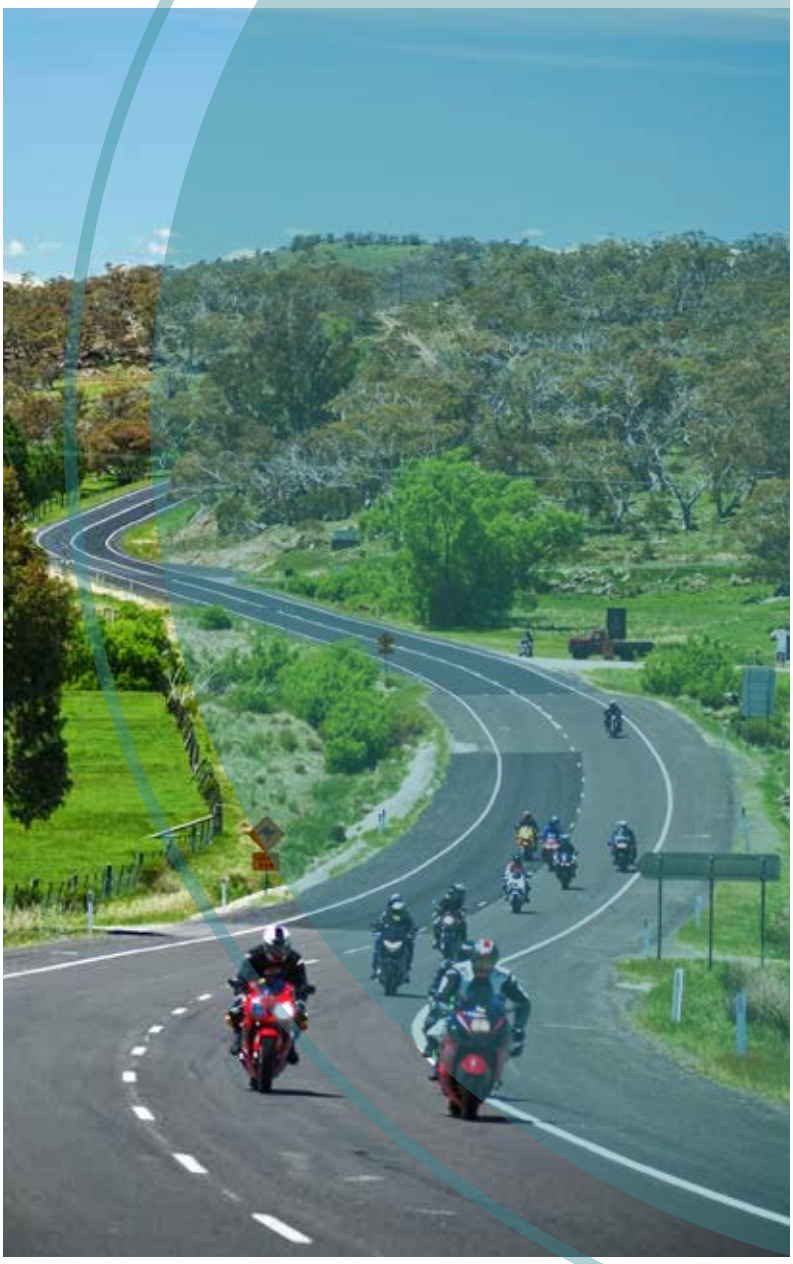
CANBERRA REGION
JOINT ORGANISATION



Regional Waste Strategy

2018–2023

NSW EPA

Our vision

To be a leader in waste minimisation and resource recovery through collaborative best practice.

Contents

Acronyms

ACM: Asbestos Contaminated Material
ACT: Australian Capital Territory
AMP: Asset Management Plan
AWT: Alternative Waste Treatment
CDS: Container Deposit Scheme (of NSW Government)
CRC: Community Recycling Centre
CRJO: Canberra Region Joint Organisation
CWF: Compact Waste Facility
EfW: Energy from Waste
EO: Executive Officer (of CRJO)
ENM: Excavated Natural Material
FOGO: Food Organics Garden Organics
FTE: Full Time Equivalent
GDP: Gross Domestic Product
GMAC: General Managers Advisory Committee
GO: Garden Organics
HH: Households
ISJO: Illawarra Shoalhaven Joint Organisation
JO: Joint Organisation (of Councils)
KPI: Key Performance Indicator
KRA: Key Result Area (of NSW WARR Strategy)
LEMP: Landfill Environmental Management Plan
LGA: Local Government Area
LTFP: Long-Term Financial Plans
LTF: Leachate Treatment Facilities
L-RIP: Regional Litter Plan
MCA: Multi Criteria Analysis
MOU: Memorandum of Understanding
MRF: Materials Recovery/Recycling Facility
MSW: Municipal Solid Waste
NFP: Not for Profit (community organisations)
PIRMP: Pollution Incident Response Management Plan
PEF: Processed Engineered Fuel
RENEW Program: Regional Networks for Effective Waste Management Program
REROC: Riverina Eastern Regional Organisation of Councils
RID Squads: Regional Illegal Dumping Squads
ROC: Regional Organisation of Councils
RRG: Recycling and Resource Group
RRPO: Resource Recovery Project Officer
RRWG: Resource Recovery Working Group
RUG: Re-Use Goulburn
RWS: Regional Waste Strategy
SEROC: South East Regional Organisation of Councils
SERRG: South East Resource Recovery Group
SMART Targets: Specific, Measurable, Attainable, Relevant and Timely Targets
SWMS: Safe Work Method Statement
SWMWG: Strategic Waste Management Working Group
SWRWMG: South West Regional Waste Management Group
tpa: Tonnes per annum
TFS: Trans Frontier Shipments
VENM: Virgin Excavated Natural Material
VWG: Voluntary Waste Group
WARR Strategy: Waste Avoidance and Resource Recovery Strategy 2014–21 (of the NSW EPA)
WLRM: Waste Less, Recycle More (project funding opportunities)
WMAA: Waste Management Association of Australia
WtE: Waste to Energy
WCS: Wright Corporate Strategy

Letter from the minister

Intro paragraph

Insert text when supplied

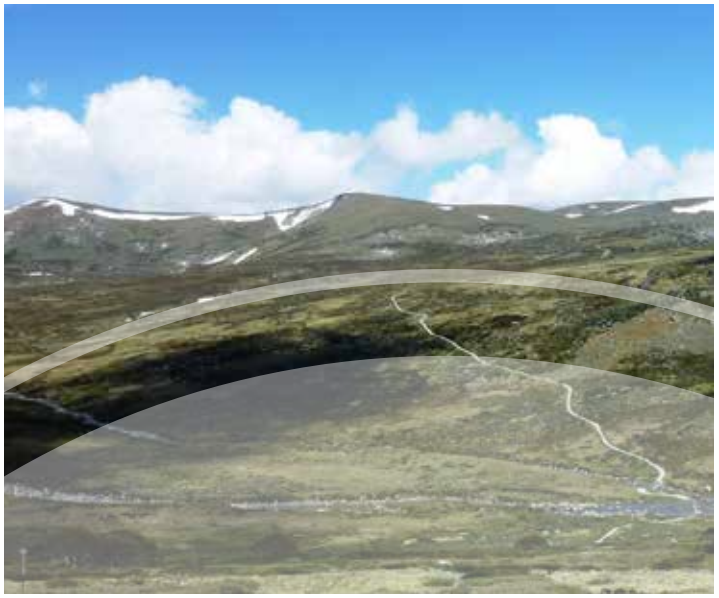
Foreword

This Canberra Region Joint Organisation Regional Waste Strategy updates the region's preceding strategy and has been prepared in the context of the NSW Waste Avoidance and Resource Recovery Strategy 2014–21 and supporting Regional Waste Strategy Review Guidelines. Its strategic Actions have been developed in consideration of the region's current performance, in particular those of the combined NSW Councils, and prevailing policy and regulation at the federal and state level.

The Strategy comprises three documents: this Strategy, an Action Plan to deliver the Strategy and Technical Appendices to support the Strategy. The Regional Strategy comprises seven Themes developed in consideration of current performance in recycling and reducing waste to landfill, the prevailing regulatory and policy environment, strategic Objectives, Goals and specific actions to deliver the intended way forward. With input and feedback from both the Joint Organisation's Resource Recovery Working Group and its Strategic Waste Management Working Group it calls for significant improvement in recycling rates and diversion of waste from landfill to be made through regional collaboration.

Infrastructure development at a regional or sub-regional level may be impacted by the Australian Capital Territory's own emerging Waste Strategy, and regional requirements have been presented as detailed investigations and analysis to be carried out pending delivery of the Territory's new Strategy.

The Strategy's underlying purpose is that of a road map to guide the long-term improvement of regional performance through substantial activity and investigation over the next five years, followed by consolidation of services thereafter.



Executive summary

A very significant period of transition has occurred in the waste industry over the last five to ten years, driven particularly by environmental protection regulation and waste policy at a state and federal level. During this period three principal themes are evident: conservation of resources, increased recycling and reduced waste to landfill; in particular waste with high organic carbon content.

There now exists very significant pull and push mechanisms in the NSW waste industry to drive change. Regional Waste Strategies are just one component, which are facilitated and financially supported by the NSW Environment Protection Authority (EPA) as a means to achieve quantum change in regional waste management performance.

This Strategy has been developed first on the basis of an assessment of opportunity within the Canberra Joint Organisation (CRJO) region, before re-defining the Themes and Objectives of the previous Strategy and focussing on opportunities for quantum increases in both diversion of waste from landfill and recycling. It is based on a medium-term, five-year period to drive more rapid initial change towards greater recycling and waste diversion from landfill; particularly for NSW Council members. The strategic approach adopted is in line with the NSW Waste Avoidance and Resource Recovery Strategy's 2021–22 targets, and also takes advantage of grant funding available through the state agency's Waste Less, Recycle More program available until 2020–21.

Within the region, the ACT generates 80% of total waste, the balance generated by the NSW Councils combined. The size of and location of the ACT is very significant for the Councils of this region, and its emerging updated Waste Strategy will likely influence infrastructure decisions made. Of similar significance will be the actions of Bega Valley Shire Council, Eurobodalla Shire Council, Goulburn Mulwaree and Queanbeyan-Palerang, who collectively generate over 67% of the waste from the Joint Organisation's NSW Councils.

An annual recycling gap of ~ 80,000 tonnes/year amongst the combined NSW Councils exists between current performance and state recycling targets. With no redress, this gap will likely grow in line with at least the overall growth rate of the region and possibly higher still with a strengthening economy. It is suggested the region first maximise performance of existing services and assets before analysing options for new and improved regional infrastructure to deliver continued long-term improvement.

This Regional Waste Strategy (RWS) and Action Plan provides detailed Actions within seven Themes over the next five years for the region to reduce both its recycling gap and waste to landfill. Broadly, it calls first for greater efficiency from existing services (Themes 1, 2 and 7), before recommending appraisal and expanding these where viable (Theme 2), reducing litter (Theme 5), reducing illegal dumping (Theme 6) and then evaluating new regional services with supporting infrastructure to recover/recycle/re-use a wider range of resources from the waste stream (Themes 3, 4, and 7). It has been developed with guiding input from both the Resource Recovery Working Group (RRWG) and Strategic Waste Management Working Group (SWMWG) s as a roadmap for change at a Council, sub-regional and regional level. The size of the ACT and its own commitment to greater landfill diversion offers the whole region considerable strategic opportunity to benefit together, and recommendations within the ACT NoWaste's *Waste Feasibility Study: A roadmap to improved resource recovery* were considered within development of this Strategy.

