

National Environmental Science Program

Sustainable Communities and Waste Hub
research plan 2023 – Attachment B
project plans – IP1



Project IP1.03 – Sustainable People–Environment Interactions

Project type: Hub research project	
Project status: Existing project seeking amendment to scope and budget	
Cross-cutting initiative:	No
Project start date: 01/04/2023	Project end date: 31/12/2026
Project leader details:	
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Project description

Project summary

Links between the health of people and the health of ecosystems and the environment are being increasingly recognised in research, policy and programs. Great strides have been taken in national and international research exploring these links between human wellbeing, and environmental and ecosystem health, including through the National Environmental Science Program (NESP). However, critical gaps remain in our knowledge and in our ability to translate knowledge to create more sustainable and liveable communities.

Our aim is to build on work done in NESP 1 Clean Air and Urban Landscapes Hub, and the Sustainable Communities and Waste Hub RP2021 and RP2022 to integrate across different knowledge systems (science disciplines, experiential and Indigenous knowledges) to create inclusive and reflexive national approaches to sustainable people-environment interactions. Through research and collaboration, and using a Nature-based Solutions (NbS) lens, we will develop knowledge and tools to inform and stimulate change for the shared benefit of humans and nature via two concurrent and mutually reinforcing projects:

Project IP1.02.01: Nature connection

Project IP1.02.02: Water sensitive and liveable communities

Through these projects, this impact priority area aims to empower regional, remote and Indigenous communities to become more sustainable and liveable and help support the delivery of *Australia's Strategy for Nature 2019–2030*, *National Climate Resilience and Adaptation Strategy 2021–2025* and a renewed *National Water Initiative 2004*.

Project description

In Research Plan 2023, Impact Priority 1 (IP1) is organised into two concurrent and mutually reinforcing projects that support two of the three cross-cutting themes of the Hub: sustainable communities and regional, remote and Indigenous communities.

RP 2023 research builds on year one (RP2021) and year 2 (RP2022) in which extensive stocktaking, engagement and co-design have been undertaken with industry, community and government participants. In this revision of the projects, we have clarified the multi-year plan, outcomes and milestones and further developed opportunities for collaboration across hubs and with partners and research-users.

Project IP1.02.01: Nature connection – UTAS led

The problem

The recently released *2021 Australia State of the Environment* concludes ‘Overall, the state and trend of the environment of Australia are poor and deteriorating as a result of increasing pressures’. This poor environmental quality is negatively impacting the wellbeing of Australians. Along with under-funding, and poor enforcement of existing legal protections, a societal lack of knowledge and culture of apathy contribute to these poor outcomes¹.

As an antidote to this trajectory, *Australia’s Strategy for Nature 2019 - 2030* sets out a vision for a nation of people who connect with, value and care for nature. Part philosophy and part practice, ‘nature connection’ refers to our human affinity with non-human nature, and the associated emotions and behaviours of this integration. Various frameworks propose that nature connectedness leads to caring for nature which leads to taking actions to protect it². Increasing people’s connection to nature can bolster support for environmental initiatives such as tree planting, floodplain management and habitat protection and lead to effective species and ecological community management and recovery³. Connection to nature, we know, is positively affected by use and experience in and with nature. Additional factors that influence our nature connection are emerging; such as, genetics, nature orientation, environmental quality, and socio-cultural and sensory (non-material) factors. People that score highly in nature connectedness also tend to score highly on measures of eudemonic wellbeing (personal growth, autonomy, purpose in life, environmental mastery, self-acceptance, positive relations to others and vitality) suggesting that they are flourishing and performing well psychologically, happier (positive affect) and more satisfied with life⁴.

However, there are complicating factors at play. Nature connection is adversely impacted by issues of access, engagement and exposure. Rapid urbanisation is leading to many city dwellers having fewer opportunities to interact with the natural environment, with disproportional impacts on marginalised communities. Changing environments and human populations are leading to the distancing of people from nature and altered people-species interactions – sometimes leading to conflict with species

¹ Russell-Smith, J, Lindenmayer, D, Kubiszewski, I, Green, P, Costanza, R, Campbel, A., 2015. Moving beyond evidence-free environmental policy. *Frontiers in Ecology and the Environment* 13, 441-448.

² For example: Mayer, FS, Frantz, CM, 2004. The connectedness to nature scale: A measure of individuals’ feeling in community with nature. *Journal of Environmental Psychology* 24, 503–515. <https://doi.org/10.1016/j.jenvp.2004.10.001>

Schultz, P, 2002. Inclusion with nature: The psychology of human-nature relations. In *Psychology of sustainable development*, pp. 61-78. Springer, Boston, MA.

³ Soga, M, Gaston, KJ, Yamaura, Y, Kurisu, K, Hanaki, K. 2002. Both direct and vicarious experiences of nature affect children’s willingness to conserve biodiversity. *International journal of environmental research and public health*. 13(6):529.

⁴ Pritchard, A, Richardson, M, Sheffield D, McEwan K. 2020. The relationship between nature connectedness and eudaimonic well-being: A meta-analysis. *Journal of Happiness Studies* 21(3):1145-67.

(including threatened species) and human wellbeing. Nature engagement can sometimes lead to disillusionment and despair about the state of the environment, and the hopelessness of human efforts to improve things⁵. Such negative experiences or disengagement with nature can make people less inclined to support NbS such as urban greening and sustainable management practices⁶.

There are significant gaps in our understanding of nature connection in Australia and the mechanisms that link our experiences of nature with the positive human and natural benefits that we hope will result. Much of the research on nature connection and pro-environmental attitudes, behaviours and human wellbeing has been conducted overseas and we know little of how nature connection and its benefits vary across the diverse socio-ecological contexts of Australia. Furthermore, little is known about connection with more abstract forms of nature, such as dark skies and deep oceans, and about the influence of nature connection on individual attitudes and behaviours and structural changes that can lead to maximising that relationship for positive human and environmental outcomes. By improving our understanding of how people connect with nature, and how nature connection benefits humans and the environment, we can develop strategies, including nature-based solutions, to generate positive change.

