

Independent Review of the NSW Resource Recovery Framework

Independent
Review
Report

Review
commissioned
by the NSW EPA

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Independent Reviewer

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Reviewer foreword

This independent review of the NSW Resource Recovery Framework (the framework) was commissioned by the EPA to examine the existing NSW waste and resource recovery framework and to provide recommendations to the EPA on:

- how well the framework protects the environment and human health from the inappropriate use of waste
- how well the framework achieves beneficial resource recovery and facilitates circular economy outcomes, including pathways for innovation
- the EPA's ability to take appropriate regulatory action to protect the environment and human health under the framework
- the framework's transparency, clarity, and enforceability
- options to reform and improve, streamline or strengthen the framework that balance the potential risks and benefits of resource recovery.

It was clear throughout the review process that all stakeholders share a strong commitment to developing the circular economy, protection of the environment and human health, innovation, and the growth of the resource recovery industry. The review has been informed by extensive consultation that included a formal submissions process based on an Issues Paper. It has also taken into account stakeholder submissions regarding the historic and somewhat controversial revocation of the general and specific resource recovery orders and exemptions for the application of mixed waste organic outputs (MWOO) to land and the EPA's consultation on the *Recovered Fines Orders and Exemptions*.

The review agrees with stakeholder views that there are important opportunities to refine and improve the framework. The framework was initially designed in 2008 to facilitate the reuse of certain wastes for the purpose of land application or use as a fuel or in connection with a thermal process. The opportunities identified in this review, along with the maturation of the circular economy, will strengthen the ability of the regulator and stakeholders to deliver on the above objectives.

In particular, while the framework enables beneficial resource recovery, some aspects can be blunt in their application and lack the nuance required to support innovation and a smooth transition to a circular economy. Right now, there can be friction when the framework's initial policy intent to safely apply waste to land insufficiently addresses circular economy or industry objectives. Many of my recommendations take on board the practical suggestions from stakeholders about how to improve the existing regulatory framework and tools to deliver better outcomes.

Resource recovery orders and exemptions are an integral part of the current resource recovery framework. Orders and exemptions can be a robust tool for facilitating the reuse of resources for higher risk applications, especially where there is a direct interface with the environment (e.g., air, soil, water). This includes the reuse of resources for land application or thermal treatment. Resource recovery orders and exemptions should therefore remain as a central part of the NSW resource recovery framework. However, there are reforms to the settings of orders and exemptions that can be undertaken as a priority to increase stakeholder understanding and confidence in these instruments and support innovation. These include:

- Investigating the development of a resource recovery innovation pathway that can support new and innovative technology and processes.
- Establishing and publishing a clear process for the issuing and revocation of general orders and exemptions that includes thorough stakeholder engagement.
- Seeking the advice of independent experts through establishing an expert panel/s and publishing a clear protocol for constituting such group/s.
- Making the application process clearer, more accessible, and more transparent.
- Overhauling the resource recovery order and exemption instruments in a manner that ensures they are easier to understand while maintaining enforceability.

This review finds that consideration should be given to whether certain recovered materials should be excluded either partially or entirely from the resource recovery framework. Recovered materials that pose trivial risk to human health and the environment, with strong market pull factors, high circularity and higher order uses (such as remanufacturing) should be assessed to determine whether the regulatory framework should be refined to exclude them or whether an end-of-waste criteria or other similar mechanism could be introduced. These reforms will need significant policy work along with further consultation and collaboration with stakeholders.

This report details the major issues considered by the review across four thematic areas:

1. Improved administration and decision making
2. The definition of waste and enhancing the regulatory framework
3. Enabling high quality materials to facilitate circularity
4. Improving approaches to known and emerging contaminants

Recommendations from this review are listed for each of the thematic areas in this report and includes recommendations that can be implemented in the short term and recommendations that require additional policy work, noting that the framework has multiple integrated parts and implementation of any substantive policy reforms must necessarily consider the intersection and interdependency of those parts.

A consolidated list of recommendations is included on the next page of this report.

I extend my thanks to the resource recovery sector for their engagement through the course of this Independent Review and I look forward to the NSW EPA's active consideration of the recommendations.



Dr Cathy Wilkinson

Independent Reviewer

Recommendations

OUTCOME 1 Improved administration and decision making

1. Recommendation

EPA to clearly articulate its decision-making considerations for orders and exemptions, in order to:

- a) better document and explain how the EPA makes decisions on orders and exemptions
- b) ensure that the sector and broader community is aware of the EPA's considerations to provide confidence that the rationale is credible and sound.

2. Recommendation

The EPA should consider changes to the drafting of orders and exemptions to make them easier to understand while maintaining their enforceability.

3. Recommendation

The EPA should consider how further transparency could be provided around orders and exemptions. This should include working with stakeholders to investigate how specific orders and exemptions could be made publicly available.

4. Recommendation

The EPA should publish clear and comprehensive guidance materials for the application and assessment of orders and exemptions.

5. Recommendation

The EPA should publish information regarding how sampling requirements and contaminant limits are generally determined for resource recovery orders and exemptions.

6. Recommendation

The EPA should continue to advocate for nationally aligned standards with the Heads of EPA Australia and New Zealand (HEPA). This should include issues such as contaminant limits and sampling requirements for recovered resources.

7. Recommendation

The EPA should improve clarity of process by establishing and publishing a clear process for the issuing and revocation of general orders and exemptions. This should include investigating options for revocations, including thorough stakeholder engagement.

8. Recommendation

The EPA should seek the advice of independent technical experts through establishing an expert panel/s and publishing a clear protocol for constituting such group/s.

9. Recommendation

The EPA should investigate options for an internal review process for certain decisions on resource recovery orders and exemptions.

OUTCOME 2 Considering the definition of waste and improving the regulatory framework

10. Recommendation

The EPA should investigate a pathway to enable an “end-of-waste” outcome for suitable common, low risk recovered materials to better enable reuse, particularly for remanufacturing while ensuring the EPA can still address environmentally problematic and undesirable uses and dumping of those materials.

11. Recommendation

If the EPA implements an “end-of-waste” outcome, the EPA should review relevant elements of the resource recovery framework and associated guidance materials to ensure language appropriately reflects the transition of waste to resources.

12. Recommendation

The EPA should investigate whether some activities that use, process and/or store recovered materials should be excluded from certain aspects of the waste regulatory framework to reduce administrative and regulatory burdens and enhance circular outcomes.

13. Recommendation

The EPA should seek to work with relevant agencies across government to develop a resource recovery innovation pathway to support the development, demonstration and assessment of new and innovative technology and processes. This could include consideration of approaches across the environment protection and environmental planning legislation.

OUTCOME 3 Enabling high quality materials to facilitate circularity

14. Recommendation

The EPA should periodically develop and publish regulatory plans targeting specific waste and resource recovery industry sectors. The plans should make better use of the full range of elements in the EPA’s regulatory approach, outlined in the Regulatory Strategy 2021-2024, by identifying the specific elements that the EPA intends to use. Plans should also include more opportunities to engage with stakeholders.

15. Recommendation

The EPA should consider the regulatory elements available under the Regulatory Strategy 2021–2024 and determine how they could be better applied to achieve higher quality materials from waste generators.

16. Recommendation

The EPA should seek to liaise with relevant planning authorities to investigate embedding requirements for improved waste management practices by waste generators, including through planning instruments and development consents.

17. Recommendation

The EPA should review the role and application of the NSW waste classification system to the resource recovery sector.

18. Recommendation

As part of a regulatory plan for the waste and resource recovery sector, the EPA should investigate ways to enhance protections for consumers of recovered resources and place greater responsibilities on waste generators and processors. This could include through compliance campaigns targeting resource recovery orders and exemptions and other safeguards.

19. Recommendation

The EPA should investigate opportunities for the increased collection and publication of resource recovery data that could assist in the transition to a circular economy, including collection and publication of the generators and processors operating under a resource recovery order.

OUTCOME 4 Improving approaches to known and emerging contaminants

20. Recommendation

A scientific expert external to the EPA should review and provide advice on the NSW approach to management of asbestos contaminants in waste and recovered materials. The review should include, but not necessarily be limited to protection of human health and the environment and consideration of opportunities and constraints of beneficial reuse.