1. Overview and introduction

How to use the Strategy documents

Three documents make up the Regional Waste Strategy and follow a common structure. The structure used first reviews current performance, before presenting the strategic direction desired and how it will be achieved.

This Strategy document details the genesis of the project, providing detailed explanation of stages within its development. It is expected it will be used to inform the Joint Organisation (JO) at a higher level of detail. The second document, the Action Plan, is intended for regular use by the Resource Recovery Working Group (RRWG) to deliver change. The Action Plan contains detailed Actions with specific Targets and Goals for the Councils of the JO region, in particular. The third and last document, the Technical Appendices, contains much of the raw and calculated data used to develop the Strategy. Appendices are presented within numbered sections corresponding to those within this Strategy document.

All data was collected and provided by the Resource Recovery Project Officer (RRPO) of the RRWG based on data supplied by the member Councils. Full member Wingecarribee Council did not supply data, although it participates within a Regional Waste Strategy of the Illawarra Shoalhaven Joint Organisation (ISJO). Associate members, Snowy Valleys Council, Wagga Wagga City Council and the East Gippsland Shire Council similarly did not provide data, although the Australian Capital Territory (ACT) did. Data from the ACT was included within key considerations of current performance, not least because of its regional dominance and proximity, but at the request of the JO the Strategy clearly focuses on the NSW full member Councils. A regional map of members is provided within Figure 1.

Joint Organisation Members

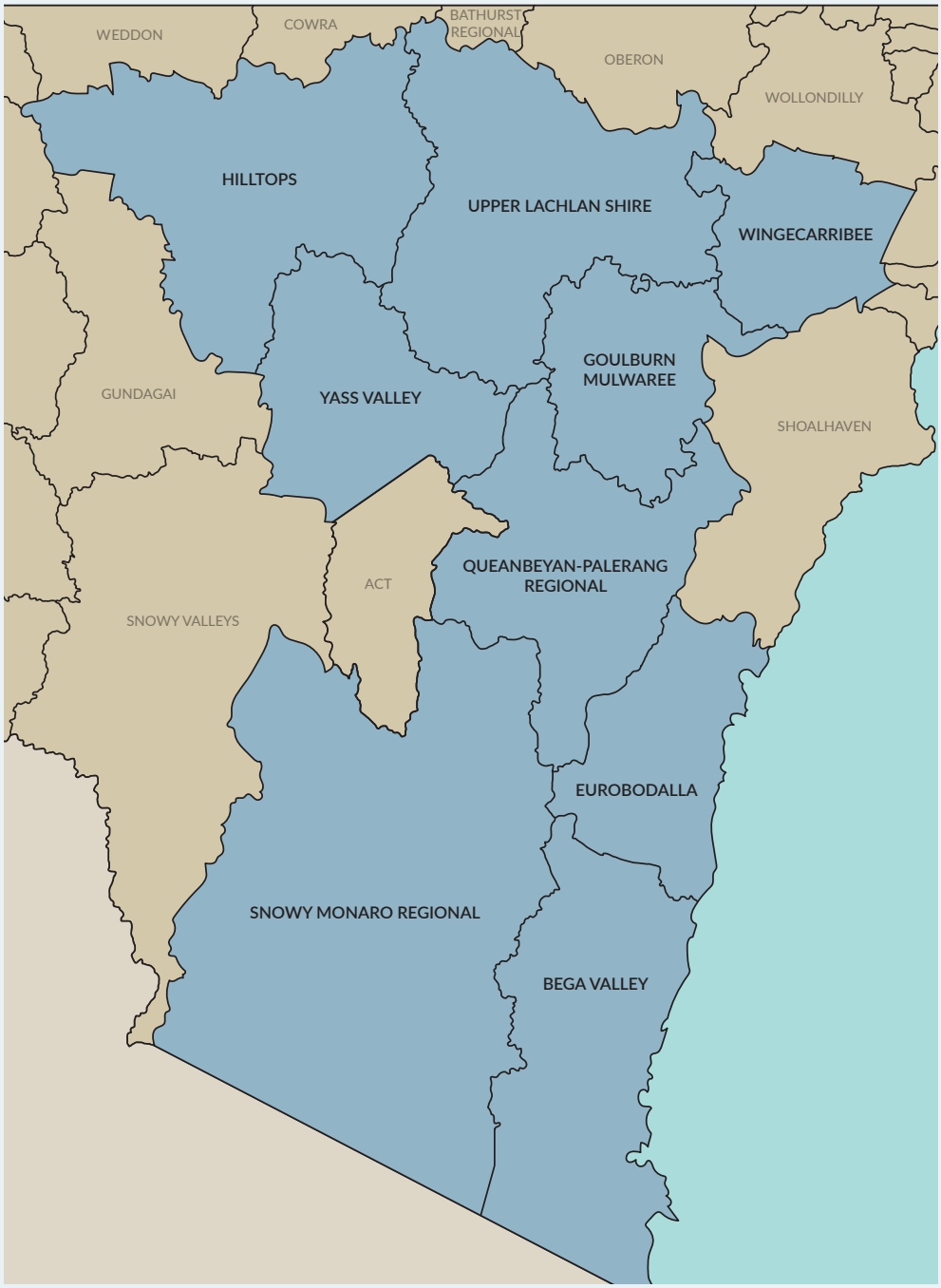
NSW full member Councils include Hilltops, Upper Lachlan Shire, Yass Valley, Goulburn Mulwaree, Queanbeyan-Palerang Regional, Eurobodalla Shire, Snowy Monaro Regional, Bega Valley Shire Councils and more recently, Wingecarribee Shire Council. The ACT became an associate member of the CRJO under terms of a Memorandum of Understanding (MOU) signed in August 2016, recognising the impact the nation's capital has on the growth and prosperity of the region, whilst Snowy Valleys Council, Wagga Wagga City Council and East Gippsland Shire Council are more recent associate members.

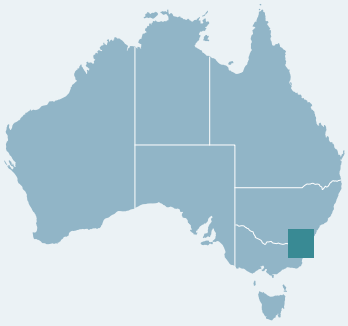
The region has adopted the phrase 'Canberra Region', and identifies with sub-regions branded as city, coast, alpine and tablelands.

The Canberra Region also features a subset of its Councils working collaboratively with neighbouring Councils outside the JO, known as the South West Regional Waste Management Group (SWRWMG). This group comprises JO members Hilltops and Yass Valley Councils, together with neighbouring recently-formed Councils Cootamundra-Gundagai Regional (from the amalgamation of Cootamundra and Gundagai shires) and Snowy Valleys (from the amalgamation of Tumbarumba and Tumut Shire Councils) of the neighbouring Riverina Eastern Regional Organisation of Councils (REROC). The SWRWMG works collaboratively with commercial entities to deliver waste collection, waste transport and landfilling services within the group's region. A regional map of group members is presented in Figure 2.

It is anticipated that the CRJO will proclaimed on 15 May 2018, after which it will further develop its strategic priorities.

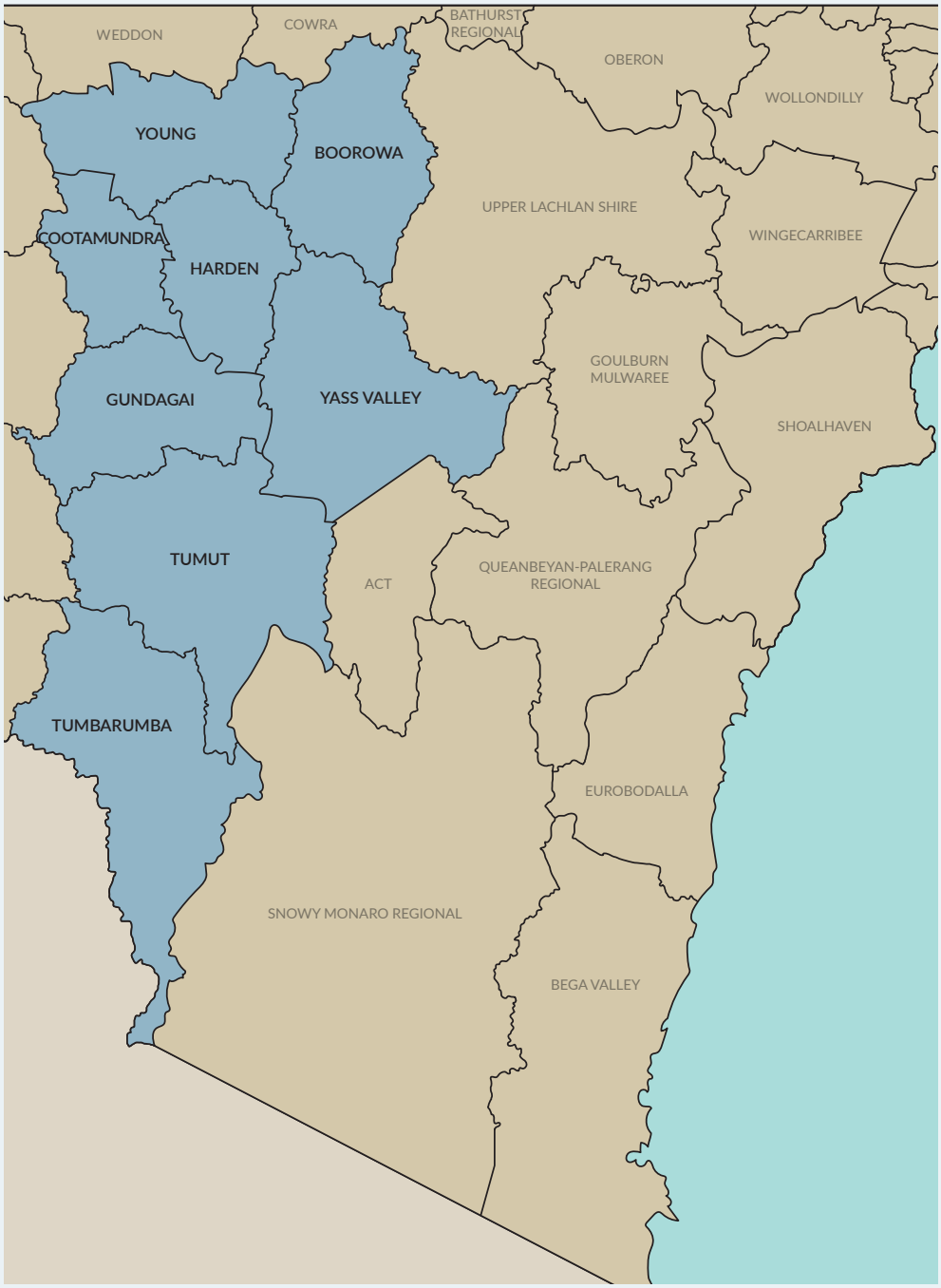
Figure 1: Canberra Region Joint Organisation of Council's full members

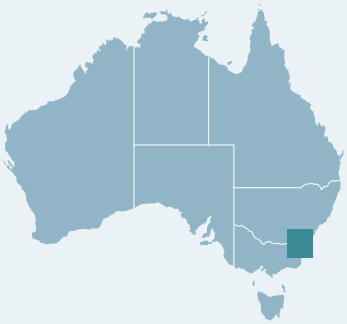




Source: CRJO (2018)

Figure 2: Council members of the South West Regional Waste Management Group





Source: SWRWMG (2017)

Regional Waste Strategies

The NSW Government's 2011 plan, *NSW 2021: A plan to make NSW number one*, is a ten-year plan for sustainable state development and includes targets for increasing recycling, and reducing litter and illegal dumping across NSW. It has underpinned development of the EPA's *Waste Avoidance and Resource Recovery 2014–21 Strategy* (WARR Strategy) whose key areas include support for investment in much-needed recycling infrastructure, encouragement of innovation and improvement of recycling behaviour, development of new markets for recycled materials and a reduction in litter and illegal dumping.

