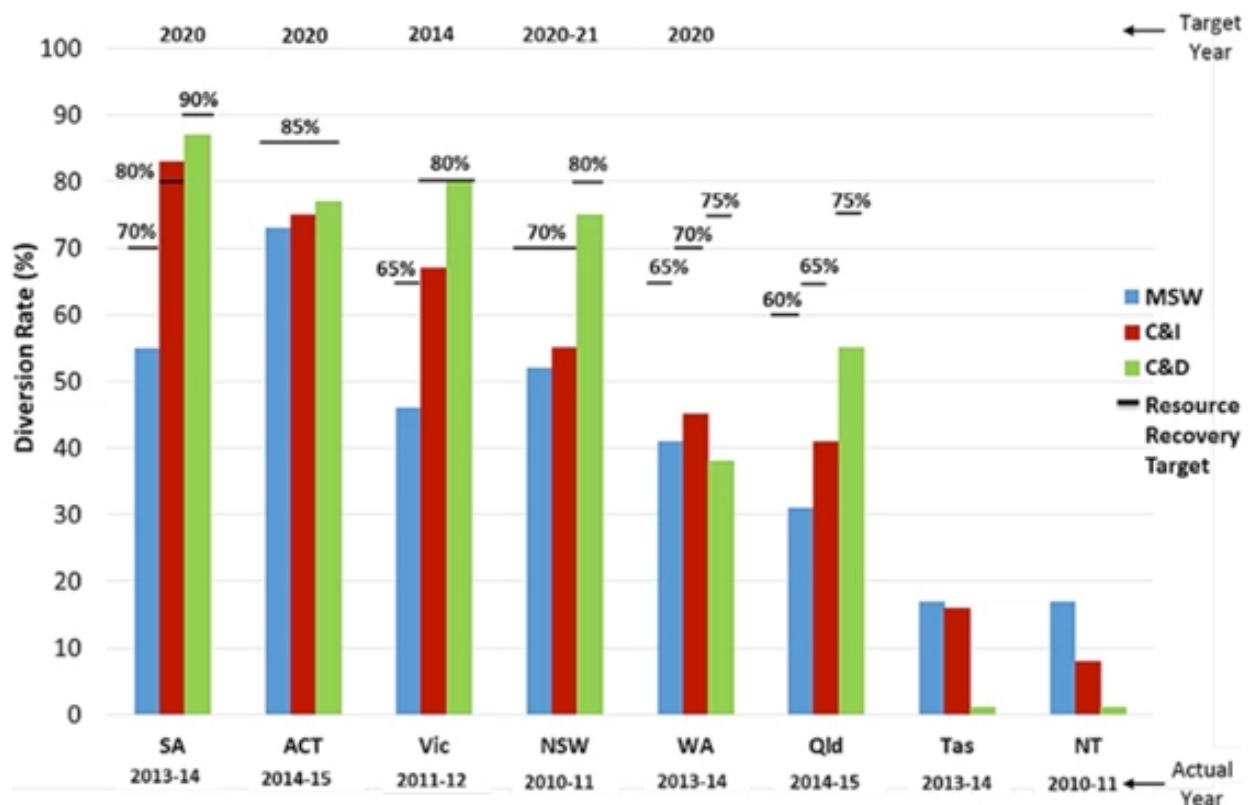


Figure 3: Diversion rates by state (MRA Consulting 2009)

Increasing recycling also has positive economic benefits for the Tasmanian economy. Commonwealth economic research suggests that around four times the number of jobs were created in Tasmania through recycling than through landfilling (Blue Environment 2014a). Continuing with the current waste management approach in Tasmania represents a missed economic opportunity by foregoing the creation of between 660–920 direct and indirect jobs in Tasmania (Blue Environment 2014a).

The Tasmanian Government in 2016 stated it does not intend to introduce a state waste levy. The NTWGM is in a unique position to increase its levy to fund projects that increase recycling rates in northern Tasmania even further than that achieved to date.

The NTWGM agreed at a meeting in July 2016 that it is preferable to raise the levy rather than cancel projects, particularly given the potential economic, social and environmental benefits from increased recycling. Accordingly, the NTWGM proposes to progressively increase the levy to \$10/t. This is still significantly lower than levies in other parts of Australia. However, it will

double the income of the NTWVG and allow the NTWVG to implement more comprehensive recycling and waste diversion projects.

The changes to the levy are proposed in two stages:

Increase 1: \$7.50/tonne by 1 July 2019

Increase 2: \$10/tonne by 1 July 2021 (**NOTE:** This will be dependent on the outcomes of a mid-term review of the strategy in 2019/20. The review will consider whether sufficient progress and expenditure against the strategy has been made to justify a levy increase to pay for additional and/or larger projects.)

The NTWVG's \$5/tonne levy currently raises an annual income of approximately \$500,000. Of the current income, approximately \$300,000 is set aside for salaries and core project administration costs, and a financial reserve of not more than 20% of annual income. This leaves approximately \$200,000 for implementing projects to increase recycling.

As shown in Table 2, the NTWVG has been accumulating a substantial reserve since 2012/13. This has largely been due to two main factors: cancellation of projects not considered relevant or important for the group; and resourcing constraints within member councils who, at times, have been unable to submit funding requests due to lack of resources to deliver projects.

Importantly, the group's operating result has remained under \$100,000 each year (with the exception of 2014/15). This shows the group is readily spending the majority of its income each financial year.

Table 2: NTWVG annual revenue, expenses and opening/closing balances 2011–2016

	2016 Actual \$	2015 Actual \$	2014 Actual \$	2013 Actual \$	2012 Actual \$	2011 Actual \$
REVENUES						
Regional Waste Levies deposits	494,196	506,821	506,907	358,153	211,864	231,512
Grants & Contributions Revenue			18,182		56,881	91,636
Other Revenue	1,000	5,414	10,000			
TOTAL REVENUES	495,196	512,235	535,089	358,153	268,745	323,148
EXPENSES						
Programme Delivery	67,362	154,639	174,225	98,935	64,037	55,940
Collection & Administration	13,000	10,000	10,000	11,000	11,000	10,000
Regional Waste Management Strategy	325,451	205,012	296,616	156,799	318,131	334,058
TOTAL EXPENSES	405,813	369,651	480,841	266,734	393,168	399,998
OPERATING RESULT	89,383	142,584	54,248	91,419	(124,423)	(76,850)
ANNUAL FINANCIAL POSITION						
Opening Regional Waste Levies deposits account balance	457,660	315,076	260,828	169,409	293,832	370,682
Add Operating Result	89,383	142,584	54,248	91,419	(124,423)	(76,850)
Closing Regional Waste Levies Deposit account balance	547,043	457,660	315,076	260,828	169,409	293,832

The financial reserve has allowed the group to spend more on projects in recent years than would be the case if the reserve were smaller. However, once the NTWVG draws down the reserve (expected by the end of 2016/17), the levy income will no longer cover planned expenditure. The average annual expenditure for the 2017–2022 strategy is \$764,000. If annual income remains at \$500,000, the average annual funding shortfall will be about \$264,000.

Apportioning the levy to broader environmental sustainability

The NTWMG landfill levy currently funds waste and recycling initiatives in northern Tasmania. While there are immediate priorities for the start of the 2017–22 strategy to address waste management challenges, the latter years of the strategy could consider a broader focus on improving other environmental issues facing councils in the NTWMG.

With a sustained focus on the future impacts of climate change likely, grant monies both federally and at a state level may be available for these areas over the coming five years. As part of the mid-term strategy review in 2020/21, the NTWMG should consider if there is value in, and support for, using some of the levy funds to access financial support from federal or state funding programs for broader environmental initiatives.

Should this be deemed appropriate, the group could allocate a specific amount or a percentage of levy income in 2020/21 and/or 2021/22 for environmental/sustainability projects or projects that reduce the carbon footprint of member councils' operations.

2017–2022 strategy: principles, vision, goals and targets

Principles

The over-arching principle guiding this strategy is the waste hierarchy, an internationally accepted guide for prioritising waste management practices.

The waste hierarchy is depicted as an inverted triangle, which specifies waste practices that are most preferable through to those least preferred (Figure 4). The waste hierarchy has evolved over the past four decades and now includes seven steps (the original contained five) to better represent the alternatives to landfill.

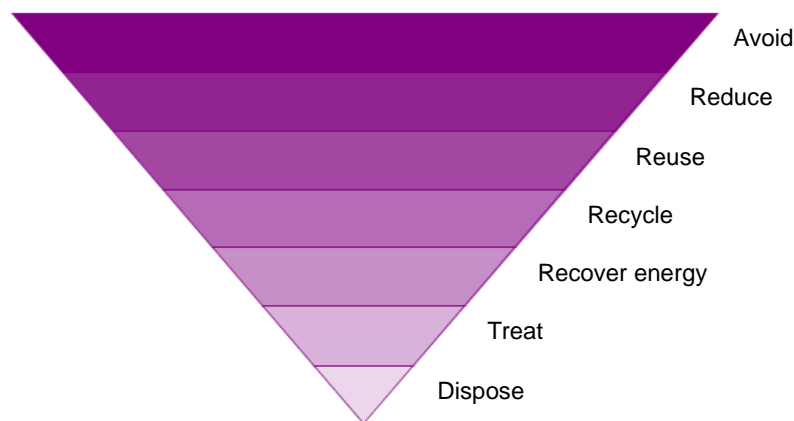


Figure 4: The waste hierarchy

The principles of ecologically sustainable development (ESD) also guide this strategy. ESD principles are included in many Australian state and federal environmental laws and provide guidance on managing waste and the facilities that recover, treat or contain it. The principles of ESD are:

1. the precautionary principle
2. intergenerational equity
3. conservation of biological diversity & ecological integrity
4. the polluter pays principle.

These four principles govern how we manage our waste by ensuring:

- waste does not cause negative or unintended consequences to the wider environment
- any waste generated is the burden of the current generation and not shifted into the future
- waste does not negatively affect Tasmania's biodiversity and ecological integrity
- the generator of the waste bears the full cost of the treatment and management, both now and in the future.

All activities implemented through this strategy will take the waste hierarchy and ESD principles into account while still recognising the need for flexibility based on economic, social and environmental conditions.

