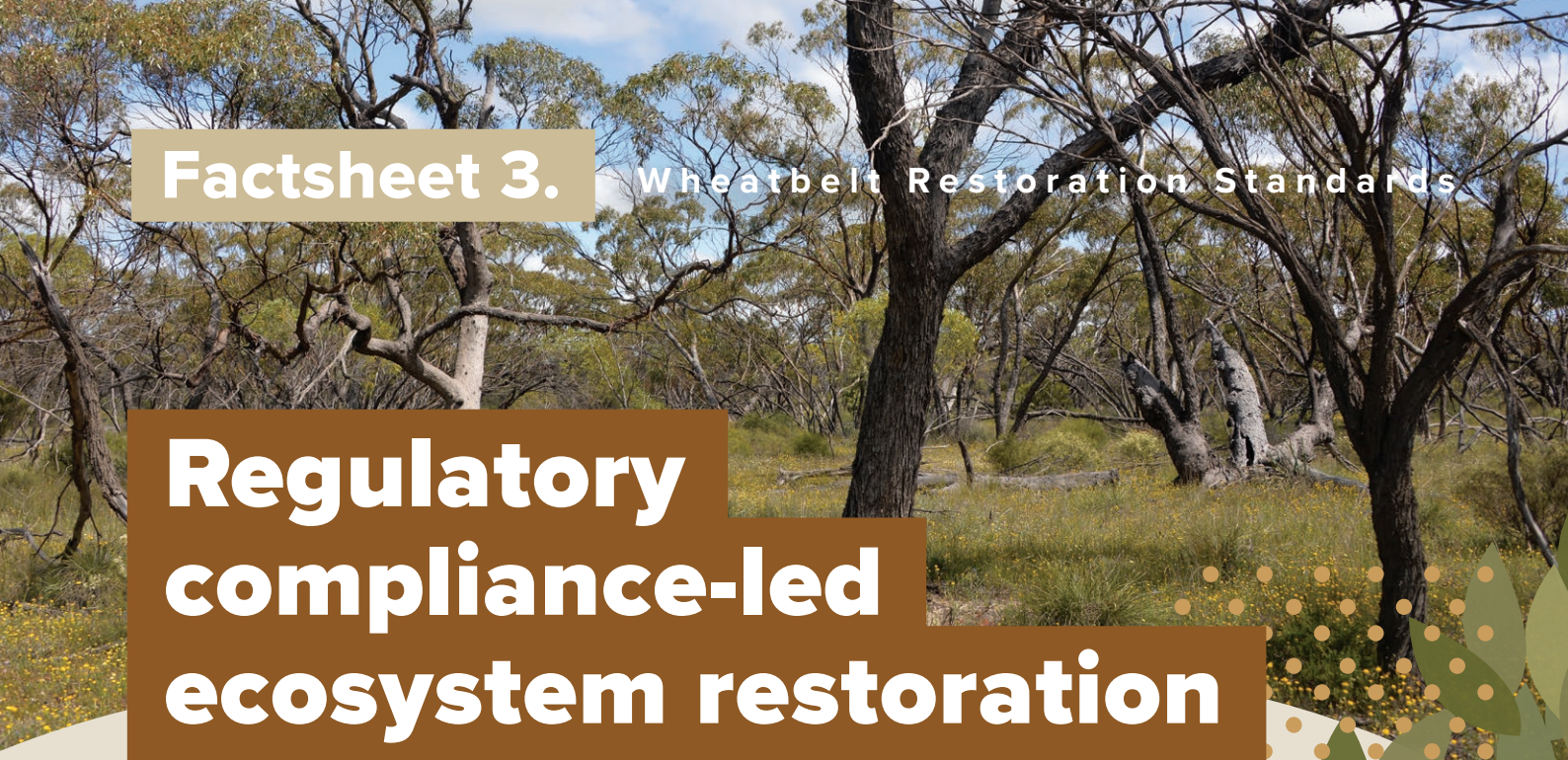


Factsheet 3. Wheatbelt Restoration Standards

Regulatory compliance-led ecosystem restoration

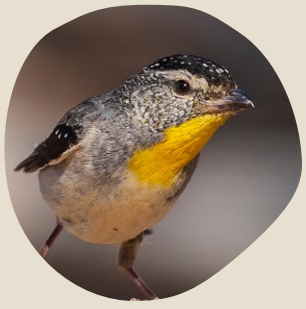
A practical approach to guide consistent, scalable and science-based restoration in the Western Australian Wheatbelt.

