

Knowledge brokering strategy

National Environmental Science Program
Sustainable Communities and Waste Hub



Strategy aims and knowledge brokering objectives

The success of the SCaW Hub depends on the ability of the Hub to understand the research needs of end users and deliver usable knowledge products. Effective knowledge brokering is central to this.

Aims

The aims of the SCaW Hub knowledge brokering strategy are to:

- guide knowledge brokering activities in the SCaW Hub
- ensure that knowledge brokering activities are embedded in all Hub activities
- provide clarity on what activities the different knowledge broker actors in the Hub will undertake.

To achieve these aims, our Hub's lead Knowledge Broker will guide knowledge brokering activities and functions across the Hub, in partnership with DAWE, all Hub partners, Indigenous facilitators and other NESP hubs. An operational knowledge broker will be appointed to support the lead knowledge broker to implement this strategy. There will be an active local presence with knowledge brokering roles in all nodes, and in all impact priority areas. Coordination of activities across these knowledge broker actors will take place through regular meetings and collaborative updates to this strategy. Trainers and facilitators will be engaged to build knowledge brokering capacity in knowledge brokering actors, researchers and research projects across the Hub.

The SCaW Hub demands interdisciplinary research to create impact. Adopting the principles of Brown *et al.* (2019), the knowledge brokering function will support quality interdisciplinary research and research translation in the Hub by:

- forging a shared mission
- developing researchers with deep disciplinary expertise and respect for other disciplines norms, theories and traditions
- learning to communicate across disciplinary, institutional and cultural boundaries with respect, trust and shared empathy
- recognising the value of interdisciplinary research in reporting and reward systems for researchers
- supporting the active work needed for the adoption of knowledge products through enduring connections between researchers and research users
- taking an evidence-based approach to communication and codesign.

This strategy recognises that the Hub has a lifecycle and that the role of the knowledge brokering function will change over the life of the Hub. The strategy will be implemented through three phases of:

- *Engagement* – with DAWE, Hub researchers, and all partners to develop strong partnerships and capability training as needed to codesign a 7-year research program with impact.
- *Co-producing Impact* – use the knowledge brokering capability we have developed to ensure research is codesigned through deep relationships with partners to achieve impact and is conducted with respect for all parties.

- *Legacy* – ensure that the knowledge products we have developed are discoverable and usable beyond the life of the Hub to have enduring impact on policy and decision making to improve environmental and community outcomes in Australia.

Knowledge brokering objectives

Over the 7-year life of the SCaW Hub, the knowledge brokering function will:

1. Embed opportunities for research codesign, knowledge cocreation, sharing and learning throughout the Hub's governance, research and engagement activities:
 - engage and inform the department, research users and other stakeholders of the planned approach for knowledge brokering.
2. Demonstrate leadership in knowledge brokering across all NESP projects and beyond:
 - contribute to national and global understanding of effective knowledge brokering
 - foster intra- and inter-Hub collaborations, and extra-NESP research collaborations within Australia and around the world
 - contribute to broader knowledge brokering strategies for the NESP program.
3. Ensure research plans are codesigned with DAWE and other research users:
 - develop enduring and deep research-practice partnerships between Hub researchers, DAWE and other Hub partners
 - increase researcher and end user respect for Indigenous knowledges
 - plan and prioritise the publication of research outputs (including annual reporting) in collaboration with DAWE.
4. Improve uptake of Hub research by DAWE, partners and research users in policymaking, program design and industry applications:
 - align Hub research activities with DAWE and partner needs
 - help decision-makers articulate their research needs
 - ensure research is delivered in a timely fashion to maximise application of research in policy and program development
 - deliver research outputs in forms that are usable by all research users.
5. Improve two-way understanding of researcher and research user needs:
 - improve researcher understanding of the environmental policymaking and management landscape that could be influenced by research activities
 - improve research user understanding of the research process and the needs of researchers
 - build capacity in Indigenous, regional and urban communities to participate in meaningful research projects.

