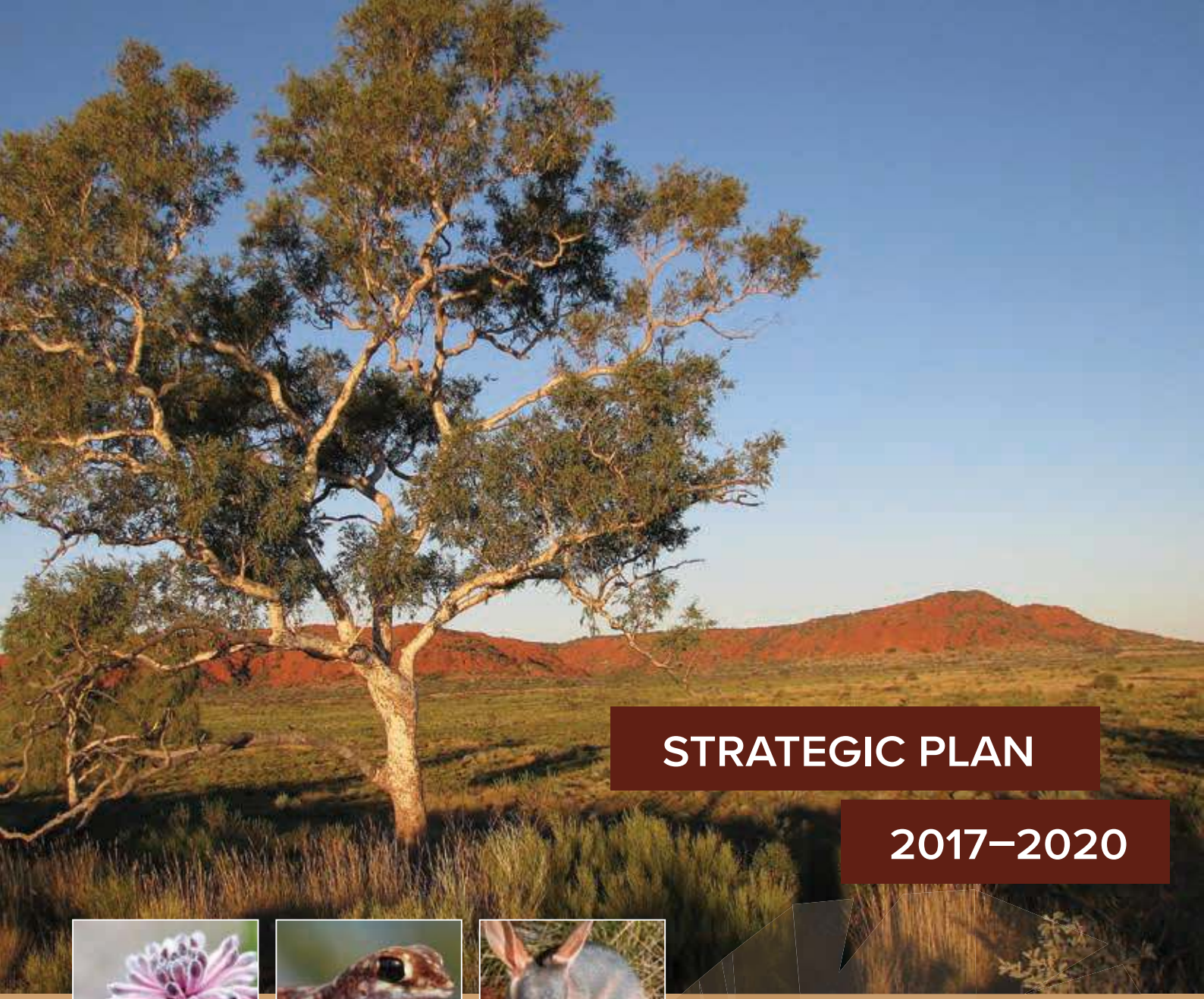

STRATEGIC PLAN

2017–2020

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE

The Western Australian Biodiversity Science Institute

OUR VISION

High quality, relevant biodiversity knowledge that is readily accessible to industry, government and the broader community to better manage the State's biodiversity.

OUR PURPOSE

Through a broad consultative process, identify strategic priorities for acquiring, managing and communicating Western Australian terrestrial biodiversity knowledge.

- *Enable and support high quality end user driven research to address critical knowledge gaps.*
- *Deliver excellence and efficiencies in research by fostering constructive collaboration across sectors and between researchers.*
- *Ensure information is available in a form that is relevant and accessible to government policy makers, industry, land managers and other stakeholders.*

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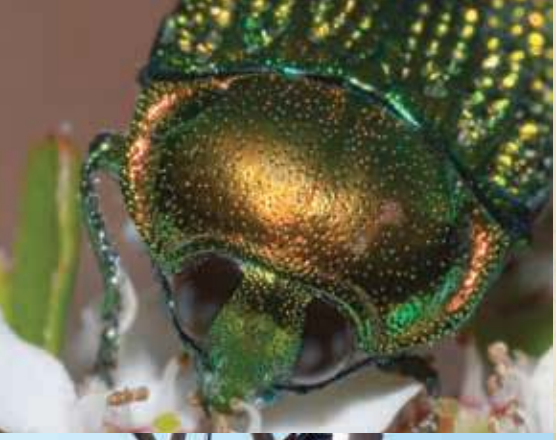


PAST

Despite a long history of terrestrial biodiversity-related research in Western Australia, it is widely accepted that there remain gaps in the knowledge needed to underpin the State's sustainable economic development. A broad-based consultation process was undertaken during 2012–2014 to help identify these gaps.

This comprehensive, independent review sought information from stakeholders such as industry organisations, leading WA scientists and researchers, environmental consultants, non-government conservation organisations, as well as State and Commonwealth governments.

The review confirmed critical gaps in terrestrial biodiversity knowledge and that historically, research was not well focused on the needs of end users. In addition, it highlighted the need for a central and accessible biodiversity knowledge database.

