

Queensland Waste Avoidance and Resource Productivity Strategy 2014-2024

Final review report

January 2019

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1 Introduction

1.1 Background to the Strategy

The Queensland Waste Avoidance and Resource Productivity Strategy 2014-2024 (the Strategy), was released in December 2014. Development of the Strategy was led by the Waste Avoidance and Resource Productivity Strategy Steering Committee (Steering Committee) comprised of representatives from business and industry, the waste and resource recovery sector, local government, and community and environment groups.

The Strategy set out a vision for Queensland to become a national leader in avoiding unnecessary consumption and waste generation, adopting innovative resource recovery approaches, and managing all products and materials as valuable and finite resources. This vision was underpinned by five key principles, four objectives, several priorities, and several statewide and regional targets to be achieved by 2024 (Table 1).

The Strategy was intended to be implemented through voluntary action plans developed by the Queensland Government, industry sectors, and peak bodies. Each action plan was intended to describe how the Strategy's targets and objectives would be achieved. Voluntary action plans were not required from councils and state government departments that were already required to prepare waste reduction and recycling plans under Chapter 6 of the Waste Reduction and Recycling Act 2011 (WRR Act).

1.2 Scope of the review

The former Department of Environment and Heritage Protection (EHP) commenced the statutory triennial review of the Strategy in early 2017, in accordance with the requirements of Chapter 2 of the *Waste Reduction and Recycling Act 2011* (the WRR Act), to inform the development of a revised or new waste and resource recovery strategy for Queensland. This review, which covers the 3-year period from 1 July 2013 to 30 June 2016, considered:

- the progress towards achieving the targets, objectives and vision of the Strategy
- the issues affecting implementation of the Strategy
- the ongoing relevance of the strategic settings
- opportunities to improve the Strategy.

1.3 Public consultation

A draft review report was prepared by the Department of Environment and Science (DES), informed by preliminary consultation undertaken by EHP with key stakeholders including state and local governments, waste generators, the waste and resource recovery industry, and environment groups (see Appendix 1).

The draft review report was released for public consultation as Appendix 1 to the *Transforming Queensland's Recycling and Waste Industry—Directions Paper* (the Directions Paper). The Directions Paper, partly informed by the draft review report, outlined the directions for Queensland's new resource recovery, recycling and waste strategy underpinned by a waste disposal levy. Consultation on the draft review report opened on 1 June 2018 and closed on 29 June 2018.

One hundred submissions were received on the Directions Paper from industry, local government, environment and community interest groups, and others (Appendix 2), but only a few submissions made comments specific to the draft review report. Collectively, these submissions referenced review findings to support their views on the Directions Paper, and more specifically:

- agreed with the review's conclusions that Queensland's resource recovery sector was underperforming, and the 2024 waste reduction targets would not be met based on business as usual
- supported the review's finding that a voluntary implementation approach, and the lack of a coordinated program of work and market-based mechanisms to incentivise behavioural change hindered the Strategy's effectiveness
- recommended: broader consultations with groups representing community and household consumer interests; establishing the new waste strategy outside of the political cycle; embedding green procurement across the state through the Queensland Procurement Policy; and increasing focus on the development of standards and regulations.

Table 1: Framework of the Strategy

Vision	Queensland will become a national leader in avoiding unnecessary consumption and waste generation, adopting innovative resource recovery approaches, and managing all products and materials as valuable and finite resources			
Key principles	<ol style="list-style-type: none"> 1. Protecting human health and the environment to secure our future prosperity 2. Sharing responsibility for avoiding unnecessary consumption and improving resource management 3. Recognising the economic, environmental and social costs of waste generation and disposal 4. Recognising regional differences and opportunities 5. Full lifecycle management of resources 			
Objectives	1. Driving cultural change	2. Avoidance and minimisation	3. Reuse, recovery and recycling	4. Management, treatment & disposal
Priorities	<ul style="list-style-type: none"> • Awareness & communication • Avoidable consumption • Partnerships, networks & programs • Roles & responsibilities for driving change 	<ul style="list-style-type: none"> • Education & training • Sustainable design • Production efficiency & cost savings to business • Avoidable consumption 	<ul style="list-style-type: none"> • Industrial ecology & infrastructure planning • Green procurement • Research & development • Improved data to highlight business opportunities • Regional collaboration & partnerships • Product stewardship • Market development & appropriate incentives 	<ul style="list-style-type: none"> • Infrastructure & planning • Appropriate regulation & enforcement • Full cost accounting of all disposal • Disaster waste management • Litter & illegal dumping • Technology & innovation
Implementation	To be implemented through voluntary action plans developed by the Queensland Government, industry sectors and peak bodies			
Measuring progress	Performance indicators	2013 Baseline	2016 Target [1]	2024 Target
	General waste generation (tonnes per person per year)	1.86	1.84	1.8
	MSW recycling rate - State	33%	38%	50%
	MSW recycling rate – metropolitan areas	37%	42%	55%
	MSW recycling rate – regional centres [2]	30%	34%	45%
	Remote areas MSW recycling rate	Not specified	n/a	As much as practicable
	C&I waste recycling rate	40%	44%	55%
	C&D waste recycling rate	61%	66%	80%
	Waste disposal to landfill (tonnes)	4,675,000	4,483,750	3,973,750
	Management of priority wastes	Not established	n/a	To be determined

Acronyms: C&D = construction and demolition; C&I = commercial and industrial; MSW = municipal solid waste

Note: [1] The 2016 targets are not original to the Strategy, but have been calculated for this review, to enable progress under the strategy to be measured. Each 2016 target was calculated by assuming that the corresponding 2024 target would be achieved in equal annual increments (or decrements) from the 2013 Baseline.

[2] The regional centres are Darling Downs-Maranoa, Wide Bay-Burnett, Fitzroy, Mackay, Townsville, and Cairns.

2 Implementation progress

2.1 Progress against targets

This section summarises the progress achieved under the Strategy as of the end of Financial Year (FY) 2016 when compared to targets. Progress towards a specific 2024 target is considered to be 'on track' if the progress as at FY2016 equals or exceeds the corresponding 2016 target calculated in Table 1.

Figure 1 and Figure 2 demonstrate the changes in waste generation rate, landfilled waste tonnages, and recycling rates against the interim targets, between FY2013 (baseline year) and FY2016 inclusive. Based on the analysis, the following 2024 targets are considered to be on track to be achieved:

- Municipal solid waste (MSW) recycling rate for regional centres (Figure 2)
- Commercial and Industrial (C&I) waste recycling rate (Figure 2).

The 2024 targets for the other quantitative indicators are not on track to be achieved. In the case of the statewide MSW recycling rate, there was no improvement compared to the FY2013 baseline. In the case of waste generation, landfilled waste, and the recycling rates for metropolitan areas and C&D waste, the performance in FY2016 has worsened compared to the FY2013 baseline.

