

# from waste to circular value in ANZ

Modernising waste operations through ERP, IoT, and AI



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## why smarter waste data matters in a fast-changing ANZ market

Population growth, urban intensification, and shifting consumption patterns continue to push waste volumes higher across Australia and New Zealand.

For operators, this is both a challenge and a chance to lead the shift toward a circular economy. Governments are advancing circularity agendas, and resource recovery operators sit at the centre of delivery.

Progress is uneven. Deloitte's Circularity Gap Report 2025<sup>1</sup> shows a confronting reality: of the ~106 billion tonnes of materials used each year, only 6.9% come from recycled inputs. Even as collection and processing improve, overall material consumption grows faster than the gains.

Our sector is ready for a step change. Removing manual friction, embracing automation, and digitising end-to-end processes are no longer optional – they're essential to staying competitive.

Modern enterprise resource planning (ERP) technology brings the unified data, process control, and automation needed to lift productivity at scale.

A fit-for-purpose ERP replaces fragmented information flows, closing the efficiency gap for ANZ waste and recycling operators. It removes manual workarounds, breaks down data silos, and strengthens both performance and profitability.

An ERP also underpins adoption of Internet of Things (IoT) and Artificial Intelligence (AI) solutions, optimising how waste is collected, moved, sorted, and reported. It supports streamlined compliance with expanding digital waste-tracking requirements across Australian jurisdictions and New Zealand.

The future of resource recovery is technology-enabled. For ANZ operators – the frontline champions of circularity – now is the time to adopt smart, compliant, data-driven operations.

# 6.9%

Of all materials come from recycled sources



## policy settings accelerating reform in Australia and New Zealand

Reform frameworks are pushing ANZ toward a more circular economy.

In Australia, the National Circular Economy Framework<sup>2</sup> sets the national direction. It shows businesses the real benefits of circularity and outlines practical ways to cut waste and emissions while opening new market opportunities. The framework strengthens policy alignment, planning, and funding, and improves coordination across jurisdictions – setting clearer targets and accountability.

### **Australia's new national ambition:**

Double Australia's circularity by 2035.

A circular economy designs out waste, prioritises reuse and repair, and maximises resource efficiency. It keeps materials in productive use for longer, regenerates natural systems, and helps decouple economic growth from resource depletion.

Modelling by the CSIRO<sup>3</sup> shows the transition could:

- Add \$26 billion to GDP each year by 2035
- Cut greenhouse gas emissions by 14% by 2035
- Divert 26 million tonnes of waste from landfill annually – around a 30% reduction

Australians generate close to 76 million tonnes<sup>4</sup> of waste each year. Without decisive action, global waste volumes could rise by 70% by 2050<sup>5</sup>, according to the World Bank.

New Zealand is also accelerating circularity through national strategies, waste levies, and product stewardship. The focus is on higher-value resource recovery, better data, and stronger traceability across supply chains – aligning with trans-Tasman goals for a low-emissions, circular economy.



Opening perspective

## the operational headwinds confronting waste and recycling providers

Across ANZ, operators face rising waste volumes, contamination issues, and pressure to lift recovery rates and circular throughput.

Australian DCCEEW data shows total waste generation continuing to grow, now at 2.49 tonnes per capita<sup>6</sup>, all of which must be collected, sorted, processed, or recovered by operators.

The challenge is amplified by outdated systems. Municipal services without centralised systems struggle to scale, track materials, optimise logistics, and adjust pricing quickly.

Even when ERPs or automated data capture tools (such as container weighing) are in place, data silos remain. This is a widespread issue across industries, with 81% of IT leaders reporting that silos slow down decision-making and execution<sup>7</sup>.

For ANZ waste and recycling operators, disconnected data increases compliance risk – especially as digital waste tracking and transparency requirements expand across Australian states and, increasingly, through national and council-driven in New Zealand.



# why modern ERP is the backbone of connected data

Digitalisation is reshaping the ANZ waste and recycling sector. It's streamlining processes, lifting productivity, and increasing agility.