The SCaW Hub knowledge brokering strategy will be reviewed annually, and the Hub is committed to responding to the Department's requests to make changes to the strategy over the life of the Hub.

What is knowledge brokering?

The SCaW Hub employs knowledge brokering to connect across the continuum of research producers and research users to improve mutual understanding and successful design and delivery of research

with impact and relevance (Dobbins et al., 2009). This connection ensures that both new knowledge and syntheses of existing knowledge are delivered in useable products and processes for research users; and simultaneously, enrich research activity with knowledge of user needs, context, and subject matter expertise.

In short, knowledge brokers facilitate and translate to create productive exchanges between people across the spectrum of researchers and research users to improve knowledge generation and application. A key responsibility of the knowledge broker function within the Hub is enabling codesign of research plans. In this context, codesign means researchers and research users working closely together to design research that meets research user needs and builds on existing research and capability.

Knowledge brokering in NESP

The National Environmental Science Program (NESP) aims to invest in “applied environmental science to support decision-makers from across the Australian community, including Indigenous communities, achieve positive environmental, social and economic outcomes” (NESP 2 Grant Opportunity Guidelines). A strong and effective knowledge brokering function is required in every NESP Hub to achieve this aim. Specific outcomes of the second round of the NESP program that intersect with the knowledge brokering function include:

- the delivery of practical science to support decision-makers to build resilience in our natural environment and communities:
 - knowledge brokering will help researchers identify how ‘practical’ science can be delivered to decision-makers, and provide guidance and training to researchers on delivering knowledge products in diverse formats (reports, policy briefs, guidelines, etc) to improve usability of research
- development of collaborative partnerships between public and private sector stakeholders as well as Indigenous communities to maximise benefits for all Australians and their local environments:
 - knowledge brokering is not a one-way act of informing others but involving, collaborating and at times empowering them to shape the research undertaken (e.g. the [IAP2](#) spectrum), which implicitly requires the development of meaningful partnerships
- actively fostering partnerships between researchers, research users and local communities to establish trust and promote open engagement across different stakeholder groups:
 - knowledge brokering will connect researchers, public and private sector stakeholders and Indigenous and other communities and provide guidance and training to researchers on building and maintaining effective and enduring partnerships.

Knowledge brokering in the SCaW Hub

The *Research Scope Overview of the Sustainable Communities and Waste Hub* identifies several roles where the knowledge brokering function can contribute to the success of the Hub.

- establish and maintain long-term, two-way partnerships with traditional owners and Indigenous communities:
 - the knowledge brokering function will work closely with the Indigenous facilitation function to connect Hub researchers and Indigenous communities, and provide guidance and training to researchers on building and maintaining effective and enduring partnerships

- Indigenous knowledge must be treated with respect and reciprocated in culturally appropriate ways in the form of shared practical research outcomes for traditional owners, communities and land managers, and capacity building for Indigenous communities:
 - we will combine knowledge brokering and Indigenous facilitation expertise to develop cultural awareness training that addresses cultural knowledge, knowledge translation for Indigenous communities, Indigenous land managers, and traditional owners, and the importance of research that benefits Indigenous peoples
- detailed research plans will be codesigned with research users at the start of the program and then on an annual basis:
 - knowledge brokering will lead the codesign process and ensure that Hub researchers address research user needs in research planning.

Audiences

Government	Primary	Secondary
Ministers' offices	Hubs	Environment non-government organisations (NGOs)
Department staff	Policy-makers	Other portfolio ministers
Other portfolio agencies	Universities, research organisations, scientists and researchers	
	State/territory and local governments, and natural resource management regional managers	
	Indigenous land and sea managers (Native Title Prescribed Bodies Corporate, Aboriginal Land Councils, Indigenous Corporations)	
	Industry including environmental, agricultural and/or financial sectors	
	General public	

Knowledge brokering approach

The SCaW Hub will draw on internal and external expertise to train Hub researchers on codesign and knowledge coproduction, synthesis and translation. This will strengthen our collective ability to listen to, understand and act on research user needs, generate credible research that is actionable, and produce research outputs that enable ready access to knowledge, interpretative guidance and widespread use of practical tools for maximum impact.