21. Recommendation

Taking into account the advice of the external scientific expert, the EPA should consider how existing approaches to management of asbestos contaminants in waste and recovered materials could be improved.

22. Recommendation

The EPA should implement a program to proactively investigate emerging contaminants and better engage with stakeholders regarding emerging contaminants.

Introduction

Terms of Reference

In November 2021 the NSW EPA commissioned an independent review of the State's resource recovery framework, being the policy and regulatory instruments, levers and tools that enable and facilitate the recovery of resources in NSW.

The objective of this review was to examine the existing NSW waste and resource recovery framework and to provide recommendations to the EPA on:

- a) how well the framework protects the environment and human health from the inappropriate use of waste
- b) how well the framework achieves beneficial resource recovery and facilitates circular economy outcomes, including pathways for innovation
- c) the EPA's ability to take appropriate regulatory action to protect the environment and human health under the framework
- d) the framework's transparency, clarity, and enforceability
- e) options to reform and improve, streamline or strengthen the framework that balance the potential risks and benefits of resource recovery.

Background to the review

The *NSW Government's Waste and Sustainable Materials Strategy 2041* (WaSM), which was released in 2021, sets the roadmap for transitioning to a circular economy over the next 20 years. The Strategy focuses on meeting future infrastructure needs, reducing carbon emissions and protecting the environment and human health from waste pollution.

This review provides a crucial step towards improved policies, regulatory requirements, and procedures for resource recovery so that they are clear, transparent and support high-quality outputs necessary for the transition to a circular economy. The recommendations of this review will contribute to a shift in focus by better supporting innovation and improving collaboration with local government and industry to help meet gaps in the market and create opportunities for resource recovery.

The review report has been informed by detailed analysis of 64 stakeholder submissions on the *Issues Paper*¹, a facilitated workshop with key stakeholders

¹ See *Issues Paper: NSW resource recovery framework* for more detail

and one on one discussions with major framework participants. It was also informed by engagement with the Waste and Local Government Advisory Groups, which are coordinated by the EPA. This report should be read in conjunction with the Issues Paper, which provides further background information on each of the review topics.

The report's recommendations consider existing legislative and regulatory requirements for environment protection and waste management under the *Protection of the Environment Operations Act 1997* and regulations under that Act. They also build on the tools available to the regulator under the EPA's Regulatory Strategy 2021-24. It should be noted that where recommendations require legislative reform, any proposals would be subject to relevant Government approval processes.

Scope of the review

As set out in the Issues Paper this review focuses on the resource recovery framework – the policy, regulatory and compliance framework administered by the EPA to facilitate beneficial resource recovery and circular economy outcomes. The core components of the framework include the:

- definition of waste and accompanying waste offences
- NSW waste levy settings (out of scope for this review)
- environment protection licensing framework and thresholds
- resource recovery orders and exemptions.

The waste levy is an important part of the resource recovery framework, as it is the primary economic mechanism to encourage resource recovery through levy charges. The waste levy is not considered in this review and will be reviewed separately as part of its scheduled five-year review.

This independent review also does not cover general waste management strategy measures, such as incentives and mechanisms, landfill bans, waste infrastructure, or the energy from waste framework (including biomaterials). Further, the review aims to avoid duplication of any pre-existing commitments that are yet to be delivered under the NSW Government's WaSM.

The review acknowledges the EPA's decision not to move ahead with formerly proposed changes to the *Recovered Fines and Orders and Exemptions*. It is understood that this decision follows a consultative process with the waste and resource recovery industry and small businesses. Some options proposed in submissions that require considerable changes to

government policy, such as changes to the machinery of government or legislation, or that do not fall within the EPA's remit were also beyond scope.

The report's recommendations provide strategic direction and guidance to improve the regulatory framework and the policies in place to manage potential impacts from the use of recovered resources. Ultimately, the review and its recommendations will improve the delivery of circular economy outcomes and potential for innovation, as well as ensure growth of the resource recovery industry without compromising human health and the environment.

OUTCOME **1**

Improved administration and decision making

The importance of protecting the environment and human health

The resource recovery framework sits within, and is framed by, legislation that aims to protect the environment and human health, as well as encourage and promote the recovery and reuse of waste. Stakeholder consultation indicated broad understanding and support for the EPA's regulatory obligations and objectives around preventing environmental harm. The considerations of this review have been framed by the EPA's objectives and the objects of the *Protection of the Environment Operations Act 1997* (POEO Act) under which the resource recovery framework sits. Protecting the environment and human health is clearly linked to these aims, as outlined in the POEO Act and the *Protection of the Environment Administration Act 1991* (POEA Act). The objects of the POEO Act include to assist in achieving the objectives of the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act), which include minimising the use of virgin materials and avoiding and reducing waste. The review also acknowledges the shift to a circular economy, which is essential for achieving waste reduction targets in the WaSM and reflects the true value of recovered materials.

During consultation, some stakeholders raised concerns that the EPA's decisions with respect to resource recovery are too risk averse. Some stakeholders were concerned that the EPA's approach overly prioritises protection of human health and the environment above other considerations such as economic benefits and industry growth. The reuse of waste does pose some risks to the environment and human health, and the risks must be managed appropriately to build consumer confidence for end-users of recovered waste, support ecologically sustainable development and move towards a circular economy.

Examples of the EPA's objectives and the objects of the POEO Act

- to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development. Ecologically sustainable development requires the effective integration of social, economic and environmental considerations in decision-making processes (**POEA Act**)
- to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote:
 - pollution prevention and cleaner production
 - the reduction to harmless levels of the discharge of substances likely to cause harm to the environment
 - the elimination of harmful wastes
 - the reduction in the use of materials and the re-use, recovery or recycling of materials (**POEO Act**)
- to assist in minimising the consumption of natural resources and the disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste (**POEO Act and WARR Act**)
- to assist in ensuring resource management options are considered against the waste hierarchy:
 - a) avoidance and reduction of waste,
 - b) re-use of waste,
 - c) recycling, processing or reprocessing waste,
 - d) recovery of energy,
 - e) disposal (**POEO Act and WARR Act**)

Approaches to managing risks to human health and the environment

The EPA's current approach to managing risks from waste and recovered materials seeks to be evidence-based and apply the precautionary principle where there is scientific uncertainty. Stakeholder responses to the Issues Paper sought more transparency when assessing risk to human health and the environment under the resource recovery framework. While the current order and exemption process broadly adopts a risk-based approach by assessing risks on a case-by-case basis and seeks to set regulatory requirements in proportion to risk, this process is not transparent for stakeholders or the broader community.

The POEA Act defines the precautionary principle as:

'...if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.'

The resource recovery framework has been in operation for some time and industry stakeholders are keenly interested in how the framework could be enhanced to allow more opportunities for innovation and to respond to the emerging circular economy. The EPA has a critical role in establishing the regulatory parameters that can support sustainable circular economy growth into the future. It is important that any changes to the approach resulting from this review remain transparent, consider regulatory burden, and adopt a culture of continual improvement as the science of contaminants and the circular economy continue to evolve.

Several stakeholders advocated for NSW to take a new approach to risk in relation to the resource recovery framework. Risk-based approaches that were suggested included sustainable economic development principles; As Low As Reasonably Practical (ALARP) strategies; and adopting the NSW Government Better Regulation Principles for decisions under the framework, which require any market interventions to be proportionate to delivery of public benefit. Industry stakeholder feedback suggested that any risk-based approach must provide practical advice, methods, specifications, and contaminant limits. It must also provide transparency to allow regulators or industry to act early, in accordance with the precautionary principle, to changing and emerging scientific knowledge, to respond to potential risks and identify any emerging harmful substances. Clear, helpful guidance must also evolve to address environmental risks and needs to ensure the approach is enforceable.

The large variety of waste types means that the framework must cater to a broad range of risk profiles. Risks must be assessed within a clear and consistent framework that is structured to allow flexibility in assessing specific waste types. The EPA's assessments should provide more consideration of desired outcomes that deliver public benefit and balance the cost of reducing risk, though must ultimately deliver evidence-based decisions that comply with the EPA's objectives and the objects of the legislation. The EPA can build more trust in this system by transparently documenting the rationale for decision-making, sharing this rationale with the sector, and investigating ways to increase engagement with stakeholders on the expert technical advice that informs its decisions.

