

# Annual Progress Report 1 May to 31 December 2021

National Environmental Science Program  
Resilient Landscapes Hub




Version	Date of issue	Author	Comments
1	1 April 2022	Michael Douglas	Draft
2	6 June 2022	Michael Douglas	HSC approved

# Certification of research plan

## Hub Leader certification

As Hub Leader, I certify that I have taken adequate steps to reasonably assure that:


- each required report component is attached
- the contents of each component of the report are complete and accurate in all material respects
- funds have been used for the purpose for which they were provided and all funding conditions have been met, recipient and other contributions have been received, and appropriate oversight has been maintained of hub projects, their progress, performance and budgets during the reporting period
- all relevant risks to project delivery have been notified to the department in this and previous reports and that appropriate steps are being taken to manage those risks
- the hub and its sub-contractors have current workers compensation and public liability insurances, as required under the funding agreement
- any carryover of project funds has been allocated as required under the funding agreement, to projects or hub activities in the next reporting period/research plan.

Signature   
Name Michael Douglas  
Position Hub Leader  
Date 6 June 2022

## Hub Steering Committee Chair certification

As Steering Committee Chair, I certify that any issues of concern or matters raised during steering committee meetings where the draft progress report was discussed have been adequately resolved, amended or incorporated into the final report submitted to the department.

This annual progress report was endorsed by the steering committee on 6 June 2022.

Signature   
Name: Ian Cresswell  
Position: Hub Steering Committee Chair  
Date: 6 June 2022

# Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and their continuing connection to and stewardship of land, sea and community.

We pay our respects to them and their cultures and to their Ancestors, Elders and future leaders.

Our Indigenous research partnerships are a valued and respected component of National Environmental Science Program research.

# Contents

<b>Certification of research plan</b> .....	<b>i</b>
Hub Leader certification .....	i
Hub Steering Committee Chair certification.....	i
<b>Acknowledgement of Country</b> .....	<b>ii</b>
<b>Contents</b> .....	<b>iii</b>
<b>Letter from the Hub Leader</b> .....	<b>1</b>
<b>Establishment</b> .....	<b>3</b>
<b>Research</b> .....	<b>5</b>
Progress towards research delivery.....	6
Research projects.....	9
Cross-cutting initiatives .....	9
Emerging priorities.....	11
<b>Performance against milestones</b> .....	<b>12</b>
Performance against funding agreement milestones .....	12
Performance against the research plan milestones .....	12
<b>Measuring success</b> .....	<b>13</b>
Hub outcomes and outputs .....	13
<b>Collaboration and partnerships</b> .....	<b>18</b>
Meetings .....	18
Knowledge brokering.....	19
Communication.....	20
Indigenous partnerships.....	21
Data management.....	23
<b>Hub-level risk management</b> .....	<b>24</b>
<b>Financial information</b> .....	<b>25</b>
Annual financial reporting.....	25
<b>Attachments</b> .....	<b>26</b>

# Letter from the Hub Leader

I am pleased to present this first annual progress report for the Resilient Landscapes Hub of the Australian Government's National Environmental Science Program (NESP). The year 2021 was a formational year for the hub – we constituted our Hub Steering Committee (HSC) and met 3 times, established our Research Executive Committee (REC) to provide specialist project guidance, entered into partnership agreements with 7 of our research-provider partners, and completed recruitment action that has built our administration, communication and knowledge brokering team. After approval of our first research plan (Research Plan 2021 [RP2021]), we commenced work on 7 theme-based research projects that will lay the foundation for the next phase of practical research commencing in 2022.

Resilient landscapes are those able to recover from disturbance, whether that is fire, flood, drought, invasive and feral species, clearing or climate change. The Resilient Landscapes Hub has a unique opportunity to make a positive impact on the management of Australian terrestrial and freshwater ecosystems and improve their resilience. The hub has started this journey by listening to policy-makers and decision-makers within the Department of Agriculture, Water and the Environment (DAWE) to ascertain their research needs and subsequently co-develop projects to meet those needs. Given the recent development of policy initiatives such as the [Threatened Species Strategy Action Plan 2021–2026](#) and [National Landcare Program Phase 2](#), it is timely that the hub is collaborating with DAWE staff to design user-driven research to inform policy and practice.

In addition to DAWE, we have reached out to other research users including the Natural Resource Management (NRM) Regions Australia, National Landcare Network (NLN), Australian Land Conservation Alliance (ALCA), Bush Heritage Australia (BHA), and state and territory governments. These consultations will continue into 2022 as we shape our research portfolio around aligning shared interests among multiple research users.

All 4 hubs in this second phase of NESP have close working relationships with one another, and we have met with the other hub leaders (Climate Systems Hub, Marine and Coastal Hub, Sustainable Communities and Waste Hub) on numerous occasions. We can clearly see the importance of the cross-cutting initiatives and how they intersect with the initiative hosted by our hub – the 'Threatened and migratory species and threatened ecological communities' initiative. For example, many of these species and communities may be affected by climate change, and many occur in protected places, and so are relevant to the work of the other hubs.

In the past year, we have launched a [new website](#) and [first research plan](#) for the Resilient Landscapes Hub. The website contains information on all the people involved with the hub, and updates on news from the hub. Resources from the previous Northern Australia Environmental Resources Hub (from the first phase of NESP) are also contained within the website. The hub's social media channels are up and running to engage the community.

Our website also provides an overview of RP2021. This research plan builds the foundation for the hub by investing in 7 projects that support the scoping, planning and co-design of our priority research focused on themes that are critical for resilient landscapes:

1. [Solutions science for resilient landscapes](#)
2. [Strengthening resilience to threatening processes and extreme events](#)
3. [Restoring and recovering landscape resilience](#)
4. [Socioeconomic insights for resilient landscapes](#)
5. [Monitoring resilient landscapes](#)
6. [Indigenous knowledge and managing the Indigenous estate](#)
7. [our contribution to the 4 cross-cutting initiatives](#), including the initiative led by our hub  
– Threatened and migratory species and threatened ecological communities.

