

Transforming Queensland's Recycling and Waste Industry

Directions Paper

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Introduction

On 20 March 2018, the Queensland Government announced the development of a comprehensive waste management strategy underpinned by a waste disposal levy to increase recycling and recovery and create new jobs.

This paper outlines the directions for Queensland's new resource recovery, recycling and waste management strategy that will support the Government's *Advance Queensland* agenda by promoting growth and jobs in the resource recovery and recycling industry. The strategy will provide the waste and resource recovery sector with the policy certainty that has been lacking, resulting in significant under investment in new and expanded resource recovery infrastructure in Queensland.

Key principles

Queensland's new waste management strategy will:

- Attract industry investment and innovation
- Create new jobs for our communities
- Have no direct impact on Queensland households
- Deliver long-term value to our environment
- Move Queensland towards a circular economy

The centrepiece of the strategy will be a waste disposal levy. An avoidable charge, the waste disposal levy will be instrumental in changing waste management behaviour and practices in Queensland. It will reduce the incentive to dispose of waste to landfill, make material that is currently disposed of more attractive to be diverted as a vital feedstock for the state's bio-futures industries and create new industries that manufacture products using recycled content. A crucial element of the levy design will be measures that avoid direct cost impacts to households as a result of the levy.

The waste disposal levy will provide a much needed source of funding for programs to support local government, business and industry in reducing the amount of waste they generate and increase recycling, and for the development of new markets and products. A portion of the funds raised through the levy will also be put towards programs to enhance the natural environment that all Queenslanders enjoy.

Importantly, the levy will also provide a disincentive to the practice of long-distance transport of waste for disposal in Queensland. Queensland is currently the only mainland state that does not have a levy on the disposal of waste to landfill. The introduction of a levy was recommended in the independent *Investigation into the Transport of Waste into Queensland* report commissioned by the Premier in August 2017.

Part A of this paper outlines the underlying directions for the waste disposal levy, including the proposed model and the levy's role within the strategy.

Part B of this paper outlines the direction the Government will take to reinvigorate Queensland's waste strategy. The development of a new waste strategy will fulfil the statutory requirement under the *Waste Reduction and Recycling Act 2011* (the Act). The final comprehensive waste strategy will be released following the statutory consultation process required by the Act.

The strategy will also contain proposed regulatory and complementary measures, such as landfill disposal bans and product stewardship programs that will help reinforce the effect of the levy in reducing the amount of waste disposed to landfill.

The Department of Environment and Science (the department) has established a Recycling and Waste Management Stakeholder Advisory Group. The Advisory Group is comprised of peak body representatives from industry, local government and the housing and business sectors. The role of the Advisory Group is to:

- help shape the new strategy
- identify opportunities for industry and market development
- assist in the design of the waste disposal levy
- advise on potential companion measures to complement the strategy and levy
- advise on potential challenges and impediments that may pose barriers to improved practice, and offer solutions to overcome these challenges.

The development of the waste strategy will be informed not only through feedback and advice from the Advisory Group and as a result of public consultation, but also by waste data reports and commissioned reports.

Overall context

Queensland is a major under performer in resource recovery by both national and international standards and is the recipient of the largest quantities of interstate waste. Annual data reported to the Queensland Government between the 2007–08 and 2015–16 financial years demonstrates that Queensland’s recovery rate has remained virtually unchanged over this time and Queensland continues to have one of the lowest recycling rates of all jurisdictions.

The department estimates a 2016–17 recovery rate in Queensland of 44.5 per cent. This is more than 30 per cent lower than the best performing Australian jurisdiction - South Australia - at close to 80 per cent. To reach the national average recovery rate of 61 per cent, Queensland would need to recover an additional 1.5 million tonnes of waste, a 38 per cent increase on the volume currently recovered.

Nevertheless, there is considerable innovation in Queensland’s waste and resource recovery industry with many companies ready to make infrastructure investments to grow the industry under the right leadership and policy directions from Government.

It is widely recognised that the current *Queensland Waste Avoidance and Resource Productivity Strategy (2014–2024)* did not deliver opportunities for the resource recovery sector to grow and prosper. While the current waste strategy establishes the vision and targets for waste management and resource recovery in Queensland, it has failed to deliver the necessary policy and regulatory certainty and stability to inspire new investment, market opportunities and job growth for Queensland. This is largely because the strategy is unfunded, relies upon the development of voluntary sectoral action plans and is not underpinned by a market mechanism to encourage behavioural change.

The disposal of waste into landfill without an incentive to recover resources is a lost economic opportunity and creates avoidable environmental problems such as additional greenhouse gas emissions and the need for long-term management of contaminated land.

A 2009 Access Economics report indicates that every 10,000 tonnes of waste disposed into landfill supports 2.8 full time jobs, whereas if the same 10,000 tonnes of waste were recycled, 9.2 jobs would be supported.

Greater resource recovery and recycling will significantly contribute to the Advance Queensland vision to establish a biofutures industry that will attract investment and create regional jobs by securing the feedstock these industries need. Growing the resource recovery sector in Queensland will directly contribute to the new high skilled jobs that the *Advance Queensland* agenda is seeking to deliver.

The Government’s *Queensland Biofutures 10-Year Roadmap and Action Plan* aims to develop a \$1 billion biofutures industry by 2026. Waste provides a valuable source of feedstock to the industry and the market signal provided by a waste levy would generate additional availability and certainty.

Queensland has a unique opportunity to learn from international experiences and build on the gains in other Australian jurisdictions in order to improve practices through modern infrastructure, technology and innovation and provide sustainable and viable domestic and local processing and market development.

In 2017, the Queensland Government commissioned Queensland Treasury Corporation (QTC) to undertake an assessment of economic opportunities for Queensland's waste industry. This assessment noted that Queensland's current waste management framework is not supported by effective mechanisms to overcome poor recovery rates. The absence of a waste levy is cited by QTC as an important cause of investment uncertainty in the sector. With greater investment in resource recovery infrastructure, QTC estimates 3000 direct jobs could be created.

QTC reviewed other Australian and international jurisdictions and found that best practice waste management requires an overarching policy framework to support the right investments, develop desired outcomes for the sector, sustain rigorous monitoring and compliance activities and promote best practice to government, business and the community.