It also demonstrated that there was a clear need for a formal institute to coordinate research efforts and better meet end user needs, consequently enhancing the cost-effectiveness of research effort and providing good science to inform decisions on policy, planning and management of biodiversity in WA.

As a result, The Western Australian Biodiversity Science Institute (WABSI) was established in October 2015 as a joint venture between nine leading organisations in WA – The University of Western Australia, Murdoch University, Curtin University, CSIRO, Department of Premier and Cabinet, Department of Parks and Wildlife, Department of Mines and Petroleum, Botanic Gardens and Parks Authority and the Western Australian Museum.

PRESENT

The purpose of WABSI is to help identify and prioritise the State's critical biodiversity knowledge gaps, to foster research and end user collaborations and partnerships to address these gaps as well as to facilitate the communication and up-take of research findings. Good science that is relevant and accessible to end users is essential to underpinning decision-making to support sustainable economic development.

Since its inception, WABSI has engaged with a wide range of stakeholders to identify and prioritise specific end user biodiversity science and information needs and to explore opportunities to assemble the appropriate resources and expertise to address these needs.

Stakeholders include research institutions, industry, government and non-government organisations including Aboriginal groups and consultants. A small executive team oversees a research focus, with a clear line of sight to deliver excellence in science through partnerships and collaboration.

As a collective, the WABSI partners undertake almost all the publicly funded terrestrial biodiversity research in Western Australia. WABSI is therefore well positioned to bring together the State's premier scientists to deliver the highest quality science that is needed to inform decision making by industry, government and the broader community.

FUTURE

WABSI is focused on capitalising opportunities to undertake collaborative research funded by industry, government and non-government organisations to meet the needs and requirements of the end users. As a collective, WABSI has access to the State's leading scientists, research equipment and infrastructure, which means greater leverage and access to funds and better research outcomes. We will also expand our efforts to meet specific biodiversity science needs in other sectors including urban development and agriculture.

INFORMED DECISION MAKING WITHIN THE LEGISLATIVE ENVIRONMENT

WA's biodiversity and natural environment is protected by a variety of statutes, treaties and other legal mechanisms including international treaties (such as the Convention on Wetlands), Federal and State legislation (such as the EPBC Act and the Biodiversity Act) and Ministerial conditions and offsets placed on land clearing and resource development proposals.

One of the key reasons for establishing WABSI was the support it could provide to the State's efforts to streamline and make the environmental approvals process more effective.

Regulators want to be confident that approvals and land management decisions adequately protect important landscapes and biodiversity, do not unnecessarily restrict development and that the wider community has confidence in those decisions.

Developers want to be confident that they can adequately manage risk associated with the approvals process and cost-effectively manage their ongoing environmental monitoring and management commitments. They want to do so with certainty of outcome and have acceptable certainty around completion and restoration obligations. In addition, they want the wider community to be confident in their ability to conduct enterprise without damaging important environmental values.

Regulators, developers and the wider community want to be assured that assessment of risk and environmental approvals are based on sound scientific knowledge. One of WABSI's objectives is to deliver independent and improved scientific knowledge that helps increase public confidence.

END USER NEEDS FOR BIODIVERSITY KNOWLEDGE

The independent stakeholder consultation process broadly identified end user knowledge needs that have helped shape WABSI's strategic priorities. These priorities have been incorporated into the WABSI Strategic Plan and further clarified in the WABSI Research Plan.

Key end user needs are:

- **Address knowledge gaps:** Readily accessible, high quality, timely biodiversity information is essential so industry, government and community can make better policy, more informed decisions and build sustainable communities through striking a balance between environmental conservation and economic development.
- **Deliver focused, relevant and cost-effective research:** Inefficiencies exist in some current tax-payer funded research programs such as low priority research, duplication of research, competition rather than collaboration between researchers, and poor communication of research findings. A formal structure such as WABSI can work to support beneficial, relevant and cost effective research to inform better biodiversity management.

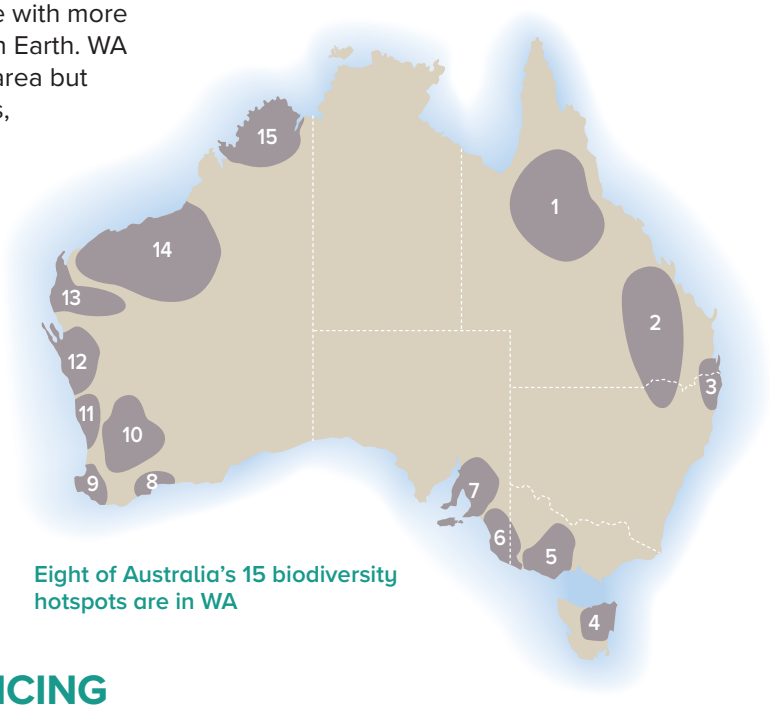
Important knowledge gaps identified by end users fall into the following four broad themes:

- **Accessible biodiversity information:** Efficient, effective information management systems, including relational databases and portals, will enable end users to readily access and share knowledge about the State's biodiversity.
- **Understand the nature and distribution of the State's biodiversity:** This is for designing a conservation reserve system, to determine the conservation status of species and ecosystems and to assess local and regional impacts of development proposals on the State's biodiversity. With such information, end users can better plan and develop their organisations.
- **Reduce threats to ecosystems:** Understand the biological, physical and chemical processes, actions and events that link organisms and their environment. End users can then help mitigate such threats and processes to ecosystems.
- **Restore and rehabilitate ecosystems and landscapes:** Understand how to appropriately rehabilitate and restore degraded, damaged, or destroyed ecosystems and habitats. End users would benefit from the development of criteria on acceptable standards of rehabilitation of ecosystems and landscapes.