The following key research questions were identified as priorities during the co-design process with the Department and other research-users:

Research Stream 1: What are the characteristics of nature connection across Australia and in what ways does connecting with nature increase or activate people's values for nature, motivate pro-environmental and sustainability behaviours and impact wellbeing?

Research Stream 2: How can new and existing strategies that enable nature connection (e.g. urban greening and NbS) be scaled up and out and made resilient for greater shared environmental, community and national impacts?

Research Stream 3 (Indigenous-led): How can research and capacity building enable cultural connection, and support sovereignty and land and sea management/caring for country by Australian Indigenous communities?

Our response

The Nature Connection Project aims to increase benefits for humans and the environment derived from valuing nature, through understanding nature connection in the Australian context, and identifying and supporting strategies, like NbS, to maximise positive impacts on health, wellbeing and sustainability for all Australians.

As a starting point for creating a nation of people who value nature, we need to build an understanding of what valuing and connecting to nature means to Australians across a range of environments from proximate and tangible, like local parks and bushlands, to distant and abstract, like dark skies and deep oceans. We need to explore what enables or hinders nature access and/or experience, and the mechanisms that generate the desired benefits. From a deep, place-based understanding, we can develop strategies to address barriers and maximise benefits into the future.

Research in IP1.02.01 will support reporting on Australia's Strategy for Nature, and, by linking nature with health and wellbeing, Australia's State of the Environment. What we learn about nature

⁵ Soga, M., & Gaston, K. J. 2022. The dark side of nature experience: Typology, dynamics and implications of negative sensory interactions with nature. *People and Nature*. <https://doi.org/10.1002/PAN3.10383>

⁶ Lyytimäki, J. 2014. Bad Nature: Newspaper Representations of Ecosystem Disservices. *Urban Forestry and Urban Greening* 13(3): 418–24. <https://doi.org/10.1016/j.ufug.2014.04.005>.

connection and its benefits across the country will support the development of environmental policies and strategies that have co-benefits for people and nature. Outcomes from our investigations into the scaling up and out of NbS can improve sustainability and liveability across the country including into regional, remote and Indigenous communities.

Methodology

We apply a transdisciplinary, co-design and co-creation approach to a multi-phase action research project. This project has a top-down national scale component, an intensely place-based component and a continued focus on supporting Tasmanian Aboriginal community-members to develop an Indigenous-led project. Through interviews, surveys, workshops and observations we will gather mixed data from a range of stakeholders, many of whom are involved in nature connection activities, to develop a rich, multifaceted understanding of nature connection and how to realise its potential benefits.

Case studies will be used to advance our research and collaborations. The City of Launceston urban greening project and the Tasmanian NE Bioregional Network's health benefits of participation in ecological restoration programs are being examined through RP2022. Through RP2023, additional case studies will be identified and developed for RP2024 and beyond.

Outcomes and outputs

Our key outcomes will be the quantifying, characterising and mapping of Australian experiences and impacts of nature connection and pathways for a more nature-connected society and empowered Indigenous communities. Our outputs, along with traditional research publications, will be a national dataset of nature connection, an interactive storymap/database of nature connection stories, and a suite of tools for evaluating, qualifying and translating nature connection experiences and impacts for use by diverse stakeholders and research-users.

Linkages

Our work will build on knowledge created in NESP 1 Clean Air and Urban Landscapes Hub on the benefits of engaging with nature. We are collaborating with the Resilient Landscapes Hub on understanding how nature connection relates to private land management decisions. We are continuing to explore linkages with the Marine and Coastal Hub and the Climate Systems Hub on nature connection and NbS. Within our Hub, we are exploring connections across IP areas on improving liveability and sustainability in remote, regional and Indigenous communities and understanding the motivations for sustainability behaviours.

Project IP1.02.02: Water sensitive and liveable communities – Monash and Curtin co-led

The problem

Australian cities and regions are confronted with complex challenges exacerbated by climate change that threaten the health and sustainability of people and nature. Local government is on the frontline of dealing with these challenges because it is the level of government closest to communities and responsible for most local infrastructure. There are 537 councils across the nation, but only a small proportion have made real progress on sustainable transitions to more water sensitive and liveable communities. A limiting factor has been the absence of an authoritative national platform for accessing science, tools and guidance.

This situation is most acute in regional and remote local government areas, as highlighted in the recently released *2021 Australia State of the Environment (SoE)* report which details poor and declining condition of natural and social-cultural capital across many parts of regional and remote Australia. Highlighted in the SoE report is an urgent need to structurally empower Indigenous voices and participation in all decisions that impact on their rights of self-determination and on exercising their

stewardship of Country. A key finding of the SoE report was that Indigenous-led and governed caring for Country, undertaken via holistic and long-term programs, is key to future success.

Similarly, the Productivity Commission (PC)⁷ highlights systemic failings in the delivery of safe and secure water services to regional and remote communities resulting in poor health and liveability outcomes, compared with national benchmarks and standards. The PC advocates for a re-designed national water policy to include objectives and targets, co-designed with Indigenous Australians, to improve Indigenous access to water and involvement in water management centred on the concept of “cultural flows”. This concept calls for substantial increases to Indigenous water access and more control in decision-making. The recommendations of the PC however do not address structural problems underlying inequities in Indigenous water rights within the policy architecture and legal foundations governing water management in Australia.