In NSW, Regional Organisations of Council (ROCs) and now JOs are the most common form of collaborative multi-purpose arrangement among NSW Councils. Evidence suggests Council groups are seeking to *'…increase their capacity in operational shared services areas. The potential to expand this role was implicit in the reference from the Destination 2036 Action Plan, seeking to develop options and models to enhance collaboration on a regional basis…'*[1]

To facilitate regional, strategic change in local government's management of waste management and resource recovery, the EPA has also identified regional collaboration as critical to achieve quantum change in local government performance, requesting each of the state's voluntary waste groups to develop a Regional Waste Strategy. These Strategies should at least:

- consider growth in population and waste generated/capita, and how these put increasing pressure on Council operations and assets – the programs of relatively larger member Councils can significantly impact change within a regional approach
- prioritise programs, encouraging Councils to shift from end of pipe to proactive managers of waste
- align waste and recycling programs and infrastructure with funding opportunities.

The EPA also recently extended its Waste Less, Recycle More grant funding program to 2021 to support delivery of Regional Strategies.

More recently, Regional Waste Strategies have started to explore and consider the benefits of:

- engaging the regional community to achieve change – awareness/education of both the business and domestic communities essential for greater source separation
- shared, regional contracting
- ownership (sovereignty) of waste and localised materials transformation
- greater integration with not-for-profit (NFP) community organisations and groups – Materials Recovery Facilities (MRFs), transfer station waste sorting programs and managing tip shops
- understanding the true cost of landfilling – linked to landfill diversion and operational efficiency (regional engineered landfills supported by a hub and spoke transfer station arrangement)
- a regional voluntary levy on waste disposed to landfill to both further incentivise source separation and pay for regional waste education
- sub-regional, centralised organics processing.
- sub-regional, centralised processing of commercial and industrial (C&I) waste
- strategic regional planning – particularly asset management plans (AMP) and long-term financial plans (LTFP) backed by reliable data

1 NSW Local Government, 2015

- enhancing the role and capabilities of the JO or ROC – development of regional policy, and increased human and financial resources for more centralised project management and implementation
- fully understanding structured allocation of risk within service delivery contracts and the financial benefits that can offer
- bundling of services – such as organics collection and processing.

Local government's management of waste

NSW Councils provide waste management services within a framework of Commonwealth, State and Local Government policy and legislation. Policy and legislative/regulatory instruments are now driving improved environmental performance of waste assets and increased diversion of waste from landfill. Many NSW Councils face increasing regulatory requirements for greater environmental performance of their waste assets, as well as an increasing cost and decreasing availability of replacement void space for landfills.

The RRWG is one of eight working groups of the JO, comprising member Council waste officers working collaboratively for the betterment of waste and resource recovery outcomes in southern NSW. The group is facilitated and coordinated by a RRPO funded by the NSW EPA. The RRPO reports directly to the JO's Executive Officer (EO), who updates members on regional waste programs through the General Managers' Advisory Committee (GMAC). The group is recognised as one of the state's Voluntary Waste Groups (VWG) which are also coordinated by the NSW EPA within its Regional Networks for Effective Waste Management (RENEW) program.

Strategy development process

Wright Corporate Strategy (WCS) started a series of regional waste management and resource recovery workshops with an appointed SWMWG in 2016, in line with a three-year commitment by the JO to review its existing Regional Waste Strategy. The working group considered the merits of its former Strategy and developed additional regional project concepts over a twelve-month period within the key result areas of the WARR Strategy framework, also adding its own Theme for greater regional collaboration and advocacy. The working group's vision was to reduce waste to landfill and increase recycling rates at a regional level within the current national and state waste policy context.

2. Where are we today?

This section examines the members' waste diversion, resource recovery and recycling performance, focusing particularly on waste production and recycling rates of the NSW Councils. Supporting data may be found within Appendices 1–15 of the Technical Appendices document.

Waste Strategies and Councils' current strategic programs

A number of the JO's members have their own waste strategies. Of note, the ACT wishes to further improve diversion of waste from landfill and has recently undertaken a two year, $2.8m feasibility study of waste management practices, services and underpinning policy, licencing, and regulation to underpin further improvement. In May 2018, ACT NoWaste released a discussion paper entitled: *Waste Feasibility Study: Roadmap and Recommendations*. Given the size of the ACT, the relative proximity of a number of NSW CRJO members to it, and ACT NoWaste's ambitious plan to divert up to 87% of the Territory's total waste generation by increasing waste processing and resource recovery infrastructure, in particular, a summary of the recommendations from the Feasibility Study are provided below:

GROUP 1 – ROADMAP RECOMMENDATIONS

Diverting organics from landfill

1.1 Undertake a food waste reduction and recovery social marketing and education campaign for households and businesses

1.2 Provide ongoing participation and support to the national food waste initiatives

1.3 Implement a kerbside food and garden organics (FOGO) collection service aligned with the existing green bin roll-out program

1.4 Identify a site and establish an organics processing facility to process both food and garden organics

Industry development and support

1.5 Identify and facilitate market development for materials that are currently sent to landfill

1.6 Establish Government 'buy-back' schemes for recycled products through procurement commitments (e.g. compost from organics, road bases from crushing of inert waste and glass fines)

1.7 Design modified service contracts for existing services (e.g. gypsum, glass fines, crushing inert wastes), repair and dismantle (e-waste and mattresses), so these materials can be recovered and repurposed for beneficial reuse

1.8 Design a modified commercial and industrial (C&I) waste service to allow source-separated (e.g. recyclables, organics and residual) waste for improved processing outcomes

1.9 Design and establish improved advisory services to businesses around the ACT regarding how they can reduce their waste to landfill and save costs

Energy from waste

1.10 Develop a waste-to-energy policy for the ACT

1.11 Investigate the establishment of a process engineered fuel (PEF) plant in the ACT

GROUP 2 – FURTHER RECOMMENDATIONS

The study's second group of recommendations are more general initiatives. The document recommends these be implemented to facilitate integration with existing waste management operations:

2.1 Continue implementing regulatory reforms under the *Waste Management and Resource Recovery Act 2016* including:

   a. improved data gathering capability

   b. identification and development of necessary regulatory interventions for the commercial sector through social market research and regulatory impact assessments.

2.2 Continue to explore product stewardship possibilities for various challenging waste streams

2.3 Periodically review the Development Control Code for Best Practice Waste Management in the ACT to ensure desired waste management and performance outcomes are achieved for multi-unit developments

2.4 Augment existing education efforts by designing and implementing an education and marketing behavioural change campaign to reduce the quantity of recyclables ending up in kerbside residual bins

2.5 Develop an integrated long-term strategic/spatial plan for waste service delivery infrastructure (e.g. transfer stations) and their locations/co-locations, using the principle of best use of land in triple bottom line assessments to determine and meet future needs and changes

2.6 Update the ACT Waste Management Strategy 2011–2025 to maintain currency and alignment with new knowledge

Of particular note is the ACT's ambition to build new food organics garden organics (FOGO) processing infrastructure and investigate the establishment of a process engineered fuel plant to drive greater recovery from waste current residual waste, and the formulation of policy to support these.

The following NSW Council members report the following strategic programs underway within their LGAs:

- Bega Valley Shire Council – finalisation of a new waste strategy, including new kerbside FOGO and construction and demolition (C&D) processing facilities, waste site rationalisation and greater local sorting and materials transformation capabilities
- Eurobodalla Shire – reviewing their current waste strategy
- Goulburn Mulwaree – transform Goulburn Waste Management Centre into a recycling and reuse hub called Re-Use Goulburn (RUG), currently in the design phase, and increasing kerbside organics collection and local processing capability to provide a service to all households receiving a kerbside service
- Hilltops – developing a new waste strategy
- Queanbeyan-Palerang Regional – replacing the existing garden organics (GO) kerbside collection with a FOGO service within the former Queanbeyan City Council LGA
- Snowy Monaro Regional – expanding kerbside collection services
- Wingecarribee – finalising its Waste Strategy 2017–2024, with a focus on removing greater organics at the kerbside
- Upper Lachlan Shire – starting a new kerbside GO service in September 2018 and will consider upgrading it later to a FOGO service. Council will also review transfer station service levels, including recycling, in June 2018

Member Councils either updating or developing new waste strategies are encouraged to follow the themes of the WARR Strategy, which will also permit closer integration with this regional strategy.

Waste and resource recovery data

Waste data provided by the NSW Councils and the ACT for this Strategy have fundamental differences. NSW Councils reported data for only waste and recycling managed overall by them, whereas ACT data is the sum of all activities in the Territory where data is obtainable. This has the relative effect of skewing upwards the ACT's performance in relation to that of the NSW Councils where commercial resource recovery and recycling programs are in operation.

In addition, the relative size of the ACT in comparison to the NSW Councils also significantly impacts outcomes from manipulation of combined regional data, whilst the different classification of waste streams to NSW meant certain estimates for ACT recycling rates were required to be made[2].

A comment also needs to be made about data concerning receival and management of soil and soil materials reported in a differing fashion by the JO members. The ACT currently receives ~40,000 tpa of contaminated soils at its West Belconnen facility for onsite rehabilitation, and whilst these soils are *not* included within their *waste diversion* calculations, this practice is expected to stop by the end of 2018 when the site closes. Some NSW Councils reported Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) as well as other general soils products within their construction and demolition waste streams, whilst others only reported soil materials. It is unknown if the latter were in fact VENM but not managed as such. In addition, those Councils receiving significant quantities of soil acknowledged receival is linked to required use onsite more than its generation within region, and that quantities received can vary significantly year-to-year.

VENM is not recognised as a waste by the NSW EPA and as such is not included within its calculations of waste generation or recycling rates. For purposes of trying to better understand more consistent waste flows, all soils have *not* been included in a calculation of *recycling rates* within this Strategy. This position also supports a general held concept that for waste to be recycled, it must leave site. Soils other than VENM may however be included within separate calculations of *recovery rates*, recognising the beneficial use soils play in landfill structural and site amelioration civil works, removing or lessening the requirement for imported material.

Waste data reported within this Strategy follows the three principal streams: domestic or municipal solid waste (MSW), C&I waste and C&D waste. The region generated 1,152,821 tonnes of waste in the FY 2016–17, with approximately 60% of all waste received recycled. Of this total, domestic/MSW was the highest source of waste (Figure 3).