Our partner relationships will also build research user capabilities to participate in codesign and delivery of research and use new knowledge, skills and tools generated by the Hub. We will work closely with our Hub liaison officer in DAWE and other key DAWE NESP and knowledge brokering staff, the Hub's communications, data and Indigenous functions, and other NESP Hub knowledge brokers, to ensure a two-way transfer of best-practice knowledge brokering approaches across the Hub and NESP.

The activities we will undertake to achieve our knowledge brokering objectives are:

1. Develop a Hub knowledge brokering strategy (this document).
2. Incorporate knowledge brokering functions in relevant documents.
3. Establish knowledge brokering capability across the Hub through:
 - appointing a lead knowledge broker and a supporting operational knowledge broker
 - a representative from each Hub node who will be nominated to assist with knowledge brokering strategy and activities (covering all impact priority areas)
 - engaging the best available knowledge brokering expertise inside and outside of the Hub to advise on policy documents and assist with training and knowledge broker leadership
 - routinely engaging with representatives of other hubs and committee meetings (e.g. Indigenous Advisory Committee) to ensure consistency of approach across the Hub.
4. Train Hub researchers on effective transdisciplinary research practices such as:
 - running Hub-wide training sessions for Hub researchers
 - developing reference material for Hub researchers to guide research user engagement, codesign, and knowledge product transfer
 - ensuring researchers' capability to train others increases and reliance on trainers decreases.
5. Facilitate research codesign workshops and related processes to:
 - connect across the spectrum of researchers, partners and research users in DAWE, other levels of government, industry, non-government organisations and communities
 - strengthen research user partnerships
 - develop shared learning and mutual understanding of research needs and possibilities
 - assist decision-makers to define their science research priorities
 - map research needs across research users and priority impact areas.

6. Support non-traditional research outputs that meet the needs of research users (e.g. synthesis reports, policy briefs, factsheets, short videos, searchable databases, interactive maps) including:
 - training researchers to develop knowledge products that are usable by research users
 - supporting usable knowledge product development through graphic design, etc
 - developing planned and transparent 'no-surprises' processes to ensure all research projects balance expanding knowledge boundaries, while still delivering usable research to research users
 - transferring research outputs to research users in accessible, appropriate, and usable forms
 - developing templates or examples for researchers to draw upon
 - seeking feedback from departmental users on draft research outputs (see Annex B).
7. Support high quality, peer reviewed contributions to global knowledge.
8. Embed knowledge brokering and pathways to impact in all research projects from conception, noting:
 - pathway to impact agreements will be signed by all researchers and research users participating in projects (Annex A).
9. Make all knowledge products publicly available on the SCaW website, and through other publicly accessible knowledge repositories as necessary and in accordance with various contractual obligations.
10. Support leadership in knowledge brokering across all NESP projects and beyond by:
 - identifying and using opportunities to contribute to national and global understanding of effective knowledge-brokering
 - facilitating inter-Hub collaborations and knowledge sharing and identifying inter-Hub research priorities.

Interface with Indigenous facilitation

To ensure that Indigenous perspectives are genuinely incorporated in knowledge brokering and research activities, a member of the Indigenous Advisory Committee will be invited to observe or participate in important knowledge broker meetings and events. Knowledge brokering policy documents will be passed to the Indigenous Advisory Committee for review before finalisation.

Interface with data wrangling and communications

The Data Wrangler or delegate and Communications and Media Officer or delegate will be invited to observe or participate in important knowledge broker meetings and events. Knowledge brokering policy documents will be passed to the data wrangling and communications functions for review before finalisation.