The Resilient Landscapes Hub is taking a user-driven, solutions-focused approach to developing and implementing our research program. [Projects](#) are being co-designed with a broad range of research users and will be delivered by [key researchers](#) from our [national research-provider network](#).

The first step in our co-design process is to consult with research users to identify priority knowledge gaps and research needs. In the final quarter of 2021, the lead researchers of RP2021 were actively gathering more detail on the research priorities from the DAWE. Several projects were submitted in RP2022 to meet the needs of DAWE research users that were identified through this process.

Consultation meetings with other research users will continue into 2022 and in September 2022, we will submit RP2023, proposing multi-year research projects that will be co-designed and co-delivered with research users.

In 2021, the hub was also awaiting the release of the Threatened Species Strategy Action Plan 2021–2026. This action plan will include priority actions, places and species, and this will be very important for informing the development of our research projects. It will also be important to ensure that place-based projects are well integrated with Indigenous stakeholders and that the timetable for project development builds in sufficient time for meaningful engagement.

Ongoing travel restrictions imposed by COVID-19 had a significant impact on our ability to scope research activities in 2021. Our inability to hold national and regional face-to-face meetings with our research partners and prospective research users constrained the detailed design work that is needed to scope complex projects involving multiple partners.

I am confident that in 2022 and beyond we will be able to quickly move forward in implementing a broad phase of meaningful, solutions-focused research projects across Australia.

# Establishment

The NESP is a long-term commitment by the Australian Government. The program funds environmental and climate research. The second phase of NESP builds on the foundations of past work, and funds 4 research hubs from 2020–21 to 2026–27.

The Hub Leader, Michael Douglas, is based at the host institution, the University of Western Australia (UWA). The Deputy Hub Leader and Senior Indigenous Facilitator, Stephen van Leeuwen, is based at Curtin University (Curtin). The Cross-cutting Initiative Leader, Helene Marsh, is based at James Cook University (JCU).

In 2021, we established our HSC, led by an independent Chairperson. In addition to DAWE members, the HSC includes a representative from the Cross-Jurisdictional Chief Environmental Scientists (scientists from state and territory governments), as well as representatives from 3 key research users with a national membership (NRM Regions Australia, NLN and ALCA). The terms of reference for the HSC include:

- providing strategic direction for the activities and research conducted by the hub
- ensuring the alignment of activities and research to the interests and needs of the hub's research users
- connecting the hub's research questions, activities and outputs to relevant policy, planning and action relevant to the hub and research users
- reviewing and endorsing research plans prior to approval by the department
- reviewing and endorsing progress and financial reports prior to approval by the department
- making recommendations for addressing project-level issues, supported by user-satisfaction reporting and related key performance indicators.

Membership of the HSC is currently: Ian Cresswell (Chair), Michael Douglas (Hub Leader; UWA), Stephen van Leeuwen (Deputy Hub Leader and Senior Indigenous Facilitator; Curtin), Kate Andrews (NRM Regions Australia), Margaret Byrne (Western Australian Department of Biodiversity, Conservation and Attractions), Kerry Olsson (NLN, sitting in for Jim Adams), Robyn McClelland (DAWE), Sue Fyfe (DAWE), Jody Gunn (ALCA), Cassandra Kennedy (DAWE), Ilona Stobutzki (DAWE) and Judy West (DAWE). Helene Marsh (Cross-cutting Initiative Leader) is an observer on the committee.

The committee met on 3 occasions, approved its terms of reference and endorsed RP2021. With the support of the Australian Government and the HSC, we finalised 4 key strategies in 2021 that will provide critical program guidance:

- Indigenous Partnerships Strategy
- Communication Strategy
- Knowledge Brokering Strategy
- Data Management Strategy.

In 2021 we also formed the REC with the following terms of reference:

- lead and manage the research program
- monitor and review research project design and delivery
- provide advice and report to the HSC on program progress, financial management and strategic direction of the program
- facilitate collaborative arrangements among consortium members by agreeing on a set of partner operating principles
- ensure that if scientists leave the hub, that arrangements are put in place so as not to compromise the meeting of milestones and delivery of project outputs
- support preparation of an annual report and progress reports to funders and program partners
- monitor the implementation of the hub's strategies (knowledge brokering, communication, Indigenous partnerships and data management)
- represent, coordinate and communicate on behalf of consortium members' interests.

Membership of the REC includes Michael Douglas (Chair), Chris Chilcott (CSIRO), Jennifer Firth (Queensland University of Technology [QUT]), Andrew Krockenberger (Northern Node host – JCU), Helene Marsh (JCU), Nick Reid (University of New England [UNE]), Natalie Stoeckl (Southern Node host – University of Tasmania [UTas]), Samantha Setterfield (Western Node host – UWA), Stephen van Leeuwen (Curtin) and Stuart Bunn (Eastern Node host – Griffith University [GU]). The committee met regularly throughout the year, normally on a fortnightly basis. As part of the commitment to building leadership capability, the REC enables members to nominate mid-career proxies from their organisations, who will eventually replace them on the REC after a transitional period of mentoring. Proxies currently include Mark Kennard (GU), Vanessa Adams (UTas) and Guy Ballard (UNE).

We finalised agreements with our partners comprising the REC membership in 2021, closely following the format of the Head Agreement established between the Commonwealth and UWA. These agreements included JCU (including funding for the Cross-cutting Initiative Leader), GU, CSIRO, UTas, Curtin (including funding for the Senior Indigenous Facilitator), UNE and QUT.

