

Waste



WA is increasingly avoiding and recycling waste, but much more needs to be done to achieve the state's waste reduction and recovery targets.



What IWA heard

During consultation on the draft strategy, stakeholders raised the need for stronger action to drive economy-wide transition to a circular economy. In response, content and recommendations have been amended to prioritise the legislative and regulatory reforms required to enable widespread adoption of circular economy principles in WA.

To provide greater certainty for planning and investing in modern waste and recycling infrastructure at scale, the waste and recycling industry sought clearer and faster time frames on the implementation of waste legislative and regulatory reforms to reposition waste as a resource and continue to develop markets. This has resulted in the addition of new sub-recommendations for a market development plan and reform roadmap, and the timing of relevant recommendations has been reconsidered.

The potential for the mining and resources sector to improve waste recovery was highlighted, which could also help build the scale and feasibility of regional recycling services and infrastructure in some areas. This is now reflected in amendments and a new sub-recommendation.

Waste management is one of society's most essential services, protecting our health and environment. However, approaches to managing waste are changing as the world moves towards a circular economy. Waste should no longer be seen as something worthless that is simply discarded in landfill. It is a resource with economic value that can be turned into something new. WA needs to progress policy and legislative reform and market development to create the conditions for a circular economy, and plan and invest more in infrastructure to meet the state's waste recycling and recovery needs.

Western Australians are increasingly recycling and minimising waste, but WA is falling well short of meeting targets to reduce and recover value and resources from its waste streams.¹ Much more must be done to achieve the state's vision for a sustainable, low-waste circular economy.²

The Australia-wide waste export bans announced in 2019 brought to public attention the significant amount of waste WA produces and the state's lack of capacity to meet waste management needs. WA lags behind South Australia (85%), Australian Capital Territory (79%), New South Wales (68%) and Victoria (68%) in its rate of resource recovery (62%).³ WA needs to ensure the necessary planning is done to modernise and invest in the services and infrastructure required to transition much faster to a circular economy.

Countries around the world are transforming their economies from a traditional take-make-use-dispose economic model into a circular economy (Figure 41).⁴

The circular model is based on the premise that all areas of the economy should be designing out waste and pollution, and continually reusing materials where possible. Not only does this reduce the impact on the environment and the amount of waste going to landfill, it also allows us to keep extracting value and resources from products after we have consumed them and helps achieve greenhouse gas reduction targets. New technologies and processes for waste and resource recovery, and increasing rates of processing and value-adding, will drive the need for new and additional circular economy waste infrastructure.

Put simply, WA must avoid, reduce and repurpose much more of the high volume of waste that we generate. The transition to a circular economy will spur innovation to turn waste into useable materials and products, require new knowledge and skills, and create new business and job opportunities across the economy.

Figure 41: Circular economy⁵



Facilitating and accelerating this transition requires technological and policy innovation as well as new infrastructure. The Australian Academy of Technology and Engineering's 2020 report, *Towards a waste free future*, concluded that technology and policy innovation are essential to overcoming existing economic and regulatory barriers, and that Australia's skills and social readiness for innovative solutions in the waste and resource recovery sector is high.⁶

The Commonwealth Scientific and Industrial Research Organisation's *National circular economy roadmap for plastics, glass, paper and tyres 2019* identified multiple pathways that need to be pursued simultaneously to drive this change.⁷

These include:

- improving product design, collection and sorting outcomes to design out waste and pollution while retaining the quality and value of materials and prevent material loss
- building capacity for reprocessing and manufacturing of recycled products, which also increases the ability to create wealth from waste domestically
- encouraging and facilitating market development to grow the circular economy, including boosting market demand for recycled products and products that contain recycled content
- harmonising standards, regulations and messaging across jurisdictions to provide consistency in governance and create sustainable materials management capability in Australia
- facilitating systemic change from linear to circular material supply chains that foster sustainable consumption and production.

The waste sector, communities, businesses and all levels of government have important roles to play in driving transition to a circular economy.