The Water Services Association of Australia (WSAA) commissioned research⁸ to review remote water services in Australia, to elevate these issues in the national conversation, and to recommend ways to close the gap in the delivery of safe drinking water including water quality and water security. Preliminary findings from this research found that despite many stakeholders across Australia leading many important initiatives in “Closing the Gap” for Indigenous Australians, there are frequent examples about remote communities with limited and sometimes no access to safe drinking water, poor health outcomes associated with lack of clean and reliable water supplies, and unclear accountabilities for providing water services.

There is a clear and urgent call in the national discourse for research to support regional and remote communities and their local institutions to develop more effective ways to empower their voice and sovereignty in decisions that impact their way of life.

The following key research questions were identified as priorities during the co-design process with the Department and other research-users:

Research Stream 1: What co-designed research is needed to address research-user identified and prioritised gaps in knowledge capital and improvements to existing knowledge products that can be scaled out to benefit regional and remote communities; and

Research Stream 2 (Indigenous-led): How can sovereign water rights, knowledges, practices, values and aspirations of Indigenous peoples transform water governance and scientific frameworks for better water outcomes for Country, culture and community?

Our response

IP1.02.02 aims to address the needs identified during co-design through two concurrent and mutually reinforcing streams of research that are both proposed to run for the period 2023-2026 to address the research questions posed.

Research undertaken in IP1.02.02 will improve access to fit for purpose knowledge capital and products for regional and remote communities and will provide evidence-based frameworks and

⁷ Productivity Commission 2021, National Water Reform 2020, Inquiry Report no. 96, Canberra.
<https://www.pc.gov.au/inquiries/completed/water-reform-2020/report/water-reform-2020.pdf>

⁸ WSAA Preliminary report: Improving water services to remote First Nations communities
<https://www.wsaa.asn.au/news/release-preliminary-report-improving-water-services-remote-first-nations-communities>

models to structurally empower Indigenous voices and participation in decisions that impact on their rights of self-determination and on exercising their stewardship of Country.

Methodology

The research design will apply a transdisciplinary, co-design and co-creation approach.

Research Stream 1 will involve IP1 researchers and research-users co-designing research scopes and methods to address prioritised knowledge gaps and improvements to existing knowledge products. It is expected that subsequent funding and delivery of that research would be undertaken mostly outside of NESP with the outputs of the research captured within the National Shared Learning Platform conceptualised in RP2022 (IP1.02.02).

Research Stream 2 will adopt Indigenous research methodologies and placed based participatory action research to inform a nationally consistent approach to the structural empowerment of First Nations peoples in decisions that impact outcomes for Country, culture and community. In the first year (2023) the research design will convene:

- Indigenous scholars and Indigenous water practitioners in a three workshop series to explore: aqua nullius (workshop 1), Indigenous water science practices and governance (workshop 2), and strategies to negotiate the use of Indigenous science methods and water governance (workshop 3).
- A colloquium shaped by the above workshop outcomes aimed at creating the conditions for an Indigenous-led review of the work required to transform the architecture of the Australian water sector, including legislation and institutions, to allow the re-enfranchisement of Indigenous water science and governance.

For the subsequent years (2024-2026), the research design adopts place based participatory action research and case studies of Indigenous led governance and institutional frameworks and models for Indigenous water outcomes.

Outcomes and outputs

Our key outcomes will be identification of the system changes necessary to deliver Indigenous water outcomes. The project will also provide on-going engagement with all levels of government, water authorities and regional and remote communities to identify, prioritise and address, through new research, gaps in knowledge capital and improvements to existing knowledge products that can be scaled out to benefit regional and remote communities.

Our research builds on the significant work already done by leading Indigenous academics and advocates. The Committee on Aboriginal Water Interests (CAWI) for example is an important reference point for our work.

Our outputs, along with traditional research publications, will include:

- Co-designed research scopes and methods to address research-user identified and prioritised gaps in knowledge capital and improvements to the interoperability of existing knowledge products that can be scaled out to benefit regional and remote communities.
- Indigenous water research frameworks and methods.
- Methods that bring together knowledge systems to create frameworks and models for Indigenous led and bi-cultural water governance.

Linkages

IP1.02.02 has synergies with other research occurring within the Hub that is engaging with regional and remote Indigenous communities, in particular research considering local governance and

institutional frameworks and models (e.g. Project IP5.02.03: Governing community-based recovery and circular economy initiatives). Regular coordination meetings with other SCaW Hub research leaders will ensure these synergies are leveraged.

Integrating/cross-cutting (cross-project philosophy)

There are two key integrating concepts that provide opportunities for cross-project, cross-IP and cross-hub collaborations, and are being recognised as key concepts within environmental research and policy:

- Nature-based solutions (NbS) is an approach that is becoming widely adopted in global policy and standards (e.g. International Union for Conservation of Nature (IUCN) Global NbS Standard) and emerging in policy and programs in Australia. A NbS approach encourages transdisciplinary methodologies for co-design and co-creation of research to address environmental, ecological and human health and wellbeing challenges, that achieve biodiversity co-benefits. It fosters multiple benefits for people and place and promotes the resilience of social–ecological systems to environmental change. At the same time, NbS have been criticised as being ‘green washing’ and not reflecting Indigenous interests. NbS can have negative impacts if undertaken without considering local context and a changing environment. Research that better understands the role of NbS in the Australian context can contribute to strengthening government policy and international reporting requirements, as well as environmental programs, the goals of the NESP program, our Hub, and our IP goal of liveable, nature-connected and sustainable communities. Key research questions include how to apply NbS in the unique Australian social and environmental context, how to scale-up and scale-out solutions to achieve national outcomes, and to understand the resilience of NbS themselves to the challenges they are designed to address e.g. climate change and urban heat.
- Genuine and meaningful engagement with Aboriginal and Torres Strait Islander communities is central to IP1. We are actively developing connections and a funding structure conducive to co-designing and co-creating Indigenous-led research in both projects. For further details, see ‘Pathway to Impact’ and ‘Indigenous consultation and engagement’.

