



HVA
HEAVY VEHICLE
INDUSTRY AUSTRALIA

WITH THE GENEROUS
SUPPORT OF



**Government
of South Australia**

Green Industries SA



MOVING FORWARD

SUSTAINABILITY GUIDE

NOV 2025

Acknowledgement of Country

We acknowledge and respect the Traditional Custodians whose ancestral lands we live and work upon and we pay our respects to their Elders past, present and emerging. We acknowledge and respect their deep spiritual connection and the relationship that Aboriginal and Torres Strait Islanders people have to Country. We extend our respect to all Aboriginal and Torres Strait Islander people and their nations in South Australia and across Australia.

Disclaimer

This guide has been developed to help the heavy vehicle industry understand environmental sustainability practices. The guide is for informational purposes only, and no guarantee is made that there will be any reduction in business costs, energy usage or environmental emissions from the adoption of any idea, practice or suggestion made in this guide.

While care has been taken to ensure the accuracy and currency of the information in this guide, Heavy Vehicle Industry Australia (HVIA) accepts no responsibility for the accuracy, currency or completeness of any information that may be included in this guide. Reliance on the information in this guide is at your risk, and the HVIA will not accept any liability, whether arising through negligence or otherwise, for any loss or damage sustained through the reliance of users of any information contained in this guide.

Foreword - GISA

Green Industries SA (GISA) is proud to support Heavy Vehicle Industry Australia (HVIA) in the creation of this essential Sustainability Guide, a significant step forward in transforming the heavy vehicle sector towards a more sustainable future.

Australia's heavy vehicle industry stands at the crossroads of urgent environmental imperatives and substantial economic opportunities. With climate change impacts increasingly evident and resource constraints intensifying, it has become crucial for the sector to embed sustainability into everyday operations. This guide provides clear, practical pathways to do exactly that.

South Australia is already a leader in sustainability and circular economy practices, with ambitious goals including 100% net renewable energy generation by 2027 and reducing greenhouse gas emissions by 60% by 2030, and doubling our circularity rate by 2035. HVIA's guide directly aligns with these targets by offering industry-specific insights into decarbonisation, resource recovery, and circular economy principles, positioning the industry to thrive amidst global shifts towards sustainability.

GISA recognises that transitioning to more sustainable practices is not just a regulatory necessity but also a strategic advantage. Reducing emissions, enhancing resource efficiency, and adopting circular economy approaches are critical for industry resilience, cost reduction, and defining a clear competitive point of difference in the market. This guide equips industry operators, manufacturers, and stakeholders with actionable strategies that can deliver tangible environmental and economic benefits.

We commend HVIA for its proactive leadership in addressing the sustainability challenges and opportunities within the heavy vehicle industry. GISA looks forward to continuing its partnership with the industry as we collectively drive forward towards a sustainable, resilient, and prosperous future for South Australia and beyond.



JOSH WHEELER
GREEN INDUSTRIES SA CHIEF EXECUTIVE

Foreword - HVIA

What exactly is a Scope 3 emission? What technology should I invest in? How much to invest? How do I begin measuring emissions? Am I captured by Mandatory Reporting?

These are the types of questions that have been asked by HVIA members – small and large alike. They are seeking the right response to decarbonise in a way that suits their business and their circumstances.

The issue is complex to navigate, and for a generation it has been a political football; some might argue it still is. As business grapples in this murkiness of uncertainty, we all seek clarity and would like to take comfort in pragmatism.

Some HVIA members have taken the plunge and are all in, whilst others are waiting for a greater deal of confidence prior to committing resources.

One thing is for sure, at the human level, they all want to leave the world in a better state than they found it. Without fault, our industry wants to do what they reasonably can, with the available capital they have, to ensure their business is ready and not left behind in a rapidly changing economy.

This is the importance of the Sustainability Guide. Factual information and real-world case studies of what HVIA members are already doing, with suggestions of next steps to either begin or continue the journey of decarbonisation. This guide sits alongside HVIA's recent foray into the TruckShowX conference, where we are shining a light on Driving the Future. HVIA's actions are about providing education and information about what our members are doing, as opposed to waiting to find out what could have been done.

I thank the SA Government for funding this resource, and our partners 2XE in working collaboratively with HVIA to deliver this document. Further, a hearty congratulations to HVIA's LITE Committee representatives, ably led by Dr Adele Lausberg who have been working on this project since inception. Lastly, a thank you to our case study participants for opening your doors and sharing so willingly to ensure others can learn from your experiences.

I hope that wherever our members are on their respective journeys they can use this guide as a manual to drive meaningful action.



TODD HACKING
HVIA CEO

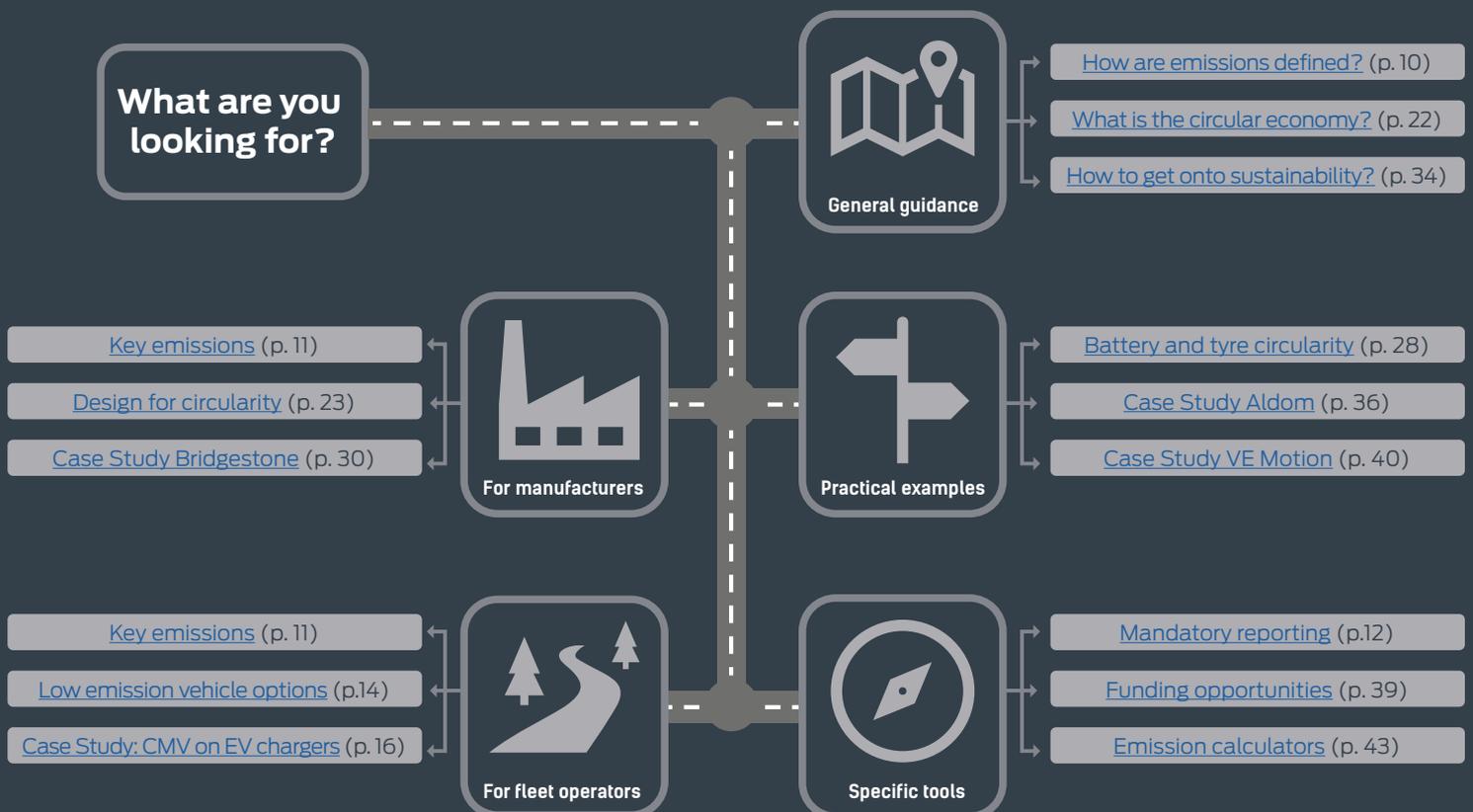
Welcome to the guide

Heavy Vehicle Industry Australia (HVIA) has developed this guide with the support of Green Industries SA (GISA) to assist the heavy vehicle industry on their sustainability journey. The term 'sustainability' is widely used, and in this guide, it specifically refers to environmental and economic sustainability.

Whether you manage a vehicle fleet, are a manufacturer of heavy vehicles, or are involved in the broader ecosystem related to heavy vehicles, this guide provides practical steps to enhance sustainability within your operations.

By using this guide, you will gain insights into:

- Driving forces behind climate and circular economy initiatives shaping the heavy vehicle industry
- Understanding and prioritising different emissions categories
- Decarbonisation through real-world approaches used by industry leaders
- Circular economy practices to extend vehicle life, minimise waste, and improve material use
- Tools and strategies to translate ambition into measurable sustainability outcomes for your business



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Charging cable specifications:
Cable length: 10m
Power: 11kW
Voltage: 230V AC
Frequency: 50Hz
Type: Type 2

SUSTAINABILITY TODAY

In this section, we explain the major concepts within sustainability, and unpack the mandatory disclosures required of Australian businesses.

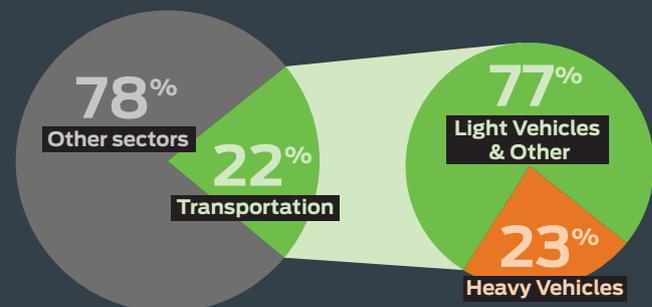
Understanding sustainability in the heavy vehicle sector

In the heavy vehicle sector, different emissions are important, ranging from noise emissions to tailpipe emissions (“fumes”) affecting air quality, to greenhouse gas emissions. Key emission sources come from diesel combustion, electricity use, manufacturing, and supply chains. The circular economy focuses on how resources are used, reused, and recovered, which includes design, manufacture, maintenance, reuse, and recycling of vehicles, components, and packaging.

Globally:

- around 55% of emissions come from the supply and use of energy and
- the remaining 45% stem from the production and use of goods and materials.¹

In 2024, transportation accounted for 22% of Australia’s greenhouse gas emissions.² Heavy vehicles contribute about 23% to Australia’s transport emissions³ and a significant source of emission stems from diesel combustion.⁴ Because the freight task keeps increasing, the transport sector could be the highest emitting sector by 2030 if no action is taken.⁵



Decarbonisation efforts taken alongside circular economy activities will cut emissions, increase resource efficiency, and strengthen supply chain resilience. This will also support continued economic development, whilst delivering the freight Australians need. Given our industry is already highly regulated and operates on thin margins, the challenge of decarbonising is large, but it is possible, and there are practical examples throughout this guide to assist your own efforts.