We have recruited staff into key administrative, communication and knowledge-brokering positions including Brendan Edgar (Executive Officer and interim Data Wrangler), Jane Thomas (Knowledge Broker and Science Communicator), Patch Clapp (Communications Officer) and Lucy Commander (Research Management Officer).



# Research

NESP hubs have been designed to deliver world-class, practical, evidence-based research to inform on-ground management and policy decisions. This investment helps build adaptation capacity and resilience in Australia's natural environment and communities.

NESP research has real impact through partnerships and collaboration between researchers and research users, including policy-makers, to deliver proven outcomes. Environmental decision-makers are key partners and are encouraged to articulate their needs to researchers, provide feedback on the quality and usefulness of the research outputs and be engaged in the communication of how this information has informed policy.

NESP research listens to and prioritises the research needs of Indigenous land and sea managers, weaves together Indigenous and western environmental knowledge systems, and supports Indigenous-led approaches to strengthening and sharing knowledge.

New and existing NESP research findings are available to use and are accessible at Australian Government and hub websites.

The Resilient Landscapes Hub will deliver a body of research that includes short-term and long-term projects. Broadly, the research priorities of the Resilient Landscapes Hub are:

- applied research to support the management of Australia's terrestrial and freshwater habitats, including a focus on bushfire recovery, feral animals and invasive species impacts, and accessible science to assist land managers to create and maintain resilient, sustainable and productive landscapes
- targeted biodiversity and taxonomy products to support efficient system monitoring
- environmental monitoring systems and decision-support tools
- cross-hub coordination for the cross-cutting 'Threatened and migratory species and threatened ecological communities' research initiative to support policy development, program management and regulatory processes to protect Australia's environmental assets in terrestrial, Ramsar and marine environments.

Our current projects and key research areas include:

1. [Solutions science for resilient landscapes](#)
  - research approach and planning
  - building capacity for 'solutions science'
  - evaluation and learning
2. [Strengthening resilience to threatening processes and extreme events](#)
  - environmental weeds and diseases
  - invasive animals
  - bushfire management
  - wetlands and water management
3. [Restoring and recovering landscape resilience](#)
  - landscape restoration
  - species recovery

4. [Socioeconomic insights for resilient landscapes](#)
  - evaluating the effectiveness of environmental plans, policies and actions on biodiversity outcomes
  - planning for resilient landscapes
  - implementing plans, policies and actions
5. [Monitoring resilient landscapes](#)
  - the role of new technology in monitoring
  - prioritisation and integration of monitoring activities
  - citizen science and community-based monitoring
  - management of monitoring data
  - monitoring, evaluation and standards frameworks
6. [Indigenous knowledge and managing the Indigenous estate](#)
  - research to support Indigenous Australians and their joint-management partners in managing the Indigenous estate
  - mobilising Indigenous knowledge to better understand, manage and conserve Australia's environments
7. [Cross-cutting initiatives](#)
  - Threatened and migratory species and threatened ecological communities (led by the Resilient Landscapes Hub)
  - Protected place management (led by the Marine and Coastal Hub)
  - Waste impact management (led by the Sustainable Communities and Waste Hub)
  - Climate adaptation (led by the Climate Systems Hub)
8. [Queensland threatened lizard survey](#)
  - supporting conservation efforts to help reptiles that are struggling to adapt to changing environmental conditions.

## Progress towards research delivery

As outlined in the Head Agreement established between the Commonwealth and UWA (signed 21 May 2021), activity outcomes include research that supports:

- management of Australia's terrestrial and freshwater habitats, including a focus on bushfire recovery, feral animals and invasive species impacts
- targeted biodiversity and taxonomy products to support efficient system monitoring
- environmental monitoring systems and decision-support tools.

The activity also includes delivering the cross-cutting initiative research focused on threatened and migratory species and threatened ecological communities. As stated in the Resilient Landscapes Hub research scope, the activity outcomes related to this initiative include:

- delivering tools and advice to support the conservation of habitats important for priority threatened species, threatened ecological communities and migratory species
- updating the national list of threatened ecological communities and species
- improving detection of cryptic, 'difficult' and other data-deficient species
- monitoring and supporting the management of the recovery of species and communities after extreme events.

Our research is designed around a participatory approach that is driven by research users, as outlined in Figure 1 below.

