



Circular Economy

Circular design, life extension and secondary markets.

How to use this handbook

This volume is the practitioner (site and technical) reference for the Circular Economy factor. It sets out what Circular Economy governs, every assessment element with its own process and controls, the Queensland and Commonwealth instruments that apply, and the primary metric for each element. It is decision support, not legal advice or a substitute for a site-specific assessment — confirm every regulatory point against the current instrument and, where a threshold is close or a critical exception applies, obtain specialist and legal review.

FIELD	DETAIL
Volume	14 of 17 — Environmental Knowledge Handbooks
Factor	Circular Economy
Jurisdiction	Queensland, Australia
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Prepared by	QTEN — Queensland Technical Excellence Network
Review	SME, spatial and legal review before reliance

Executive overview

The circular economy reframes waste as a design failure and materials as retained value. For Queensland organisations it aligns with the Waste Reduction and Recycling Act 2011 and the state waste strategy, and with Commonwealth product-stewardship reforms under the Recycling and Waste Reduction Act 2020. The opportunity is lower material and disposal cost, resilience to supply shocks, and a credible sustainability position. The task is to set a circular strategy, design for durability and disassembly, and build the reuse, repair and secondary-market flows that keep materials in use.

Scope

Circular Economy resolves into four secondary factors — Circular Design and Resource Strategy; Product and Asset Life Extension; Circular Flows and Markets; Measurement, Finance and Transition — and twenty assessment elements. Every element is set out below with its own process and controls and its primary decision metric; identifiers are shared with the companion Knowledge System workbook and the platform calculators.

Assessment elements & process

Each assessment element below carries what it governs and its key pressures, the appropriate site process and controls, and the primary metric that measures it. Work every element that your project engages.

ASSESSMENT ELEMENT	WHAT IT GOVERNS & KEY PRESSURES	PROCESS & CONTROLS
Circular Economy Strategy and Governance <i>Circular strategy maturity</i>	Circular-economy strategy and governance maturity. Pressures: circularity treated as recycling only.	Set circular targets and governance; baseline material flows; assess and lift maturity.
Circular Design and Material Selection <i>Circular design coverage</i>	Circular design and material selection. Pressures: linear design, hard-to-recover materials.	Apply circular-design criteria; select recoverable, safe materials; verify design coverage.

ASSESSMENT ELEMENT	WHAT IT GOVERNS & KEY PRESSURES	PROCESS & CONTROLS
Durability, Adaptability and Design for Disassembly <i>Disassembly and adaptability coverage</i>	Durability, adaptability and design for disassembly. Pressures: short life, bonded assemblies.	Design for durability, adaptability and disassembly; use material passports; verify coverage.
Material Efficiency and Dematerialisation <i>Material intensity improvement</i>	Material efficiency and dematerialisation. Pressures: material overuse.	Reduce material intensity; dematerialise where possible; measure intensity improvement.
Regenerative and Safe Material Systems <i>Safe and regenerative material share</i>	Regenerative and safe material systems. Pressures: hazardous and non-regenerative materials.	Select safe and regenerative materials; avoid hazardous substances; track safe-material share.
Reuse and Redistribution <i>Reuse rate</i>	Reuse and redistribution. Pressures: disposal by default, weak markets.	Establish reuse and redistribution channels; measure reuse rate; grow secondary markets.
Maintenance, Repair and Refurbishment <i>Repair and refurbishment rate</i>	Maintenance, repair and refurbishment. Pressures: replace-not-repair culture.	Enable maintenance, repair and refurbishment; extend life; measure repair and refurbishment rate.
Remanufacturing and Component Harvesting <i>Remanufactured value retained</i>	Remanufacturing and component harvesting. Pressures: value lost at end of life.	Recover and remanufacture components; harvest value; track remanufactured value retained.
Sharing, Leasing and Product-as-a-Service <i>Service-model coverage</i>	Sharing, leasing and product-as-a-service. Pressures: ownership models driving waste.	Adopt sharing and service models; retain product responsibility; measure service-model coverage.
Asset Life Extension and Adaptive Reuse <i>Asset life-extension value</i>	Asset life extension and adaptive reuse. Pressures: premature demolition and replacement.	Extend and adapt assets; reuse structures; measure life-extension value.
Reverse Logistics and Take-back <i>Take-back and reverse-flow performance</i>	Reverse logistics and take-back. Pressures: no return pathways.	Establish take-back and reverse logistics; recover products and materials; measure performance.
Secondary Materials and Recycled Content <i>Secondary material input share</i>	Secondary materials and recycled content. Pressures: reliance on virgin materials.	Specify and verify recycled content; grow secondary-material input share.
Industrial Symbiosis and By-product Exchange <i>Industrial symbiosis exchange</i>	Industrial symbiosis and by-product exchange. Pressures: by-products landfilled.	Identify and establish by-product exchanges; track beneficial symbiosis.
Organics and Biological Cycles <i>Biological nutrient cycling</i>	Organics and biological cycles. Pressures: organics to landfill, nutrient loss.	Divert and cycle organics safely; recover nutrients; measure biological cycling.
Circular Markets, Standards and Demand <i>Circular market participation</i>	Circular markets, standards and demand. Pressures: weak demand and standards.	Participate in circular markets and standards; build demand; track participation.