QTC found that a waste disposal levy is a foundational element in any jurisdiction with a high recovery rate. A levy has the dual purpose of:

1. providing a market signal to reduce waste generation and increase recovery
2. providing a source of funding for reinvestment into the resource recovery and waste sector and programs to help reduce the amount of waste to landfill.

The QTC report also observed that an overarching strategic approach to waste management and resource recovery has significant direct and indirect benefits including:

1. developing a regional approach to planning and funding
2. reducing greenhouse gas emissions associated with disposal
3. reducing the unproductive use of land by providing a more strategic approach to the identification of the need of new landfill sites
4. developing high quality data collection to enable more informed decision making
5. establishing key performance indicators (KPIs) to provide for transparent monitoring and reporting.

A key observation from the QTC report is that levies in other jurisdictions in Australia and across the world are applied as part of a comprehensive waste strategy. This includes a clear statement of objectives and a framework for how the levy revenue would be used to promote investment in new and expanded recycling infrastructure, market development opportunities, and behaviour change that reduces waste generation.

Current initiatives

Current waste management actions and initiatives have focused on mitigating the impact of contaminants on the environment, providing regulatory reform for industry to stimulate future infrastructure investment and jobs growth, and an ongoing commitment to improving the recovery of priority waste streams.

Collaboration and partnerships with business and industry that deliver on-ground initiatives have been vital in achieving successful outcomes to date.

Both at the national and state levels, a range of wastes have been identified as priority issues. Key projects have more recently targeted the most problematic wastes with a high level of environmental impact and community concern, especially those for which collection and recycling presents domestic business opportunities.

The Queensland Government is currently implementing a number of initiatives that complement and support the strategic direction of improved waste management and resource recovery in Queensland. These initiatives include:

- the introduction of a ban on the supply of single-use lightweight plastic shopping bags on 1 July 2018
- the introduction of a Container Refund Scheme on 1 November 2018
- regulatory reform of the regulated waste and waste-related Environmentally Relevant Activity frameworks
- strategic partnerships to deliver outcomes to improve management of organic wastes
- development of a Plastic Pollution Reduction Plan.

PART A— Waste disposal levy

A waste disposal levy was first introduced in December 2011. The levy of \$35.00 per tonne applied to all general waste disposed of to landfill, with the exception of MSW (Municipal Solid Waste—household waste collected by or under contract to local government). Some exemptions also applied for charity waste (on application) and disaster management waste. A discounted levy rate also applied to the disposal of recycling residuals.

A levy zone comprised of 34 local government areas was established. Public and private sector landfills within the levy zone were required to report on the waste received for disposal and remit levy payments to the department. To avoid the transport of waste for disposal to cheaper or lower standard landfills in other parts of the state, the levy also applied to waste that was generated within the levy zone and disposed of outside the levy zone.

In 2012, the former Queensland Government (2012–2015) repealed the levy. In a two-stage approach, the levy was changed to \$0 through regulation in July 2012 with amendments to the Act to remove the levy provisions occurring at the end of 2012.

During the seven months the levy was in place, \$42.9 million was collected. Levy revenue was directed to three funds: the Waste and Recycling Program Fund, the Local Government Sustainable Futures Fund (administered by the Local Government Association of Queensland (LGAQ)) and an Environment Fund.

Advance funding was provided to assist local government install weighbridges and other infrastructure at landfill facilities. This funding ceased when the levy was terminated.

The levy received considerable criticism and backlash from the business sector because household waste was excluded from the levy.

The removal of the levy in 2012, combined with the inability of the New South Wales (NSW) Government to restrict the long distance transport of its waste, has resulted in more than 900,000 tonnes of interstate waste being reported as received in Queensland in 2016–17.



Waste investigation

In August 2017, the Queensland Government commissioned the Honourable Peter Lyons QC, former Supreme Court Judge, to undertake an investigation into the transport of waste into Queensland.

The investigation found there is a real prospect that the quantity of waste from interstate will continue to increase under the current policy framework.

The key recommendation of the investigation is that the Government consider implementing a general levy on all waste disposed of at landfill in Queensland.

On 20 March 2018, the Government released the report and its response to the recommendations, including the development of a new waste strategy and re-introduction of the waste disposal levy.

The Queensland Government supports the re-introduction of a waste disposal levy on the condition there is no direct cost impact on households.

The investigation considered the comparable regulatory frameworks across Australia and internationally. The report also recommended that Government continue discussions with other jurisdictions on a national framework to reduce the unnecessary transportation of waste within Australia.

In response to the investigation report, industry feedback and recommendations, and international and national best practice waste management experience, the Queensland Government intends to re-introduce a waste disposal levy that will be operated along similar lines to the previous levy with some important modifications.

The introduction of a waste disposal levy will:

- act as a price signal that encourages waste avoidance and resource recovery behaviour, and discourages disposal as the first option
- provide an adequate source of funding for programs to assist local government, business and industry to establish better resource recovery practices, improve overall waste management practices and sustain Queensland's natural environment
- provide certainty and security of feedstocks for advanced technologies and processing
- facilitate industry investment in resource recovery infrastructure.

To be effective and engender business, industry and community confidence, a waste disposal levy must be applied in the context of the new comprehensive waste strategy described in Part B.

The Recycling and Waste Management Stakeholder Advisory Group will assist in refining the design of the waste disposal levy. A key design factor for the levy is ensuring it incorporates measures to avoid direct cost impacts to Queensland households.

A significant communications and education program will ensure Queenslanders better understand the benefits of the levy including where the levy revenue will be spent and how it will operate to meet long-term goals and targets to improve waste management and resource recovery practices.

The way forward

A waste disposal levy will come into effect in the first quarter of 2019

Significant preparatory work is required to implement the new levy. The legislative and regulatory framework, including a detailed levy model, needs to be drafted, consulted on with stakeholders and progressed through the required approval processes.

Additionally, landfill infrastructure, such as weighbridges and security fencing, needs to be made 'levy-ready'. Industry and government information technology systems need to be redeveloped and made able to 'interface' with each other so waste can be measured and the levy owed to be calculated. Staff training and broader awareness and education needs to be developed and delivered.

Stakeholders will be consulted throughout this process.



The levy will apply to all major waste streams

The waste disposal levy will apply to all general waste streams—MSW, Commercial and Industrial (C&I) waste and Construction and Demolition (C&D) waste—and regulated wastes that originate from a defined levy zone or are disposed to landfills within that zone.