National frameworks are being implemented to support the transition to a circular economy and will consequently drive the requirement for adequate and improved waste and recycling infrastructure in WA. Frameworks such as the *National Waste Policy Action Plan 2019* and product stewardship schemes for televisions, computers, batteries and solar panels have been agreed to by state and territory governments, to be regulated under the national *Recycling and Waste Reduction Act 2020* (Cth).⁸ Importantly, these frameworks and associated actions and funding also aim to assist market development for waste-derived materials. It is expected that the Australian Government will begin to require the use of recycled content in infrastructure projects as a condition of funding to promote demand for waste-derived materials.

The WA Government's Waste Avoidance and Resource Recovery Strategy 2030 (WARRS 2030), released in 2018, guides the state's waste sector and sets out a suite of actions to avoid waste and move to a circular economy.⁹ WARRS 2030 is a robust strategy, reflecting international best practice and providing the context for IWA's waste infrastructure recommendations.



WARRS 2030 builds on WA's previous waste strategy, *Creating the right environment*, released in 2012. Both strategies set firm targets for waste avoidance, recovery and environmental protection across the 3 key waste streams: municipal solid waste, commercial and industrial waste, and construction and demolition waste. Table 3 shows the waste targets and WA's performance in achieving them.¹⁰ Significant improvement has been achieved in reuse of construction and demolition waste, but not enough progress has been made in avoidance and recovery of municipal solid waste and commercial and industrial waste. In some cases, reuse has even declined. Much more must be done to achieve WA's waste targets.

WARRS 2030 identifies a set of focus materials that, by weight, make up more than 90% of the waste generated in WA, and in which significant improvements must be made to reach the targets. They include:

- construction and demolition materials: concrete, asphalt, rubble, bricks, sand and clean fill
- organics: food organics and garden organics
- metals: steel, non-ferrous metals, packaging and containers
- paper and cardboard: office paper, newspaper and magazines
- glass: packaging and containers
- plastics: packaging and containers
- textiles: clothing and other fabric-based materials
- hazardous waste.

WARRS 2030 also sets out several actions to improve waste management and foster a circular economy in WA, such as investigating options to promote local markets for recycled products and developing better practice guidance and standards for waste-derived products.¹¹ It includes undertaking a strategic review of WA's waste infrastructure (including landfills) by 2020 to guide future infrastructure investment and establishing mechanisms including funding approaches to support investments in local infrastructure.¹² It also identifies the need to investigate and report on the application of the circular economy in WA.¹³

Current attitudes and behaviours about waste and waste-derived materials can be a significant barrier to achieving a circular economy.



Education and awareness-raising initiatives and policy and legislative settings play important roles in changing habits and adopting approaches to reduce and reuse waste. The Waste Levy is an important policy instrument that was established to improve waste recovery by increasing the cost of landfill disposal to make avoiding and recycling waste more economically attractive alternatives to landfill.¹⁴ Also, 25% of the funds generated from the Waste Levy are to be used on a range of waste and environmental initiatives.¹⁵ Review of the Waste Levy is necessary to ensure it continues to be an effective tool in diverting waste from landfill, improving recycling rates and driving behaviour change.

WA's geographic size, relative isolation and distance to markets add to the challenge of coordinating and providing services and infrastructure across the state. Low densities and long transport distances in regional areas make it difficult to achieve economies of scale to undertake recycling, and vast areas make it easier to illegally dump waste which reduces the amount available for recovery.

Table 3: Western Australia's performance in meeting WARRS 2030 waste targets

Year	Metro municipal solid waste	Major regional centres	Commercial and industrial	Construction and demolition	Statewide recovery rate	Per capita generation (kg per person)
2010-11	39%	-	28%	31%	31%	2,764
2011-12	39%	-	41%	38%	38%	2,658
2012-13	45%	-	45%	39%	40%	2,486
2013-14	41%	-	45%	38%	39%	2,659
2014-15	39%	30%	53%	42%	42%	2,452
2015-16	36%	31%	48%	64%	49%	2,029
2016-17	32%	28%	48%	77%	52%	1,787
2017-18	37%	28%	47%	75%	51%	1,769
2018-19	34%	29%	51%	81%	57%	1,852
2019-20	31%	28%	44%	81%	58%	2,168
State targets 2020	65%	50%	70%	75%	-	-
State targets 2025	67%	55%	75%	77%	70%	-
State targets 2030	70%	60%	80%	80%	75%	-

Notes: Figures from 2019-20 are from data collected under regulation 18C of the Waste Avoidance Resource Recovery Regulations. Figures before 2019-20 are from the Waste Authority's *Recycling activity in Western Australia* annual reports, except municipal solid waste performance (major regional centres) which is from the annual census of Western Australian local government waste and recycling services. Some historical data has been revised. The data presented here supersedes all previous versions. Excludes one major regional centre due to data verification issues.