Download the Standard and tools

Regulatory compliance-led restoration plays a critical role in restoring endangered ecological communities and their associated values.

Environmental offsets are an important mechanism to restoring critically endangered ecological communities in the Wheatbelt region of Western Australia. Achieving the highest level of recovery possible involves a significant degree of technical rigour to manage complex ecological challenges successfully. A strategic opportunity exists for implementing offsets at scale, improving the integrity and resilience of Eucalypt woodlands and associated endemic ecological communities[1].

The Wheatbelt Restoration Standard supports regulatory processes and enables consistent, repeatable and scalable approaches, using a restorative continuum and 5-star recovery system. It accounts for local environmental, social and economic conditions, with a focus on restoring the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community (WWTEC). To demonstrate that environmental offsets may meet intended environmental outcomes, guidance is provided on ecological assessments, completion criteria, monitoring and evaluation frameworks and adaptive management.



[1] Regulatory compliance-led ecosystem restoration would also apply when ecological restoration is required following disturbance that has been approved via the Environmental Impact Assessment (EIA) pathway.

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Key stages and tools for regulatory compliance-led restoration

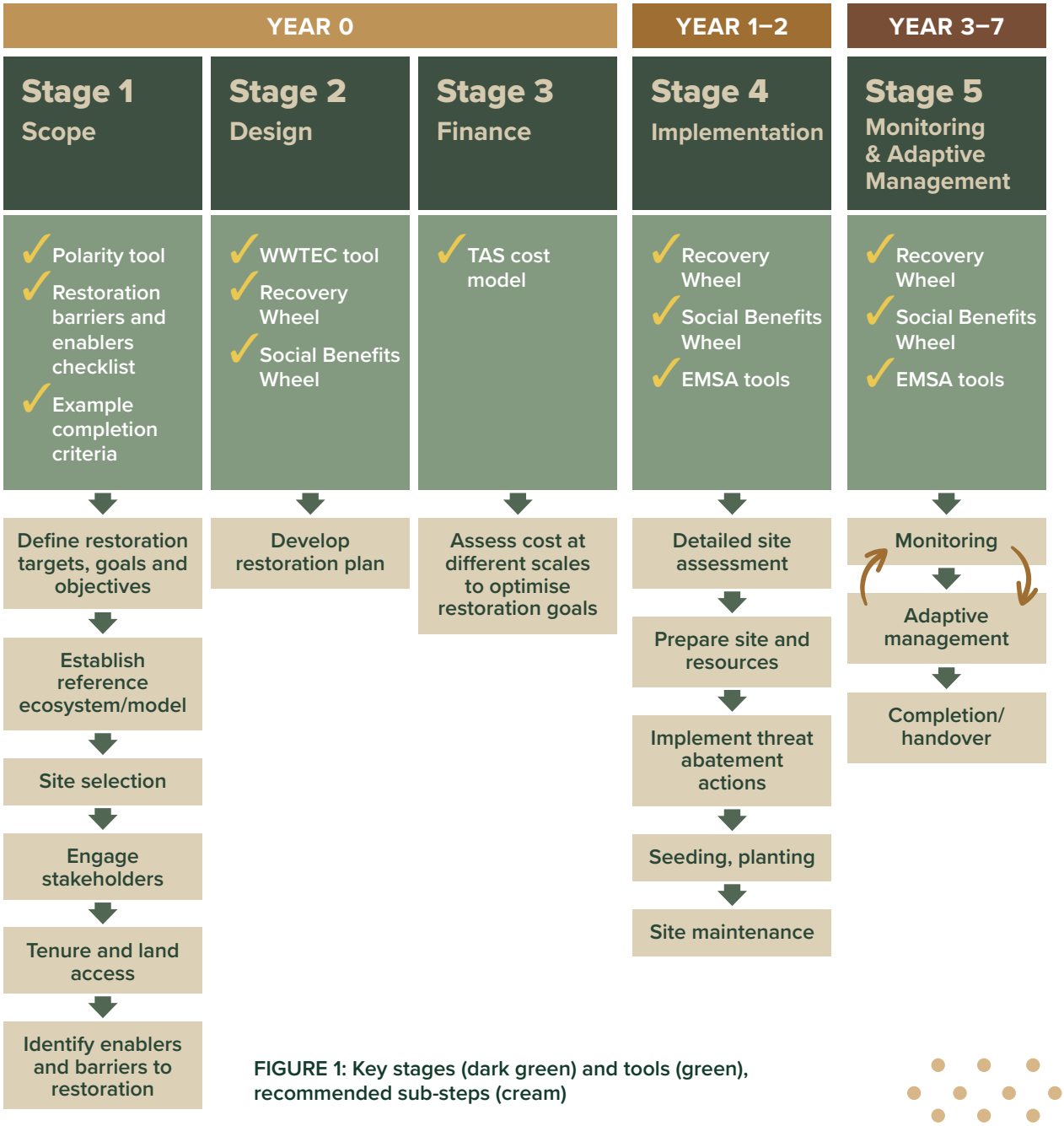

FIGURE 1: Key stages (dark green) and tools (green), recommended sub-steps (cream)