BIODIVERSITY IN WESTERN AUSTRALIA

THE NEED TO CONSERVE BIODIVERSITY

- Australia's biodiversity is of global importance with more than 600,000 species found nowhere else on Earth. WA makes up about one third of Australia's land area but is home to more than 11,000 species of plants, more than half of Australia's plant species.
- WA has one of the highest rates of new species discovery in the world, indicating the richness of the State's biodiversity.
- The South West of WA is one of 34 recognised global biodiversity hotspots and eight of Australia's 15 declared biodiversity hotspots are in WA.



Eight of Australia's 15 biodiversity hotspots are in WA

THE CHALLENGES OF BALANCING CONSERVATION WITH SUSTAINABLE ECONOMIC DEVELOPMENT

- A fundamental knowledge gap exists due to the vastness of the State, its rich biodiversity and a finite research capacity. We do not have sufficient information about the conservation status of many species and ecosystem processes.
- Western Australia is rich in mineral, oil and gas resources, has a thriving agricultural sector and a growing population with associated urban expansion. A key challenge is to develop the State's resources for the benefit of the community while minimising adverse impacts on biodiversity and the environment.

ENSURING AN ALIGNMENT WITH BIODIVERSITY MANAGEMENT PRINCIPLES

WABSI recognises the value of key biodiversity principles. Our Research Plan is aligned to these principles to facilitate and maximise uptake of biodiversity research by end users in conservation and sustainable development efforts.

- Protection of rare species and ecological communities.
- Prevention of introduced pests and diseases.
- Identification and management of threatening processes.
- Balancing economic development and biodiversity conservation.
- Rehabilitation and reconstruction of degraded ecosystems.
- Maintaining ecosystem health and resilience.
- Knowledge-based policy and management.
- Monitoring responses to management and natural processes.
- A comprehensive, representative and adequate reserve system.

STRATEGIC PRIORITIES 2017–2020

PRIORITY — END USER FOCUSED RESEARCH

- Support end user, outcome-focused investment in biodiversity research.
- Promote a coordinated research effort to reduce duplication.
- Facilitate access to and uptake of quality biodiversity information to support biodiversity management principles.

ACTIONS	OUTCOMES
• Implement the Communications Strategy. • Proactively communicate the nationally recognised biodiversity science skill sets of WABSI partners and position WABSI as the 'go to' organisation. • Facilitate a collaborative and multidisciplinary research approach.	• Research purchasers and providers are informed about WABSI. • End user needs are met: – knowledge gaps are addressed – research is focused, relevant and cost effective.
• Collaborate with a range of stakeholders to link research providers, industry, government, non-government organisations, community and other end users. • Actively seek funding opportunities to engage WABSI partners in biodiversity research projects important to WA.	• WABSI is recognised as an independent organisation delivering excellence in biodiversity science that meets end user needs. • Enhanced capacity to undertake high quality, high priority biodiversity research in WA. • Land managers utilise research outcomes to better manage biodiversity according to comprehensive biodiversity principles.
• Make better use of existing capacity by encouraging and facilitating a collaborative and multi-disciplinary approach to biodiversity research.	• At least 40 projects executed by end of 2020 and WABSI supporting the communication and uptake of research by end users (which include regulators, industry and other land managers).

PRIORITY — END USER FOCUS RESEARCH *(continued)*

ACTIONS	OUTCOMES
• Create linkages and seek efficiencies and synergies in research collaboration across organisations.	• Cost effective, 'value-for-money' research. • Duplication in research minimised.
• Identify the priority biodiversity issues, problems and information needs of end users to focus on.	• Research aligned with end user needs. • Enhanced certainty, confidence and more informed decision making based on quality research outcomes and scientific excellence.

PRIORITY — RESEARCH PLAN IMPLEMENTATION

- Maintain focus on the Research Plan that is informed by strategic priorities and reflects end user needs.
- Expand the Research Plan to other sectors in 2018 and beyond.
- Ensure the Research Plan is recognised as the State's priorities in biodiversity research.

ACTIONS	OUTCOMES
• Build a database of end users with whom WABSI will consult.	• WABSI will have engaged with all key stakeholders by 2018.
• Meet with all key stakeholders by 2018.	• Update the research plan by end of 2018 to include the expanded end user consultation.
• Meet end user need for accessible biodiversity information (Information Node). • Facilitate access to and uptake of quality biodiversity information by end users including industry, regulators and land managers.	• Data sharing platform in place that allows better decision making by regulators and industry.
• Meet end user need for understanding biodiversity distribution (Survey Node), ecosystems threats (Processes and Threat Mitigation Node) and restoration needs (Restoration and *Ex-situ* Node). • Conduct workshops on key issues to identify gaps in knowledge (such as mine completion criteria).	• Developed a set of science-based guidelines on mine closures that has industry and regulator support.
• Seek government agreement that WABSI priorities represent State's priorities for biodiversity research.	Develop at least one large project in response to the needs of the resources sector (e.g. *Subterranean fauna*).

PRIORITY — DEVELOP PROJECTS

- Develop large scale projects that benefit the State but would not be possible without collaboration.

ACTIONS	OUTCOMES
• Host a workshop of strategic thinkers to identify and prioritise large projects and how they could be funded.	• Have at least two long-term large projects funded and executed by 2020 that have the support of community and other end users.
• Using peak bodies, host meetings with key industry leaders to establish keystone project for resource sector.	• Develop at least one keystone project within the resource sector.