A key challenge is building enough local demand for recycled products to underpin the commercial viability and growth of a domestic recycling industry, such as:

- new products made with recycled plastics
- electronics that can be reused or new products made with materials recovered from electronic waste
- construction materials that can be reused or new products made with recycled content
- compost made with recycled organic waste
- items that are difficult to recycle, including bulk wastes such as solar panels and furniture that can be reused.

Investment in research and development will be necessary to develop products, processes, technologies, and standards and specifications to build confidence in and markets for products with recycled content. Implementing the *Waste Data Strategy*, which is a supporting document of the WARRS 2030, will also be important to improve waste data collection and reporting.¹⁶ Providing a more granular understanding of material sources and flows will help identify opportunities to improve waste management performance and develop recycled products.

Landfills will continue to play an important role, even as WA transitions to a circular economy. WA has hundreds of landfills and the Auditor-General's 2020 report *Waste management – service delivery* notes that many are poorly managed, which impacts on the environment and the amount of waste recovered.¹⁷ Better practice guidelines and additional resourcing are needed to lift standards and undertake compliance enforcement.¹⁸

WARRS 2030 acknowledges that waste-to-energy plants have a narrow role as the least preferred alternative to disposal to landfill as they reduce the amount of waste available for recycling. Accordingly, WARRS 2030 contains a target to recover energy only from residual waste from 2020. As noted in the Waste Authority's position statement on waste-to-energy released in 2020, to maximise material recovery, energy recovery should only be used for residual waste once better practice source separation approaches

Improving waste management in remote Aboriginal communities and town-based reserves is needed to realise **environmental health, liveability and environmental benefits** and potentially create business and employment opportunities.

have been exhausted.¹⁹ This is also consistent with advice from the Environmental Protection Authority provided in its 2018 assessment report, *Report 1623 – waste-to-energy projects*, which made recommendations on restricting waste-to-energy feedstock to residual waste.²⁰

Ineffective waste management in many remote Aboriginal communities is a significant issue. Approximately 12,000 Aboriginal people live in 274 remote Aboriginal communities across WA.²¹ Waste management in these communities is often not adequately managed, for a range of reasons, such as poorly defined roles and responsibilities, difficulty in servicing isolated communities and lack of funding to provide effective services. In collaboration with Aboriginal communities, priority action is required to implement a sustainable waste management model that addresses impacts on the environment, and the liveability and public health of Aboriginal communities. In the Aboriginal cultural heritage, wellbeing and enterprise chapter, IWA has made a recommendation to clarify, as a priority, the roles and responsibilities of entities responsible for provision of municipal services, such as waste management, in remote Aboriginal communities and town-based reserves (see Recommendation 9). A collaborative approach to addressing this issue also has the potential to provide training, employment and business development opportunities for Aboriginal communities.

Governance

All levels of government, as well as the private sector, are involved in the waste sector (Figure 42). In WA the sector is regulated by the WA Government.

The *Waste Avoidance and Resource Recovery Act 2007* and the *Environmental Protection Act 1986* are the state's principal mechanisms for waste regulation. There are 3 WA Government entities responsible for waste management:

- Waste Authority, which provides advice to the Minister for Environment and is responsible for implementing the WARRS 2030 and the administration of the Waste Avoidance and Resource Recovery Account, which holds funds collected through the Waste Levy
- Department of Water and Environmental Regulation, which is responsible for implementing programs and policies under the direction of the Waste Authority and ensuring that priority actions in the WARRS 2030 action plans are undertaken
- Environmental Protection Authority, which is responsible for undertaking environmental impact assessments and processing works approvals and licences for waste facilities that are defined as prescribed premises under Schedule 1 of the *Environmental Protection Regulations 1987*.