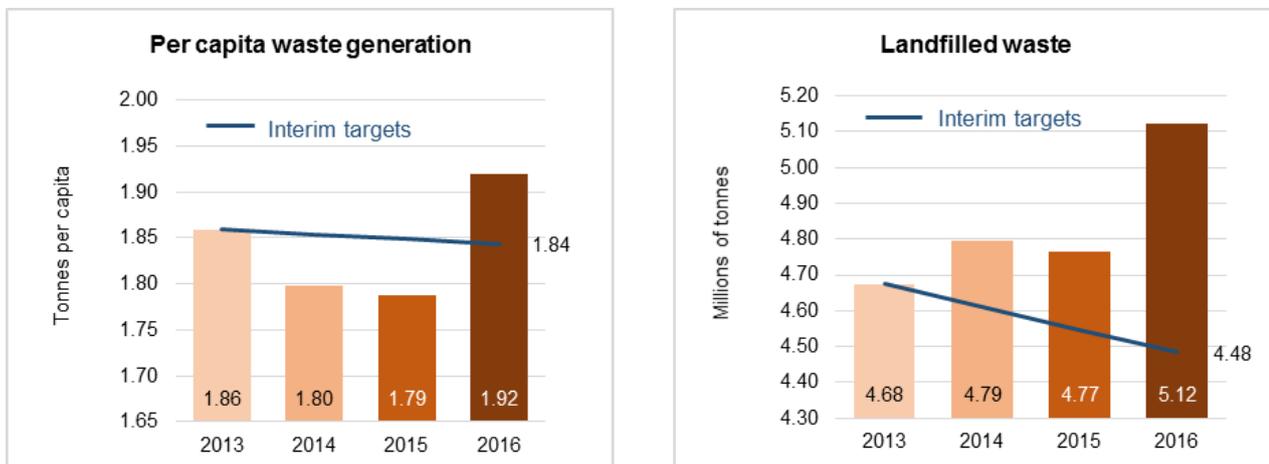


Figure 1: Progress in waste generation (left) and landfilled waste (right) (lower values are better)

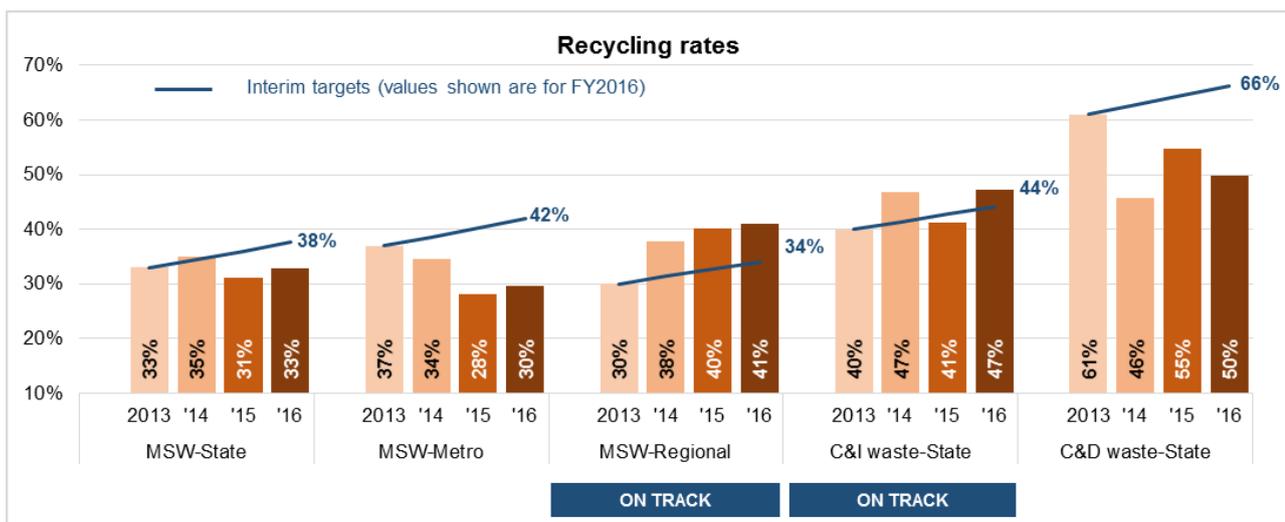


Figure 2: Progress in recycling rates between FY2013 and FY2016 (higher values are better)

2.1.1 Action plans

As at December 2016, two voluntary action plans under the Strategy had been developed. These were developed by the Waste Recycling Industry Association of Queensland (WRIQ), and the Australian Organics Recycling Association (AORA).

Additionally, the former EHP released Queensland's Litter and Illegal Dumping Action Plan (Litter Plan) in 2013 to complement the anticipated release of the Strategy. The Litter Plan sets out the Government's vision to create a Queensland free from litter.

As at 30 June 2016, action plans required under Chapter 6 of the WRR Act have been developed by all 22 Queensland Government departments and 44 out of 77 local governments. Many of these action plans consider the targets, objectives and vision of the Strategy and therefore contribute to its implementation.

2.1.2 Data limitations

In reviewing the progress against targets, it is important to note the following limitations and assumptions concerning the underlying data.

- **Data coverage:** The waste data represented in this report and in the Strategy were provided to DES by reporting entities designated under chapter 7 of the WRR Act and registered with the Queensland Waste Data System (QWDS). Reporting entities include all 77 councils in Queensland as well as non-council waste facilities that receive, sort, recycle, treat or dispose of at least 1,000 tonnes of waste in the previous financial year. Reporting is not mandatory for entities that fall below this regulatory threshold of 1,000 tonnes, however some of these facilities do voluntarily report these data to DES. At the time the review was initiated, data was available up to the end of the 2016.
- **Missing data:** Facilities that fall below the 1,000 tonne per annum threshold are not mandated to report to DES, and so data is only captured where operators volunteer this information. Additionally, data is not collected for activities undertaken by illegal waste operators or for illegally dumped waste that goes undetected. The magnitude of this 'missing' data is not currently known.
- **Baseline setting:** The baseline data used to set interim targets at the start of the strategy period includes waste brought into Queensland from other states (interstate waste) and wastes associated with the management of natural disasters (disaster waste). These source streams are the result of external factors that are not necessarily a reflection of Queensland's consumption and waste generation practices, however insufficient data is available for the FY2013 year to allow the effects of these waste streams to be isolated. It should be noted that there were several severe weather events in 2013 including Ex-Tropical Cyclone Oswald and tropical lows generated disaster waste that may have contributed to the reported rise in the per capita waste generation rate (1.86 tonnes in 2013 compared to 1.64 tonnes in the previous year), and potentially influencing the baselines calculated and reported in the Strategy.
- **Changes to allocation of waste materials to source streams:** Prior to 2013, all green wastes were deemed to be MSW. This categorisation changed in 2013, when green waste reported by local governments was deemed to be MSW with the remainder (from other sources) deemed to be C&I waste. Further changes were introduced in 2015, when green waste not delivered by independent commercial operators was deemed to be MSW. The categorisation of timber waste and scrap metal has also been refined over time. As a result of these changes, the recycling rates for individual source streams (MSW, C&I, C&D) across various years are not directly comparable.
- **Regional data:** The Strategy includes recycling targets for SEQ, regional centres, and remote areas. However, tracking and measuring the flow of recyclable materials on a regional basis is problematic, particularly when it involves large companies operating in multiple regions. For example, the point of measurement and reporting for an entity that collects waste materials in a regional centre may be in SEQ. This would result in a higher apparent recovery rate for SEQ rather than the regional centre, where the waste originated.
- **Data confidence:** Data estimation techniques have improved over time, for example, through the use of weighbridges at waste facilities. As a consequence there is a higher degree of confidence in the 2016 data compared to the preceding years.

2.2 Other notable progress

2.2.1 Litter and illegal dumping

According to the National Litter Index¹, between 2008 and 2016, the number of littered items and the volume of litter reported for Queensland decreased by 28% and 52% respectively (Figure 3). In 2016, retail precincts recorded the highest number of littered items while beaches and industrial precincts were found to have the greatest volume of litter. Cigarette litter (butts and packaging) accounted for 43% of the littered items, while beverage containers were responsible for 41% of the total litter volume.