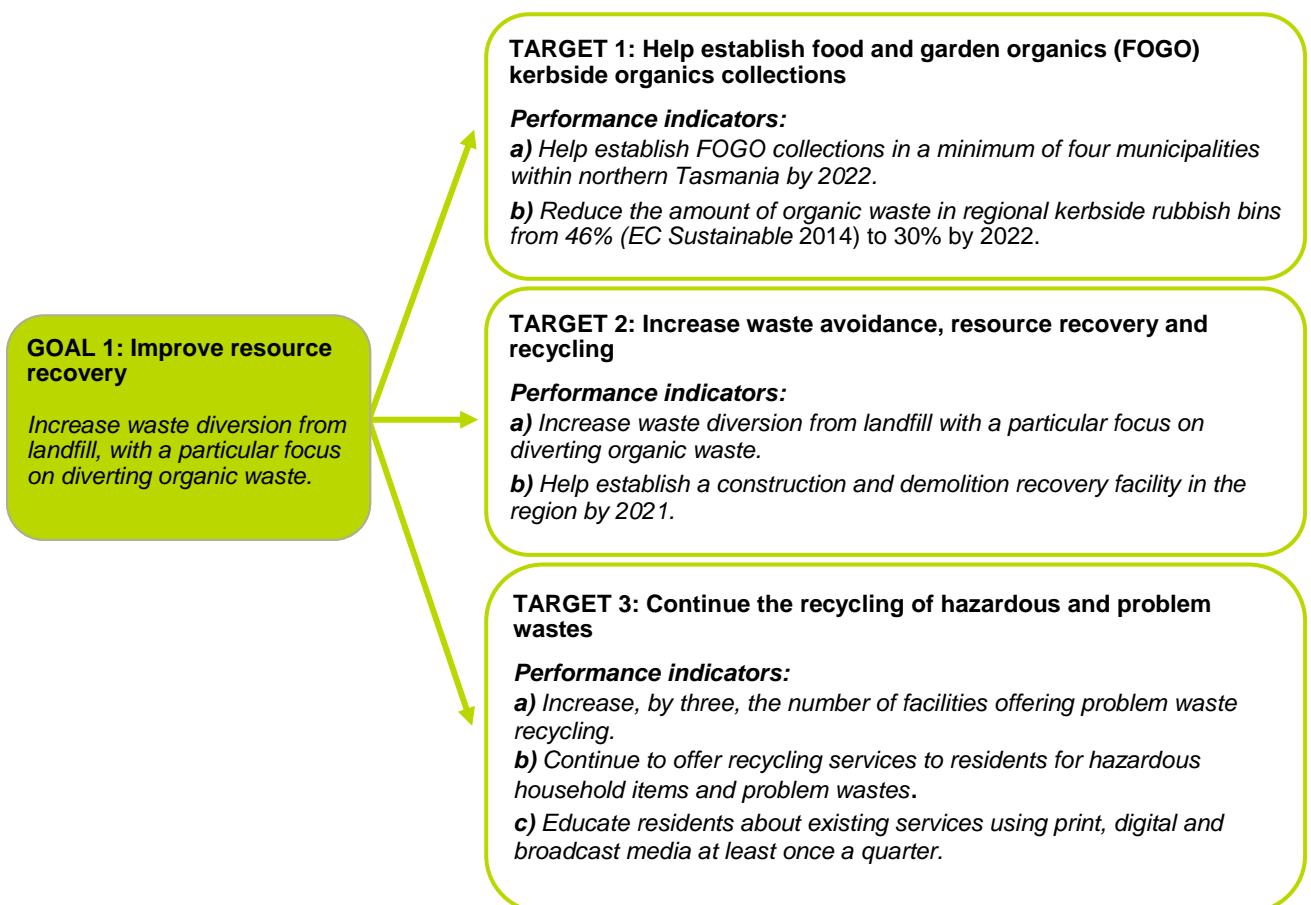
Vision

To collaborate and cooperate regionally to increase recycling and reduce waste to landfill, and to achieve consistent services across the northern Tasmanian region.

Goals and targets

The 2017–2022 strategy builds an updated set of goals which better reflect the shifting priorities of the group. New targets have also been set with specific performance measures to help track progress.

The NTWMG has developed three new guiding goals around resource recovery, council waste and recycling infrastructure, and education and engagement. There are a further eight targets, with specific performance measures, which relate to each of the goals.



GOAL 2: Improve council waste and recycling infrastructure, operations and data systems to best practice

Improve recycling infrastructure and data collection to improve recycling and to better monitor councils' recycling performance.

TARGET 4: Achieve best practice and safe transfer stations and landfills

Performance indicators:

- a)** Seven transfer stations upgraded to best practice by 2022 as per the recommendations in Blue Environment's 2016 "Northern Tasmanian Transfer Station Assessments".
- b)** Standard materials are collected from all regional transfer stations by 2022 as per Blue Environment's 2014 "Transfer Station Best Practice Guidelines 2014".
- c)** All transfer stations reviewed in 2020 for compliance against best practice.

TARGET 5: Implement consistent operating standards

Performance indicators:

- a)** Provide financial incentive to encourage councils to adopt operational standards at all transfer stations by 2022 as guided by Blue Environment's 2014 "Transfer Station Best Practice Guidelines". Operational standards could include uniform signage and pricing, collection of standard materials, and safe and environmentally responsible transfer stations.
- b)** All transfer stations reviewed in 2020 for compliance against best practice.

TARGET 6: Improve data collection

Performance indicators:

- a)** Implement and actively maintain a waste data collection project at each transfer station. Electronic waste and recycling data collection will be implemented at:
 - the major transfer station in each council by 2020.
 - the remaining 17 transfer stations by 2022.

GOAL 3: Facilitate education, engagement and partnerships about waste, recycling and reuse

Increase involvement with community groups and schools on correct recycling and waste avoidance behaviours.

Promote recycling within the community and the use of recycled/reclaimed products to support the recycling industry and job creation.

Strengthen partnerships with other local governments, waste management bodies, the private sector, education providers and community organisations to improve opportunities for collaboration, and resource and information sharing, about waste and recycling.

TARGET 7: Increase the number of kerbside recycling bin assessments

Performance indicators:

- a)** By 2022,
 - visit 65% of accessible NTWMG households as part of the kerbside recycling bin assessment program.
 - assess the bin of each visited household three times.

TARGET 8: Broaden community, government and industry engagement, awareness and education about recycling and better waste management

Performance indicators:

- a)** Undertake a minimum of 30 visits with community groups/schools/businesses/public events each year.
- b)** Facilitate information sharing through council waste forums and advocate to the state government as required on waste and recycling matters.
- c)** Educate residents about existing services using print, digital and broadcast media at least once a quarter.

Appendix 1 shows in detail the priority waste themes and projects linked to each target.

2017–2022 strategy: priority waste themes

Priority waste themes have been set up to help meet the goals and agreed targets. These themes have been determined based on evidence collected by the NTWMG over the last five years and are intended to highlight the most pressing issues facing the region. While the targets and goals are set, the priority waste themes will remain flexible to enable the region to respond to emerging or problematic waste issues.

1. Organics

Sources of organic waste

Organic waste in Tasmania is generated by a range of domestic and commercial processes and includes garden waste, food waste, timber, paper and cardboard, textiles, biosolids and organic sludges (Blue Environment 2014a). By weight, food and garden organics contribute over half (52%) of MSW, and over a quarter (26%) of both C&I waste and total landfilled waste (27%) in Tasmania (Blue Environment 2014a).

As shown in Figure 5, the C&I sector generates and disposes almost as much organic waste as the municipal sector.² Organics recovery projects in northern Tasmania should therefore focus on both C&I and municipal organic waste to maximise organics recovery.



Figure 5: Organic waste generation and disposal in Tasmania, 2010/11 (Blue Environment 2014a)

Feedstock options for composting facilities

The City of Launceston is establishing a regional commercial composting operation at its landfill in 2017/18 and will require a range of materials from various sectors to ensure viability of the facility.

On the domestic front, household kerbside rubbish bins comprise 47% organic material by weight, all of which is currently landfilled and which could be diverted to a regional composting facility (EC Sustainable 2014). The City of Launceston will be commencing a food and garden organics (FOGO) kerbside service in 2017, with materials delivered to the Launceston Waste Centre's composting facility. FOGO services are also planned for Meander Valley (which has

² This data excludes waste from some industrial sectors including agricultural, forestry and mining waste which is generally managed on site or by third parties (Blue Environment 2014a, DJR Environmental 2012).

had a localised FOGO collection in the suburb of Blackstone Heights since 2014), West Tamar and George Town Councils in the near future.

The agricultural sector could also be a source of organic feedstock. The value of food production in Tasmania grew by \$1.1 billion over the 10 years to 2008/09 and has potential to grow significantly into the future (Tasmanian Irrigation 2012). With the introduction of irrigation schemes across Tasmania, the dairy, fruit, wine and vegetable production and processing sectors will likely expand, potentially generating more organic feedstock for composting operations (Tasmanian Irrigation 2012).

Further, there may be potential to incorporate biosolids generated through TasWater's operations, as well as organic waste from stables (in particular the Launceston racecourse) and waste from regional councils' parks departments (City of Launceston 2015).

Market potential for composted products

An expanding agricultural industry may result in increased demand for compost, which helps improve soil productivity and water retention. Organic farming may present a potential market if the final product produced through the regional facility in Launceston can meet the National Association of Sustainable Agriculture Australia's organic standards. The quality of the product will need to be consistently high to promote the benefits and allay fears of risks of using the compost over other soil conditioners and fertilisers (City of Launceston 2015).

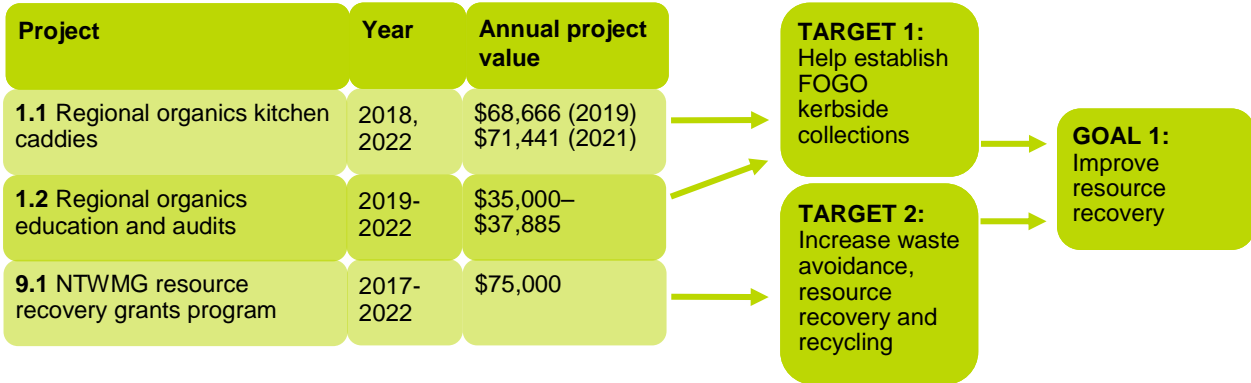
There may also be scope to sell composted materials to landscape suppliers. However, finding a large wholesale market in this area may be more difficult (City of Launceston 2015). Finally, the City of Launceston will require significant amounts of soil to assist with rehabilitation of its landfill and will likely have a high demand for composted organic products to meet this need.

Projects to improve organics recycling

The NTWMG's focus will be to help establish services to support the regional Launceston composting facility and increase diversion of organics from landfill. An immediate focus will be assisting with the rollout of kerbside FOGO services in four council areas through provision of kitchen caddies and organics education, and providing support and education to the remaining three councils to improve organics recovery.

The NTWMG will also assist the C&I sector to increase organic waste recycling. The NTWMG intends to help a small number of large-scale producers of organic waste, such as large hospitality venues or health services, by providing financial and education support to implement organics recovery infrastructure. This support will occur through the resource recovery grants program.

The following projects address the organics priority waste theme:



2. Construction & demolition recovery and reprocessing

The NTWMG's transfer stations receive approximately 13,500 tonnes of construction and demolition (C&D) waste each year. Hyder Consulting (2014) found potential exists to recover 1,200 tonnes of timber and wood, and 10,000 tonnes of masonry currently landfilled in the north. By volume, C&D materials make up 31% of waste to the Launceston landfill (APC Environmental Management 2011).