ERP sits at the centre of this shift. By replacing manual invoicing, billing, routing, and reconciliations, it frees teams to focus on higher-value work. It is no surprise that Gartner<sup>8</sup> predicts the Australian Software-as-a-Service (SaaS) market, which includes cloud ERP, is projected to hit almost A\$13 billion in 2025, growing 15.5% year-on-year. This is the single largest component of Australia's cloud market.

Smart waste technologies are also scaling fast, with market growth around 14.2%<sup>9</sup> as operators roll out IoT, analytics, and on-vehicle systems to optimise performance.

These tools now support every stage of the collection and resource-handling journey:

Smart sensors and IoT now give operators real-time visibility, predictive maintenance alerts, and measurable efficiency gains. But they also create data overload – and without advanced analytics and automation, much of that insight goes unused.

A modern ERP needs to bring all this data together, recognise patterns, and trigger context-aware actions. When paired with AI and IoT, collections become more efficient, costs fall, and compliance reporting becomes faster and more accurate.

With end-to-end connectivity driven by a purpose-built ERP, ANZ operators can accelerate circular outcomes.

SMART TECHNOLOGY	EXAMPLE APPLICATION
IoT sensors	Track container fill levels to optimise collection frequency and resource allocation.
GPS tracking systems	Monitor vehicle locations and driver behaviour in real time to improve route efficiency and reduce fuel use.
Smart cameras	Identify material types and contamination automatically to improve recycling quality and value.
Telematics	Combine diagnostics with GPS to enable predictive maintenance and minimise unplanned downtime.

## the productivity cost of data silos

Many providers still rely on fragmented tools for accounting, pricing, route planning, and customer service. These stitched-together systems create operational friction, lead to revenue leakage, and increase compliance risk as ANZ regulations continue to evolve.

Legacy platforms struggle to support growth, integrate cleanly, or enable the innovations needed for circularity. As workloads increase, operators face rising costs, delays, and more missed or late services. Councils that still manage missed-service events manually take on unnecessary cost.

Revenue leakage is a common consequence. Manual consolidation increases billing errors and assets not effectively used. Research shows waste fleets can be underutilised by more than 20%<sup>10</sup>, suppressing efficiency. Real-time tracking, route optimisation, and predictive analytics can materially reduce mileage and fuel use. The World Economic Forum<sup>11</sup> notes that AI-enabled logistics optimisation can cut emissions while lifting productivity – essential for dynamic collections.

### Outdated tech and rising compliance pressure

When information is scattered across truck telematics, lift counts, weigh data, MRF video analytics, manual logs, and smart bin inputs, operators are left piecing together fragmented streams. Valuable insights stay locked away, while the noise increases the risk of errors and sub-optimal decisions.

A municipal operator, for example, may want to re-time rounds – but without reliable data on tonnages, contamination, fuel use, and traffic, inefficiencies remain. Consistency and accuracy slip, and improvement opportunities go unrealised.

Standardising, codifying, and categorising data through an ERP foundation is the first step toward higher recycling rates and confident compliance across the trans-Tasman policy landscape.

# 20%

Underutilisation of vehicles' payload



# Australia and New Zealand's circular potential, held back by legacy systems

As ANZ moves toward designing for reuse, repair, remanufacture, and composting, visibility and traceability become mission-critical.

In Australia, the National Waste Policy Action Plan<sup>12</sup> targets an 80% resource recovery rate by 2030 across all streams. Reaching this goal will require stronger collection and sorting infrastructure, smarter logistics, and higher-quality recyclate to stimulate end markets – particularly in organics, paper and cardboard, and priority commercial streams.