Stage 1: Scope

✓ **Define restoration targets, completion criteria and milestones:** Identifies the ecosystem to be restored and develops a framework for evaluating progress towards completion criteria through milestones. Example **completion criteria** and milestones including indicators help develop a restoration plan. The **polarity tool** helps to identify dual benefits during target setting, maximising project outcomes.

✓ **Establish a reference ecosystem:** A reference informs restoration targets with information on composition, structure, function and site condition attributes for projects progressing through the restoration continuum (Figure 2). Recommended attributes for compliance-led projects are outlined in Table 1.

✓ **Site selection:** If the restoration site is not yet known, a desktop assessment can help to assess the feasibility of locations and engage stakeholders early. If a site is known, it can be used to evaluate capabilities and capacity required and the types of interventions needed to restore the target ecosystem.

✓ **Engage stakeholders:** Building trust through maintaining transparent, accountable partnerships is enabled through approaches and resources included in the Standard.

✓ **Tenure and land access**: Guidance and resources are provided promoting third-party investment opportunities recognising rights, responsibilities and equity sharing options for negotiating agreements.

✓ **Identify restoration enablers and barriers:** Using the **barriers and enablers checklist** supports effective planning and stakeholder engagement by highlighting risks, opportunities and knowledge gaps that may impact restoration outcomes.

