



CENTRE OF
DECOMMISSIONING
AUSTRALIA

A large, semi-circular graphic on the right side of the page contains a blue-tinted photograph of an industrial facility, likely a decommissioning site. The image shows a complex network of pipes, scaffolding, and large cylindrical tanks. In the foreground, there are several large, rectangular objects, possibly waste containers or equipment, stacked under a simple metal structure. The background shows a flat, open landscape under a clear sky.

Decommissioning Waste Disposal Pathways

Public Report

May 2025

Acknowledgements

These valuable reports, which help to build a solid foundation for the ongoing development of an Australian decommissioning industry, have been made possible through the following contributions.

This report and its associated materials were produced by the Centre of Decommissioning Australia (CODA) in collaboration with SKH Circular Economy Solutions (SKH). SKH leveraged their unique in-depth knowledge of the Australian waste management landscape and their extensive industry network to ensure that this work is the best possible reflection of the current state and future opportunity related to decommissioning waste management.

We extend our sincere gratitude to the Department of Jobs, Tourism, Science and Innovation, a Western Australian Government department, for their ongoing financial support and guidance, which has been instrumental in making our reports a reality and enhancing their value to the Australian industry.

CODA would like to also acknowledge the contributions of all the individuals and companies who provided their input to the data contained in this report. These insights have made the report all the more significant.

Disclaimer

This document and its contents have been prepared and are intended solely as information for the Centre of Decommissioning Australia and use in relation to decommissioning planning.

CODA and SKH Circular Economy Solutions assume no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This public version of the report provides an overview of the full work scope carried out for the full report, but does not include detailed accounts of the individual work phases within that scope. It is principally intended to act as a companion to, and guide for, the use of the Decommissioning Waste Facilities Database. The development, structure and composition of this database are comprehensively described here. This public report includes the recommendations arising from the full report.

Access to the full report, which includes detailed accounts of each work phase, as well as the translation of recommendations into an action plan, are available to CODA Partners via the CODA Partner Portal

This document has 23 pages including the cover.



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Executive Summary

The decommissioning of oil and gas facilities and infrastructure located in Australia and its offshore environment is already underway. The number and scale of these decommissioning projects are expected to grow significantly over the next 5 to 8 years, with further bursts of activity continuing beyond this initial peak for the next 3 decades. Under the requirements of the Offshore Petroleum and Greenhouse Gas Storage Act (2006), the baseline expectation is that offshore title-holders will remove from the property all materials and structures that have been used for the production, storage and transmission of hydrocarbons. Similar requirements are embedded in corresponding state and territory legislation covering the decommissioning of nearshore and onshore oil and gas facilities.

The volume of materials and waste streams arising from oil and gas decommissioning presents both challenges and opportunities for existing and future waste management and recycling supply chains in Australia. This study, undertaken by Centre of Decommissioning Australia (CODA) with support from the Government of Western Australia, provides insights into the current status of those supply chains and makes recommendations which will better enable them to address the key challenges and capture the opportunities presented by ongoing decommissioning activities.

The study and its findings and recommendations are based on the following inter-related activities:

Industry Consultation: Separate workshops were run to gather insights and perspectives from both decommissioning waste producers (oil and gas operating companies) and waste management / recycling supply chain representatives. In addition, a comprehensive survey of nearly 50 waste management facility owners provided further specific feedback on relevant challenges and opportunities.

Decommissioning Waste Facilities Database Construction: All data and information for over 2000 waste facilities licensed to provide services relevant to the needs of oil and gas decommissioning have been compiled into a national database. An interactive, searchable user interface has been added to enable industry and governments ready access to the best available description of the national capacity and potential pathways for decommissioning materials and waste management.

Waste Management Legislation & Regulatory Frameworks Review: A summary description of the international, national and state/territory legislation and regulatory frameworks relevant to the management and recycling of decommissioning outputs has been developed. This provides clarity on the nature and complexity of the regulatory environments that existing supply chains are required to navigate and is essential context for identifying potential opportunities to streamline and improve related processes.

Integration with Global Industry Insights: The outputs from industry consultation, database construction and the regulatory frameworks review have been integrated with examples of best practice management of decommissioning materials and waste streams gained in other industry sectors (mining, nuclear energy) and in other global decommissioning jurisdictions (UK, SE Asia).

The critical insights provided by the research and integration process has supported the definition of a number of recommendations designed to enable and promote best-practice approaches to decommissioning waste management in Australia.

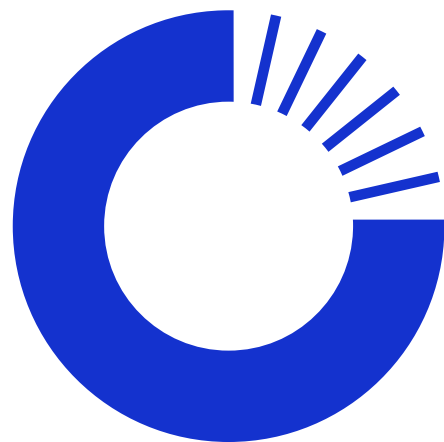
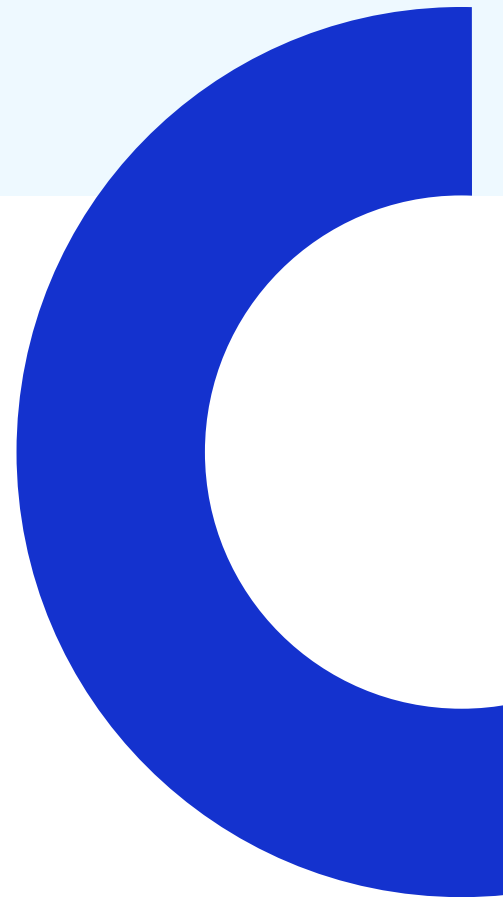
- 1. Develop Clear Communications** which help to demystify and normalise oil and gas decommissioning as a process. Public information packs and fact sheets which concentrate on the industry's effective risk management strategy and opportunity creation.
- 2. Maintain a Materials Focus:** Communications relating to oil and gas decommissioning programs should talk about 'materials' and not just 'waste' to enable and promote a more balanced, realistic view which builds expectation around recovery, re-use and recycling rather than just disposal.
- 3. Connect Waste Producers with the Supply Chain:** Build more open, frequent and meaningful connections between the oil and gas and waste management industry sectors to improve waste producer's understanding of the full range of options available to them and to provide greater visibility of opportunities to the supply chain.
- 4. Develop a 'Waste-Led Decommissioning' Approach,** prioritising critical-path waste management needs such as decontamination and hazardous materials management as the essential precursor to the safe and sustainable dissemination of materials and waste into disposal and recycling supply chains.

Executive Summary

- 5. Clarify the Circular Economy Perspective:** Clearly and appropriately position oil and gas decommissioning in the context of the Circular Economy and the role it can play in contributing to increasingly circular material flows.
- 6. Integrate Oil & Gas Decommissioning & Mining Closure:** Identify common needs and optimise the range of solutions available to both industries via platforms such as a Decommissioning & Closure Waste Management forum.
- 7. Map & Model Industrial Systems and Supply Chains** in detail to fully understand the dependencies and opportunities within supply chains relevant to decommissioning materials and waste management.