Exemptions and concessions for specific waste streams are discussed later in this Directions Paper.

The levy rate will commence at \$70 per tonne for all general waste streams, with higher rates for regulated waste, and increase by \$5 per year

A waste disposal levy needs to be set at a level that is going to drive waste diversion and facilitate resource recovery, without stifling business and economic growth.

Levies in other states vary considerably, with NSW having the highest levy at \$138.20 per tonne. This creates a significant incentive for the transport of waste to lower cost facilities.

A levy rate set at a minimum of \$70.00 per tonne for the disposal of all general wastes will ensure that an appropriate level of disincentive is provided to move waste from disposal to higher order and value-add uses.

This rate has been suggested for the following reasons:

1. It avoids the high rate in the Sydney metropolitan area of \$138.20. A high levy rate would create a shock to the market and the current resource recovery infrastructure capacity may struggle to meet high demand to divert material from landfill disposal. However, \$70 per tonne is still considered to be high enough to send an appropriate price signal to the market and will act as an immediate incentive to divert heavier materials, such as concrete, from landfill.
2. It is broadly in line with the rates in Victoria and South Australia, and would provide a strong market signal to divert waste from landfill without the market shock of a rate in line with NSW.
3. It provides a disincentive to transport a significant proportion of interstate waste to Queensland.

Table 1: Waste disposal levy rates

Waste classification	Levy rate (per tonne)
Regulated waste: Category 1	\$150
Regulated waste: Category 2	\$100
General waste: C&D, C&I and MSW	\$70

Regulated wastes are those wastes, as defined in the Environmental Protection Regulation 2008, whose characteristics mean that they have the potential to pose an increased risk to the environment if they are not managed appropriately. Some of these wastes also have high resource recovery value and there are disposal alternatives available. A higher levy on these wastes will help to address some of the cost imbalance between disposal and higher order recovery options.

Waste disposal levies in other states have annual increments that increase the levy rate over time. The Queensland levy rates will increment at \$5 per year over the next four years to continue to incentivise change in material recovery, recycling and waste disposal behaviours and practices.

Higher gate fees in NSW may maintain the incentive to transport some waste to Queensland. Gate fees (excluding the levy rate) are determined by a combination of market factors and reflect impacts including site management and disposal costs, competition and relative scarcity of landfill space in proximity to Sydney. This is why the new waste management strategy is also proposing companion measures, such as landfill disposal bans, to further reduce incentives for the transport of interstate waste.

Further work will be informed through the Stakeholder Advisory Group and public consultation processes to develop the detailed levy model.

The levy will have no direct impact on households

On average, a Queensland household disposes approximately 700 kilograms of waste each year through the 'red top' kerbside bin service. The amount of waste disposed increases to approximately 800 kilograms each year when 'self-haul' waste is included.

While it is proposed that the levy will apply equally across all general waste streams, the Queensland Government has committed to avoiding direct costs to households. This will be achieved in the following manner:

- The Queensland Government will provide an annual advance on levy charges to those local councils that dispose of household MSW in the levy zone.
- The rate of the annual advance is proposed to be set at 105 per cent of the tonnage disposed of in the previous financial year multiplied by the current levy rate. The formula will be reviewed in future years.
- As an example, for a local council with 60,000 kerbside-serviced households, an annual average of 700kg of 'red top' bin waste per household and a levy rate of \$70 per tonne, this equates to an annual advance payment of around \$3 million.
- If the local council makes savings in the amount of household waste that is disposed of—e.g. through the establishment of a new green waste collection service—any derived savings would be retained by the council.
- This provides local government with enough money to offset its levy costs, avoid passing on costs to households, as well as providing additional funds to invest in measures to recover MSW and encourage the progressive reduction of disposal to landfill.
- Over time, it would be anticipated that the relative proportion of payment would reduce as councils re-invest the funds to achieve greater efficiencies and diversion.

This option is preferred to ensure an incentive for improving recycling and waste practices applies to household waste while meeting the Government's commitment to avoid the direct costs of the levy being borne by households.

To exclude household waste from the levy would undermine the objectives of transforming Queensland's resource recovery, recycling and waste management industry as many household waste streams, such as organics, will have significant recycling value, particularly for emerging biofutures industries.

Excluding MSW would also undermine the overall success of the waste strategy as it puts all the burden on small business and other industry sectors.

Research into waste disposal levies in other jurisdictions across Australia and globally indicates that no other scheme excludes MSW.

The levy will apply to a levy zone that covers the populated areas of Queensland

A designated levy zone where the levy will apply is proposed. This recognises in part the special needs of remote Queensland communities and removes the administrative cost of collecting, remitting and reporting against the levy. In order to avoid communities outside the levy zone becoming ‘dumping grounds’, waste that is brought into the zone where the levy does not apply will still incur the levy if this waste is disposed of. It is proposed that this also include interstate waste if this creates an incentive to transport waste beyond South East Queensland. Further work will determine the infrastructure and regulatory requirements to apply the levy to this waste and this may require further infrastructure at non-levy zone landfill sites.

The introduction of a levy will create regional job opportunities through the attraction of investment and creation of new markets for recycled material. A waste disposal levy also creates a much needed source of funding for regional waste infrastructure programs that can assist in providing new or enhanced facilities to improve waste management practices across the state.

Figure 1 provides a map of the proposed levy zone local government areas. Thirty-eight local government areas out of a total of 77 will be included in the levy zone, which covers over 90 per cent of Queensland’s population.