1 <https://www.ellenmacarthurfoundation.org/completing-the-picture>

2 <https://www.dcceew.gov.au/climate-change/publications/australias-emissions-projections-2024>

3 <https://www.infrastructure.gov.au/department/media/publications/transport-and-infrastructure-net-zero-consultation-roadmap>

4 <https://www.climatechangeauthority.gov.au/sites/default/files/documents/2024-09/2024SectorPathwaysReviewTransport.pdf>

5 <https://www.infrastructure.gov.au/department/media/publications/transport-and-infrastructure-net-zero-consultation-roadmap>

Key terminologies



Circular economy refers to keeping resources in use at the highest value for as long as possible. The circular economy approach looks at a diverse set of tools to keep material streams in circulation, meaning materials can be reused after their “first life”. Prominent examples of the circular economy include manufacturing new lead-acid batteries from materials retrieved from end-of-life batteries. There are more examples of circular economy approaches discussed in [Section 3](#).



Waste segregation refers to sorting your waste at source. Using separate bins and waste streams ensures that recyclable materials are kept in their cleanest form and can be reintegrated into the production cycle. Examples include having dedicated scrap metal bins, dedicated cardboard bins, keeping food scraps in a green bin. We dive into more specific examples relevant to the industry in [Section 3](#).



Emissions, refers to releasing greenhouse gases that drive climate change. Greenhouse gases include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and others. To compare their climate impact, emissions are commonly expressed in carbon dioxide equivalents (CO₂e), using CO₂ as a standard reference point.



Decarbonisation describes the action required to reduce greenhouse gas emissions towards zero. Decarbonisation examples include renewable electricity generation, improving operational efficiency, switching to low-carbon materials, and designing for circularity across the vehicle lifecycle. These pathways will be explored further in [Section 2 & 3](#).



Net zero means halting the acceleration of climate change. More specifically, it refers to achieving a balance between a) the quantity of greenhouse gases emitted and b) the amount removed.⁶ In practice, this means reducing emissions as far as possible through improved energy efficiency, improved material efficiency, and increased use of renewable energy sources, and afterwards offsetting any remaining emissions through carbon removal methods like reforestation. This concept is central to global climate goals, including the Paris Agreement, which commits countries to limit warming below 2°C.⁷ Notably, 97% of Australia’s trade goes to countries with net zero targets.⁸



Embodied carbon describes the carbon emissions of product’s upstream stages. This may refer to emissions due to material extraction, refinement production and transportation. For example, a truck’s embodied carbon includes emissions from mining the iron ore, producing the steel, manufacturing the chassis, and transporting parts to the assembly plant, all before it even burns a drop of fuel on the road.



Efficiency is engineering language for “maximising output from a given input.” Examples of efficiencies include energy efficiency and material efficiency. Efficiency considers units of output per unit of input. A classic example is fuel efficiency, where we refer to the energy required - measured in litres of diesel - to achieve a desired output (e.g. tonne-kilometres driven). As new energy carriers have entered the mix, other units such as gigajoules (GJ) or kilowatt-hours (kWh) are also used.⁹ As this change is taking place it is important to ensure we are comparing like with like. We list useful [tools in the Appendix](#).



Climate-related disclosures provide insight into an organisation’s exposure to climate-related risks and opportunities. This allows investors, shareholders, customers and other stakeholders to assess how well an organisation is managing the potential impacts of climate change on its operations and financial performance.

6 <https://www.climatecouncil.org.au/resources/net-zero-emissions/>

7 <https://unfccc.int/process-and-meetings/the-paris-agreement>

8 <https://www.dcceew.gov.au/sites/default/files/documents/annual-climate-change-statement-2024.pdf>

9 <https://www.transportenvironment.org/articles/analysis-long-haul-battery-electric-trucks-eu>

Defining scope 1, 2, and 3 emissions

The Greenhouse Gas Protocol is the global standard for measuring, managing and reporting on greenhouse gas emissions. The framework describes three classifications of emissions, scope 1, 2 and 3:¹⁰

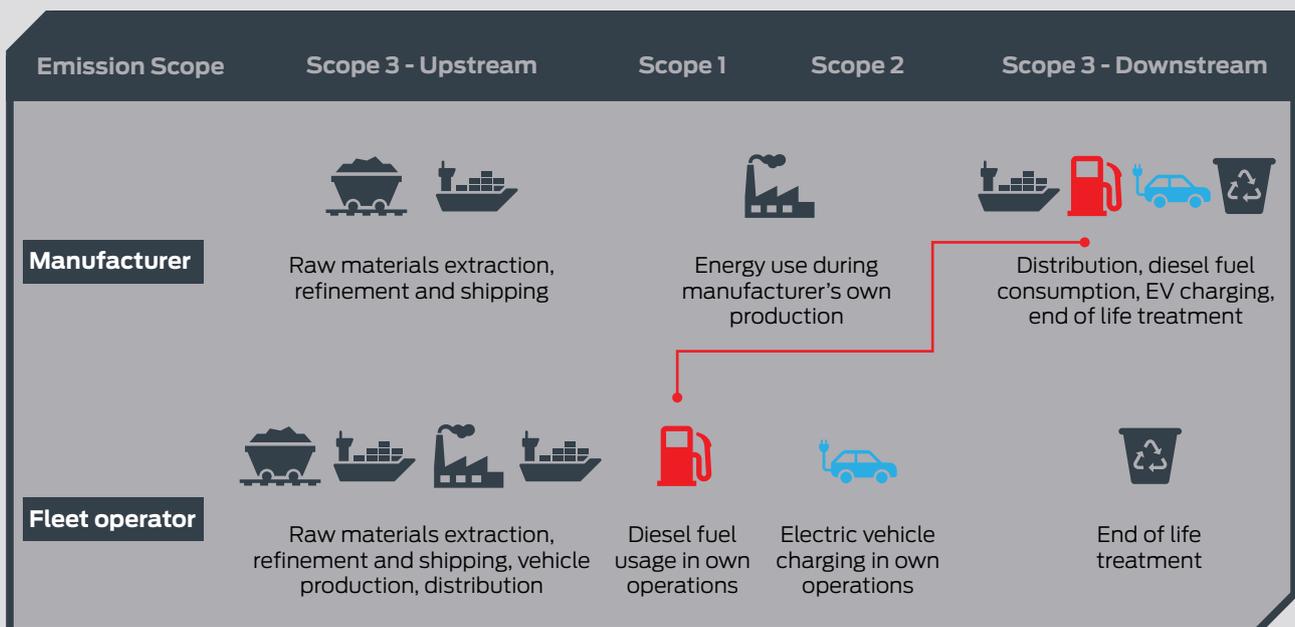
Scope 1 describes the direct emissions you generate, think diesel used in trucks, LPG or natural gas used in your factory or depot, and refrigerant leaks from cooling systems or in other industrial processes. These emissions are directly under your operational control.

Scope 2 covers indirect emissions in the form of purchased electricity. Although the direct pollution happens off-site (with the generator), how much electricity you consume is under your direct influence on-site at your warehouses, workshops, or offices. If you are running lights, charging forklifts or powering fabrication equipment, that electricity, and the emissions it represents, are counted here.

Scope 3 includes all other indirect emissions across your value chain, both upstream and downstream. This may include purchased materials, freight services, waste disposal and the use of products you sell. For manufacturers, Scope 3 can be the largest emissions source as it accounts for emissions downstream – and sold trucks and buses use a lot of fuel during their operational life¹¹. However, Scope 3 emissions also present the largest opportunities for industry-wide improvement, collaboration, and competitive advantage.

Using this categorisation, one organisation’s Scope 3 emissions can often be viewed as another organisation’s Scope 1 emissions. For example, Scope 1 diesel emissions from a fleet operator are counted as downstream Scope 3 emissions for a manufacturer (refer to the highlighted red icons in the following table).

Conceptual allocation of Emission Scopes (Simplified)



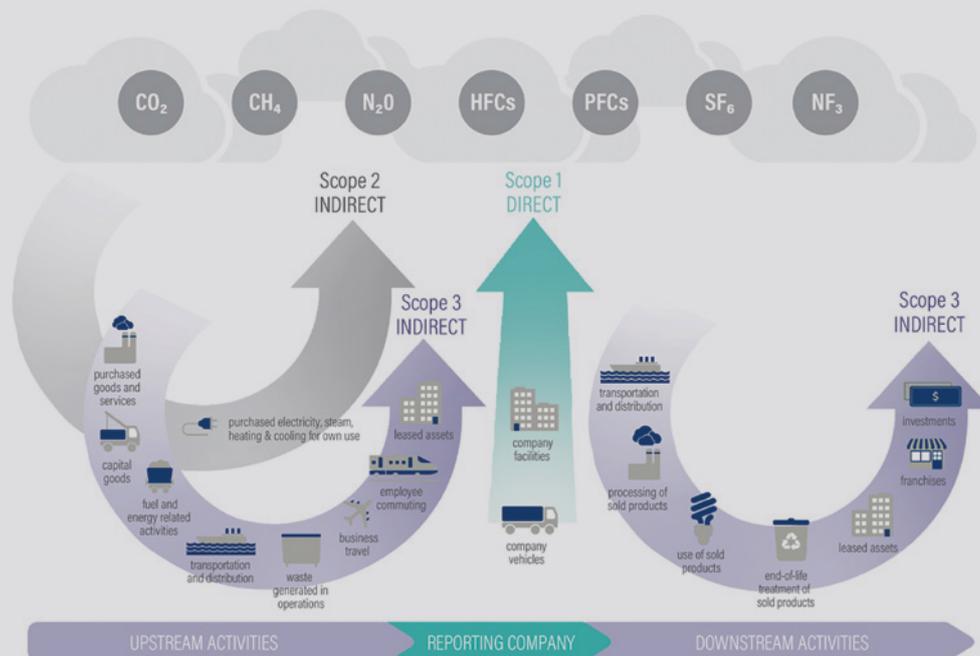
¹⁰ <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

¹¹ https://www.transportenvironment.org/uploads/files/202311_truck_scope3_report.pdf

- For **manufacturers**, Scope 3 emissions span a wide footprint.
 - » Upstream, this includes emissions from raw material extraction, steel and aluminium production, transport of parts, subcontracted fabrication, and packaging.
 - » Downstream, it also covers emissions from outbound logistics moving finished vehicles to dealers or customers and when the truck or trailer is operated by the buyer. At the end of that life, emissions from dismantling, recycling, or disposal are also included.¹²
- For **fleet operators**, the emissions from the use phase of trucks are directly in their operational control, hence their Scope 1 emissions. Still, Scope 3 is significant and includes:
 - » Upstream emissions created when extracting, refining and transporting the diesel you purchase, any lease of vehicles, any subcontracted part of your freight task, any outsourced maintenance, and your staff commute.
 - » Downstream, Scope 3 includes waste and potentially the re-sale of vehicles and any emissions associated with their remaining lifecycle.¹³

A small portion of operational fuel and electricity consumption are attributed to upstream Scope 3 emissions, linked to extraction, processing, transmission and distribution. For example, the Scope 3 emissions from producing and distributing diesel is about 20% of the total emissions impact.¹⁴

Scope 1, Scope 2 and Scope 3 Emissions¹⁵



12 Critically, Scope 3 includes the use phase: the emissions generated when the truck or trailer is operated over a 10–20-year lifespan

13 <https://ghgprotocol.org/scope-3-technical-calculation-guidance>

14 <https://www.dccew.gov.au/climate-change/publications/national-greenhouse-accounts-factors>

15 Source: World Resources Institute (WRI), Scope 3 Calculation Guidance image, via Wikimedia Commons. Licensed under Creative Commons Attribution-ShareAlike 4.0 International (CC BY-SA 4.0).