In addition, the study proposes 5 principles on which to base the development of strategy and actions which aim to streamline and improve the navigation of regulatory frameworks relevant to decommissioning waste management:

- 1. Collaboration & Partnership** between government agencies, industry operators, and the waste supply chain. This cooperative approach will ensure that all stakeholders are aligned in managing decommissioning waste effectively and sustainably.
- 2. Education & Awareness** for regulators and planning policy bodies to provide them with a clear understanding of the primary waste streams, the forecast waste volumes and the challenges faced by those in the waste supply chain.
- 3. Uniformity & Clarity** of regulations, along with clarity and consistency in definitions and the streamlining of processes related to the regulation of decommissioning waste and recycling.
- 4. Risk-Based Assessment** and approval processes with clearly defined criteria, timeframes, and licensing procedures to streamline approvals while protecting proprietary business information.
- 5. Integrated National Approach** involving stakeholders from across the sector to support the creation of an enabling regulatory framework and national guidelines that address the unique challenges of decommissioning waste management and recycling.



1.0

Context & Objectives

1.1 Decommissioning Waste Disposal Pathways

Under the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* the decommissioning of offshore oil and gas production facilities and associated infrastructure should include the full removal of these structures and materials from the permit unless an equal or better environmental outcome can be demonstrated as a result of leaving some or all of them in situ. Similar requirements are also embedded in corresponding state and territory legislation covering the decommissioning of nearshore and onshore oil and gas facilities.

The implication of these requirements is that the decommissioning of Australia's oil and gas inventory in the coming decades will result in the recovery of substantial volumes of industrial materials. Where possible, selected infrastructure elements will be refurbished for re-use within the oil and gas industry (either in Australia or internationally). The majority of the recovered materials, however, will require decontamination and processing in readiness either for input to recycling supply chains or, as a last resort, disposal to landfill. Oil and gas decommissioning therefore represents a significant national waste management challenge, but it is also an opportunity for both Commonwealth and State governments to:

- Ensure the responsible, efficient and sustainable treatment of the resulting materials and waste streams in order to reduce any associated risks to as low as reasonably practicable and to deliver the best possible environmental outcomes.
- Maximise the potential for positive economic and social outcomes arising from waste management activities carried out in Australia, including, for example, stimulating growth in the scale and connectedness of corresponding supply chains and associated regional employment opportunities.

The consideration of the materials arising from oil and gas decommissioning as 'waste' is consistent with a definition of

waste in terms of unwanted materials which are discarded after their primary use. It does not preclude the recovery, refurbishment or transformation of the material such that it can either be re-used or re-purposed or is in a form that is suitable for reconstitution as alternative products which are unrelated to the primary use case. The relatively high-value nature of the primary waste streams expected to arise from decommissioning makes it likely that viable solutions for their recovery, re-use or re-purposing will be actively sought.

In 2022, Centre of Decommissioning Australia (CODA) published a report summarising an evaluation of domestic disposal and recycling pathways for materials and waste generated by the decommissioning of offshore oil and gas infrastructure (CODA, 2022). This study provided industry with a directional indicator of requirements, capabilities and capacity relating to the most common materials and waste streams.

The study indicated, on the basis of the current regulatory base case of full removal, that decommissioning of offshore oil and gas facilities and infrastructure would result in 5.7Mt of material requiring disposal. Almost 62% of this material is in the form of steel, with concrete (24%) representing the next largest waste stream by volume. In terms of infrastructure elements, export trunklines and intra-field pipelines are expected to contribute 67% of the total waste volume. Geographical distribution of recovered materials is to be overwhelmingly dominated by Western Australia (89%).

In 2024, CODA has built on the 2022 study outcomes by conducting a more detailed assessment of industry readiness and optionality in relation to the management and disposal of decommissioning waste streams (this report). In addition, a more granular overview of the most common waste streams has been developed, reflecting the recognition that implications of decommissioning for the waste management industry are dependent as much on problematical, low-volume hazardous materials as they are on the more benign, high-volume 'headline' waste streams.

1.2 Scope & Objectives

1.2.1 Project Scope

The project focuses on the management and disposal pathways for materials and waste streams generated by the decommissioning of oil and gas facilities and infrastructure. Both onshore and offshore project decommissioning are in scope.

This report describes the key challenges perceived by both waste generators and the waste management and recycling industry in relation to these materials and waste streams and makes recommendations based on learnings from other industries and global benchmarks with regard to potential opportunities.

While recognised as one of the foundation principles of the developing circular economy, the potential re-use of decommissioned oil and gas infrastructure is beyond the scope of the current project. In a global context, small markets for the re-use of refurbished infrastructure elements in the oil and gas industry have been established and are effectively serviced by a number of organisations. Volumetrically, however, re-use only accounts for a very small proportion of the materials recovered during decommissioning. It has not, therefore, been subject to further analysis as part of this project.

Similarly, common waste valorisation processes such as composting, pyrolysis and waste-to-energy have not been evaluated in detail. They represent part of the broader portfolio of options and opportunities for the management of waste streams, but specific analysis of their requirements, emissions profiles and potential benefits is beyond the scope of this project.

1.2.2 Strategic & Functional Objectives

The key strategic objectives of the **Decommissioning Waste Disposal Pathways** project are:

- To provide industry and governments with a clear description of existing materials and waste management pathways in Australia relevant to oil and gas decommissioning, including capacities and licensing of key facilities.
- To use feedback from oil and gas titleholders and waste management service providers to highlight current capabilities, limitations and future improvement opportunities for the industry and how it is regulated.
- To take learnings from other industries and global jurisdictions with a longer history of oil and gas decommissioning and to thereby support and accelerate the development of a sustainable and commercially viable decommissioning industry sector in Australia, aligned with the best possible environmental and community outcomes.

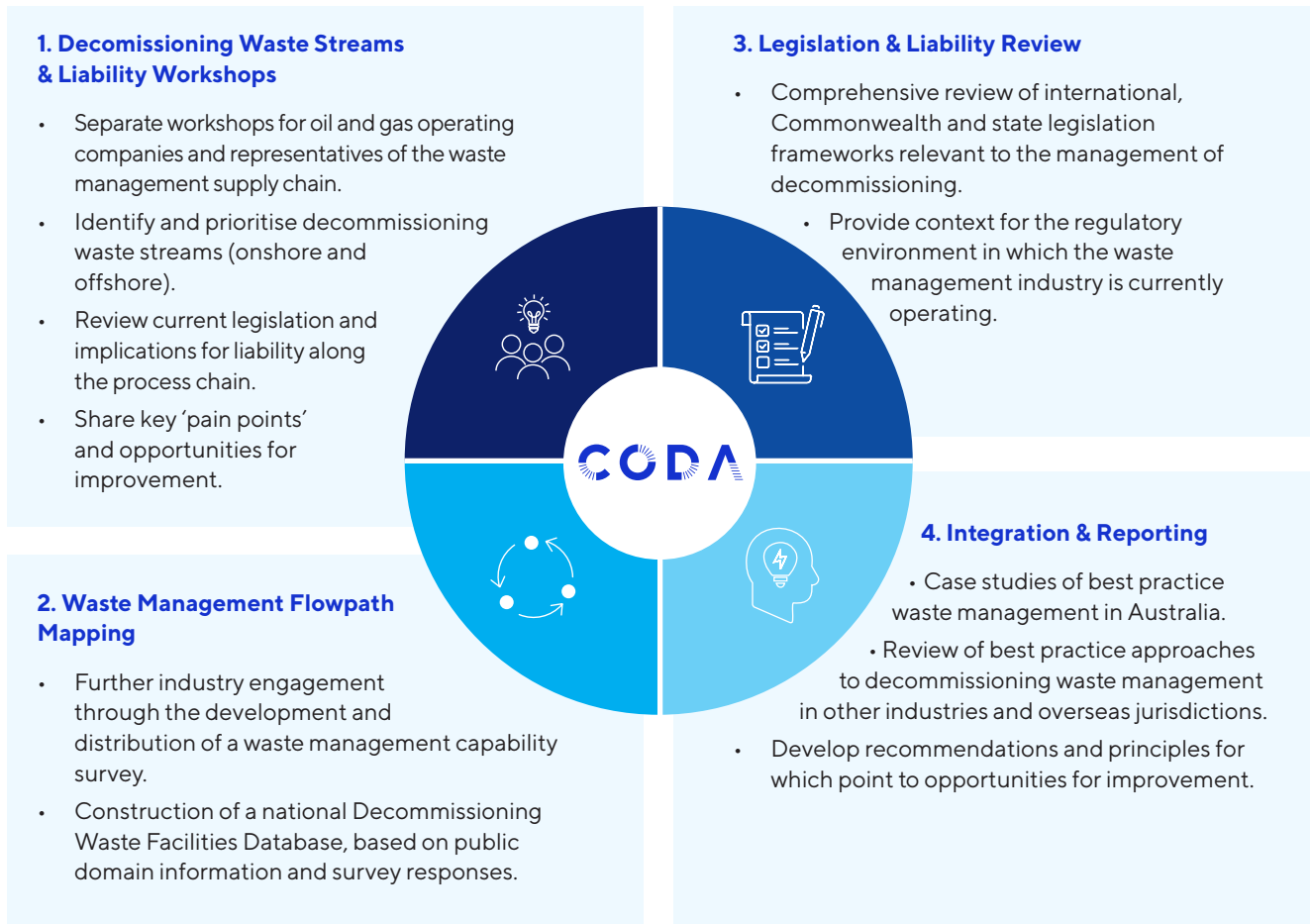
In terms of functional objectives, this study also aims to address the following:

