Values-led ecosystem restoration

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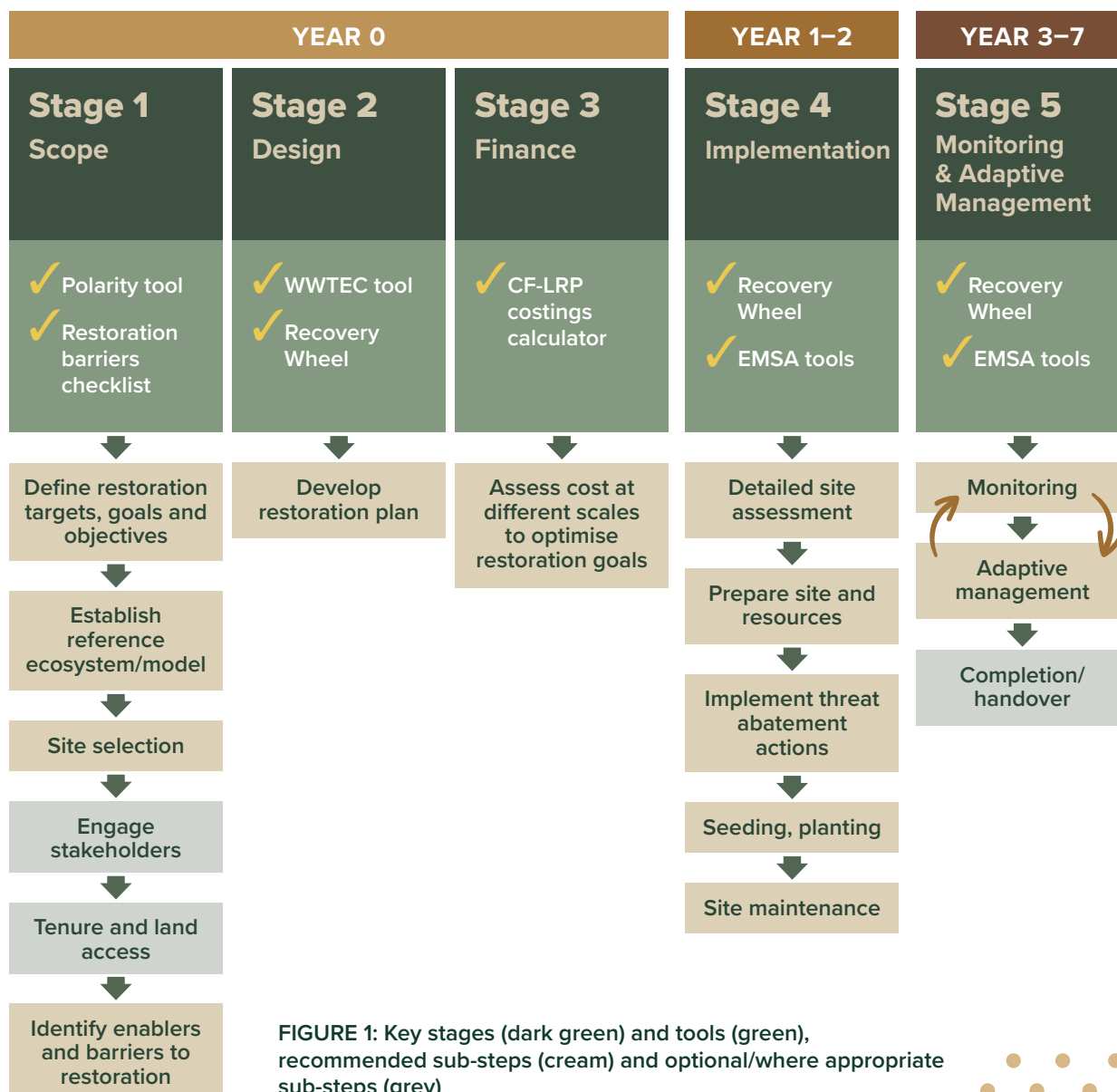
Download the Standard and tools

Values-led restoration is based on personal or community values, such as conservation and cultural significance.

It offers a valuable opportunity to repair environmental damage, restore biodiversity and integrate nature-positive practices into degraded systems. These initiatives are often led by landholders or communities committed to achieving long-term environmental outcomes. Projects may be self-funded or supported through philanthropic and impact investment. Values-led restoration may focus on lower-productivity areas of farmland, land with high environmental and/or cultural heritage significance, and areas that enhance ecological connectivity or climate adaptation.

The Wheatbelt Restoration Standard guides native and modified (novel) ecosystem restoration in predominately agricultural landscapes using a restorative continuum and a 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).