The factors responsible for the reduction in litter and illegal dumping are not immediately clear. The implementation of the Litter Plan and the Love Queensland - Let's Keep It Clean campaign are likely to have played a role in the declining trend, but the specific contribution cannot be quantified at this time.

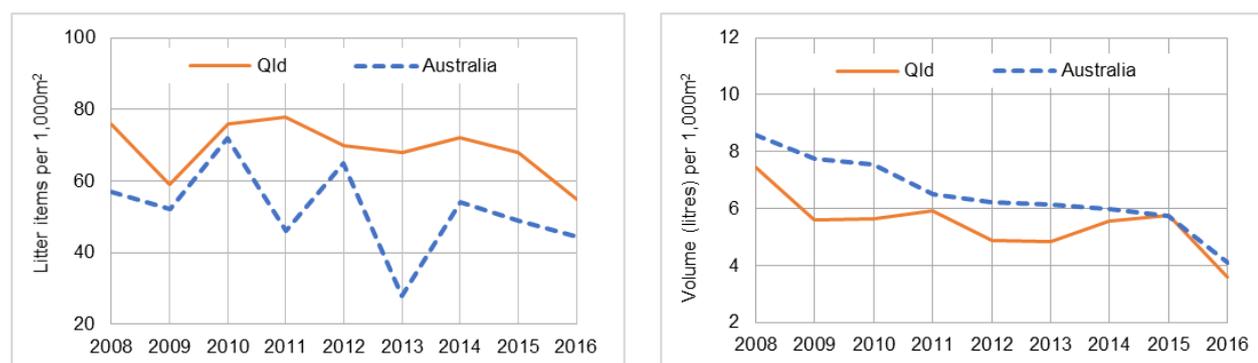


Figure 3: Litter in Queensland

2.3 Projects and policy initiatives

DES has implemented or commenced implementation of several projects and policy initiatives under the Strategy, as listed in Table 2. As the majority of initiatives are pilot projects or still in progress, it is not possible to quantify their potential contributions to the targets of the Strategy; rather, each initiative is described in Appendix 3.

Table 2: Project and policy initiatives under the Strategy

Objective	Project or initiative
Driving cultural change	<ul style="list-style-type: none"> Love Queensland. Let's keep it clean (in progress) Container refund scheme (CRS, in progress) Introduction of a plastic bag ban (in progress)
Avoidance and minimisation	<ul style="list-style-type: none"> Government policy on balloon releases (in progress)
Reuse, recovery and recycling	<ul style="list-style-type: none"> Sugarcane fertiliser bag recycling trial (completed) Organic waste recycling trial (completed) Emergency lighting batteries stewardship (in progress) Power tool battery recycling trial (completed) Tyre recycling demonstration project (in progress) National market development study for end-of-life tyres (in progress) Coffee cup recycling trial (completed) Biofutures waste review (completed)
Management, treatment and disposal	<ul style="list-style-type: none"> Regulated waste framework review (in progress) Waste-related environmentally relevant activities framework review (in progress) End of waste framework (in progress) Online waste tracking (completed) Landfill disposal bans (in progress) Queensland Waste Infrastructure Project (in progress) Operation TORA (in progress)

¹ The National Litter Index (NLI) published by Keep Australia Beautiful, measures the number and volume of litter items across specific sites in Australia as surveyed during November and May each year. In Queensland, the NLI measures litter across 151 sites (beaches, car parks, highways, industrial sites, recreational parks, residential sites, retail sites, and shopping centres) covering an area of 224,004 square metres.

3 Findings

This chapter presents the findings of the review, which were determined through preliminary consultations with stakeholders from DES, the Queensland Government and the waste industry. The chapter is structured under the key themes of the review, to present the headline comment, followed by a summary of the key points identified during the review.

3.1 Approach to developing the Strategy

1. The industry-led approach to developing the Strategy relied on a consensus approach and resulted in a Strategy that did not provide the necessary clarity and implementation details

The development of the Strategy was guided by a multi-stakeholder Waste Avoidance and Resource Productivity Strategy Steering Committee (Steering Committee) supported by five technical working groups. The large composition and diversity of representation on the Steering Committee and technical working groups made it difficult to reach consensus on the Strategy's specific actions, resulting in a strategy that lacks implementation details, concrete actions or specific commitments. Instead, the Strategy relies on these details being specified in voluntary action plans. When these action plans were not developed (with the exception of the few that were) and implemented as intended, the strategic framework essentially became ineffectual.

3.2 Strategic framework

2. Key elements of the strategic framework are not aligned and require further clarity

The key elements of the strategic framework include the title, vision, key principles, objectives, priorities and targets. The findings for each of these elements are summarised below.

- (a) The title of the Strategy introduces the concept of 'resource productivity', which is neither defined in the Strategy nor linked to the other elements such as the objectives and performance indicators. This makes the Strategy inaccessible to all but those in the waste and resource recovery industry.
- (b) The Strategy's vision, while aspirational, introduces concepts that are: difficult to measure objectively (for example 'avoiding unnecessary consumption'); not underpinned by corresponding actions; and not aligned with the targets. For example, the Strategy envisions Queensland as a 'national leader', yet other Australian jurisdictions including South Australia, Victoria, and NSW have targets that exceed Queensland targets for resource recovery performance. Stakeholders also suggested that the vision should reflect the complementary economic, social, and environmental benefits of resource recovery and waste management.
- (c) The Strategy is guided by five key principles to guide its implementation. Feedback suggested that the Strategy's principles would benefit from further refinement to ensure that the WRR Act principles are appropriately incorporated.
- (d) The Strategy identifies the waste and resource management hierarchy (the hierarchy) as the important tool for setting the order of preference for managing waste, however it seemingly sits outside of the strategic framework. This could be improved, for example, by enshrining the hierarchy as one of the key principles.
- (e) The Strategy's objectives are broadly consistent with those of other jurisdictions and remain relevant for Queensland. However, there is scope to simplify and improve understanding of the objectives by using plain English (e.g. "reduce the impacts of waste" rather than "management, treatment and disposal").
- (f) Each objective is underpinned by several priority areas for action, which are largely still relevant. However, the lack of implementation details around each priority is concerning, and consideration should be given to whether the priorities could be further streamlined.
- (g) The Strategy designates seven quantitative targets and one qualitative target to be achieved by 2024. The quantitative targets were set lower than the existing performance of other States and will result in Queensland lagging behind other states (Figure 4). In making this comparison, it should be noted that resource recovery in the jurisdictions compared are driven by a landfill levy, which does not exist in Queensland.
- (h) Targets should, in general, be ambitious but achievable. In this respect, stakeholders expressed the view that the targets needed to be more ambitious, while others were satisfied with the current settings, preferring to see a greater emphasis on implementation actions. Stakeholders were also critical of the lack of clarity and rigour around the process for establishment of the targets.