- Ownership and transfer of liability for materials and waste streams.
- Legislative and permitting frameworks within which the industry currently operates.
- Best practice examples of waste management (case studies).
- Critical gaps in the market / supply chain for waste management and recycling.

This work has been supported under the Financial Assistance Agreement between CODA and the WA State Government, administered by the WA Department of Jobs, Tourism, Science & Innovation (JTSI). The scope of the industry evaluation, however, is national rather than WA state-specific and any WA emphasis on challenges and opportunities reflects the dominance of North-West Shelf decommissioning in terms of the volume of materials arising from it.

1.3 Work Phases: Process, Methods & Deliverables

This work has involved 4 main phases of activity:



Phase 1 Decommissioning Waste Streams & Liability Workshops

Two separate workshops were held in April and May 2024, one involving oil and gas operating companies and one involving representatives of the waste management supply chain. These events provided a platform for titleholders and suppliers to:

- Identify and prioritise waste streams arising from oil and gas decommissioning activities (onshore and offshore).
- Review current legislation and discuss implications for liability along the supply chain.
- Share key 'pain points' and opportunities for improvement.

The separate consultation with operators and the supply chain provided both groups with an environment in which they felt comfortable to share thoughts, ideas and experiences. It effectively removed concerns over competition, commercial advantage and reputational impact.

Phase 2 Waste Management Flowpath Mapping

This phase involved:

- Further industry engagement through the development and distribution of a waste management capability survey. The content of the survey was informed by feedback from the workshops. It was nationally distributed and sought feedback in relation to the types of waste managed by the facility, its current capacity and processing capabilities.
 - Construction of a waste management facilities database, based on a combination of public domain information and survey responses. An interactive front-end interface has also been constructed allowing easy access to data summaries and spatial interrogation of the database.
-

Phase 3 Legislation & Liability Review

A comprehensive review of international, Commonwealth and State legislation frameworks relevant to the management of decommissioning waste has been undertaken. This provides context for the regulatory environment in which the waste management industry is currently operating. All relevant Acts and Regulations have been captured and compiled and are available through links provided via the dedicated Waste Legislation Review summary on the CODA website.

Phase 4 Integration & Reporting

The main findings from each phase of the work have been integrated into a summary of the key waste streams and priority challenges associated with managing materials produced by the decommissioning and removal of oil and gas facilities and infrastructure. Case studies of best practice waste management in Australia have been developed and a review of the approach to decommissioning waste management in overseas jurisdictions has also been undertaken.

The integration and review process has been used to develop recommendations and principles for governments and industry to consider. The recommendations point to opportunities for improvement not only in the process and regulation of decommissioning waste management but also in the environmental, economic and community outcomes arising from it.

2.0

The Australian Decommissioning Waste Facilities Database

2.1 Context & Objectives

Identifying challenges which might threaten the sustainable management of decommissioning materials and waste streams requires a description of the relevant parts of the waste management industry in Australia. The country's overall waste production profile and the economic response by industry and households are documented in DCCEEW's latest National Waste Report² and in the Australian Bureau of Statistics' Waste Account³ analysis. There is, however, no readily accessible and comprehensive national overview of the location, distribution and capacity of the waste management facilities relevant to oil and gas decommissioning at this time.

A national decommissioning waste management facilities database has therefore been constructed to:

- Provide the oil and gas decommissioning industry with an integrated overview of the current status of materials management capability within Australia.
- Understand the nature of any gaps within the Australian waste facility landscape which might prevent the domestic processing of decommissioning waste.
- Challenge existing assumptions and perceptions of the waste management industry in terms of its overall capacity and capability.

Across Australia, bespoke waste facilities are either operating or being developed to respond to the recovery of niche waste streams. These facilities, which are located in both regional areas and cities, can typically manage at least some elements of decommissioning waste. There is a risk that if operators and Tier 1 contractors in the oil and gas industry are not aware of the presence and capabilities of these facilities, assumptions might be made in terms of the need to either export this waste or build new capacity into the market. Both of these outcomes potentially impact the sustainability and operation of these businesses. Capturing the presence and capabilities of as many relevant waste facilities as possible and making it easier for industries seeking waste management solutions to access that information in one place are vital to ensuring a thriving waste facility ecosystem, not only to service decommissioning, but also the waste generated under normal operating conditions by the oil and gas industry.

Mapping out the waste management ecosystem in this way is a valuable first step in understanding the current capability and future potential of the Australian market to receive and process decommissioning waste and, where appropriate, to turn at least some elements of the waste streams into valuable products.

2.1.1 The Waste Management Industry in Australia

The Australian waste management industry is a dynamic industrial ecosystem that has developed and continues to evolve in response to market needs. As a result, there is a direct correlation between industrial presence and the abundance and diversity of waste facilities. Traditionally, Victoria and NSW have held the largest numbers of waste management facilities, which service the manufacturing and resources industries in those areas. Other waste facility hubs are located in Western Australia (mostly around the Perth/Peel region), Queensland (Brisbane and Gladstone), and South Australia (Port Pirie and Adelaide). In the NT, the Darwin area includes several speciality facilities which are vital to the local industry.

Waste facilities commonly work on the basis of a low profit margin for the services provided and are typically, therefore, lean operations (i.e. preserving as much value as possible through the most efficient use of limited resources). It is also not uncommon for waste facilities to be relatively transient, with comparatively frequent changes of ownership and/or temporary shutdowns. The Australian waste industry is also a very competitive market, where landfill, evaporation or incineration are often more competitively priced than more complex and sustainable waste management processes and therefore remain the preferred option for waste disposal.

It is also common in Australia to see waste facilities start up as successful recyclers, only to be acquired by larger waste management companies for their licences alone (rather than for their capabilities). Often there is a loss of capabilities to service the market as a result of this process as many such facilities are either completely 'mothballed' or their equipment decommissioned. In addition, not all recycling facilities have the throughput capacity to require licencing or permitting, and as a result many of these facilities do not appear in government reports or databases.

The decommissioning waste facilities database has been developed with full recognition of this very dynamic industry landscape and how it is being actively re-shaped by market forces. It is a 'snapshot' of current status that represents a foundation on which to build an understanding of existing materials management pathways. Plans for the ongoing maintenance and 'evergreening' of the database are outlined in Section 2.6.

²<https://www.dcceew.gov.au/environment/protection/waste/national-waste-reports/2022>

³<https://www.abs.gov.au/statistics/environment/environmental-management/waste-account-australia-experimental-estimates/latest-release>

2.2 Data & Information Capture

The construction of the decommissioning waste facilities database involved accessing as much relevant material as possible from public domain sources and incorporating additional feedback obtained directly from a number of individual facilities via a structured survey form.

2.2.1 Public Domain Data

A review of online and publicly available waste facility infrastructure databases was carried out. The data and information from these different sources were cross-referenced for consistency and completeness and the results compiled into a single repository.