Figure 1: Levy zone by local government area

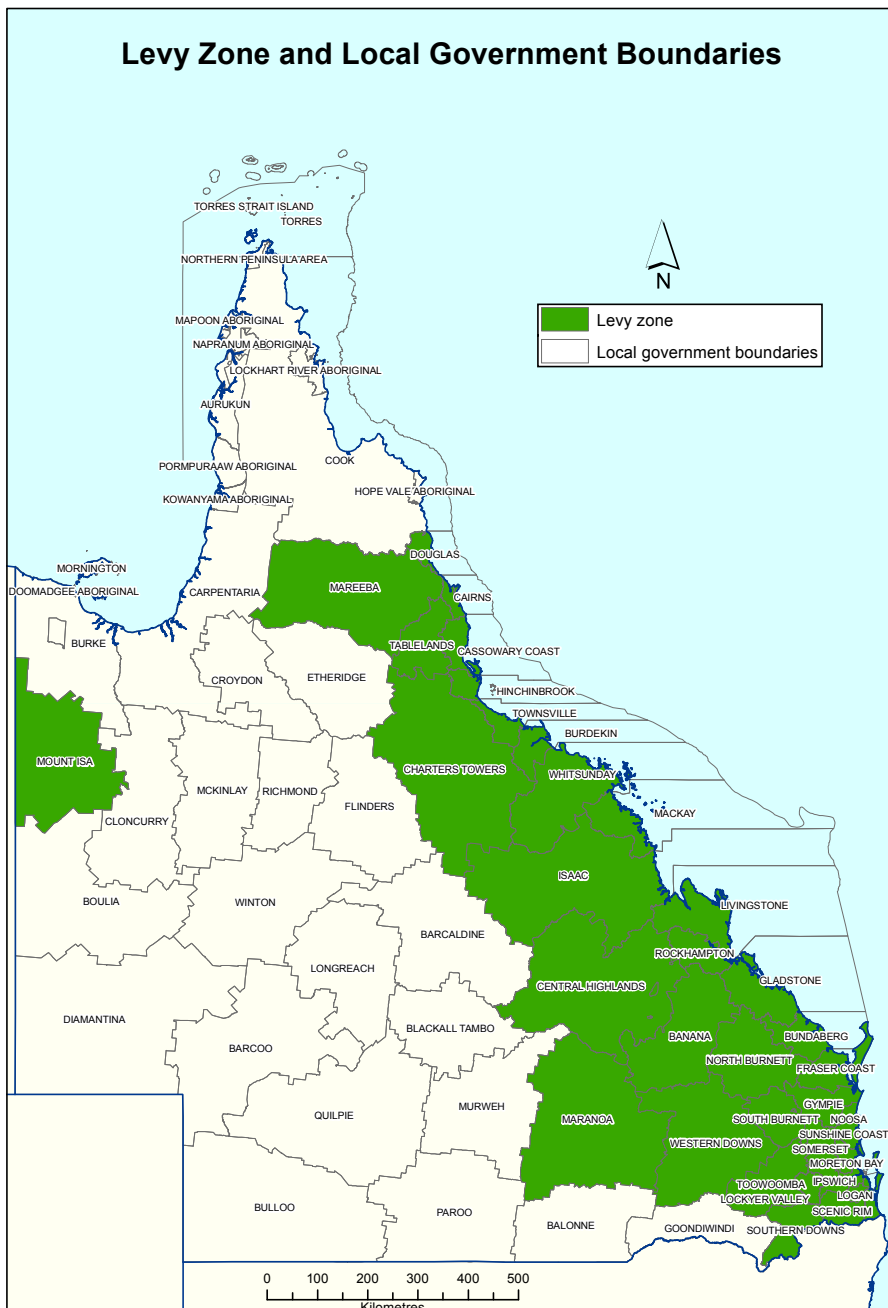


Table 2 contains detail on how the levy zone will operate.

Table 2: Application of the levy zone

Waste generated in	Waste disposed in	Levy applied
Levy zone	Levy zone	Levy zone rate applicable to waste type
Levy zone	Rest of Queensland	Levy zone rate applicable to waste type
Rest of Queensland	Levy zone	Levy zone rate applicable to waste type
Rest of Queensland	Rest of Queensland	None
Other states	Queensland	Levy zone rate applicable to waste type

Clear exemptions to the levy will be identified

To be effective the levy will need to apply to all wastes. However, it is recognised that special circumstances may require some wastes to be exempt, including:

- wastes resulting from a declared natural disaster such as a cyclone, bushfire or flood
- wastes where disposal is required by a regulation, such as asbestos, quarantine waste or fire ant infested material
- litter and illegally dumped waste collected by a local council, community group or other organised participant involved in an initiative such as Clean Up Australia Day
- waste that has been received by charities as part of donations or that has been left in and around charity donation bins and stores.

Exemptions are likely to be conditional and for the most part will require an application.

Exemption example—charity donation waste

Exemptions for ‘charity waste’ may apply to a charitable recycling organisation that:

- is a not for profit group
- is a constituted charity organisation in accordance with the *Collections Act 1966*
- has obtained Deductible Gift Recipient status from the Australian Taxation Office and
- actively and consistently operates a recycling and reuse program for the purpose of emergency assistance and or the support of the charitable purpose of the organisation.

The exemption would apply to levyable waste that has been received as a donation but that cannot practicably be used for the purposes of the organisation. The exemption would not apply to waste that is generated as part of the normal business operation of the organisation.

A charitable organisation may apply for a ‘long term’ exemption (e.g. for waste disposed of over a number of years) or on an as-needs basis. The charitable organisation would be issued with an exemption certificate and the exemption certificate code provided to the nominated disposal site or sites.

Targeted consultation will be undertaken with specific sectors such as charities (through the peak body the National Association of Charitable Recycling Organisations) to design a suitable and appropriate arrangement.

The exemptions system will be reviewed regularly and changes made as appropriate. Exempt wastes and conditions around exemptions will be contained in regulation and guidance material.

Other wastes will be specifically excluded from the application of the levy, including:

- wastes that are disposed of on the site where they are produced, including, for example, red mud, fly ash, feedlot manures and waste rock from mining activities, and
- materials that are segregated for recovery not disposal at a landfill site.

Residual waste resulting from legitimate recycling activities will have a concessional levy rate

The waste disposal levy will also recognise that legitimate resource recovery and recycling activities still result in residual waste streams that may need to be landfilled, by providing for a discounted rate or an exemption.

This rate may increase over time in order to encourage greater efficiencies in resource recovery practices and opportunities for additional resource recovery to be explored.

Token recycling efforts in order to avoid the levy will be prevented by regulation by clearly defining a resource recovery activity and the eligibility criteria for the discounted rate.

Operators of waste disposal facilities will collect the levy

The operator of a waste disposal facility will be required to collect the levy when the waste is presented to the facility for disposal. A waste disposal facility may be operated by, or on behalf of, a local government or by a private company. The operator of the facility is required to remit the amount of levy owed, at a timing, and through a process, to be determined in legislation.