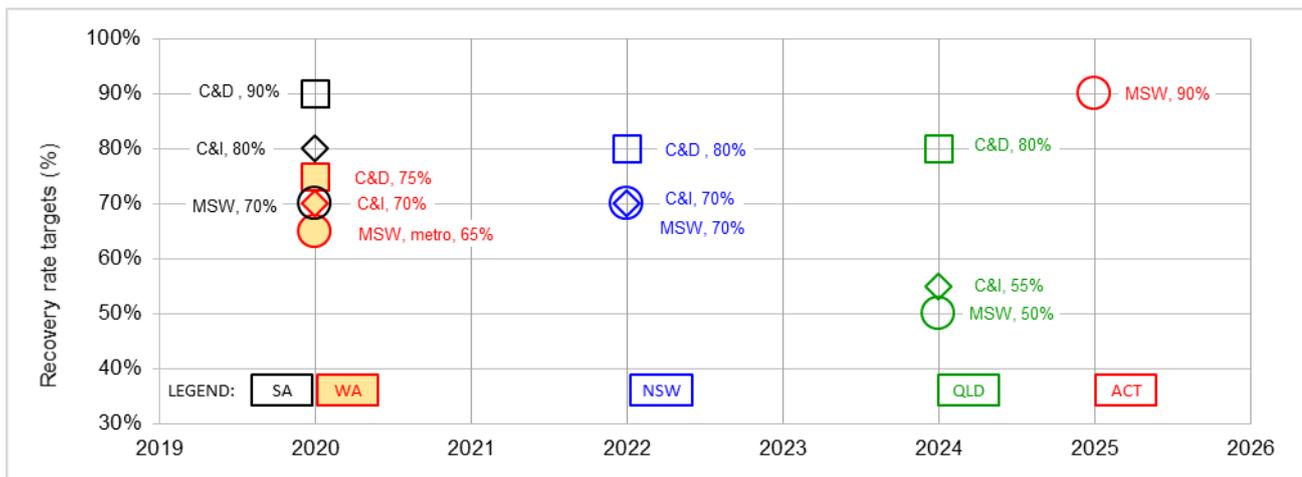


Figure 4: Comparison of resource recovery targets in several Australian jurisdictions

- (i) The Strategy identifies five priority waste streams, which have potentially high risk associated with landfill disposal (such as high toxicity or greenhouse gas emissions), social impacts (such as community concern or amenity), or for which recovery would present resource savings or business opportunities. Priority materials are identified for each waste stream. Some stakeholders were of the view that the classification of priority wastes under the 2014 Strategy required review and streamlining. Matters suggested for consideration include:
- improving consistency by listing all priority waste materials or products by type (e.g. ‘mattresses’), instead of by sector (e.g. ‘mining and industry development’ waste)
 - providing a secondary classification for waste materials or products (e.g. CRS plastics)
 - flagging priority materials which are currently covered under the end of waste framework.
- (j) Chapter 4 of the WRR Act enables the Queensland Government to gazette a ‘priority statement’ that identifies priority wastes or priority products. The priority wastes listed in the Strategy have not undergone the gazettal process prescribed under the WRR Act. Doing so will ultimately strengthen the case for action on priority wastes and allow for robust consultation with industry and the community.

3. The Strategy misses the opportunity to take advantage of potential synergies with other major sector strategies and plans

The intended contributions of the Strategy to the goals and objectives of The Queensland Plan are well articulated. Less so, are the links, potential synergies and opportunities between the Strategy and other sector strategies, although it is noted that some of these were developed after the release of the Strategy. These include:

- The Advance Queensland Biofutures 10-year Roadmap and Action Plan, which sets a vision for a \$1 billion sustainable and export-oriented industrial biotechnology and bioproducts sector that is focused on the development and manufacturing of products from sustainable organic and/or waste resources, rather than fossil fuels²
- the Reef 2050 Long-Term Sustainability Plan³, which identifies marine debris and land-based sources of wastes as major reef threats
- the Queensland Climate Adaption Strategy 2017-2030⁴, which encourages integrating climate adaptation consideration into policies
- the Queensland Climate Transition Strategy⁵, which outlines the path to a low carbon economy.

Leveraging these broader efforts across government could help to achieve greater resource recovery and waste management outcomes. This view was shared by some stakeholders who felt that better harmonisation and integration of the Strategy settings with other whole-of-government policy settings and strategies, and greater coordination across the responsible departments and agencies could be improved. .

² Source: <https://statedevelopment.qld.gov.au/resources/plan/biofutures/biofutures-10yr-roadmap-actionplan.pdf>

³ Source: <http://www.environment.gov.au/marine/gbr/long-term-sustainability-plan>

⁴ Source: <http://www.ehp.qld.gov.au/assets/documents/climate/qld-climate-adaptation-strategy.pdf>

⁵ Source: <http://www.ehp.qld.gov.au/assets/documents/climate/qld-climate-transition-strategy.pdf>

3.3 Implementation of the Strategy

4. The implementation of the Strategy was hindered when action plans did not eventuate as intended

There are several issues with reliance on voluntary action plans to implement the Strategy:

- All stakeholders expressed dissatisfaction with the effectiveness of voluntary action plans as the implementation mechanism for the Strategy. Stakeholder feedback included:
 - disappointment with the perceived lack of clarity around the specific roles and responsibilities of stakeholders in developing the plans, and lack of guidance materials on action plan development
 - misunderstandings about whether individual entities (e.g. councils) were each responsible for achieving the targets stipulated in the Strategy
 - concerns about the lack of visibility given by government to action plans that were developed.
- Industry stakeholders called for a more flexible approach, noting that there was little value to some companies in developing a separate action plan since waste and resource recovery initiatives were already being implemented through environmental management plans and other plans.
- The cycle of developing multiple voluntary action plans as intended could place a significant time and resource burden on the Queensland Government, as it would require multiple meetings and discussions with each sector or organisation to negotiate and agree on the actions, roles and responsibilities of each party. Further, as the needs of each sector/organisation are different, the process would require careful management to ensure that the government's efforts are not spread too thinly across multiple action plans.

5. There is no formal mechanism in place to provide implementation oversight and to support coordination and engagement with stakeholders

Although the Strategy was developed using an industry-led approach with a strong emphasis on shared responsibility, DES has sole responsibility for overseeing its implementation. There is no governance structure in place to provide Strategy implementation oversight, or to facilitate and support broader coordination and engagement with stakeholders.

To improve implementation of the Strategy, consideration should be given to establishing a high-level Strategy advisory group, ideally comprised of representatives from state and local governments and the waste and resource recovery industry. This group would enable stakeholders to participate in the Strategy implementation process at the highest level and would also contribute to strengthening the working relationships between DES and various stakeholders. Similar groups are often successfully established by DES at the project level to guide implementation of specific projects or initiatives (e.g. CRS Implementation Advisory Group).

3.4 Monitoring and evaluation of the Strategy

6. The Strategy lacks a formal monitoring, evaluation and reporting framework

'Monitoring' typically involves tracking the achievement of activities and outputs, and to a lesser degree, intermediate outcomes. In contrast, evaluation (such as this review) takes place at specific moments, and permits a strategy's progress (at the outcome and impact levels) to be assessed over a longer period of time. A good monitoring and evaluation framework should clearly outline how each activity and expected outcome relates to and facilitates the achievement of each objective, and how objectives relate to each other and the ultimate goal. High quality data should also be available to support an effective monitoring and evaluation framework.

The monitoring, evaluation and reporting framework is described in the "How will progress be measured?" chapter of the Strategy. It consists solely of a set of five outcome-based measures or indicators linked to source streams. There is insufficient implementation details in the Strategy (e.g. activities, outputs, intermediate outcomes) which likely hindered the development of a contemporary monitoring, evaluation and reporting framework. Other shortcomings of the monitoring and evaluation framework include the following:

- The performance indicators were not defined, even though they carry unique meanings that differ from their common or ordinary definitions. For example, the term 'recycling' as used in the Strategy encompasses all the waste recovered through recycling (i.e. manufacturing into the same or similar products), reprocessing (e.g. composting), stockpiling for future use, and energy recovery.