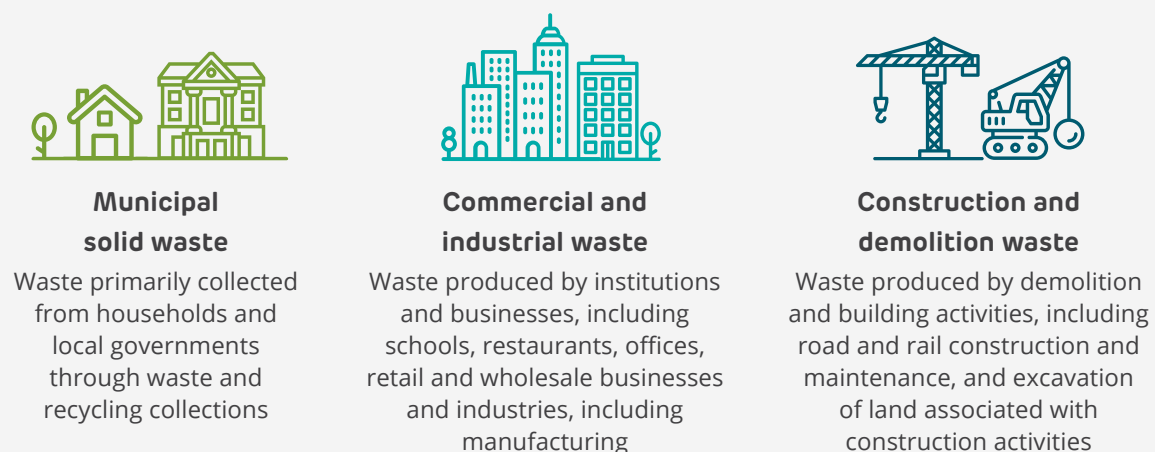
Local governments are responsible for collecting and managing municipal solid waste, either on a council-by-council basis or through a regional arrangement. The private sector provides waste management services and owns and operates much of the waste infrastructure across WA.

Figure 42: The waste sector

Three main entities



Waste is divided into 3 'streams'





Case study

Roads to Reuse pilot project

The Roads to Reuse program highlights the opportunity for state and local government and the private sector to use recycled products to support the state's recycling targets and transition to a circular economy.

Roads to Reuse supports the supply of recycled construction and demolition products that meet strict specifications to manage risks of contaminants, such as heavy metals and asbestos. Transport infrastructure projects, including road construction, present opportunities to procure and use significant amounts of recycled products, such as Roads to Reuse products.

The Waste Authority, Department of Water and Environmental Regulation and Main Roads WA, with support from the Department of Health and the Waste and Recycling Industry WA, successfully delivered the Roads to Reuse pilot project.²² The pilot used over 30,000 tonnes of recycled construction and demolition products in the Kwinana Freeway Northbound Widening project and Murdoch Drive Connection project.²³ Following the successful pilot, more than 50,000 additional tonnes were used by Main Roads WA prior to the end of 2020–21.

Under the program, material supplied must meet the Roads to Reuse product specification – recycled road base and recycled drainage rock – to ensure protection of human health and the environment.²⁴ Construction and demolition product recyclers are required to undertake rigorous sampling and testing to demonstrate

that the material meets the specification.²⁵ Independent audits of recyclers' processes and products provide additional assurance to purchasers.²⁶

Main Roads WA has found that Roads to Reuse material is strong and durable and reports time (and labour) savings during construction and potentially reduced transport impacts and costs due to recyclers being close to construction sites. Main Roads WA is also satisfied with the robust environmental assurance framework, including the independent audit, which provides consumers with confidence to use recycled products.

A number of major infrastructure projects are underway across WA, and several state agencies and government trading enterprises (GTEs) have made commitments to purchase recycled materials to develop recycling markets and support the state's waste targets. For example, DevelopmentWA has committed to producing waste management plans for projects with demolition works over \$1 million and development projects over \$5 million.²⁷ Main Roads WA has also committed to using over 200,000 tonnes of crushed recycled concrete on selected projects.²⁸





Recommendations

Waste Avoidance and Resource Recovery Strategy 2030

Expediting waste reforms and market development

The waste sector is highly regulated and government will need to progress a number of reforms to create the conditions necessary for community, government and business to transition to a circular economy. The government has several levers it can pull to drive change, such as waste legislation, procurement, planning, education programs, financial incentives, waste data collection and reporting, and local government waste plans.