What reporting has Australia mandated for businesses?

Australia, alongside many other countries, has committed to keep the increase of global average temperatures below 2°C. This commitment led to the Australian Government's plan to reach net zero by 2050.¹⁶ In South Australia, this plan has been translated into some specific state-level goals, including:¹⁷

- Achieving 100% net renewable energy generation by 2027
- Reducing greenhouse gas emissions by 60% by 2030

To better manage the risks associated with climate change, specific climate-related disclosures are mandatory for Australian businesses. These disclosures require a business to publish their transition plans, emissions targets, and climate risk assessments following the Australian Sustainability Reporting Standards (ASRS).



Australian Sustainability Reporting Standards (ASRS) consist of two Standards:

- **AASB S1:** General requirements for sustainability-related disclosures (voluntary)
- **AASB S2:** Climate-related financial disclosures (mandatory)

In this guide we will focus on the **mandatory AASB S2 Standard**, which is the framework for the climate-related financial disclosures that companies must comply with. The standard is available online on the [Australian Government](https://www.australian.gov.au)'s website. Businesses must publicly disclose:

- a) climate-related risks, and
- b) climate-related opportunities.

The standard sets out specific requirements on how these risks and opportunities are identified and managed.

¹⁶ <https://www.dcceew.gov.au/climate-change/emissions-reduction/net-zero>

¹⁷ <https://www.environment.sa.gov.au/topics/climate-change/government-action-on-climate-change>

Mandatory climate reporting using AASB S2 – groups and start dates¹⁸

Group	Reporting start date	Number of employees	Consolidated gross assets	Consolidated annual revenue
Group 1	1 st of January 2025	>500	>\$1 billion	>\$500 million
Group 2	1 st of July 2026	>250	>\$500 million	>\$200 million
Group 3	1 st of July 2027	>100	>\$25 million	>\$50 million

AASB S2 climate-related disclosures apply directly to large business, however the implications of the reporting reach suppliers, contractors and the wider value chain. This could include fleet operators, manufacturers, body builders, maintenance providers, fuel suppliers and more.

If your clients are required to report their Scope 3 emissions or climate risks, they may start asking for yours too.

For a fleet-based or equipment-based business, this involves tracking fuel and electricity use, calculating emissions, and explaining your plans to reduce them. You can get started with what you already have: fuel data, energy bills, equipment logs. Use Australia's National Greenhouse Accounts Factors¹⁹ to convert diesel, gas or electricity into emissions. Document what you are already doing to improve performance. Use this as more than a reporting exercise, use it to spot inefficiencies, strengthen your position with customers, and prepare for regulatory and market changes.

AASB S2 is not just for the boardroom, it reaches the shop floor, the depot and the service bay. The companies that engage early, collect the right data, and take practical steps will be in the best position to compete, comply, and cut costs in a changing economy.

¹⁸ If you meet two of the three indicators, you part of the earlier group.

¹⁹ <https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors>

DECARBONISING HEAVY VEHICLES

Australian Governments have set targets and identified the transport sector as a key area for change. Our sector will require a mix of solutions to suit different freight needs, and we cover these in this section.²⁰

Low-carbon vehicles

Fuel consumption in vehicles is a significant source of emissions. While efficiency improvements with the existing fleet are critical to reduce emissions, aiming towards zero emissions will require new propulsion technologies. There are three primary technology pathways being explored:

- **Hydrogen fuel:** Can be used in specifically designed or modified internal combustion engines. When produced using renewable energy 'green hydrogen' offers a pathway of near-zero emissions performance. Hydrogen is being trialled in longer-haul and industrial fleet applications²¹ and already operational in South Australia's buses and waste trucks.^{22 23}
- **Electrification:** Refers to battery-powered electric vehicles with fully electric drivetrains that are charged from the electricity grid. As Australia's grid adds more solar and wind, electrification is becoming a scalable emissions reduction pathway. Battery-electric vehicles are already in service in short-haul freight, waste services, and last-mile distribution tasks.
- **Low carbon liquid fuels (LCLFs):** These fuels are renewable substitutes for conventional fossil-based liquid fuels and include biogenic fuels such as biodiesel. They can be used in existing internal combustion engines, offering a potential pathway to reduce emissions without major changes to vehicles or infrastructure. LCLFs may be suited to applications where electrification or hydrogen is currently limited, such as long-haul freight and remote operations.

20 <https://hvia.asn.au/wp-content/uploads/2025/01/HVIA-submission-to-the-Zero-Roadmap-22-07-24.pdf>

21 <https://www.tollgroup.com/about/news-and-media/toll-backs-hydrogen-future-through-viva-energy-hub>

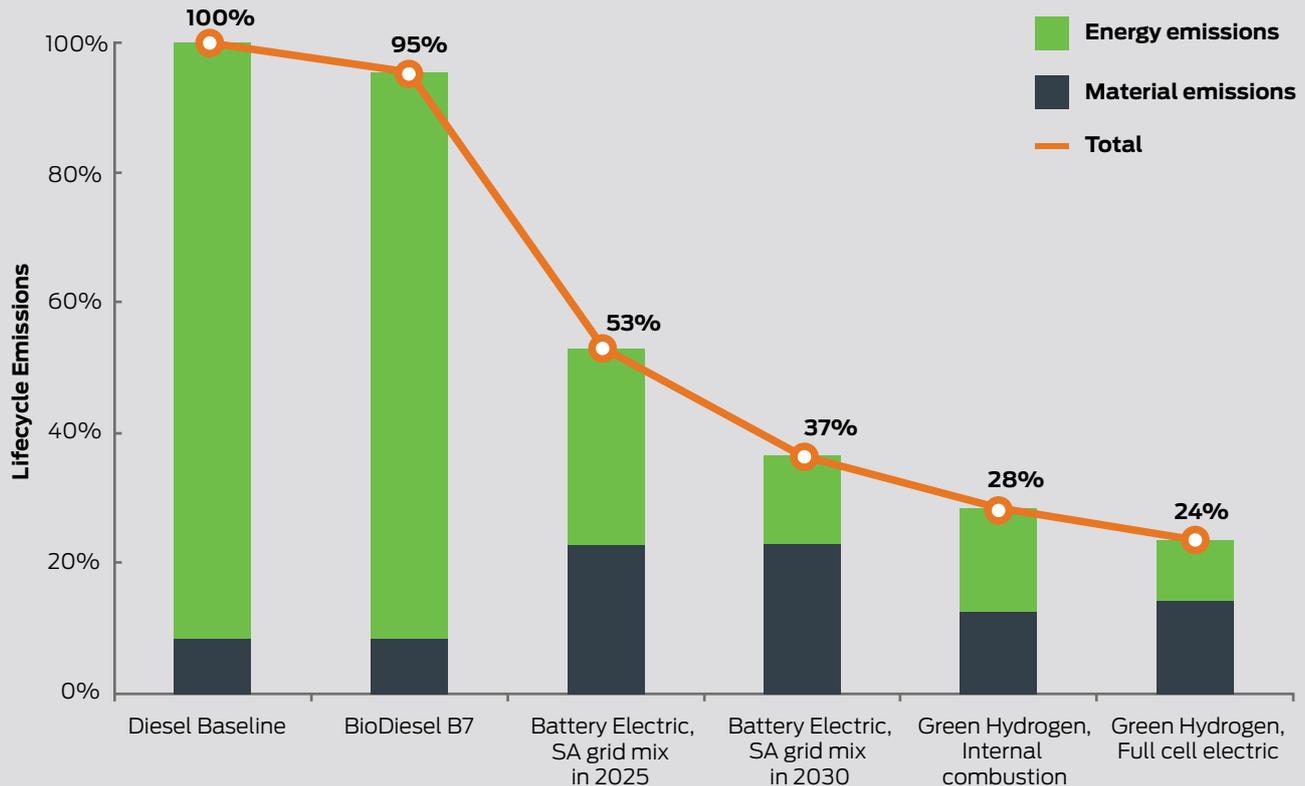
22 <https://www.jointransit.com.au/latest/transit-systems-green-fleet-expands-on-south-australian-streets>

23 <https://www.fullyloaded.com.au/pure-hydrogen-waste-truck-on-adelaide-roads/>

It is important to recognise that investing in a vehicle technology today sets your emissions pathway for the life of that vehicle, often for decades. Caution is advised when considering hybrid options that may continue to rely on diesel as the main fuel source.

The following graph compares the lifecycle emissions for different propulsion technologies. Lifecycle emissions presented include the emissions stemming from *energy usage* during operation and from *material usage* to make the truck.

Truck emissions for different technologies^{24 25}



Aside from emissions, other parameters, including vehicle range, refuelling or recharging time, infrastructure availability and suitability for the task should be considered. While range limitations may apply to some low-emission technologies, practical solutions are emerging, such as the rollout of publicly accessible mega-watt chargers.^{26 27} Total cost of ownership (TCO) is a critical consideration and includes fuel and recharge costs over the lifetime of the vehicle. Many low-emission vehicles have a much higher upfront costs, but significantly lower operational costs. Comparing these costs holistically is critical for making sustainable investment choices.²⁸

24 <https://hdvco2comparator.eu/>, with following deviation from default settings: • Long haul- Class 5 • Max Payload • Battery 800 kWh • Grid electricity mix emissions: SA in 2025 240gCO₂e/kWh, SA in 2030 110g CO₂e/kWh as per [DCCCEW projections](#).

25 Green hydrogen options assume hydrogen production using only renewable electricity rather than the SA grid mix, as the time of electricity consumption is decoupled from the time of refuelling. The green hydrogen emission intensity of 10.9gCO₂e/MJ is based on a renewable electricity emission factor of 17.7gCO₂e/kWh, an electrolyser efficiency of 66.5%, and a set of further assumptions, all of which are available in the [Concawe E-fuels report No. 17/22](#).

26 <https://www.goauto.com.au/news/scania/scania-and-abb-trial-megawatt-charging-system/2023-05-10/90959.html>

27 <https://arena.gov.au/knowledge-bank/aecom-electrifying-road-freight-report/>

28 For example: A Freemium total cost of ownership calculator is available here: <https://freightmetrics.com.au/truck-operating-cost-calculator-trial/>

Case Study

Aldom Transport Engineering is a Wingfield based service provider with sales, repair, and maintenance operations. Aldom have partnered with other businesses to provide a diversified range of options for accessing electric trucks. Besides traditional truck purchases, this also includes leasing options for trucks and charging infrastructure. With this approach, Aldom provides customers with a transparent option portfolio to pick the variant most suitable to them. In Aldom's perspective electrifying the transportation industry in Australia will go in tiers, gaining experience along the way: first is the distribution sector, then intrastate transport, and finally interstate routes, which they believe will start with specific corridors such as the Adelaide to Melbourne route.