- Some stakeholders made a specific recommendation to consider ‘domestic kerbside waste’ as an additional indicator that could provide a more accurate measure of household waste recycling trends compared to the ‘MSW recycling rate’ which includes the waste from public litter bins, street sweepings, and clean-up activities.
- The validity and usefulness of regional recycling indicators are uncertain given the difficulties involved in tracking and reporting the flow of waste and recovered resources across the state (section 2.1.2).
- The Strategy’s baseline may have been distorted by waste generation associated with severe weather events during FY2013, as well as by waste imported into Queensland from other states (section 2.1.2). The baseline should be established using a suitable method that normalises the impacts of one off or special events such as major disaster waste generation, interstate waste, and other seasonal variations in waste generation such as large amounts of green waste generated during exceptionally wet years.

In view of these short-comings, the Strategy requires a more comprehensive and robust monitoring and evaluation framework. In parallel, the waste data framework could be further enhanced to ensure that the information collected to support monitoring and evaluation of the Strategy is normalised, accurate and relevant.

3.5 Communication of the Strategy

7. The release and implementation of the Strategy may not have been communicated well to all stakeholders

Several stakeholders questioned the validity of the Strategy, citing a lack of awareness of the Strategy.

In terms of general communication during implementation the Strategy, some stakeholders cited the need for more strategic communication from government on the benefits of waste management to businesses and the manufacturing sector in terms of improving resource efficiency, productivity and competitiveness.

3.6 Adequacy of the Strategy settings going forward

8. The industry-led Strategy lacks effective measures to reverse the current negative trends and to achieve the waste reduction, resource recovery and landfill disposal targets

The available data suggests that the amount of solid waste generated per person is increasing (9.1% over 8 years), while the overall resource recovery rate has virtually stalled over the same period (1.3% increase over 8 years). The Strategy does not identify specific interventions or incentives to address these negative trends. For example, there are no incentives to reduce statewide waste generation and drive resource recovery, to overcome the barriers of scale and distance associated with resource recovery in remote areas, to encourage greater household participation in kerbside recycling, or to encourage investment in resource recovery infrastructure.

Incentives for resource recovery

- The lack of incentives under the Strategy compounded by an uncertain policy environment was a recurring issue raised by stakeholders. Industry stakeholders indicated that the repeal of the Queensland landfill levy in July 2012—seven months after its introduction—undermined investor confidence and created a barrier to future infrastructure investments. For example, several operators established C&D waste recycling facilities when the landfill levy was rolled out, only to scale back or abandon operations when the levy was repealed.
- There was a strong call from stakeholders to: reintroduce a landfill levy to incentivise the waste and resource recovery industry and boost resource recovery rates; and introduce landfill bans for certain recoverable material streams to eliminate the disposal option, with regulations to limit the stockpiling of banned materials.

Viable markets for recovered resources

The combined (MSW, C&I, and C&D) recovery rate has only increased by 1.3% since FY2008, which suggests that there has been no appreciable change in the demand for secondary resources. Stakeholders called for greater leadership and support from the Queensland Government to develop the markets that would encourage the recovery, enhancement, marketing, and use of resources from waste. In particular, there was a strong call for:

- state and local government to adopt and enforce green procurement practices that mandate, or set targets for the use of secondary resources in government projects and operations
- developing local markets in close proximity to the recovered resources, particularly in remote areas, which would reduce prohibitive transportation costs for both the waste and the recovered resource.

- market development to be supported by landfill bans to eliminate the cheap disposal option, and regulations to limit stockpiling of banned materials. Organic waste, tyres, mattresses and glass were given as examples of waste types which would benefit from stronger government-led market development.

Waste management and resource recovery infrastructure capacity

In 2015, Arcadis Australia Pacific (Arcadis) was engaged by the former EHP to undertake a comprehensive assessment of waste infrastructure capacity across Queensland, including the capacity that would be required to meet the Strategy's resource recovery targets.

The findings of the assessment indicate that several regions will require significant additional resource recovery infrastructure to meet the targets for MSW, C&I and C&D recycling. Whilst DES has commenced the process to develop a statewide infrastructure plan, there is an obvious lack of measures in the Strategy to address this critical infrastructure gap, for example through financing and incentive mechanisms, or through raising the profile of waste infrastructure priorities under the State Infrastructure Plan.⁶

Regional and remote issues

Councils in the remote region of Queensland typically dispose of more waste to landfill, recover less resources from waste, offer fewer waste management services, and are confronted by litter and illegal dumping when compared to SEQ and regional centres. While the Strategy recognises the importance of regional development, it lacks the interventions to address these disparities and the underlying challenges faced by these councils, including:

- Significant distances to markets for recovered resources
- Difficult road conditions with limited accessibility in the wet season
- Limited availability of parts and skills for operating and maintaining waste infrastructure and equipment
- In the case of the Torres Strait Islands, quarantine restrictions on the southward movement of goods (including recyclables) to the mainland
- Small dispersed populations with limited financial resources
- Poor infrastructure and equipment for waste management.

9. The Strategy lacks effective interventions to reverse the current waste disposal trends

The amount of waste per capita going to landfill increased by 2.2% since FY2008 and by 5% since FY2013, partly due to: increased importation of waste into Queensland from other Australian jurisdictions (interstate waste); continuous improvement in compliance monitoring and enforcement by state and local governments resulting in more waste entering the lawful waste management system; and continuous improvements in the accuracy of data measurement (for example through the increasing use of landfill weighbridges).

The Strategy does not identify specific interventions or a credible pathway to achieve the 2024 target of reducing landfilled waste to 3.97 million tonnes. Because the amount of waste going to landfill has increased since 2013, achieving the 2024 target of 3.97 million tonnes would require the amount of waste landfilled in FY2016 to be reduced by approximately 20%. In order to address this widening gap, a range of regulatory, economic, social and other incentives and disincentives must be identified and evaluated.

Interstate waste

On average, more than 465,000 tonnes per year of interstate waste were received by Queensland's landfills between 2014 and 2016, accounting for 5.4% of the reported general waste total (Table 3). While the majority of this waste is directed to a few facilities in SEQ where it provides an additional source of revenue for waste operators, it also consumes landfill capacity that may shorten the operating lifetime of existing facilities.

The majority of stakeholders felt that more needed to be done to discourage interstate waste, and in this respect called for the reintroduction of a landfill levy. Conversely, one stakeholder viewed interstate waste as an economic and jobs opportunity for the waste industry and felt that interstate waste should be encouraged.

In August 2017, the Queensland Government launched an independent investigation into the transport of waste into Queensland, to understand the financial, economic and regulatory drivers that are giving rise to the transport of waste into Queensland.

⁶ Department of Infrastructure, Local Government and Planning 2016, *State Infrastructure Plan Part A: Strategy* <<http://www.dilgp.qld.gov.au/resources/plan/sip/sip-part-a.pdf>> accessed 7 August 2017.

Table 3: Interstate waste disposal in Queensland

Parameter	2014	2015	2016	3-yr Average
Total general waste reported in Queensland (tonnes)	8,364,369	8,439,043	9,165,361	8,656,258
Interstate waste received (tonnes)	477,000	353,000	566,000	465,333
Interstate waste (as % of total general waste)	5.7%	4.2%	6.2%	5.4%

4 Summary

The purpose of the Strategy was to improve resource recovery and waste management through shared responsibility. However, progress under the Strategy has been slow and in some cases regressive. Progress has also been hindered by the lack of clearly articulated strategic actions or direction for Queensland. Moreover, the heavy reliance on implementation through voluntary action plans, which did not eventuate, impeded the Strategy's success.