Recommendation 1

EPA to clearly articulate its decision-making considerations for orders and exemptions, in order to:

- a) better document and explain how the EPA makes decisions on orders and exemptions
- b) ensure that the sector and broader community is aware of the EPA's considerations to provide confidence that the rationale is credible and sound.

Understanding resource recovery orders and exemptions

Orders and exemptions are legally binding documents. It is imperative that any party using an order or exemption can understand them.

Stakeholders generally considered that the current framework is complicated, with many comments that the orders and exemptions themselves were difficult to understand. This is primarily because orders and exemptions are legal instruments that contain detailed technical information. They use legal terms to ensure that they contain the correct information and are legally enforceable. Despite this, there may be opportunities to improve the drafting of orders and exemptions, and changes should be explored to ensure that the regulated community can easily understand their responsibilities while also ensuring that instruments are enforceable.

Framework transparency

Several stakeholder submissions recommended increasing the transparency of resource recovery orders and exemptions. Stakeholders were concerned that specific orders and exemptions² are generally not published but remain confidential. Currently, specific orders are issued directly to an applicant. Specific exemptions may be published in the Gazette where the exemption is not granted to a specific person/s or when the applicant requests it. Reference to specific orders and exemptions may be published on the EPA website – but this does not include the full order or exemption.

Stakeholders raised concerns that this lack of transparency could hide inconsistencies in the way applicants are treated and could result in different conditions or requirements being imposed on different operators for similar activities. Most framework participants (including some holders of specific orders and exemptions) believed that more information on specific orders and exemptions should be published to provide increased operational transparency, inform future applications, and drive innovation in the sector. Stakeholders also suggested that specific commercial-in-confidence information could be removed before publication. Some stakeholders that hold an existing confidential specific order or exemption expressed a desire to maintain their confidentiality.

Those stakeholders were concerned that they would lose their competitive advantage in the industry and that others may benefit from a free-rider effect from their investment and work. Interestingly, even these participants supported sharing high level concepts that could help others with development of new resource recovery solutions.

There are clear benefits to the release of more information on specific orders and exemptions, including greater use of public data. This information should be made more accessible. More information about specific resource recovery orders should also be made publicly available. Possible options include releasing basic information regarding all specific orders and exemptions, or implementation of a staged publication process where basic information could be released initially while detailed information would be released once a certain time period has elapsed. Regardless of the solution, all holders of specific orders and exemptions should be provided with the opportunity to opt-in to publication on the EPA's website. The EPA and stakeholders should work together to determine the most appropriate process to achieve more transparency for specific orders and exemptions.

Recommendation 2

The EPA should consider changes to the drafting of orders and exemptions to make them easier to understand while maintaining their enforceability.

Recommendation 3

The EPA should consider how further transparency could be provided around orders and exemptions. This should include working with stakeholders to investigate how specific orders and exemptions could be made publicly available.

² Specific orders and exemptions are assessed on a case-by-case basis for a specific process or material and receiving environment that is not already covered by the general orders and exemptions.

Administration

Stakeholder response to the administration of the resource recovery framework centred around the:

- application and assessment process for orders and exemptions
- justification for sampling requirements on orders and exemptions
- process for revocation of orders and exemptions.

Stakeholders emphasised the importance of regulatory clarity when interacting with the resource recovery framework, be it in applications, appeals and revocations or simple compliance.

Application process

Stakeholders were concerned that the application and approval process for specific orders and exemptions was challenging to navigate, complex, expensive, and prolonged.

Information and guidance

Many stakeholders advised that it was difficult to locate information on the application process for orders and exemptions, and that the information that was available was hard to understand. Once an application had been submitted, stakeholders had difficulty tracking its progress.

Requests for additional guidance on the application process were common. While the EPA has instructions on their website regarding applying for orders and exemptions, stakeholder feedback indicates it is not meeting the needs of industry. In particular, stakeholders were concerned that the information provided does not provide a clear overview of the process, timeframes, and specific criteria for processing applications. Comparison was made to the information available to support development applications, which is often more detailed. Stakeholders also requested better initial guidance on high volume materials and emerging waste streams such as FOGO.

Despite criticism, many stakeholders are highly engaged with the EPA's regulatory process. Councils requested that the EPA develop guidelines and training packages to assist officers to interpret resource recovery and waste classification requirements. Industry associations also offered to provide induction training to new EPA staff to develop a better understanding of interactions with the framework. This is consistent with workshop feedback that promoted opportunities to bring the supply chain together to help inform and rework administrative processes.

Processing time

Some stakeholders reported that timeframes for processing applications were excessive and inconsistent. For example, some framework participants were concerned about the processing time for time-critical applications to recover soils or wood from large road or tunnel projects. Applications often require advice from experts or consultants plus laboratory analysis, which are each time and resource intensive actions. Others stated that past experiences with the time and cost of an application, including sampling protocol and undefined extensive timeframes, had deterred them from any future interactions with the framework. This reluctance to engage with the framework means that opportunities to safely divert waste from landfill are potentially being missed, which hinders the transition to a circular economy.

Some submissions suggested that the EPA could engage further with stakeholders to investigate the possibility of implementing an application fee to improve EPA resources and thereby reduce processing times and improve applicant outcomes. There would be merit in the EPA further testing this suggestion through its stakeholder advisory groups. Various stakeholders also suggested that the EPA could better streamline the application and assessment process for the highest volume wastes and for new and emerging waste streams to reduce some of the perceived barriers for diverting waste from landfill.

Other administrative issues

Environmental consultants with frequent experience making new applications identified administrative opportunities to streamline the application process. For example, sections five and six of an application both relate to the receiving environment of the recovered resource and could be combined.

Providing better guidance on the application process may allow industry to better anticipate processing times and can also help improve application quality, which should in turn reduce processing time. Many stakeholders also supported increased knowledge-sharing by releasing details of applications being refused or approved to complement other transparency measures.

Recommendation 4

The EPA should publish clear and comprehensive guidance materials for the application and assessment of orders and exemptions.

Operating under an order or exemption

Orders and exemptions include requirements for sampling, contaminant standards and characteristics of the environment where recovered materials are applied or used. These conditions are applied to meet principles of beneficial resource recovery, including being fit for purpose, conferring a benefit, and posing minimal or no risk of harm to human health or the environment. An order puts requirements on generators and processors, and enables a consumer to be exempt from certain legislative and regulatory requirements including holding an environment protection licence and payment of the waste levy.

Sampling requirements

Sampling requirements are often included in orders and exemptions as part of a risk-based approach to ensure the safety of recovered resources. Many stakeholders raised concerns throughout the consultation process about these requirements and their associated costs.

Many stakeholders raised that the rationale for imposing the specific sampling requirements for an order or exemption is not always clear. The EPA sets sampling requirements based on likely contaminants, scientific evidence, receiving environment, quality control, scientific methods, methods in comparative jurisdictions and consultation with stakeholders. At present this process is not clearly documented or publicly available. There was concern that the number of samples required, and contaminant limits were not adequately justified, and that clearer standards could be documented and referenced as part of the application process. Stakeholders suggested that the opaque decision-making process for setting sampling and contaminant requirements may result in compliance inconsistencies and a lack of a level playing field.

Sampling will remain an ongoing necessary function for resource recovery, which will help to ensure that recovered materials meet quality standards and do not pose a risk to human health and the environment. It is therefore important that the rationale for sampling requirements is made clearer.

Introduction or use of standards

Several stakeholders advocated for the use of Australian Standards or codes due to their success in other jurisdictions or applications. Although standards have many similarities with resource recovery orders, they differ from resource recovery exemptions as they do not acknowledge the final purpose and receiving

environment. Stakeholders noted that nationally aligned standards would be most beneficial, particularly for high volume recovery streams, such as recycled content standards for pavements and roads.

Recommendation 5

The EPA should publish information regarding how sampling requirements and contaminant limits are generally determined for resource recovery orders and exemptions.

Recommendation 6

The EPA should continue to advocate for nationally aligned standards with the Heads of EPA Australia and New Zealand (HEPA). This should include issues such as contaminant limits and sampling requirements for recovered resources.