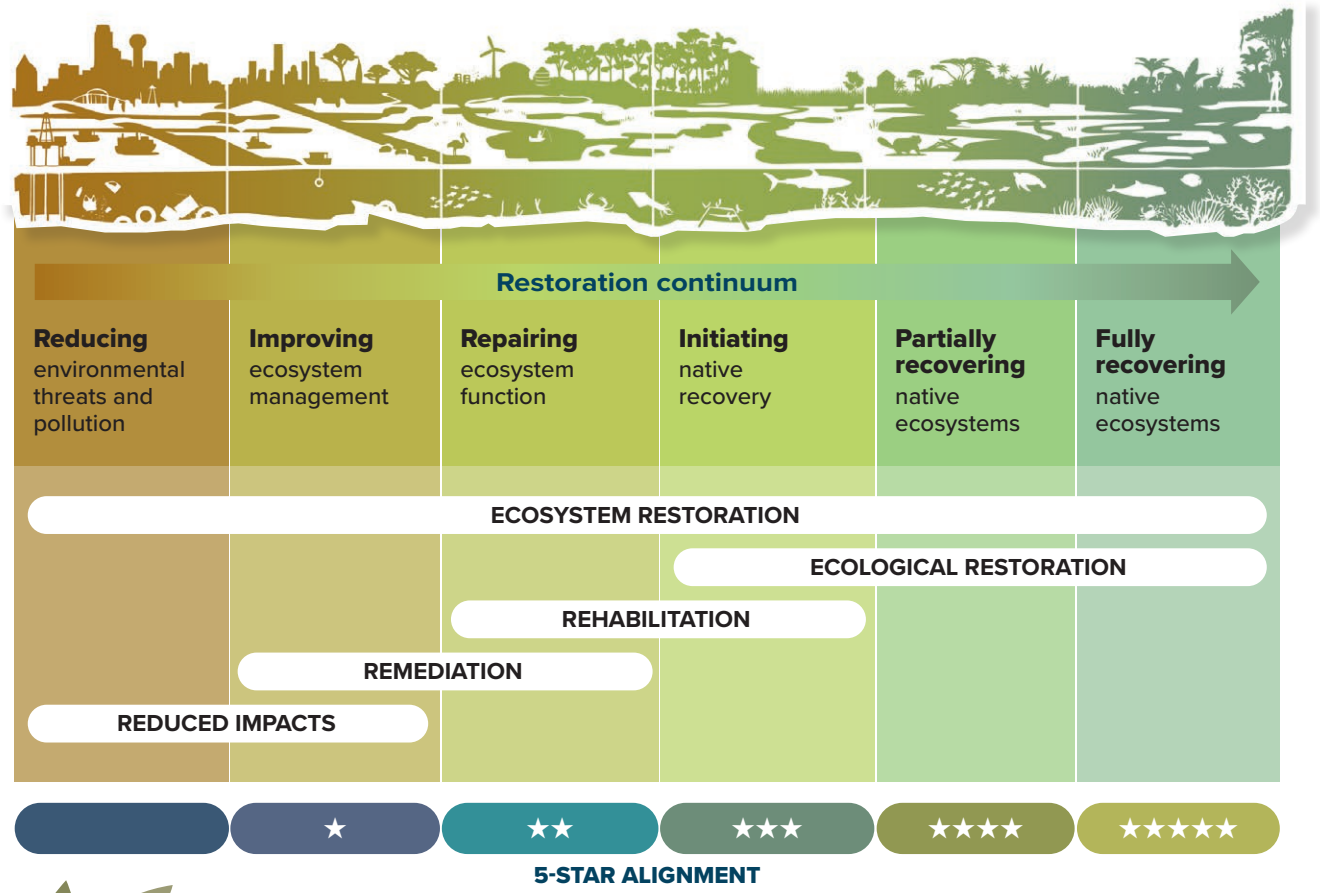

FIGURE 2: The restorative continuum and alignment with the 5-star recovery system (modified from FAO, SCBD & SER 2024)

TABLE 1: Ecological attributes recommended for evaluating progress against targets, goals and objectives for regulatory compliance-led restoration

SER Ecological Benefits Recovery Wheel		Indicator purpose
Ecological attribute	**Recommended sub-attribute (suggested indicator type)**	
Absence of threats	Contamination (**Q**)	Identify pollutants in soil and water
	Invasive species (**Q**)	Identify potential threats to native species
	Overutilisation (**Q**)	Identify threats from undesirable species (e.g. from overgrazing)
	Other degradation drivers (**Q**)	Identify threats from direct disturbance (e.g. erosion)
Physical conditions	Water chemo-physical conditions (**Q**)	Identify degraded hydrological conditions (e.g. ground/surface water salinity)
	Substrate chemical conditions (**Q**)	Identify degraded soil conditions (e.g. soil nutrient concentrations)
	Substrate physical conditions (**Q**)	Identify degraded soil conditions (e.g. soil compaction, moisture content)
Species composition	Desirable plants (**Q**)	Identify species representing the target ecosystem
	Desirable animals (**Q**)	Identify species utilising the habitats of the target ecosystem
	Rare and threatened species (**Q**)	Identify recovery of rare and threatened species to locality
	No undesirable species (**Q**)	Identify undesirable species (e.g. plants, animals, pathogens)
	Provenance, genetic diversity and genetic resilience (**Q**)	Identify genetic diversity and resilience
Structural diversity	All vegetation strata (**Q**)	Identify whether the structure of maturing vegetation resembles the target ecosystem
	All trophic levels (**Q**)	Trophic levels increasing in complexity
	Spatial mosaic (**Q**)	Identify habitat complexity (e.g. multiple canopies, logs, leaf litter forming)
Ecosystem function	Productivity/cycling (**Q**)	Identify growth, productivity and nutrient cycle functioning
	Habitat & interactions (**C/Q**)	Identify availability of habitats for native fauna
	Resilience/recruitment (**Q**)	Identify flowering/fruiting of desirable plants and natural regeneration, recovery after drought or fire
External exchanges	Landscape flows (**C/Q**)	Identify interactions within the broader landscape (e.g. foraging, natural recruitment)
	Intraspecific gene flow (**C/Q**)	Identify gene flow with the broader landscape (e.g. bird and insect pollinators, seed dispersers)
	Habitat links (**C/Q**)	Identify habitat connectivity with native ecosystems in the locality (e.g. distance between patches)

Suggested indicator types:

C = categorical – a qualitative attribute can be scored as present or absent and measured against a target.

Q = quantitative – the attribute may be scored and measured against a numerical target.

Stage 2: Design

✓ **Develop a restoration plan:** A restoration plan addresses the key elements, methods and resources to implement, manage and evaluate progress. The 5-star approach (Figure 1) supports evaluation of progress toward targets, with the **Ecological Recovery Wheel** and the **Social Benefits Wheel** (Figure 3). The **WWTEC tool**, based on DBCA factsheets, compiles diagnostic information on Wheatbelt Eucalypt woodlands to support species selection, planting design, monitoring and evaluation of WWTEC-related restoration.