Is this a cross-hub project?

Project IP1.02.01: Nature connection: No

While this is not a cross-hub project we have consulted with the Resilient Landscapes (RL) Hub as they are undertaking similar surveys in Tasmania to determine the role of nature connectedness in private land management. Through this process, we have ensured questions in the survey are similar to allow for cross study comparison and we will work together (through in-kind contributions) to understand the dynamics of nature connection, wellbeing and land management.

Project IP1.02.02: Water sensitive and liveable communities: No

While this is not a cross-hub project, we have identified several opportunities for cross-hub research including the Climate Science Hub (heat and climate adaptation in urban and regional communities), Resilient Landscapes Hub (nature connection and wellbeing and “cultural water”) and Marine and Coastal Hub (blue and green ecosystem services and health, nature-based solutions). SCaW Hub researchers from Monash, Curtin, CSIRO and UTAS are well connected with other hub researchers at their respective institutions through existing relationships. We will continue to explore these collaborations.

Our researchers are also involved in, and will seek synergies with the nascent Healthy Environments and Lives Network (HEAL). This recently-formed network is supported by a \$10 million grant through the National Health and Medical Research Council's *Special Initiative on Human Health and Environmental Change*. It brings together 100 experts across Australia to catalyse research, knowledge exchange and research translation into policy and practice that will bring measurable improvements to our health, the Australian health system, and the environment.

Does this project contribute to a cross-cutting initiative?

Project IP1.02.01: Nature connection: No

Project IP1.02.02: Water sensitive and liveable communities: No

This project may in the future contribute to the Climate Adaptation Initiative led by the Climate Systems Hub via research that supports improvements in the evidence base for adaptation decision-making for climate resilience. Several members of the SCAW Hub and Climate Systems Hub met in December 2021 to discuss synergies in urban climate and air quality across the two hubs. Overlapping interests were identified in these initial conversations that we will progress throughout 2022 and 2023 with an aim to develop a cross-Hub collaboration.

Pathway to impact

Outcomes
<p>From the outset, we will embed a pathway to impact in our processes by engaging with research-users across urban, regional, remote and Indigenous communities to identify clear research needs relevant to policy, programs, management and international reporting, seeking participation and feedback on research plans, and translating knowledge into usable forms in culturally sensitive and context-specific ways.</p> <p>The short-term outcomes from the projects will include:</p> <p>Informing policy and frameworks</p> <ul style="list-style-type: none"> • Data and knowledge to enable federal, state and local governments to better report on national (e.g. <i>Australia's Strategy for Nature 2019–2030</i>, <i>National Climate Resilience and Adaptation Strategy 2021–2025</i>, <i>National Water Initiative</i>, <i>Closing the Gap</i>, <i>Protecting Victoria's Environment – Biodiversity 2037</i>, etc), and international (e.g. Sustainable Development Goals (SDGs), post-2020 Global Biodiversity Framework, Ramsar triennial reporting to the conference of the Contracting Parties, post United Nations Framework Convention on Climate Change Conference of Parties 26, World Heritage Convention, IUCN) policies, outcomes and obligations. • Foregrounding Indigenous water research frameworks and methods – developing, identifying, and sharing ontologies, governances and values to better inform and develop water policy, frameworks and management in Australia. <p>Community benefits</p> <ul style="list-style-type: none"> • Identification of the governance and water system changes necessary to deliver water outcomes supportive of Indigenous communities.

- Greater understanding of knowledge exchange/capacity building for regional and remote communities, including championing Indigenous thought leaders and change champions to challenge the water and land management sectors
- Training and leadership to support Indigenous-led transformation in the water sector/industry and land and sea management.

Economic Benefits

- Data and knowledge to support economic evaluations of the benefits of a society that connects with and values diverse forms of nature.

Environmental Benefits

- Greater understanding of the characteristics and benefits of nature connection across Australia and the strategies that can support Australians valuing, connecting with and benefiting from nature, while creating positive environmental outcomes.
- Knowledge and tools to effectively and equitably support nature connection, urban greening and NbS across rural, regional and remote Australia.

Partnerships & Collaboration:

- New and strengthened partnerships among researchers, the Department, state environment agencies/departments, Indigenous groups, local communities, NGOs and other research-user partners.
- Greater understanding of methods that bring together knowledge systems to create frameworks and models for Indigenous-led and bi-cultural water governance and land management

The expected longer-term outcomes of the projects include:

Informing policy and frameworks

- Data and knowledge to enable federal, state and local governments to better implement and shape national (e.g. *Australia's Strategy for Nature 2019–2030*, *National Climate Resilience and Adaptation Strategy 2021–2025*, *National Water Initiative*, *Closing the Gap*, *Protecting Victoria's Environment – Biodiversity 2037*, etc), and international (e.g. *Sustainable Development Goals (SDGs)*, *post-2020 Global Biodiversity Framework*, *Ramsar triennial reporting to the conference of the Contracting Parties*, *post United Nations Framework Convention on Climate Change Conference of Parties 26*, *World Heritage Convention*, *IUCN*) policies and obligations.

Community benefits

- Improved capacity in local governments and Indigenous communities through increased availability of tools/models/platforms/knowledge, understanding of specific community needs and the inclusion of more diverse perspectives in environmental decision-making to enable better planning of our communities, including implementation of NbS and sustainability transitions that improve liveability, sustainability, resilience, biodiversity, and health and wellbeing in our communities.

Economic Benefits

- Economic benefits from improved wellbeing of a country that engages and connects with nature, including reducing productivity losses, money wasted in healthcare, and heat-related health risks

- Improved management of green infrastructure assets by planting/maintaining greenspaces that are not climate resilient or not wanted by the community.
- Business triple bottom line benefits from incorporating NbS, and new business opportunities in nature-based tourism and healthcare.