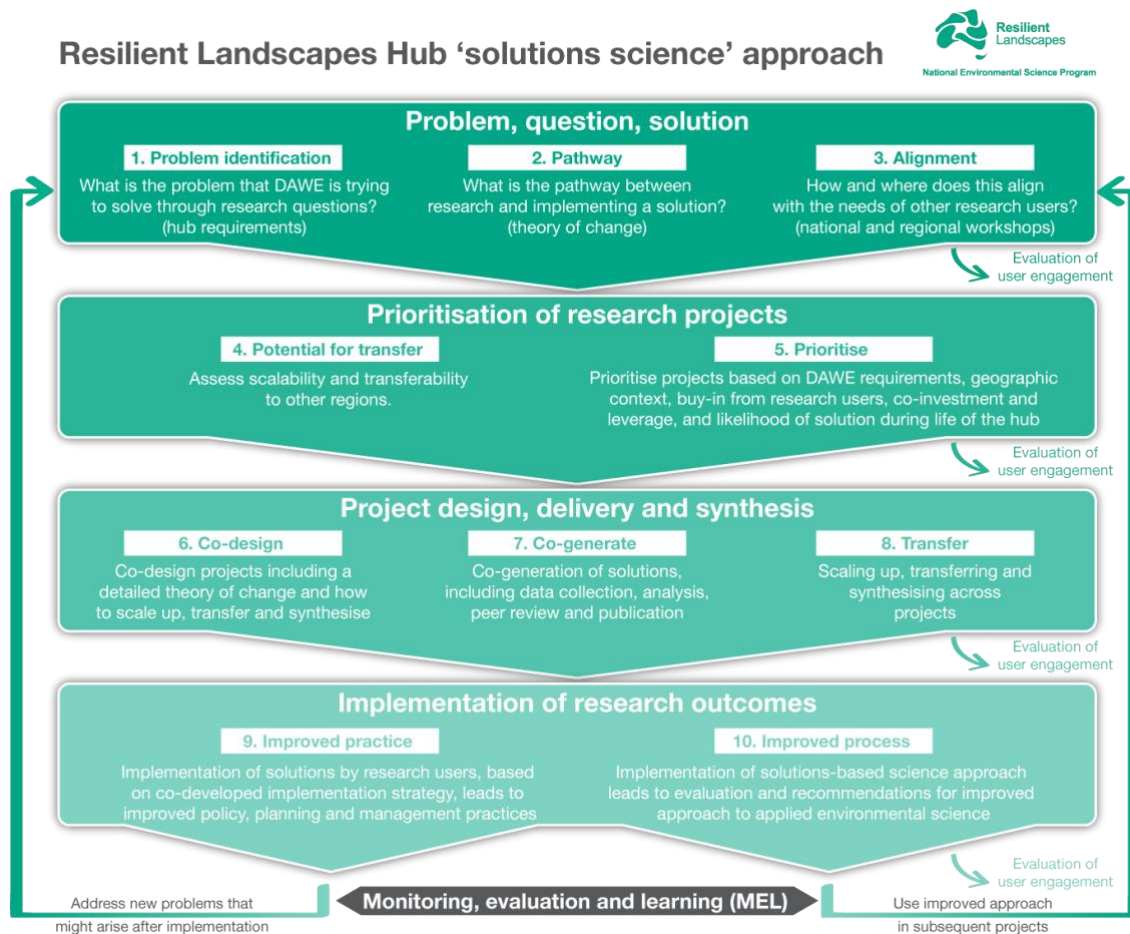


Figure 1: Research design, implementation and evaluation process.

In the latter half of 2021, we held a range of consultation meetings with DAWE staff to better identify research needs and priorities. These consultations resulted in the identification of a number of potential areas where research could make a significant contribution to solving key environmental challenges. We conducted a post-consultation survey to provide us with an evaluation of the effectiveness of the workshops so that we could improve future engagement.

The outcomes of these workshops were the development of a set of 5 projects that have since been detailed in Research Plan 2022 (RP2022). These projects include managing environmental risks, managing feral cats and foxes, understanding regional transferability of research, monitoring of Ramsar sites and developing a research strategy for Kakadu National Park. A summary of each of these 5 potential projects follows.

### 1. Managing environmental risks to water resources from development in north Queensland

Individual developments in northern Australia are currently assessed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and

other state planning legislation to ensure biodiversity is protected. However, there is a need to take a broader regional approach to assessing risks from the cumulative impacts of multiple developments. This project will examine existing risk-assessment frameworks, and data on environmental and cultural values in the western Cape York Peninsula/south-east Gulf of Carpentaria region. It will develop a pathway to improving community engagement, and identify knowledge gaps to guide NESP research for improved outcomes for environmental and cultural values.

## **2. Best-practice management of feral cats and red foxes**

This project will utilise facilitated expert workshops to identify best-practice management methods for invasive mesopredators and key knowledge gaps that require further research.

This information will support practitioners to improve real-world management outcomes and provide clear direction for research on invasive mesopredator management in Australia.

## **3. Using integrated data analysis to assess regional transferability**

This project will help decision-makers determine the extent to which research that is undertaken in one region is transferable to another. It will also help identify areas that are most and least suited to different regional-planning approaches. First, it will add data relevant to climate and threatened species to an existing integrated dataset. Second, it will analyse the data to identify (a) groups of regions that share 'similar' social, economic and biophysical characteristics and regions that are 'similar' to particular locations (e.g. priority places, protected areas) and (b) regions that have characteristics most suited to particular planning approaches (that focus on conservation/ecological systems).

## **4. National overview of monitoring frameworks/tools for Ramsar sites**

One of Australia's key obligations under the Ramsar Convention is to maintain the ecological character of its 66 internationally listed Ramsar wetlands. These responsibilities shared by the Australian Government in partnership with state and territory governments and non-government site managers. Well-designed monitoring programs are needed to enable site managers to adaptively manage and assess the effectiveness of management interventions and actions to restore and improve condition. This project will develop a better understanding of the monitoring frameworks appropriate for use at Ramsar sites, and identify current knowledge gaps to guide research and development of tools to build capacity to monitor and manage Ramsar wetlands.

## **5. Addressing Kakadu's strategic research needs**

The Indigenous-owned lands of Kakadu National Park are a national icon and globally significant. The natural and cultural values of Kakadu are at risk from a range of threats that will intensify over time. To manage these threats, there is a pressing need to develop a Kakadu research strategy. This project will deliver a research

strategy that will provide guidance on both what research needs to be done and how it should be conducted in Kakadu. The project will also provide the foundation for a co-designed program of research in which NESP hubs and cross-cutting initiatives address Kakadu's research needs.

## Research projects

[Attachment A](#) lists the projects currently funded under the Resilient Landscapes Hub and provides information on the project status, information on outputs and links to products for all projects (where available). Exceptions to the NESP Data and Information Guidelines are also noted.

## Cross-cutting initiatives

The Resilient Landscapes Hub leads the cross-cutting 'Threatened and migratory species and threatened ecological communities' initiative. This initiative will support policy development, program management and regulatory processes to improve the status of Australia's threatened and migratory environmental assets in terrestrial, freshwater and marine environments by working with all NESP initiatives and hubs to add value to the outcomes of the overall program.