Case Study

Commercial Motor Vehicles (CMV) Group operates automotive dealerships, predominantly in South Australia and Victoria. There is a strong interest in electric vehicles, but not all of this interest has translated into sales yet. From CMV's point of view, a critical aspect when switching to an electric truck is the requirement to have a charging facility at your depot, at least when using the so-called "back-to-depot" charging strategy. This upgrade to the depot is significant, given the power requirements for such chargers. Slow charging is often not operationally or economically viable, so fast charging is often the only option. A critical component in getting a fast charger installed is the approval from the network operator, which is SA Power Networks (SAPN) in South Australia. Getting in touch with SAPN early can help speed up the process and set realistic expectations from the start:

<https://www.sapowernetworks.com.au/connections/connect-solar-and-ev-chargers/electric-vehicle-charger-installations/ev-chargers-for-fleets-commercial-sites-and-public-rapid-chargers/>

Practical decarbonisation initiatives in South Australia

Manufacturers, distributors and dealerships are already translating decarbonisation goals into practical projects. Several examples are outlined below.

Manufacturers: Adelaide-based BusTech Group (now part of GoZeroGroup) has developed and deployed the ZDi electric bus. The initiative contributes directly to public transport fleet decarbonisation while supporting local manufacturing capability. BusTech's work reflects broader opportunities in electrifying suburban and regional bus networks.²⁹

Distributors: Major freight operators are leaning into electrifying their fleets. Woolworths Group operates a distribution centre in Adelaide and has committed to fully electrify its metro delivery fleet by 2030. The company has already deployed electric refrigerated trucks in NSW and Victoria cutting emissions and improving local air pollution from delivery vehicles.³⁰

Operators: Toll Group, with funding from the Australian Renewable Energy Agency (ARENA), has deployed electric trucks in Adelaide on reconfigured multi-stop urban routes. To support this, the company has installed high-capacity charging infrastructure at its depot near the airport. These projects demonstrate how strategic route planning and depot upgrades can enable electric freight operations in metropolitan settings.³¹

Dealerships: Heavy vehicle dealerships are beginning to adapt their operations to support the incoming wave of low- and zero-emissions vehicles. A leading example is CMV Truck, operating across South Australia and Victoria, which represents several major Original Equipment Manufacturers (OEMs) including Volvo Group, Mack Trucks, and UD Trucks, all of which have made global commitments to phase out fossil fuel vehicle sales. CMV has begun preparing its network for battery electric models such as the Volvo FL Electric and FH Electric. This includes high-voltage servicing infrastructure and implementation of dedicated technician training programs.³² These upgrades signal the dealership's readiness to support both sales and ongoing maintenance of next-generation commercial vehicles.

29 <https://bustechgroup.com.au/bustech-zdi-450-at-the-australasia-bus-and-coach-expongb/>

30 <https://www.woolworthsgroup.com.au/au/en/our-newsroom/latest-news/2023/greener-groceries-to-your-door-as-woolworths-group-accelerates-t.html>

31 <https://arena.gov.au/news/focus-on-heavy-vehicle-electrification-set-to-drive-innovation-in-transport-sector/>

32 <https://cmvtb.com.au/news/volvo-trucks-australia-launches-all-new-fuel-saving-aero-range/>

The following table provides an overview of government targets and industry stakeholder commitments related to decarbonisation and enhanced circularity.

Entity	Emissions from own operations	Net Zero Target	Material Recoverability Target
Australian government ³³	82% renewable electricity by 2030.	by 2050	Recover 80% of resources
South Australia (SA) ^{34 35}	100% net renewable electricity by 2027.	by 2050	Recover >90% of resources by 2030 Double circularity rate by 2035
Kenworth ³⁶	35% reduction by 2030	Not specified	Not specified
Volvo Trucks ^{37 38}	50% reduction by 2030	by 2040	Not specified
Mack Trucks ³⁹	50% reduction by 2030	by 2040	Remanufacture 50% of parts by 2025
Scania ^{40 41}	50% reduction by 2025	by 2040	Reduce 40% of waste per produced vehicle

33 <https://www.dcceew.gov.au/environment/protection/circular-economy/framework>

34 <https://www.environment.sa.gov.au/topics/climate-change/government-action-on-climate-change>

35 <https://www.greenindustries.sa.gov.au/resources/circular-economy-strategy-2025-2030>

36 <https://paccar.com/media/3rabmysl/sasb-esg-combined-report-feb-2024.pdf>

37 <https://www.volvogroup.com/en/sustainable-transportation/responsible-business/climate.html>

38 <https://www.volvotrucks.com/en-en/news-stories/stories/2023/may/why-circular-parts-are-a-sustainable-choice.html>

39 <https://www.macktrucks.com/trucks/sustainability/>

40 [https://www.scania.com/group/en/home/newsroom/news/2021/Scania's commitment to electrification our initiatives so far.html](https://www.scania.com/group/en/home/newsroom/news/2021/Scania%20commitment%20to%20electrification%20our%20initiatives%20so%20far.html)

41 <https://www.scania.com/targets.html>

Case Study

Commercial Motor Vehicles (CMV) Group operates a large truck dealership in Wingfield, with over 100 staff. This site has an electricity peak demand of 150 kW in winter. Their solar rooftop installation with a peak generation of 100 kW helped to reduce their electricity consumption significantly. It is CMV's general ambition to add solar rooftop installations to each site while being mindful of resource allocation: adding that under current incentives the first 100 kW of solar is more economical than higher levels. This is because higher levels of solar generation will more often exceed the on-site consumption, requiring exporting to the grid. Exporting to the grid is generally not economical, as feed-in tariffs are typically very low or not even supported in many commercial electricity supply contracts.

Some general questions to ask when adding solar installations to your site include:

1. Is the roof in a suitable condition for adding infrastructure that is meant to stay for the next 25 years?
2. Does your load profile suit that of solar generation (only during the day)?
3. Are there any flexible loads that can be directly controlled to ramp up and down depending on the solar generation (e.g. domestic hot water, air conditioning using buildings' thermal inertia)?
4. Are there any batteries or electric vehicle charging stations on your site that can flexibly adjust how much electricity they absorb?
5. Are potential vendors or suppliers for the installation accredited? Check with SAA <https://saaaustralia.com.au/accreditation-status-check/>

A solar rooftop installation significantly reduces the amount of electricity that you consume from the grid. Accordingly, this will directly reduce your Scope 2 emissions. Solar rooftop installations typically have a payback period of 8-10 years.

Should you still have a significant residual electricity consumption that cannot be reduced any further, or your site is not suitable for a solar rooftop installation, procuring Green Power electricity is another pathway to reduce your scope 2 emissions. Further information is available through the Australian Government's Green Power Website.

<https://www.greenpower.gov.au/documents/greenpower-business-guide>

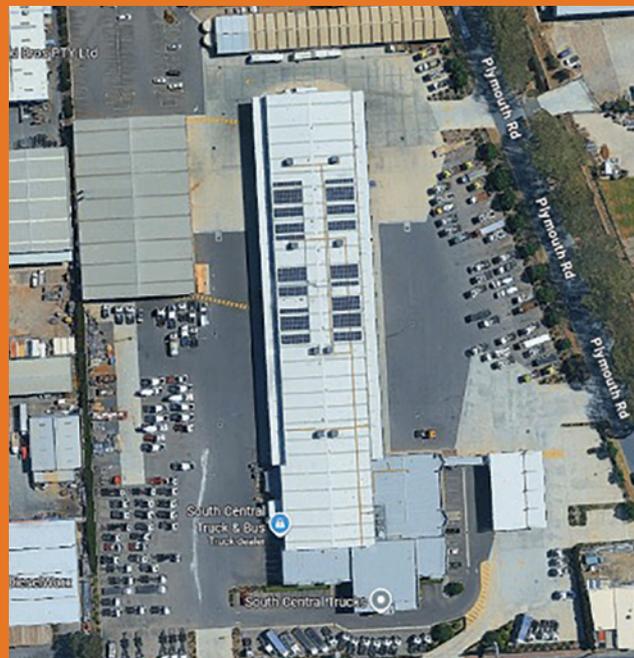
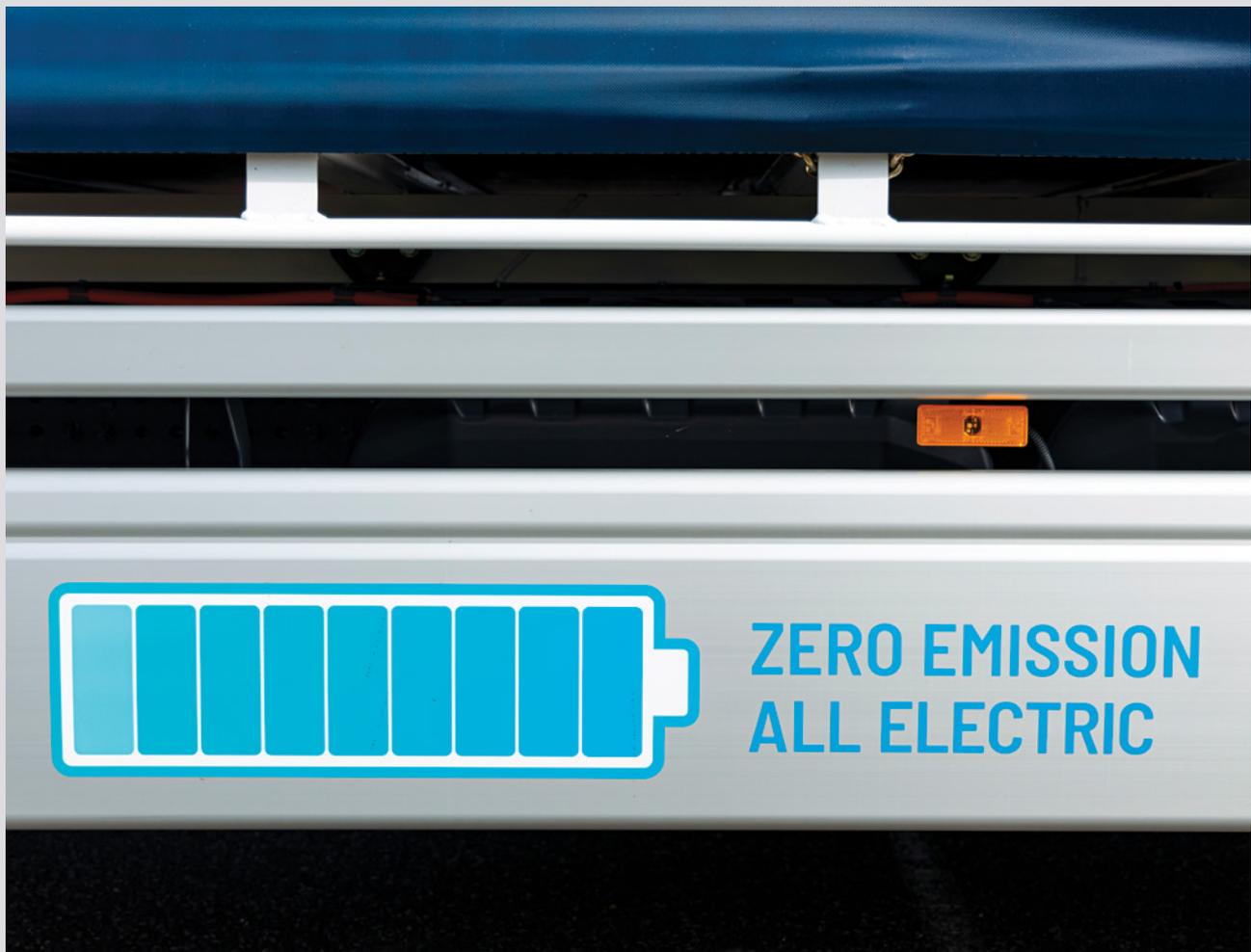


Image source: Google Maps (accessed 30/11/2025). Imagery ©2025 Vexcel Imaging US, Inc., Airbus, Maxar Technologies; map data ©2025 Google.