Environmental Benefits

- Evidence, tools, capacity, interest, and partnerships for creating future-proof positive people–environment interactions in urban, regional, remote and Indigenous communities and the resultant benefits for biodiversity, and environments that come from a society connected with and caring for nature

Partnerships & Collaboration:

- New partnerships across the consortia and partners to foster innovation and creative solutions to improve people–environment interactions across Australia.
- Structurally empower Indigenous voice and participation in decisions that impact on their rights of self-determination and on exercising their stewardship of Country.

Research-user	Engagement and communication	Impact on management action	Outputs
<p>Project IP1.02.01:</p> <p>DCCEEW: Biodiversity Policy/ Biodiversity Policy & Water Science Branch/ Biodiversity Conservation Division; Indigenous Water Policy/ Basin Policy, Science & Indigenous Branch/Water Division; Science Policy & Coordination/Basins Policy, Science & Indigenous Branch/Water Division; Blue Carbon & International Partnerships/Environmental Science & Nature Based Solutions Branch/Biodiversity Markets, Economics & Environmental Science Division; International Environment & United Nations/International Strategy & Engagement Branch/ Portfolio Strategy Division; Heritage Strategies/Heritage Branch/Heritage Reef & Ocean Division; Migratory Species/Protected Species and Communities Branch/ Biodiversity Conservation Division; Science and Management Effectiveness/ Marine & Island Parks Branch/Parks Australia Division; Parks Science and Strategy/Booderee & Business Services Branch/</p>	<p>Research-user needs have been and will continue to be identified through the co-design process including via facilitated workshops, focus groups, interviews, user surveys and feedback/review of research projects as they develop. Through the co-design process we will update research-users about research outputs which will also be made accessible via the Hub website.</p> <p>Research-users will help identify the format of knowledge products to foster their use in policy-making, planning and management. We will collaborate with our Hub Knowledge Broker and the Communications and Media Manager to further ensure appropriate design and reach of the knowledge products.</p> <p>Where appropriate, research will involve research-users in the co-production of</p>	<p>The co-design process itself as well as collaborative research efforts are already influencing policy (e.g. <i>City of Launceston's urban greening strategy</i>) and will continue to influence policy development and program design of our partners.</p> <p>Research outcomes on nature connection and its benefits will be used to assist in reporting for: <i>Australia's Strategy for Nature 2019 – 2030</i> (across all goals), <i>2021 Australia State of the Environment</i> (especially the wellbeing implications for the chapters), and international reporting obligations (e.g. UN SDGs, post-2020 Global Biodiversity Framework, Ramsar triennial reporting)</p> <p>Outputs from the national survey will be used to benchmark the Victorians Valuing Nature survey results and inform the</p>	<p>Co-designed research plans (RP2024-RP2027)</p> <p>Summary notes and reports from co-design sessions</p> <p>Research translated into clear, digestible formats suitable for use by decision-makers including fact sheets, reports and audio-visual formats</p> <p>A national, interactive audio-visual data base of nature connection stories and data</p> <p>A suite of tools (e.g. guidelines, survey templates) for evaluating, qualifying and translating nature connection experiences and impacts.</p> <p>Academic publications</p>

<p>Parks Australia Division; Wetlands/Wetlands, Policy & Northern Water Use Branch/Commonwealth Environmental Water Office; Science Partnerships/ Environmental Science & Nature Based Solutions Branch/Biodiversity Markets, Economics & Environmental Science Division</p> <p>DAFF: National Soil Policy/ Soils & Nature Based Solutions/ Portfolio Strategy & Climate Policy/Agriculture & Food Policy & Research Group</p> <p>State environment departments Department of Environment, Land, Water and Planning (DELWP) Victoria; Queensland Department of Environment and Science (DES); Tasmanian Department of Natural Resources and Environment (DNRE)</p> <p>Local councils Knox, Brighton, Launceston</p> <p>Other nature-based research users (see project contacts section)</p> <p>Indigenous communities e.g. melythina tiakana warrana Aboriginal Corporation (MTWAC)</p>	<p>knowledge throughout the life of the research project.</p> <p>We will also regularly update the Department about progress, outputs and outcomes though quarterly reporting.</p>	<p><i>Protecting Victoria's Environment – Biodiversity 2037</i> strategy</p> <p>Outcomes will support partner organisations to quantify and enhance the impacts of their conservation programs (e.g. NE Bioregional Network and Landcare Tasmania ecological restoration programs) for both participant and environmental benefit.</p>	
<p>City of Melbourne, Knox City Council, TierraMar, RBGV, Nursery and Garden Industry Victoria (NGIV), Tree Dimensions, community groups, Traditional Owners</p>	<p>Building on the work of the NESP 1 Clean Air and Urban Landscape (CAUL) Hub, and existing research on 'future urban forests' with all partners, we have identified the need for a workshop to better understand how NbS will be resilient to the effects of climate change they are designed to ameliorate</p> <p>We will work with industry partners (e.g NGIV) to codesign and promote useable products</p>	<p>Participation in the workshop will increase literacy around the resilience of NbS, and the outputs of the workshop will be used to inform the design of management of NbS to increase resilience to climate change, to ensure the benefits of NbS accrue to a broad cross-section of the community and Traditional Owners.</p> <p>Working with industry partners and codesigning outputs will facilitate the translation, dissemination and impact of knowledge</p>	<p>Workshop and report on the resilience of Nature-based Solutions 'to climate change' and 'for climate adaptation'</p> <p>Other outputs codesigned with Industry partners</p>
<p>Project IP1.02.02: DCCEEW: Indigenous Water Policy/Basin Policy, Science & Indigenous Branch/Water</p>	<p>Research-user needs have been and will continue to be identified through the co-design</p>	<p>Research findings and outputs will support partner organisations to improve water sensitive</p>	<p>Co-designed research plans (RP2024-RP2027)</p>