Research needs for threatened species have recently been identified in DAWE's [Threatened Species Strategy 2021–2031](#). Using a collaborative approach, the Resilient Landscapes Hub will play an important role in implementing this strategy.

The strategy's [Action Plan 2021–2026](#) has identified [100 priority threatened species](#) and priority places and actions (in early 2022) that will be the focus for the next 5 years. The Resilient Landscapes Hub will address research needs identified in the action plan and work with land managers to design, implement and monitor priority on-ground activities.

All 4 hubs have committed to working together in the delivery of research plans. Each of the other 3 hubs has identified a champion for our initiative who will work closely with our cross-cutting initiative leader throughout the co-design phase. Similarly, this hub has identified a champion for each of the other 3 cross-cutting initiative.

Planning activities include scoping, prioritising and co-designing a suite of projects that will be considered for inclusion in subsequent research plans of all 4 hubs, the strategic research plans for the other 3 cross-cutting initiatives and an overall strategic research plan.

Activities relevant to the cross-cutting initiative that have been developed in 2021 include:

Solutions science for resilient landscapes	Further developing and implementing a user-driven, solutions-science framework for research to facilitate recovery of threatened and migratory species and threatened ecological communities.
Strengthening resilience to threatening process and extreme events	Developing project plans for research to support the management of threats to listed entities caused by the following key threatening processes: (1) invasive grasses in northern Australia and (2) invasive predator management: cats and foxes.
Restoring and recovering landscape resilience	Developing project plans for research to support the restoration of threatened ecological communities and improve the recovery of threatened and migratory species.
Socioeconomic insights for resilient landscapes	Developing project plans for testing and articulating processes to implement a conceptual framework of socioeconomic factors that need to be considered to promote conservation, especially of threatened and migratory species and threatened ecological communities.
Monitoring resilient landscapes	Developing project plans for research on how to develop robust multi-methods and emerging technologies to monitor threatening processes, threatened and migratory species, and threatened ecological communities.
Indigenous knowledge and managing the Indigenous estate	Developing project plans to emphasise how Indigenous knowledge is employed to help Traditional Owners manage the Indigenous estate and support research to monitor threatened and migratory species, threatened ecological communities and threatening processes, especially on Indigenous Protected Areas.
Cross-cutting research	Conducting a desktop study to identify priority information requirements for improving outcomes for nationally listed species and ecological communities through regulation and management based on entities chosen on the basis of principles co-developed with DAWE. The study will be conducted in 2 phases with a review by research users after the first phase. Assisting in the development of project plans for cross-hub and cross-cutting research relevant to threatened and migratory species and threatened ecological communities

## Emerging priorities

Each year, specific emerging priorities may be identified by the department, hubs or third parties for delivery as research projects. If endorsed by the department, the hub will develop research project/s to address the emerging priority.

Hubs will be flexible and adaptable to respond to emerging priorities, with the ability to rapidly scale output, bring in external expertise or respond if additional resources are made available. Hubs are required to set aside 10% of their annual funding (in any category) so that they can respond to emerging priorities – these funds can be rolled into the subsequent year if they are not used.

Emerging-priority projects will be developed outside the hub's annual research-proposal process. Once emerging priority projects have been approved, the hub's research plan and activity budget for the relevant calendar year will be amended and emerging priorities will be included in the hub's annual progress reports.

There were no emerging priorities projects in 2021.

# Performance against milestones

## Performance against funding agreement milestones

All milestones for the reporting period and to date have been met as per the funding agreement (Milestones 1 to 7).

## Performance against the research plan milestones

Information on project progress and performance is provided in [Attachment A](#).



# Measuring success

## Hub outcomes and outputs

In 2021, the hub was primarily in the establishment, scoping and planning stages. Accordingly, while we aim to deliver best-practice, publicly available research, the outcomes and outputs from our research will not become available until 2022 and later years. Research projects are being designed to have outcomes that are transferable to research users and regions beyond the specific target audiences directly involved in our projects.

## Short-term to medium-term outcomes – quantitative measures

Table A: Quantitative performance measures (short-term to medium-term outcomes).

Notes: Reporting period means the calendar year preceding the Annual Progress Report. For the first year of these NESP hubs, the reporting period is May to December 2021. Unless specified otherwise, the term ‘research user’ refers to departmental and/or external users.

No.	Performance measure	Result for reporting period (numerical only)	Explanation, if any
1	Proportion of projects (active or completed in the reporting period) for which there is a research-user actively engaged in the project: a) co-design b) research delivery c) use and research uptake	a) 8 / 8 b) 8 / 8 c) 8 / 8	All projects have research-user engagement.
2	Research outputs in the reporting period provided to research users on time and as identified in the approved research plans: a) total number b) proportion	a) 0 b) 0	No research outputs were planned to be completed in the reporting period.
3	Proportion of completed research projects that are confirmed to meet the needs of departmental research users as identified at project co-design stage	0%	There are currently no completed projects.
4	Number of projects that: a) are Indigenous-led b) meet research and management priorities of Indigenous stakeholders c) are Indigenous-led projects that also meet research and management priorities of Indigenous stakeholders.	a) 1 / 8 b) 1 / 8 c) 1 / 8	Stephen van Leeuwen leads project 7.
5	Number of peer-reviewed, NESP-funded publications during the reporting period	0	No publications were planned to be completed in the reporting period.
6	Number of NESP research citations in other researchers’ publications during the reporting period	0	No publications were planned to be completed in the reporting period.