DELIVERING A RETURN ON INVESTMENT

WABSI will generate impact and deliver a return on investment by:

- Supporting effective prioritisation and execution of strategies and investments in the management and conservation of Western Australia's terrestrial biodiversity.
- Reducing investment uncertainty by ensuring that decisions relating to environmental approvals are made on the basis of the best scientific knowledge that is both accessible and which secures community confidence.
- Supporting efforts to streamline processes whilst maintaining their integrity with respect to biodiversity conservation.
- Promoting coordinated and outcomes-focused investment in biodiversity research through partnerships that engage research providers, industry and other end users.
- Delivering efficiencies and synergies through the coordination and collaboration of research efforts across organisations.
- Facilitating the communication and uptake of research findings by end users (which include regulators, industry and other land managers).

DELIVERING VALUE TO OUR STAKEHOLDERS

RESEARCHERS AND STAFF IN PARTNER ORGANISATIONS

- Collective strength in demonstrating and promoting leading expertise, excellence and capabilities in biodiversity science.
- Partnerships offer enhanced opportunities to leverage funding for priority research to meet end user needs.
- Collaborations that optimise research outcomes and impact.

INDUSTRY

- A 'one-stop-shop' for accessing biodiversity knowledge and for commissioning new research aligned with the State's research priorities.
- Ready access to a world class research capability delivering science outcomes that contribute to better decision making, improved efficiency and social licence to operate.

GOVERNMENT

State Government

- An easy, single point of access to high quality scientific knowledge of WA's biodiversity.
- Ready access to biodiversity science and information to support better informed regulatory, planning and management decisions.
- Value adding by leveraging the State's investment in science.

Commonwealth Government

- A coordinating mechanism to deliver scientific excellence and capability.
- A credible source of science and information to support the devolution of decision making about environmental protection and biodiversity conservation matters to State authorities.

EXTERNAL ORGANISATIONS

- **Non-government environmental organisations:** End user focused research that meets knowledge needs; easy access to expertise and objective information through a single point of access.
- **Aboriginal groups:** Integration of indigenous knowledge and expertise, with science providing a powerful knowledge base for traditional owners.
- **Community:** Greater confidence that planning, conservation and development decisions are based on objective, high quality science.

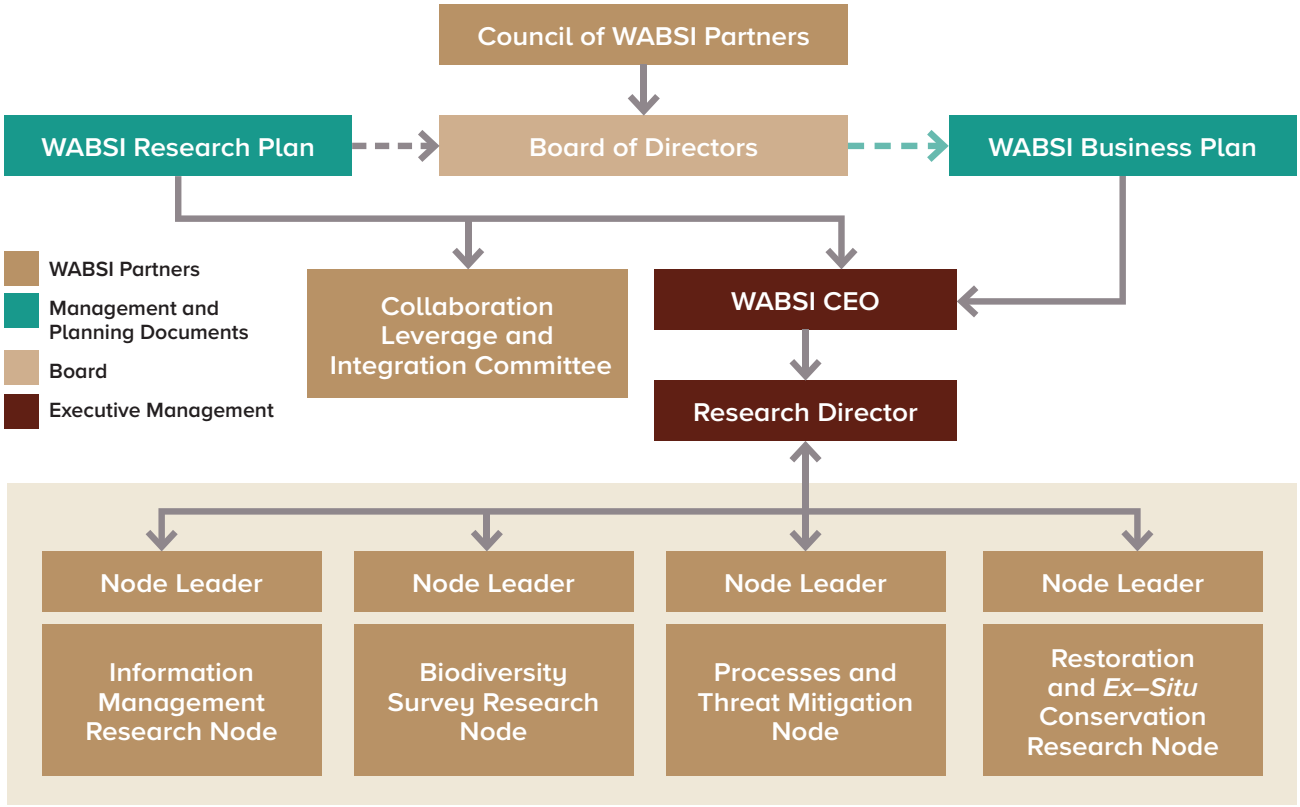
INTERNAL STAKEHOLDERS: BOARD, CLIC, EXECUTIVE

- The opportunity to make a positive environmental, economic, cultural and social impact through collaboration with biodiversity research organisations, government, industry and community.