Review and appeal processes

Stakeholders considered that the transparency of the framework is significantly impacted by the lack of a decision review or appeal process for resource recovery orders and exemptions which reduces certainty for investment. Solutions raised included clear appeal and review mechanisms and the implementation of timeframes for any significant variations or proposals to revoke general orders or exemptions.

Revocation or amendment of orders and exemptions

Orders and exemptions are issued at a point in time. As new information and evidence becomes available over time, there may be a need to revoke or amend an existing order or exemption. There is tension within the framework between business requirements for certainty and the need for sufficient flexibility to adapt to new and emerging contaminants, and to support innovation.

Many stakeholders were concerned that orders and exemptions could be revoked by the EPA with little consultation or notice after businesses had invested large sums of capital. It is acknowledged that parties, including industry and councils, may have entered longer-term contracts that could not respond flexibly to framework changes. The revocation of the MWOO

orders and exemptions was cited as an example by several stakeholders. Stakeholders suggested that the EPA should allow longer lead times when changes to the framework are investigated, to provide operators, including business and councils, more flexibility and time to adjust.

Stakeholders clearly communicated their experience that the EPA's process for MWOO, and more recently consultation on the *Recovered Fines and Orders and Exemptions*, lacked transparency and clarity, and did not meet their expectations. Stakeholders specifically raised concerns regarding a perceived lack of robust evidence and formal consultation process to support the MWOO and recovered fines positions.

Stakeholders recommended that the EPA establish an independent expert panel or panels to provide guidance and advice on proposed amendments or revocations to general orders and exemptions. The EPA does use expert advisory groups as well as individual independent experts to inform some decisions. For example, the EPA convened an independent expert advisory group to provide advice for the MWOO process. The group was constituted as a Technical Advisory Committee (TAC) under the *Protection of the Environment Administration Act 1991*. The EPA also sought and utilised advice from individual independent experts regarding the proposed recovered fines amendments.

There would be value in the EPA establishing a process to formally convene a relevant expert panel (or panels), and publicly document their role in providing independent advice. The expert panel/s would provide technical advice and guidance to the EPA to inform decision making, as requested on a case-by-case basis by the EPA. The expert panel/s should be chaired by an appropriate independent external expert appointed by the EPA. The members of the panel/s should be appointed or engaged by the EPA. A panel/s could be established with the ability to bring in other experts from time to time for specific technical issues. Alternatively, the EPA may establish a protocol for constituting issue-specific panels, to allow the type of technical experts on a panel to be more closely tailored to the specific issue under consideration. Any panel/s should not undermine the EPA's role as an independent environmental regulator, including inadvertently delaying EPA decision making processes. Advice could be subject to stakeholder consultation prior to the regulator making any informed decision based on the panel's advice. The panel/s should also meet strict governance criteria to avoid any risk of regulatory capture or conflict of interest for any of its members.

Given that the EPA did use independent expert advice to inform the recent controversial MWOO and recovered fines processes, it is clear from stakeholder submissions that this alone is not enough to appease concerns around decision-making. These concerns could be addressed through improved transparency and communication of EPA processes, engagement with stakeholders more broadly, and through whole of sector change management when considering changes to orders and exemptions.

It is particularly important that the EPA documents a transparent process for review and appeal of decisions around orders and exemptions. The process must provide vehicles for robust scientific evidence, necessitate industry and community engagement and feedback, and build trust in the regulator as the final decision maker. Lead times for any changes could provide notice periods that are long enough for industry to prepare and adjust to the final determination, provided that these timeframes also ensure protection of environment and human health.

Applicants may currently seek judicial review by the Land and Environment Court of an EPA decision to refuse to grant, or to amend, a resource recovery order and exemption, however the EPA does not have an established formal internal review process that could be accessed for decisions regarding orders and exemptions. The EPA does already have internal review and appeal processes in place for some other regulatory decisions, and these are clearly communicated on the EPA's website. Internal reviews are available for decisions relating to penalty notices, licence environmental risk level, or a decision about requests for public access to information. Internal review typically involves a staff member of the EPA, independent of the original decision maker, conducting a review of the decision.

Different review processes have been established in various jurisdictions. For example, EPA Victoria's process for review of remedial notices is set out in legislation and is outlined on its website. It includes clear instructions on how to apply for a review, details of the internal review process, and external review rights. For the U.S. Environmental Protection Agency an Environmental Appeals Board acts as an independent, impartial review board that makes final Agency decisions in administrative appeals.

Some stakeholders suggested that the EPA should be required to prepare a Regulatory Impact Statement (RIS) to support the revocation of a resource recovery order or exemption. A RIS is required to be prepared for new principal regulations. This level of analysis is currently not required for new, amended, or revoked instruments in the resource recovery framework. The EPA may consider a range of factors when making determinations on orders and exemptions, including the objects of the POEO Act, which also refer to objects of the WARR Act. These include encouraging the most efficient use of resources and reducing environmental harm in accordance with the principles of ecologically sustainable development.

Recommendation 7

The EPA should improve clarity of process by establishing and publishing a clear process for the issuing and revocation of general orders and exemptions. This should include investigating options for revocations, including thorough stakeholder engagement.

Recommendation 8

The EPA should seek the advice of independent technical experts through establishing an expert panel/s and publishing a clear protocol for constituting such group/s.

Recommendation 9

The EPA should investigate options for an internal review process for certain decisions on resource recovery orders and exemptions.

OUTCOME 2

Considering the definition of waste and enhancing the regulatory framework

A large share of stakeholder submissions contended that the current framework is stifling the ability of NSW to shift to a circular economy. Stakeholders said that the definition of waste, the language used to talk about waste and resources, and the remit of the environmental regulator needed to evolve to better facilitate circular outcomes in NSW. Stakeholders also expressed a desire for greater regulatory certainty, clear pathways for innovation and the harmonisation of resource recovery frameworks and definitions across the Australian jurisdictions.

Definition of waste and end-of-waste

Many stakeholders argued that the NSW resource recovery framework is not fit-for-purpose to support a robust circular economy. To better facilitate the circular economy transition, stakeholders emphasised the need to shift the discourse (and the framework) away from waste and towards resources. One submission commented that:

“The continued emphasis and language around waste management as opposed to resource or material management once the material’s productive use as a secondary raw material has been demonstrated and has met all the requisite testing/specifications, is problematic particularly as the objective of this framework is to enable the re-use of materials.”

Definition of waste

The definition of waste was raised by many stakeholders as the key issue impacting the development of mature markets for recovered resources and reducing the ability of those resources to compete with virgin materials.

The NSW definition of waste, like that of many Australian state jurisdictions, is very broad. Importantly, a material's waste status is not extinguished simply because the material is wanted or is of value. This expansive definition has the effect of denoting materials as 'waste' as they pass through both the waste management *and* the resource recovery supply chains.

The Protection of the Environment Operations Act 1997 (POEO Act) defines waste as:

- a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment, or
- b) any discarded, rejected, unwanted, surplus or abandoned substance, or
- c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, processing, recovery or purification by a separate operation from that which produced the substance, or
- d) any processed, recycled, re-used or recovered substance produced wholly or partly from waste that is applied to land, or used as fuel, but only in the circumstances prescribed by the regulations, or
- e) any substance prescribed by the regulations to be waste.

A substance is not precluded from being waste for the purposes of this Act merely because it is or may be processed, recycled, re-used or recovered.

The framework currently provides an avenue that distinguishes some waste management activities from bona-fide resource recovery activities. This is through the resource recovery order and exemption framework, which provides a gateway for certain suitable generated, processed or recovered resource recovery waste to be subject to reduced regulatory requirements.

Throughout the consultation period it was apparent that stakeholders thought that the definition of waste in NSW was too broad and that the orders and exemptions do not go far enough in ensuring that recovered materials are removed from the waste framework. As outlined in the Issues Paper, stakeholders were concerned that the continued classification of recovered materials as waste impacted on consumer perceptions of recovered materials. They were also concerned that some of the waste regulatory requirements that continued to apply to recovered materials were overly onerous. In general, there was strong advocacy for recovered or recycled materials to cease to be deemed as waste once they were "converted to a product" or resource. This view was broadly held by both industry and local government. Even when materials were not actively regulated as waste, stakeholders expressed a strong preference for there to be a definitive point where eligible wastes cease to be defined as waste. Examples provided within the stakeholder submissions included materials donated for reuse or charity and inputs to remanufacturing processes (e.g., glass cullet or plastic pellets).

