



Circular Economy Plan

November 2025



This Plan outlines our strategic approach to adopting circular economy principles, building on recent policy developments and recognising the need for systemic change in response to the growing climate crisis.

While Main Roads operations have long relied on extracting non-renewable resources, we have progressed in the uptake of recycled content, and this Plan demonstrates our further intent to minimise extraction and maximise regeneration of resources. It provides a framework to identify enabling opportunities, thus contributing to a sustainable future for the state's infrastructure.

This Plan clarifies our role in this transition and outlines our commitment to driving change within our industry. While we have undertaken several initiatives related to the circular economy, they have often been executed without a unified framework or structured approach, which can lead to fragmented processes and missed opportunities.

To address this, our comprehensive framework clearly defines our vision, strategic objectives and key pillars to ensure a coordinated and impactful effort moving forward.

Our Circular Economy Framework



The framework will guide our transition to a circular model, ensuring materials are kept in use for as long as possible and we minimise waste and regenerate resources.

The framework sets our commitment to embracing the circular economy and enables us to focus our efforts on ensuring all circular economy initiatives are aligned, scalable and can be integrated into our projects and processes.



Main Roads Circular Economy Framework

VISION

We will support the circular economy in Western Australia by driving circular economy principles across our operations and adopting a whole-of-lifecycle approach

STRATEGIC OBJECTIVES

Promote sustainable lifecycle management and material circularity in all activities

Advance local circular economy industry development through sustainable procurement