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Key stages and tools for values-led restoration

YEAR 0			YEAR 1–2	YEAR 3–7
Stage 1 Scope	**Stage 2** Design	**Stage 3** Finance	**Stage 4** Implementation	**Stage 5** Monitoring & Adaptive Management
✓ Polarity tool ✓ Restoration barriers checklist	✓ WWTEC tool ✓ Recovery Wheel	✓ CF-LRP costings calculator	✓ Recovery Wheel ✓ EMSA tools	✓ Recovery Wheel ✓ EMSA tools

Stage 1 flow:
Define restoration targets, goals and objectives
↓
Establish reference ecosystem/model
↓
Site selection
↓
Engage stakeholders
↓
Tenure and land access
↓
Identify enablers and barriers to restoration

Stage 2 flow:
Develop restoration plan

Stage 3 flow:
Assess cost at different scales to optimise restoration goals

Stage 4 flow:
Detailed site assessment
↓
Prepare site and resources
↓
Implement threat abatement actions
↓
Seeding, planting
↓
Site maintenance

Stage 5 flow:
Monitoring
↓
Adaptive management
↓
Completion/handover

FIGURE 1: Key stages (dark green) and tools (green), recommended sub-steps (cream) and optional/where appropriate sub-steps (grey)

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Stage 1: Scope

✓ **Define restoration targets, goals and objectives:** Identifies the ecosystem to be restored and develops a framework for evaluating progress towards the expected goal-state through short- and medium-term objectives. 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 values-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.

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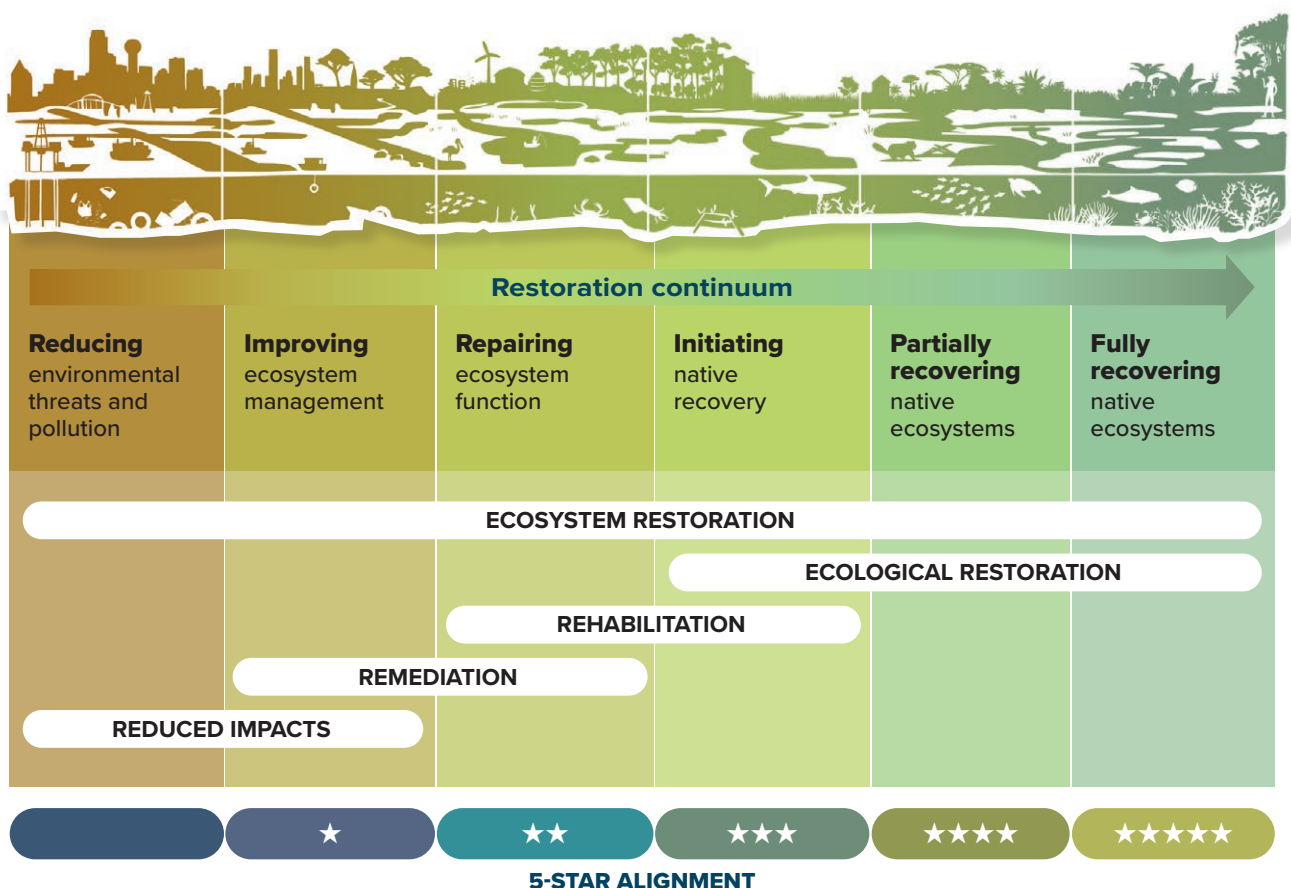
FIGURE 2: The restorative continuum and alignment with the 5-star recovery system (modified from FAO, SCBD & SER 2024)