Approach to codesign

A key activity of the knowledge brokering function within the Hub is supporting effective codesign of research projects and plans. Codesign is the meaningful participation and engagement of research users in research design, implementation and knowledge product delivery (Slattery et al., 2020). Approaches can vary from deep participation to 'light touch' approaches that are relatively passive. Slattery et al. (2020) identify different phases of codesign involving different kinds of activities.

Foundational activities during project establishment can involve workshops, focus groups, conferences, symposia, interviews, surveys and deliberative methods (e.g. rating of needs or options). During the research implementation phase, engagement can vary from occasional contact such as seeking feedback on draft knowledge products, to constant dialogue on all aspects of the project, to empowering research users to lead research activities. Research users can play a range of roles including as advisors, reviewers and coproducers of knowledge. Benefits of using codesign in research projects include creation of more usable knowledge products and more relevant research questions being asked, more positive experiences and emotions from participation, and increased understanding of research impact pathways and impact evaluation. Negative outcomes can include the needs for greater resource investment (time, money) and concerns about lack of scientific rigour where trade-offs with research user needs are made.

Codesign is important in all applied research, and particularly important in NESP. In the second round of NESP hubs, DAWE has made engagement between researchers and research users a main priority. The NESP knowledge-brokering and communications strategy says: *“A key focus for the next iteration of the program is to more closely engage research end users early in the program design, capturing and responding to their research needs. Hub Liaison Officers and Hubs should work with end users to embed NESP research into policy-making.”*

Therefore, a key activity will be codesigning research projects to achieve the goals of the Hub, DAWE, user partners and the broader NESP program. The SCaW Hub is well placed and experienced to achieve this vision of engagement, codesign and fostering greater impact from Hub research. Our Hub has extensive expertise in codesign and researcher user engagement across all nodes. We will generate knowledge products on our codesign processes that can be used by other NESP Hubs, and transdisciplinary researcher user collaborations across Australia and around the world.

Definitions

Term	Our Definition in the context of Hub codesign processes
Codesign	The meaningful participation and engagement of people across the spectrum of research and research users in research design, including defining the form of knowledge products and knowledge product delivery to achieve intended use.
Coproduction	The meaningful participation and engagement of research users in knowledge production processes.
Cocreation	Research that uses both codesign and coproduction of knowledge products.
Inform	One-way delivery of information (e.g. from researcher to research user) where no feedback is elicited.
Consult	Seeking feedback on potential or proposed plans, processes, and products with the intention of acting on feedback to improve and adapt those plans, processes, and products.
Translate	Taking a knowledge product and summarising, reformatting, reframing or adapting it to increase the usability of research by research users, based on a strong understanding of the barriers and facilitators they face.

Term	Our Definition in the context of Hub codesign processes
Knowledge Brokering	Activities connecting people across the spectrum of research producers and research users to improve mutual understanding and successful design and delivery of research with impact and relevance.

Principles for codesign process:

- Respect for the needs of other actors in the codesign process.
- Openness and listening to the views of others.
- Trust between actors to support frank and effective communication.
- Willingness to take 'smart risks' together to produce better research and better decisions.
- Humility and valuing of contributions of different sources of knowledge and evidence.
- Mindfulness, time and care in working across diverse backgrounds, experience, and knowledge.
- Compromise on agreed plans that incorporate the views of all actors involved.
- Adaptive processes that allow actors to learn from mistakes and adapt to new research and research user needs.
- Ongoing codesign of research across the life of the Hub.