Operators will also be required to submit data in relation to the waste received at the site for disposal and what was received and segregated for recovery.

The levy will have a firm legislative base

Legislation is required to introduce the levy. It will make provision for application of the levy and provide penalties for non-compliance. Non-compliance issues may be in relation to failure to collect the levy, failure to remit the levy payment or correct levy payment by the due date, and failure to keep records.

While the legislation will establish the levy head of power and framework, regulation will set the levy amount, the administrative requirements for collection and disbursement, any future increases and the levy collection zone. This will also include rules around stockpiling so this cannot be used as a long-term way to avoid the levy. The legislation will allow for reviews of the levy amount, levy differentiation and application.

Levy proceeds will go to waste, environmental and community program funding

Revenue from the levy will be available to fund levy administration, enhanced compliance and enforcement activities and improved data and reporting. It will also fund waste programs designed to achieve the strategy's waste reduction and resource recovery targets. Programs include statewide and industry-specific programs such as funding to help local government prepare and implement waste management plans, industry and market development, and grants and rebate schemes. These programs are essential for Queensland to meet the strategy's targets.

Local government

Local government will be a beneficiary of the proposed levy with funding available for activities. For example:

- waste disposal infrastructure upgrades
- education and awareness raising
- reducing greenhouse gas emissions from waste.

Individual councils will also benefit in the longer term as lower rates of disposal of waste to landfill will reduce council operating costs and extend the lifespan of local government landfills.

Small business and industry

Substantial business and industry funding will be available to assist businesses implement programs to help reduce the amount of waste that needs to be disposed of and to identify and develop waste avoidance and resource efficiency practices. The expansion of existing initiatives such as *ecoBiz* will provide a channel for funding and the development of targeted and sectoral programs.

The levy will also provide the ability to create grants and funding programs such as low-interest green loans that can assist the resource recovery sector to upgrade infrastructure and develop new markets for recovered materials.

Levy funds will be used to stimulate further capital investment for expanded and innovative technologies that process residual waste and support local processing facilities in regional areas. This will help attract private sector investment and boost the development of best practice infrastructure to manage waste in Queensland.

The environment

Levy funds will also be used to fund new programs, such as incentives to business to reduce their energy, waste and water consumption.

The community

Surplus funds from the levy will benefit the entire Queensland community by supporting our schools, hospitals, essential infrastructure and other front-line services.



PART B—Resource recovery, recycling and waste management strategy

In 2017, the department conducted a review of the current *Queensland Waste Avoidance and Resource Productivity Strategy (2014–2024)*, as required every three years under the Act. The current strategy is based on a voluntary approach and, while there are stated objectives, targets and priorities, these are not supported by a coordinated program of work or market-based mechanisms for behaviour change.

Discussions as part of the statutory review process confirmed that Queensland should replace the current waste strategy with a new strategy that contains strong targets, clear market-based incentives and companion measures to reduce waste and increase resource recovery and recycling.

Stakeholder feedback also highlighted the commonly held view that the current strategy has not provided an effective platform to drive improved practice nor incentivised industry investment in new infrastructure or expansion of existing capacity. A consistent theme raised during consultation was that a new waste strategy must provide the overall strategic direction for waste management in Queensland. It must clearly prioritise actions and identify companion measures such as landfill disposal bans, infrastructure development, pricing signals and programs to assist in greater resource recovery and landfill diversion.

The 2018 *Queensland Waste Avoidance and Resource Productivity Strategy 2014-2024 Draft review report* is attached to this paper (Appendix 1). Submissions on this report and the proposals contained in this directions paper are invited to help inform the development of a new resource recovery and waste management strategy.

The department will develop this new strategy in consultation with the Stakeholder Advisory Group, the waste and resource recovery industry, local government, business and industry, environmental groups and the wider community.

The new strategy will focus on opportunities for economic and market development and job growth, and the readiness and capacity of business and industry and the resource recovery sector to take action to transform.

The priorities will also reflect current and emerging national and state priorities and the new strategy will reflect the need to build harmonisation across states and territories in key areas.

A new norm, which includes changing and volatile commodities market and international policies that reflect a growing concern about the quality of recovered materials that are received, will impact on the development of the new strategy and companion measures.

One such policy, the China National Sword, has caused significant concern in the industry. In 2013, China introduced Operation Green Fence, which placed some import restrictions on low-quality bales of material being shipped to China.

In July 2017, China advised that further quality restrictions were being introduced for low grades of recovered mixed paper, plastics and some metals with quality standards of less than 5 per cent contamination being enforced. And in January 2018, under the National Sword Policy, China tightened these specifications further, reducing the level of allowable contamination to 0.5 per cent.

While the National Sword Policy does not ban the import of mixed plastics or mixed paper and cardboard, due to changes over time to sorting equipment and practices, the recent tightening of contamination levels makes meeting the export quality standards extremely difficult for a number of facilities.

Despite the tighter restrictions, the Chinese Government is encouraging legitimate quality recycling and allows processed (pelletised) single-stream plastics to be imported under permit. Several companies have successfully applied for an import permit while other companies responded to the earlier signals from the Chinese Government and sourced other international markets.

The new strategy needs to recognise these changes and the challenges that they present, while at the same time identifying the local and domestic opportunities that can be created from the implementation of a future-looking and comprehensive approach.

Clear objectives and targets will be developed to ensure performance and progress can be measured, monitored and evaluated.

New regulatory measures will be developed to support the goals and objectives of the strategy. These include landfill disposal bans and product stewardship programs.

These regulatory measures will work alongside a waste disposal levy to drive higher rates of diversion from landfill. Where markets and infrastructure are in place to process the diverted material, regulatory measures such as landfill disposal bans will be incorporated into the strategy.

The application of product stewardship programs at a state and national level can also be explored to support the goals and objectives of the strategy.

Programs will be developed to support priority areas and help direct reinvestment of levy revenue to:

- facilitate waste avoidance, landfill diversion and recycling activities
- enhance economic development opportunities led by building advanced processing and technology capacity
- facilitate and encourage waste infrastructure investment in key regional areas
- promote regional market and job development opportunities
- support targeted compliance and education.

The key directions underpinning the new strategy are set out in the following pages.