No.	Performance measure	Result for reporting period (numerical only)	Explanation, if any
7	Percentage of completed NESP products, research publications, datasets and metadata that are discoverable and accessible in accordance with <a href="#">NESP Data and Information Guidelines</a> and the funding agreement	0	No datasets were planned to be completed in the reporting period.
8	The number of datasets and management tools that benefitted from hub research and outcomes (including but not limited to web-based decision support systems; environmental management tools for Indigenous communities, waters and land management; plans of management for Indigenous Protected Areas (IPAs), co/jointly managed parks, marine park plans of management, conservation agreements)	0	No datasets were planned to be completed in the reporting period.
9	Number (full-time equivalents) during the reporting period of: <ul style="list-style-type: none"> <li>a) PhD students</li> <li>b) post-doc and early-career researchers</li> <li>c) mid-career researchers</li> <li>d) Indigenous researchers</li> <li>e) volunteers (total)</li> <li>f) Indigenous volunteers</li> <li>g) Indigenous sub-contractors</li> </ul>	<ul style="list-style-type: none"> <li>a) 0</li> <li>b) 3</li> <li>c) 6</li> <li>d) 1</li> <li>e) 0</li> <li>f) 0</li> <li>g) 0</li> </ul>	Because the program is at an establishment phase the number of researchers is relatively low, this will increase significantly in 2022 and beyond.
10	Number of knowledge-sharing and communication events and activities held or shared: <ul style="list-style-type: none"> <li>a) with on-ground managers (general)</li> <li>b) jointly with Indigenous researchers and Traditional Custodians</li> <li>c) that are Indigenous-led</li> </ul>	<ul style="list-style-type: none"> <li>a) 18 / 21</li> <li>b) 1 / 21</li> <li>c) 2 / 21</li> </ul>	Primarily these meetings were to engage with research users to scope potential areas of research activity.
11	Proportion of hub staff and researchers who have completed: <ul style="list-style-type: none"> <li>a) Indigenous cultural capability training</li> <li>b) Indigenous cultural and intellectual property (ICIP) training</li> <li>c) both Indigenous cultural capability training and Indigenous cultural and intellectual property training</li> </ul>	<ul style="list-style-type: none"> <li>a) Nil / 0%</li> <li>b) 7 / 20%</li> <li>c) Nil / 0%</li> </ul>	A number of members of the HSC and REC have completed True Tracks® training in Indigenous intellectual and cultural property. Further training has been scheduled for HSC, REC members and researchers in 2022. Cultural capability training will be organised for researchers from 2022 onwards.
12	Proportion of hub projects overall that fall within the categories of the <a href="#">Three-category Approach</a> :	<ul style="list-style-type: none"> <li>a) 0 / 0%</li> <li>b) 7 / 85%</li> </ul>	

No.	Performance measure	Result for reporting period (numerical only)	Explanation, if any
	<ul style="list-style-type: none"> <li>• Category 1</li> <li>• Category 2</li> <li>• Category 3</li> </ul>	c) 1 / 15%	All hub projects fall within the Three-category Approach to Indigenous engagement.
13	Proportion of hub projects that have been developed in consultation with the hub Indigenous facilitator or the Indigenous Facilitation Network	8 / 100%	The hub's Senior Indigenous Facilitator (also Hub Deputy Leader) sits on the HSC and REC and is consulted in the development of all projects.
14	Number of guidelines about best-practice that the hub has produced or co-produced in the reporting period, for: <ul style="list-style-type: none"> <li>a) knowledge brokering</li> <li>b) Indigenous partnerships and products (including design of flagship engagement activities)</li> <li>c) environment and climate management within the scope of the hub's research</li> </ul>	a) 0 / 0 b) 0 / 0 c) 0 / 0	No guidelines were planned to be completed in the reporting period.

## Longer-term outcomes – qualitative measures

As the hub is at its formative and establishment stage, there are no longer-term impacts that can be reported at this time. When available, we will report evidence of emerging, longer-term impacts from the hub's research, including:

- proportion of completed research products that have been used by research users to inform policy, programs and or management decisions
- evidence of public interest and enhanced understanding about our environment
- improved environmental and waste management
- changes in practices by community or industry
- measures being developed to ensure relationships are maintained between researchers, Indigenous research users and other research users.

## NESP impact stories

NESP impact stories are provided at Attachment B. Impact stories showcase the contribution of NESP-funded research beyond contributions to academia, including to the environment, the economy, society, culture, public policy and quality of life.

While we have provided a single impact story ([Improving digital engagement for transferable solutions](#)) with this report, in subsequent years we will have multiple impact stories addressing:

- how the hub has collaborated with research users to better understand decision-makers' needs or the key questions that research needs to address
- how the hub is successfully partnering with government, community and industry stakeholders
- how the hub is successfully partnering with Indigenous Australians throughout the work of the hub
- how the hub is using innovative approaches to connect science with policy-making and decision-making
- how the research conducted by the hub has been used to inform on-ground action or policy
- how the hub has improved the national environmental information base through delivery of open-access data or other data-related activities.

# Collaboration and partnerships

NESP encourages a collaborative, multidisciplinary approach to environmental and climate research. Key to the success of the hub will be the capacity to foster partnerships across hubs and with a wide range of decision-makers across the Australian community, including Indigenous communities, to achieve positive environmental, social and economic outcomes.

The hub builds on the leadership and governance model of the previous NESP Northern Australia Environmental Resources Hub which demonstrated excellence in solutions-focused, impactful research that was co-designed with stakeholders, responsive to evolving management priorities, and strongly embraced Indigenous partnership and knowledge. While being hosted by UWA, we have a national footprint based on 4 regional nodes led by universities (Western: UWA; Northern: JCU; Eastern: GU; Southern: UTas) and a national node hosted by CSIRO.

## Meetings

### Governance

- Chair (monthly)
- REC (fortnightly)
- HSC
- All Hub Leaders, Cross-cutting Initiative Leaders, Senior Indigenous Facilitators x 1
- Hub Leaders' meetings (informal)
  - Marine and Coastal, Sustainable Communities and Waste
- Initiative Leaders/Knowledge Brokers
  - Climate adaptation x 2 , Protected place management x 3, Waste impact management x 1.