Current barriers to C&D recovery and reprocessing include:

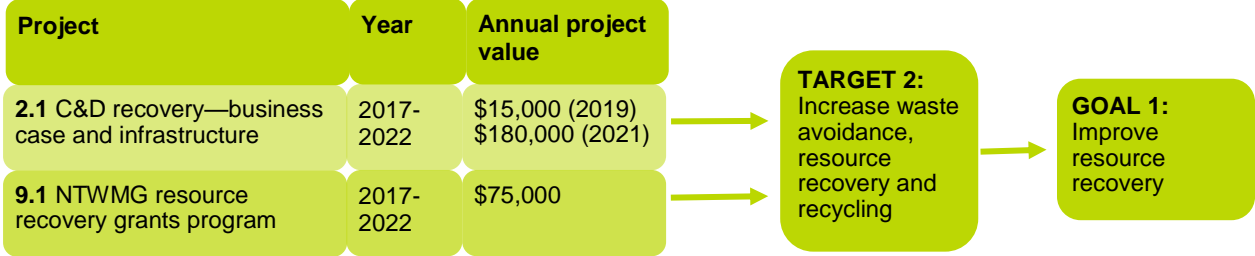
- limited developed markets
- unregulated inert facilities where no levy applies
- low landfill levy
- retrieval efficiencies
- quality control and contamination.

Pursuing C&D recovery requires the development of a business case on options including:

- front end landfill/transfer station sorting
- mobile processing
- centralised processing.

The NTWMG will provide funding support to establish a regional C&D recovery facility at the Launceston Waste Centre, which received the majority of C&D waste generated in northern Tasmania. As part of this, the NTWMG will commission a business case into various processing options and potential end markets. Other options, such as promotional subsidies for C&D recovery or certification of builders who recycle their building waste, may be considered through the resource recovery grants program if they are deemed critical to maximising C&D recovery.

The following projects address the C&D recovery and reprocessing priority waste theme:



3. Household hazardous waste

Prior to the NTWMG's household hazardous waste (HHW) projects, the Tasmanian Government collaborated with Tasmanian local governments to run the *Tasmanian Household Hazardous Waste* program.

In 2013, the Local Government Association of Tasmania (LGAT) reviewed the 2009–2012 program. The review recommended the following:

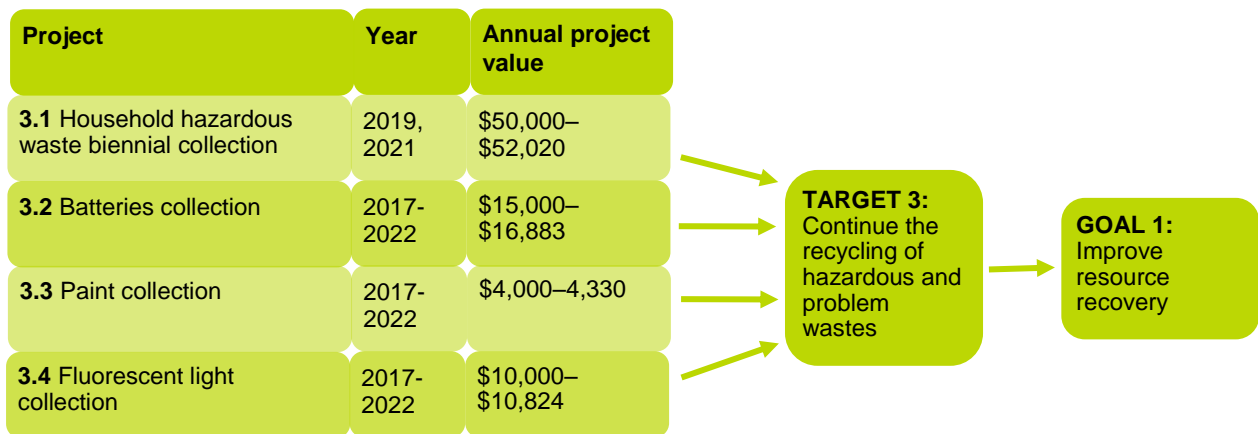
1. Provide a statewide network of permanent drop-off sites for high volume low toxicity (HVLT)³ items (82% of material by volume) such as paint, batteries, gas bottles, fluorescent tubes and aerosols.
2. Provide regionally focussed mobile drop-off locations targeting low volume high toxicity (LVHT)⁴ materials. Mobile collection days are expensive to host and should aim to collect only highly toxic materials (Mooney 2013).

³ HVLT materials: Paint (all types), Gas cylinders, Batteries, Flammable liquid FP <61C, Aerosols, Automotive products except oil, e.g. coolants, brake fluids, Fluorescent tubes and compact fluorescent globes (Mooney 2013).

HHW can be dangerous if not stored or disposed of safely and many of these materials cannot be landfilled. Due to community demands for safe disposal methods, and in the absence of state funding or support for HHW recycling, the NTWMG will continue to fund the following projects:

- HHW mobile collections: ongoing funding for recovery, transport and processing costs for LVHT collections, occurring every two years.
- Batteries and fluorescent lamps: ongoing funding covering recovery, transport and processing cost, with batteries and fluorescents collected from each member council.
- Paint: participation in Paintback, with funding allocated to cover transport costs (if required) to a centralised location from remote/rural transfer stations.
- Fluorescent light collection from major regional transfer stations.

The following projects address the household hazardous waste priority waste theme:

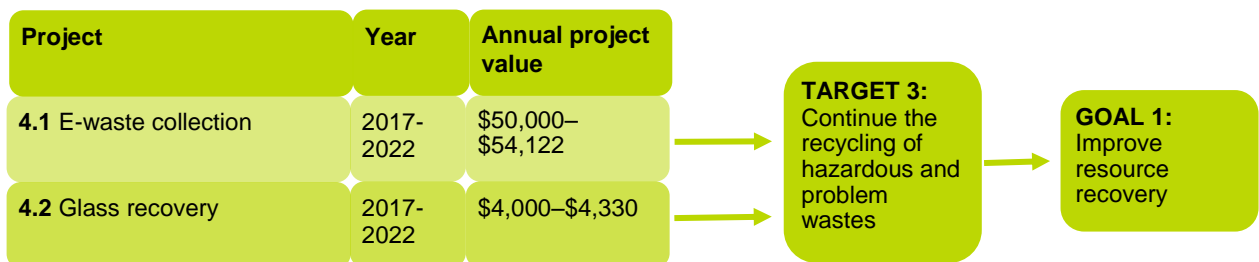


4. Problem wastes

The NTWMG will continue to fund projects to increase recycling of problem materials, such as e-waste and glass:

- *Electronic waste (e-waste) – TVs and computers:* in the absence of a federal product stewardship scheme operating effectively in northern Tasmania, the NTWMG will continue to fund the collection and transport costs of e-waste.
- *Alternative glass recovery arrangements:* kerbside collected glass in Tasmania is not reprocessed into new glass packaging (although it is often reused, such as into new pavers). However, many NTWMG transfer stations currently (or have the potential to) colour sort glass. Colour sorted glass at transfer stations is often better quality than glass collected through the kerbside and can be shipped directly to Victoria for use in glass manufacture. The NTWMG will pursue opportunities to increase recovery of colour sorted glass from transfer stations.

The following projects address the problem waste priority waste theme:



⁴ *LVHT materials:* Acidic liquid, Alkali, Arsenic based products, Cyanides, Heavy metal compounds excluding metallic mercury, Metallic mercury, Organic peroxides, Oxidising (solid and liquid), PCB materials, Pesticides (solid and liquid toxic), Pesticides OC (solid and liquid toxic), Photographic chemicals, Reactives, Solvents - halogenated, Toxic (solid and liquid), Unknown (solid and liquid) (Mooney 2013).

5. Transfer station and data improvements

Infrastructure and operational improvements

The NTWMG received advice in 2014 on what is required to establish best practice transfer stations (Blue Environment 2014). Transfer stations are important for increasing resource recovery in rural and regional communities, particularly where it is not always practical to provide kerbside recycling (APC Environmental Management 2012).

According to the Service Level Strategy prepared for the NTWMG by APC Environmental Management (2012), the aim of upgrading the NTWMG transfer stations should be to:

- increase resource recovery opportunities
- promote the environmentally beneficial diversion of wastes from landfill
- provide safe facilities for the drop off of items not collected at kerbside
- provide appropriate handling/processing options for hazardous wastes
- provide bulking facilities where material quantities are too small to justify frequent collection services.

The investment demand for resource recovery infrastructure is significant: Blue Environment's recent work (2016) indicates a cost of \$155,000–\$269,500 to upgrade six transfer stations to achieve environmental, safety and resource recovery improvements. The NTWMG will provide an annual funding program over the five year strategy to upgrade nominated transfer stations in line with the Blue Environment recommendations.

Significantly more funding has been allocated to transfer station improvements than what was recommended by Blue Environment. This extra funding allocation is to cover other improvements to transfer stations, such as signage, data collection and minimum operating standards and services across the region.

Data and waste charging improvements

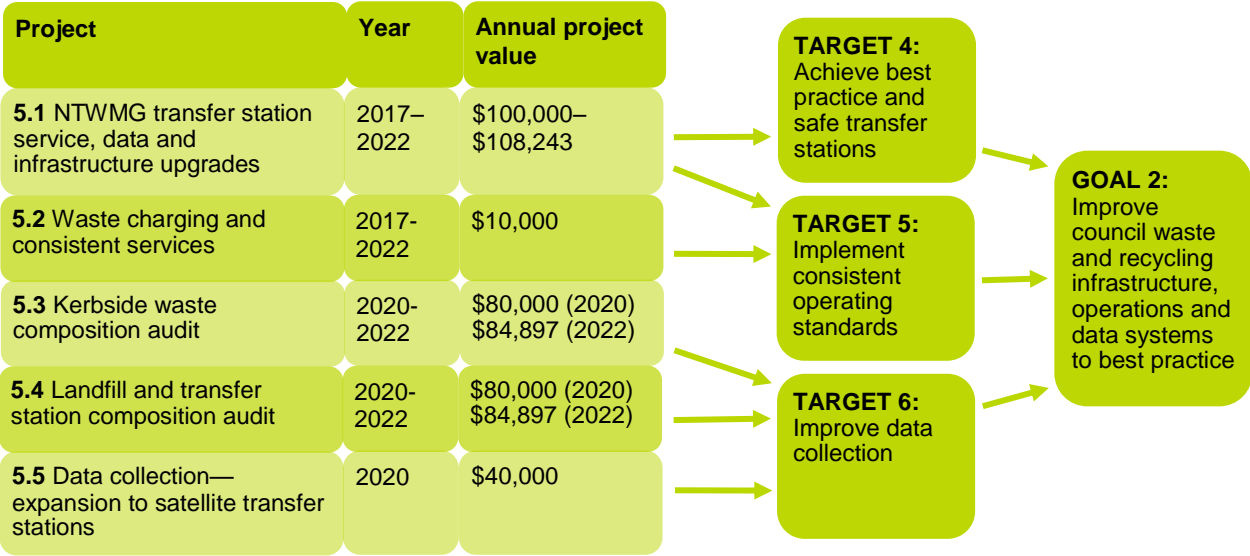
Data on waste generation is inconsistent and largely absent in the region. Most pressing is the lack of waste generation and recycling data for each sector (MSW, C&I and C&D). It is important for the NTWMG to develop baseline generation and recycling data from which improvements can be measured against.