Benefits of codesign process across the spectrum of researchers and research users:

FOR RESEARCHERS	FOR RESEARCH USERS
Increase awareness and understanding of the knowledge needs of research users	Increased understanding of Hub research capability
Increased understanding of the current policy- and decision-making landscape	Increased understanding of and access to the current state of knowledge
Improved understanding of the differing timeframes, motivations and barriers for research users	Improved understanding of the differing timeframes, motivations and barriers for researchers
Clarity on the difference between what is known and not known, versus what is known and not used	Clarity on the difference between what is not known here and now, versus what is not known anywhere
Research with greater impact	Research that is more usable
Enduring partnerships with research users	Enduring partnerships with researchers
Research that better utilises researcher capability	Research that addresses a broader range of needs more effectively
Ownership of creating research that is fit for purpose	Ownership of using research and evidence relevant to the decision at hand
Empowerment and respect for research knowledge and capability	Empowerment and respect for policy- and decision-making expertise

Constraints/risks of adopting a codesign process:

- Codesign takes time and must be scheduled into research planning and activities of actors working across the spectrum of research and application.
- Codesign will need additional learning - effective codesign will require training of researchers and research users to understand the importance of codesign, and the techniques and tools needed for successful codesign.
- Codesigned research knowledge products may not be recognised by traditional researcher performance evaluation processes.
- Codesigned research plans may not engage researcher capability as expected by researchers or institutions.
- Codesigned research plans may not include research needs as expected by research users.
- Codesign requires willing and open-minded parties who can negotiate mutually beneficial outcomes.
- Codesigned research may use researcher background intellectual property (IP) to generate new shared IP.

Challenges for codesign in the Sustainable Communities and Waste Hub

Codesign across research institutions

As research needs and priorities are identified and prioritised, node leaders and impact priority leaders will identify node researchers best suited to respond to these research needs and ensure that cross-node collaboration is supported.

Codesign with partners across impact priority areas and nodes

Some research users will be partners with researchers from a single research institution in a single impact priority area. Yet some research users, such as local government authorities (LGAs) and state environment departments, have research interests and needs that will span impact priority areas, and some partners have existing relationships with researchers across nodes. Our codesign process will foster collaboration and engagement with partners across nodes and impact priority areas to ensure the capability of Hub researchers is available to all partners.

Regional research needs and research delivery

The NESP program aims to support applied research in regional and urban areas, and the delivery of research via regional centres. Our Hub will deliver on these aims by engaging with regional partners and research users early in the research codesign process to identify regional research needs, knowledge product formats that are usable in regional contexts, and pathways to impact in regional areas. Knowledge and data product design will consider regional research user needs and capabilities to ensure national coverage and impact through Hub research.

Key messages

The key knowledge brokering messages for the SCaW Hub are:

Topic	Message
<i>End user focused</i>	The Hub will generate research that is codesigned with research users including all levels of government, industry and community. Hub research will address research user priorities and be delivered in formats that are usable by decision-makers, benefiting from research user knowledge of policy problems, context and the application environment.
<i>Codesign</i>	The Hub will codesign all research plans to ensure the meaningful participation and engagement of research users in research design and knowledge product delivery.
<i>Coproduction</i>	Where desirable and feasible, the Hub will involve research users in the implementation of research.
<i>Partnerships</i>	Hub knowledge brokering will connect researchers, public and private sector stakeholders and Indigenous and other communities and provide guidance and training to researchers on building and maintaining effective and enduring partnerships.
<i>Knowledge weaving</i>	Our Hub respects other knowledge systems, including Indigenous and local knowledge, and will respect the integrity of those systems when weaving these 'strands' of knowledge together to generate new knowledge products.
<i>Knowledge translation</i>	Our Hub will generate credible research that is actionable to produce research outputs that enable ready access to knowledge, interpretative guidance, and widespread use of practical tools for maximum impact.
<i>Cocreation</i>	Our Hub researchers will work together with research end-users and communities to codesign and coproduce knowledge products that solve environmental challenges and develop new scientific knowledge.
<i>Pathway to impact</i>	Through applying an integrated approach to knowledge design, development, creation, and translation, we will deliver research outputs that can be put to immediate use to improve societal outcomes relating to sustainable communities and waste.