Although the Strategy has been useful in guiding the business of DES, it has not been widely embraced by other stakeholders, nor has it been supported by appropriate policy instruments to drive resource recovery. The key findings of the review are summarised below.

- 1. The industry-led development of the Strategy relied on a consensus approach and resulted in a Strategy that did not provide the necessary clarity and implementation details.** The result is a strategy that lacks depth and breadth to effect substantial improvements in waste management and resource recovery.
- 2. Key elements of the strategic framework are not aligned and require further clarity.** For example, the Strategy's title includes a major but undefined concept of 'resource productivity' that does not connect with the other elements of the Strategy; the vision does not align with the targets; the targets may not be sufficiently ambitious; and further clarity around priority wastes is required.
- 3. The Strategy misses the opportunity to take advantage of potential synergies with other major sector strategies and plans.** The potential synergies and opportunities between the Strategy and other sector strategies (some of which were developed after the release of the Strategy) have not been explored.
- 4. The implementation of the Strategy was hindered when action plans did not eventuate as intended.** The lack of mandatory actions and commitments in the Strategy meant that there was little implementation of the Strategy when voluntary action plans were not developed as intended. Moreover, the cycle of developing multiple voluntary action plans as intended could consume significant time and resources of the Queensland Government.
- 5. There is no formal mechanism in place to provide implementation oversight and to support coordination and engagement with stakeholders.** Although the Strategy was developed using an industry-led approach with a strong emphasis on shared responsibility, DES is solely responsible for implementation oversight.
- 6. The Strategy lacks a formal monitoring, evaluation and reporting framework.**
- 7. The release and implementation of the Strategy may not have been communicated well to all Stakeholders.** Several industry stakeholders were uncertain about the official status of the Strategy. Specific communication issues were also identified which suggested a potential breakdown in communication of the objectives of the strategy between state and local governments.
- 8. The industry-led Strategy lacks effective measures to reverse the current negative trends and to achieve the waste reduction and resource recovery targets.** The available data indicates that the solid waste generation and landfill disposal rates are increasing, whilst the resource recovery rate has stalled over the last eight years. There are no incentives identified to reduce statewide waste generation, to overcome the barriers of scale and distance associated with resource recovery in remote areas, to encourage greater household participation in kerbside recycling, or to encourage industry to invest in resource recovery.
- 9. The Strategy lacks effective interventions to reverse the current waste disposal trends and to achieve the waste disposal targets.** The amount of waste landfilled per capita increased by 2.2% since FY2008 and by 5% since FY2013. The proportion of interstate waste received has also increased in the last year. The Strategy does not identify specific interventions or a credible pathway to reverse these trends and achieve the 2024 target of reducing landfilled waste to 85% of FY2013 levels.

5 Recommendations

In light of the key findings, DES recommends that the Strategy be replaced with a new long-term strategy developed in consultation with stakeholders. The replacement strategy should articulate concrete actions, roles, and responsibilities for relevant stakeholders to improve waste and resource recovery performance in Queensland. Furthermore, the following specific recommendations, at times informed by the approach used in other jurisdictions (Appendix 4), should be considered and explored in greater depth during the process to develop the strategy.

1. The Queensland Government should take the lead in developing the new waste strategy with advisory and technical support from diverse stakeholder groups as necessary.
2. Evaluate the full range of policy tools available to divert waste from landfill into higher order resource recovery, drawing where appropriate on successful instruments used in other Australian and international jurisdictions, such as market-based, regulatory, fiscal, social and other instruments that provide the desired incentives.
3. Establish a contemporary strategic framework to ensure alignment and links between the individual elements. Ensure that terms and concepts used in the strategy are defined in plain English.
4. Ensure greater integration and linkages between the next waste strategy and other whole-of-government policy settings and priorities including, for example, the Reef 2050 Long-term Sustainability Plan, the Queensland Climate Adaptation Strategy, the Queensland Climate Transition Strategy, and the Advance Queensland Biofutures 10-year Roadmap and Action Plan.
5. Include time-bound, high-level strategic actions in the strategy that commit stakeholders to act and that provide a mandate for the development of action (implementation) plans. In addition to the plans already commenced (infrastructure plan, plastic pollution reduction plan), the following priority implementation plans should be considered:
 - Waste and resource recovery data framework- this should seek to ensure the collection and availability of standardised, accurate, and relevant data in the immediate and longer-term, to support ongoing monitoring of the state's waste strategy. This could include, for example, measures to improve the rigour around data collection.
 - Waste education plan, which would contribute to a statewide coordinated approach to waste and resource recovery education programs including littering and illegal dumping. In this regard, Victoria's approach to developing a Waste Education Strategy could prove insightful.
6. Develop a whole-of-government action plan that demonstrates 'leadership-by-example' in resource efficiency. This could also serve as a template for other sectors/organisations.
7. Establish a high-level advisory group to advise on the implementation of the strategy. The advisory group should ideally comprise of representatives from state and local governments and the waste and resource recovery industry.
8. Develop a monitoring, evaluation and reporting framework for the strategy to ensure that the progress towards achieving the goals, objectives and activities of strategy can be reliably and consistently tracked and reported. As part of this framework:
 - Select performance indicators that better reflect the intent and scope of the indicator (e.g. 'waste reported' rather than 'waste generated', and 'recovery rate' rather than 'recycling rate'). Define indicators in plain English and provide guidance on their measurement
 - establish and calculate a robust baseline for the strategy in a way that isolates the effects of disaster waste, interstate waste, and seasonal variations such as fluctuations in green waste
 - develop performance indicators and targets subject to data availability, including for domestic kerbside waste (e.g. kerbside disposal amount), and for specific waste streams (e.g. green waste recovery rate, and concrete recovery rate).
9. Evaluate benefits from aligning the strategy development and review cycle.
10. Develop a communication and engagement framework to underpin the strategy and improve messaging and communication with various stakeholders on the development, release and implementation of the strategy. This should include exploring strategic approaches to improve and maintain good relations between DES, councils and industry on waste and resource recovery, and in particular around compliance enforcement. This may

include strengthening (and perhaps regularising) meaningful and strategic engagement with existing groups such as the South East Queensland Council of Mayors, and the Local Government Association of Queensland.

11. Develop a 'market development plan' to stimulate the demand for recovered resources. This could include measures to develop minimum standards for recovered resources and products containing them, and to mandate the use of recovered resources in public projects.
12. Develop a regional collaboration framework that identifies tailored solutions to the unique challenges and barriers of regional and remote Queensland. The framework should explore regional approaches to implementing policies, infrastructure and asset planning, capacity building and other initiatives.

Appendix 1: Stakeholders consulted

The following stakeholders were consulted to help inform the review report.

Sector	Stakeholder consulted
State government	Aboriginal and Torres Strait Islander Partnerships Environment and Heritage Protection Fire and Emergency Services Health Housing and Public Works Infrastructure, Local Government and Planning Natural Resources and Mines Premier and Cabinet Transport and Main Roads Treasury
Local government	Local Government Association of Queensland
Waste and recycling industry	Australian Council of Recycling Waste Recycling industry Association Qld Inc. Australian Organics Recyclers Association Waste Management Association of Australia
Resources sector	Queensland Resources Council
Agriculture	Queensland Farmers Federation
Community environment sector	Boomerang Alliance
Business	Chamber of Commerce and Industry Queensland

Appendix 2: Written submissions on the draft review report

Written submissions from the following submitters were received during public consultations on the *Transforming Queensland's Recycling and Waste Industry—Directions Paper*.