<p>Division; Science Policy & Coordination/Basins Policy, Science & Indigenous Branch/Water Division; Parks Science and Strategy/Booderee & Business Services Branch/Parks Australia Division; Wetlands/Wetlands, Policy & Northern Water Use Branch/Commonwealth Environmental Water Office; Science Partnerships/Environmental Science & Nature Based Solutions Branch/Biodiversity Markets, Economics & Environmental Science Division</p> <p>DITRDCA – Regional Development. Local Government and Regional Recover/ Cities and Territories Division</p> <p>State Government: Department of Environment, Land, Water and Planning Victoria; Queensland Department of Environment and Science; WA Department of Communities; WA Department of Water; Development WA; NT Department of Environment, Parks and Water Security; SA Department of Environment and Water.</p> <p>Local Governments and Aboriginal Land Councils: TBC</p> <p>Water Corporations and peak bodies: Water services Association of Australia, Water Research Australia; WA Water Corporation, NT Power and Water, SA Water</p> <p>Indigenous communities: TBC</p> <p>One Basin CRC MDBA – Environmental Research Program</p>	<p>process including via facilitated workshops, focus groups, interviews, user surveys and feedback/review of research projects as they develop. Through the co-design process we will update research-users about research outputs which will also be made accessible via the Hub website.</p> <p>Research-users will help identify the format of knowledge products to foster their use in policy-making, planning and management. We will collaborate with our Hub Knowledge Broker and the Communications and Media Manager to further ensure appropriate design and reach of the knowledge products.</p> <p>Where appropriate, research will involve research-users in the co-production of knowledge through the life of the research project.</p> <p>We will also regularly update the Department about progress, outputs and outcomes through quarterly reporting.</p>	<p>and liveable outcomes for communities across Australia, particularly for regional and remote communities.</p> <p>The research outcomes will be used by all levels of government to inform structural reform of current laws, policies, strategies, guidelines, standards, and practices impacting the provision of essential water services, particularly to regional and remote communities.</p> <p>The research outcomes will support implementation of <i>National Climate Resilience and Adaptation Strategy 2021–2025</i> and a renewed <i>National Water Initiative 2004</i>.</p>	<p>Summary notes and reports from co-design sessions, workshops and colloquiums</p> <p>Research translated into clear, digestible formats suitable for use by decision-makers including fact sheets, reports and audio-visual formats</p> <p>Academic publications</p>
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Indigenous consultation and engagement

Recognition of the diversity of Indigenous communities in Australia is embedded in our Research Plan 2023, which is guided by the Hub’s Indigenous Partnerships Strategy.

Aboriginal and Torres Strait Islander knowledges, cultures and land management practices vary greatly across the country. Colonisation and its aftermath have had varying impacts on culture and

community. We recognise and acknowledge the rights of our Indigenous peoples, which are covered in the United Nations Declaration on the Rights of Indigenous Peoples, i.e. the right to self-determination and *free, prior and informed consent*. In line with the Hub’s Indigenous Advisory Committee, we are following the philosophy that NESP Hubs are proceeding from ‘for us’ in NESP 1, to the current ‘with us’ stage in NESP 2, to be ‘by us’ in NESP 3.

Through a co-design process, IP1 aims to be a Category 1 project (of the Hub’s agreed three-category Indigenous engagement approach), meaning that projects will co-design outcomes with Indigenous people to ensure mutual benefits are achieved. We will ensure close consultation with the Hub’s Indigenous Advisory Group through our Senior Indigenous Facilitator, and Tasmanian Aboriginal man Rob Anders, to co-design consultation, engagement and research methods and practices that are appropriate and always acknowledge and respect Indigenous knowledges and participation. We will not repeat the mistakes of western academic researchers in the past. The days of non-Indigenous researchers flying in and flying out to *do* research *on* Indigenous communities are long gone.

We have already built relationships with members of Indigenous organisations (e.g. MTWAC) that we hope will lead to enduring partnerships. Through RP2023 and in the co-design of RP2024, we will continue to engage with these organisations to enable us to undertake and support co-designed and Indigenous-led research projects. We recognise that building these relationships takes time, and that they do not necessarily align seamlessly with academic and bureaucratic timeframes. Through Rob Anders, who is an active community member, we understand that Aboriginal communities are busy at the moment with consultation on a range of policy/legislative reform (e.g. new Aboriginal heritage legislation, review of the Aboriginal Lands Act, *Closing the Gap*, Truth-Telling and Treaty conversations), and that the capacity to take on additional consultation is limited. We are engaging with these communities at the pace and form that best suits them. For example, we are organising on-country cultural awareness training with MTWAC (employing local Aboriginal community members to run the training) and have involved their chairperson in one of our 2022 co-design workshops.

We are also liaising with the Marine and Coastal Hub, the Resilient Landscapes Hub and the Climate Systems Hub to coordinate engagement with Tasmanian Aboriginal communities, to avoid consultation fatigue and ensure engagement is respectful of the time of participants. We will also liaise with the Department to explore connections with the multi-jurisdictional Indigenous-led Indigenous Ecological Knowledge (IEK) Group.