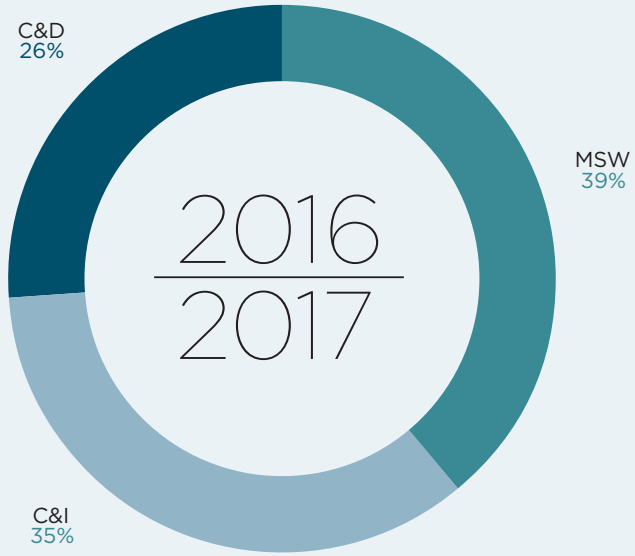
The highest composition of waste disposed to landfill was MSW/domestic waste, comprising 57% of the total 464,466 tonnes disposed across the region. An additional 51,650 tonnes of 'clean soil' was also reported for period and variously managed by members (VENM and ENM – principally 31,588 tonnes from Goulburn Mulwaree, 10,405 tonnes from Snowy Monaro Regional and 8,852 tonnes from Bega Valley Shire Councils in 2016–17).

The ACT alone generated 922,520 tonnes of waste in this period, or ~80% of all waste generated within the region in FY 2016–17. The NSW Councils combined managed 230,301 tonnes of waste in the same period (reported as approximately 1 tonne/year generated per capita). Domestic/MSW was again the highest source of waste, comprising 64% of the waste stream managed by the Councils combined (Figure 4).

Amongst the NSW Councils, only 37% of waste received was recycled. Interestingly, MSW constituted both the greatest amount of waste recycled (almost 80% of the 84,657 tonnes recycled) and waste landfilled (55% of the 144,466 tonnes disposed), representing significant opportunity for improvement (Appendices 6, 13, 14 and 15).

2 Wright Corporate Strategy obtained data for the ACT from the JO, seeking clarifications directly with the ACT's Transport Canberra and City Services

Figure 3: Composition of waste managed by members within the CRJO region: 2016–17



Source: CRJO 2017

Note 1. ACT data includes estimated division of waste between the WARR Strategy principal waste streams

Figure 4: Composition of waste managed by NSW Councils within the CRJO region: 2016–17

Source: CRJO 2017

Kerbside collection services and audit data

Council kerbside audit data within the JO was limited. Bega Valley Shire Council data from an independent audit in 2014 over a winter period (low tourist season) and summer (peak tourist season) found:

- 12–18% of kerbside waste bins were overflowing
- 37–43% premises used less than 50% of the waste bin's capacity
- 14–17% of kerbside recycling bin were overflowing
- 22–31% of kerbside garden organics bins were overflowing.

This data provides an example of a coastal LGA with a significant tourist influx during peak holiday periods. As an example of a regional inland centre (Cooma) with similar periodic tourist influx, Snowy Monaro Regional Council data from a 2014 audit found that more than half of the weight of the domestic residual waste bin was made up of organic waste, or on average 5.7kgs/household/week. Audit data of contamination within kerbside recycling and organics collections was unavailable.

COMMERCIAL KERBSIDE SERVICES

Seven of the JO's Council members provide a commercial waste and recycling service, with only three also offering a commercial kerbside organics service. Of these, only Snowy Monaro Regional provided a commercial FOGO service[3]. By comparison, commercial kerbside collections of waste, recycling and organics were small, totalling only 2,029 tpa waste, 917 tpa recycling and 95 tpa organics under overall management by the Councils.

DOMESTIC KERBSIDE SERVICES

Within domestic services, all Council members provide a waste and recycling service, whilst six also provide an organics

3 Bega Valley Shire Council will deliver a commercial FOGO service in the 2018–19 FY

service split evenly GO and FOGO. The ACT recently started a small, trial collection of GO. Collection frequencies and bin services varied significantly between members.

Residual Waste

Residual waste is collected weekly across the region. Eurobodalla Shire residents supplied with the smallest bin size (80L) produced the least amount of waste per household, whilst Hilltops residents with the largest bin size (240L) produced one of the highest amounts of waste per week (Appendices 1 and 10).

By comparison, NSW households on average produce 11.7kg/hh/week waste[4], which was eclipsed by two Councils only – Upper Lachlan and Hilltops. Nearly all NSW Councils collect residual waste weekly too (93%), with the use of 120/140L or 240L MGBs fairly equal amongst NSW Councils. EPA data confirms that the provision of bigger waste bins results in greater collection of kerbside waste.[5]

Recycling

Recycling is collected fortnightly and nearly all of it in 240L bins. Yass Valley residents generated the greatest amount of recycling but had the highest household production of waste. Conversely, Upper Lachlan Shire residents generated one of the lowest amounts of household kerbside recycling but also the lowest amount of total household waste (Appendices 2 and 11).

In comparison, NSW households on average produce 4.9kg/hh/week recycling[6], which is greater than that produced by all members except Yass Valley and the ACT only. A majority of NSW Councils (73%) provide at least a 240L co-mingled recycling bin fortnightly, whilst reported data across NSW suggests that a weekly recycling collection only increases collection by a further 5–10%.[7]

If Council households *already* receiving a recycling service generated the state average of co-mingled recyclables each week by diverting more from the waste bin, diversion of recycling from landfill at the kerbside could increase by an estimated 4,741 tpa, provided that material is currently disposed within the waste bin, with Eurobodalla Shire (736 tpa), Goulburn Mulwaree (674 tpa) and Queanbeyan-Palerang Regional (2,294 tpa) providing the greatest opportunities. Across the state, it has been reported that almost one third of all recyclable items are placed in the garbage bin and end up in landfill.[8]

If *all* households within each LGA received a recycling service, and if each generated at least the NSW average of 4.9kg/hh/week, the Councils combined could divert up to an extra estimated 12,213 tpa of recycling from landfill, on the same assumptions, with the greatest possible contributions coming from Eurobodalla Shire (1,153 tpa), Goulburn Mulwaree (1,955 tpa), Upper Lachlan Shire (1,125 tpa), Hilltops (1,696 tpa), Queanbeyan-Palerang (3,343 tpa) and Snowy Monaro Regional (2,525 tpa). If improvement within the ACT was also included (6,605 tpa), this could bring the regional total to 18,818 tpa, although these estimations have not been adjusted for current drop-off of recycling by residents without a current kerbside service.

Of course, it may well not be economically viable to increase services across the LGAs, given regional and rural property locations and road distances required to be travelled.

Organics

Organics are collected in 240L bins either every two or four weeks, although each fortnight is more prevalent (Appendices 3 and 12).

Residents supplied with a FOGO service produced more organics than those with only a GO service; 3.7kg/hh/week on average for those with a GO service compared with

4 EPA Waste and Resource Recovery Data Report (2014-15)
5 EPA Waste and Resource Recovery Data Report (2014-15)
6 EPA Waste and Resource Recovery Data Report (2014-15)
7 EPA Waste and Resource Recovery Data Report (2014-15)
8 MRA Consulting: State of Waste 2016 – current and future Australian trends

5.2kg/hh/week for those with a FOGO service – a 40% increase in yield on average. Two recently amalgamated Councils have both a GO and FOGO service operating in their LGAs. Generally speaking, residents supplied with a FOGO service generated correspondingly less residual waste than those with only a GO service, diverting more waste from landfill.

In comparison, NSW households on average produced 5.6kg/hh/week organics (GO and FOGO combined)[9], which is greater than that produced by all Council members except Goulburn Mulwaree.

If Council households *already* receiving an organics service generated the NSW average of organics each week by diverting more from the waste bin, diversion of organics from landfill at the kerbside could increase by up to an estimated 4,799 tpa, on the basis of this material currently being disposed to landfill within the waste bin, with Bega Valley Shire (1,513 tpa), Eurobodalla Shire(1,98 tpa), Queanbeyan-Palerang Regional (911 tpa) and Snowy Monaro Regional (606 tpa) providing the greatest opportunities. This is supported by the average NSW kerbside waste bin reportedly containing 60% organic material waste comprising food (40%) and garden waste (20%).[10]

If however *all* households within each LGA received a FOGO organics service, and if each generated at least the NSW average of 5.6kg/hh/week, the Councils combined could divert up to an estimated further 22,361 tpa of organics from landfill, on the same assumptions, with significant possible contributions coming from Yass Valley (2,22 tpa), Bega Valley Shire (2,838 tpa), Eurobodalla Shire (1,960 tpa), Goulburn Mulwaree (3,298 tpa), Upper Lachlan Shire (1,757 tpa), Hilltops (2,355 tpa), Queanbeyan-Palerang Regional (4,371 tpa) and Snowy Monaro Regional (3,663 tpa). If the ACT was also included, a further 46,049 tpa could be included, bringing the regional total up to 68,410 tpa. Estimates have not been adjusted for residents currently without kerbside services currently dropping off green waste at sites.

The opportunity for significant increased recycling of kerbside organics is supported by data from an independent audit of Bega Valley Shire Council's kerbside waste bins in 2014. This audit found that 44% of the contents of the domestic kerbside waste bins with a three-bin GO system were organics which could be diverted from landfill and processed into a valuable compost. Snowy Monaro Regional Council found that within twelve months of providing a three-bin system including a FOGO collection, the amount of organics remaining in the waste bin had halved down to 2.76kgs/hh/week.

State data from NSW Councils found that on average an increase of 1.7kg/hh/week is gained by adding food waste to an existing garden organics kerbside collection.[11]

Kerbside collection contracts

Kerbside collection arrangements vary considerably within the region. Existing waste and recycling collections are either carried out by the Council themselves (three, with one amalgamated Council servicing part of its LGA), by commercial contractors with agreements expired or near expiry (two) or have around five years possible remaining within these agreements (four). Organics kerbside collections vary slightly to this (Appendix 4).

9 EPA Waste and Resource Recovery Data Report (2014-15)

10 MRA Consulting: State of Waste 2016 – current and future Australian trends

11 EPA Waste and Resource Recovery Data Report (2014-15)

Waste Infrastructure

A map of the NSW Councils' landfills, transfer stations, and commercial landfills, materials recovery facilities and organics processing facilities is provided within Appendices 7 and 8[12]. In addition, the ACT has its principal landfill within the Jerrabomberra district and Recycling Drop-off Centres at Jolly Street, Belconnen, O'Brien Place, Gungahlin, Baillieu Circuit, Mitchell, Botany Street, Phillip, and Scollay Street, Tuggeranong.

Council members use the services of a number of commercial waste processing and landfilling service providers, whilst some regional alternatives available currently remain almost unused by members; notably this includes Veolia's Woodlawn facility with a separate landfill bioreactor (130,000 tpa) used only by Queanbeyan-Palerang Regional commercial kerbside waste disposal[13] and its mechanical biological treatment process for high organic content kerbside waste (40,000 tpa)[14] prior to landfilling of depleted residuals, not reported as being used by any member Councils (Appendix 5).

RESIDUAL WASTE

Summary data from members indicates member Councils principally use landfills under their own management, with only Yass Valley and Hilltops Councils sending waste to landfill at Jugiong under their separate SWRWMG commercial arrangement. The ACT principally uses its own Mugga Lane site with a reported 35+ years' of useful operating life at current fill rates (300,000m3/year). The ACT's West Belconnen site currently receives approximately 243,000 tpa of asbestos contaminated material (ACM) but aims to stop landfilling by the end of 2018, whereupon the site will be rehabilitated by 2020 and converted into an open parkland.