ORGANISATIONAL STRUCTURE

A FOUNDATION FOR OUR COLLABORATIVE ROLE

- **Council:** Performs a 'shareholder' function; the primary role is to review the performance of WABSI and its Board.
- **Board:** Primary decision-making authority, accountable to WABSI partners for governance oversight of WABSI.
- **Executive** is responsible for operational management and business development.
- **Collaboration, Leverage and Integration Committee (CLIC):** Comprises WABSI CEO and senior research leaders from WABSI partner organisations. Its role is to identify and facilitate collaboration opportunities at a project level, identify business development opportunities along with advice and support to the WABSI CEO to capitalise on opportunities.
- **Research Director:** Provides technical and networking support to the CEO and Node leaders.
- **Node Leaders:** Oversee projects within the research nodes, using research project design principles that incorporate the whole-of-project-cycle participation of end users. This will ensure that research delivers end user focused knowledge.



ORGANISATIONAL POSITIONING

THE PATH TO ACHIEVING OUR PURPOSE

WABSI will position itself with end users, funders, research organisations and other stakeholders as the 'go to' organisation to address knowledge gaps in WA's biodiversity.

Through a process of broad consultation with end users and other stakeholders, WABSI will develop and regularly update a research plan that reflects WA's most pressing biodiversity research needs to underpin sustainable development and biodiversity conservation.

ORGANISATIONAL PRINCIPLES

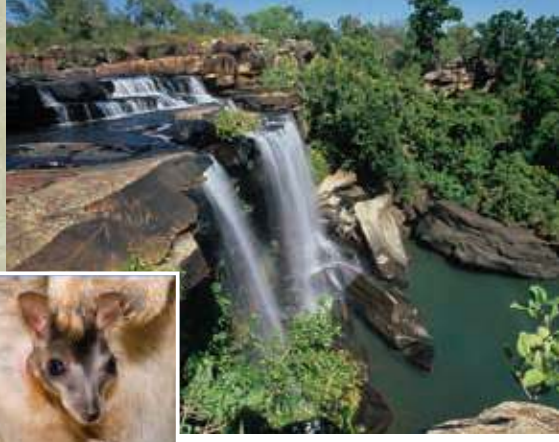
FOCUS ON END USERS	• Seek to understand, remain focused on and deliver biodiversity science knowledge needs of decision-makers in government, industry and the broader community. • Articulate end user needs in the WABSI Research Plan.
FIRST CLASS ENVIRONMENTAL SCIENCE	• Harness and coordinate the best available scientific capability. • Ensure we deliver world-class scientific outcomes for stakeholders.
A COLLABORATION MECHANISM	• Identify end user knowledge needs. • Seek and design research projects that will deliver end user knowledge needs. • Source resourcing for projects. • Source and coordinate leading scientific expertise to manage the process and deliver outcomes.
ALIGN PROJECTS WITH THE STATE'S PRIORITIES	• Projects supported by WABSI must align with WABSI's vision, purpose and principles, and the State's research priorities as reflected in the Research Plan. • Add value to projects through WABSI's coordination and collaboration mechanisms.
OPERATE AS A 'LITE' INSTITUTE	• Maintain administration at an effective and efficient level. • Optimise resourcing of relevant scientific endeavours.

RESEARCH FOCUS

A COLLABORATIVE RESEARCH CULTURE

Developing a collaborative research culture amongst stakeholder organisations is a key priority and is characterised by:

- An end user needs and problem-solving orientation.
- Meaningful engagement with end users throughout the project cycle.
- A desire to deliver outcomes that are useful and able to be implemented.
- A willingness to embrace a multi-disciplinary approach.
- Seek professional and career opportunities for WABSI scientists.
- Aboriginal people of Western Australia are key stakeholders in the State's ecosystems and landscapes that support biodiversity. We will help address the knowledge needs of Aboriginal people in our projects.



A COLLABORATIVE RESEARCH CULTURE *(continued)*

Strategic Objective

Ensure research facilitated by WABSI is high impact and widely adopted for more effective decision making in Western Australian biodiversity conservation.

Strategies	Actions to 2020	Outcomes at 2020
Develop programs of research that specifically address end user needs, including strategies to communicate project progress to ensure relevance to end users.	• Consult with end users and progress project ideas in accordance with the project origination process. • Synthesise end user gaps in knowledge and identify priority areas for commissioned work. • Bring researchers and end users together to develop biodiversity science priorities and improve shared learning within research projects. • Prepare and implement a communication strategy that engages end users throughout the project life-cycle.	**Stakeholders are effectively engaged throughout all phases of research projects from conception to completion.**
Incorporate expertise from multiple disciplines into research programs.	• Encourage cross government collaboration for enhanced biodiversity outcomes. • Identify capacity and gaps for transdisciplinary research across research partners. • Build on existing transdisciplinary research teams delivering Western Australian science and learn from successful partnerships. • Foster new transdisciplinary partnerships across researchers.	**Transdisciplinary approaches to research provide improved outcomes for the conservation of Western Australian biodiversity.**
Embed the assessment of social and economic values in research programs to improve communication of the costs and/or benefits of alternative conservation management approaches.	• Develop guidelines for research partners on how to consider and report on the social and economic values of research. • Encourage partnerships between biophysical and economic and social scientists in research programs. • Ensure all projects clearly communicate how they improve the effectiveness and/or reduce costs associated with managing biodiversity.	**Cost effectiveness of managing Western Australia's biodiversity is increased.**
Implement communication strategies in research projects that address adoption pathways and optimise research impact.	• Review existing frameworks and develop guidelines for measuring and evaluating research impact and adoption. • Identify relevant adoption pathways and potential adoption barriers associated with research projects. • Prepare and implement project and organisation communication strategies that facilitate adoption by end users. • Develop WABSI supported approaches for evaluating research impact and adoption with research partners and end users.	**The impact of adoption of biodiversity science outcomes by end users is increased.**

OUR RESEARCH FRAMEWORK

- Cross Cutting Themes ensure focus and engagement with end users in the development and delivery of projects.
- Research Nodes reflect key biodiversity knowledge gaps, being biodiversity survey, biodiversity processes and threats, and restoration and *ex-situ* conservation. Nodes are committed to improving biodiversity information management systems.
- Priority Landscapes help organise and direct research and land management activity according to broad geographic regions of Western Australia.