Improvements to data will rely on several aspects: a repeat of the 2014 kerbside waste bin audit; a repeat of the 2011 landfill audit; and provision of a region-wide consistent data capture system for regional transfer stations. The transfer station data collection project may focus on collecting information which can help inform the kinds of services and frequencies of collections at the region's major and satellite transfer stations, such as the:

- number of vehicles visiting each transfer station each year (to justify where services are/aren't provided)
- volume of waste brought to transfer stations (extrapolate whether there has been a change in volume against vehicles)
- materials brought in (measure campaign successes and service effectiveness).

Member councils will be required to provide data to the NTWMG to secure ongoing financial payment for data services/programs.

The following projects address the transfer stations and data improvements priority waste theme:



6. Kerbside recycling assessments and community education

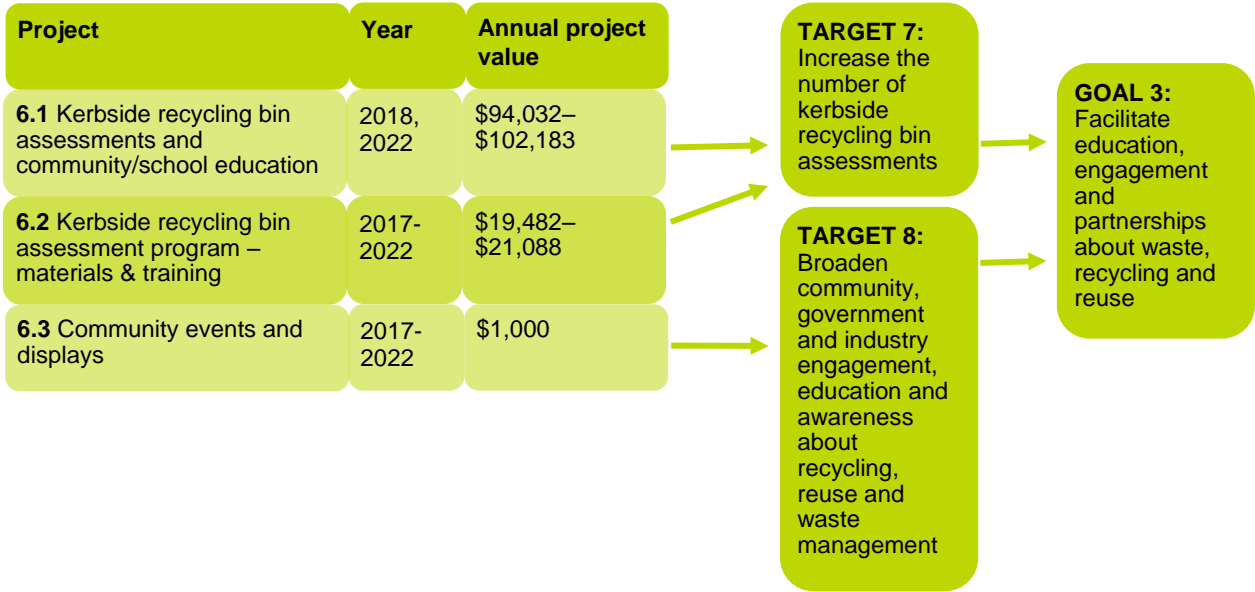
The kerbside recycling assessment program commenced in 2012 and reinforces the importance of household recycling. Kerbside recycling is available to nearly every household, is generally very cheap or free and has a measurable and positive impact on the environment.

The kerbside recycling assessment program involves two part time staff checking regional household recycling bins for contamination on a daily basis across the region and providing direct, tailored advice to households on how to improve their recycling. The program has evolved since 2012 to focus more on community engagement and education. This evolution was due in part to community demand: various schools and community organisations asked officers to present information on waste and recycling to their schools and groups.

Education through community engagement provides the means to help people change the way they think and act about waste and resources. The kerbside assessment and education program can provide this by becoming an ongoing annual education program, employing two part time staff, with a broader remit as follows:

- Increasing the number of school visits using the NTWVG's education program for schools.
- Providing education to schools outside the region, with an associated fee for service.
- Providing education and assessments to households on FOGO recovery when new services begin and then on an ongoing basis.
- Working with trader groups or associations to broaden education about recycling, such as for retailers or those in agriculture.
- Developing programs in partnership with real estate agents or the University of Tasmania to improve recycling from tenancies.

The following projects address the transfer stations and data improvements priority waste theme:

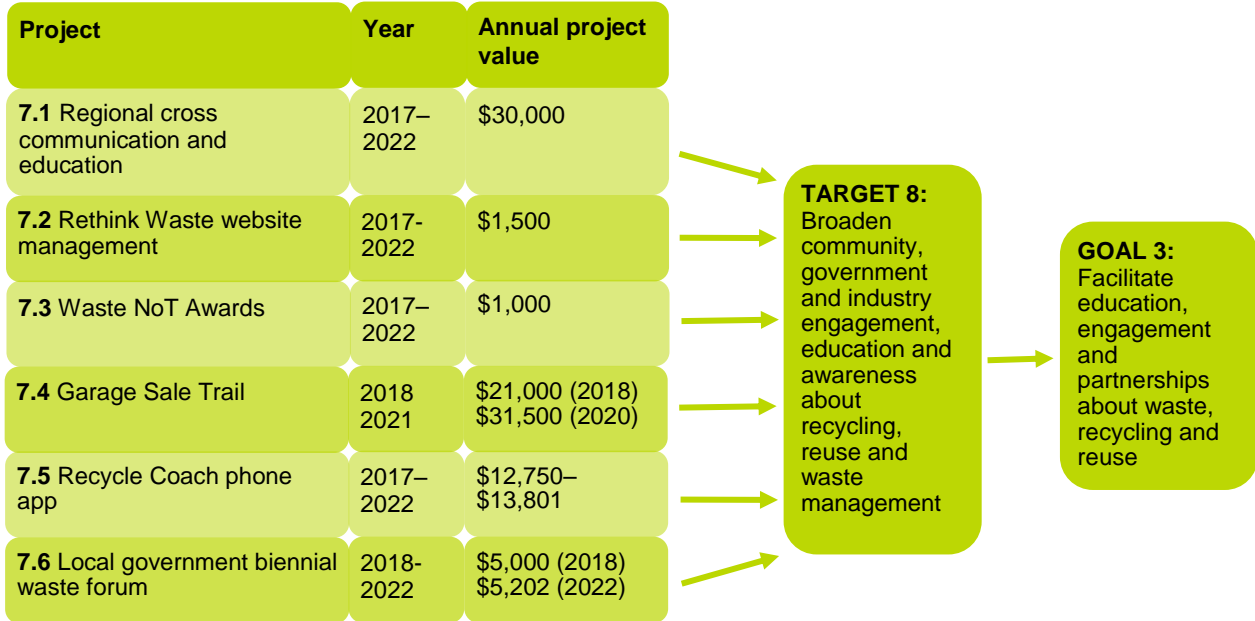


7. Waste and recycling information and awareness about the NTWMG

There is a lack of understanding about the NTWMG, its roles and responsibilities, its projects and its annual budget among the member councils and within the broader community. It is possible member councils are unaware of the annual income stream and how it can assist their councils improve waste and recycling services. The broader community is likely to be unaware of all of the recycling services offered by the NTWMG.

A well-resourced and targeted communications strategy is required to fill this gap in understanding across councils and the community more broadly. The NTWMG will pursue better use of social media platforms, including better integration with member councils' online media. The NTWMG will continue joint communications activities with the CCWMG where possible to promote projects and services. The NTWMG will also facilitate a forum for local governments to meet to share information on waste and recycling in a Tasmanian context.

The following projects address the information/awareness priority waste theme:



8. Events, litter and illegal dumping

Events

Kerbside recycling has been successfully introduced to most households in northern Tasmania. While people expect to be able to recycle at home, there is a growing expectation that people should be able to recycle while they are out an about.

Northern Tasmania hosts several large events each year, including *Agfest*, *Festivale*, the *Deloraine Art and Craft Fair* and the *Launceston Show*. Thousands of people attend each of these events.

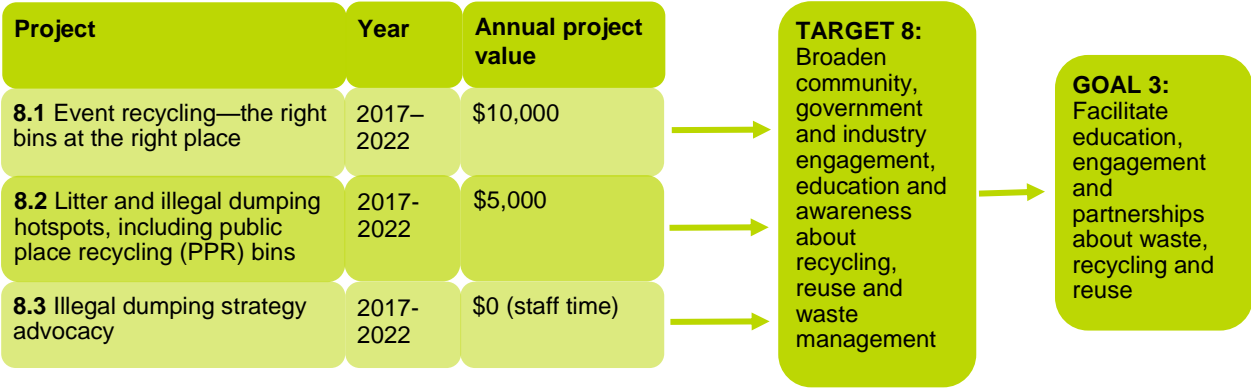
The NTWMG will work with festival organisers to ensure these festivals all have consistent public place waste and recycling services and correct signage. The NTWMG will also work with festival organisers to determine bin and recycling options that maximise recycling, i.e. recycling for back of house where material inputs to bins can be better controlled, and bin configurations for festival goers that focus on organics recovery.

Litter and illegal dumping

Litter and illegal dumping are problems facing all councils in northern Tasmania. However, anecdotal evidence from member councils indicates much illegal dumping occurs on crown land. Councils have no jurisdiction over crown land, which can make illegal dumping hard to manage.

However, councils have indicated there may be benefit in identifying litter and illegal dumping hotspots on council land and placing infrastructure at these hotspots to minimise dumping and litter. Further, councils have expressed strong support for a state government-led illegal dumping strategy that addresses illegal dumping on both crown and council land. The NTWMG will continue to work with the CCWMG on advocating the state government to develop an illegal dumping strategy.

The following projects address the events, litter and illegal dumping priority waste theme:



Partnerships

The 2017–2022 strategy will be implemented with consultation and cooperation from the following partners.