Accelerate knowledge sharing and engagement for circular economy practices

KEY PILLARS

Resources

Optimisation and Management

Materials

Selection and Circularity

Data

Accessibility and Transparency

Supply Chain

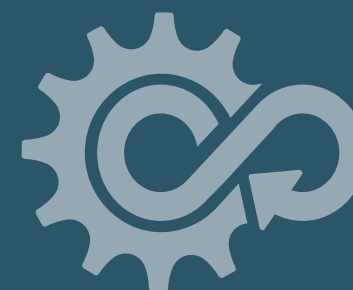
Engagement and Innovation

Knowledge

Exchange and Collaboration

EMBEDDING THE CIRCULAR ECONOMY

Actions and Opportunities Program

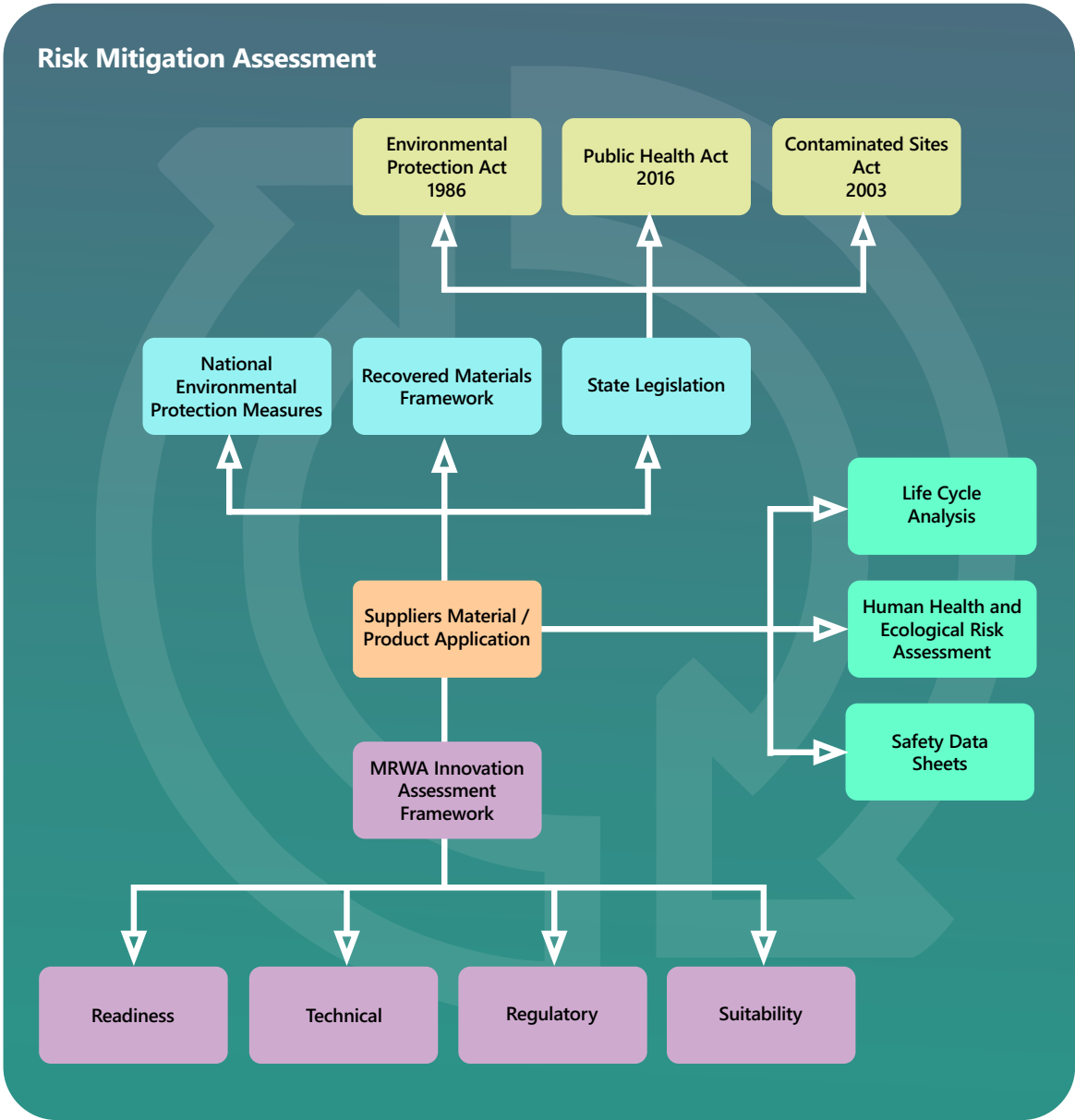


Risk Management and Regulatory Oversight

This Plan integrates a robust and multi-tiered risk assessment framework. This framework ensures that all proposed innovations (whether materials, products, or processes) are thoroughly evaluated for environmental, health and safety impacts before adoption or trial. Key risks are managed through established pathways, including the National Environment Protection Measures, State Legislation, Recovered Materials Framework and the Main Roads Innovation Assessment Framework (IAF). All materials, products and processes proposed under this Plan must undergo these and/or other relevant risk evaluations.

Proponents must provide thorough documentation to support the safe and responsible use of proposed materials, products or processes. At a minimum, this includes Life Cycle Assessments, Human Health and Ecological Risk Assessment and Safety Data Sheets. These assessments are reviewed under the IAF to ensure that all innovations meet performance, safety and regulatory standards.

While Main Roads provides oversight and technical guidance, the onus remains on proponents to demonstrate material safety and secure the necessary approvals. Materials still in the research and development phase remain within the risk framework until sufficient testing and validation confirm their readiness for use. Main Roads reserves the right to conduct independent testing and review to uphold public safety and environmental integrity.



Identifying Priority Materials and Products

To focus our transition, this Plan identifies the materials considered to be key enablers of circularity, while also recognising their critical role in reducing carbon. The priority materials for this Plan are identified below. Additional materials to support the circular economy and decarbonisation of civil infrastructure are expected to be identified as we mature in our approach.

Establishing local supply chains is key to circularity, resilience, and the long-term viability of infrastructure projects while benefiting the WA economy.

The materials listed in the following table have been assessed for their potential to advance circularity, based on their ability to minimise the extraction of virgin resources and their relevance to WA's road infrastructure needs.

The table below provides a high-level overview of Main Roads' current use of recycled and alternative materials, as well as areas under investigation. It is an indicative reference only, and will require ongoing review as technologies advance, specifications evolve, and new approvals are introduced.



Materials and Products Applications

MATERIAL / PRODUCT	APPLICATION						
	Pavements	Surfacing	Structures	Drainage	Traffic	Landscape	Electrical
Crushed Recycled Concrete	✓			✓			
Crumb Rubber		✓					
Reclaimed Asphalt Pavement	✓	✓					
Low Carbon Concrete			✓	✓	✓	✓	
Green / Reused / Recycled Steel			✓			✓	
Recycled Plastic	✓		✓	✓	✓		✓



Applications currently in use



Areas under research and development

Priority Material Targets

Main Roads is committed to increasing the use of reused and recycled materials across our infrastructure by setting strategic, agency-wide targets and implementation pathways that reduce reliance on virgin materials, support baseline data development, and drive growth in sustainable material supply.