CROSS CUTTING THEMES	RESEARCH NODES			APPLIED TO PRIORITY LANDSCAPES
Stakeholder Engagement	Biodiversity Survey	Processes and Threat Mitigation	Restoration and *Ex-situ* Conservation	Developing North Kimberley
Transdisciplinary Research				Pilbara
Social and Economic Analysis				Western Deserts
Aboriginal Knowledge	Information Management Systems			Drying South West
Communication and Adoption				Island Arks

RESEARCH DEVELOPMENT AND IMPLEMENTATION

FOUNDATION (PHASE COMPLETED)

- Implement governance framework and management systems.
- Identify existing biodiversity research programs of WABSI partners.
- Develop WABSI doctrine — a Strategic Plan and Research Plan, reflecting the State's priorities.
- Explore opportunities for immediate collaboration to value add existing projects and opportunities to commence new projects.

CONSOLIDATION

- Planning process leading to the establishment of WABSI.
- Identified existing projects of terrestrial biodiversity research activity in which at least one WABSI partner has an interest which mostly aligns with the WABSI Research Plan.
- WABSI can add further value to a project and stakeholders.
- 2016–2017: WABSI will identify existing projects that can be optimised through the WABSI coordination collaboration mechanisms.

NEW PROJECTS (2017)

- Partner organisations to promote WABSI's collective capability and the benefits of collaboration.
- Target opportunities to undertake priority research funded by the Commonwealth Government, Western Australian Government, industry and non-government organisations.

SECTOR EXPANSION (2020)

- Expand efforts to identify and address specific biodiversity science knowledge needs of sectors such as agriculture, forestry, urban and Aboriginal land holders, as well as critical infrastructure development.
- Review WABSI Research Plan, which reflects the State's priorities, to ensure the current research node framework is adequate; expand thematic coverage within nodes to meet end users needs.

RESEARCH STRATEGY

Through consultation, identify and regularly review the State's biodiversity research priorities that will generate critical knowledge to support better policy and decision making regarding economic development and biodiversity conservation.

BIODIVERSITY SURVEY NODE

This Node focuses on identifying biodiversity survey knowledge gaps and developing improved, more efficient survey techniques that take advantage of latest technologies.

Western Australia has incredible diversity in plant and animal species across varied landscapes. Understanding the distribution of specific flora and fauna species and the landscape and ecological communities that support them is a fundamental baseline for the ability to better manage biodiversity and properly assess the potential impacts of resource development and land clearing proposals.

- There is a lack of baseline data and efficient methods for surveying biodiversity. This poses a significant challenge to developers and regulators through the project approvals and environmental conditions setting, environmental monitoring and restoration phases of projects.
- A coordinated and focused effort across government, industry and the scientific sector can help deliver a more comprehensive understanding of the State's biological resource, species distribution and processes that influence that distribution.

BIODIVERSITY SURVEY NODE *(continued)*

Strategic Objective

Develop a thorough and robust understanding of the full range of species and ecological communities in Western Australia, their geographic distribution and their current and projected condition through time.

Strategies	Actions to 2020	Outcomes at 2020
Develop a program of research that encompasses the development of identification tools, systems and standard processes to allow for consistent and efficient collection and interpretation of biodiversity data.	• Progress the development of a Western Australian Vegetation Information System. • Facilitate the development of an eFlora of the Pilbara and then the State. • Identify further opportunities for the development tools, systems and standards.	Capacity to accurately identify elements of biodiversity is increased.
Develop a program of research that progresses the development and trial of innovative new technologies for biodiversity research and assessment.	• Facilitate the identification of satellite and airborne platforms for environmental mapping. • Identify further opportunities for investigating the application of new technologies with an emphasis on molecular and genomics techniques and remotely sensed tools.	Efficiency of biodiversity assessments is increased through utilisation of technologies.
Develop a program of research that develops the capacity to collate and synthesise a comprehensive view of the status of biodiversity at varying spatial and temporal scales.	• Facilitate the identification of gaps in biodiversity survey coverage in land/ resource development precincts e.g. Western Deserts. • Facilitate the identification of habitat connectivity for Pilbara mammals to identify important dispersal routes and better understand species distributions. • Identify further opportunities to better understand biodiversity pattern and significance with an emphasis on modelling biodiversity patterns and assessing change in biodiversity status.	Decisions regarding impacts of proposed developments and conservation management on biodiversity are better informed.
Identify other end user knowledge gaps with respect to biodiversity survey and taxonomy.	• Consult with end users and progress project ideas in accordance with the project origination process. • Synthesise end user gaps in knowledge and identify further priority areas for commissioned work. • Revise research plan to incorporate new initiatives.	Biodiversity survey focused research projects to inform decision-making by end users developed and progressed.

RESTORATION AND *EX-SITU* CONSERVATION NODE

This research node focuses on delivering scientific outcomes that underpin practical solutions for restoration and the *ex-situ* conservation of flora and fauna species.

- Collaborations between industry and research in Western Australia have developed world-leading restoration technologies for some regions of the State, notably the alumina industry in the Darling Ranges.
- By extending these capabilities across other land use systems and ecological communities we can achieve better restoration outcomes.
- By developing new technologies and methodologies for *ex-situ* conservation and translocation of plants and animals we can significantly improve efficiencies and restoration outcomes.

RESTORATION AND *EX-SITU* CONSERVATION NODE *(continued)*

Strategic Objective

Develop and facilitate the adoption of cost effective and scalable strategies and tools for the restoration and reconstruction of ecosystems and *ex-situ* conservation and reintroduction of threatened species.