Codesign in Research Plan 1 (RP1)

Our Hub's knowledge brokers will support the key activity of research codesign through our first year of operation, and through the life of the Hub. The outcomes to be delivered through RP1 codesign process are:

- updated research needs and priorities for DAWE and other research user partners
- a codesigned research program for 2022
- a codesigned research agenda for the life of the Hub
- enduring partnerships between DAWE, Hub researchers and other research user partners
- shared understanding of the current state of research and available data/tools, to inform codesign processes

- shared understanding of current research activities and research capability in Australia relevant to the operation of the Hub.

Codesign timeline (2021-2022)

Item	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
State-based information sessions	X	X	X								
RP1 partner engagement	X	X									
RP1 submission to DAWE		X									
Codesign of Research Plan 2 (RP2) with research users			X	X	X	X	X	X	X	X	
Codesign workshops			X	X	X	X	X				
Research needs elicitation and prioritisation			X	X	X						
Synthesis reports to support codesign						X	X	X	X		
Feedback by end users on draft research project plans							X	X	X	X	
RP2 submission to DAWE											X

Codesign activities in RP1

RP1 is heavily focused on foundational work that will lead to a successful Hub over the life of the Hub. Codesign is a critical part of that foundational work. The scope of the codesign process may vary across projects. Some projects with well-defined research user needs and shared understanding of research capability may use codesign to refine and clarify these needs. Other projects may choose more extensive processes to elicit as yet unknown research needs, or to elicit research needs from additional research users (e.g. state environment departments, other partners). Similarly, some projects may choose a more traditional research process where researchers deliver research to research users in accordance with research plans (and in agreed and usable formats). Other projects may choose to coproduce knowledge, where research is delivered through collaborative projects involving researchers and research users.

The minimum expectations for codesign in this research plan across all project areas are (see Annex D for a research checklist for research project codesign activities at different stages of project design):

- all nodes and all impact priority areas will be involved in codesign processes with DAWE and other partners
- suitable researchers and research users (within DAWE and other partners) are identified
- research needs are identified and discussed through several facilitated interactions e.g. workshops (see Annex C)
- data is collected through these interactions, and analysed to inform research planning
- research needs are prioritised

- a research plan (RP2) is developed to address high priority needs
- the policy- and decision-making processes where research will be used is identified (see Annex A)
- knowledge products are in formats that will enable research use in policy- and decision-making and made available in conjunction with processes and requirements of the data and communications strategies
- research users agree to use knowledge products developed in accordance with the agreed research plan
- researchers agree to produce (or coproduce) knowledge products in accordance with the agreed research plan, in agreed formats
- researchers will seek feedback from research users on draft research plans (see Annex B).

Additional research activities that could form part of RP1 to assist codesign of RP2 and beyond include:

- synthesis of the current state of knowledge (e.g. literature review)
- synthesis of currently available data/tools
- review/synthesis of existing research landscapes (e.g. DAWE and partner projects).

Spatial and thematic structure of research user participation in codesign

Our Hub research institutions and partners span all states and territories. Research projects will span nodes, states and territories, and multiple partners. Effective codesign requires collaboration between researchers across institutions and sectors, with research users spanning multiple levels of government, industry, non-government organisations and community groups. The success of the Hub depends on collaboration, consultation, and inclusivity across these boundaries. The codesign process under RP1 will put in place processes to foster these successes.

While COVID presents challenges for face-to-face engagement, such interactions are crucial for initiating large collaborative projects involving new participants. As much as is practicable, some face-to-face engagement will be supported particularly during the initiation of the Hub.

Monitoring and evaluation

Measure	Metric
DAWE-researcher engagement	Formal meetings between DAWE and Hub researchers
Research user engagement	Formal meetings between research users and Hub researchers
Capability building	Number of researchers attending training sessions.
Partnerships	Partners listed in research plans
Academic impact	Number of peer-reviewed publications. Number of citations. Peer review of quality and impact where appropriate
Policy impact	Number of knowledge products provided to research end-users. SCaW product mentions in policy documents, Ministerial announcements, etc. Policy impact stories where appropriate.
Departmental impact	Number of mentions in internal DAWE publications (e.g. Secretary's Newsletter, AWEsome Update, Business Bulletin, In AWE), annual reports,
Research user satisfaction	Feedback from research users, Surveys of research users
Researcher satisfaction	Feedback from researchers, Surveys of researchers