This Strategy recommends expediting legislative and regulatory review and reforms to enable circular economy principles to be applied, such as:

- review of the *Waste Avoidance and Resource Recovery Act 2007* to reposition waste as a resource
- development of a waste-derived materials framework to provide for the safe use of recycled products
- implementation of the Waste Data Strategy to provide a more detailed understanding of WA's waste streams.

Both government and the waste and recycling industry have roles to play in building new markets for waste-derived products to underpin the growth and sustainability of recycling industries. Developing viable markets will be necessary to support the economic feasibility and scale of the recycling services and infrastructure needed to process the large volumes of waste generated across the waste streams. To support this, government and industry will need to work together to prepare and implement a market development plan for waste-derived products, as this will require a level of planning and coordination that individual businesses will be unable to manage on their own.



Businesses that manufacture recycled products, such as compost from organic waste and construction materials from demolition waste, should undertake marketing and promotion to stimulate consumer demand across the economy for their products. Government can also play a leadership role through its procurement power to 'lead by example' and help drive market development of waste-derived products by setting targets for state agencies and GTEs to procure more environmentally sustainable and locally produced recycled products. The Roads to Reuse project highlights the potential to use recycled construction and demolition waste in infrastructure projects.²⁹ A range of opportunities to promote sustainable procurement could be explored, such as:

- establishing infrastructure requirements or incentives for using building or fit-out materials or products that include recycled content or are already existing and can be reused rather than sourcing new materials (for example, office furniture)
- specifying targets in building and infrastructure projects led by state agencies and GTEs for the construction industry to source materials and products that can be reused or contain recycled content (for example, major road projects)
- specifying 'design for disassembly' (for example, modular design) requirements for new and redeveloped public infrastructure projects such as schools, community housing, hospitals and special projects

- establishing longer-term waste management contracts to improve commercial viability and reduce the risk to businesses of investing in more-innovative and larger-scale waste and recycling infrastructure.

The introduction of the Waste Levy in the Perth metropolitan area has been a highly effective tool for increasing material recovery. Reviewing its application to include other regions, where it is practical and feasible to do so, would provide a financial incentive to increase waste recovery, on the basis that complementary waste recycling services and infrastructure are available to provide alternatives to landfill. The waste and recycling industry will require a forward schedule of changes to the Waste Levy and time frames for their implementation over the medium term to allow them to determine what they mean in practice and be ready to comply with the changes when they come into effect.

While WARRS 2030 is supported by annual action plans, businesses require enough time to find innovative ways to reuse waste as a resource, and to expand, upgrade and purchase infrastructure to meet any regulatory changes or requirements, such as changes to the Waste Levy. To help businesses plan and prepare for changes, they need early information and guidance on procedures, policies, infrastructure, operational requirements and timings to inform their planning and investment decision-making. As such, a longer-term roadmap to accompany WARRS 2030, which sets out the sequence and time frames for reform and market development,

would provide industry with greater confidence to undertake the longer-term planning and investment in infrastructure that will be needed to meet WA's needs. More of the funds generated from collection of the Waste Levy should be used to resource the reforms and market development required to fast-track the implementation of WARRS 2030 and subsequent infrastructure investment.

Mining and resources sector waste and infrastructure

Minerals and energy comprise 94% of state merchandise exports, generated by hundreds of active onshore and offshore mining and resource projects across WA.³⁰ These projects generate a significant amount of waste and infrastructure throughout their lifecycle. While the mining and resources sector is not a focus of the WARRS 2030, waste and infrastructure recovery and recycling within the sector could contribute to the vision for a sustainable, low-waste circular economy.

Resource sector mining, refining and processing sites generate a variety of wastes such as organics and packaging from worker camps, hydrocarbons, batteries, tyres, conveyor belts and concrete rail sleepers (referred to below as 'site waste'), although there is limited data available on actual volumes and materials. Currently, sites are managed under legislation that does not obligate operators to recycle their waste. They are allowed to manage waste on site.

The remoteness of many sites and difficulties in transporting waste to recycling facilities is a challenge. However, expectations about pursuing environmental, social and governance principles are increasing, and continuing to manage waste in this way is becoming much less acceptable. This Strategy recommends that opportunities be investigated in partnership with the resources sector to normalise the way resource sector waste is regulated and managed to improve environmental outcomes and help build economies of scale in regional locations where it is practical and feasible to recover waste.