Strategies	Actions to 2020	Outcomes at 2020
Develop a program of research that supports the development of restoration technologies and techniques for evaluating restoration success.	• Progress the development and implementation of the Pilbara Restoration Initiative. • Facilitate the identification and development of research to support climate resilient ecological restoration in the highly fragmented south west. • Identify further opportunities to enhance restoration success, particularly through science that integrates biophysical and socio-economic factors contributing to ecological restoration.	End users are better able to successfully restore ecosystems in impacted landscapes.
Develop a program of research that progresses our ability to conserve species *ex-situ* and successfully reintroduce species.	• Support the development of species enhancement tools and understanding of species introduction impacts to ensure long term persistence of populations. • Develop innovative breeding, sourcing and storage approaches to enhance the capacity for *ex-situ* conservation of Western Australian Biodiversity through. • Actively seek further opportunities to develop and evaluate *ex-situ* and species re-introduction techniques to support WA biodiversity conservation.	Capacity to house, store, breed and release (translocate) threatened plant and animal species is increased and our ability to evaluate reintroduction success is improved.
Identify other end-user knowledge gaps and priorities with respect to ecological restoration and *ex-situ* conservation of threatened species.	• Synthesise end-user gaps in knowledge and identify further priority areas for commissioned work. • Consult with end-users and build innovation networks to support the progression of project ideas. • Revise the Research Plan to incorporate new restoration and *ex-situ* conservation initiatives.	A program of research has been initiated that will contribute key outcomes as part of a broader strategy for restoration and *ex-situ* conservation.

PROCESSES AND THREAT MITIGATION NODE

The focus of this Node will be to develop an understanding of ecological processes to provide better information about the potential impacts of planning, development and regulatory decisions.

It will also help build the capacity of government, industry and community land managers to better understand and manage processes that threaten Western Australia's biodiversity such as changed fire regimes, altered hydrology, water availability and management, climate variability, exotic species, pests and diseases and fragmentation through land clearing.

PROCESSES AND THREAT MITIGATION NODE *(continued)*

Strategic Objective

Build the capacity of conservation managers to prioritise and develop cost-effective, integrated, on-ground strategies for management of biodiversity processes and threats.

Strategies

Develop research approaches for evaluation of the long-term projected impacts of all threats to biodiversity and the corresponding costs of threat prevention and control, as the basis of threat prioritisation.

Build an understanding of the interactions between threats and build coherent policy and on-ground management responses to conserve biodiversity within the global change dynamic.

Actions to 2020

- Build networks between researchers and end users with responsibilities for protecting biodiversity against threats.
- Fill fundamental knowledge gaps about threatening processes and the nature and magnitude of their likely impacts.
- Identify and test prospective management approaches to limit threatening processes and mitigate their likely impacts.
- Develop enhanced methods for social and economic evaluation (cost-benefit analysis) applicable to assess any biodiversity threats and management options.
- Prioritise processes of concern and threats to biodiversity conservation across priority landscapes.
- Develop a program of work around wetlands and the drying South West
- By the end of 2020, have at least five projects under this program that work with the State's Green Growth Plan.

- Fill critical knowledge gaps about interactions between threatening processes across all priority landscapes.
- Build a general model of the biodiversity impacts of multiple interacting threats and chronic decline of ecosystems, and test sensitivity to management interventions.
- Develop enhanced methods for social and economic evaluation (cost-benefit analysis) of management options for the interdependencies and synergies between threats.
- Build participatory approaches for WABSI expert input into policy and planning for biodiversity conservation and land management.
- Prioritise investment strategy for integration of threat and change management across priority landscapes.

Outcomes at 2020

Evaluation of priorities for management of threats to species and communities of conservation concern.

Development of effective management strategies that integrate responses to the suite of processes and threats facing different geographic locations throughout time.

BIODIVERSITY INFORMATION MANAGEMENT NODE

This Node will focus on developing an information system to facilitate aggregation, interpretation and access to biodiversity data held by government, industry and research agencies.

- A significant volume of information about WA's biodiversity already exists in a wide range of formats across government, industry, academic and community records.
- However developers, regulators and others are unable to efficiently access and interpret this information for good decision-making.

BIODIVERSITY INFORMATION MANAGEMENT NODE *(continued)*

Strategic Objective

Create a collaborative environment, including a web-based data management platform, whereby biodiversity information is collected, made openly accessible, and able to be used for multiple applications.

Strategies	Actions to 2020	Outcomes at 2020
Facilitate the development of an agreed framework and approach for the management of biodiversity information.	• Develop a cost benefit analysis on data sharing for all stakeholders.	Capacity to efficiently secure electronically (web-based) access to available data of known quality and origin to support better planning and decision making processes.
Facilitate the development of improved organisational practices, policies and knowledge management systems to facilitate integrated access, aggregation, sharing and interpretation of the biodiversity related information held by government, industry and research organisations.	• Development and population of a common platform hosting metadata.	Improved collaborations and knowledge sharing leading to enhanced conservation management and research outcomes.
Facilitate and negotiate the development of a data sharing agreement with the major holders of Western Australian biodiversity information.	• Negotiate, secure and implement a data sharing agreement.	Streamlined processes including data standards and quality guidelines that improve data quality, avoid duplication in collection of environmental data and therefore reduce costs and delays associated with both development and conservation planning.
Facilitate the development of tools, methodologies and interfaces that support improved access and interpretation of biodiversity information.	• Determine what platforms (existing or new) maybe needed using participatory approaches with data-holders, end users, researchers and computing experts. • Develop a scope of work that looks to put in place a data platform from the analyses undertaken.	User-friendly interface and tools to discover, interpret and analyse data using accredited methodologies.