While a small number of submissions argued for a contraction in the definition of waste, which would define less materials as waste, most supported the adoption of an end-of-waste criteria as described above.

End-of-waste frameworks in other jurisdictions

Stakeholders provided examples of end-of-waste frameworks in Queensland and South Australia that could be used as a model for NSW. In the Queensland framework, a waste is deemed a resource for a specific use or purpose if the waste and its user meets the criteria and conditions stipulated in an end of waste code (EoW code) or end of waste approval (EoW approval). Similar to the NSW orders and exemptions framework, the EoW codes and EoW approvals can set conditions and criteria for the waste, the producer, and its use. Under the Queensland framework, materials revert back to being classified as waste if a person uses those materials in a way, or for a purpose, that doesn't comply with the EoW code or EoW approval, when they are illegally dumped or when they are disposed of at a waste disposal site.

The South Australian model was viewed by some stakeholders as being less restrictive and therefore preferable to the Queensland framework. Under the South Australian model, waste continues to be defined as waste unless:

- it meets a specification or standard determined by the Minister or approved by the SA Environment Protection Authority, or
- the SA Environment Protection Authority declares the material an approved recovered resource, provided the material is dealt with in accordance with that declaration.

The NSW order and exemption framework has many similarities to those in Queensland and South Australia. The NSW framework was developed first and used to inform the development of similar frameworks in these other states. Specifically, all three frameworks:

- set standards or specifications for the reuse of waste-derived materials
- enable the reuse of those materials without triggering all of the requirements of the waste regulatory framework for that jurisdiction
- provide mechanisms for the re-capture of materials as waste (or the application of waste regulatory provisions) where there is a failure to meet the relevant standards or conditions.

The clear differentiation between the NSW and South Australia or Queensland frameworks is that in the latter frameworks, waste-derived materials that meet relevant standards or specifications are deemed to no longer be waste. Whereas in NSW those materials retain their legal definition as waste, but are exempted from the application of parts of the regulatory framework.

Industry, local government, and waste associations argued that although the order and exemption framework reduces waste regulatory requirements, retention of a waste label still has significant market and regulatory implications.

Enhancing the current model

It is clear that the NSW waste regulatory framework, including the definition of waste, has been adapted over time to provide ongoing legal, regulatory and policy clarity to regulators and the regulated community. When implemented in 2008, the resource recovery order and exemption gateway was a progressive model for differentiating waste from bona-fide recovered materials.

If the enhancements to the administration of the framework detailed in Outcome One are made, the orders and exemptions framework should remain an appropriate and effective model for continuing to manage the reuse of most recovered materials at a foundational level. The current order and exemption gateway meets the EPA's need to retain a robust regulatory framework that protects the environment and human health from the risk of deliberate or accidental harm and lessens the administrative and regulatory burdens that might otherwise apply to the reuse of waste.

There are further opportunities to improve circular economy outcomes while minimising risks to human health and the environment by examining and potentially expanding the types of waste that may be removed from the waste regulatory framework, and the mechanisms for doing so. Presently, not all wastes are able to access a resource recovery order and exemption, as this gateway is available only to suitable wastes that are applied to land or used as a fuel or in connection with a thermal process. It appears that there are some higher order commonly recovered materials for which a strong argument exists for exclusion from the waste regulatory framework due to their potential circularity and low risk profile. Providing for this, where materials are fit-for-purpose, low risk and participate in mature markets with strong, stable demand would improve circular economy outcomes. These wastes are likely to be those used in remanufacturing processes where a high-quality end-product is a strong driver for ensuring that recovered material inputs meet strict quality assurance and quality control standards.

As a first step to better facilitate the transition to a circular economy, the EPA should undertake a thorough review of commonly recovered materials used in secondary manufacturing processes, with a view to determining materials that would be suitable

for exclusion from the waste regulatory framework, whether through the addition of an 'end-of-waste' criteria or code, the inclusion of additional exemption provisions or through a change in the definition of waste. It should be noted that any such changes must ensure that there are no unintended consequences from excluding, exempting or removing materials from the waste definition or framework. For example, the EPA would need to ensure that materials that are used, dumped, or disposed of in an undesirable way were retained or recaptured as waste and subject to all relevant waste regulatory provisions. There may also be gains that can be made towards a robust circular economy by reviewing the language that is used around recovered resources both within the resource recovery order and exemption gateway and more broadly across the framework.

Recommendation 10

The EPA should investigate a pathway to enable an "end-of-waste" outcome for suitable common, low risk recovered materials to better enable reuse, particularly for remanufacturing while ensuring the EPA can still address environmentally problematic and undesirable uses and dumping of those materials.

Recommendation 11

If the EPA implements an "end-of-waste" outcome, the EPA should review relevant elements of the resource recovery framework and associated guidance materials to ensure language appropriately reflects the transition of waste to resources.

Regulatory requirements and administrative barriers

The NSW resource recovery framework is a combination of the statutory definition of waste and the regulatory controls that apply to the reuse, recovery, and processing of that waste. In NSW, as with most other jurisdictions, there are thresholds for when regulatory controls such as licensing, waste levy liability, weighbridges, and storage requirements are triggered.

During the consultation process, stakeholders frequently described the regulatory implications of

their material being defined as a waste within the NSW context and the impact of the resource recovery framework on their operations. Requirements around waste storage and stockpiling were one of the most common issues identified by stakeholders as a barrier to the reuse of recovered resources. Often these were contrasted to the lack of similar requirements for virgin materials.

Waste storage requirements and implications for recovered materials

The storage of waste (or any material) can pose localised environmental risks (e.g., odour, dust, land, or groundwater contamination) and if stored for long periods can also distort the waste and resource recovery market. Storing waste can therefore trigger the requirement to hold an environment protection licence. In the levy area storing waste can also trigger a levy liability for that waste while it is on-site, require the installation and use of weighbridges, and trigger the setting of 'authorised amounts' for the maximum amount of waste allowed on-site at any one time. Several stakeholders commented that the imposition of authorised amounts on stockpiles of recovered resources constrains their operations, and that more flexibility is needed to account for fluctuations in market conditions.

Both industry and local government stakeholders identified facilities involved in road and infrastructure construction or maintenance (such as asphalt plants) as being particularly affected by these stockpiling issues. Stakeholders outlined two core issues that they felt impacted their ability to undertake road making or maintenance activities and imposed an unreasonable regulatory burden on what they considered a low-risk activity. Those two issues were:

- The requirement to install a weighbridge and be subject to the waste levy framework substantially increased the administrative burden of operating routine road making and maintenance sites.
- The setting of an authorised amount of waste permitted to be stockpiled on their sites restricted their ability to respond flexibly to market demands, take advantage of material supply and prepare for future projects.

In relation to the first point, stakeholder feedback indicates this is particularly an issue for many local councils in relation to road maintenance activities. While the EPA's *Excavated Public Road Material Order and Exemption* allows councils to store road-making material on the road corridor where it is to be used without triggering licensing or other requirements, many councils want to establish small

depots throughout their local government area to store materials for routine maintenance activities. Councils say they would be happy for these sites to be licensed but that the added expense and administration of weighbridges and the levy system make it untenable.

In relation to the second point, there is clearly a need to impose limits on the amount of material (waste or not) appropriate to be received and held on a site. The limit set for each site is dependent on the unique features of that site (e.g., size, location, surrounding environment, traffic, infrastructure). Regardless of whether a material is waste or not, material holding limits are often set through the planning system or environment protection licences. Even premises that store virgin materials such as extractive activities, quarries and chemical plants have set limits on the volume and type of materials they can receive and store. Some facilities' authorised amounts for the purpose of environment protection licences are directly linked to their planning consent limits, whereas others are set based on the space physically available to store the materials safely for fire-safety and environmental considerations.