Addressing emissions requires a systems-wide transformation that includes how we make, use, and manage products and materials.⁴² This is where the circular economy becomes essential. While it supports emissions reduction, its focus is broader: it is a shift away from the traditional take-make-waste model toward one that designs out waste, keeps materials in use at their highest value, and regenerates natural systems.

What can you do today

- Implement fuel efficiency and energy efficiency measures
- Gain an understanding of the carbon intensity of vehicle options relevant to your organisation, start sharing insights with your team
- Seek guidance for net zero emission vehicles relevant to your organisation, start conversations around total cost of ownership and financing options



⁴² <https://www.ellenmacarthurfoundation.org/completing-the-picture>



CIRCULAR ECONOMY

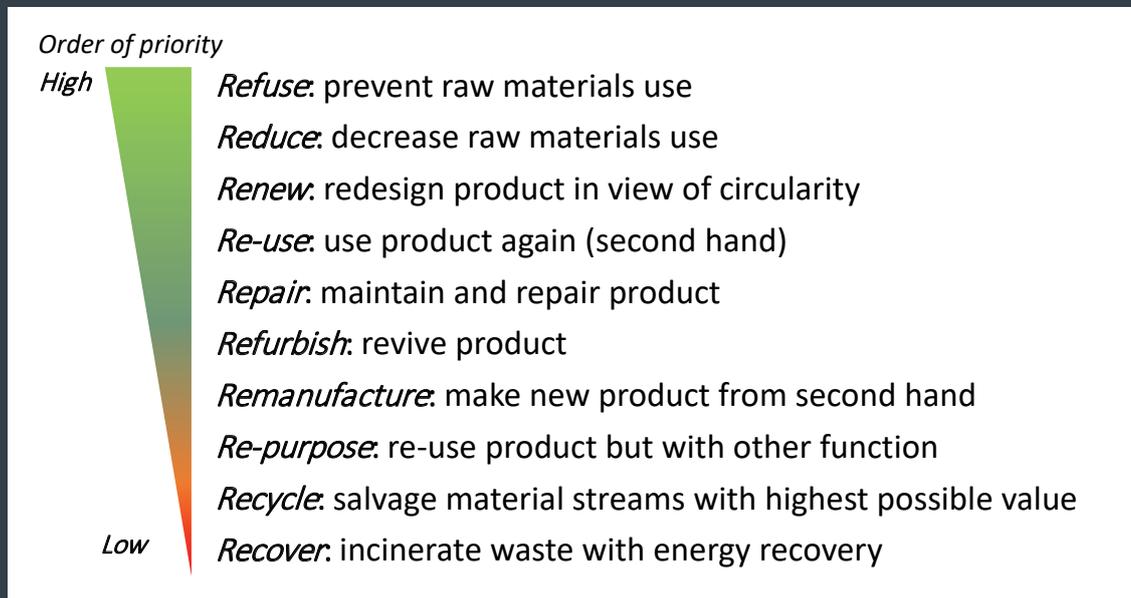
This section covers vehicle, circular design, key materials, maintenance, recycling, end-of-life treatment, and waste-related opportunities.

Defining the circular economy

The circular economy is best understood as a large-scale opportunity to redesign how we use materials. This approach moves away from “Take-make-waste” and towards a system that allows resources to be kept in circulation for as long as possible, to minimise the use of virgin materials and reduce landfill.

When implemented it enables materials to be managed in a sustainable and regenerative way. The guiding principles for the circular economy are presented in the following figure, the highest priority being to *refuse* the need for raw materials altogether, and the lowest priority (or last resort) is to *recover* energy from waste.

Key Principles of the Circular Economy



Source: Cramer, J. (2017) “The Raw Materials Transition in the Amsterdam Metropolitan Area: Added Value for the Economy, Well-Being, and the Environment”, *Environment: Science and Policy for Sustainable Development*, 59(3), pp. 14–21, Fig. 1. © Jacqueline Cramer 2017. Licensed under CC BY-NC-ND 4.0

Circular design & manufacturing

Circular design directly supports all three of Australia's circular economy targets and underpins progress toward net zero goals. Early design decisions influence emissions, energy use, durability, and recyclability throughout production, operation, and disposal.

Relevant priorities include:

- Enabling reuse and refurbishment of existing materials and components
- Facilitating disassembly and ensuring traceability of materials throughout the product
- Prioritising durability to extend product lifespan
- Incorporating modular design to simplify upgrades, repairs, and part replacement
- Selecting recycled or renewable materials wherever possible
- Collaborating across the value chain to transform waste outputs into valuable inputs
- Integrating better-practice waste management during the operational phase

These strategies align with the “retain value” principles of narrowing material flows (using less), slowing loops (extending product life), and closing loops (enabling recovery and reuse).

Products designed with circularity in mind are easier to disassemble, reuse, or recycle, ensuring that materials remain in use for as long as possible while reducing environmental harm across the entire lifecycle.



Material usage

Using recycled materials, such as remanufactured plastics or reclaimed metals, can significantly reduce the use of virgin materials, manufacturing emissions and cut down on packaging and freight activities. During manufacturing, materials like virgin aluminium, glass, and rubber often require high heat inputs, contributing to Scope 1 and 2 emissions. Material selection plays a critical role in the emissions impact throughout a vehicle's lifecycle.

Two main materials, steel and aluminium, are increasingly available in recycled and lower-carbon forms that can significantly improve circularity and reduce embedded emissions in vehicle manufacturing.^{43 44} For example, recycled aluminium uses just 5% of the energy required to produce virgin aluminium, without compromising on performance.⁴⁵

Case Study

Aldom Transport Engineering has traditionally been a tailored solution provider. As part of their sustainability efforts, they offer truck builds with aluminium bodies. For example, they offer 20 m³ dry freight bodies which have a tare weight of less than 600 kg. The change to lighter body weights allows the conversation to shift from towing capacity to payload capacity. Also, this weight reduction helps to make the business case for shifting to electric trucks. Some usage types in the last+ first mile sector can now be driven with a car license, and as such, this change helps with recruiting drivers.

Businesses can improve resource efficiency, cut waste and reduce emissions by:

- Sourcing sustainable materials made with a high proportion of recycled content or those manufactured using renewable energy. Green steel or bio-based plastics are examples of more sustainable material choices.
- Minimising mixed-material designs, which are harder to recycle, and coordinating earlier with recyclers.
- Considering embodied carbon data when making procurement decisions

DAF Trucks incorporates 35% recycled material in its vehicles, with at least 90% of materials in new trucks designed to be recyclable.⁴⁶ This demonstrates how circular design principles can be applied at scale to support both environmental and operational goals.

43 <https://www.csiro.au/en/news/All/Articles/2021/January/seeing-green-low-carbon-steel-and-aluminium-target-reduced-emissions>

44 <https://transitionasia.org/green-steel-economics-australia-factsheet>

45 https://aluminium.org.au/wp-content/uploads/2024/10/IAI-Factsheet-Claim-3_GHG-Saving_external.pdf

46 <https://www.daf.com/en/about-daf/sustainability/environment-circularity/circular-products>

Maintenance, repair & refurbishment

Fleet operators and workshops are increasingly adapting to a changing environment, through a mix of on-site rebuilding and remanufacturing units. On-site rebuilding can be efficient for certain mechanical systems and supports local skills, particularly in regional centres. For critical components, in particular for high-voltage components in electric vehicles, remanufactured units offer higher reliability, and warranty coverage.

OEM-aligned service providers in SA, including CMV Group⁴⁷ and Daimler Trucks Adelaide⁴⁸ are already participating in global parts recovery and remanufacturing programs. As more workshops become EV-ready,⁴⁹ combining strategic use of remanufactured parts with selective on-site repairs provides a scalable, sustainable servicing model for South Australia's growing electric heavy vehicle fleet.

Notably, many service outlets also offer refurbished vehicles to purchase or lease. These typically carry remaining warranties, however, in some cases new warranties are being offered on refurbished vehicles.⁵⁰

To align workshop operations with circular economy and low-emissions goals, consider the following actions:

- Prepare for emerging technologies, including digitisation, electric drivetrains, and diverse energy carriers.
- Align servicing practices with OEM circular guidelines, especially around modular component replacements.
- Reduce operational emissions by phasing out gas-powered equipment (e.g. radiator heaters, boilers) and switching to renewable electricity sources.

47 <https://www.cmvtruckcentre.com.au/service/>

48 <https://www.daimlertrucksadelaide.com.au/service>

49 <https://members.mtasant.com.au/mta-launches-electric-training-centre/>

50 <https://www.dafusedtrucks.com/en/>

End-of-life vehicle management

When a heavy vehicle reaches end-of-life, its components increasingly have the potential to live on through remanufacturing, refurbishment, and targeted material recovery. Programs such as the Scania “iReGear” have shown that remanufactured gearbox components can be brought back onto the main production line. Initiatives like this helped reduce the need for new parts by 50%.⁵¹

Similarly, the Caterpillar “Reman” program refurbishes parts for resale under warranty, offering like-new performance at a lower cost. Caterpillar reports a 65% reduction in greenhouse gas emissions and an 80% reduction in new material usage compared to manufacturing new components.⁵²

Case Study

The CMV Truck Centre is located on a 12 acres site in Wingfield and is Australia’s second largest Kenworth dealer. As part of its repair and maintenance program, the CMV Truck centre offers both new and refurbished parts. Refurbished parts are made available to customers at significant discounts, depending on stock availability.



51 <https://www.scania.com/uk/en/home/about-scania/newsroom/press/going-full-circle.html>

52 https://www.cat.com/en_US/products/new/parts/reman/sustainability.html

While these programs focus primarily on metal-based parts, plastics also require attention. DAF Trucks is taking a leadership role by publishing plastic sorting guides for its models. These tools enable targeted disassembly and recycling by allowing early-stage sorting based on material type, improving recovery rates and reducing contamination.

Sorting guide- plastic parts of DAF truck⁵³

CF EXTERIOR DAY CAB



GUIDE FOR SORTING PLASTIC PARTS DAF CF Euro 6 SERIES | 3

Image © DAF/Paccar. Used with permission (Paccar, 13 Nov 2025).