Of note is the estimated lifespan of existing, Council-owned landfill sites within the region, with members indicating:

- there are around twenty small (<1,500 tpa), unlicensed landfills in use, with likely low engineering controls in place and with a remaining useful life of less than 20 years, with approximately twelve of these with significantly less than ten years remaining useful life
- there are a few Councils (three to four) with medium-sized landfills in use, some of which are licenced and carry greater engineering controls, with a useful asset life of around 20 years each, but which are used and managed only for waste derived within their LGAs
- future disposal of residual waste should be elevated to a priority.

12 Provided by CRJO 2017
13 Provided by CRJO 2017
14 Provided by CRJO 2017

RECYCLING

Sorting of kerbside recycling is dominated by the Re.Group within the region, processing a reported 41,672 tpa recycling from the combined region's total of 53,655 tpa. Of the balance, community groups manage a reported 3,247 tpa.

Recent international events[15] are considered by some to now threaten Council recycling collections through market price collapses, whilst others view this as a growing opportunity for Australia to develop its own circular economy, using collected materials back within the manufacturing process.[16]

ORGANICS

Councils with an organics kerbside service and/or drop-off capability report mostly managing material themselves under a range of technologies. Snowy Monaro Regional uses an open windrow method for processing its kerbside FOGO material whereas Bega Valley Shire has made considerable steps towards a covered, aerated static pile system. Only Queanbeyan-Palerang Regional reported using a commercial provider for FOGO material for that part of its amalgamated area receiving a FOGO service, whilst the ACT has only more recently commenced a limited collection trial of garden organics being processed by a commercial operator.

Capacity for processing expansion may be limited by available site conditions and appetite for risk by some Councils.

Recycling and waste diversion rates

A summary of the Council's combined performance in attaining the WARR recycling targets is provided within Table 1. Individual Council recycling rates are presented within the Technical Appendices. Combined Councils are well below all three target recycling rates, and are similarly significantly below the overall waste diversion rate as well. The gap estimated for the Councils and the ACT to meet their respective recycling and landfill diversion targets has also been included within Table 1 as an indication of the magnitude of regional improvement sought.

A recycling gap of ~80,000 tpa to meet state targets under current conditions has been estimated for the Councils combined. A further ~182,000 tpa is required to be diverted from landfill for the ACT to meet its current diversion target by 2025.

The Councils combined also have a lower recycling rate than the state average. The NSW EPA reported an overall recycling rate[17] across NSW of MSW 58%, C&I 58% and C&D 71%.

MSW represents the greatest component of the recycling gap for the combined Councils totalling 36,065 tpa. In absolute terms, more MSW is required to be recycled than C&I or C&D to meet the WARR targets. For the combined Councils, MSW also contributed both the greatest source of waste managed and waste landfilled.

Generally however, member Councils produced less total domestic waste than the NSW average. Whilst Yass Valley and Eurobodalla Shire residents produced more than the NSW average, Eurobodalla had the highest Council recycling rate for MSW.

15 China's ban on foreign waste leaves Australian recycling industry eyeing opportunities, ABC News, 11 December 2017

16 Gayle Sloan, chief executive of the Waste Management Association of Australia (WMAA), reported by ABC News, 11 December 2017.

17 NSW Waste Avoidance and Resource Recovery Strategy: Progress Report 2014-15 (2017). NSW EPA

Table 1: Waste management performance within the CRJO region: 2016–17

WARR Strategy KRAs	Waste generated (tpa)	Disposal to landfill (tpa)	Diverted from landfill (tpa)[1]	Recycling rate (%)[2]	Recycling gap (tpa)[5]
KRA 2. INCREASE RECYCLING: NSW Councils Combined					
MSW (70% target by 2021–22)	147,181	80,220	66,962	45%	36,065
C&I (70% target by 2021–22)	42,230	35,999	6,231	15%	23,330
C&D (80% target by 2021–22)	40,890	28,248	11,464	28%	21,248
KRA 3. DIVERT MORE WASTE FROM LANDFILL: NSW Councils Combined					
Diversion (75% target by 2021–22)	230,301	144,466	85,835	37%	86,891
ACT Government					
Diversion (85% target by 2020)[3]	920,000	320,000	600,000	65%[4]	182,000

Sources: CRJO 2017 and ACT 2017

Note 1. This amount is landfilled as waste. The EPA specifically excludes VENM received at landfills from its disposal calculations and does not include it in its recovery calculations either

Note 2. The WARR recycling rate[18] for any waste stream is calculated using the formula: Recycling Rate of a stream = (Total diverted from that stream)/ (Total generated in that stream) where

Total diverted from landfill = Total recycled, reused or reprocessed, and

Total Generated = Total disposal + Total diverted

Diversion data provided did not make discounts for contamination and/or post-MRF landfilling of waste derived from the kerbside recycling and organics collections

Note 3. Current ACT Waste Management Strategy 2011–2025

Note 4. The ACT reported that it did not include on-site use of contaminated soils for site rehabilitation within its waste diversion calculation

Note 5. For NSW Councils, the recycling gap is the annual tonnage difference between the WARR Strategy Recycling Rate and current performance. For the ACT, it is the difference between its current performance and its own strategic target of 85% diversion of waste from landfill

18 Quality Declaration – WARR Strategy Recycling Rates, OEH, May 2011

Regional population forecasts

Waste creation is linked to population growth and economic activity, but now may be more closely linked to the latter. In the period 1996–2015 Australia's population rose by 28% but waste generation increased by 170%.[19] That is, waste generation outstripped population growth. The most meaningful data may in fact be change in waste generation per capita compared to change in Gross Domestic Product (GDP) or economic activity.

Adding some encouragement however, from 2012–13 to 2014–15 total waste generation in NSW fell, resulting in total annual waste produced per capita down from 2,341 to 2,203 kilograms, although urban development impacting the generation of C&D waste, in particular, can significantly impact data such as this and its implications for regional and rural Councils. In real terms both MSW and C&I waste generation in NSW actually increased during this period.[20]

Table 2: Projected regional population growth

Government Area	Population Forecast 2016	Population Forecast 2026	Forecast Population Growth	Forecast Growth Percentage
Yass Valley	16,628	19,865	3,237	19%
Bega Valley Shire	33,944	35,919	1,975	6%
Eurobodalla Shire	37,966	41,597	3,631	10%
Goulburn Mulwaree	30,158	33,863	3,705	12%
Hilltops	18,841	19,174	333	2%
Queanbeyan-Palerang Regional	58,119	66,593	8,474	15%
Snowy Monaro Regional	20,617	21,286	669	3%
Upper Lachlan Shire	7,837	7,847	10	0%
Wingecarribee Shire[3]	47,882	50,300	2,418	5%
NSW Councils Combined	271,992	296,444	24,452	9%
ACT[2]	399,899	462,762	62,863	16%

Source: www.forecast.id.com.au

Note 1. "Population numbers in forecast.id for the NSW Councils 2016 base year are derived from Estimated Resident Population from the Australian Bureau of Statistics. These differ from (and are usually higher than) Census counts as they factor in population missed by the Census and population overseas on Census night. They are generally considered a more accurate measure of population size than Census counts" (forecast.id)

Note 2. ACT Treasury (2013)

Note 3. NSW Population Projections Regional LGA Data (NSW Department of Planning and Environment)

19 MRA Consulting: State of Waste 2016 – current and future Australian trends

20 NSW Waste Avoidance and Resource Recovery Strategy Progress Report 2014–15

Projected ten-year populations for each JO member from a 2016 base line are provided within Table 2. Of note:

- The ACT comprises ~65% of both the current and 2026 forecasted population, and also has one of the fastest predicted growth rates (although data reported shows it produces around 80% of all waste, revealing possible aberrations within data provided)
- The NSW LGAs with the higher forecast populations; Queanbeyan-Palerang Regional, Goulburn Mulwaree, Eurobodalla Shire and Bega Valley Shire Councils, also generally have the highest forecast growth rates, and together generate around 67% of the combined Council's waste. Wingecarribee Shire has both the second highest current population of Councils and one of the higher project growth increases in absolute terms

This data suggests that the future programs of the ACT and Queanbeyan-Palerang Regional, Goulburn Mulwaree, Eurobodalla Shire and Bega Valley Shire Councils will play a major part in delivering the quantum of the relative change from a regional perspective.

Australia's population is ageing as a result of increasing life expectancy and lower birth rates[21]. This has resulted in a proportionally larger increase in those aged 65 years and older. A large study performed by the UK's Department for Environment, Food and Rural Affairs (DEFRA) revealed that the older respondents were more likely to participate in recycling, with the most enthusiastic recyclers being aged 65 and over. This age group was also the most likely to undertake home composting using kitchen waste.

The annual rate of waste generation from current Council members is expected to increase by at least 9% over the next ten years in line with predicted population growth and current per capita waste generation rates, or approximately 23,030 tpa by 2026. Using the average NSW per capita annual waste production rate of 2 tpa doubles this amount. Whichever data is used, the predicted increase in waste generation over the next ten years will put increased pressure on existing waste processing and management infrastructure, particularly Council-operated landfills, and this needs to be addressed within this Strategy's five-year period.

Community waste education

Only three Councils, Wingecarribee Shire, Goulburn Mulwaree and Snowy Monaro Regional, nominated themselves as having a dedicated Waste Education and Project Officer or equivalent. Most other Councils nominated that either resources for education (and improvement in recycling rates, in particular) were limited, or that occasionally resources from the Council or the RRWG were used for contractors to deliver specific projects.

Problem wastes

Four of the Councils have a Community Recycling Centre (CRC) for managing domestic (household) problem wastes, removing them from the general domestic recycling stream. Items received at no charge to residents include gas bottles, fire extinguishers, paint, fluorescent globes and tubes, car batteries, household batteries, oils and smoke detectors. A fifth Council, Goulburn Mulwaree, has an application for a CRC pending with the NSW EPA.

Other problem waste within the region was nominated as asbestos contaminated soils (ACT), asbestos, e-waste and skis/ snowboards and ski boots.

21 Population by age, sex, Australia, States and Territories, Australian Bureau of Statistics 2016

Strategy development issues and challenges

ONGOING LOCAL GOVERNMENT AMALGAMATIONS

A number of amalgamated Councils are at different stages of implementation of waste diversion and recycling operations, whilst some have voiced a need to review significant operational inconsistencies within their own LGAs. Within recent and former NSW local government amalgamations, Boorowa, Harden and Young Shire Councils formed Hilltops Council, whilst Bombala, Cooma-Monaro and Snowy River Shire Councils formed Snowy Monaro Regional Council. The City of Queanbeyan merged with Palerang Council to form Queanbeyan-Palerang Regional Council. A key challenge will be to ensure that the developed Regional Waste Strategy is aligned with the intent (or content) of specific member Council waste strategies. There is also a likely increasing polarity between larger, urban centres and smaller, regional ones.

DISRUPTION TO VOLUNTARY WASTE GROUP (RESOURCE RECOVERY WORKING GROUP)

The Group has had significant disruption since delivery of its former Waste Strategy, due principally to a number of changes of its Project Officer, including sustained periods of absence of an appointed Officer. However, the Group has a real willingness to investigate the increased benefits of regional collaboration and appreciates the great opportunity to redevelop and enhance its approach to waste management and resource recovery.