Australian Government	Provision of policies such as product stewardship schemes (e-waste, paint) to increase recycling
CCWMG	Collaboration and cooperation on waste/recycling projects outlined in both the NTWMG and CCWMG 2017–2022 strategies
Education and community sector	Recipients of projects and services that provide education on waste and recycling
EPA Tasmania	Advice on regulatory matters and Tasmanian State Government waste policy
LGAT	Engagement on waste issues facing local government through the Waste Management Reference Group (WMRG)
Southern Tasmanian councils	Potential statewide collaboration on waste/recycling projects outlined in the NTWMG 2017–2022 strategy
Tasmanian State Government	Engagement with the Tasmanian Government on development of a new Tasmanian waste strategy
Waste and recycling industry	Recipients of advice and support that improve waste management practices

Appendix 1: Summary of goals, targets, projects and priority waste themes

GOAL	TARGET	PROJECT	PRIORITY WASTE THEME
1. Improve resource recovery	1. Help establish food and garden organics (FOGO) kerbside organics collections	1.1 Regional organics kitchen caddies	1. Organics
		1.2 Regional organics education	1. Organics
	2. Increase waste avoidance, resource recovery and recycling	9.1 NTWVG resource recovery grants program	1. Organics 2. C&D recovery and reprocessing
		2.1 C&D recovery: business case and infrastructure	2. C&D recovery and reprocessing
	3. Continue the recycling of hazardous and problem wastes	3.1 Household hazardous waste biennial collection	3. Household hazardous waste
		3.2 Domestic batteries collection	3. Household hazardous waste
		3.3 Paint collection	3. Household hazardous waste
		3.4 Fluorescent light collection	3. Household hazardous waste
		4.1 E-waste collection	4. Problem wastes
		4.2 Glass recovery from transfer stations	4. Problem wastes
2. Improve council waste and recycling infrastructure, operations and data systems to best practice	4. Achieve best practice and safe transfer stations and landfills	5.1 NTWVG transfer station infrastructure upgrades	5. Transfer station and data improvements
	5. Implement consistent operating standards	5.1 NTWVG transfer station infrastructure upgrades	5. Transfer station and data improvements
		5.2 Waste charging and consistent services	5. Transfer station and data improvements
	6. Improve data collection	5.3 Kerbside waste composition audits (4 yearly)	5. Transfer station and data improvements
		5.4 Landfill and transfer station composition audits (4 yearly)	5. Transfer station and data improvements
		5.5 Data collection - expansion to satellite transfer stations	5. Transfer station and data improvements

GOAL	TARGET	PROJECT	PRIORITY WASTE THEME
3. Facilitate education, engagement and partnerships about waste, recycling and reuse	7. Increase the number of kerbside recycling bin assessments	6.1 Kerbside recycling bin assessments and community/school education - salaries	6. Kerbside recycling assessments and community education
		6.2 Kerbside recycling bin assessments - materials and training	6. Kerbside recycling assessments and community education
	8. Broaden community, government and industry engagement, awareness and education about recycling and better waste management	6.3 Community events and displays	6. Kerbside recycling assessments and community education
		7.1 Regional/cross regional communications and education	7. Share information about waste and recycling and raise awareness about the NTWVG
		7.2 Website management	7. Share information about waste and recycling and raise awareness about the NTWVG
		7.3 Waste NoT Awards	7. Share information about waste and recycling and raise awareness about the NTWVG
		7.4 Garage Sale Trail	7. Share information about waste and recycling and raise awareness about the NTWVG
		7.5 Recycle coach phone app	7. Share information about waste and recycling and raise awareness about the NTWVG
		7.6 Local government waste forum - biennial	7. Share information about waste and recycling and raise awareness about the NTWVG
		8.1 Event recycling - the right bins at the right place	8. Events, litter and illegal dumping
		8.2 Litter and illegal dumping hotspots, including public place recycling (PPR) bins	8. Events, litter and illegal dumping
		8.3 Illegal dumping strategy advocacy	8. Events, litter and illegal dumping

Appendix 2: Five year summary budget and projects

Item	Projects	Link to 2017-2022 goals	Link to 2017-2022 targets	Status	2017/18	2018/19	2019/20	2020/21	2021/22	TOTAL	Annual increase
1	Priority waste theme: Organics										
1.1	Regional organics kitchen caddies	1	1	Biennial	\$ -	\$ 68,666	\$ -	\$ 71,441	\$ -	\$ 140,107	CPI
1.2	Regional organics education	1	1	Recurring annually	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	CPI
	Annual total				\$ -	\$ 68,666	\$ -	\$ 71,441	\$ -	\$ 140,107	
2	Priority waste theme: C&D recovery and reprocessing										
2.1	C&D recovery: business case and infrastructure	1	2	2 year project	\$ -	\$ -	\$ -	\$ 180,000	\$ -	\$ 180,000	CPI
	Annual total				\$ -	\$ -	\$ -	\$ 180,000	\$ -	\$ 180,000	
3	Priority waste theme: Household hazardous waste										
3.1	Household hazardous waste biennial collection	1	3	Biennial	\$ -	\$ 50,000		\$ 52,020	\$ -	\$ 102,020	CPI
3.2	Domestic batteries collections	1	3	Recurring annually	\$ 15,000	\$ 15,450	\$ 15,914	\$ 16,391	\$ 16,883	\$ 79,637	3%
3.3	Paint collection	1	3	Recurring annually	\$ 4,000	\$ 4,080	\$ 4,162	\$ 4,245	\$ 4,330	\$ 20,816	CPI
3.4	Fluorescent light collection	1	3	Recurring annually	\$ 10,000	\$ 10,200	\$ 10,404	\$ 10,612	\$ 10,824	\$ 52,040	CPI
	Annual total				\$ 29,000	\$ 79,730	\$ 30,479	\$ 83,268	\$ 32,037	\$ 254,514	
4	Priority waste theme: Problem wastes										
4.1	E-waste collection	1	3	Recurring annually	\$ 50,000	\$ 51,000	\$ 52,020	\$ 53,060	\$ 54,122	\$ 260,202	Nil
4.2	Glass recovery from transfer stations	1	3	Recurring annually	\$ 4,000	\$ 4,080	\$ 4,162	\$ 4,245	\$ 4,330	\$ 20,816	CPI
	Annual total				\$ 54,000	\$ 55,080	\$ 56,182	\$ 57,305	\$ 58,451	\$ 281,018	
5	Priority waste theme: Transfer station and data improvements										
5.1	NTWVG transfer station infrastructure upgrades	2	4, 5	Recurring annually	\$ -	\$ -	\$ 100,000	\$ 102,000	\$ 104,040	\$ 306,040	CPI
5.2	Waste charging and consistent services	2	5	Recurring annually	\$ -	\$ -	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000	Nil
5.3	Kerbside waste composition audits (4 yearly)	2	6	4 yearly	\$ -	\$ -	\$ -	\$ 80,000	\$ -	\$ 80,000	CPI
5.4	Landfill and transfer station composition audits (4 yearly)	2	6	4 yearly	\$ -	\$ -	\$ 80,000	\$ -	\$ -	\$ 80,000	
5.5	Data collection - expansion to satellite transfer stations	2	6	One off	\$ -	\$ -	\$ 40,000	\$ -	\$ -	\$ 40,000	Nil
	Annual total				\$ -	\$ -	\$ 230,000	\$ 192,000	\$ 114,040	\$ 536,040	
6	Priority waste theme: Kerbside recycling assessments and community education										
6.1	Kerbside recycling bin assessments and community/school education - salaries	3	7	Recurring annually	\$ 94,032	\$ 96,007	\$ 98,023	\$ 100,081	\$ 102,183	\$ 490,326	EBA/CPI
6.2	Kerbside recycling bin assessment program - materials and training	3	7	Recurring annually	\$ 19,482	\$ 19,872	\$ 20,269	\$ 20,674	\$ 21,088	\$ 101,385	CPI
6.3	Community events and displays	3	8	Recurring annually	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 5,000	Nil
	Annual total				\$ 114,514	\$ 116,878	\$ 119,292	\$ 121,756	\$ 124,271	\$ 596,711	

7	Priority waste theme: Share information about waste and recycling and raise awareness about the NTWMG										
7.1	Regional/cross regional communications and education	3	8	Recurring annually	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 150,000	Nil
7.2	Website management	3	8	Recurring annually	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 7,500	Nil
7.3	Waste NoT Awards	3	8	Recurring annually	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 5,000	Nil
7.4	Garage Sale Trail	3	8	Recurring annually	\$ 21,000	\$ -	\$ 31,500	\$ -	\$ -	\$ 52,500	Nil
7.5	Recycle Coach phone app	3	8	Recurring annually	\$ 12,750	\$ 13,005	\$ 13,265	\$ 13,530	\$ 13,801	\$ 66,352	CPI
7.6	Local government waste forum - biennial	3	8	2 yearly	\$ -	\$ 10,000	\$ -	\$ 10,404	\$ -	\$ 20,404	CPI
	Annual total				\$ 66,250	\$ 55,505	\$ 77,265	\$ 56,434	\$ 46,301	\$ 301,756	
8	Priority waste theme: Events, litter and illegal dumping										
8.1	Event recycling - the right bins at the right place	3	8	Recurring annually	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Nil
8.2	Litter and illegal dumping hotspots, including PPR bins	3	8	Recurring annually	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Nil
8.3	Illegal dumping strategy advocacy	3	8	Recurring annually	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Nil
	Annual total				\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 100,000	
9	Resource recovery grants (covers organics; transfer station improvements; C&D priority waste themes)										
9.1	NTWMG resource recovery grants program	1	2	Recurring annually	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 375,000	Nil
	Annual total				\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 375,000	
10	Administration										
10.1	Staffing x 2 P/T (equiv. to 1 FTE @ 50% NTWMG/50% CoL)	1, 2, 3	1 to 8	Recurring annually	\$ 78,458	\$ 80,106	\$ 81,788	\$ 83,505	\$ 85,259	\$ 409,116	EBA/CPI
10.2	Training and conferences	1, 2, 3	1 to 8	Recurring annually	\$ 4,000	\$ 4,080	\$ 4,162	\$ 4,245	\$ 4,330	\$ 20,816	CPI
10.3	Annual report and budget	1, 2, 3	1 to 8	Recurring annually	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Nil
10.4	Strategy mid-term review	1, 2, 3	1 to 8	Once off	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Nil
10.5	Annual levy collection and administration charge	1, 2, 3	1 to 8	Recurring annually	\$ 11,000	\$ 11,220	\$ 11,444	\$ 11,673	\$ 11,907	\$ 57,244	CPI
	Annual total				\$ 93,458	\$ 95,406	\$ 97,394	\$ 99,424	\$ 101,495	\$ 487,176	
	Annual expenditure				\$ 452,222	\$ 566,265	\$ 705,612	\$ 956,627	\$ 571,595	\$ 3,252,322	