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

SER Ecological Benefits Recovery Wheel		Indicator purpose
Ecological attribute	Recommended sub-attribute (suggested indicator type)	
Absence of threats	Invasive species (**C**)	Identify potential threats to native species
	Overutilisation (**C**)	Identify threats from undesirable species (e.g. from overgrazing)
	Other degradation drivers (**C**)	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 (**C**)	Identify species representing the target ecosystem
	Desirable animals (**C**)	Identify species utilising the habitats of the target ecosystem
	Rare and threatened species (**C**)	Identify threatened species known or potentially occurring in the locality
Structural diversity	All vegetation strata (**Q**)	Identify whether the structure of maturing vegetation resembles the target ecosystem
	Spatial mosaic (**Q**)	Identify habitat complexity (e.g. multiple canopies, logs, leaf litter forming)
Ecosystem function	Resilience/recruitment (**C**)	Identify flowering/fruiting of desirable plants and natural regeneration, recovery after drought or fire
External exchanges	Habitat links (**C**)	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 measuring progress against recovery wheel attributes, with the **Ecological Recovery Wheel** recommended for all projects and the **Social Benefits Wheel** (Figure 3) adopted when partnerships or stakeholder involvement is integral. 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.

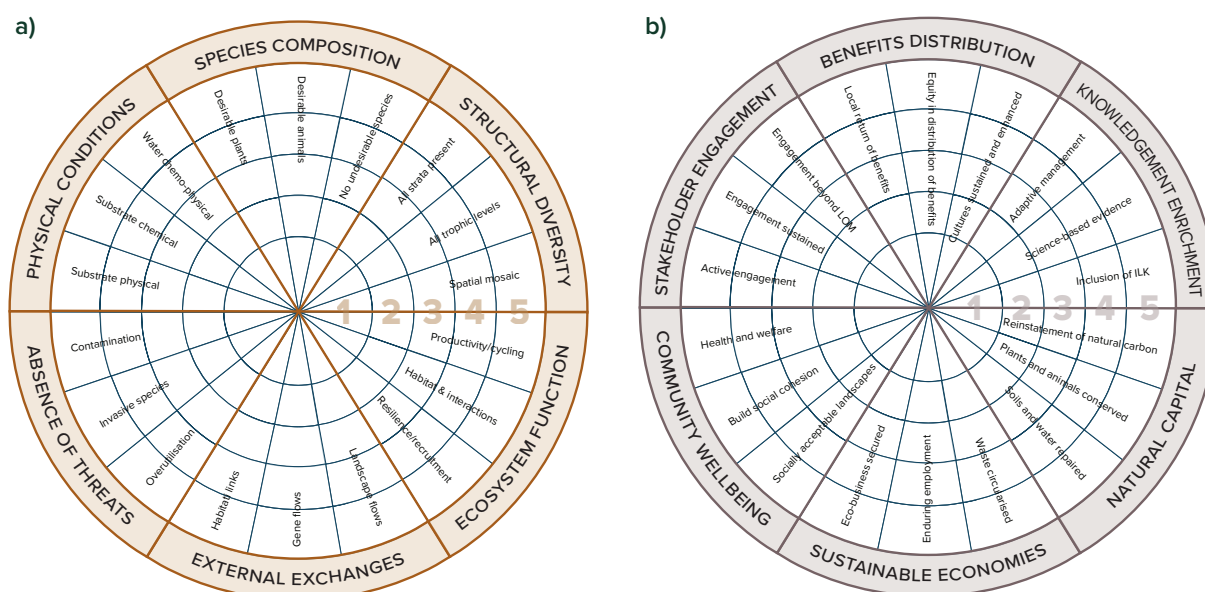a)   b)

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:** Values-led restoration projects can require significant investment, the Wheatbelt Restoration Standard provides examples of grants and programs available for enabling restoration projects. The WA Government's **CF-LRP Costings Calculator** helps to estimate common expenses such as site preparation and planting, 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. The **Ecological Recovery Wheel** and 5-star recovery system (Figure 2) establishes a consistent and repeatable approach to evaluating progress, together with **EMSA tools** for 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** 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 2.   **Market-led ecosystem restoration**

Factsheet 3.   **Regulatory compliance-led ecosystem restoration**

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