The mining and resources sector also produces significant industrial by-products from mining, refining and processing that have applications with commercial potential. However, resource companies are restricted from selling industrial by-products, as they may be considered as waste under current legislation. For example, mining residues have potential for reuse for a variety of applications, such as roadworks, and could replace the use of virgin materials, but they are currently required to be stockpiled on site, which can impact on the environment and lifespan of facilities. Establishing a waste-derived materials framework is a critical first step in repositioning waste as a resource, opening the potential of the resources sector and industry generally to exchange by-products where safe, and to build the consumer confidence in recycled products that is necessary for a circular economy. Such a framework would provide certainty about when waste-derived materials are no longer considered waste, and licensing for premises (and infrastructure) would not be required under the *Environmental Protection Act 1986*. It would also provide clarity on when Waste Levy requirements are not triggered and encourage the use of waste-derived materials in markets while protecting the environment.

Oil and gas projects also require significant infrastructure, such as oil and gas rigs and sub-sea structures such as wellheads and pipelines, which require decommissioning once operations have ceased. It is estimated that US \$40.5 billion in decommissioning work needs to be undertaken on Australia's offshore oil and gas infrastructure, over half of which needs to commence within the next 10 years.³¹ Infrastructure will require decontamination and removal, and there will likely be opportunities to reuse equipment that is still in working order as well as to recycle large volumes of material such as steel, concrete and plastics. Collaborative approaches may be required to manage the scale and complexity of decommissioning work to enhance cost-effectiveness and environmental outcomes. Facilities located near oil and gas fields, such as those off WA's north-west coast, may be required to enable infrastructure to be brought ashore to be processed before being reused, recycled or disposed. Local businesses may also have the potential to export the specialised expertise developed through undertaking this work to meet the growing need for decommissioning in South East Asia and around the world.



Local government collaborative arrangements

Local governments are responsible for managing municipal solid waste and most local governments in the Perth and Peel regions and in Greater Bunbury have collaborated to form regional councils to consolidate waste management services and infrastructure to achieve economies of scale and consistency of service delivery. However, not all local governments in the Perth and Peel regions participate in regional councils. The WA Government should investigate whether this fragmentation of regional arrangements is potentially a risk to the cost-effective provision of waste services and infrastructure. There may also be further opportunities for local governments in regional areas to collaborate through collective arrangements. As noted in the Auditor-General's report *Waste management – service delivery*, a 'lack of infrastructure planning and accurate waste and recycling data, along with guidance on better practice waste recovery has left local government entities to plan and manage community waste based on their own local needs and available infrastructure, which may not be consistent with the state's own plans and objectives'.³² The state waste infrastructure plan, discussed below, will provide a basis to consider further opportunities for consolidation in the context of WA's future waste management needs.

Recommendation 54

Achieve the vision of a sustainable, low-waste circular economy by accelerating implementation of the Waste Avoidance and Resource Recovery Strategy 2030, including:

- a. prioritising and expediting legislative and regulatory reforms, including:
 - i. reviewing the *Waste Avoidance and Resource Recovery Act 2007* to reposition waste as a resource
 - ii. developing a waste-derived materials framework that enables the recovery of materials derived from waste and provide for their safe use in products with recycled content
 - iii. reviewing the Waste Levy, including the rate and geographical application to regional areas where feasible and practical
 - iv. reducing Waste Levy avoidance and evasion practices
 - v. implementing the Waste Data Strategy to improve waste data collection and reporting to provide a more detailed understanding of WA's waste streams
- b. preparing a waste-derived materials market development plan that sets out actions required to grow demand for products with recycled content
- c. strengthening the role of the WA public sector in supporting the circular economy through government procurement policies that set ambitious and progressively increasing targets to avoid and reduce waste generation, increase recovery and reuse of materials and purchase products with recycled content
- d. presenting a clear roadmap and time frames for the implementation of waste legislative and regulatory reforms (see Recommendation 54a) and market development (see Recommendations 54b and 54c), and increasing the use of the Waste Levy funds to fast-track implementation
- e. investigating opportunities to improve the way mining and resources sector site waste is regulated and managed to increase recovery
- f. investigating the potential for more local governments to participate in collective arrangements to enhance the provision of waste services and infrastructure, and whether local governments not participating in collective arrangements undermines the provision of cost-effective waste management services and infrastructure.