The *DCCEEW 2022 waste resource recovery infrastructure database*⁴ provided the most extensive national coverage of waste management available at this time, making reference to approximately 7000 facilities. It was therefore used as the starting point for the identification of waste facilities relevant to the decommissioning sector and, in particular, the priority decommissioning waste streams. The DCCEEW database, however, was cross-referenced against the following sources:

1. Data from the comprehensive information set contained in *Victoria's waste and resource recovery infrastructure map*⁵ (October 2023), hosted by Recycling Victoria.
2. The Queensland state government's database for public waste infrastructure hosted on the Department of Environment and Science website⁶.
3. A database provided by the Northern Territory EPA of 'waste-listed' (permitted) facilities in the NT⁷.
4. Relevant IBISWorld market data⁸, which was reviewed to understand any additional gaps.
5. An online search engine check for additional waste facilities currently in operation.

Consistent with the findings of earlier industry consultation, the priority waste streams expected from oil and gas decommissioning that were used to review and verify the relevance of the data acquired from these sources included:

- Used hydrocarbons (unspecified)
- Hydrocarbon sludges (both heavily and lightly contaminated)
- Mercury (liquid and solid)
- NORMS (Naturally Occurring Radioactive Materials)
- Ferrous Steel (uncontaminated and contaminated)
- Non-Ferrous Metals (uncontaminated and contaminated)
- Polymers (both cleaned and contaminated forms)
- Fluids from chemical cleaning
- Concrete contaminated with plastics or asbestos
- PFAS liquids and PFAS-contaminated soils

The database construction process involved the following steps:

- The DCCEEW facilities database was reviewed in detail to ensure that all entries with potential relevance to the decommissioning waste streams were clearly identified and retained, including landfills and composting facilities.
- As due diligence and legal compliance of facilities are key starting points for the database, licences for all of the relevant waste facilities were accessed, linked and key information such as licence expiration dates and licencing waste categories were extracted and added into separate database columns.
- A gap analysis was then undertaken using search platforms and industry network knowledge to identify relevant priority waste facilities that were missing from the database.
- The database was then purged of facilities which are not considered to be relevant in terms of focus and capabilities, for which permits had expired, or which had been subject to disciplinary action on more than one occasion. Permitted facilities and facilities which were considered relevant and critical to the future potential of regional areas to service remote decommissioning activities were not removed.
- Cross-referencing and incorporation of additional facilities and associated information from other sources:
 - With over 30% of the waste recovery capability and key providers being located in Victoria it was considered particularly important to provide the most comprehensive overview possible of relevant Victorian facilities. Two separate databases were initially reviewed and all relevant information compiled, together with links to all permits and supporting data. This information was then added to the national dataset.
 - Review of the Northern Territory EPA waste facilities database and comparison to other datasets indicated the need for a number of updates, with some facilities removed on the basis of relevance and others added for completeness.
 - There were no Queensland-based facilities listed in the DCCEEW database so relevant information was therefore compiled from alternative online sources, including the Environmental Authorities (EAs) public register⁹. All relevant waste related categories and corresponding facilities with granted and enforced EAs were identified. Details of these facilities and links to all corresponding permits have been captured.
 - In Western Australia, the original DCCEEW dataset has been expanded to incorporate the licensed throughput capacity for permitted waste facilities.

⁴<https://www.dcceew.gov.au/environment/protection/publications/waste-resource-recovery-infrastructure-db>

⁵<https://www.vic.gov.au/victorias-waste-and-resource-recovery-infrastructure-map>

⁶<https://www.qld.gov.au/environment/circular-economy-waste-reduction/data-reports/qld-waste-resource-recovery-infrastructure-report>

⁷<https://ntepa.nt.gov.au/your-environment/waste>

⁸<https://www.ibisworld.com/au/industry/waste-treatment-and-disposal-services/5024/>

⁹<https://www.qld.gov.au/environment/management/licences-permits/public-register>

2.2.2 Waste Facilities Survey

A survey (consisting of 65 questions developed with input from operators and industry experts) was sent out to 340 waste facilities. This initial contact was followed up with phone calls and other forms of outreach to those in current networks to try and ensure effective engagement of as many facilities as possible. 10% of the facilities contacted stated that while they have the ability to process at least some of the relevant waste streams, they were not currently seeking to make this part of their core business.

However, 47 full responses were received to the survey. The data and information they contain essentially act as a form of pre-screening and initial due diligence that will provide support to waste producers and contractors seeking access to relevant waste facilities with specific capabilities.

Some of the larger-scale waste management companies were able to provide a response to the survey for each facility they operate. Others expressed clear interest in providing services to the sector but were unable to complete the survey for all of their relevant facilities. Similarly, many smaller waste companies were keen to ensure their inclusion in the database but did not complete the survey within the available time window.

Survey responses represent a rich, high-quality dataset, but their coverage of the industry is obviously limited. They provide a critical qualification and refinement of the public-domain information that has been used as the foundation of the database.

2.3 Database Constraints & Limitations

The Australian decommissioning waste facilities database is intended to be of particular relevance to a specific industry sector and much of the data and information that is not considered relevant to decommissioning waste management has therefore been removed. It does, however, provide an opportunity for waste generators and others in the industry to perform searches, see licences and scan the relevant parts of the waste management ecosystem in one place and to find the majority of the relevant waste management capability in Australia.

The accuracy and currency of the database are a function of the information currently accessible in the public domain and, to some extent, additional context that those organisations responding to the survey were willing to divulge. Mechanisms for maintaining the completeness and accuracy of the database are outlined in Section 3.6.

Significantly, compilation of the database did not include the auditing of the facilities in terms of their ability to deliver the needs of the decommissioning industry (beyond the high-level due diligence afforded by the survey responses). This would have been a very substantial undertaking that is far beyond the scope of the current work. The existence of the database does not remove the requirement on waste producers and contractors to undertake regular waste stewardship and assurance reviews.

2.4 Database Metrics & Content

2.4.1 Facility Distribution

The Australian Decommissioning Waste Facilities Database contains data on over 2,200 facilities, focusing on waste types commonly encountered in offshore oil and gas decommissioning. In terms of geographic distribution, the majority (approximately 68%) of these facilities are in Victoria, Queensland, and NSW, as shown in Figure 2.1.

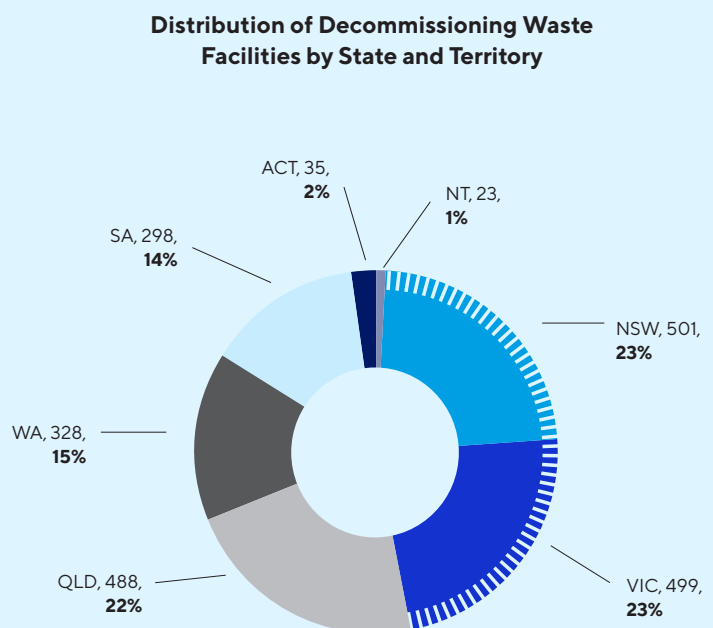


Figure 2.1. | Location of facilities in the Australian Decommissioning Waste Facilities Database.

On a ‘facilities per capita’ basis, however, Western Australia is relatively well represented in the database, with 328 facilities. Most of these WA facilities are concentrated in the Perth and Peel regions, rather than in proximity to the North-West Shelf development area where the majority of decommissioning waste streams are expected

to originate. This spatial disparity highlights potential logistical considerations for managing decommissioning waste effectively across WA’s extensive offshore basins. The logistical challenge is somewhat alleviated on the east coast, where Victoria’s offshore basins are situated closer to a substantial number of facilities (Figure 2.2).