### DAWE

- Minister's Office
- Hub Liaison Officer (monthly)
- Co-design workshops
  - invasive species (26 invited)
  - fire (29 invited)
  - water and wetlands (34 invited)
  - restoration and recovery (28 invited)
  - socioeconomic insights (48 invited)
  - monitoring (35 invited)
- Environment Approvals Division, Queensland North Assessments
- Regional Planning Workshop (run by ThinkPlace).

### States and territories

- Cross-jurisdictional Chief Environmental Scientists x 2
- NT Government
- Western Australian Environmental Protection Authority.

## Hub research providers and research users

- ALCA board
- BHA
- Indigenous Desert Alliance
- NLN.

## Others

- Australian Wildlife Conservancy
- Centre for Invasive Species Solutions
- Feral Cats Taskforce
- Kakadu Board of Management
- Telstra Foundation, Microsoft, North Australian Indigenous Land and Sea Management Alliance, CSIRO x 2
- Water Trust Australia.

## Knowledge brokering

The Resilient Landscapes Hub will maximise the impact of its research through the implementation of its Knowledge Brokering Strategy that commits to knowledge brokering activities that:

- contribute to program-level knowledge brokering planning and activities
- strengthen the connections, synthesis and collaboration between both other hub staff and the broader NESP partnerships team
- are designed, planned, prioritised and delivered in consultation with the department, research users and other stakeholders to ensure they meet user needs at times and in formats that are most useful
- involve research users in research design, development and implementation to ensure the research meets their needs and aligns with policy, planning and management objectives
- facilitate delivery and adoption of research outputs by research users
- inform the hub's cross-cutting research initiative of threatened and migratory species and threatened ecological communities
- build the capacity of the hub's knowledge-brokering team so that the hub implements best-practice approaches to knowledge brokering
- develop processes and products that synthesise hub outputs and establish a legacy.

In implementing this strategy, the hub will ensure alignment with the broader NESP knowledge brokering and communications strategy.

The hub is well underway in addressing all the major points of the strategy above, and achieved this by primarily focusing on facilitating meetings between researchers and researcher users during 2021. These meetings reached a broad range of departmental users and the hub has also been flexible in having subsequent meetings with any sections that were missed initially. Synthesising priorities and feedback from such a broad suite of

research users has guided the hub in creating a range of projects that have a clear pathway for uptake by research users.

Additionally, the hub has refined our internal processes to ensure that project teams are doing everything possible to facilitate increased knowledge brokering throughout projects. This has included providing them with more information around timelines for feedback and supporting researchers to seek feedback on research outputs.

## Communication

The Resilient Landscapes Hub will maximise the impact of its research through communications activities and products outlined in the its Communication Strategy that:

- contribute to program-level communications planning and activities
- are designed, planned, prioritised and delivered in consultation with the department, research users and other stakeholders to ensure they meet user needs at times and in formats that are most useful
- raise awareness of the hub, its projects and their outcomes, and its cross-cutting research theme of threatened and migratory species and threatened ecological communities
- meet acknowledgement and accessibility requirements
- support projects to plan and implement knowledge brokering and communication activities
- make research products and findings accessible to decision-makers, communities and other research users during and beyond the life of the program
- develop processes and products that synthesise hub outputs and establish a legacy.

In implementing this strategy, the hub will ensure alignment with the broader NESP Knowledge Brokering and Communications Strategy.

## Website and social media statistics for 2021

- Website
  - ~3,500 views and ~850 visitors
  - 3 highest-traffic pages: Landing page; Research plan 2021; People
  - most came in through direct links on e-newsletter, Facebook, Twitter
- E-newsletter
  - distributed to 1,956 recipients
  - 673 opened the email, 201 clicked something in the email
  - website front page got the most clicks, then People page, then Restoring & Recovering project page
  - 36% open rate vs 26.7% open rate of our peers
  - 11% click rate vs our peers at 5%
- LinkedIn (brand new page)
  - 755 post impressions
  - page likes up 316%
- Twitter (since rebranding in mid-October)
  - 35,000 impressions



- top 3 tweets (impressions) were 1) Indigenous water needs of the Fitzroy, 2) hub website launch, 3) announcing branding change
- top 3 tweets (engagement) were 1) fire and weeds Territory NRM finalist announcement, 2) hub website launch, 3) Kakadu monitoring project
- Twitter (for final month of the year)
  - impressions up 136%
  - profile visits up 107%
  - mentions up 114%
  - followers up by 42 (930 total now)
- Facebook (since re-branding)
  - reach is up 212%
  - page visits up 227%.

## Indigenous partnerships

The Resilient Landscapes Hub will facilitate effective Indigenous participation and Indigenous-led involvement in the research program (co-design through to co-evaluation) through a participatory ‘2-way, right-way’ approach.

This participatory approach is outlined in our Indigenous Partnerships Strategy and will:

- honour the perspectives and aspirations of our Indigenous partners
- be authentic, inclusive and culturally safe
- seek community consensus on pathways to progress
- build the capacity of both Indigenous and non-Indigenous partners
- utilise appropriate metrics to assess effectiveness and efficiency
- be cognisant of the need to take time.

Our participatory approach will be well planned, tailored, targeted and evaluated with our Indigenous partners. The hub will provide meaningful opportunities for our Indigenous partners to contribute to strategies, initiatives, programs and projects from their conception to completion across the entire lifecycle of the hub.