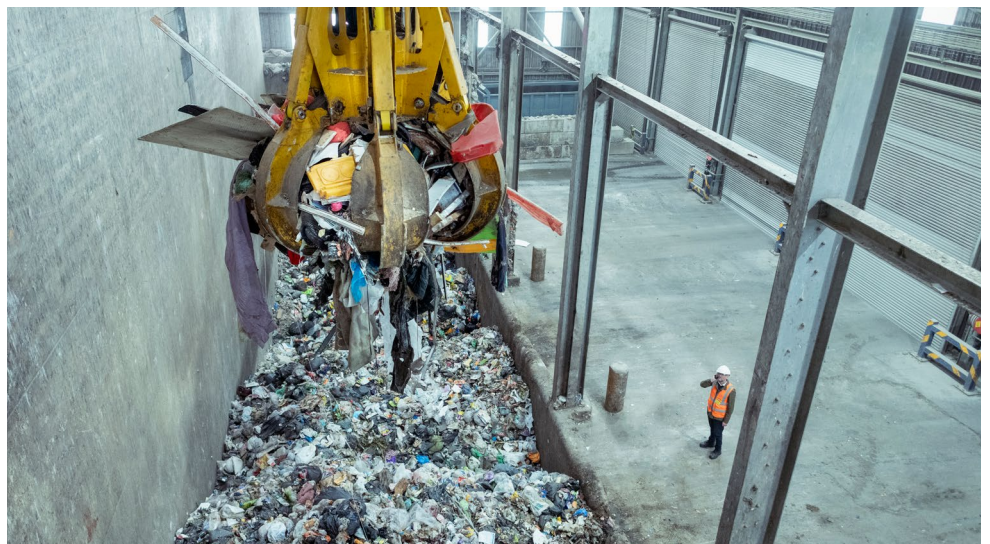
Lifting performance demands collaboration across councils, regulators, industry, and technology partners. This collaboration enables advanced sorting, granular tracking, and automated compliance.

Australia's circularity rate is estimated at 4.3%, below the global average of around 7%, with a national ambition to double by 2035<sup>13</sup>. At the same time, New Zealand is strengthening product stewardship, levy frameworks, and national strategy<sup>14</sup> to lift recovery rates and support higher-value reprocessing – all of which rely on modern data systems.

Upstream design matters too. Digital product data, safer chemistry, and materials innovation, all depend on systems that track provenance, substitutions, and recovery pathways. Marketplaces for recovered materials, supported by automation and analytics, can help accelerate demand and value-added reuse.

## Building trusted oversight across borders

Australia's waste shipment regime is designed to ensure cross-border movements are controlled, traceable, and environmentally sound. Looking ahead, technology will need to streamline compliance, strengthen transparency, and support circular outcomes. Cloud platforms can reduce manual burden and improve coordination between regulators and operators.



The hidden burden of legacy platforms

## raising the compliance baseline with digital workflows

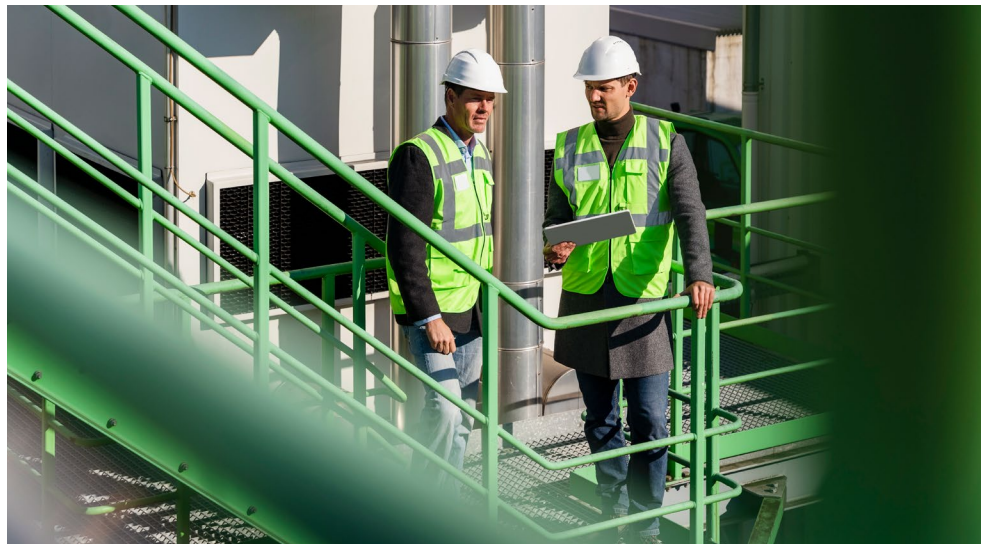
In Australia, the DCCEEW administers international obligations such as the Basel Convention<sup>15</sup>, ensuring hazardous and recyclable shipments are properly permitted and tracked. The challenge is gaining real-time visibility across complex value chains. Digitised permits, automated reporting, and embedded compliance checks within logistics workflows help operators stay ahead of evolving rules. Cloud solutions such as AMCS Wastedge provide compliance tooling that reduces paperwork and simplifies audits.