Geographic Distribution of Decommissioning Waste Facilities



Figure 2.2. | Geographical distribution of facilities in the Australian Decommissioning Waste Facilities Database.

The database categorises facilities by Waste Type, Facility Type, and Waste Pathway, with additional filtering options by name, owner, and location. This structure enables users to visualise and quantify facilities that align with specific waste management needs in the decommissioning sector.

2.4.2 Waste Type

Facilities are categorised by the types of waste they are licensed to manage, with a focus on waste streams relevant to oil and gas decommissioning. Operators have identified 41 distinct waste types, covering both hazardous and non-hazardous materials commonly found in the oil and gas industry, as well as general industrial waste.

The inclusion of Waste Type in the database enables stakeholders to identify facilities capable of managing specific decommissioning waste types, thereby facilitating efficient resource allocation and planning.

The number of facilities handling each waste type is shown in Figure 2.3. Construction and Demolition Waste, Concrete, and Ferrous Metals are commonly handled by waste facilities. In contrast, waste types like Textiles, Rubber, and Asphalt are managed by significantly fewer facilities, reflecting a focus on high-volume waste streams. In total, more than 1,300 facilities in the database handle additional waste streams beyond the scope of this study.

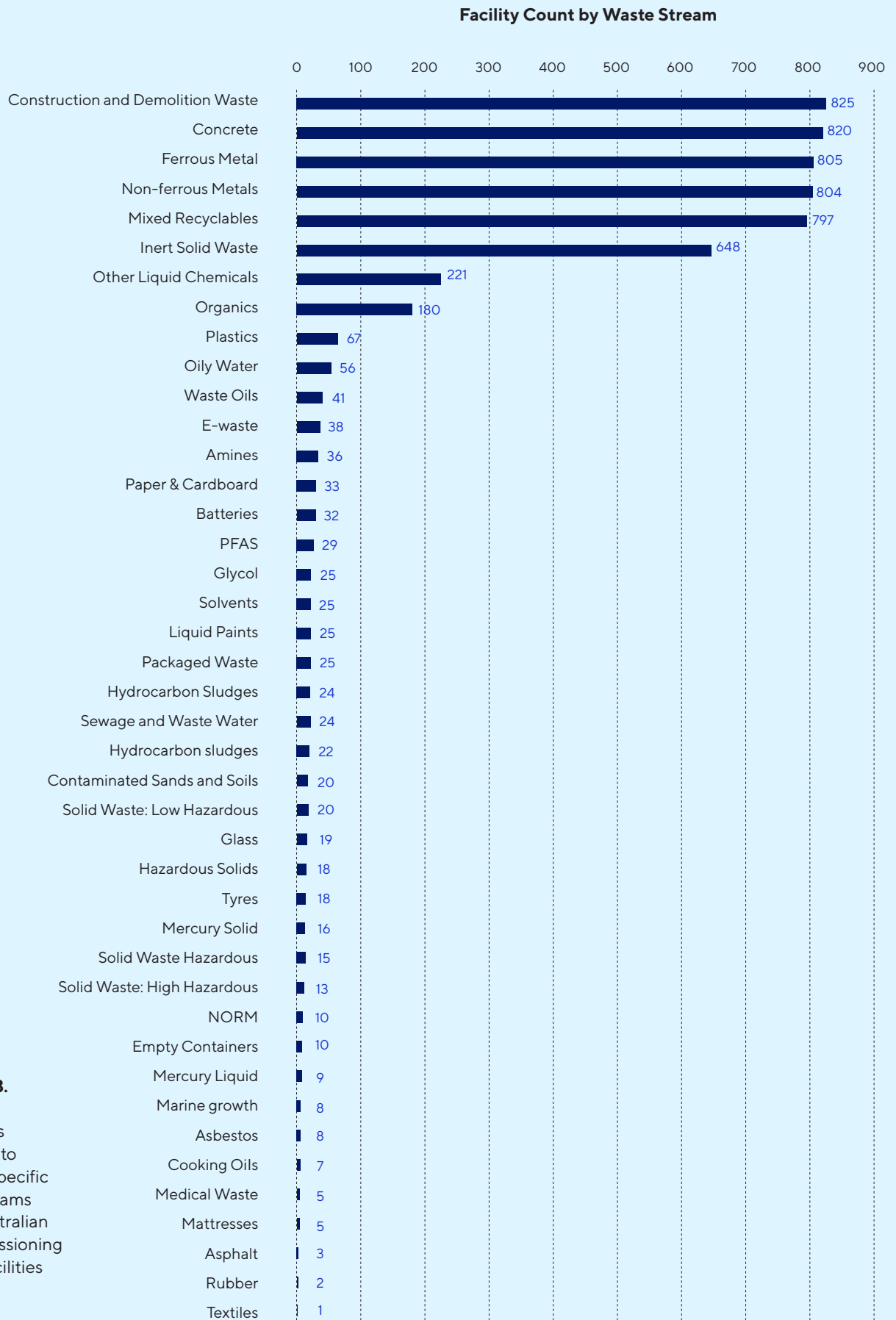


Figure 2.3. Number of facilities equipped to manage specific waste streams in the Australian Decommissioning Waste Facilities Database.

2.4.3 Facility Type

Facility Type categorises facilities based on their physical infrastructure and technologies used to manage waste. The database includes 57 facility types, encompassing various facilities such as landfills, material recovery facilities (MRFs), composting plants, transfer stations, and energy-from-waste plants. This categorisation allows stakeholders to distinguish facilities based on their processing capacities and technological capabilities, ensuring decommissioning waste types are directed to facilities with suitable infrastructure.

Figure 2.4 highlights the 15 most common facility types in the database. Consolidation and Storage facilities (738) represent the largest group, followed by general landfills (334) and putrescible landfills (318). Other frequently occurring facility types include organics recycling and Construction and Demolition (C&D) recycling facilities. The data indicates a higher concentration of facilities equipped to manage a broad array of waste streams, including both general and recyclable materials.

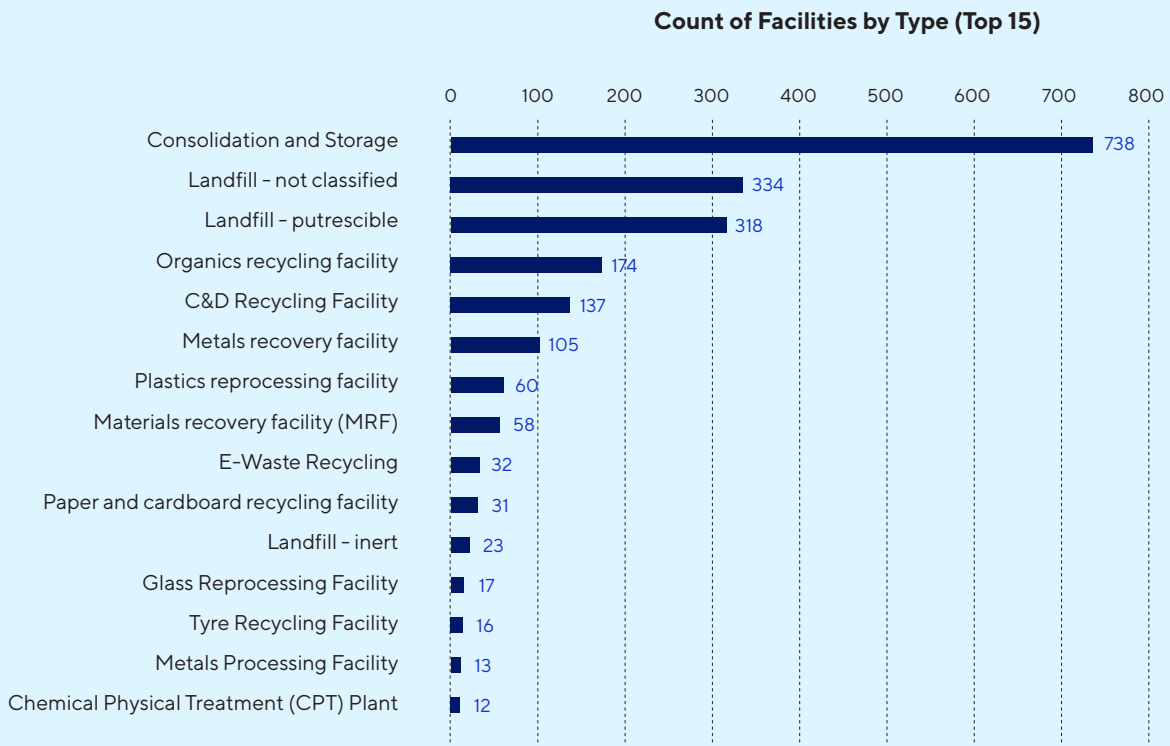


Figure 2.4. | Number of facilities by type in the Australian Decommissioning Waste Facilities Database, showing the top 15 facility types.