Appendix 3: Levy income revenue and project expenses scenarios

BUDGET SCENARIOS: \$5, \$7.50 & \$10/t

\$5/tonne	2017/18	2018/19	2019/20	2020/21	2021/22	5 year total
REVENUE						
Regional levy income	\$ 512,000	\$ 512,000	\$ 512,000	\$ 512,000	\$ 512,000	\$ 2,560,000
Other revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL REVENUE	\$ 512,000	\$ 512,000	\$ 512,000	\$ 512,000	\$ 512,000	\$ 2,560,000
EXPENSES						
Project delivery	\$ 678,764	\$ 648,560	\$ 568,672	\$ 988,260	\$ 512,188	\$ 3,396,444
Administration	\$ 93,458	\$ 95,406	\$ 97,394	\$ 99,424	\$ 101,495	\$ 487,176
TOTAL EXPENSES	\$ 772,222	\$ 743,965	\$ 666,066	\$ 1,087,684	\$ 613,684	\$ 3,883,620
OPERATING RESULT	-\$ 260,222	-\$ 231,965	-\$ 154,066	-\$ 575,684	-\$ 101,684	
Opening balance	\$ 100,000	-\$ 160,222	-\$ 392,187	-\$ 546,253	-\$ 1,121,936	
Operating result	-\$ 260,222	-\$ 231,965	-\$ 154,066	-\$ 575,684	-\$ 101,684	
CLOSING BALANCE	-\$ 160,222	-\$ 392,187	-\$ 546,253	-\$ 1,121,936	-\$ 1,223,620	
\$7.5/tonne	2017/18	2018/19	2019/20	2020/21	2021/22	5 year total
REVENUE						
Regional levy income	\$ 768,000	\$ 768,000	\$ 768,000	\$ 768,000	\$ 768,000	\$ 3,840,000
Other revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL REVENUE	\$ 768,000	\$ 768,000	\$ 768,000	\$ 768,000	\$ 768,000	\$ 3,840,000
EXPENSES						
Project delivery	\$ 678,764	\$ 648,560	\$ 568,672	\$ 988,260	\$ 512,188	\$ 3,396,444
Administration	\$ 93,458	\$ 95,406	\$ 97,394	\$ 99,424	\$ 101,495	\$ 487,176
TOTAL EXPENSES	\$ 772,222	\$ 743,965	\$ 666,066	\$ 1,087,684	\$ 613,684	\$ 3,883,620
OPERATING RESULT	-\$ 4,222	\$ 24,035	\$ 101,934	-\$ 319,684	\$ 154,316	
Opening balance	\$ 100,000	\$ 95,778	\$ 119,813	\$ 221,747	-\$ 97,936	
Operating result	-\$ 4,222	\$ 24,035	\$ 101,934	-\$ 319,684	\$ 154,316	
CLOSING BALANCE	\$ 95,778	\$ 119,813	\$ 221,747	-\$ 97,936	\$ 56,380	

BUDGET SCENARIOS: \$5, \$7.50 & \$10/t

\$10/tonne	2017/18	2018/19	2019/20	2020/21	2021/22	5 year total
REVENUE						
Regional levy income	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 5,120,000
Other revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL REVENUE	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 1,024,000	\$ 5,120,000
EXPENSES						
Project delivery	\$ 678,764	\$ 648,560	\$ 568,672	\$ 988,260	\$ 512,188	\$ 3,396,444
Administration	\$ 93,458	\$ 95,406	\$ 97,394	\$ 99,424	\$ 101,495	\$ 487,176
TOTAL EXPENSES	\$ 772,222	\$ 743,965	\$ 666,066	\$ 1,087,684	\$ 613,684	\$ 3,883,620
OPERATING RESULT	\$ 251,778	\$ 280,035	\$ 357,934	-\$ 63,684	\$ 410,316	
Opening balance	\$ 100,000	\$ 351,778	\$ 631,813	\$ 989,747	\$ 926,064	
Operating result	\$ 251,778	\$ 280,035	\$ 357,934	-\$ 63,684	\$ 410,316	
CLOSING BALANCE	\$ 351,778	\$ 631,813	\$ 989,747	\$ 926,064	\$ 1,336,380	

Appendix 4: Five year program – detailed projects and budget

1 PRIORITY WASTE THEME: ORGANICS							
Project number	Project	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
1.1	<p>Regional organics kitchen caddies</p> <p>Purchase kitchen caddies on behalf of member councils as part of their rollout of food and garden organics (FOGO) services in their municipalities.</p> <p>The NTWVG has committed to fund the cost of kitchen bench top caddies required when councils introduce FOGO collections. The NTWVG has already paid for caddies for the City of Launceston. Additional caddies are expected for Meander Valley and West Tamar Council in 18/19 and for George Town Council in the years after.</p> <p>The group will also fund caddies for Dorset, Northern Midlands and Break O'Day councils if they choose to introduce FOGO services.</p>	\$0	*\$68,666	\$0	\$71,441	\$0	\$140,107
1.2	<p>Regional organics education and audits</p> <p>Undertake community education about member councils' new FOGO services using consistent messages about FOGO organics across the region.</p> <p>Undertake audits of collected FOGO loads and individual household FOGO bins.</p> <p>Education and auditing may consist of the following:</p> <ul style="list-style-type: none"> • Developing and printing education materials (fact sheets etc.) • Media releases • Possible subscription fees to other education programs • One on one household 'training' • Advertising & promotion, including You Tube videos • Contamination monitoring including audits of delivered loads of FOGO and individual household bins 	*\$35,000	*\$35,700	\$36,414	\$37,142	\$37,885	\$182,141
ANNUAL PRIORITY WASTE THEME TOTAL		\$35,000	\$104,366	\$36,414	\$108,583	\$37,885	\$322,248

(* Project spending pending landfill levy increases)

2 PRIORITY WASTE THEME: C&D RECOVERY AND REPROCESSING							
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Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
2.1	<p>C&D recovery: business case and infrastructure</p> <p>Commission a business case (2017/18) on C&D recovery and reprocessing options at the Launceston Waste Centre including:</p> <ul style="list-style-type: none"> • front end landfill/transfer station sorting • mobile processing • centralised processing. <p>Help the City of Launceston establish appropriate processing infrastructure based on outcome of the business case.</p>	-	*\$15,000	-	\$180,000	-	\$195,000
9.1	<p>NTWWMG resource recovery grants program</p> <p>Provide an annual grants program for businesses, schools, government and community groups to improve waste management and recycling practices, including for C&D recycling. See item 9.1 for more information.</p>	See item 9.1	See item 9.1	See item 9.1	See item 9.1	See item 9.1	See item 9.1
ANNUAL PRIORITY WASTE THEME TOTAL		-	\$15,000	-	\$180,000	-	\$195,000

(* Project spending pending landfill levy increases)

3 PRIORITY WASTE THEME: HOUSEHOLD HAZARDOUS WASTE							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
3.1	<p>Household hazardous waste (HHW) biennial collection</p> <p>Provide a biennial HHW collection at a regionally central location for low volume high toxicity (LVHT) materials covering:</p> <ul style="list-style-type: none"> • site hire fees (if applicable) • collection and transport of HHW (LVHT materials) • advertising and promotion. 			\$50,000		\$52,020	\$102,020
3.2	<p>Domestic batteries collections</p> <p>Provide a battery collection and processing service to member councils for all domestic household batteries (excludes motor vehicle batteries).</p> <p>Project includes battery collection, transport and processing across all member councils.</p> <p>(Councils have their own 10lt pails at their council offices and are required to bring spent domestic batteries directly to the Launceston Waste Centre or to Town Hall in Launceston for consolidation.)</p>	\$15,000	\$15,450	\$15,914	\$16,391	\$16,883	\$79,637
3.3	<p>Paint collection</p> <p>The NTWVG will participate in the Paintback paint product stewardship program. The cost to drop off paint to the Invermay Paintback depot is free, however, the NTWVG will pay for the cost for NTWVG member councils to transport paint to the Paintback site.</p> <p>Costs include stillage hire and transport costs to the Invermay Paintback depot.</p>	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$175,000
3.4	<p>Fluorescent light collection</p> <p>Provide a fluorescent light collection service for member councils. Costs covered include transport, bin hire and processing costs.</p>	\$10,000	\$10,020	\$10,404	\$10,612	\$10,824	\$52,040
	ANNUAL PRIORITY WASTE THEME TOTAL	\$29,000	\$79,730	\$30,479	\$83,268	\$32,037	\$254,514

4 PRIORITY WASTE THEME: PROBLEM WASTES							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
4.1	<p>E-waste collection</p> <p>Provide a subsidised e-waste collection for members. Costs covered include stillage hire, transport and processing costs.</p>	\$50,000	\$51,000	\$52,020	\$53,060	\$54,122	\$260,202
4.2	<p>Glass recovery</p> <p>Provide infrastructure for councils to colour sort glass at their transfer stations with the aim of sending the sorted glass to Victoria for reprocessing.</p> <p>The use of recycled glass during glass manufacture reduces emissions. Recovering high quality glass from transfer stations and shipping it directly to Victoria will improve Tasmania's recycling rate.</p> <p>The program should be cost neutral once the bass Strait equalisation scheme is applied and also because councils should be paid for their sorted glass.</p>	\$4,000	\$4,080	\$4,162	\$4,245	\$4,330	20,816
	ANNUAL PRIORITY WASTE THEME TOTAL	\$54,000	\$55,080	\$56,182	\$57,305	\$58,451	\$281,018

5 PRIORITY WASTE THEME: TRANSFER STATION AND DATA IMPROVEMENTS							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
5.1	<p>NTWMG transfer station best practise upgrades</p> <p>Provide waste infrastructure and equipment funding for members. Funding will aim to upgrade main transfer station within each member council to maximise recycling and user safety by 2022, based on the results of Blue Environment's 2016 "<i>Northern Tasmanian Transfer Station Assessments</i>". Priorities include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Increase resource recovery • Improve user and visitor safety and amenity • Improve environmental performance of transfer stations • Improve hazardous waste collection and storage • Ensure consistent signage at all facilities. 	*\$100,000	*\$102,000	\$104,040	\$106,121	\$108,243	\$520,404
5.2	<p>Waste charges and consistent services</p> <p>The NTWMG will adopt and implement consistent operational standards at all transfer stations. Focus areas include achieving consistent:</p> <ul style="list-style-type: none"> • pricing • signage • operational standards based on Blue Environment's 2014 "<i>Transfer station Best Practice Guidelines</i>". 	*\$25,000	*\$25,000	\$10,000	\$10,000	\$10,000	\$80,000
5.3	<p>Kerbside waste composition audits (every 4 years)</p> <p>Undertake a regional kerbside garbage bin audit in 2017/18 and again in 2021/22 that is statistically valid and representative.</p> <p>The NTWMG undertook a statistically valid and representative kerbside waste bin composition audit in 2014. The data provides a baseline for what residents in northern Tasmania are throwing away and where the NTWMG could better target its education. Two repeat audits will help the group track changes in waste disposal patterns and ensure programs remain relevant.</p> <p>(* Project spending pending landfill levy increases)</p>	*\$80,000	\$0	\$0	\$84,879	\$0	\$164,897

5 PRIORITY WASTE THEME: TRANSFER STATION AND DATA IMPROVEMENTS							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
5.4	<p>Landfill and transfer station composition audits (every 4 years)</p> <p>Undertake a regional landfill and transfer station composition audit in 2017/18 and again in 2021/22.</p> <p>The NTWMG, in conjunction with the CCWMG, undertook a landfill and transfer station composition audit in 2010. The data provides baseline information about what is being thrown away in northern Tasmania and where the NTWMG could better target its projects. Two repeat audits will help the group track changes in waste disposal patterns and ensure projects remain relevant.</p> <p>A major transfer station within each council will be part of the audit, as well as the region's landfills. The transfer station component will enable those councils without landfills to get data on composition of waste disposed to their facilities which may allow for better waste infrastructure and disposal options within those councils.</p>	*\$80,000	\$0	\$0	\$84,879	\$0	\$164,897
5.5	<p>Data collection – expansion to satellite transfer stations</p> <p>The NTWMG will implement data collection processes at seven major transfer stations in the region. By 2022, the NTWMG will ensure the remaining transfer stations all have basic data collection at their sites to capture information including, but not limited to, the</p> <ul style="list-style-type: none"> • number of cars to each site • types of loads deposited by material stream • size of loads deposited. 	-	-	\$40,000	-	-	\$40,000
ANNUAL PRIORITY WASTE THEME TOTAL		\$285,000	\$127,000	\$154,040	\$285,914	\$118,243	\$970,197