### Enabling circular outcomes through greater data insight

Future regulation will place greater emphasis on recovery and reuse, requiring operators to demonstrate that shipments deliver environmental value. IoT tracking and analytics reveal material flows, contamination levels, and processing outcomes. AMCS supports this shift with data systems that identify substitution opportunities, pinpoint recycling bottlenecks, and lift recovery yields.

### Scaling efficiently while staying compliant

As ANZ operators grow, fleets must coordinate activity across multiple jurisdictions. Manual approaches won't scale. Route optimisation, digital dispatch, and weighbridge integration reduce costs and strengthen reliability. AMCS SaaS platforms enable integrated, data-driven operations, positioning providers to stay compliant and succeed as efficiency and sustainability converge.



## what today's ERP includes

A modern ERP connects collections, recycling, finance, and customer functions into one platform, giving operators better planning capability and faster decision-making. Key capability domains include:

**Asset management:** vehicles, bins, containers

**Transport operations:** container management, route planning, execution

**Weighing:** PAYT, pay-by-weight, weighbridge, transfer stations

**Workforce administration:** payroll, overtime

**Recycling operations:** MRF inbound/outbound, grading, stock control

**Material trading:** margins, shipping documents

**Billing + invoicing:** invoice runs, dunning

**Accounts payable:** subcontractors, temporary staff

**Accounts receivable:** direct debit, card payments

### **Digitalisation and smart technologies in practice**

Over the past decade, digital tools have reshaped ANZ waste and recycling, from material trading to billing. IoT, cloud, AI, and analytics are lifting efficiency, productivity, and resilience. The smart waste market is expanding quickly and is projected to reach \$5.02 billion by 2029<sup>16</sup>.

### **Internet of Things (IoT)**

Bin-level sensors are transforming routing and service levels. Integrated or retrofit devices provide real-time status updates, supporting demand-based scheduling. Street bins can alert at threshold, and GPS-enabled sensors help deter theft and misuse. By 2023, 1.25 million collection points globally were using smart sensors<sup>17</sup>.

### **Artificial Intelligence (AI)**

AI drives material identification, sorting, process optimisation, quality control, and robotics. On-vehicle cameras detect contamination during collections, helping educate customers and improve stream quality. At MRFs, computer vision and robotic sorting lift precision. AI also balances routes and time windows to maximise truck utilisation and reduce empty miles – touching nearly every point across the value chain. It's no surprise the global AI in waste management market is forecast to grow by 35.5% between 2025 and 2034<sup>18</sup>.

### **Cloud computing**

Cloud platforms enable anywhere access, supporting dynamic scheduling, mobile service management, and paperless workflows. Real-time connectivity improves driver assistance and two-way communication between dispatch and the field, strengthening both safety and productivity.

### **Data analytics**

Predictive models<sup>19</sup> reveal usage patterns, seasonality, and route optimisation opportunities. Analytics helps operators anticipate disruptions – from equipment issues to demand spikes – so they can act proactively.

## ERP as the launchpad for agentic AI

Sensors, analytics, and AI only create value when systems can interpret the data and act on it. Moving beyond static reporting into pattern detection helps lift recovery rates and strengthen cost control. For example, operators can link collection frequency with contamination, measure the impact of education campaign outcomes, or predict maintenance windows using telematics data.