Academic Institutions

Institute of Future Environments (IFE), Queensland
University of Technology

Environmental & community interest groups

Boomerang Alliance
Environmental Defenders Office
Gecko Environment Council Assoc. Inc
GIVIT
Queensland Conservation Council
Redlands 2030
Sunshine Coast Environmental Council (SCEC)
Wide Bay Burnett Environment Council
Wildlife Protection Society of Queensland

Individuals

Debra Bambrook
Gary Duffy
Ray Ison
Georgia Liussi
Mic & Lynette
K. O'Brien & Craig Myers (Zero Waste Ipswich)
Rowan Rafferty

Industry - Consulting

GCS Consulting
Full Circle Advisory
GHD
Mike Haywood
MRA Consulting Group

Industry - Others

All Energy Pty Ltd
Baxter Healthcare
BMI Group
Caltex (Private and Confidential)
HQPlantations
Kal Tire
Lantrak
Rio Tinto
Pacific National (Confidential information)

Industry - Peak Body

Australian Council of Recycling (ACOR)
Australian Industrial Ecology Network (AIEN)
Australian Landfill Owners Association (ALOA)
Australian Sustainable Business Group
Australian Tyre Recyclers Association
Bioenergy Australia
Commerce and Industry Queensland (CCIQ)
Consult Australia
Demolition Industry Association
Green Building Council Australia
Housing Industry Association
Master Builders Queensland
National Waste and Recycling Industry Council
News Media Works
Property Council of Australia
Queensland Farmers Federation
Queensland Resources Council
Queensland Tourism Industry Council
Timber Queensland
Tyre Stewardship Australia
Waste Management Association of Australia (WMAA)
Waste Recycling Industry Association

Industry - Waste

Aerochamber Pty Ltd
Byrne Resources Group
Bio-waste Solutions
Cleanaway
Handy in Waste Services & Skip Bins Brisbane Group
Hitachi Zosen Inova Australia
J.J. Richards & Sons Pty Ltd
Lemura Sand Co Pty Ltd (submission prepared by RPS Group)
Licella
Orora
Soil Cyclers
Tellus
SUEZ
Veolia
Visy

Local Government

Banana Shire Council
Brisbane City Council
Bundaberg Regional Council
Burdekin Shire Council
Cairns Regional Council
Charters Towers Regional Council
City of Gold Coast
Douglas Shire Council
Goondiwindi Regional Council
Hinchinbrook Shire Council
Ipswich City Council
Logan City Council
Mackay Regional Council
Mareeba Shire Council
Moreton Bay Regional Council
Noosa Council
North Burnett Regional Council
Redland City Council

Rockhampton Regional Council
Tablelands Regional Council
Toowoomba Regional Council
Townsville City Council
South Burnett Regional Council
Sunshine Coast Council
Western Downs Regional Council

Local Government Peak Body

FNQ Regional Organisation of Councils
Frazer Coast Regional Council
Local Government Association of Queensland
SEQ Council of Mayors

Other

Carina-Carindale Branch of the ALP
HWL Ebsworth acting for Mega Estate Pty Ltd
One submission of unknown origin

Appendix 3: Projects and policy initiatives

Objective 1: Driving cultural change

Love Queensland. Let's keep it clean (in progress). This [campaign](#) aims to create awareness of major littering and illegal dumping sites around the state. It also encourages Queenslanders to take responsibility for their litter and waste, and to report incidences of littering and illegal dumping.

Container refund scheme (CRS, in progress). Commencing on 1st July 2018, the CRS will provide for a 10 cent refund on eligible empty containers (sized between 150 ml and 3 litres inclusive) returned to an approved collection point. Certain exemptions will be provided, in line with the exemptions in other states (for example, containers for plain milk and wine, and large pure juice containers). The CRS should also contribute to the achievement of objective 3 - reuse, recovery and recycling.

Introduction of a plastic bag ban (in progress). The legislative ban, which will be effective as of 1st July 2018, targets lightweight single-use supermarket-style shopping bags effective. Options for voluntary action to reduce the use of heavier-weight 'department store' plastic bags will also be investigated. The plastic bag ban also contributes to the achievement of objective 2 - avoidance and minimisation.

Objective 2: Avoidance and minimisation

Government policy on balloon releases (in progress). Investigations have commenced on the development of a government policy to restrict the release of lighter-than-air (helium) balloons from state government-owned venues and events sponsored or coordinated by state government entities.

Objective 3: Reuse, recovery and recycling

Sugarcane fertiliser bag recycling trial (completed). A trial recycling program was conducted in North Queensland between September 2015 and February 2016 to demonstrate the feasibility of recycling sugarcane fertiliser bags. The trial was managed by Farm Waste Recovery, with support from the former EHP, regional councils, fertiliser manufacturers—Incitec Pivot Limited and Impact Fertilisers—and the peak industry body for Australian sugar growers (CANEGROWERS). As at December 2016, more than 700 tonnes of used fertiliser bags (enough to manufacture 3,500 park benches) had been collected from 23 sites and employment opportunities created for seven staff.

Organic waste recycling trial (completed). The City of the Gold Coast estimates that food waste from its hospitality sector accounts for about 50% of the 39,000 tonnes of food waste generated on the Gold Coast annually. In early 2016, the former EHP partnered with the City of the Gold Coast to pilot the collection and recycling of commercial food waste with a view to establishing a city-wide collection scheme and improving organic waste management on the Gold Coast ahead of the 2018 Commonwealth Games.

Emergency lighting batteries stewardship (in progress). The emergency lighting battery pilot project commenced in mid-2015 and seeks to develop a voluntary product stewardship program to increase the recycling rate of end-of-life emergency lighting batteries in Queensland. The pilot project is implemented in partnership with the Lighting Council Australia and complements national efforts to develop a national handheld battery product stewardship scheme for hazardous and rechargeable batteries.

Power tool battery recycling trial (completed). This pilot program, funded by the former EHP and managed by the Australian Battery Recycling Initiative, trialled the collection of power tool batteries (less than 500 grams) to help inform the development of a national rechargeable handheld battery program. More than 500kg of batteries were returned to participating hardware stores in the Brisbane City Council area over 9 months, and a further 1000kg of stockpiled batteries were collected for recycling from the service centre of one hardware store.

Tyre recycling demonstration project (in progress). This partnership between the Department of Transport and Main Roads and the Australian Road Research Board seeks to investigate the feasibility of increasing the use of crumbed rubber modified (CRM) binder from end-of-life tyres in road applications such as spray seals and asphalt. This initiative supports the national voluntary tyre product stewardship scheme, which is focused on the recovery and recycling of tyres.

National market development study for end-of-life tyres (in progress). Queensland is co-leading a project with the Victorian Government and in partnership with Western Australia, New South Wales and Tyre Stewardship

Australia to prepare a national market development strategy for used tyres. The strategy is intended to map out actions for short, medium and long-term prioritisation of market development opportunities. These actions are expected to reduce reliance on export markets, and strengthen domestic tyre recycling capacity in Australia.

Coffee cup recycling trial (completed). This 20-day Brisbane-based trial resulted in the collection of 4,296 disposable coffee cups in the Brisbane City Council Green Square where approximately 700 people work. The information will be used to help develop a national business case to attract investment into recycling this waste stream (either by recycling into new plastic and paper products, or in energy recovery).