The way forward

Queensland will progressively move toward a ‘circular economy’ to realise resource recovery opportunities and grow recycling sector investment and jobs

The global economy is transforming towards a more circular economy. Queensland’s economy is predominantly linear, which means that things are typically made from virgin raw materials, used, and then thrown away as part of a ‘take-make-dispose system’ commonly referred to as ‘cradle-to-grave’. The majority of these end-of-life products end up in landfill.

In contrast, a circular economy is one in which products and materials keep circulating within the economy at their highest value for as long as possible, through re-use, recycling, remanufacturing, delivering products as services and sharing.

Moving to a circular economy encourages improved resource efficiency, and protects businesses from fluctuating and sometimes volatile commodity prices, thus providing a more stable operating environment for manufacturers, retailers and consumers.

Businesses operating under the circular economy model create the opportunity of new revenue streams, markets and product lines, which help to further economic growth across the state and align with the *Advanced Queensland* strategy.

The circular economy is predicted to have significant net benefits for states and cities through additional revenue opportunities and the delivery of new jobs in the areas of re-use, remanufacturing and materials innovation.

New performance targets

New performance targets are necessary to drive a substantial reduction in the amount of waste disposed to landfill in Queensland. Targets are proposed as follows:

- 20 per cent avoidable waste disposed of to landfill by 2030
- 10 per cent avoidable waste disposed of to landfill by 2040
- Zero avoidable waste disposed of to landfill by 2050.

Under the circular economy model, wastes that are disposed of to landfill or incinerated (with or without energy recovery) are considered a material loss. The strategy will drive recognition of the material value in our waste, and targets and actions will be set accordingly.

In 2016–17, more than 50 per cent of Queensland’s municipal, commercial and industrial, and construction and demolition wastes (collectively termed “headline wastes” in the *Recycling and waste in Queensland 2017* report) was disposed to landfill.

The new strategy will identify what needs to be done where and by when to work towards Queensland becoming a zero avoidable net waste economy by 2050. Zero avoidable net waste equates to eliminating all waste where it is technologically, environmentally and economically practicable to do so.

This target is intended to align with the *Pathways to a clean growth economy—Queensland Climate Transition Strategy* which seeks to achieve zero net emissions by 2050 and acknowledges the role that waste has to play in achieving Queensland’s climate targets.

The mid-period targets set for 2030 and 2040 will ensure that the strategy’s progress can be tracked and performance monitored.

Additional targets to measure the strategy’s objectives and specific priorities will be developed in consultation with key stakeholders. Examples include increased resource recovery and recycling and decreased per capita waste generation. In the first instance, these targets will be designed to ensure Queensland is on par with the best performing states by the end of the next decade.

Queensland will pursue landfill disposal bans on selected waste streams where proven feasible

The department has already undertaken preliminary work to identify waste streams that may be feasible in the future for landfill disposal bans. These include tyres, e-waste and agvet chemical containers. Landfill disposal bans on these waste streams will support the objectives of existing product stewardship programs that already have well-established collection and recovery networks.

Bans on the disposal of other waste streams including concrete and green waste could support further industry development to process these materials and the increased uptake of recycled content products.

Further economic modelling will be undertaken to demonstrate the economic feasibility and benefits of implementing landfill disposal bans for other waste streams.

Queensland will only introduce disposal bans where markets exist and will allow sufficient transition time for infrastructure to be put in place before commencement of the bans. The feasibility of implementing staged bans across the state for certain end-of-life products will also be considered as part of this work.

Queensland will adopt product stewardships schemes where national action fails and community demand is evident

Product stewardship approaches are being identified as a means for the generators of the products that end up as waste to take responsibility for what happens to those products at the end of their useful life.

Many product stewardship schemes across Australia are currently focused on take-back and recycling. A number of these schemes have been operating successfully for some time. There is now a significant chance to move the stewardship discussion to the next level to explore the opportunities presented around product re-design and lifecycle responsibility.

Queensland is taking the lead by implementing a product stewardship approach to the Container Refund Scheme.

Queensland will continue to support national action supporting new product stewardship programs such as the development of a scheme for photovoltaic systems that is currently under discussion and is prepared to lead the development of national schemes where national action is lacking, or where state based action is better suited. For example, Queensland has taken a leadership role in the development of a national product stewardship program for end-of-life handheld rechargeable batteries and has piloted a manufacturer-led sugarcane fertiliser bag stewardship program which has since expanded to include other fertiliser bags.

Queensland will only consider state based product stewardship schemes where there is no prospect of, or case for, a national solution and there is evidence that the Queensland community demands action.



The Queensland Government will explore the development of waste-to-energy

Waste-to-energy is a complex and diverse topic area. There are a range of technological solutions that are already available commercially, and a host of new and emerging innovative technologies that may require support to continue their development.

There is also a significant body of literature on waste-to-energy in reducing the amount of waste that goes to landfill, and the role that waste-to-energy plays in a transition towards a more circular economy.

To align with the implementation of the levy, the department will develop a policy to promote the safe and sustainable delivery of waste-to-energy. This will be developed in collaboration with key stakeholders across government and industry.

Queensland will take on board the lessons learned from other jurisdictions and seek to ensure the most appropriate types of waste are used for waste-to-energy.

Fundamentally, the introduction of waste-to-energy cannot simply be a replacement for landfill, but can be a complementary measure in a society that achieves significantly higher rates of recycling.

The policy will seek to place limits on the use of certain types of waste as feedstock for waste-to-energy technologies. Waste-to-energy will be appropriate for residual wastes where the best outcome is to recover remaining energy from the material. Residual wastes have no economically, socially or environmentally viable recovery or recycling options.

The policy will also consider the potential environmental impacts, including odour and air quality concerns, and planning considerations of the various waste-to-energy technologies.

The Queensland Government will continue to engage nationally on interjurisdictional waste issues and take a lead national role where necessary

It is recognised that many businesses, industries and waste and resource recovery companies operate across the national market and streamlining regulatory requirements, definitions and reporting will create a more efficient and less administratively burdensome operating environment.

There are significant opportunities to develop economies of scale to overcome some of the market development challenges faced by individual states and territories. For example, the Queensland and Victorian governments are leading work to implement the national market development strategy for end-of-life tyres. In this way, existing programs, markets and activities can be leveraged to create a national driver for stronger landfill diversion and advanced on-shore processing and markets for waste derived products.