Operationally, our participatory approach will, for example:

- contractually bind all hub partners to the Indigenous Partnerships Strategy
- support induction and training programs that build the cultural competency of our researchers (e.g. True Tracks® training)
- acknowledge community Elders as experts of their Country and ensure they are acknowledged and remunerated appropriately
- initiate procedures to ensure Traditional Owners with the cultural authority to speak for Country are partners of our hub
- celebrate the mutual benefits derived from undertaking research together to find solutions to identified needs.

Progress on the [Indigenous knowledge and managing the Indigenous estate](#) project has been constrained due to the inability to consult with Indigenous research users and other key stakeholders due to COVID-19 restrictions and a desire to manage expectations within

community in regard to where and when on-ground research may occur. A key issue that has limited project development, including the co-design of on-ground research, has been our inability to identify with some degree of certainty the places where the hub will focus its investment.

Nevertheless, consultation and planning has continued during which several key topical areas have been identified for potential investment in strategic research activities. These strategic research activities fall mostly within the purview of the Resilient Landscapes Hub, although a few have links to the activities of other hubs or the cross-cutting initiatives, or are elements within a much larger, cross-hub, collaborative proposal (e.g. Kakadu).

Four key strategic research activities identified during consultations and discussion with Indigenous and non-Indigenous stakeholders are:

- **Joint management.** Stakeholders have expressed a desire to review what has and is currently the status of joint-management arrangements and how these can be improved to fulfil the aspiration of the Indigenous partners in joint management. The question of key performance indicators to assess Indigenous outcomes from joint management (e.g. social and cultural outcomes) and not just biodiversity and economic outcomes is a recurring request, i.e. ‘How will joint management protect our culture and improve wellbeing?’.
- **Indigenous knowledge and language.** Stakeholders are concerned with the loss of traditional knowledge as Elders pass and language is lost. Given language and knowledge are intrinsically linked to the natural environment for Indigenous Australians, such loss also diminishes our understanding of how species and ecological communities function and how they can be managed to ensure persistence.
- **Culturally significant entities.** Provision of greater clarity in regard to what constitute culturally significant entities (species and ecological communities), how Indigenous Australians and their communities define and value them, the protocols and procedures to capture such knowledge, and the subsequent application of this knowledge to the business practices associated with conservation assessments, listing processes, recovery planning, threat abatement, impact assessments and environmental regulation has been a recurring request from many stakeholders.
- **Remote monitoring.** Greater coordination and the provision of data storage and analysis tools are needed to unlock the environmental monitoring capabilities afforded by the use of remote-sensing technologies (remote camera, unmanned aerial vehicles, audio recorders) which have been rapidly adopted by Indigenous land-management practitioners and rangers.

Despite the challenges of hosting in-person meetings with Indigenous partners, we have also been supporting the National Indigenous Environmental Research Network and the Indigenous Facilitators Network.

# Data management

The hub has prepared a Data Management Strategy that aims to:

- manage all data collected through hub activities in accordance with the FAIR (findable, accessible, interoperable and reusable) data principles in a sustainable manner for the long term
- make all hub data and data products freely and openly available unless specific restrictions apply (indefinitely or for a limited time) for reasons of privacy, ethics, sensitivity or commercial-in-confidence
- ensure research outputs are presented in an accessible form that encourages reuse and maximises impact on management, policy-making and decision-making
- ensure published data acknowledges the hub and associated researchers and requires subsequent citation and acknowledgement when reused by implementing appropriate licensing, persistent identifiers and acknowledgment guidelines
- apply existing established research-data management policies, standards and guidelines, and support and engage in the development of evolving standards guiding the direction of national data networks
- promote collaboration and support the work of management agencies, researchers, Indigenous peoples and community groups, through its data management approach.

At the project level, data guidelines will be implemented through project-level research data plans. Completing the data-management plan template has been incorporated into a set of resources for researcher (which includes a handbook) which will form the basis of orientation sessions for project leaders to ensure that the hub delivers on its data strategy. Working with project teams, the hub's Data Wrangler will ensure data-product generation and delivery conforms to FAIR principles where applicable, including by hosting on national repositories for integration into existing systems and databases.

The hub has also been collaborating with data wranglers from other hubs, liaising with data-specific contacts in the partnerships team and working with the Atlas of Living Australia (ALA; further detailed below) to ensure that the hub's approach to data is optimal. This includes refining our internal process for project tracking, particularly around outputs, and ensuring that projects are using best-practice data management from their inception.

Discussions are well advanced with ALA to appoint a jointly funded data wrangler who will work closely with ALA and EcoCommons. This position will commence in the second half of 2022 and further build on the interim work undertaken by the knowledge brokering and communication team.

The HSC has expressed an interest in having a greater focus on data by:

- including data management as an agenda item at its meetings
- coordinating data management across hubs
- understanding the wider data landscape, repositories and portals
- promoting consistent language with commonly understood meanings
- commissioning a paper to allow for consideration of key issues around how the hub will manage and implement its Data Management Strategy.

# Hub-level risk management

All risks identified in the hub's risk management plan are being actively managed. There have been no additional risks included in the hub's risk management plan since the approval of the 2021 research plan.

# Financial information

## Annual financial reporting

Financial information for the Resilient Landscapes Hub is provided at Attachment C. Hubs require strong financial controls for project budgeting, planning and management purposes, including for managing arrangements with partner research organisations.

As advised by the department, it does not have a need, at this time, to receive detailed project-level financial reporting (i.e. actual expenditure by project) because this is provided in Attachment C to the 2021 research plan. Financial reporting against the 4 main expenditure categories – research (applied science, decision tools and practical management options), knowledge capture, communication and administration – are sufficient for the 2021 annual progress report acquittal.

# Attachments

- [Attachment A](#) – Resilient Landscapes Hub research projects and outputs
- Attachment B – Resilient Landscapes Hub impact stories
- Attachment C – Resilient Landscapes Hub financial information, asset schedule and audit report.