Biofutures initiative (in progress). The Queensland Government's [Biofutures 10-year Roadmap and Action Plan](#) (Biofutures Roadmap) includes strategies and actions to achieve its vision for a \$1 billion sustainable and export-oriented industrial biotechnology and bioproducts sector attracting significant international investment, creating regional, high-value and knowledge intensive-jobs. Under the Biofutures Roadmap, a review of wastes in Queensland that may be suitable for diversion from disposal to higher-order and more sustainable uses has been completed. A further investigation into the policy and market development opportunities to encourage re-use of waste currently going to landfill was also conducted in 2017. The outputs of these actions will help to facilitate and attract investment in the resource recovery sector.

Objective 4: Management, treatment and disposal

Regulated waste framework review (in progress). This review aims to introduce a regulated waste classification system that reflects the link between the waste and the potential risk to human health and the environment. Four regulated waste categories are proposed (in order of decreasing risk): category 1, category 2, category 3, and the not regulated waste category.

Waste-related environmentally relevant activities (ERA) framework review (in progress). The review aims to develop a modern framework for regulating waste-related ERAs that better reflects current waste management practices and the environmental risks associated with each activity. It also seeks to identify opportunities for improved waste management and resource recovery, industry growth and, where appropriate, facilitate the use of new and innovative technologies.

End of waste framework (EoW) (in progress). The EoW framework provides the means by which a waste can be reclassified into a resource, allowing it to be used for other purposes. As a resource, the material would be considered the same as other non-waste resources and would not be controlled as a waste. This is intended to encourage diversion of potential resources from landfill and into new uses.

Online waste tracking (completed). This online waste tracking system was introduced to facilitate rapid completion (by industry) and analysis (by DES) of waste transport certificates that track the movement of trackable wastes (schedule 2E of the Environmental Protection Regulation 2008). The online system enables an equitable fee charging regime, reduces the administrative burden on DES involved in processing paper-based tracking certificates, and provides more timely access to waste tracking information for compliance investigation purposes.

Landfill disposal bans (in progress). A 2014 cost-benefit analysis of the implementation of landfill disposal bans in Queensland identified that introducing a landfill ban for sorted concrete, tyres and MSW green materials would be feasible on the basis that it would result in a net economic benefit over a 10-year period. Additional work is being completed to evaluate the potential impacts of a legislative ban on the waste materials.

Queensland Waste Infrastructure Project (in progress). This project seeks firstly to improve understanding of waste flows and existing waste and resource recovery infrastructure across the state, and secondly to develop a series of long-range waste infrastructure plans for Queensland's regions to ensure sufficient infrastructure capacity to support the Strategy targets. A key outcome of this project to date is an [interactive map](#) of licensed waste facilities that are open to the public.

Operation TORA (in progress). Implemented by the Waste Industry Compliance Investigation Taskforce, Operation TORA is a coordinated compliance program to stamp out unlicensed waste management operators in Queensland. Between August 2015 and January 2017, Operation TORA conducted 207 investigations into alleged unlicensed waste operators which resulted in 69 enforcement outcomes.

Appendix 4: Waste management strategies in other jurisdictions

Overview

The following waste management strategies were analysed to identify distinguishing or notable features that could help to inform this review:

- New South Wales' Waste and Resource Recovery Strategy 2014-2021 (NSW strategy)
- South Australia's Waste Strategy 2015-2020 (SA strategy)
- The Tasmanian Waste and Resource Management Strategy (TAS strategy)
- Victoria's Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP)
- Western Australia Waste Strategy: Creating the Right Environment (WA strategy)

The jurisdictional analysis did not include a detailed analysis of the specific targets or strategic directions for each state. This is because each state's strategic settings are influenced by a range of factors which may not be applicable to the Queensland context, including the way in which waste is classified, the accuracy and availability of data, delivery of specific election commitments, and other political and socio-economic drivers.

To help provide context to the chapter, a comparison of the resource recovery rates of the jurisdictions analysed is provided in Table 4. Based on this comparison, Queensland is the joint lowest performer (tied with WA) for resource recovery overall.

Jurisdictional findings

The following noteworthy features were identified from the jurisdictional analysis. Where appropriate, these features have been used to help inform possible approaches to address the overall findings of the review.

- The objectives/goals of most strategies are typically around the themes of behaviour change, waste avoidance and reduction, resource recovery, disposal, and landfill diversion. The TAS strategy is the only one that identifies a reduction in greenhouse gas emissions as one of its main objectives.
- Most strategies specify numerical targets to be achieved by specific dates. Used to a lesser extent are qualitative targets that describe the desired trend without committing to a numerical target (e.g. 'reduce the rate of waste generation per capita'), and targets benchmarked against another indicator (e.g. 'the growth in waste generation rate is less than the population growth rate' as used in the ACT). The use of qualitative targets are useful when there is a lack of data to support the establishment of numerical targets.
- NSW is unique among jurisdictions in that the governing law requires an expert reference group to set the NSW strategy targets.
- All of the strategies analysed specify high-level strategic actions or directions and allow the implementation details (e.g. specific actions, timeframes and responsibilities) to be specified in annual business plans (Victoria and WA), thematic implementation plans such as for illegal dumping or organic waste (Victoria and NSW), and regional plans (Victoria).
- Victoria and Tasmania are the only states that appear to have formal mechanisms in place to oversee implementation of their strategies. Oversight for strategy implementation is provided by waste and resource recovery groups consisting of multiple councils in Victoria, and the multi-stakeholder Waste Advisory Committee in Tasmania.

Table 4: Comparison of 2014-15 resource recovery rates in Australian jurisdictions⁷

Rank	MSW recovery rate [1]	C&I recovery rate [1]	C&D recovery rate [1,2]	Overall recovery rate [1]
1	SA: 71%	SA: 84%	NSW: 74%	SA: 77%
2	NSW: 59%	VIC: 72%	Vic: 73%	VIC: 69%
3	VIC: 53%	WA: 63%	SA: 72%	NSW: 64%
4	WA: 42%	TAS: 59%	Qld: 47%	TAS: 50%
5	QLD: 41%	NSW: 56%	WA: 42%	QLD: 48%
6	TAS: 38%	QLD: 56%	TAS: 1%	WA: 48%

Note: [1] Recovery rate = (energy recovery + recycling) / generation; [2] The C&I and Overall recovery rates exclude fly ash

- Victoria's strategic framework is extensive and underpinned by the following:
 - seven 10-year Regional Waste and Resource Recovery Implementation Plans developed by statutory Waste and Resource Recovery Groups
 - the Victorian Waste Education Strategy, which seeks to provide a statewide coordinated approach to waste and resource recovery education programs
 - the Victorian Market Development Strategy for Recovered Resources, which identifies interventions to address the imbalance in the supply and demand for recovered resources\the Victorian Organics Resource Recovery Strategy, which aims to establish a vibrant recycled organics market
 - a 5-year engagement strategy that develops the key messages and engagement mechanisms to ensure the right stakeholders are engaged appropriately throughout implementation of the SWRRIP.
- The NSW strategic framework is also underpinned by several supporting strategies, including:
 - Changing behaviour Together: NSW Waste Less, Recycle More education strategy 2016-21
 - Draft Litter Prevention Strategy
 - NSW Illegal Dumping Strategy
 - Waste and Resource Recovery Infrastructure Strategy.

⁷ Blue Environment Pty Ltd and Randell Environmental Consulting 2017, *Australian National Waste Report 2016*, Department of the Environment and Energy, Canberra.