(* Project spending pending landfill levy increases)

6 PRIORITY WASTE THEME: KERBSIDE RECYCLING ASSESSMENTS AND COMMUNITY EDUCATION							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
6.1	<p>Kerbside recycling bin assessments and community/school education – salaries</p> <p>Provide salaries for two part time officers (30 and 22.5 hours each per week) to undertake kerbside recycling bin assessments and provide education to schools, businesses and community groups.</p> <p><i>Kerbside recycling bin assessments:</i> Undertake assessments of recycling bins in northern Tasmania to reduce contamination. Based on the kerbside bin audits (EC Sustainable 2014), the focus will be on getting cardboard/paper, film plastic and textiles out of the waste bin and into appropriate recycling/reuse schemes.</p> <p><i>Community education:</i> focus will be on educating –</p> <ul style="list-style-type: none"> • school students (childcare/primary/secondary/TAFE) on correct recycling practices • school students in the north west/south on correct recycling practices (fee per visit) • businesses about recycling and undertaking waste assessments of business waste to identify areas for improvement • community groups about correct recycling practices. <p>Target groups for community education include:</p> <ul style="list-style-type: none"> • TAFE/UTAS • primary and secondary schools • childcare centres • migrant resource centre/English Language Centre • Real estate agents • Seniors' schools • Community groups (i.e. Rotary/Lions) • Trader associations/businesses • Events and festivals. 	\$94,032	\$96,007	\$98,023	\$100,081	\$102,183	\$490,326

6 PRIORITY WASTE THEME: KERBSIDE RECYCLING ASSESSMENTS AND COMMUNITY EDUCATION							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
6.2	Kerbside recycling bin assessments – materials and training Provide materials and training to enable effective program delivery: <ul style="list-style-type: none"> • Uniform & PPE • Vehicle • Mobile phone & tablet • Training • Printed materials • Other items as required for assessments and education. 	\$19,482	\$19,872	\$20,269	\$20,674	\$21,088	\$101,385
6.3	Community events and displays Attend events such as Agfest and regional shows, and hold stalls at shopping centres. Event stall fees usually apply.	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
ANNUAL PRIORITY WASTE THEME TOTAL		\$114,514	\$116,878	\$119,292	\$121,756	\$124,271	\$596,711

7 PRIORITY WASTE THEME: WASTE AND RECYCLING INFORMATION AND AWARENESS ABOUT THE NTWMG							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
7.1	<p>Regional/cross regional communications and education</p> <p>Develop communication materials that promote the NTWMG, the Rethink Waste website and brand and correct waste and recycling practices using:</p> <ul style="list-style-type: none"> • media releases • TV, radio & newspaper ads • promotional materials (bags, pens, caps) • fact sheets • social media (Instagram, You Tube, Facebook, Twitter) <p>Activities to be jointly undertaken, where possible, with the CCWMG.</p>	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000
7.2	<p>Website management</p> <p>Facilitate regular website layout and content updates. (This is separate to recurring web hosting costs.)</p>	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$7,500
7.3	<p>Waste NoT Awards</p> <p>Administer and promote the Waste NoT Awards program, which recognises positive waste and recycling practices within the community, businesses and governments. Program is to include hosting a formal awards ceremony to recognise award winners and runners-up.</p>	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000
7.4	<p>Garage Sale Trail</p> <p>Provide funding for the Garage Sale Trail subscription. The NTWMG will also aim to negotiate a multi-year subscription fee.</p> <p>Provide other promotional support as required.</p>	\$21,000	\$0	\$31,500	\$0	\$0	\$52,500
7.5	<p>Recycle Coach phone app</p> <p>Provide funding for the annual subscription fee for the app. Promote use of Recycle Coach.</p>	\$12,750	\$13,005	\$13,265	\$13,530	\$13,801	\$66,352

7 PRIORITY WASTE THEME: WASTE AND RECYCLING INFORMATION AND AWARENESS ABOUT THE NTWVG							
Item	Projects	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
7.6	<p>Local government waste forum – biennial</p> <p>Host a biennial forum for local government waste officers to hear about best practice in waste management and to collaborate on waste and recycling initiatives within Tasmania.</p> <p>NTWVG will invite CCWVG to co-deliver the forum. Investigate if LGAT is interested in promoting the event.</p>	-	\$10,000	0	\$10,404	-	\$20,404
ANNUAL PRIORITY WASTE THEME TOTAL		\$66,250	\$55,505	\$77,265	\$56,434	\$46,301	\$301,756

8 PRIORITY WASTE THEME: EVENTS, LITTER AND ILLEGAL DUMPING							
Item	Project	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
8.1	<p>Event recycling – the right bins a the right place</p> <p>Help major regional events, such as <i>Agfest</i>, <i>Festivale</i>, the <i>Deloraine Art and Craft Fair</i> and the <i>Launceston Show</i>, implement recycling for both patrons and stallholders. The project will aim to ensure that the right bins are at the right place e.g. recycling bins for beverage sellers, organics bins in food halls and that consistent and clear signage is in place that meets Australian Standards.</p>	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
8.2	<p>Litter and illegal dumping hotspots, including public place recycling (PPR) bins</p> <p>Provide financial support for member councils to place appropriate infrastructure, including public place recycling bins, at illegal dumping and litter hot spots within their municipalities.</p>	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
8.3	<p>Illegal dumping strategy advocacy</p> <p>Continue to advocate for the state government to adopt a statewide illegal dumping strategy, particularly to help overcome illegal dumping on crown land over which councils have no jurisdiction.</p>	-	-	-	-	-	-
ANNUAL PRIORITY WASTE THEME TOTAL		\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$100,000

9 RESOURCE RECOVERY & INFRASTRUCTURE GRANTS							
Item	Project	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
9.1	<p>NTWVG resource recovery grants program</p> <p>Provide an annual grants program for businesses, schools, government and community groups to improve waste management and recycling practices.</p> <p>Funding priorities may include:</p> <ul style="list-style-type: none"> • C&D recycling • Increasing commercial organics recovery and commercial recycling. • Community education • Improving waste processing infrastructure, such as infrastructure to improve recovery of liquid paperboard, and ensuring plastics 1-7 are recovered from each municipality. 	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$375,000
ANNUAL TOTAL		\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$375,000

10 ADMINISTRATION COSTS							
Item	Project	Cost 2017/18	Cost 2018/19	Cost 2019/20	Cost 2020/21	Cost 2021/22	TOTAL
10.1	Staffing Provide funding to cover salaries for two part time (0.5 FTE x 2) NTWVG staff to implement projects, and to provide governance and administration services. (Two 0.5 full time equivalent officers are equivalent to 1 full time equivalent officer dividing their time equally between the NTWVG and CoL).	\$78,458	\$80,106	\$81,788	\$83,505	\$85,259	\$409,116
10.2	Training and conferences Provide funding for NTWVG staff and NTWVG members to attend relevant training or conferences. Conference fees, accommodation and airfares included.	\$4,000	\$4,080	\$4,162	\$4,245	\$4,330	\$20,816
10.3	Annual report and budget Prepare annual report and budget.	-	-	-	-	-	-
10.4	Strategy mid-term review Review of the 2017–2022 strategy.	-	-	-	-	-	-
10.5	Annual levy collection and administration charge Annual cost to City of Launceston to collect and administer the NTWVG levy.	\$11,000	\$11,220	\$11,444	\$11,673	\$11,907	\$57,244
ANNUAL TOTAL		\$93,458	\$95,406	\$97,394	\$99,424	\$101,495	\$487,176

Appendix 5: Strategy context

The NTWMG's 2012–2017 strategy expires on 30 June 2017. As outlined in the regional waste management agreement (RWMA), the NTWMG is required to have a five year strategy to guide its activities. In particular, the five year strategy is the basis for the NTWMG's annual plan and budget, also required under the RWMA. The 2017–2022 strategy is the second strategy to be developed for the NTWMG and builds on the achievements the NTWMG has already made.

This 2017–2022 strategy sits within the context of state and federal waste policies, as outlined below.

Tasmanian Government policies

During the life of the first NTWMG strategy, the Tasmanian Government undertook work, through the Waste Advisory Committee, to investigate the introduction of a statewide waste levy.

In June 2016, the Tasmanian Government advised it does not support a statewide levy on waste to landfill. The government also signalled its intention to develop a new waste management strategy to supersede the existing *Tasmanian Waste and Resource Management Strategy (TWRMS) 2009*. The current *TWRMS* sets out actions and priorities for Tasmania to reduce waste and improve waste practices.

The NTWMG will take an active role in influencing the new state waste strategy through the Waste Management Reference Group (WMRG), a collaborative forum convened by LGAT to recommend waste strategy and funding initiatives to the state government.

Other Tasmanian local government/regional policies

The City of Launceston released its waste strategy in 2012 – *The Launceston Resource Recovery and Waste Management: Interim Strategy and Action Plan*. This document outlines the activities the City will pursue to improve resource recovery, including establishing an organics facility. The organics facility has direct relevance to the NTWMG as it will accept organic materials from other councils in the north, directly impacting on organic diversion rates in northern Tasmania.

The Cradle Coast Waste Management Group's (CCWMG) strategy operated under the same timeframe as the NTWMG's 2012-2017 strategy. This achieved close alignment of goals, targets and actions of the two groups. As the CCWMG is reviewing its strategy in line with the NTWMG, the two regions will likely continue working closely to implement the actions set out in their respective new strategies.

Federal government waste policies

The following federal policies may influence the activities of NTWMG:

- The *National Waste Policy 2009 Less Waste, More Resources* (NWP) sets Australia's waste management and resource recovery direction to 2020. It emphasises extended producer responsibility, sustainable procurement and packaging design; improved data capture and waste definitions; market development; and reduction and improved management of hazardous wastes.
- The *Product Stewardship Act 2011* provides the framework to manage the environmental, health and safety impacts of products, and in particular those impacts associated with the disposal of products. The framework includes voluntary, co-regulatory and mandatory product stewardship. Two product stewardship schemes, which directly affect the NTWMG,

are the *Paintback* waste architectural and decorative paints scheme, and the TV and computers recycling scheme.

- The *Australian Packaging Covenant* is a voluntary policy agreement between government, manufacturers and producers to improve their packaging to make it more sustainable. This is encouraged through light weighting of packaging, using less energy, more sustainable materials and designing the packaging to be recyclable.

Other state government waste policies/initiatives

The Tasmanian government contemplated the introduction of a CDS in 2014 but rejected the policy following a study commissioned by the Tasmanian EPA. The study claimed a state-based container deposit scheme would reduce litter but the net cost to the state would be about \$4 million a year⁵.

The South Australian, Northern Territory, Western Australian, Queensland and New South Wales governments have enacted legislation for *container deposit schemes* (CDS). The progress of other states towards CDS may affect whether Tasmania also introduces its own scheme.

The NTWVG will work with the State Government to ensure a smooth rollout of CDS should the state decide to implement a scheme in Tasmania.