State waste infrastructure plan

Additional metropolitan and regional waste infrastructure will be required as communities, industries and their waste recovery and recycling needs grow. WARRS 2030 stipulates development of a state waste infrastructure plan to identify long-term, statewide waste infrastructure needs. The plan would address the type and scale of waste processing infrastructure required in each region of WA. A draft waste infrastructure plan was prepared in 2014 but not released. The timeline in WARRS 2030 proposed that this would be completed by 2020, but this is now behind schedule. The plan is required urgently by government and the waste and recycling industry to help them inform planning and investment decisions and guide siting of infrastructure. This is especially relevant given national and state policy and legislative changes regarding the circular economy and waste-derived materials frameworks.

China's announcement in 2017 that it would ban all solid waste imports from 1 January 2021 highlighted the amount of waste Australia not only generates but how much it exports, because of the inadequate recycling capacity across the country. In response, the former Council of Australian Governments banned the export of waste plastic, paper, glass and tyres to accelerate action to reduce waste and stimulate a domestic recycling industry.³³

The Australian and WA governments are now working with the private sector to modernise and expand recycling infrastructure across WA, with \$70 million in joint funding announced in February 2021 to assist the development of new private facilities to recycle waste tyres, support electronic waste collection and recycling, reprocessing and sorting of plastics, and process waste paper and cardboard.³⁴

The state waste infrastructure plan will need to consider population, commercial and industry trends and include a detailed analysis of material flows to identify capacity gaps for processing specific waste materials and where infrastructure should be located to meet needs and optimise logistics and costs. It will also be required to identify specific infrastructure to meet needs, such as:

- waste transfer stations and materials recovery facilities across Perth and regional areas, which will become increasingly important aggregation points for waste materials, and to sort and pre-process materials before they are sent to recycling and remanufacturing facilities in or outside WA
- recycling facilities to process wastes where there are viable domestic markets for recycled products
- facilities to store bulk waste items, such as office furniture and play equipment, until opportunities arise for reuse

- facilities to support electronic waste initiatives and product stewardship schemes, given the anticipated growth of digital and renewable energy technologies such as solar panels and rechargeable batteries and the state ban on electronic waste from landfill by 2024.

The state waste infrastructure plan should also consider:

- management of hazardous waste that can be processed in WA, including clinical-related waste (most clinical-related waste resulting from medical, nursing, dental, pharmaceutical, skin penetration and other clinical activity is transported interstate)
- risk and contingency planning that identifies approaches to mitigate risks factors that could impact on WA's waste management capacity, such as disruptions caused by waste infrastructure failure or the inability to transport waste due to road or border closures caused by shock events such as pandemics or natural disasters
- support for the increased recovery of resources sector mining, refining and processing site waste where it is feasible and practical to do so.

Avoiding poor planning outcomes will be important, as demonstrated by the siting of 2 proposed waste-to-energy plants very close to each other in Perth's south-west metropolitan region. As more players enter a growing waste recovery and recycling market, the state waste



infrastructure plan will be needed to help secure strategic sites with appropriate separation distances to protect existing and future facilities and support collocation synergies to service the waste streams.

From IWA's perspective, it is difficult to identify waste infrastructure priorities in the absence of a state waste infrastructure plan. IWA therefore recommends its preparation and implementation as a high priority.

Recommendation 55

Guide long-term planning and development of waste infrastructure by prioritising finalisation of a state waste infrastructure plan.

The plan should include:

- identifying infrastructure required by material type and geographic location (at regional and sub-regional level, including remote areas and Aboriginal communities) and considering population growth and commercial and industry development trends
- considering the infrastructure required to manage and recover site waste from the mining and resources sector, in collaboration with the sector
- identifying infrastructure required to manage hazardous wastes and clinical-related wastes that are feasible to process and recycle in WA
- developing a clear implementation plan and public reporting framework that:
 - prioritises implementation findings to inform infrastructure decision-making
 - includes actions for government and industry to work together to identify and secure strategic sites and separation distances to protect existing and future waste infrastructure facilities and support opportunities for collocation.