As NSW transitions to a circular economy more recovered resources are moving between organisations. It is timely to consider whether certain activities that use recovered resources should cease to be regulated as waste facilities, and also whether the waste levy framework and its controls is appropriate for these industries and activities. This consideration should extend to whether this can be remedied through amendments to what is defined as waste or by constraining the waste regulatory requirements that may apply to that material, the receiving facility, and its use. There is already precedent for this within the NSW context. For example, landscapers are excluded from holding a waste environment protection licence if they store material that meets a resource recovery order, and it is used for landscaping purposes.

Recommendation 12

The EPA should investigate whether some activities that use, process and/or store recovered materials should be excluded from certain aspects of the waste regulatory framework to reduce administrative and regulatory burdens and enhance circular outcomes.

Innovation

Throughout the consultation process, stakeholders identified the lack of a formal "innovation pathway" for pilot or trial resource recovery projects as a significant barrier to investment in, and maturation of, the circular economy in NSW. Several stakeholders commented that because of a lack of a clear innovation pathway one large operator had chosen to invest in Victoria instead of NSW. There were also calls for increased Government funding and a separate resource recovery agency to encourage innovation and accelerate the State's transition to a circular economy.

The EPA has granted specific, time limited orders and exemptions to trial new products for land application or thermal treatment. At present, this avenue can effectively only be accessed by existing operators with existing processes. An apparent gap in the NSW regulatory framework is a pathway for pilot or trial projects that are not established and require a scaling-up process to demonstrate commercial viability and environmental credibility.

Innovation pathways are sometimes referred to as a "regulatory sandbox," which establishes a framework where innovative concepts, technology or products can be tested at a small-scale, for a defined period with appropriate controls and monitoring in place. A regulatory sandbox approach allows for both the regulator and operator to mitigate their respective risks and provides operators with a clear pathway from trials and testing to commercialisation and full operation.

There are examples both domestically and internationally where regulatory sandboxes have been successfully employed to facilitate good outcomes in a range of fields. Stakeholders pointed out that any regulatory sandbox designs that enable pilots or trials would need to integrate and consider approaches across both the environment protection and environmental planning legislation. The lack of early integration of approvals for orders and exemptions into the planning phase was raised by several stakeholders as an issue that increased the risk of investing in projects in NSW.

For regulators this is clearly a difficult space. Without reference facilities and guarantees on product quality, it is difficult for regulators to sign off on regulatory approvals at a concept stage. Enabling a pathway for pilot projects to demonstrate their product and process would provide certainty for the regulator and operator.

The lack of a clear pathway for the progression of trials and pilots within the NSW resource recovery framework is a significant barrier to investment and is a gap that should be addressed.

Recommendation 13

The EPA should seek to work with relevant agencies across government to develop a resource recovery innovation pathway to support the development, demonstration and assessment of new and innovative technology and processes. This could include consideration of approaches across the environment protection and environmental planning legislation.

OUTCOME 3 Enabling high quality materials to facilitate circularity

One of the key principles of a circular economy is to keep materials, products and services circulating in the economy for as long as possible. Successfully achieving the transition to a circular economy will require significant disruption to the operation of current manufacturing and supply chains and must be underpinned by intentional product design that enables the circularity of materials. Industry, governments, and individuals all have a role to bring about this change. Stakeholders identified a number of enabling levers that may help to deliver higher quality materials flowing through the circular economy.

This section of the report explores actions that could be undertaken within the resource recovery framework to better facilitate the flow of high-quality materials within the circular economy. There was a strong focus from stakeholders on expanding the regulator's focus from infrastructure and end-product standards to other enablers of a circular economy such as collaborative partnerships with industry, data availability and transparency, and promoting a shared responsibility for circularity throughout the supply chain.

Making use of the full range of regulatory tools across the supply chain

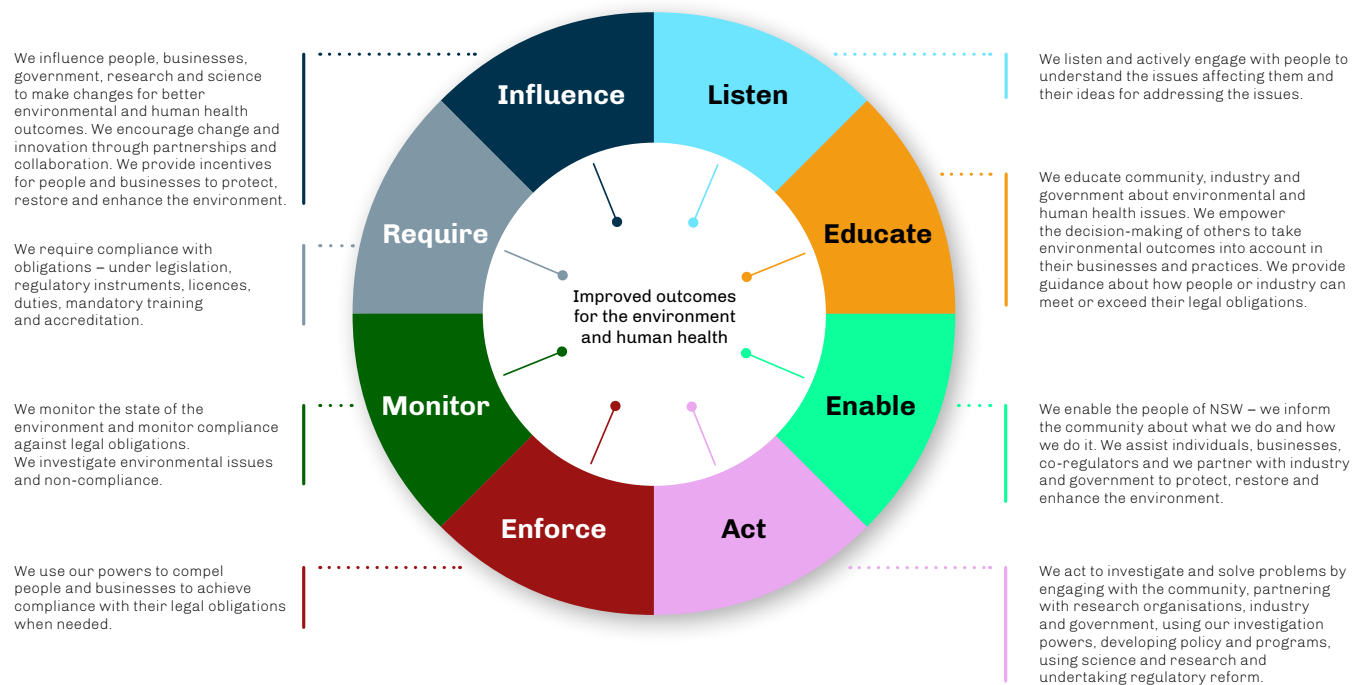
A strong, mature resource recovery industry can influence change in supply chains, restructure contracts to increase the rate of resource recovery and advocate for improved resource quality as materials flow through the circular economy. There was strong support from all stakeholders for a strong regulatory presence within the resource recovery sector to assist industry to achieve these outcomes. Many stakeholders felt that the EPA should do more to ensure a level playing field across the industry, with calls for:

- stronger penalties for non-compliance (including revocation of environment protection licences)
- more scrutiny of waste facilities and transporters by the EPA (including spot checks)
- more regular compliance and audit programs for all orders and exemptions, in partnership with industry
- stronger focus on unlicensed operators
- more powers for local councils in their role as regulators, including higher value fines.

Stakeholders also suggested that a third-party accredited assessor scheme could be established, similar to that for contaminated site management in NSW, to assist the EPA with auditing under the framework. Such a scheme would be administered by the regulator. Third-party certification processes are not uncommon locally and overseas. For example, in Scotland and Austria there are third party accreditation processes for compost facilities to recover waste into resources.

The EPA has a broad set of tools at its disposal to achieve its objectives. As shown in Figure 1 below, the EPA's own *Regulatory Strategy 2021-2024* outlines eight elements that deliver a balanced regulatory approach.