2.4.4 Waste Pathway

The Waste Pathway attribute describes the waste management processes that facilities are equipped to handle, including recycling, disposal, energy recovery, and treatment. Pathways are categorised based on industry standards and have been simplified for enhanced clarity in decommissioning applications (see Figure 2.5). Key pathways include:

- Consolidation and Storage – The most common pathway, with 762 facilities, offering interim storage solutions to consolidate waste before final treatment or disposal.
- Decontamination – Mobile capabilities, often limited to specific sites (5 facilities), delivered in situ and necessary for treating contaminated equipment or materials onsite, reducing the need for hazardous waste transport.
- Disposal – A widely available pathway (704 facilities) for safe waste disposal when other recovery or reuse options are unviable.

- Energy from Waste – Facilities (19) converting waste into usable energy, particularly suited for high-energy waste types and contributing to sustainable disposal practices.
- Process – Industrial facilities (6) capable of transforming or processing waste into other usable forms, aiding material recovery and waste reduction.
- Recycling – A well-represented pathway with 699 facilities, dedicated to reprocessing materials, allowing decommissioned components to be reused in other industries and supporting circular economy principles.
- Reuse – A category with limited data (2 facilities); facilities here are intended to directly repurpose waste without major transformation. Stakeholders are encouraged to add new facilities to this category through a feedback form on the partner portal.

This structure provides a comprehensive view of waste pathway capabilities, allowing users to identify facilities suited to various stages of the decommissioning waste lifecycle.

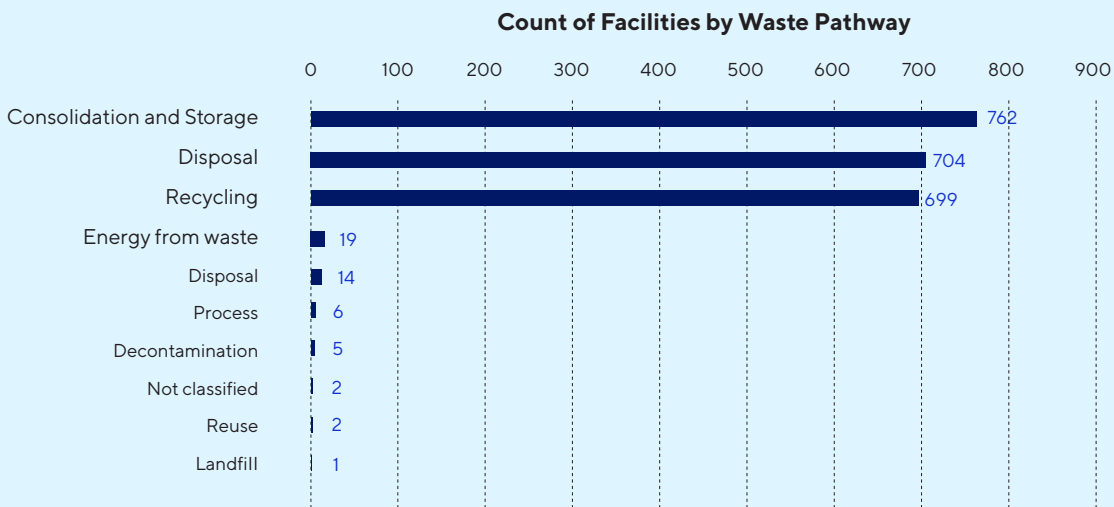


Figure 2.5. | Number of facilities by waste pathway in the Australian Decommissioning Waste Facilities Database.

2.5 How to Use the Australian Decommissioning Waste Facilities Database

The Australian Decommissioning Waste Facilities Database offers an interactive platform to search and explore waste management facilities across Australia. Through its intuitive interface, users can efficiently filter, visualise, and analyse facilities based on specific requirements. This section guides users through the main features and effective usage. See Figure 2.6 below for a screenshot of the interface.

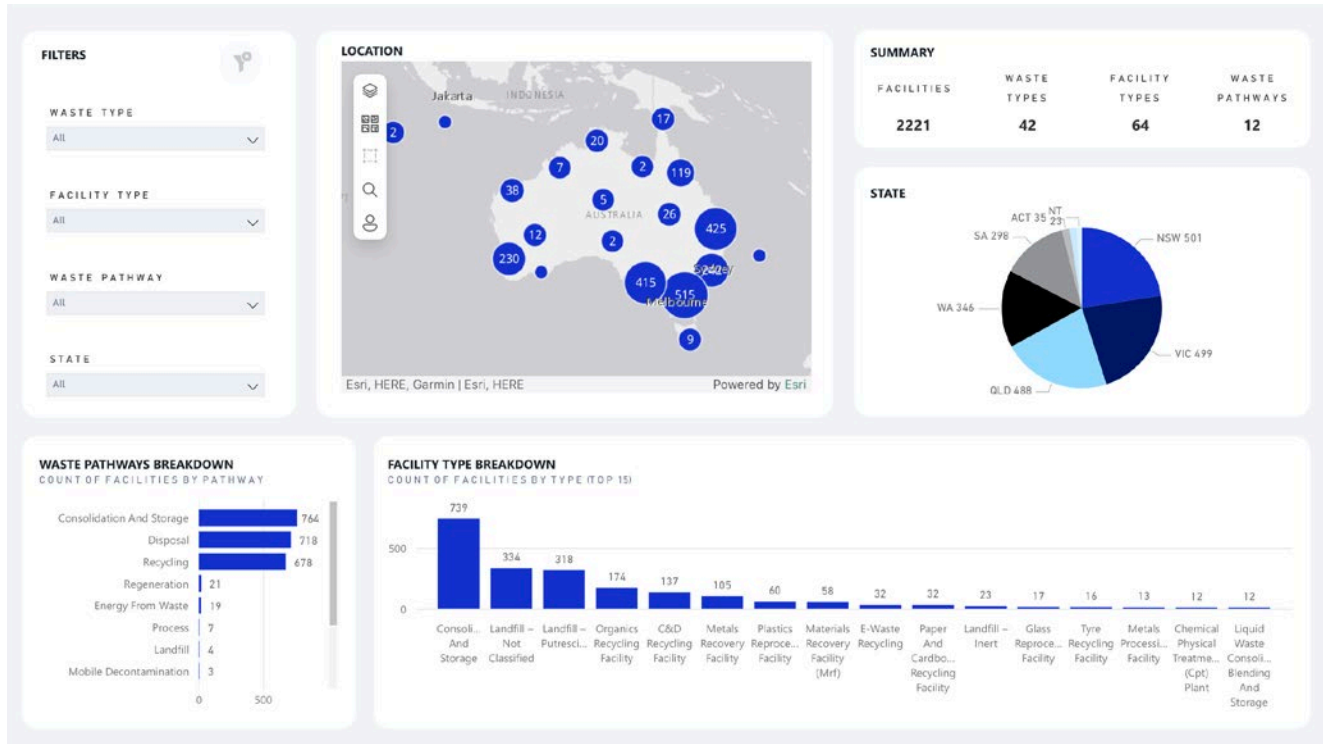


Figure 2.6. | The user interface of the Australian Decommissioning Waste Facilities Database.

2.5.1 Interface Overview

The interface offers a comprehensive suite of tools designed to enhance user navigation and interaction with the database, allowing for tailored exploration of waste facilities across Australia.

On the left side, the Filters Pane enables users to narrow down search results by several criteria: selecting specific waste types, choosing from available facility categories, filtering by waste pathways (processing methods), focusing on states and/or territories, and searching for facilities by name or owner. This granular filtering helps users quickly identify relevant facilities based on specific needs.