Crushed Recycled Concrete

Achieve 200,000 tonnes per annum with an aspirational goal of doubling this use to 400,000 tonnes per annum



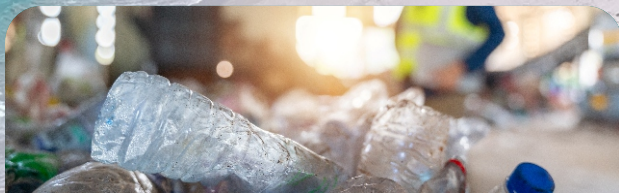
Crumbed Rubber

Achieve use beyond 2,500 tonnes per annum



Reclaimed Asphalt Pavement

Balance RAP supply and demand through a data-driven approach, optimising available RAP stockpiles and mix design approvals



Recycled Plastic

Set project-level targets for integrating recycled plastic into infrastructure applications



Low Carbon Concrete

Develop and implement a targeted strategy to accelerate the use of low-carbon concrete in suitable project applications



Green Steel

Deliver a research-driven strategy to accelerate the adoption of low carbon, recycled, and reused steel in road infrastructure, focusing on pathways and impact analysis






Action and Opportunities Program

The Actions and Opportunities Program, detailed within the Plan, sets clear, measurable, attainable, realistic and time-bound targets that will guide our move toward circular practices.

Over the next 5 years, these actions will offer a structured pathway while remaining adaptable to evolving regulations and advancements in innovation and technology. Successful implementation will require unwavering commitment, internal engagement, and clear accountability across the agency. By leveraging government resources and collaborating with external partners, we aim to ensure that our initiatives are well-supported and promote circular practices throughout our operations.

Actions and Opportunities Program Overview

Key Pillar	Headliner Initiative	Summary of Key Actions	Year	1	2	3	4	5
 Resources: Optimisation and Management	Enabling Circular Outcomes from the Outset	Establish and maintain a circular economy register of opportunities and strategies for projects, aligned with objectives such as: <ul style="list-style-type: none">• Designing out waste;• Keep assets and components in circulation; and• Explore regenerative design principles.						
	Keeping Materials in Circulation	Evaluate and update asset management and maintenance procedures to align with circular economy principles.						
	Closing the Loop on Operational Waste	Develop strategies for the internal and external management of end-of-life materials (i.e. Operational Waste Management Plans)						
 Materials: Selection and Circularity	Defining Priority Circular Products and Processes	Update the Recycled and Sustainable Materials at Main Roads Reference Guide (2022) to align with circular economy principles, highlight priority materials and support implementation strategy development.						
	Prioritise Reuse and Use of Recycled Content over Virgin Materials	Initiate and evaluate projects that explore the use of waste-derived and low-carbon construction materials as alternatives to virgin materials.						
		Expand the use of treated wastewater in road infrastructure.						
 Data: Accessibility and Transparency	Measuring Circular Economy Impact	Utilise existing Sustainability Performance Indicators to monitor circular economy progress and establish.						
	Enhancing Circular Economy Performance	Successful completion and deployment of a reporting portal, enabling it to effectively track and report on circular economy initiatives.						

Key Pillar	Headliner Initiative	Summary of Key Actions	Year	1	2	3	4	5
 Supply Chain: Engagement and Innovation	Promoting Circular Economy through Strategic Communication	Develop and implement an Engagement Strategy to build confidence within industry and provide clarity on circular economy goals and achievements through effective communication.						
	Supporting a Local Circular Economy	Identify barriers to achieving circular economy outcomes within supply chains, with an emphasis on uncovering gaps, opportunities and region-specific advantages.						
	Resource Efficient Procurement	Integrate circular economy principles into procurement strategies, tendering and contract delivery to ensure sustainable decision-making and practices across all procurement processes.						
	Advancing Circular Economy through Research and Innovation	Optimise the documentation process for circular economy research and trials.						
 Knowledge: Exchange and Collaboration	Developing Tools and Guidance for Circular Economy Integration	Leverage Main Roads' expertise to support Transport Portfolio Partners in evaluating, updating and developing tools and guidance materials that incorporate circular economy principles.						
	Facilitate Circular Knowledge Exchange and Continuous Learning	Establish and oversee a central repository for documenting and sharing circular economy case studies.						
	Building Circular Economy Skills	Implement a circular economy training program to embed knowledge and drive sustainable applications across the agency.						