Figure 1: EPA regulatory elements (Regulatory Strategy 2021–24)



In general, there was consensus among stakeholders for greater EPA presence and involvement across the eight elements of the Strategy to facilitate better outcomes. Some submissions generally called for a greater emphasis on the ‘enabling,’ ‘listening’ and ‘educating’ elements of the Strategy and advocated for an increased focus on working collaboratively with industry on minor exceedances and increasing EPA-run education sessions or programs to help industry better understand their regulatory obligations. Where stakeholders called out the need for specific actions, these focused on increasing EPA enforcement actions (e.g., fines, inspections, audits etc).

It was clear from the consultation responses that stakeholders wanted more collaboration, education, and engagement with the EPA and NSW Government more broadly.

Recommendation 14

The EPA should periodically develop and publish regulatory plans targeting specific waste and resource recovery industry sectors. The plans should make better use of the full range of elements in the EPA’s regulatory approach, outlined in the Regulatory Strategy 2021–24, by identifying the specific elements that the EPA intends to use. Plans should also include more opportunities to engage with stakeholders.

Enhancing circularity and regulatory obligations for waste generators

Transitioning to a circular economy requires changes to existing supply chains to ensure that high quality materials remain in circulation for longer. Some stakeholders supported the establishment of product stewardship schemes in order to embed circular economy outcomes into product design and support the development of processes and infrastructure for collection, processing, and reuse.

Many stakeholders argued strongly that to achieve higher quality materials circulating through the economy, government must shift its attention to address poor upstream waste management, collection, and transportation practices that can result in contaminated feedstocks and significant costs to processors to manage and process low quality waste materials.

Many stakeholders advocated for tighter regulation of waste generators to reduce contaminants at the source and ensure that cleaner, fit-for-purpose waste streams are received at resource recovery facilities. Some examples of government intervention in other jurisdictions included reference to California's mandatory source separation systems, whereby businesses of a particular size or that generate a particular volume of waste are required to separate that waste. In NSW, separate collection of food and garden organics from all NSW households will be required by 2030, and food waste from targeted high waste generating businesses by 2025.

The NSW framework does contain legislative provisions that place obligations on waste generators. Section 143 of the POEO Act requires that the waste transporter and owner must transport waste to a facility that can lawfully receive it. Stakeholders argued that this requirement does not sufficiently drive behaviours to deliver high quality materials through to the resource recovery sector.

There are significant benefits to improving the quality of materials from waste generators to ensure optimal circular economy outcomes. This will require waste generators to shift their behaviour and attitudes. There are many parties (not just the regulator) that can influence this outcome, including resource recovery facilities through their gate prices and contractual arrangements.

There is merit in further investigating upstream intervention points to ensure that only quality materials turn up at the front gate of a resource recovery facility. The EPA should consider how it may better use the full remit of its eight regulatory elements to achieve better quality recovered materials from waste generators. It is important to acknowledge that because many waste generation activities are not licensed by the EPA, applying the full range of regulatory elements may be difficult. Most waste generators (in particular construction and demolition activities) would however require some form of development consent under the *Environmental Planning and Assessment Act 1979*. Interventions could be considered within the planning framework, building on the EPA's existing *Waste Not Development Control Plan*, which is a model chapter that council can include in development control plans. For example, actions could be taken to improve the quality of waste management plans produced for development applications and to embed improved waste management practices by generators into development consents.

Recommendation 15

The EPA should consider the regulatory elements available under the Regulatory Strategy 2021–24 and determine how they could be better applied to achieve higher quality materials from waste generators.

Recommendation 16

The EPA should seek to liaise with relevant planning authorities to investigate embedding requirements for improved waste management practices by waste generators, including through planning instruments and development consents.

Optimising waste classification for circular economy and regulatory outcomes

As jurisdictions enter a phase of transition from more linear waste management to circular economy frameworks, government needs to consider whether the guidelines, tools and instruments that support

current regulatory frameworks are fit-for-purpose for the regulator and the regulated community. Waste classification was raised by many stakeholders as an area that needs reforms to ensure that it is fit-for-purpose for the resource recovery sector.

Waste classifications were designed as a tool to group wastes to manage their risks for disposal, but increasingly scheduled resource recovery and waste processing facilities are using waste classification reports to guarantee material quality and characterisation on receipt.

Under the classification system, wastes are classified into one of six groups based on risks to the environment and human health. Waste classification allows a person to determine the regulatory requirements under the POEO Act that apply to the waste; pass information relating to waste classifications and relevant regulatory requirements along the supply chain so people transporting and receiving the waste know how to manage its risks; and to identify a lawful waste facility that can receive the waste for storage, processing, treatment, disposal, or resource recovery.

The licences of scheduled waste facilities list the types and sometimes classes of waste that a facility can lawfully receive. The Issues Paper described a number of concerns with waste classifications, including issues around chemical testing requirements; lack of verification of reports; no template for waste classification reports; and limited requirements on who can prepare or approve waste classification reports. Stakeholders reported that fraudulent or inadequate waste classification reports were common. Stakeholders also reported that there is minimal understanding of the waste classification system across the industry and government sectors and little guidance, training or resources provided by the EPA.

The unintentional or deliberate misclassification of waste can pose a significant risk to business operations as well as the environment and human health. Given that waste classes and definitions are sometimes tied to the receipt of material at resource recovery facilities, stakeholders stated that a lack of quality assurance and controls around waste classification reports left them vulnerable to receiving misclassified waste, which may cause them to produce contaminated products and to be left with substantial disposal costs.

Many stakeholders called for an overhaul of the current waste classification system to ensure that it supports the receipt of higher quality materials at recovery facilities rather than grouping wastes for disposal. Some stakeholders requested additional guidance materials, including photographic standards, or more specific materials to be listed on licences (such as timber, wood, or food waste), rather than waste classes.

The EPA is investigating establishing a scheme for accredited waste assessors to assist with waste characterisation and classification under the WaSM. An accreditation scheme aligns with the strong stakeholder support for waste classification reforms, including mandatory training and certification of classifiers, standard requirements for a waste classification report, and an online register. The recommendations of this review lend further strong support to the development and implementation of such a scheme, as it would help to address many of the issues identified in this report.

Recommendation 17

The EPA should review the role and application of the NSW waste classification system to the resource recovery sector.

Protection for consumers

A robust circular economy depends on strong demand for high quality recovered resources, where the composition of those materials is known, and risks to human health and the environment are minimised. Strong demand for recovered resources requires consumer confidence in those materials. The resource recovery order and exemption framework was intended to provide confidence for consumers that recovered materials have been produced in accordance with quality standards contained within the relevant order and exemption.

Regulatory action is often focused on the end-use of materials because this is where the harm to the environment or human health, or non-compliance with legislative requirements, is most clear. This can be problematic because consumers often have little control over the quality of the recovered materials they receive. Where a recovered resource fails to comply with exemption requirements, including chemical limits, it may mean that a consumer is at risk of being in breach of the waste regulatory requirements the exemption would otherwise exempt them from.

Feedback from stakeholders with experience of the resource recovery framework suggests that unlawful behaviours of generators or processors, coupled with a lack of accountability, can result in poor quality recovered resources and loss of consumer confidence. The current system received two specific criticisms from stakeholders. Firstly, that consumers and transporters could not always rely on generators and processors to comply with resource recovery requirements regarding the composition of the product they receive. Secondly, that it was not always reasonable to apply certain

requirements under a resource recovery exemption to a consumer (e.g., retention of records).

Stakeholders provided several suggestions to help improve confidence in recovered resources and boost consumer engagement with the resource recovery framework, including advocating for increased self-regulated industry accreditation schemes and broader regulatory powers for local councils that would enable them to issue higher fines for a range of waste offences.

Because consumers of recovered materials are diverse and have little ability to control the quality of materials they receive, it is important that the EPA sets clear standards and provides authoritative guidance and support on what is required for compliance. Targeted compliance campaigns run by the EPA in partnership with other relevant regulatory bodies could further help support consumer confidence and increase the quality and reputation of recovered materials. The EPA also needs to be an authoritative source of information for consumers on the state of resource recovery, key risks, and new and emerging issues.

Recommendation 18

As part of a regulatory plan for the waste and resource recovery sector, the EPA should investigate ways to enhance protections for consumers of recovered resources and place greater responsibilities on waste generators and processors. This could include through compliance campaigns targeting resource recovery orders and exemptions and other safeguards.