ENGAGING WITH TRADITIONAL OWNERS

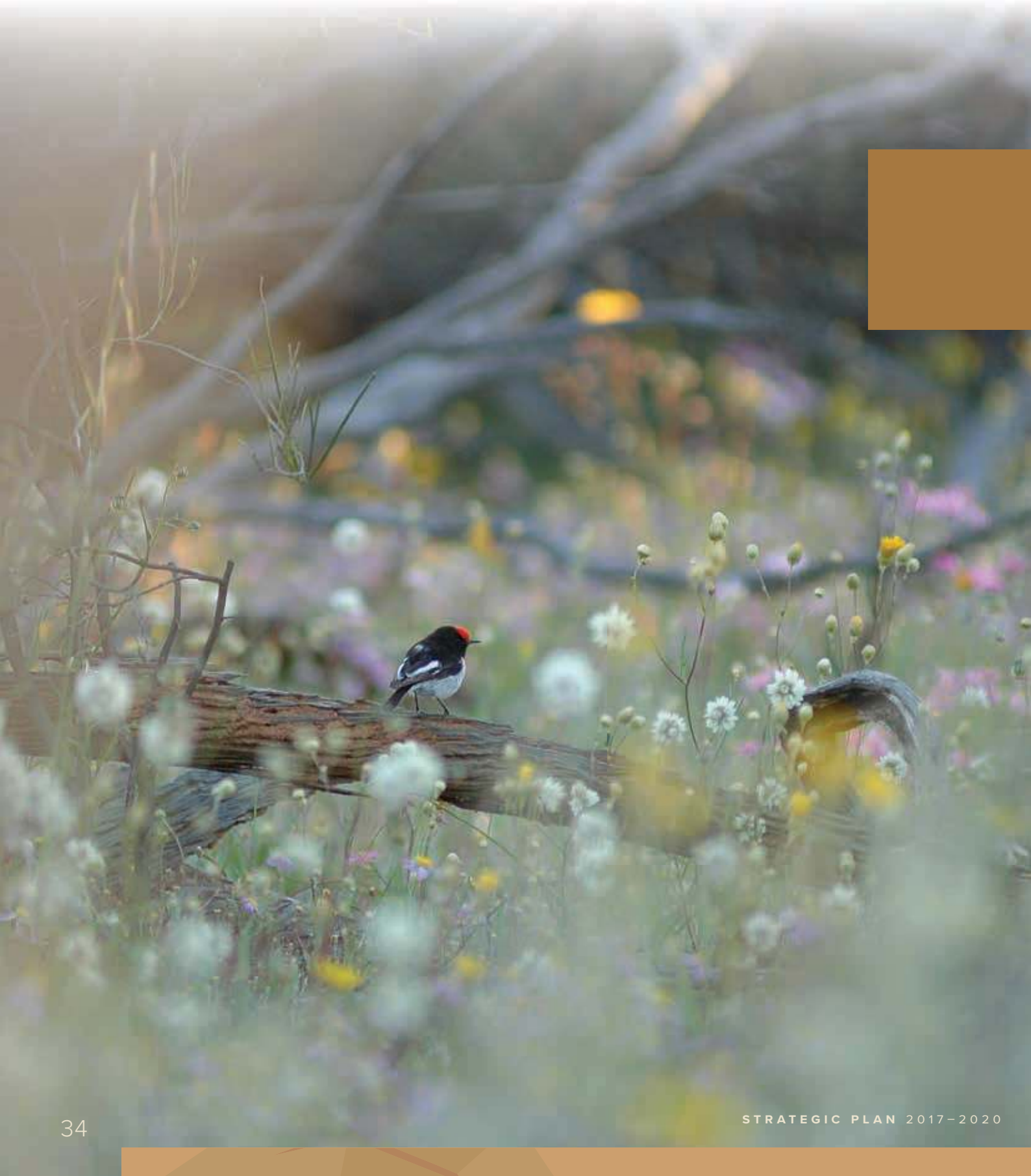
Aboriginal communities own and manage large areas of land in WA, which support significant biodiversity values. WABSI will work with Aboriginal communities to integrate traditional knowledge and science to deliver better social, cultural, economic and environmental outcomes for these communities.

ENGAGING WITH TRADITIONAL OWNERS *(continued)*

Strategic Objective

Engage with Aboriginal Western Australians as end users, participants and collaborators in biodiversity research.

Strategies	Actions to 2020	Outcomes at 2020
Incorporate Aboriginal perspectives and advice into institutional governance structures and processes.	• Review and if necessary amend policies and processes to seek Aboriginal advice during institutional decision making and implementation. • Develop an Aboriginal engagement strategy that incorporates both key principles of engagement at an institutional level and ethical requirements for research at a project level.	**Aboriginal Western Australians are engaged with WABSI as an institution and have strong collaborative relationships with WABSI priorities, processes, programs and projects.**
Nurture and normalise a respectful 'two-way' culture and *modus operandi*.	• Build western scientific capacity amongst Aboriginal participants in WABSI projects. • Build capacity among non-Aboriginal researchers with respect to Aboriginal culture, people, country and law. • Contribute to inter-generational biodiversity knowledge (traditional and scientific) transfer and other activities to strengthen Aboriginal culture.	**Traditional ecological knowledge holders are respected by WABSI researchers and are empowered in 'two-way' participation in the collection, management and access to biodiversity and land management information.**
Understand the research needs of Aboriginal land owners and managers as potential end users.	• Meet with and gather information from Aboriginal groups and individuals about their research needs. • Analyse Aboriginal survey data in order to compare with research needs of other land manager groups and to incorporate into the WABSI Research Plan at Node and priority landscape levels.	**Enhanced intergenerational transmission of traditional ecological knowledge.**
Achieve improved biodiversity outcomes on Aboriginal owned and managed lands.	• Seek funding for research projects to address Aboriginal research needs in collaboration with Aboriginal end user organisations. • Implement projects on Aboriginal lands. • Ensure highly participatory research approaches and broad dissemination of research results and management recommendations amongst Aboriginal people. • Build appropriate models of WABSI expert input to Aboriginal land management planning.	**Aboriginal landowners and managers achieve improved biodiversity outcomes on their lands.** **Benefits arising from wider/non-indigenous access to traditional ecological knowledge are equally shared.**



Biodiversity (biological diversity) refers to the variety of lifeforms native to a geographical area.

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