One of the core challenges in improving end-of-life outcomes is the lack of comprehensive data. In Australia 850,000 vehicles reach their end-of-life every year accounting for 1.36 million tonnes of waste.⁵⁴ However, there is no specific waste data for the 1,060,525 registered heavy vehicles units on Australian roads⁵⁵. The light vehicle industry reports material recovery rates of 70%,⁵⁶ while the state’s total recycling rate is 82%.⁵⁷ We have an opportunity to go beyond these benchmarks by embracing circular design, improving traceability, and supporting consistent material recovery.

53 <https://www.daf.com/-/media/files/document-library/sorting-plastics-guides/daf-cf-euro-6-recycle-guide-en.pdf>

54 <https://www.fcai.com.au/driving-change-in-automotive-recycling/>

55 <https://www.nhvr.gov.au/about-us/corporate-documents/heavy-vehicle-productivity-plan>

56 <https://www.nhvr.gov.au/about-us/corporate-documents/heavy-vehicle-productivity-plan>

57 <https://www.greenindustries.sa.gov.au/SArecycling>

Examples: Battery & tyre circularity

Batteries and tyres are two components in the heavy vehicle sector that already demonstrate strong circular economy potential. These parts typically wear out faster than other major vehicle systems, making efficient recycling and recovery essential. The systems in place for battery collection and processing offer valuable insights that can inform broader industry practices.

Battery circularity

Australia has achieved an impressive 96% recycling rate for lead-acid batteries⁵⁸. This is due to a combination of:

- A mature recycling process
- Strong regulatory frameworks
- Widespread collection networks
- Clear financial incentives across the value chain

The Nyrstar smelter in Port Pirie, South Australia, plays a key role in processing these batteries. Automotive retailers, mechanics, and battery suppliers all participate in take-back schemes, forming a reverse logistics system that efficiently returns batteries at end-of-life to recyclers at scale.

End of life batteries in Australia in 2021 and 2050⁵⁹

Year	Batteries reached end of life in Australia (tonnes)	Key chemistry
2021	180,320	Lead acid (89%)
2050	630,730	Lithium-ion (78%)

Lithium-ion recycling rates are relatively low at about 10%, but the industry is ramping up quickly to be able to accommodate the rapid change.^{60 61} Options are available and the Association for the Battery Recycling Industry (ABRI), keeps an updated database of recycling options available by battery type.⁶²

58 <https://bcycle.com.au/wp-content/uploads/2023/05/Battery-MA-Report-FINAL-20230927.pdf>

59 In 2021, a total of 180,320 tons of batteries reached end of life in Australia, of which 89% were lead acid batteries. However, by 2050, the total mass of spent batteries is expected to rise to 650,000 tonnes, with more than 75% projected to be lithium-ion. Table 21 and Table 24 of <https://bcycle.com.au/wp-content/uploads/2023/05/Battery-MA-Report-FINAL-20230927.pdf>

60 <https://www.csiro.au/en/news/All/Articles/2024/May/Lithium-ion-battery-recycling>

61 <https://publications.csiro.au/publications/publication/Plcsi:EP208519>

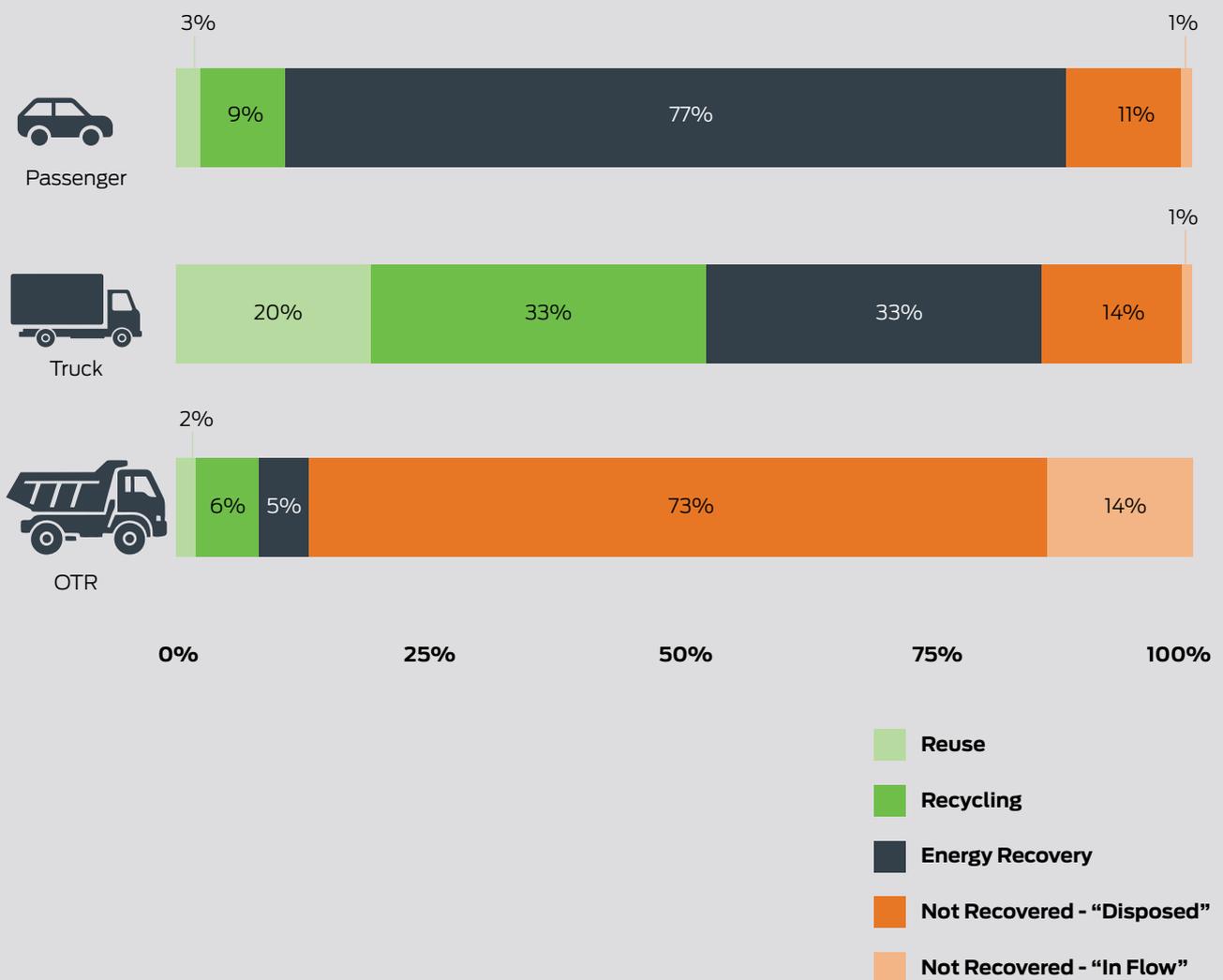
62 <https://www.batteryrecycling.org.au/battery-types>

Tyre circularity

Tyres represent a major circular opportunity in the heavy vehicle sector. Landfill bans and the establishment of Tyre Stewardship Australia (TSA) have improved recovery rates. In FY 2024, Australia generated 537,000 tons of end-of-life tyres, 28% of these were reused or recycled. For trucks and buses, the recovery rates are much higher, with 55% of total tyres either being reused or recycled, an additional 33% were processed in energy recovery facilities.

High recovery rates in the truck and bus sector are helped by schemes such as those which apply new tread to existing casings, thereby reducing raw material use by up to 85%, cutting costs, and lifting resource productivity. Close to 90% of large fleets now use retreads.⁶³

End of life tyre fate in Australia⁶⁴



63 <https://www.continental-tires.com/us/en/b2b/truck/solutions/retread-solutions/sustainability/>

64 <https://www.tyrestewardship.org.au/tools-and-resources/material-flow-analysis-report-2023-24>

Case Study

Bridgestone Australia acquired the Bandag⁶⁵ retreading plant in Wingfield in 2000. Today, the facility services customers across South Australia, Western Australia, and the Northern Territory, operating at a capacity of around 150 tyres per day (as of 2025).

Heavy vehicle tyres can typically be retreaded three to four times, and in some cases up to eight times, depending on their previous use. Retreading offers significant cost savings - often 30% or more compared to purchasing new tyres.

Beyond cost benefits, Bandag retreaded tyres deliver clear environmental advantages. Each retreaded tyre produces 35% fewer carbon emissions and uses 40% less raw material when compared to the manufacture of a new tyre. Overall, a Bandag retreaded tyre is composed of up to 75% recycled and reused materials.

The retreading process involves a detailed 10-step quality control procedure. This procedure relies on visual inspection as well as shearography, which provides detailed imagery to detect irregularities in the tyre's material structure. This incoming quality control early in the production process ensures a targeted value-add and contributes to a process internal failure rate of 0.02%.



65 <https://www.bridgestone.com.au/tyres/bandag>

Waste management

Waste management is a critical lever for reducing environmental impact. Waste arises at every stage from fabrication offcuts and packaging to used tyres, oil filters, and end-of-life vehicles.

Key waste streams include:

- Metal and rubber from manufacturing
- Oils, fluids, and filters from servicing
- Packaging and spare parts from supply logistics
- Vehicle shells and components at end-of-life

Case Study

The Bandag⁶⁶ retreading plant in Wingfield also demonstrates strong environmental management through careful waste stream segregation. Rubber buffing dust is captured onsite and recycled via third-party partners to create new products such as rubber flooring.⁶⁷ Cardboard waste is collected and processed through a dedicated paper recycling service. While a general waste collection system remains in place, the site is actively exploring ways to further reduce this waste, including the introduction of a soft plastics recycling service.



66 <https://www.bridgestone.com.au/tyres/bandag>

67 <https://a1rubber.com/products-info/>

The South Australian Environment Protection Authority (EPA) provides specific guidance for the safe dismantling and disposal of end-of-life vehicles and encourages recovery over landfill wherever possible; many vehicle parts including tyres and batteries are also explicitly banned from landfill.⁶⁸

While earlier sections of this guide focus on avoiding waste through better design and circular practices, final waste that does occur should be recovered for materials or energy as a last resort before landfill.

Businesses in the heavy vehicle supply chain can take the following steps to reduce waste:

- Conduct a waste audit to identify and quantify discarded materials over a set period
- Maximise segregation by streamlining collection of metals, hard plastics, paper, e-waste, and organics
- Engage suppliers about returnable or reusable packaging options
- Partner with licensed recyclers and resource recovery service providers
- Track waste types and costs over time to identify trends and reduction opportunities

Using data for circularity

The heavy vehicle sector faces pressures for data transparency from customers, regulators, and international markets are creating new opportunities to align digitisation efforts with sustainability and circular economy goals. With rising data expectations, the industry can leverage its digitisation agenda to help customers track, in real time, how materials are moving and how supply chains are evolving.