The ACT's own Waste Strategy is under redevelopment and hence unavailable for review at the time of preparation of this Regional Strategy. Given the ACT's relative population size, its future resource recovery and waste processing capabilities will likely considerably influence regional decision making, particularly processing of organics.

UNDER-PRICED LANDFILLS

The region's members are generally unaware of their current full cost of waste disposal. Under-priced landfills hinder sustainable resource recovery programs to sort and recycle waste streams and can lead to unfunded economic and financial liabilities.

The recycling industry in Australia has been shown to provide more than three times the employment opportunities for each 10,000 tonnes of waste managed rather than landfilling. Within the high-population density areas of the eastern seaboard, the increasing scarcity of landfill space, coupled to high land values and the NSW EPA's Waste Levy all assist in driving upwards the cost difference between landfilling and recycling and/or resource recovery programs. Higher populations in more densely populated areas also favour centralised processing as a viable alternative to landfilling. However, within the member Council LGAs, these drivers are either less influential or absent, noting however that Wingecarribee Shire Council lies within the waste levy area of NSW.

Despite the promise of emerging waste processing technologies, a significant proportion of the waste stream arising in each LGA will, in fact, require continuing landfill disposal for the foreseeable future. Councils need to make provision for long-term landfill access for domestic and business waste in order to avoid risks associated with the inevitable requirement for future waste disposal.

Landfill space is viewed by many now as a limited resource, with the development of new landfills both expensive and lengthy. Planning and regulatory approval is not guaranteed. Local government in regional and rural areas is generally only starting to understand the benefits of preserving landfill space and developing recycling and resource recovery programs, including the socio-economic benefits of local materials transformation.

THREATS TO RECYCLING

Threats to recycling exist and markets for many materials are fickle, prices are variable and transport costs to MRFs can exceed materials prices on offer, particularly glass and mixed plastics. The domestic market for recycled glass has reportedly collapsed[22], particularly for green glass, leaving thousands of tonnes of glass available as a crushed substitute for sand within regulated engineering applications.

Whilst some member Councils face significant transport distances to existing MRFs, for others, local geography and highway infrastructure limits alternatives. Glass, in particular, is a heavy component of ex-MRF recyclates, and in the current climate, alternatives to at least remove glass locally before road transport are now worth considering.

Improved recycling systems requires the successful development of a circular economy in Australia, who for too long has relied on export trading markets such as China for processing of waste commodities.[23] Issues such as lack of a common, clear vision between the Commonwealth and states, and diverse state policies, are claimed by Waste Management Association of Australia (WMAA) to have hampered investment and employment required to develop a circular economy, and urgent government intervention is sought as Australia seeks to manage the difficulties it now faces in the recycling sector as a result of China's National Sword[24] policy. This policy recently came into effect, banning the importation for processing of 'contaminated' mixed recycling. Australia alone sent 1.25 million tonnes of recycled material to China in 2016–17 which the National Sword now impacts. As a result, some NSW Councils have already had to significantly increase rates paid to kerbside collection/MRF contractors to manage their kerbside co-mingled recycling, although some short-term financial relief ($2.5m) is available from the EPA to non-levy paying Council areas to offset increased recycling costs.

The recently delivered NSW Container Deposit Scheme (CDS) is reportedly having an impact on the receival of refund-eligible containers at regional MRFs and transfer stations. Reduced income to MRF operators now receiving less of these eligible containers may worsen the flow-on financial implications for Councils, although increased capacity within co-mingled kerbside bins as a result of this presents alternatives for collection of an increased range of recyclables or possible changes to kerbside services (such as dedicated paper/cardboard collection and/or changes to co-mingled container packaging).

These pressures add impetus to determination of the full cost of landfilling by member Councils, and the evaluation of alternatives available to them. Such investigations would likely benefit from a more detailed analysis of waste and recycling material flows throughout the region. They also had weight to regional considerations of locally-owned/managed transformation of waste, taking greater sovereignty of waste and its recyclates, with Councils taking greater control through strategic, regional action of the JO.

Council engineering divisions are encouraged to review the benefits of recycled materials within local engineering applications more closely, closing the loop more on local waste.

Generally, Councils might also revise purchasing policy to support products containing a higher proportion of recycled materials and/or those produced locally, and review opportunities for deconstruction rather than demolition within planning approvals within their LGA.

22 China's National Sword policy is cutting deep in the recycling sector, MRA 2018

23 Waste Management Association of Australia (WMAA) – NSW Senate inquiry into the waste and recycling industry 2018

24 The National Sword policy has banned the import of some materials, reduced contamination levels down to an almost impossibly-low 0.5% within mixed recyclables, and reduced licences for import of waste materials. As a result, ex MRF prices for mixed paper and mixed plastics have been hit hard, and the business model of many MRFs is under siege.

DATA COLLECTION

A number of member Councils are frustrated at their lack of reliable waste and recycling data, and at the sometime inconsistency of its generation throughout the region. This presents a number of challenges; not least, qualifying the magnitude of change required and analysing alternatives for improvement.

What does all this mean for NSW member Councils?

A number of conclusions may be drawn:

1. Waste and audit data: Member Councils freely relayed their frustrations at sometimes lack of objective data. In some cases, recycling rates may have actually been lower, as waste diversion data provided did not make discounts for contamination and/or post-MRF landfilling of waste derived from the kerbside recycling and organics collections. In other cases, recycling rates may have actually been higher, for example C&D waste, with some Councils recounting that their concrete sorting and crushing operations lay outside the principal operations area, not accessing the weighbridge.

   Some Councils made the valid point that more waste and recycling audit data is required to provide a better qualification of base rate kerbside contamination and/or leakage of recyclables into the waste bin at source. This would then be expected to provide a better idea of where and how to develop improvement programs.
2. Per capita waste generation: The Council region produced only about 50% of the state annual per capita tonnage of waste, although its recycling rates and landfill diversion rates were significantly below state targets. It is suggested this might prompt a review of data and data collection across the region.
3. Waste diversion: Only 37% of waste received was recycled, with all state targets requiring around twice this.
4. Domestic Waste: MSW constituted both the greatest amount of waste recycled and waste landfilled. The MSW recycling rate was 45%, with an estimated recycling gap of ~36,000 tpa; the highest of the three estimated recycling gaps. Whilst kerbside waste collection for member Councils was generally below the state average, so were the amounts of recycling and organics collected. Not clear at this stage is how much this is due to lower generation of waste in general and/or higher leakage of recycling and organics into the residual waste bin.

   The recycling gap may be reduced as the following estimates reveal:

   – If kerbside collections for *existing organics services* met the state average for weekly household generation, a further ~5,000 tpa could be diverted from landfill over BAU, assuming this material is currently disposed within the kerbside waste bin. If instead the state average was to be exceeded by 25%, this gain could be increased to ~9,000 tpa. These calculations only consider domestic/MSW kerbside organics, suggesting the impact could be greater if greater commercial services were delivered as well.

   Goulburn Mulwaree has a newly licenced composting facility allowing up to 50,000 tpa of FOGO to be processed. Council advises it has capacity to be developed as a regional facility with the appropriate processing equipment and technology. Council also undertook a biogas study in 2018 as a processing option to composting, advising such a development would only be viable as a regional facility.

   – If kerbside collections for *existing recycling services* met the state average for weekly household generation, a further ~5,000 tpa could be diverted from landfill over BAU, assuming this

material is currently disposed within the kerbside waste bin. If instead the state average was to be exceeded by 25%, this gain could be increased to ~10,000 tpa.

Opportunity exists within the region for use of the Woodlawn facility to increase diversion of retained organics in residue waste, whilst greater opportunity for regional processing of FOGO material might be possible within the ACT's yet-to-be released new Waste Strategy.

Some regional capacity exists for processing extra FOGO. A study and analysis reviewing alternatives for sub-regional processing sites is encouraged. Bundling of collection and processing services is an alternative which may reduce overall costs; especially if kerbside organics/recycling collection vehicles can be used to run full, each way, between major centres with processing facilities in each. A range of controlled-environment technologies exist from relatively simple covered aerated windrows to more intensive in-vessel systems.

Extra MRF capacity for increased kerbside dry recycling is unknown, and at any rate, may now be impacted by China's National Sword policy. Councils now need to move closer to securing a long-term sustainable future for recycling.

Removing greater amounts of organics from the waste stream can both make significant improvements to MSW recycling rates and improve the environmental impact made by landfills with only minimum engineering controls.

5. Commercial waste: The C&I recycling rate of the combined Councils is the lowest of the three state targets at 15%, with the same four largest Councils contributing about 68% of C&I waste generation. The C&I recycling gap was estimated to be ~23,000 tpa and is the second highest of the estimated gaps.

   Council data reports that organics consist of only 8% of total C&I waste received. Generally commercial services by Councils are not developed, relying more on the commercial sector delivering much commercial waste as non-recyclable, mixed waste to Council landfills. If 25% of the landfilled amount of C&I waste was estimated as organics and able to be separated at source and captured within processing operations, an estimated ~9,000 tpa could be diverted from landfill, raising the recycling rate to ~36%.

   An audit of the C&I waste stream would be very useful to set some quantitative future goals for assessing realistic gains possible in the C&I recycling rate from source separation and resource recovery.

6. Construction and Demolition Waste: The C&D recycling rate of 28% is mid-way of the three recycling rates with a corresponding recycling gap of ~21,000 tpa. This actual gap is the lowest of the three gaps, and improvements at Bega (4% recycling rate) and Eurobodalla (19%) to around 50%–60% on par with Goulburn Mulwaree and Queanbeyan-Palerang Regional would reduce this gap by an estimated ~7,000 tpa.

   The high bulk density of C&D waste, and the oft-times relatively high contribution by weight of concrete, brick and tiles in this waste stream, Council practices to increase receival of clean, sorted material available for crushing would be expected to significantly raise the recycling rate of this stream.

   With greater pre-classification of soils as VENM, and also greater sorting of soils, the region's recycling rate for C&D waste could likely be pushed over the state target.

   Of note however is the considerable risk of asbestos contaminating C&D waste streams. A risk management approach is recommended, perhaps initially excluding domestic C&D waste on the assumptions

its contribution is both relatively small when compared to commercial C&D waste delivered, and a generally poorer ability by residents to identify and properly manage asbestos during renovations introduces significant risk.

7. Service contracts: Very little commonality exists across the region for kerbside service providers, with services split between in-house and a wide range of contractors. Opportunity exists to evaluate the cost efficiency of in-house services in comparison to contracted commercial services, and the ability of existing Council collection services to expand to provide services to neighbouring Councils.

   Opportunity also exists to review regional tendering for kerbside services early to mid–2020s, bringing existing services into line with a common termination data. Such an initiative would require reasonable forward planning and coordination at a JO level.

   Opportunity exists to review individual terms of agreements with common service providers (such as Re.Group) for kerbside recycling, and negotiate a possible better rate across participating Councils. There may be beneficial scope to also standardise recyclables collected. In consideration of more recent restrictions on the quality of MRF residuals into China for processing, this has likely elevated merit.

8. Disposal of residual waste: A broad review of landfill data indicates that Councils either generally have at least one larger, engineered landfill with capacity for another twenty years, a number of smaller regional landfills all operating together, or generally send waste to the EcoFill facility at Jugiong, which itself has a reported life expectancy of around twenty years in the current cell area with extra land available for development.[25]

   A long-term view on disposal alternatives and infrastructure capacity for residue waste is encouraged. An assessment of compliance against minimum standards of smaller, regional landfills and a calculation of the true cost of landfilling across the region would also assist with long-term planning for regional disposal capacity; especially given the availability of commercial alternatives, the growing interest in energy-from-waste and the expense and uncertain approval status of developing more landfill capacity in the future.