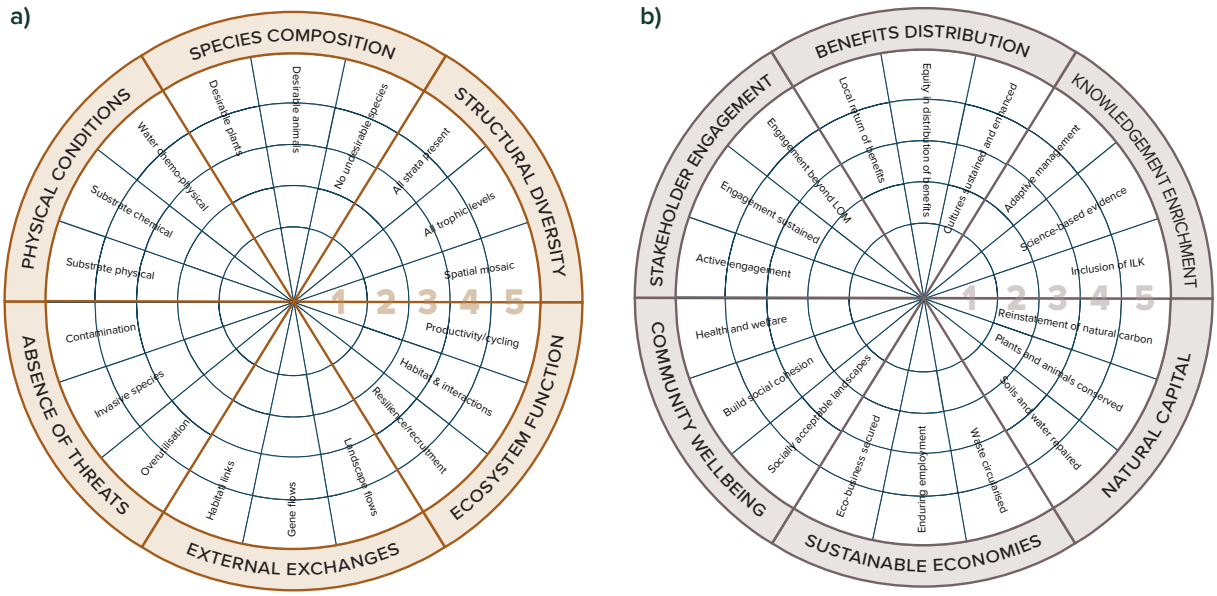

FIGURE 3: Example of a) Ecological Recovery and b) Social Benefits Wheels to assist in measuring progress towards goals and targets (Gann et al. 2019)

Stage 3: Finance

✓ **Assess costs:** Regulatory compliance-led restoration projects can require significant investment, the Wheatbelt Restoration Standard provides examples of grants and programs available for enabling restoration projects. The **TAS cost model** helps to estimate restoration-related expenses such as site preparation, planting and key threat abatement actions, providing a useful starting point for project planning.

Stage 4: Implementation

✓ **Detailed site assessment:** Before initiating restoration, capture baseline ecological conditions to measure progress toward targets. Collection of information is supported with the **Ecological Recovery Wheel** and 5-star recovery system (Figure 2) and Social Benefits Wheel. These, together with **EMSA tools**, enable practical, science-based data collection and management (available at EMSA Home | EMSA).

✓ **Prepare site and resources, threat abatement actions, seeding, planting and site maintenance:** Effective restoration of degraded sites in the Wheatbelt involves management of key elements during the first 1–2 years, to promote germination and establishment. The Standard links technical guides to ground preparation and methods for addressing common degrading processes in the Wheatbelt and includes research priorities for ecosystem restoration.

Stage 5: Monitoring, adaptive management and contribution to national databases

✓ **Monitoring:** An effective monitoring plan is an important instrument for early identification and response to ecological conditions going 'off-track'. The **Ecological Recovery Wheel** and **Social Benefits Wheel** supports monitoring progress toward restoration targets, with the 5-star recovery system (Figure 2) and **EMSA tools**.

✓ **Adaptive management:** Adaptive management is a critical component to achieving restoration goals in complex and changing environments. The Standard supports planning adaptive management actions in response to changing indicators.

A consistent, evidence-based approach provides the ability to reliably evaluate ecosystem condition improvement at a local and landscape scale. The **EMSA tools** can connect information to the Commonwealth's Biodiversity Data Repository which can be accessed for restoration-related research addressing key knowledge gaps in the Wheatbelt.

For more information

Contact: restoration@wabsi.org.au

Wheatbelt Restoration Standards factsheets:

Factsheet 1. Values-led ecosystem restoration

Factsheet 2. Market-led ecosystem restoration

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