The next step is agentic AI – where machine intelligence not only identifies insight but initiates the right action. Think of triggering a pickup based on fill-level thresholds or rerouting fleets in real time as conditions change. By bringing IoT, AI, and automation together, operators shift from reactive maintenance to proactive asset orchestration.

To enable this, ERPs must provide robust APIs that integrate with sensors, MRF systems, weighbridges, CRMs, finance platforms, and bespoke operational tools. This ensures the platform can ingest data and trigger the right workflows across the entire stack.



## Illustrations: the AMCS approach at work

### Example 1: Smart street-litter services

Working with a central London authority, AMCS deployed IoT-enabled smart bins. Live sensor data and historical patterns forecast demand, while traffic feeds and truck GPS support dynamic routing. This helps vehicles prioritise hotspots and reduce service disruptions.

### Example 2: Predictive fleet maintenance

For a fleet of more than 6,000 trucks, AMCS integrated advanced telematics covering ECU codes, electrical systems, brakes, suspension, transmission, and driver behaviour. Historical and real-time data identify maintenance needs and automatically trigger work requests. Scheduling are aligned with collection timetables and workshop capacity. Parts rationalisation cut inventory by 22%, after uncovering more than \$2 million in obsolete stock.



## AI-enabled waste compliance: risks and remedies

### Regulatory settings are shifting across ANZ.

In Australia, digital waste tracking under DCCEEW<sup>20</sup> and state EPAs<sup>21</sup> is tightening reporting on waste flows, improving recovery, and reducing landfill. Modern ERPs automate data capture and reporting, ensuring accurate, real-time records.

AI also sharpens sort purity to meet diversion standards, lifting recovery performance and reducing revenue leakage from service errors and write-offs. For organisations working toward voluntary standards such as ISO 14001<sup>22</sup> or the Global Reporting Initiative (GRI)<sup>23</sup>, digital ERP solutions can help monitor and control environmental factors including energy use, emissions, and water footprint.

#### Data governance

AI is only as strong as the data behind it. ANZ operators need consistent waste-stream definitions and contamination thresholds, supported by harmonised inputs from trucks, MRFs, transfer stations, and smart bins. Without standardisation, misclassification risks rise and recovery falls.

#### Data security

As datasets grow, so do privacy and security risks – especially for household-level information. Clear policies on anonymisation, access controls, and cybersecurity are essential to maintain public trust and protect service continuity. Incidents are not uncommon and can escalate quickly in the event of a breach. The Australian Cyber Security Centre (ACSC) reports that 67% of Australian organisations experienced a cybersecurity incident in 2025<sup>24</sup>, highlighting the real potential for data loss or service disruption. A breach or misuse of information can also undermine public confidence in recycling programs, lowering participation rates.

### ERP as a sustainability platform

Sustainability is now a core driver for the industry. Cloud ERPs remove data silos, and give operators a holistic view of environmental impacts. AI improves sort accuracy and directs more recyclables into recovery pathways. Combined with IoT, dynamic routing reduces fuel use, cuts emissions, and lowers energy demand – embedding sustainability into daily operations and long-term competitiveness.

In summary

## conclusion

ANZ waste and recycling operators play a pivotal role in circularity, keeping materials in circulation and retaining value. Legacy systems make it harder to navigate volatile markets and shifting regulation. Modern ERPs go far beyond record-keeping – they deliver the intelligence and automation needed to make better, faster, and more profitable decisions.

By harnessing real-time data, automation, and analytics, ANZ operators can optimise operations, strengthen compliance with future-ready environmental rules, and lift overall performance. Embedding sustainability into daily operations turns reactive compliance into proactive value creation, making circularity a durable competitive advantage.

### About AMCS Group

AMCS is the market leader in Performance Sustainability, enabling resource-intensive industries to boost sustainability and profitability at the same time. With AMCS, companies achieve sustainable growth and transparent social responsibility while also safeguarding the environment and reducing operational risks.

[Contact us to learn how AMCS can transform your sustainability goals into a profitable reality.](#)