ASSESSMENT ELEMENT	WHAT IT GOVERNS & KEY PRESSURES	PROCESS & CONTROLS
Circularity Measurement and Material Flow Accounting <i>Circularity and material-flow completeness</i>	Circularity measurement and material-flow accounting. Pressures: unmeasured circularity.	Measure circularity and material flows; account completely; use to improve.
Circular Business Cases and Financial Value <i>Circular net value</i>	Circular business cases and financial value. Pressures: unquantified circular value.	Build circular business cases; quantify net value; use to justify circular choices.
Circular Procurement and Contracting <i>Circular contract coverage</i>	Circular procurement and contracting. Pressures: linear procurement.	Specify circular outcomes in procurement and contracts; verify circular contract coverage.
Product Stewardship and Extended Responsibility <i>Stewardship coverage and effectiveness</i>	Product stewardship and extended responsibility. Pressures: no end-of-life responsibility.	Participate in stewardship schemes; take extended responsibility; track coverage and effectiveness.
Circular Transition, Reporting and Adaptive Management <i>Circular transition delivery</i>	Circular transition, reporting and adaptive management. Pressures: slow transition, no reporting.	Deliver the circular transition; report; correct and adapt.

Regulatory mapping

The instruments most often engaged for Circular Economy. Confirm currency and application to the specific site and activity before relying on any entry.

INSTRUMENT	JURIS.	WHAT IT DOES	TYPICAL TRIGGER
Waste Reduction and Recycling Act 2011	Qld	Waste hierarchy, levy and resource-recovery duties.	Generating or handling waste and materials.
Queensland Waste and Circular-economy Strategy	Qld	State targets for recovery and circular performance.	Aligning circular targets and reporting.
Recycling and Waste Reduction Act 2020	Cth	Product stewardship and export controls for waste materials.	Products under a stewardship scheme.
National Waste Policy Action Plan	Cth	National recovery and circular-economy targets.	Aligning material-recovery performance.

Assurance & evidence

- **Source currency.** Confirm the instruments, criteria and trigger values cited are current and correctly applied to the site and activity.
- **Records.** For each element engaged, retain the assessment, the controls applied, monitoring against the metric, and any statutory notifications — the evidence that the process was followed.
- **Independent review.** Interpretations, threshold decisions and critical exceptions are reviewed by a suitably qualified person before reliance.

TALK TO QTEN

Managing circular economy on a live project? QTEN helps Queensland clients turn this handbook into a defensible, evidence-backed position — scoping, assessment, controls, approvals and review. Bring us your site and we will help you get it right, and prove it.
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