Related materials

- [Australian Government branding – guidelines on the use of the Australian Government logo by Australian government departments and agencies](#)
- [Australian Government public data policy statement](#)
- [Australian Government style manual](#)
- [Australia's science and research priorities](#)
- [NRM monitoring, evaluation, reporting and improvement \(MERI\) framework](#)
- *NESP brand standards* (provided to hubs)
- *NESP data and information guidelines* (provided to hubs)
- [NESP grant opportunity guidelines](#)
- *NESP knowledge brokering and communications strategy* (provided to hubs)
- [Our knowledge, our way in caring for Country: Indigenous-led approaches to strengthening and sharing knowledge for land and sea management](#)
- *Three-category approach workbook* ([further information](#)).

This strategy should be read in conjunction with the:

- *National Environmental Science Program knowledge brokering and communications strategy*
- *Sustainable Communities and Waste Hub communication strategy*
- *Sustainable Communities and Waste Hub data management strategy*
- *Sustainable Communities and Waste Hub Indigenous partnerships strategy*.

References

Brown, R., Werbeloff, L., Raven, R., 2019. Interdisciplinary Research and Impact. Global Challenges 3, 1900020. <https://doi.org/10.1002/gch2.201900020>

Dobbins, M., Robeson, P., Ciliska, D., Hanna, S., Cameron, R., O'Mara, L., DeCorby, K., Mercer, S., 2009. A description of a knowledge broker role implemented as part of a randomized controlled trial evaluating three knowledge translation strategies. Implementation Science 4, 23. <https://doi.org/10.1186/1748-5908-4-23>

Slattery, P., Saeri, A.K., Bragge, P., 2020. Research co-design in health: a rapid overview of reviews. Health Research Policy and Systems 18, 17. <https://doi.org/10.1186/s12961-020-0528-9>

Further reading

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Newman, Joshua, Adrian Cherney, and Brian W. Head. "Do Policy Makers Use Academic Research? Reexamining the 'Two Communities' Theory of Research Utilization." *Public Administration Review* 76, no. 1 (2016): 24–32. <https://doi.org/10.1111/puar.12464>.

Annex A: Example of research user agreement

Research user agreement: Project *insert project name and number*

Researchers: *insert researcher names and institutions*

Research users: *insert research user names and institutions*

The purpose of the research user agreement is to encourage co-design and confirm the expected deliverables agreed between the Hub and research users.

Researcher checklist:

- Engaged with the research users above, with respect and consideration of research user needs, to develop this research project.
- Considered Indigenous participation and engagement using the 3-category approach.
- Established a schedule of regular meetings/engagement with end-users to test knowledge product development.
- Time has been allocated to engage with research users.
- Discussed and agreed on the list, timeline and format of knowledge products to be delivered, and mapped them to key research users for each product.
- Assessed key barriers and facilitators for knowledge translation for key research users for each product, and filled gaps in understanding where identified.
- Agreed to a data-management plan for the project in accordance with Hub data-management strategies and guidelines.
- Agreed to implement research project in accordance with this agreement.

Research user checklist

- Identified research priorities with NESP Hub knowledge brokers and/or researchers.
- Participated with researchers to design a research project to achieve these priorities.
- Agreed to regular meetings/engagement with researchers to test knowledge product development.
- Discussed and agreed on the list, timeline, and format of knowledge products to be delivered, and mapped them to key end users for each product.
- Assed key barriers and facilitators for knowledge translation for key end-users for each product and filled gaps in understanding where identified.
- Agreed to use the knowledge products developed through this project in policymaking, decision-making, program design or practice.
- Have sufficient time available to participate in these engagement activities.