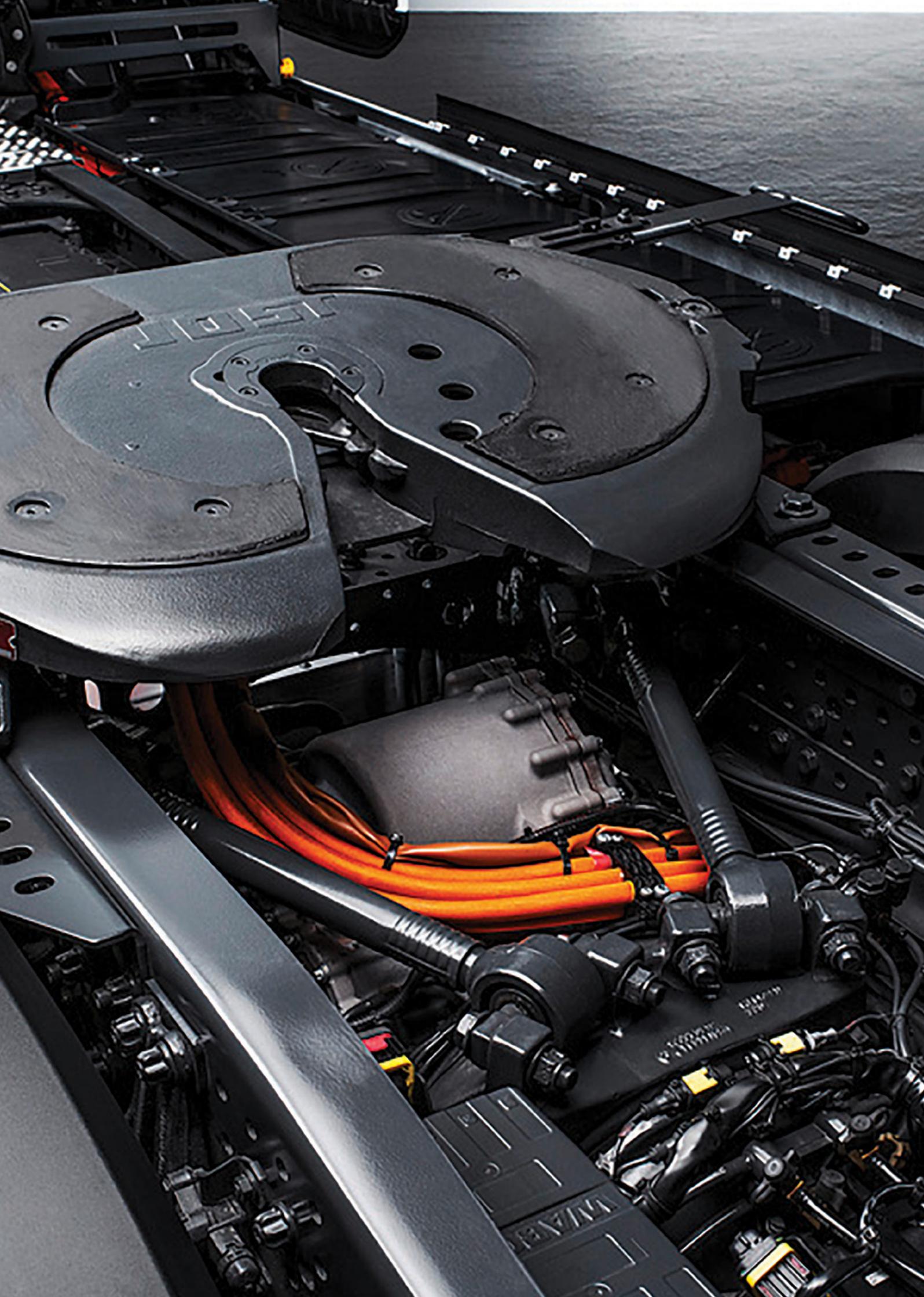
The concept of seamless traceability can be applied to tracking parts and materials from manufacture through use and end-of-life.⁶⁹ This can extend the useful life of components, enable more effective reuse and refurbishment, and improve recycling outcomes. A relevant example is the Caterpillar 'Reman' program, which relies on detailed component tracking to enable large-scale remanufacturing.

Consider the following opportunities in your organisation:

- Harnessing the potential of readily available digital inventories to support sustainability initiatives.
- Track materials and components throughout production, use, and end-of-life to identify opportunities for re-use and avoid unnecessary replacements.
- Integrate traceability tools to improve data quality, customer confidence, and alignment with international compliance expectations.

⁶⁸ https://www.epa.sa.gov.au/files/15447_auto_recyclers_guideline.pdf

⁶⁹ As a starting point, see <https://www.dcceew.gov.au/sites/default/files/documents/step-by-step-implementation-guide-for-recycled-content-traceability.pdf>



SUSTAINABILITY PLANNING FOR YOUR BUSINESS

Sustainability is on the radar and now is the time to get your organisation prepared. While the shift to net zero and a circular economy are fundamental operational changes, the transition happens one step at a time.

This section outlines practical actions to help you begin your journey. A one-page “cheat sheet” summary and other useful resources are compiled in the [Appendix](#). And remember, you are not alone. Introductions to sustainability experts can be facilitated by several organisations, such as the publishers of this guide:

- [Green Industries SA \(GISA\)](#)
- [Heavy Vehicle Industry Australia \(HVIA\)](#)

Most importantly, collaboration is key when it comes to reaching sustainability outcomes, get your team on board, engage with your peers, competitors, suppliers, buyers, investors, and the communities you work within. When we ask the same questions and work together, we move faster towards our shared goals.

Setting sustainability targets

Setting targets is how your business turns ambition into action, and strategy into measurable progress. The key to setting sustainable goals is to stay realistic and start with where your business is today.

Step 1 – Establish Your Baseline

Step 2 – Understand Your Motivation

Step 3 – Apply Both Inside-Out and Outside-In Thinking

Step 4 – Set SMART Targets

Step 5 – Break Down and Prioritise

Step 6 – Prepare for Monitoring and Reporting

Step 1 – Establish Your Baseline

Begin with what you can measure now. Start with what's within your control. Scope 1 and Scope 2 cover emissions from your own operations (like fuel use and electricity) and should be prioritised first. Once you have these well understood and managed, you'll be in a stronger position to tackle Scope 3.

For resource flows, review product volumes, materials used, repairability and components recovered or reused. If relevant, track landfill and recycling volumes. Use invoices, utility records, weighbridge data, and operational logs. This provides a solid, verifiable foundation. Expand to detailed material flows over time.

Step 2 – Understand Your Motivation

Your targets must reflect both internal business priorities and external expectations. Motivating factors may include:

- Regulatory shifts: Australia's Net Zero by 2050, mandatory climate disclosure, and the national circular economy goal to double circularity by 2035
- State and local mandates: achieve a 10% reduction in total waste generated per person, and a 90% diversion rate for commercial and industrial waste by 2030. By 2035, South Australia aims to double its circularity rate, with targets including a 10% reduction in material footprint, a 30% increase in materials productivity.
- Supply chain pressure to cut emissions and eliminate waste.
- Increasing customer expectations around durability, repairability, and sustainability
- Rising input costs and risk exposure from material and fuel volatility

Case Study

While Aldom Transport Engineering's bread and butter business is in repair and custom builds, they realised that they needed to become more proactive. As the CEO Nick Maloney describes this motivation for action: "We need to give young people back their future".

For Aldom, being a sustainable heavy vehicle business requires a clear strategy and implementing it involves a risk-assessment based decision-making process that involves taking leaps of faith. To support its sustainability goals, Aldom has introduced a comprehensive 10-phase strategy. This strategy started with easier bits like moving to lighter body builds and installing solar panels on their site, but it has also become a lot more forward looking. Aldom joined a research consortium called "Race to 2030",⁷⁰ which is dedicated to driving innovation for the transition to clean energy.



70 <https://www.racefor2030.com.au/>

Step 3 – Apply Both Inside-Out and Outside-In Thinking

To set strong, realistic circularity and decarbonisation targets, it is important to look at your business from two angles: outside-in and inside-out.

- **Outside-in** means understanding what is expected of you, by government, your industry, supply chain partners and the broader market. It helps you benchmark your ambition against national goals and sector leaders.
- **Inside-out** means looking at what your business can practically do, based on your operations, resources, and known opportunities. It helps you set targets that are achievable with the tools, data and investments you have today.

Combined, these two perspectives will help you set targets that are both credible and achievable.

Step 4 – Set SMART Targets

Make your targets specific, measurable, achievable, relevant and time bound. Ensure they are:

- Easy to communicate.
- Tied to your baseline (inclusive of Scope 1, 2, and where possible, Scope 3 emissions)
- Benchmark them against what others in the sector are doing and national and state goals.
- Supportive of value retention and waste reduction across the product lifecycle

Step 5 – Break Down and Prioritise

High-level goals need to translate into operational action. Breakdown these goals into specifics:

- Process-specific goals (e.g. reduce electricity in specific operations)
- Site or business unit targets
- Circularity metrics (e.g. % of recycled content, % materials reused or recovered, landfill diversion)

This creates the foundation for a practical transition plan.

Step 6 – Prepare for Monitoring and Reporting

Track against key indicators such as:

- Emissions per unit of output (e.g. per vehicle produced)
- Percentage of renewable electricity used.
- Reduction in fuel consumption (L/year or % change)
- Number or percentage of components reused, repaired, or remanufactured.
- Tonnes of waste diverted from landfill (% or total)

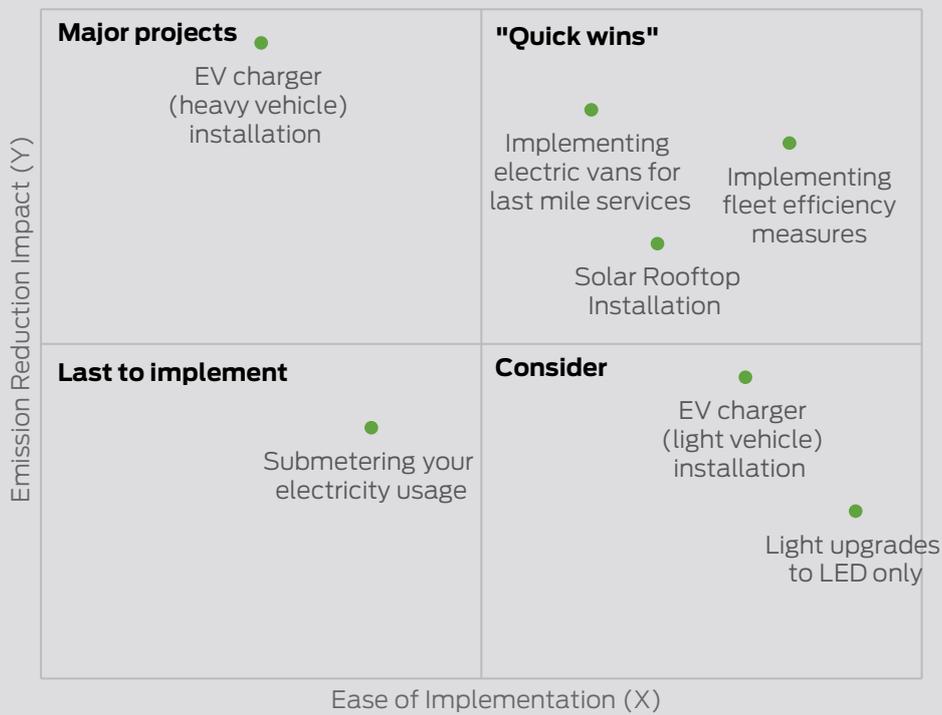
Ensure targets are embedded into decision-making. Make performance visible across design, procurement, operations, and capital planning using consistent methods. Report internally for accountability and externally to meet disclosure and supply chain needs.