⁵ ABC News 2014, "Container deposit scheme rejected in Tasmania after report estimates \$4m cost", 20 December 2014

Appendix 6: NTWMG waste composition

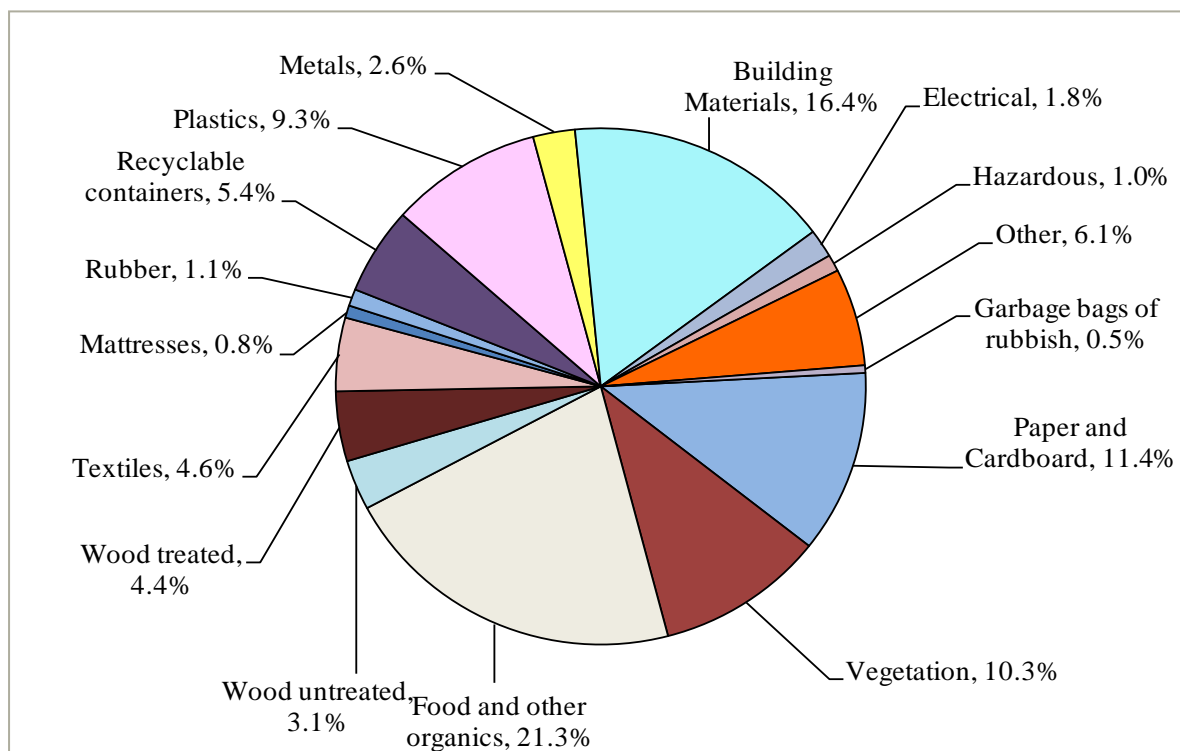
Not all waste disposal sites within northern Tasmania have weighbridges, making accurate disposal tonnages hard to obtain. However, based on the available information, the total amount of waste disposed to landfill for the region is estimated at 140,000 tonnes per year (including clean fill), or about one third of Tasmania's waste. The Launceston Waste Centre receives most of the north's waste (about 90%).

Presented below is waste composition data for northern Tasmania that has informed the 2017–2022 NTWMG strategy.

Landfill composition data

A waste audit conducted across seven landfills in the NTWMG and CCWVG in 2011 estimated the average composition of waste to landfill, by weight, as shown in Figure 6 (APC Environmental Management 2011). The audit showed the largest area for improvement was food and other organics, and vegetation. When combined, these materials make up almost 33% of waste to landfill.

Figure 6: Average composition of waste disposed within the region, by weight (APC Environmental Management 2011)



Another area for significant gain is C&D waste, with these materials making up 16% of waste to landfill. According to a report prepared by Hyder Consulting (2014), councils in northern Tasmania receive approximately 13,500 tonnes of C&D waste per annum (Table 3).

Table 3: Estimated C&D composition in tonnes per annum (Hyder Consulting 2014)

Masonry	Metals	Timber	Total
1,726	469	1,401	13,596

There is scope to recover materials with significant value from this stream, including nearly 500 tonnes of metal. Using a conservative estimate that the unreclaimed metal is steel, a likely environmental benefit from recovering this steel is a reduction of 206 tonnes of CO₂e per annum, or permanently removing 50 cars from the road (NSW EPA 2016). If we recovered all C&D materials shown in Table 3, a greenhouse gas benefit of 2,332 tonnes CO₂e per annum would be realised.

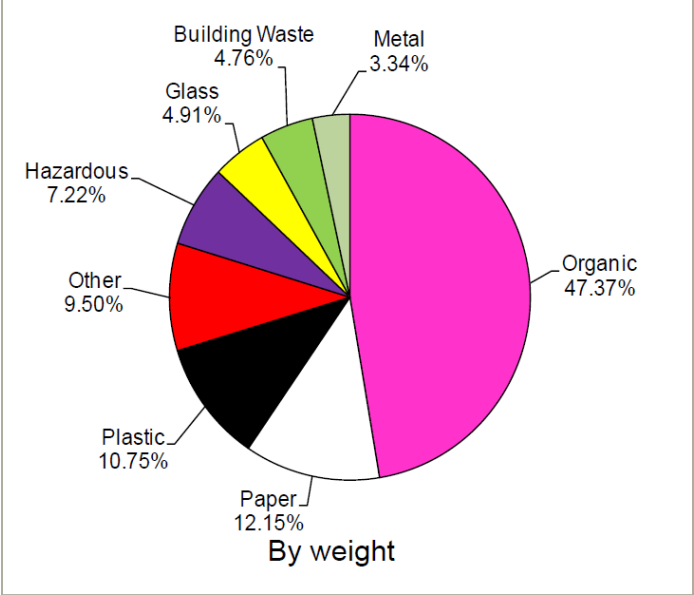
Kerbside rubbish bin composition data

Similar to the landfill audit results, organic materials make up the largest portion of waste disposed by households in their kerbside bins, totalling nearly 50% of bin weight (Figure 7), or 4.741kg per household per week (EC Sustainable 2014). The City of Launceston has agreed to introduce a voluntary FOGO kerbside service for its residents. Assuming a participation rate of 10,000 households, the service is likely to divert nearly 2,500 tonnes of FOGO per annum while achieving annual savings of 600 tonnes of CO₂e and 1,000 kilolitres of water. Expanding FOGO services across the NTWMG will yield even greater environmental benefits.

Hazardous materials (e-waste, household chemicals, batteries and fluorescent tubes) were also found in significant quantity in household bins as shown in Figure 7. The large quantities of these materials justify maintenance of existing HHW recycling programs. To recover even more of these materials, the NTWMG should look to increase promotion and awareness of these services.

Paper and cardboard make up a significant portion of waste in kerbside rubbish bins, currently at 12% (Figure 7). This amount is very similar to the findings from the landfill audit, which shows paper and cardboard made up 11% by weight (Figure 4) of waste disposed (APC Environmental Management 2012). There is clearly a significant opportunity to encourage people to recycle more paper and cardboard and this should be a focus of the group over the life of the 2017–2022 strategy.

Figure 7: Residual kerbside waste stream – summary category composition (EC Sustainable 2014)



In addition to the findings in Figure 7, the top ten materials found in kerbside waste bins by waste type are shown in Table 4 and Table 5 by weight and volume respectively. As can be seen in both tables, organic materials comprise a significant portion of bin weight and volume. These findings, coupled with the results of the landfill audit, confirm the NTWMG requires a strong focus on recovering organics (both food and vegetation).

Plastic film, while comprising only 6% by weight of kerbside rubbish bins (Table 4), is the largest single waste material by volume in kerbside bins, totalling nearly 15% (Table 5). Better education about options for recycling plastic film, including at transfer stations and supermarkets, is required to improve recovery of this material.

Table 4: Top waste materials in kerbside rubbish bins, by weight (EC Sustainable 2014)

Top ten categories	Weight (kg/hh/wk)	%
Garden/vegetation	1.346	14.33%
Loose food/other (incl. scraps)	1.131	12.04%
Loose food/fruit and vegetable	1.087	11.57%
Plastic film	0.545	5.80%
Other putrescible	0.534	5.68%
Other ⁶	0.524	5.58%
Nappies/hygiene products	0.511	5.44%
Compliant paper	0.444	4.72%
Compliant glass	0.436	4.65%
Textile rags	0.376	4.00%

Contaminated paper and cardboard, which make up 7% of rubbish bins by volume (Table 5), cannot be recycled with clean paper and cardboard due to their soiled nature. The new FOGO services will provide an alternative disposal option for this material.

Textiles make up a similar quantity in household rubbish bins as they do in landfill (4% and 4.6% respectively, Figure 4 and Table 5). An opportunity exists to educate the community about alternative disposal methods for textiles, such as charity or tip shops, or encouraging reuse within the home, such as using unwanted textiles as cleaning rags rather than buying new cleaning cloths.

Table 5: Top waste materials in kerbside rubbish bins, by volume (EC Sustainable 2014)

Top ten categories	Volume (L/hh/wk)	%
Plastic film	13.136	14.80%
Garden/vegetation	9.206	10.37%
Contaminated soiled paper/cardboard	6.457	7.28%
Compliant cardboard	5.755	6.49%
Compliant paper	4.621	5.21%
Other rigid plastic	4.556	5.13%
Other	4.546	5.12%
Plastic containers 1	4.323	4.87%
Loose food/other (incl. other scraps)	4.028	4.54%
Textile rags	3.583	4.04%

⁶ Other: all materials bit sorted into other categories including composite paper, plastics and metals

Appendix 7: NTWVG Consultancies & reports: 2011 – 2016

1. APC Environmental Management 2011, *Landfill Audit for the Northern Tasmanian Waste Management Group and Cradle Coast Authority*
2. APC Environmental Management 2012, *Service Level Strategies for Northern Tasmanian Waste Management Group*
3. APC Environmental Management 2012, *NTWVG 5 year strategy 2012–2017*
4. Blue Environment 2013, *Regional waste management and resource recovery pricing policy*
5. Blue Environment 2014, *Transfer Station Best Practice Guidelines*
6. Blue Environment 2016, *Northern Tasmanian Transfer Station Assessments*
7. Cradle Coast Authority, Northern Tasmanian Waste Management Group & the Southern Waste Strategy Authority 2012, *Strategic Review of the collection of Household Hazardous Waste in Tasmania*
8. DJR Environmental 2012, *NTWVG Organics Facility Feasibility Study*
9. EC Sustainable 2014, *NTWVG Residential Kerbside Bin Audit*
10. Hyder Consulting 2014, *C&D Management in the North and North West of Tasmania*
11. MRA Consulting 2014, *Regional Strategies for Sustainable Management of Recyclables: tyres/gas bottles/cooking oils*

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APC Environmental Management 2011, *Landfill Audit for the Northern Tasmanian Waste Management Group and Cradle Coast Authority*, Report to the NTWMG, Launceston and CCWMG, Devonport

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Blue Environment 2014a, *Tasmanian Waste Review - Final Report*, Report to the Waste Advisory Committee, Hobart

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Blue Environment 2016, *Northern Tasmanian Transfer Station Assessments*, Report to the NTWMG, Launceston

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MRA Consulting 2016, *State of Waste 2016 – current and future Australian trends*, MRA Consulting, Drummoyne

Tasmanian Irrigation 2012, *Tasmania's Water Opportunity: Unlocking Tasmania's competitive advantage*, Tasmanian Irrigation Pty Ltd, Western Junction