Which Three-category approach the project meets:	Co-design	Collaborate	Communicate
Project IP1.02.01: Nature connection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project IP1.02.02: Water sensitive and liveable communities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Project milestones

Project IP1.02.01: Nature connection

Milestones	Due date	Responsible person
Milestone 1 - Annual report on project's RP2022 activities	7 April 2023	Emily Flies (UTAS)
Milestone 2 – Signing of project contract	30 June 2023	Emily Flies (UTAS)
Milestone 3 – Co-design workshops for RP2024 commenced	1 August 2023	Emily Flies (UTAS)
Milestone 4 – First on-country Aboriginal cultural awareness training completed	1 August 2023	Emily Flies (UTAS)
Milestone 5 – Detailed project RP2024 developed	29 August 2023	Emily Flies (UTAS)
Milestone 6 – Report on strategies for equitable urban greening and nature connection in regional communities	31 December 2023	Jason Byrne (UTAS)
Milestone 7 - First draft of an Indigenous-led project developed	31 December 2023	Emily Flies (UTAS)
Milestone 8 – Co-designed national survey examining nature connection and its benefits delivered	31 December 2023	Emily Flies (UTAS)
Milestone 9 – Workshop and report on the resilience of Nature-based Solutions 'to climate change' and 'for climate adaptation' delivered	31 March 2024	Dave Kendal (UTAS)
Milestone 10 - Annual report on project's RP2023 activities	7 April 2024	Emily Flies (UTAS)
Milestone 11 – Detailed project RP2025 developed	31 August 2024	Emily Flies (UTAS)
Milestone 12 – Co-design of ICIP agreements for Indigenous-led projects commenced	31 August 2024	Rob Anders/Emily Flies (UTAS)
Milestone 13 – Report and infographic characterising nature connection and benefits in Australia	31 December 2024	Emily Flies (UTAS)
Milestone 14 – Indigenous-led project commenced	31 December 2024	Rob Anders/Emily Flies (UTAS)

Milestones	Due date	Responsible person
Milestone 15 – Story-telling data collection completed at first site (Tasmania) and data collection begun at second site (TBD)	31 December 2024	Pauline Marsh (UTAS)
Milestone 16 – Launch of interactive story database using data from first site (Tasmania)	31 March 2025	Pauline Marsh (UTAS)
Milestone 17 - Annual report on project's RP2024 activities	7 April 2025	Emily Flies (UTAS)
Milestone 18 – Detailed project RP2026 developed	29 August 2025	Emily Flies (UTAS)
Milestone 19 – Tailored plan for Indigenous capacity building delivered	29 August 2025	Rob Anders/Emily Flies (UTAS)
Milestone 20 – Review of national and international literature pertaining to nature connection, health and pro-environmental behaviours. Storytelling data collection completed at second site (TBD) and begun at third site (TBD)	31 December 2025	Pauline Marsh (UTAS)
Milestone 21 – Co-designed national survey examining nature connection and its benefits delivered	31 December 2025	Emily Flies (UTAS)
Milestone 22 – Addition of second site (TBD) data to interactive story telling database. Report detailing mechanisms, enablers, and barriers to connecting, valuing and positive change delivered.	31 March 2026	Pauline Marsh (UTAS)
Milestone 23 - Annual report on project's RP2025 activities	7 April 2026	Emily Flies (UTAS)
Milestone 24 – Detailed project RP2027 developed	29 August 2026	Emily Flies (UTAS)
Milestone 25 – Story telling data collection completed at third site	31 December 2026	Pauline Marsh (UTAS)

Milestones	Due date	Responsible person
Milestone 26 – Addition of data from third site (TBD) to interactive story telling database Nature Connection Toolkit for stakeholders and research-users delivered	31 March 2027	Pauline Marsh (UTAS)
Milestone 27 - Annual report on project's RP2026 activities	7 April 2027	Emily Flies (UTAS)

Project IP1.02.02: Water sensitive and liveable communities

Milestones	Due date	Responsible person
Milestone 1 - Annual report on project's RP2022 activities	April 2023	Malcolm Eadie (Monash)
Milestone 2 – Signing of project contract	June 2023	Malcolm Eadie (Monash)
Milestone 3 – Research user identified research priorities to address research user identified and prioritised gaps in knowledge capital and improvements to existing knowledge products	August 2023	Malcolm Eadie (Monash) / Mohammad Swapan (Curtin) / Guy Barnett (CSIRO)
Milestone 4 - Detailed project RP2024 developed	August 2023	Malcolm Eadie (Monash)
Milestone 5 – National convening of Indigenous scholars and Indigenous water practitioners to explore: aqua nullius (workshop 1), Indigenous water science practices and governance (workshop 2), and strategies to negotiate the use of Indigenous science methods and water governance (workshop 3).	October 2023	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 6 – Workshop reports	November 2023	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 7 - Convening of a colloquium shaped by the above workshop outcomes aimed at creating the conditions for an Indigenous-led review of the work required to transform the architecture of the Australian water sector, including legislation and institutions, to allow the enfranchisement of Indigenous water science and governance.	February 2024	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 8 – Colloquium report	March 2024	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 9 - Annual report on project's RP2023 activities	April 2024	Malcolm Eadie (Monash)
Milestone 10 - Co-designed research scopes and methods to address research end user identified and prioritised gaps in knowledge capital and improvements to existing	April 2024	Malcolm Eadie (Monash) / Mohammad Swapan (Curtin) / Guy Barnett (CSIRO)

Milestones	Due date	Responsible person
knowledge products (2 priority research scopes and methods per year)		
Milestone 11– Execution of formal agreements established with up to four (4) remote Indigenous communities for the conduct of co-developed placed based research and case studies of Indigenous led governance and institutional frameworks and models for Indigenous water outcomes	May 2024	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 12 - Detailed project RP2025 developed	August 2024	Malcolm Eadie (Monash)
Milestone 13 - Annual report on project's RP2024 activities	April 2025	Malcolm Eadie (Monash)
Milestone 14 - Co-designed research scopes and methods to address research end user identified and prioritised gaps in knowledge capital and improvements to existing knowledge products (2 priority research scopes and methods per year)	April 2025	Malcolm Eadie (Monash) / Mohammad Swapan (Curtin) / Guy Barnett (CSIRO)
Milestone 15 – Annual progress reports on place-based research and case studies of Indigenous led governance and institutional frameworks and models for Indigenous water outcomes	April 2025	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)
Milestone 16 - Detailed project RP2026 developed	August 2025	Malcolm Eadie (Monash)
Milestone 17 - Annual report on project's RP2025 activities	April 2026	Malcolm Eadie (Monash)
Milestone 18 - Co-designed research scopes and methods to address research end user identified and prioritised gaps in knowledge capital and improvements to the interoperability of existing knowledge products (2 priority research scopes and methods per year)	April 2026	Malcolm Eadie (Monash) / Mohammad Swapan (Curtin) / Guy Barnett (CSIRO)
Milestone 19 – Annual progress reports on place based research and case studies of Indigenous led governance and institutional frameworks and models for Indigenous water outcomes	April 2026	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)