   Under-priced landfills not only threaten the long-term financial sustainability of Councils, they can also threaten recycling and resource recovery programs.

9. LGA sizes: The four larger Councils (Bega Valley, Eurobodalla Shire, Queanbeyan-Palerang Regional and Goulburn Mulwaree) not only have the highest growth predictions, but also the highest MSW recycling rates. Despite this, they still offer the greatest opportunity for regional quantum change, contributing to around two-thirds of the recycling gap required to meet the WARR target. The programs of these Councils will likely be key in significantly improving regional recycling rates.

   These larger Councils, due both to their size and geographical position, present as logical choices to investigate as locations for sub-regional processing of organics and recycling, with smaller Councils supplying materials. The ACT lies between Goulburn Mulwaree and Queanbeyan-Palerang Regional, presenting another possibility. More remote pairs of Councils, such as Bega-Eurobodalla, might also benefit from each having either a FOGO or recycling MRF, better using collection vehicles in the future.

25 South West Regional Waste Management Group 2017

The ACT generates ~80% of the region's total waste and is ineligible for Waste Less, Recycle More (WLRM) funding from the NSW EPA. It is recommended within Theme 7 of the Action Plan that NSW member Councils evaluate options for increased waste processing infrastructure both within NSW, and/or freely accessing ACT infrastructure where viable and legal to do so.

10. Community waste awareness and education: Waste awareness and education programs are generally under-developed within the region and are considered vital to change behaviours of business and residents.

    Very little available kerbside audit data indicates that generally both little is known about current contamination levels of co-mingled recycling of organics, and that little is being done to improve it. A regional community awareness and education program targeting contamination of recyclables and leakage of recyclables into the waste bin is considered to be an important component of improving regional performance.

11. Holidaying waste behaviours: A number of member Councils are very popular holiday destinations which significantly impacts both waste generation and kerbside/public place recycling during peak holiday times.

12. Waste disposal charges: Charges for disposal at landfill of mixed domestic and commercial waste vary considerably throughout the region. Under-priced landfills pose a long-term financial risk to Councils, may contribute to environmental risk from lack of funds for adequate protection measures, and undermine the cost/benefit of site-based resource recovery programs.

3. Where do we want to get to?

This section develops the Strategy's Vision, Themes, strategic Objectives and Targets, taking into account the previous Waste Strategy and its Work Plan, outcomes of the previous section examining waste production and recycling rates, and principal pieces of policy and regulation prevailing within the NSW waste industry. Supporting data may be found within Appendix 16 of the Technical Appendices document, outlining strategic Objectives and SMART Targets/Goals and key performance indicators (KPIs) developed to deliver these.

Former Regional Waste Strategy

The former South East Regional Organisation of Councils (SEROC)'s 2014 Regional Waste Stream Management Strategy forecasted increased waste generation in the region and reported that current resource recovery in MSW is significantly lower in the period 2011–12 than targets set by the WARR Strategy of the time.

It provides seven principal reasons why the regional Strategy document was produced, including recognition of:

- growth in regional waste generation
- NSW Government policy
- funding provided by the EPA to develop programs and strategies to minimise waste generation and maximise resource recovery
- funding originally provided to develop the Strategy
- the requirement and role played by local government in managing waste
- the need to manage change in the region (from a waste management perspective)
- the need for assistance to help local government move from more end-of-pipe to pro-active waste and resource recovery managers.

The former Strategy was based on a Vision Statement with six Goals reported to be supported by all member councils. These strategic Goals were:

- help member councils be pro-active, holistic and innovative in addressing the concept of waste
- help member councils to provide efficient waste services to meet community needs
- foster the take-up of sustainable behaviours in member councils and their community
- improve council bargaining power in service contracts and managing difficult products
- increase local markets for, and business and employment opportunities in, recovered resources
- educate and advocate for life cycle responsibility, and against the creation of waste.

These strategic Goals remain as important today as they were in 2014 and have been incorporated into the new Strategy. The former Strategy's Objectives and Targets were similarly appraised and components included within this new Strategy.

The former Strategy also acknowledged that it alone will not result in change, but that communities, businesses and all levels of government all have an important role to play. It reports its aim to 'best position local government' to manage all parties and policies to effect change and that it is a 'living document' which will be updated in response to changing circumstances.

This new Regional Waste Strategy seeks to build on this former document, honing its intent by further developing its Objectives and targets within a set of themes more aligned to both the WARR Strategy and commitment to regional advocacy by the new JO.

Principal NSW legislative and policy drivers

Key legislative and policy drivers summarised below have been adapted from the Regional Waste Strategy Review Guidelines[26]:

- NSW Premier's Priorities in Action – twelve priorities for NSW including reducing litter by 40% by 2020
- Waste Less Recycle More – the NSW Government's nine year $802m Waste and Resource Recovery program funding Initiative
- NSW Container Deposit Scheme – return and earn on eligible containers

The NSW Waste Avoidance and Resource Recovery Strategy 2014–21 has six key result areas (KRA) with targets. The new Regional Strategy is based on these KRAs and includes others specific to the region. The six KRAs of the WARR Strategy are:

1. Avoid and reduce waste generation – aims to reduce the rate of waste generation per capita by 2021–22
2. Increase Recycling – has three ambitious state targets for recycling rates in line with the three principal waste streams. By 2021–22 recycling rates for each waste stream are to be increased as follows:
   - MSW from 52% (in 2010–11) to 70%
   - C&I waste from 57% (in 2010–11) to 70%
   - C&D waste from 75% (in 2010–11) to 80%
3. Divert more waste from landfill – seeks to increase waste diverted from landfill from 63% (in 2010–11) to 75% by 2021–22. Reuse and recycling will remain the main avenues for diverting waste from landfill, with energy recovery providing a new means of future diversion from landfill for residual waste remaining from recycling operations[27]
4. Manage problem wastes better – seeks to establish or upgrade 86 drop-off facilities or services for managing household problem wastes state-wide by 2021–22
5. Reduce litter – aims to reduce the number of litter items by 40% compared with 2011–12 levels by 2016–17, and then continue to reduce litter items to 2021–22
6. Reduce illegal dumping – calls for Councils to implement the NSW Illegal Dumping Strategy 2014–16 to reduce the incidence of illegal dumping state-wide, including establish baseline data to allow target-setting in other parts of the state by 2016–17

Regional strategy and policy

As part of the process of setting a Vision, Themes and Objectives for the new Regional Waste Strategy, consideration was given to the JO's own strategy and policies.

The JO's formation allows for cross-jurisdictional activity with the ACT Government which can be amended to accommodate future NSW legislative changes. Its priorities include regional advocacy for infrastructure, including regional road, freight and communications infrastructure, as well as inter-governmental collaboration on regional priorities through the alignment of local, regional and state plans providing consistency of effort.

26 NSW EPA Regional Waste Strategy Review Guidelines 2017

27 NSW Waste Avoidance and Resource Recovery Strategy 2014-21

A Regional Plan sets out four goals for the South East and Tablelands region:

- a connected and prosperous economy
- a diverse environment interconnected by biodiversity corridors
- healthy and connected communities
- environmentally sustainable housing choices.

The CRJO is an organisation:

> *'...committed to supporting its members by facilitating or considering delivery of shared services and other opportunities for operational efficiency gains'.*

Its Mission is:

> *"To be a regional leader, advocating for all parts of the region in partnership to create vibrant communities"*

Its Vision is:

> *"To be the voice of a strong and cohesive region which recognises and celebrates unique sub regions"*

New Regional Waste Strategy

Development of the Regional Waste Strategy from this point followed the step-wise development process below:

- Strategy's Vision
- Strategic Themes
- Objectives for each Theme
- SMART Targets to support the Objectives
- Creation and assessment of Options (delivery mechanisms) to deliver the Objectives and Targets
- Strategic Actions within an Action Plan.

The Regional Waste Strategy is to be monitored, evaluated and updated as it is delivered.

The SWMWG first developed the Vision for the new Regional Waste Strategy from these legislative, guidance and policy documents, considering achievements made within the former Regional Strategy.

The Vision of the new Regional Waste Strategy was developed as:

> *'To be a leader in waste minimisation and resource recovery through collaborative best practice'*

To deliver this Vision, the strategic workshop sessions identified seven Themes based on WARR Strategy KRAs, which were later developed to contain strategic Objectives and SMART Targets (specific, measurable, attainable, relevant and timely). The genesis of these Themes and draft projects to deliver change are provided within the Technical Appendices.

The Themes, Objectives and Targets required to deliver the SWMWG's Vision are principally orientated towards the JO's Council members, given the ACT's own developing Waste Strategy. Leadership from Councils with greater populations and/or those with successful programs and experience will be key to delivery of regional change. Theme seven and its Objectives were specifically developed during the strategic workshops.

4. How will we get there?

This section develops and assesses Options (delivery mechanisms) to meet the strategic Objectives and Targets, before finalising and developing those selected as strategic Actions to be implemented during the Strategy's term. Supporting data may be found within Appendices 17–19 of the Technical Appendices document.

Waste generation within the Council combined region is expected to increase by at least 23,000 tpa by 2026, and possibly up to twice this amount on the basis of the latest per NSW per capita waste generation data available. This will lead to a growing gap between opportunity for resource recovery and the infrastructure to deliver it, particularly for organics. Current uncertainty around the viability of co-mingled kerbside recycling threatens further development of MRFs, at least in the short-term.

If the Council combined region is to first make greater use of existing services and infrastructure, calculations suggest that up to 19,000 tpa of domestic organics and co-mingled recycling might be able to be diverted from landfill. Gains from greater source separation of commercial waste could significantly increase this.

Sorting of mixed waste delivered to transfer stations would be expected to raise recycling rates further, although insufficient data exists to develop this concept further at this stage.

It would not be unreasonable that the Councils combined could make significant impact on the annual MSW recycling gap of ~36,000 tpa relatively quickly before developing strategic alternatives for secondary improvement.

An increase in diversion and recycling rates for C&I has always been problematic for local government, often because it has provided end-of-pipe disposal without long-term supply contracts. Encouragement and support for businesses to request greater kerbside services from Council and/or commercial contractors to increase source separation is important. Investigation into the cost/benefit of developing sub-regional MRFs is also proposed; particularly in consideration of the low-value of separated glass and a regional approach to also processing problem wastes locally. A target of 5,000 tpa presents as an initial goal to be considered.

Improvement in recycling of C&D waste offers more low hanging fruit if Councils can encourage/enforce greater amounts of clean, sorted materials such as concrete, brick and tiles for crushing rather than mixed and/or contaminated material. Soil recycling and pre-classification of VENM soils will become more pressing. Recycling rates of C&D approaching the state target are not uncommon, and improvement up to ~32,000 tpa, or 80% of receival, is encouraged.

The simple addition of these feasible gains totals ~60,000 tpa in increased recycling, or three-quarters of the current recycling gap which is recommended as a target within the Strategy's five-year period. Analysis of alternatives for improved and increased asset services to deliver increased change is also recommended within this period, providing the region longer-term strategic improvement for increased diversion from landfill.