Developing investable action plans

Once your targets are set and priority opportunities identified you can look at how to plan your action. Sound investable plans should combine emissions impact, resource efficiency, and long-term value creation.

Start by visualising your potential projects and initiatives. Prioritisation matrices are an excellent way to visualise your projects against competing parameters. For example, a common setup is to have **X axis** as ease of implementation and the **Y axis** as emissions reduction or circular economy impact.

Prioritisation matrix (conceptual example)



This dual lens reframes the value of each project in context. For example, a simple lighting upgrade may cut on-site emissions significantly and provide good financial benefits in the short-term (i.e. a 'quick win'). An equally impactful project could be establishing a recovery loop with local suppliers to collect, remanufacture, and reintegrate worn-out parts; however, it can be a complicated undertaking (i.e. a 'major project').

After prioritising your projects, the next step is creating an action plan. It is likely you will need to stage projects to balance speed, feasibility, and return. Some common strategies might include:

- Starting with 'quick wins' to build momentum
- Deploy proven technologies first while scoping more complex innovations later
- Prioritise by payback period where capital is constrained

Look for projects that deliver long-term value and strong co-benefits. For example, instead of using parts that get thrown out, choose equipment with components that can be removed, repaired and reused. Set up systems to take back used materials and put them back to work.

This supports your targets by lowering emissions and increasing circular performance. The more your projects match your targets, the easier it is to track real progress and show others the results.

Do not separate emissions from resource flows. The most investable actions will decarbonise and decouple, lowering both emissions and material input per unit of service. These are the foundation of a resilient future ready heavy vehicle sector.

Financing options

A range of funding options are available to support your sustainability journey, including grants, debt finance, and equity investment. Each comes with its own criteria, advantages, and considerations.

Grants are a common starting point, with the Australian Renewable Energy Agency (ARENA) offering several programs, particularly for large-scale projects. Small and medium enterprises (SMEs) can access support through other grant programs. To stay informed, it's helpful to register with the GrantConnect portal and set up alerts using keywords tailored to your industry. Keep in mind that grants usually come with reporting requirements, so ensure your team has capacity to meet these obligations. [GrantConnect](#)

Debt financing, such as loans for sustainable infrastructure and equipment, is another critical pathway. At the national level, the Clean Energy Finance Corporation (CEFC) provides concessional finance for projects achieving at least a 50% emissions reduction relative to baseline activity.⁷¹ While CEFC support is valuable for larger or more complex projects, many investments with clear commercial returns—like solar PV systems or equipment upgrades—may be better suited to standard business loans or sustainability-linked loans from commercial banks. These options are often easier to access and competitively priced. For reference, you can explore CEFC's investment examples on their website: [Clean Energy Finance Corporation](#)

⁷¹ <https://www.cefc.com.au/document?file=/media/oegh5t0a/cefc-complying-investment-guidelines-march-2021.pdf>

Equity investment may also be relevant, especially in dynamic sectors like sustainable transport or clean technology, where investor interest is growing. Securing equity typically requires a compelling business case and proactive engagement with investors. For South Australian businesses, Invest South Australia is a valuable platform to explore capital attraction, partnership opportunities, and government support. [Invest South Australia | Department of State Development](#)

Case Study

VE Motion is a trucking company based out of Murray Bridge. The value proposition of their flagship innovation is a 400 horsepower electric trailer that would cut diesel emissions by half. Dean Panos, the director at VE motion delivers their pitch: “Half an electric truck for quarter an electric truck cost, with a 5-year payback (when grid charging is available)”

The company’s journey was aided by the Industry Growth Program.^{72 73} VE Motion describes that one of the unique values of this program was the advisory support. Through the advisory sessions, VE Motion was able to streamline its innovation focus and is preparing for an exponential growth and equity financing round. VE Motion also highlighted that support through networking with other industry members has been critical for establishing a customer base. VE Motion identified access to testing facilities as a key innovation challenge unique to the heavy vehicle industry. While no testing facilities are available near their site in Murray Bridge, other locations may have better access. The Australian Government does maintain a database of test sites:

<https://www.rover.infrastructure.gov.au/PublishedApprovals/TFAApprovals/>



72 <https://business.gov.au/grants-and-programs/industry-growth-program>

73 <https://business.gov.au/grants-and-programs/industry-growth-program/grant-recipients>

Engaging stakeholders

Australia's transition to a low-emissions and circular economy world is a shared journey and every organisation has a role to play. Here are several practical ways to build momentum:

- **Start with meaningful conversations:** Speak to individuals across your various teams and positions. One-on-one conversations help build relationships and uncover root causes of challenges and barriers to change.
- **Facilitate purpose-drive workshops:** Conduct workshops internally with clear objectives. Whether it is to identify 'quick win' energy savings or mapping out effective recycling processes, ensuring each session has actionable outputs is key to making the end goal achievable.

Strong internal efforts must be matched by proactive external engagement. Conversations with supply chain partners and customers will help clarify which sustainability issues are most material to your business. Use sustainability as a vehicle to drive collaboration. The following questions can be a starting point for such conversations:

- Where are you seeing the most pressure on sustainability, both internally and externally?
- What assumptions are you currently testing in your sustainability planning?
- What parts of your footprint are hardest to measure?
- What is proving hardest to reduce or change across your operations?
- Where could collaboration make the biggest difference?

Make sure you are not left alone with these questions, pass them onto your service and supply chain partners. Work with your peers and competitors, regulators and associations to explore new pathways. Provide leadership in the various ways that are possible, be it through open invitations for workshop, best practise guides or a more formal role of stewardship, chances are high that you will be seen and rewarded.

Implementing effective processes

Good reporting helps manage risk, show progress and meet growing customer and investor demands. The following outline may help in structuring your reporting and make sure you have the setup to deliver consistently.

Start early. You may not be required to report yet, but expectations are rising. Setting up your systems now puts you ahead.

Get the basics right. Appoint leaders to oversee climate and circularity reporting. Make sure roles are clear across operations, finance and IT.

Track the right things. Use a mix of operational and outcome-based indicators to get a well-rounded view of performance. Track operational day-to-day patterns, such as maintenance activity, equipment downtime or energy use. Combine these with longer-term indicators like total fuel consumed or emissions per kilometre or percentage of waste diverted from landfill. Together these metrics provide clear insight into trends and help highlight opportunities to improve circularity and reduce emissions.

Set up a simple reporting system. Implement structures to ensure that your reporting is relevant, reliable and reproducible. Consider:

- Who is the report for? (site teams, executives, customers)
- Which key metrics should be included?
- How often (monthly, quarterly, annually) should we report?
- Should reporting be done on the site, regional or national level?
- Who is responsible for preparing and reviewing reports?

Keep improving: Reporting should be continuous and adaptive. Schedule regular reviews to keep data current and ensure it reflects operational changes. As new information becomes available or circumstances shift, update your reporting accordingly. Make reporting part of daily operations. Centralise data collection, use standard templates, and assign data owners for each input.

APPENDIX

Online tools and calculators

Calculate the [carbon intensity](#) of your heavy vehicle type of interest (CONCAWE):



Pros, cons and best-fit by industry guide for [low emission vehicles](#) (NatRoad):



Access NatRoads “[Get Fleet Fit](#)” guides to help you save energy with your current fleet:



Other Useful Resources and Experts

Case Studies

- [Case Studies - Alternative fuels, Infrastructure, Transport - Clean Energy Finance Corporation](#)
- [Depot of the Future Vehicle Electrification Project - Australian Renewable Energy Agency \(ARENA\)](#)
- [Decarbonisation Guides “Get Fleet Fit” | NatRoad](#)

Tools and Modelling

- [Heavy vehicle comparison tool | Transport for NSW](#)
- [Vehicle operating cost \(VOC\) models | Australian Transport Assessment and Planning](#)
- [Truck Operating Cost Calculator Trial - Freight Metrics](#)

General background

- [Lifecycle emissions | Green Vehicle Guide](#)
- [HVIA-LITE Project - Heavy Vehicle Industry Australia](#)
- [Circular Economy - Supply Chain Sustainability School Limited](#)

Electric vehicles

- [AECOM – Electrifying Road Freight Report - Australian Renewable Energy Agency \(ARENA\)](#)
- [Reports - Electric Vehicle Council](#)

Low-carbon liquid fuels

- [Low carbon liquid fuel opportunities for Australia - CSIRO](#)
- [Refined Ambitions – how Australia can become a low carbon liquid fuel powerhouse - Clean Energy Finance Corporation](#)

Getting started today 1-pager

1. Data stock-taking
 - a. Which [circular economy](#) practices have you recently adopted?
 - b. Do you have an understanding of [the Scope 1, 2 and 3](#) greenhouse gas emissions at your site?
 - c. If not, have you looked into the following as a starting point?
 - i. Annual diesel consumption (litres)
 - ii. Annual electricity consumption (kWh)
 - iii. Number of waste streams and quantities on your site
2. Monitoring and Targets
 - a. When will your organisation need to begin [mandatory climate-related reporting](#)?
 - b. Which [sustainability indicators](#) do you track on a regular basis?
 - c. Are these indicators known to everyone in the organisation?
3. [Engagement](#) – Clients:
 - a. When last did you speak to a client about their [net zero](#) targets?
 - b. Which of your top three clients issues regular sustainability reports?
 - c. When do your top 3 clients fall under [mandatory reporting](#)?
4. [Engagement](#) – Team:
 - a. Which sustainability topics are important to your team?
 - b. What support can you provide your team to adopt more sustainable practices?
5. No-cost/low-cost opportunities examples
 - a. [Waste segregation](#): is it possible to add an additional waste stream for your site (e.g. cardboard not just co-mingled recycling)?
 - b. On the road: Are you following [fuel-saving tools and guidelines](#)?
6. [Capital investments – site examples](#)
 - a. On-site solar generation: Have you explored installing a rooftop solar PV system?
 - b. EV charging: What options are available to support on-site electric vehicle charging (light vehicle, heavy vehicle)?
7. [Capital investments – fleet examples](#)
 - a. Road fleet 1: Which processes are already underway to reduce your fleet emissions?
 - b. Road fleet 2: Which processes can you bring underway to reduce fleet emissions significantly over the next 10 years?
 - c. Which measures have you taken to prepare your site and your team for new propulsion technologies such as hydrogen powered or electric trucks and buses?
8. [Leadership and innovation](#)
 - a. Which grants are available today that could be suitable for you?
 - b. Which experts would you like to be connected to?
 - c. From your operational experience: Which product or service is missing today that could help make the industry more sustainable? Who shares this vision?
9. [Sharing this guide](#)
 - a. Which case study in this guide do you find the most relatable for your organisation?
 - b. Which specific tools listed in the appendix do you feel everyone should know about?

This is designed as a starting point to help getting underway quickly.
Please refer to the respective chapters and see [tools and resources](#) for further guidelines.