Data collection and waste tracking across the supply chain

Another key enabler in delivering better circular economy outcomes is the monitoring and provision of data. Monitoring systems for a circular economy are a whole-of-government consideration that extend broadly across the whole economy and could include product and market data, repair and reuse schemes and many other options across the supply chain. Within the scope of this review, stakeholders advocated for increased tracking and monitoring of waste and resources throughout the supply chain, supported by the availability and transparency of data which can assist in both enhancing circular economy outcomes and facilitating better compliance outcomes.

While the EPA collects data on material movements at licensed resource recovery facilities, there is not a complete picture of the movement of waste and resources across the entire supply chain. As identified by stakeholders, this is both an intentional feature and a disadvantage of the framework. The order and exemption system allows for the reuse of certain resources without being subject to some regulatory requirements such as data reporting. While the reduction in regulatory burden was beneficial for industry when the order and exemption system was first established, stakeholders considered that there are significant benefits, such as access to robust data, that would justify increased reporting requirements utilising technological systems.

In addition to improved knowledge of waste movements throughout the supply chain, better data can also help to inform the use of regulatory options and policy levers beyond those used for strict compliance and enforcement of orders and exemptions.

Stakeholders suggested a number of technological solutions for increasing the amount of data captured across the resource recovery supply chain. There was significant stakeholder interest in expanding the online "WasteLocate" application which tracks asbestos and tyre movements to monitor the transport of recovered resources. Similar tools are currently being deployed in the United Kingdom. Other options suggested by stakeholders included GPS tracking, licensing of all waste transporters (not just those transporting trackable or hazardous wastes) and sophisticated waste tracking systems that could be integrated into planning and development approval processes to enable whole-of-life-cycle tracking.

Improved data capture should be paired with increased data accessibility and transparency for resource recovery framework participants. Symmetrical information creates a level playing field and avoids market failure by ensuring all parties have access to relevant information when making decisions. Presently there is no data captured on which facilities are producing resources under a particular resource recovery order or which consumers are using a material under a resource recovery exemption. This is a barrier to achieving both market and regulatory outcomes.

While beneficial, the introduction of additional technology-driven initiatives can be expensive and is likely to require significant resourcing and training for participants. Understanding and developing methods for the governance, collection, storage, and lifecycle usage of data are also complex. There are likely immediate benefits that can be realised in the short-term by prioritising the improvement of the quality

and frequency of data collected under existing orders and exemptions.

In Queensland, users must first register with the regulator before using the equivalent of a NSW resource recovery order. Collection of data through a registration system could provide a list of generators and processors in NSW, making it easier for new consumers to find them and providing the regulator with a clear list of stakeholders to interface with over a particular resource recovery order.

Government can play an important role by making more data publicly available. This would help stakeholders make informed decisions and support the transition to a robust circular economy. Regulators must be more responsive and willing to experiment to create a more innovative ecosystem for resource recovery businesses. This includes removing barriers to greater use of public data. Improvements to current data collection would support delivery of circular economy goals by identifying emerging issues for collaboration and deliver a trusted source of data.

Recommendation 19

The EPA should investigate opportunities for the increased collection and publication of resource recovery data that could assist in the transition to a circular economy, including collection and publication of the generators and processors operating under a resource recovery order.

OUTCOME 4

Improving approaches to known and emerging contaminants

Contaminants may pose significant risks to human health and the environment. The EPA sets contaminant limits for resource recovery based on scientific evidence and application of the precautionary principle. Stakeholders requested more flexibility in dealing with contaminants. Asbestos, microplastics and

per- and polyfluoroalkyl substances (PFAS) were the contaminants most discussed by councils, industry, and peak bodies.

The challenge in setting chemical and regulatory limits within the resource recovery framework is in striking the right balance so as to both encourage the most efficient use of resources while at the same time minimising environmental harm. This means setting regulatory limits that satisfy the principles of ecologically sustainable development, including not impacting the environment in the future or contaminating land for future generations.

Allowing even small amounts of contaminants in recovered materials can compound to unsafe levels if they are repeatedly applied to the same land or blended with other contaminated materials. Blending and transport of contaminated waste or soils is considered a high-risk activity in terms of contamination. Contamination places a huge potential burden on landowners and government. Contaminated land management and remediation can be difficult and costly; prevention of contamination from recovered materials is critical.

Management of asbestos contamination of waste

The human health risks of asbestos are serious and the resource recovery framework is a critical gatekeeper for ensuring that waste materials containing asbestos are appropriately managed. Industry, councils, and peak bodies expressed frustration with the EPA's approach to the presence of asbestos contamination in waste. This approach is based on the requirements of the POEO Act, which does not allow for the recycling or reuse of asbestos waste.

Stakeholders were specifically concerned about the zero-tolerance approach to the presence of any asbestos within other types of waste, which means all of the impacted waste is asbestos waste. Asbestos waste must not be recycled or reused. This often means that large volumes of waste are disposed of in landfill. The complexity in dealing with asbestos contaminated waste is made worse by the cost burden for operators that unintentionally receive asbestos waste or councils that deal with illegally dumped asbestos. Stakeholders also reported that the current approach has such a sizeable impact on high volume recovered resources that the WaSM's resource recovery targets may not be met. Recovered resources that are particularly impacted include those from the construction and demolition sector, such as concrete aggregate, excavated natural

material (ENM), recovered asphalt, and recovered fines. Jurisdictions across Australia take different approaches to managing and detecting asbestos in waste. For example, in Western Australia, construction and demolition waste may be reused provided it meets certain conditions, including that it contains less than 0.001% weight-for-weight asbestos.

Many stakeholders were also concerned about the approaches to asbestos in the *Contaminated Land Management Act 1997* and the POEO Act and regulations.

Recommendation 20

A scientific expert external to the EPA should review and provide advice on the NSW approach to management of asbestos contaminants in waste and recovered materials. The review should include, but not necessarily be limited to protection of human health and the environment and consideration of opportunities and constraints of beneficial reuse.

Recommendation 21

Taking into account the advice of the external scientific expert, the EPA should consider how existing approaches to management of asbestos contaminants in waste and recovered materials could be improved.

Emerging contaminants

As knowledge around the environmental and human health impacts of chemicals and substances grows, it is likely that new contaminants will continue to emerge. The key challenge in dealing with emerging contaminants is a lack of information or evidence to support decision-making. This also presents a difficulty for all parties when trying to negotiate waste contracts. Stakeholders requested that an agreed consultation process on the management of newly identified contaminants be developed, including opportunities for expert scientific review and risk assessments.

One of the key elements of the legislative framework in NSW is the precautionary principle, which states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The federal Productivity

Commission has also advocated for precautionary measures to be taken, even if some cause-and-effect relationships are not fully established scientifically, if an activity raises threats of harm to human health or the environment.

The EPA should take a proactive and adaptive approach to emerging contaminants within the resource recovery framework to ensure potentially harmful substances are safely handled, transported, stored, and disposed.

The resource recovery framework places the burden of proof on generators and processors to demonstrate that the reuse of their waste is genuine, beneficial and fit-for-purpose, and will not cause environmental harm. This includes a requirement for generators and processors to provide evidence (including the results of chemical analysis) regarding the qualities of the waste proposed to be reused. The frequency, scale and number of samples required are outlined in each resource recovery order. Providing information around emerging contaminants to stakeholders would help to provide confidence in the process for determining contaminant thresholds and assist resource generators and processors to determine whether improvements could be made to their materials to reduce risk.

While government, communities, and the economy continue to face the persisting impacts of known legacy contamination, future contamination issues will also arise.

Continued monitoring of contaminant science and responsive application to resource recovery orders and exemptions, including sampling requirements, is imperative for human and environmental health. Adaptability, avoidance, and removal of contaminants is particularly relevant for recovered materials and the EPA should continue work to reduce and remove the risks posed by contaminants in recovered resources. Clear communication around legacy and emerging contaminants by the EPA is required to reduce risk of exposure and ensure framework participants can proactively screen and avoid emerging contaminants. This would also help stakeholders to prepare for and understand any changes to the framework made in response to emerging contaminants.

Recommendation 22

The EPA should implement a program to proactively investigate emerging contaminants and better engage with stakeholders regarding emerging contaminants.