Milestones	Due date	Responsible person
Milestone 20 - Detailed project RP2027 developed	August 2026	Malcolm Eadie (Monash)
Milestone 21 - Annual report on project's RP2026 activities	April 2027	Malcolm Eadie (Monash)
Milestone 22 - Co-designed research scopes and methods to address research end user identified and prioritised gaps in knowledge capital and improvements to the interoperability of existing knowledge products (2 priority research scopes and methods per year)	April 2027	Malcolm Eadie (Monash) / Mohammad Swapan (Curtin) / Guy Barnett (CSIRO)
Milestone 23 – Final reports on place-based research and case studies of Indigenous led governance and institutional frameworks and models for Indigenous water outcomes.	April 2027	Kate Harriden (Monash) / TBC (Curtin) / TBC (CSIRO)

Data and information management

The co-design process will identify detailed knowledge products to be delivered through RP2023 and beyond, and detailed data and information management plans will be developed for each of these. It is expected that any knowledge products generated through the co-design phase will be made publicly available through the Hub website, and in accordance with the Hub Data Management Strategy and subject to ethics approvals and any relevant Indigenous Cultural and Intellectual Property (ICIP) arrangements. The Data Wrangler will play a key role in coordinating and facilitating this data management and sharing through the provision of expert advice.

Project output	Data management and accessibility
Synthesis reports, fact sheets, infographics, academic papers, workshop reports and the nature connection story site	Will be made publicly available on the Hub website, in accordance with the Hub Data Management Strategy. There will be sensitivities of the underlying data, per the ethics approval, that will not allow full disclosure of the data but all syntheses and data that can be made public will be made available on the website.
Indigenous cultural and intellectual property in any project outputs	<p>Where Indigenous knowledges are included in project outputs, the management and accessibility of those outputs will be subject to the relevant Ethics approvals, FAIR (Findable, Accessible, Interoperable, Reusable) and CARE (Collective benefit, Authority to Control, Responsibility, and Ethics) principles and any specific Indigenous Cultural and Intellectual Property (ICIP) arrangements developed with the communities involved. We will handle the data that emerges from these discussions according to Article 31 of the United Nations Declaration on the Rights of Indigenous Peoples, which Australia has endorsed, and affirms that:</p> <p><i>Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.</i></p> <p>Furthermore, we will include Aboriginal participants as co-authors in knowledge products where appropriate to recognise their intellectual contributions.</p> <p>Specific to the Nature Connection interactive storytelling site, the project team will work with Indigenous partner organisations and community members to ensure that story data is collected and shared in culturally appropriate ways, and with full, prior and informed consent. Process consent methods will be applied (i.e. at continuing points in the co-design and collection and sharing process) to provide multiple opportunities along the project timeline to reiterate how, when and why the stories will be shared and used. Clarification about cultural obligations and kinship structures pertaining to story ownership and appropriateness for sharing in the public (and non-Indigenous) domain will be built into the story-gathering processes, and form part of the authority to publish checks.</p>
Conceptual design and methodological framework for the development of a national platform to advance water sensitive outcomes for liveable regional and remote communities	<p>Will be made publicly available on the Hub website, in accordance with the Hub Data Management Strategy and communication strategy.</p> <p>As above, all Indigenous knowledge included in project outputs will adhere to ethics approvals, FAIR and CARE principles, and all relevant ICIP arrangements.</p>

Location of research

The projects aim to deliver knowledge products that can inform policy discussion and planning for all 102 Australian cities and towns defined as *Significant Urban Areas*⁹ by the Australian Bureau of Statistics, as well as regional and remote communities. The co-design process will include research-users from urban, regional and remote Australia, including potential case studies in Launceston and rural Tasmania, as well as in Canberra, Melbourne, Perth, Hobart and Brisbane, regional Victoria (e.g. Ballarat), regional Western Australia and Uluru-Kata Tjuta National Park.

The choice of case-study locations has been led by our partners, while also taking account of our IP area's interest in focussing on regional, rural and remote areas.

Through the establishment phase, activities will be face to face where possible, particularly if we receive invitations to meet on Country from TRACA and MTWAC (NE Tasmania) or the Traditional Owners of Uluru-Kata Tjuta National Park. However, the majority of the co-design activities will be conducted through online workshops and meetings, followed up by email conversations, as appropriate. Whether workshops are face to face, online or a hybrid of the two, notes will be kept as a record of outcomes and follow-up activities. These will be circulated to attendees with an option for them to seek clarification or amendment.

The table below describes the scale at which the project will be working, and the location/s where most of the project research will be conducted.

At which spatial scale is the project working	National <input checked="" type="checkbox"/>	Regional <input type="checkbox"/>	Local <input checked="" type="checkbox"/>
Location(s) – gazetted region /place name	Australia Tasmania other places TBD		
Aboriginal or Torres Strait Islander nation or traditional place name(s)	Lutruwita (Tasmania)		

Project keywords

Human-nature connection, nature-based solutions, water-sensitive cities, liveability, Indigenous engagement

⁹ <https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/significant-urban-areas-urban-centres-and-localities-section-state>