Queensland will also continue to work with other jurisdictions on measures to harmonise waste definitions, data arrangements and compliance activities.

While it is acknowledged that Queensland has one of the worst resource recovery and recycling rates of the Australian jurisdictions, the Government also recognises the need to demonstrate leadership to drive national harmonisation and markets that will ultimately help to improve Queensland's performance.

There is significant opportunity to build on the initiatives that are currently under way, including leading work with national retailers to explore options to reduce the supply of heavier 'department store-style' plastic bags and leading the development of a national product stewardship scheme for handheld rechargeable batteries.

Queensland has chosen to take the lead in areas where there is:

- significant community support (such as plastic bags)
- an identified gap in the national agenda (batteries)
- a clear identified direct state interest (tyres).

Queensland will develop a best practice performance monitoring system underpinned by a comprehensive waste database

Accurate data provides a strong foundation for business and policy decisions about waste management and helps to educate and inform the behaviour and choices within our communities. Quality data also helps local government and the waste and resource recovery industry identify material flows and commercial opportunities to manage waste in new and innovative ways.

The primary methods for measuring and monitoring the performance of the strategy are the annual report on waste disposal and recycling, and the triennial statutory review period for the waste management strategy required under the Act.

Compiled by the department, the annual report and statutory review provide analyses and insights into waste disposal, recycling and resource recovery. Information is provided by a number of entities, including local government, landfill and incinerator operators, recyclers, organic processors and waste handlers. Solid baseline data has been collected since the Act was implemented in 2011 to enable accurate point-in-time and trend analyses to be undertaken.

In addition, Queensland's waste and resource recovery data contributes to Queensland's *State of the Environment* report, the Commonwealth Government's national waste and national greenhouse gas emissions reporting, as well as reports for relevant international agreements. Maintaining consistency with other states and territories and the Australian Government in the way data is defined and collected will remain a priority to ensure the reliability, repeatability and comparability of Queensland's waste and resource recovery performance.

The web-based Queensland Waste Data System is the primary tool used by the department to collect the data for the annual report.

The use of this web-based tool will continue and technological advances, stakeholder feedback and industry changes will be incorporated to monitor and confirm the performance of the waste and resource recovery industry.

In addition, waste characterisation, litter and illegal dumping, waste infrastructure and other issue-specific surveys are also undertaken to gather objective, attitudinal and behavioural change information that informs policy development.

Recognising the intrinsic economic drivers in waste management, there are opportunities to identify and incorporate new indicators related to employment and the economic value of the waste and resource recovery sector. Exploring these could be a focus of future work programs.



Next steps

The *Transforming Queensland's Recycling and Waste Industry—Directions Paper* has been prepared to guide the development of the Queensland Government's new strategy that will, in part, help to support the *Advance Queensland* and broader sustainability agendas.

The Recycling and Waste Management Stakeholder Advisory Group convened by the department will be invited to help shape the final form of the strategy and the underpinning levy.

Public input into this process is also sought and public submissions are invited on this paper.

Your input into the development of the new strategy will ensure opportunities and challenges can be identified to ensure the transformation and growth of Queensland's recycling and waste management industry.

Submissions are due by 5pm on Friday 29 June 2018.

Making a submission

Email: wastepolicy@des.qld.gov.au

Mail: Directions Paper
Strategic Environment and Waste Policy
Department of Environment and Science
GPO Box 2454
Brisbane Qld 4001

Appendix 1

Queensland Waste Avoidance and Resource Productivity
Strategy 2014–2024 Draft review report

**Queensland Waste Avoidance
and Resource Productivity
Strategy 2014–2024**
Draft review report

January 2018

Prepared by: Waste Policy and Legislation, Department of Environment and Science

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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 sets 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 is underpinned by five key principles, four objectives, several priorities, and several state-wide and regional targets to be achieved by 2024 (as shown in 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* (the 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 Act), to inform the development of a revised or new waste and resource recovery strategy for Queensland. This review, which covers the three-year period from 1 July 2013 to 30 June 2016, has 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 Consultation

This draft review report has been prepared by the Department of Environment and Science (the department) and is informed by preliminary consultation undertaken during March and April 2017 between the former EHP and other Queensland Government departments, waste generators, the waste and resource recovery industry, environment groups, and stakeholders, as identified in Appendix 1.

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 state-wide 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.

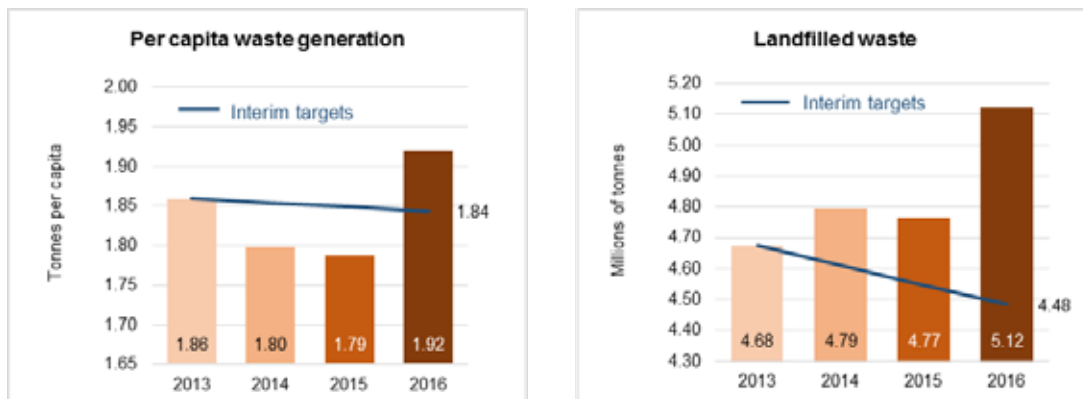


Figure 1: Progress in waste generation (left) and landfilled waste (right) (lower values are better)