The second term of the EPA's grant funding program Waste Less, Recycle More has funds available to support action. Within the Local Government Waste and Recycling Infrastructure package, $9.5m has been made available to include bin audits, training and support and capacity building for Councils. This fund might add assistance to the proposed Waste Awareness and Education program. The Waste and Infrastructure Fund has $48m available which includes targeted support to Councils, listing priorities as recovery of recyclables from sorted and unsorted waste, recycling and re-processing recyclable materials and processing/stabilisation of waste. This fund might add

assistance to sub-regional MSW/C&I MRFs proposed to be investigated. The Recycling Innovation Fund has $5m available which includes innovative, targeted solutions by Councils, which might add assistance to proposed investigation into local and sub-regional targeting of problem wastes. The Business Recycling Fund provides $22.5m to support waste avoidance and resource recovery within the commercial sector, including the industrial ecology program *Circulate*, which the Councils are encouraged to be aware of in their region. Significant funds also exist to support litter prevention and clean-up, as well as illegal dumping and clean-up; both Themes of this Strategy.

Options to deliver the strategic Objectives

Options to deliver the strategic Objectives and Targets/Goals within each Theme are presented below. They are later short-listed within an assessment process described, before being adopted as Actions and detailed within the Action Plan document.

Options Appraisal

Options and possible significant projects were first canvassed under a gap analysis with the WARR Strategy framework (Appendix 18), before being assessed within the strategy workshops using a multi-criteria analysis (MCA) as a guide for WCS to develop further (Appendix 17). This initial process is presented in detail within the Technical Appendices.

The resulting seven Themes and their individual Objectives developed for the Strategy are:

1. Avoid and reduce waste generation
   - Guide the community in avoiding creation of unnecessary waste
2. Increase recycling
   - Improve source separation and recycling of kerbside waste
   - Reduce waste to landfill
   - Increase recycling of construction and demolition waste
3. Divert more waste from landfill
   - Investigate alternative pathways for residual waste
4. Manage problem wastes better
   - Deliver commercially sustainable, long-term management alternatives for problematic wastes
5. Reduce litter
   - Ensure visual amenity of the region
6. Reduce illegal dumping
   - Work in partnership with the community to protect the environment
7. Develop regional collaboration and advocacy
   - Progressive delivery of improved regional waste avoidance and resource recovery outcomes through collaboration, knowledge sharing and regional investment
   - Improve operational efficiency and realised cost savings within delivery of core business services
   - Development of improved services through collaboration
   - Increased regional engagement in resource recovery based on winning community support and developing local enterprise and employment

A second qualitative[28] MCA was then used to assess the Options (Appendix 19). Four criteria were developed to reflect the collective strategic Objectives within the seven Themes, with each criteria given a weighting index in line with its assessed relative importance in contributing to regional change.

28 The SWMWG made clear it was in more in favour of a Regional Strategy providing directions for investigation and analysis, rather than prescribed outcomes

The criteria and relative weightings used within this second MCA to assess each Option were:

- Diverts more waste from landfill (than the current situation) – 60%
- May provide cost savings or increased returns (to member Councils) – 20%
- Benefits from, or contributes to, regional collaboration – 20%
- Supports benefits of local waste transformation – 20%

Each of the 36 Options originally developed were assessed under each criteria and assigned a score of 0 – 4 on the basis of how it was considered to deliver or support that criteria, from none to very significantly. A weighted score for each Option under the four criteria was then calculated by multiplying the criteria's score by its weighting index. A total score and ranking for each Option was derived by summing the four weighted scores.

Lastly, the preferred combination of Options based on weighted MCA and key priorities to achieve the Targets/Goals of the strategic Objectives were selected. These formed the basis of the Action Plan detailed within Section 5.

This process however does not preclude other draft Options from future inclusion within the Regional Strategy as it matures under performance measures imposed.

The second MCA delivered few surprises: *Theme 2 Increase Recycling*, contained more, higher rating Options than any other Theme given its ability to deliver quantum changes at a regional level. The other high rating Themes were *Theme 3 Divert more waste from landfill* and *Theme 7 Develop regional collaboration and advocacy*. Generally speaking, *Theme 4 Manage problem wastes better*, *Theme 5 Reduce litter* and *Theme 6 Reduce illegal dumping* contained the lowest rating Options, indicating they should be assigned a lower priority within the Action Plan.

Preferred Options

Table 4–1 summarises the *Preferred Options* from the second MCA. From the ranking of total score within the MCA, Options with a total score less than half of the maximum score applied were removed in creating the short list.

If short-listing to preferred Options removed all the Options of an Objective during this process, the Objective was re-instated with the highest ranking and/or most relevant Option to ensure all Objectives were included.

Themes and Options address waste generally, recognising however that for many Councils issues of public place litter/recycling bin placement, littering and illegal dumping are not functions of their Waste Divisions. Considerations have been included however on the basis of a whole-of-Council approach to regional improvement.

Preferred Options were developed into Actions within Section 5 and the Action Plan document. In some cases, the Option became the Action entirely, whilst in others, Actions were adapted from the Preferred Options (Theme 7), even developing them within different Themes to produce a more seamless Action Plan. Once Actions were finalised and the Action Plan initiated, Detailed Actions were generated for each. SMART Targets/Goals and KPIs originally developed to deliver the strategic Objectives within Section 3 were transferred consistently across these Actions and Detailed Actions within each strategic Theme.

Table 3: Preferred Options to deliver the Objectives of each Theme

THEME 1: Avoid and reduce waste generation

Objectives	Options to achieve Objective
Guide the community in avoiding creation of unnecessary waste	Support, develop and deliver programs to improve productive use of household and public event items and materials
Reduce generation of waste	Develop and deliver a regional waste awareness program

THEME 2: Increase recycling

Objectives	Options to achieve Objective
Improve source separation and recycling of kerbside waste	Develop kerbside services Lead business and residential community behaviour change towards greater source separation of waste
Reduce waste to landfill	Sort mixed waste delivered to transfer stations Develop waste sorting infrastructure Investigate a voluntary system for JO members to make payments to support regional projects and delivery of the Regional Waste Strategy
Increase recycling of construction and demolition waste	Develop local programs to recycle and utilise clean, sorted concrete/brick/tile, in particular

THEME 3: Divert more waste from landfill

Objectives	Options to achieve Objective
Investigate alternative pathways for energy recovery from residual waste	Investigate alternatives for waste residuals

THEME 4: Manage problem wastes better

Objectives	Options to achieve Objective
Deliver commercially sustainable, long-term management alternatives for problematic wastes	Develop alternative processing and markets for generic problem wastes (such as e-waste, mattresses) Develop processing solutions and markets for local problem wastes (such as horizontal boring drilling muds, skiing accessories, silage wrap)

THEME 5: Reduce litter

Objectives	Options to achieve Objective
Ensure visual amenity of the region	Prepare and support a Regional Litter Plan

THEME 6: Reduce illegal dumping

Objectives	Options to achieve Objective
Work in partnership with the community to protect the environment	Implement NSW Illegal Dumping Strategy

THEME 7: Develop regional collaboration and advocacy

Objectives	Options to achieve Objective
Progressive delivery of improved regional waste avoidance and resource recovery outcomes through collaboration, knowledge sharing and regional investment	Improve knowledge base of Waste Officers
Improve operational efficiency and realised cost savings within delivery of core business services	Develop a superior waste/recycling data capture and availability process Standardise opt-in contracts for a wider range of operational services
Development of improved services through collaboration	Develop sub-regional management of kerbside and drop-off organic waste Develop services to deliver greater MSW and dry C&I sorting Determine preferred regional kerbside bin system and tender new services at a regional level Investigate alternatives for shared, mobile waste assets
Increased regional engagement in resource recovery based on winning community support and developing local enterprise and employment	Develop a business and residential waste awareness and education program including, waste audits and kerbside services policy review Lead re-use of recycled materials within Council operational activities and purchasing

5. How will the strategy be implemented?

This section develops Actions to deliver the Preferred Options within the separate Action Plan document. The Action Plan summarises the activities and initiatives required to deliver change within the region and provides the principal road map for guiding strategic change within the region.

This Regional Waste Strategy and Action Plan provides detailed Actions within seven Themes over the next five years for the region to reduce both its recycling gap and waste to landfill. Broadly, it calls first for greater efficiency from existing services (Themes 1, 2 and 7), before recommending appraisal and expanding these where viable (Theme 2), reducing litter (Theme 5), reducing illegal dumping (Theme 6) and then evaluating new regional services with supporting infrastructure to recover/recycle/re-use a wider range of resources from the waste stream (Themes 3, 4, and 7).

The JO may wish to separately develop an internal implementation plan to provide a structure for implementing the Action Plan. It may also wish to record progress within a separate progress report.[29]

The Action Plan includes detailed Actions to deliver strategic Objectives within each Theme. It provides Targets/Goals and KPIs and summarises the requirements to evaluate delivery in line with the KPI. Dates were provided to deliver some specific Actions by, whilst others were not provided completion dates to afford some flexibility over the five-year period.

Actions were generated from the Preferred Options within Section 4. Detailed Actions were created within each Action to guide specific components of change.

It is assumed that the Action Plan is the responsibility of the Resource Recovery Project Officer, using human and financial resources of the JO to deliver change with participation of members.

The Action Plan should be updated annually in line with review periods nominated. New Actions may be generated from those Options not shortlisted within Table 4–2 but contained within Appendix 17.

KPIs considered to be trigger points; that is, are critical for delivery of the Strategy and require continual monitoring throughout the year, have been highlighted.

29 An example of a progress report may be found within the NSW EPA's Regional WARR Strategy guidelines

6. How to measure success?

This section describes the requirements of the Resource Recovery Project Officer to review progress in delivering the Strategy and update the Action Plan over time. Consideration during this process should also be given to ensuring continuous improvement of the Strategy and its Action Plan within an assessment feedback loop.

The Resource Recovery Project Officer is responsible for collecting and aggregating data to monitor delivery progress. It is expected that during this time the Resource Recovery Project Officer will also evaluate data responses from Councils and make objective assessments of both data provided and rate of implementation, taking action to correct either/both as required. As a result, the Action Plan may need to be updated, particularly around stipulated trigger points, or following significant changes within the external environment, such as the ACT's delivery of its new Strategy, changes in EPA policy or legislation, or changes in grant funding programs.

References

The following were used as References within this Strategy document:

1. ACT Population Projections: 2013 edition. ACT Government
2. China's National Sword policy is cutting deep in the recycling sector (2018). MRA within Inside Waste Issue 82
3. Media Release: NSW Senate inquiry into the waste and recycling industry (2018). Waste Management Association of Australia
4. NSW Waste Avoidance and Resource Recovery Strategy 2014–21 (2014). NSW EPA
5. NSW Waste Avoidance and Resource Recovery Strategy: Progress Report 2014–15 (2017). NSW EPA
6. Population and household forecasts 2016 to 2036 (2017). Id
7. Population by age, sex, Australia, States and Territories (2016). Australian Bureau of Statistics
8. Quality Declaration – WARR Strategy Recycling Rates (2011). OEH
9. Regional Collaboration and Shared Services – Background Paper (2015). Local Government NSW
10. Regional Waste Strategy Review Guidelines (2017). NSW EPA
11. State of Waste 2016 – current and future Australian trends (2016). MRA Consulting
12. Waste and Resource Recovery Data Report (2014–15). NSW EPA

A list of supporting Consulting Reports formerly commissioned by the Group and referred to within development of the Strategy document may be found within Appendix 20 of the Technical Appendices document.

Document version history

DATE	VERSION	REVIEWED BY:	PREPARED BY:
March 18 2018	Version 1 Draft		WCS
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For your notes

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