At the centre of the interface, a Cluster Map provides a visual representation of facility locations across Australia. Facilities are grouped by region to improve clarity, with options to expand clusters for a detailed view, preview facility details by hovering, and select individual markers to update all associated database views.

In the top right corner, the Facilities Summary displays an overview of the total number of facilities that match the selected criteria, along with a breakdown of available facility types and waste pathway options. This summary allows users to gauge the scale and scope of facilities relevant to their needs at a glance.

On the right side, an interactive State Distribution Pie Chart presents the distribution of facilities by state. This chart not only provides a regional overview but also enables users to filter database views by selecting specific states, with the map and facility details updating automatically to reflect these choices.

Finally, the Detail Pane at the bottom lists facilities that match the selected filters, displaying essential information such as facility names and types, waste handling capabilities, processing pathways, ownership and location details, license status, and links to further information. This pane consolidates all relevant data, enabling users to access comprehensive details in one place.

2.5.2 Using the Database Effectively

Start by specifying your requirements in the Filters Pane—including selecting relevant waste types, facility categories, processing pathways, and preferred locations. If you need to reset your search, click the filter icon near the top left to clear all filters.

Then, explore the database both visually and analytically. The Cluster Map provides insights into facility distribution across

regions, while the State Distribution Chart aids in regional analysis. The Facilities Summary offers a quick overview of the number and types of facilities relevant to your criteria, and the Detail Pane provides in-depth information about each facility.

Common use cases for the database include:

- **Finding Suitable Waste Facilities:** Use filters to select specific waste types and review facility capabilities, along with their geographic locations.
- **Analysing Regional Coverage:** Apply state filters and explore the map view to assess facility distribution and regional processing capacities.
- **Evaluating Processing Options:** Filter by waste pathways, compare facility types, and assess available capacities.

This interactive tool delivers a comprehensive view of Australian waste facilities, supporting waste management planning and helping users locate facilities best suited to their needs.

2.6 Maintaining the Database

The database in its current form reflects the data and information compiled over the first 6 months of 2024. As previously noted, however, the waste management sector in Australia is a dynamic and constantly changing industrial ecosystem. From a national perspective, new waste facilities are opening and existing facilities are regularly merging, shutting down, changing ownership and/or subject to regulatory closure. There is, therefore, a need to update the content of the database, at least on an annual basis.

The process is expected to involve:

- Ad-hoc updates from across the industry based on data and information submitted via an online Waste Facilities Database Update form hosted on the CODA website.
- Annual review and update of the entire dataset based on the process established during its construction. This will capture all relevant addition and removal of facilities, as well as changes to the licensing and capacity of existing facilities. It will also address material changes in State or Commonwealth waste management policy or regulations, the reclassification of waste facilities on a local, State or national basis or announcements relating to the opening of new 'cornerstone' facilities supporting management of priority waste streams in a particular area.

3.0

Recommendations

This study has combined industry feedback from workshops and surveys with the experience of constructing the Decommissioning Waste Facilities Database to enable a critical evaluation of current legislative and regulatory frameworks. This has been overlain with learnings from other industries and other decommissioning activity centres worldwide to develop a number of recommendations and principles for future optimisation of the decommissioning waste management process and its communication across key stakeholders. These focus on strategic initiatives and actions for governments to consider when developing or amending policy in relation to waste management such that it better enables both supply chains and communities to grasp the opportunities presented by oil and gas decommissioning and the materials and waste streams arising from it.

3.1 Decommissioning Waste Management Recommendations

- 1. Develop Clear Communications:** Design and produce communications and information which help to demystify and normalise oil and gas decommissioning as a process. Public information packs and fact sheets which concentrate on the industry's proactive approach to risk management and opportunity creation when dealing with materials and waste arising from decommissioning. Show typical materials flow paths and 'waste fate' maps to provide clarity in the public domain.

Consider developing, for example, a guidance document outlining typical decommissioning processes and the materials and waste that are generated (comparable to that in SEPA (2018)).

- 2. Materials Focus:** Communications relating to oil and gas decommissioning programs should talk about 'materials' and not just 'waste'. Although recognising the need for responsible and sustainable best-practice waste management, consistent representation of decommissioning outputs in terms of materials enables a more balanced view and builds expectation around recovery, re-use and recycling rather than defaulting to disposal.

This is considered to be an important contributor to shifting the perception of oil and gas decommissioning from an inherently 'dirty' or 'polluting' process to one that actively seeks positive environmental outcomes, and which offers opportunity to support the development of more circular material flows.

- 3. Connect Waste Producers with the Supply Chain:** Build more open, frequent and consistent connections between the oil and gas and waste management industry

sectors. This will improve waste producer's understanding of the full range of options available to them in the waste management supply chain. It will also provide much greater visibility of the oil and gas decommissioning opportunities to the supply chain and improve their ability to prepare and position themselves to grasp those opportunities. Consider developing a dedicated decommissioning waste management platform and associated events to enable these improved connections.

- 4. Develop a 'Waste-Led Decommissioning' Approach:** Recognise and prioritise critical-path waste management needs. Decontamination and hazardous materials management, for example, are typically the essential precursor to the safe and sustainable dissemination of materials and waste into disposal and recycling supply chains. The distribution and capacity of existing facilities is unlikely to meet the needs of the forecast industry activity and represents a potential bottleneck. Consider how the accelerated development of a more balanced distribution of critical path capabilities can be achieved (including supporting the development of 'mobile' services where appropriate).
- 5. Clarify the Circular Economy Perspective:** Clearly and appropriately position oil and gas decommissioning in the context of the Circular Economy and the role it can play in contributing to increasingly circular material flows.

Consider future policies and amendments to existing frameworks that might better incentivise or even mandate the management, recycling and disposal of certain materials within Australia's borders where supply chains either exist or can be developed to support it.

- 6. Integrate Oil & Gas Decommissioning & Mining Closure:** Build connections between mining and oil and gas from a closure/decommissioning and waste management perspective. This will help to identify common needs and optimise the range of solutions available to both industries. Consider a Decommissioning & Closure Waste Management forum.
- 7. Map & Model Industrial Systems and Supply Chains:** Conduct a more detailed, integrated characterisation of relevant industrial precincts and ecosystems in order to fully understand the dependencies and opportunities within supply chains relevant to decommissioning materials and waste management. Apply tools and concepts which support a holistic analysis and which provide the detail and clarity required for strategic planning and decision-making (e.g. development of 'decommissioning waste fate maps' and/or application of Circular Ecosystems' secondary resource mapping approach).

3.2 Strategy & Principles for an Improved Regulatory Environment

Based on the feedback gathered, five clear principles are proposed to address the challenges and opportunities specific to navigating the regulatory environment relevant to decommissioning materials and waste streams:

1. **Collaboration & Partnership:** Establish strong collaboration and partnerships between government agencies, industry operators, and the waste supply chain. This cooperative approach will ensure that all stakeholders are aligned in managing decommissioning waste effectively and sustainably. Enabling collaboration environments and programs are required to support this. Regular opportunities for stakeholders to meet, review progress and strategize around issues and opportunities are critical
2. **Education & Awareness:** Educate regulators and planning policy bodies to provide them with a clear understanding of the primary waste streams, the forecast waste volumes and the challenges faced by those in the waste supply chain. This education should highlight the economic potential of treating waste as a Circular Economy feedstock, rather than exporting it or sending it to landfill. Additionally, efforts should focus on 'debottlenecking', whether that be in relation to infrastructure deficits or regulatory hurdles, to enable effective product stewardship and scalable waste management solutions.
3. **Uniformity & Clarity:** Promote uniformity of regulations across the nation, along with clarity and consistency in definitions related to waste and recycling. This could involve creating a single governing body to oversee regulation in the sector or agreeing on standardized definitions and streamlined procedures. Such an approach would maximize the capabilities of Australian waste facilities, ensuring that decommissioning waste is effectively managed and utilized as a domestic resource.

4. **Risk-Based Assessment:** Implement risk-based approval processes with clearly defined criteria, timeframes, and licensing procedures. This approach should include mechanisms to understand companies' intellectual property-protected processes while ensuring that sensitive information remains secure during the Expression of Interest (EOI) process. This will streamline approvals while protecting proprietary business information.