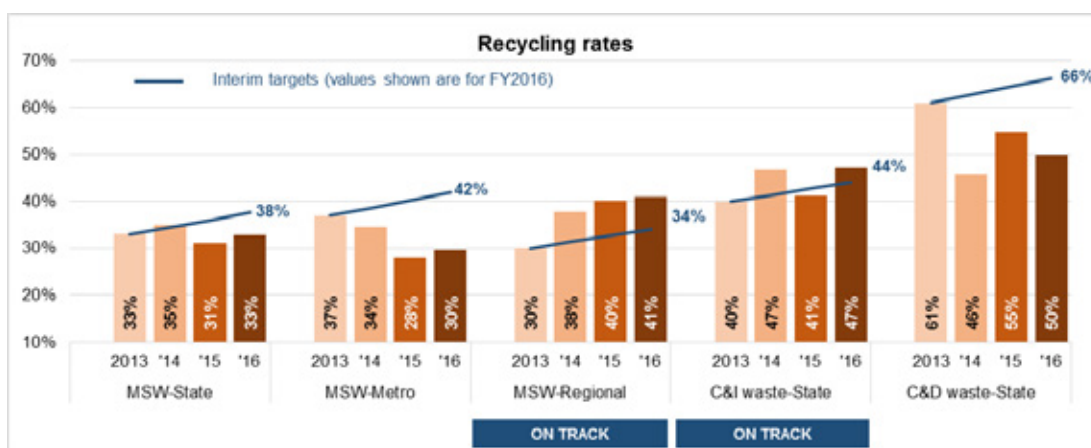


Figure 2: Progress in recycling rates between FY2013 and FY2016 (higher values are better)

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 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 the department by reporting entities designated under chapter 7 of the 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 the department. 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 the department, 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 influenced 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 per cent and 52 per cent respectively. 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 per cent of the littered items, while beverage containers were responsible for 41 per cent 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.

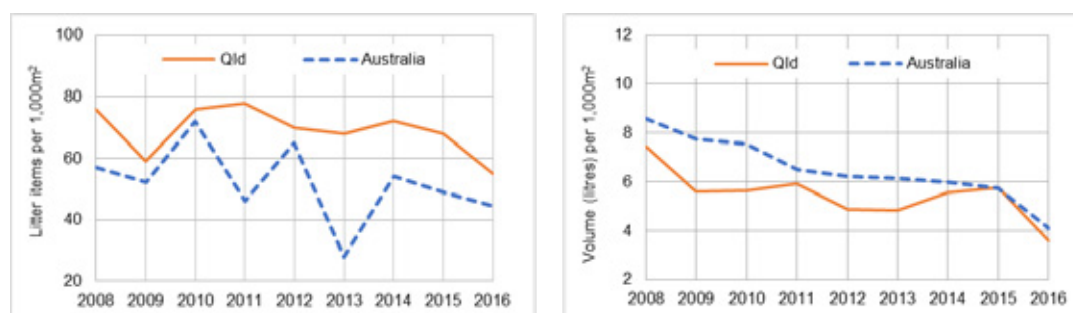


Figure 3: Litter in Queensland

2.3 Projects and policy initiatives

The department 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 2.

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 the department, 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 Act's 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.

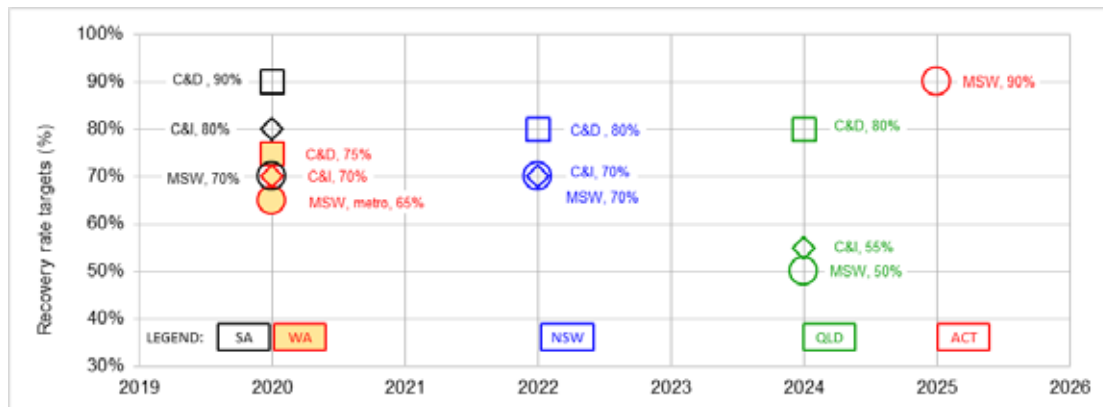


Figure 4: Comparison of resource recovery targets in several Australian jurisdictions

- (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 *Queensland Waste Avoidance and Resource Productivity Strategy 2014–2024* 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 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 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 Plan*³, which identifies marine debris and land-based sources of wastes as major reef threats
- the *Queensland Climate Adaption Strategy 2017-2030*⁴, which encourages integrating climate adaptation consideration into policies
- the *Queensland Climate Transition Strategy*⁵, 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

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>

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.

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, the department 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 the department and various stakeholders. Similar groups are often successfully established by the department 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 shortcomings, 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 per cent over eight years), while the overall resource recovery rate has virtually stalled over the same period (1.3 per cent increase over eight years). The Strategy does not identify specific interventions or incentives to address these negative trends. For example, there are no incentives to reduce state-wide 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 were 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 per cent 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 the department has commenced the process to develop a state-wide 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 has increased by 2.2 per cent since FY2008 and by 5 per cent 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 per cent. 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 per cent 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.

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.

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.

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 the department, 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, the department 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 state-wide 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 per cent since FY2008 and by 5 per cent 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 per cent of FY2013 levels.

5 Recommendations

In light of the key findings, the department 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 3), 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 state-wide 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 the department,

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 table identifies the stakeholders consulted during the preparation of this review report. The initial consultations were designed to enable collection of preliminary information to help inform the content of 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: 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 in 2018, the CRS will provide 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 1 July 2018, targets lightweight single-use supermarket-style shopping bags. 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 sugarcane 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 Gold Coast estimates that food waste from its hospitality sector accounts for about 50 per cent 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 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 nine 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 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 the department) 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 the department 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 3: 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:

- *NSW 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 State-wide Waste and Resource Recovery Infrastructure Plan* (SWRRIP)
- *Western Australian 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 state-wide 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 five-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 NSW Litter Prevention Strategy 2017-20*
 - *NSW Illegal Dumping Strategy 2017-21*
 - *Draft Waste and Resource Recovery Infrastructure Strategy 2017-2021*.

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