5. **Integrated National Approach:** Develop national guidelines specifically for managing decommissioning waste. This integrated approach should involve stakeholders from across the sector to support the creation of an enabling regulatory framework that addresses the unique challenges of decommissioning activities. Guidelines should be underpinned by a set of clear foundation principles similar to those developed in other decommissioning jurisdictions.

These principles aim to create a more cohesive, efficient, and economically beneficial approach to managing decommissioning materials and waste streams in Australia. They are consistent with the priority advocacy areas of the WMRR (Waste Management & Resource Recovery Association), the national peak industry body that focuses on enabling industry's ability to respond to the needs of integrated resource management challenges such as the growth of oil and gas decommissioning.

The principles are also consistent with observations made in the Commonwealth Government's interim report on the development of the circular economy in Australia (Productivity Commission, 2025). This assessment clearly identifies "prescriptive, outdated or inconsistent regulations" as one of the primary barriers to the progression of circular industry practices. The need to formulate strategy and implement action plans that significantly and rapidly optimise regulatory approaches to waste management is therefore of paramount importance.

References

[1]	AUSTRALIAN GOVERNMENT (1989) <i>Hazardous Waste (Regulation of Exports and Imports) Act 1989</i> . Available at: https://www.legislation.gov.au/C2004A03937/latest/versions
[2]	AUSTRALIAN GOVERNMENT (1998) <i>Australian Radiation Protection and Nuclear Safety Act 1998</i> . Available at: https://www.legislation.gov.au/C2004A00383/latest/text
[3]	AUSTRALIAN GOVERNMENT (2006) <i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i> . Available at: https://www.legislation.gov.au/C2006A00014/latest/versions
[4]	AUSTRALIAN GOVERNMENT (2011) <i>Work Health and Safety Act 2011 and Work Health and Safety Regulations 2011</i> . Available at: https://www.legislation.gov.au/C2011A00137/2018-07-01/text ; https://www.legislation.gov.au/F2011L02664/latest/text
[5]	AUSTRALIAN GOVERNMENT (2018) <i>Australian Radiation Protection and Nuclear Safety Regulations 2018</i> . Available at: https://www.legislation.gov.au/F2018L01694/latest/text
[6]	AUSTRALIAN GOVERNMENT (2018) <i>National Waste Policy: Less Waste, More Resources</i> . Available at: https://www.dcceew.gov.au/sites/default/files/documents/national-waste-policy-2018.pdf
[7]	AUSTRALIAN GOVERNMENT (2019) <i>National Waste Policy Action Plan 2019</i> . Available at: https://www.dcceew.gov.au/sites/default/files/documents/national-waste-policy-action-plan-2019.pdf
[8]	AUSTRALIAN GOVERNMENT (2020a) <i>Recycling and Waste Reduction Act 2020</i> . Available at: https://www.legislation.gov.au/C2020A00119/2021-09-01/text
[9]	AUSTRALIAN PACKAGING COVENANT ORGANISATION (2017) <i>The Australian Packaging Covenant</i> . Available at: https://documents.packagingcovenant.org.au/public-documents/Australian%20Packaging%20Covenant%201Jan2017
[10]	AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY (ARPANSA) (2008) <i>Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation</i> . Available at: https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rps14.pdf
[11]	AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY (ARPANSA) (2014) <i>Code of Practice for the Safe Transport of Radioactive Material</i> . Available at: https://www.arpansa.gov.au/sites/default/files/rps_c-2-2019.pdf
[12]	AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY (ARPANSA) (2020) <i>National Directory for Radiation Protection (Edition 2.2)</i> . Available at: https://www.arpansa.gov.au/sites/default/files/national_directory_for_radiation_protection_-_2nd_edition_ndrp2.pdf
[13]	BÄRENBOLD, R., MALADOH BAR, M., LORDAN-PERRET, R., STEIGERWALD, B., von HIRSCHHAUSEN, C., WEALER, B., WEIGT, H. & WIMMERS, A. (2024) Decommissioning of commercial nuclear power plants: Insights from a multiple-case study. <i>Renewable and Sustainable Energy Reviews</i> , 201 , (2024), 114621
[14]	CARPENTER, C. (2024) Path to green circular decommissioning explored. <i>Journal of Petroleum Technology</i> , 76 , 86-88
[15]	DUGUID, A., GENEVE, L. & NELSON, N. (2022) Design for decommissioning – focussing on preventative strategies and beneficial impact assessment for managing offshore infrastructure. <i>The APPEA Journal</i> , 62 , S246-S250
[16]	FOSNWM (2022) Approaches for decommissioning strategies and lessons learned so far. Experience from Germany. <i>Federal Office for the Safety of Nuclear Waste Management</i> .
[17]	IAEA (2023) Management of radioactive waste from decommissioning. <i>IAEA Bulletin</i> , April 2023

References

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|------|---|
| [18] | LE, H.T., PUNURAI, W., KANG, H.S., LEOW, J.S., AMELIA, S., BHARGAVA, R., YAAKOB, O.B., ZAWAWI, N.A.W., STERKER, T., YUBONMHAT, K., YULIATI, E., LIN, T.I., ASAVADORNDEJA, P., NGUYEN, N.T.P., LE, T.T., NGUYEN, K.V., KAMARUDIN, N.A., LE, S.V., WANG, J., DEV, A.K., ADITRAMULYADI, D.D., HASYIM, B., KALTHIA, C., and ISMAIL, M.A. (2024) Technical Guidelines for Safe and Sustainable Recycling Facilities and Waste Management Facilities for Decommissioned Offshore Structures in Southeast Asia. Safe and Sustainable Decommissioning of Offshore Structures Taking into Consideration the Peculiarities of the ASEAN & South Asia Regions. <i>Universiti Teknologi Malaysia, Johor Bahru</i> . |
| [19] | NIA (2018) <i>National Decommissioning & Waste Management Pipeline (Nuclear Sector Deal)</i> . UK Nuclear Industry Association |
| [20] | NATIONAL TRANSPORT COMMISSION (NTC) (2020) <i>Australian Dangerous Goods Code, 7th Edition</i> . National Transport Commission. Available at: https://www.ntc.gov.au/codes-and-guidelines/australian-dangerous-goods-code |
| [21] | SAFE WORK AUSTRALIA (2022) <i>Model Work Health and Safety Laws</i> . Available at: https://www.safeworkaustralia.gov.au/law-and-regulation/model-whs-laws |
| [22] | PRODUCTIVITY COMMISSION (2025) <i>Australia's circular economy: Unlocking the opportunities</i> . Interim Report, Canberra, March 2025. |
| [23] | SEPA (2018) <i>Regulation of Offshore Oil and Gas Waste</i> . Scottish Environmental Protection Agency (SEPA) Guidance, WST-G-059 , Version 1 |
| [24] | SCHANDL, H., WALTON, A., OKELO, W., KONG, T., BOXALL, N.J., TERHORST, A. and PORTER, N.B. (2023). Australia's comparative and competitive advantages in transitioning to a circular economy. <i>A Report to the Office of the Chief Scientist</i> . CSIRO , Australia. |
| [25] | THIED, R. (2023) Optimizing nuclear waste management: the role of DQO in decommissioning. <i>Nuclear Engineering International Magazine</i> , August 2024 |
| [26] | UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) (1989) <i>Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal</i> . Available at: https://www.basel.int |
| [27] | UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) (1998) <i>The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade</i> . Adopted in Rotterdam, 10 September 1998. United Nations Environment Programme. Available at: https://www.pic.int/ |
| [28] | UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) (2001) <i>The Stockholm Convention on Persistent Organic Pollutants</i> . Adopted in Stockholm, 22 May 2001. United Nations Environment Programme. Available at: https://chm.pops.int/ |
| [29] | UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) (2013) <i>The Minamata Convention on Mercury</i> . Adopted in Kumamoto, 10 October 2013. United Nations Environment Programme. Available at: https://minamataconvention.org/en |
| [30] | WHITTAKER, P., OUDENOT, E. & VASQUEZ, M. (2018) <i>A Roadmap for Cutting Decommissioning Costs by 30%</i> . Boston Consulting Group, permissions@bcg.com |



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