Schedule

Item	Description
Meeting/engagement schedule	e.g. we will meet monthly over zoom including whole research team, representatives from each research user, a representative of the Hub knowledge broker function, and a representative of DAWE NESP science partnerships
Indigenous engagement and participation category and summary	
Data management plan summary	
Research product(s) type and description	e.g policy brief covering <i>xyz</i> , dataset of <i>abc</i> , decision support tool for <i>def</i> , research paper <i>ghi</i>
How will research product be used	e.g. basis of policy <i>xyz</i> , fundamental component of strategy <i>abc</i>

Knowledge brokering/Pathway to impact budget

Engagement costs (e.g. travel, workshops): _____

Knowledge product costs (e.g. graphic design, open access fees, printing): _____

We have read and agree to the attached research plan, checklist and schedule above.

Insert research name/s, insert research user section, division and department

Insert research project leader name, Project Leader

Annex B: Example email requesting feedback on draft research outputs from departmental research users

To: Insert relevant departmental research users

Cc: Insert relevant Hub liaison officer, research@awe.gov.au

Subject: For input by insert due date: insert Hub name Hub's draft insert output type/title

Dear insert research user names

I'm getting in touch in relation to the National Environmental Science Program (NESP) [insert hub name/hyperlink to website](#) Hub because you are identified as research users of the Hub's project [insert project #, title/hyperlink to project information](#).

Please find attached the [insert hub name](#) Hub's draft [insert output type/title](#) for early review and input prior to finalising. This is milestone [insert milestone # and name](#) under the project.

[Insert brief description/background information of research output.](#)

I am seeking your feedback on the following questions:

- Does this draft output meet your needs as an research user?
- Is there any additional content/context that would be useful for the Hub to include in this draft output?

If possible, I would like to provide feedback to the authors by [insert date](#), so please respond by [insert due date \(request feedback at least 1 day prior to date due to authors\)](#). I would be grateful if you would please reply even if you have a nil response.

Please let me know if you have any questions, or if there are other sections or colleagues that I should circulate this to for input.

Kind regards

[Insert hub knowledge broker's name](#)

Annex C: Research priorities to be prioritised through codesign in RP1

Current DAWE priorities

Through RP1, Hub researchers will work with DAWE to identify, clarify, and prioritise the research needs of DAWE. DAWE have provided an initial list of research priorities that will be used as the basis for this work.

Sustainable Communities and Waste Hub research scope

DAWE initial priorities to be addressed in RP1 come from the NESP 2 Sustainable Communities and Waste Hub Research Scope Overview. This overview was used to shape the structure of our proposal and the research impact priority areas described below:

- Applied scenario modelling to support sustainable people-environment interactions in communities including liveability analysis:
 - Effective management of people-species conflicts in urban settings
 - Develop options for more water sensitive urban design
 - Understand the benefits and complexities of urban greening measures, including analysis of the socio-economic and environmental outcomes
 - Minimise urban heat island impacts.
- Targeted information and management tools to reduce the impact of plastic and other material on the environment:
 - Assess the effectiveness of using recycled material in new products and buildings
 - Reduce impacts of fishing waste on the marine environment
 - Understand and manage the effects of artificial light on species and ecological communities.
- Effective and efficient management options for hazardous waste, substances and pollutants throughout their lifecycle to minimise environmental and human health impacts:
 - Identify entry of chemicals of concern in the environment including Per- and Poly-fluoroalkyl substances and heavy metals
 - Understand the impact of chemicals of concern on our natural ecosystems
 - Methodologies for calculating toxicity or potency equivalence factors
 - Contemporary environmental contamination detection technologies
 - Develop and update standards and frameworks both for monitoring existing and emerging chemicals of concern, including baselines and trends for environmental levels
 - Improve waste-water treatment technologies to reduce environmental impact.
- Maintained and improved air quality:
 - Transfer of international air quality science to the Australian environment
 - Effective new technologies aimed at reducing the concentration of air pollutants

- Evaluate local planning and zoning regulations to reduce air pollutants
- Ambient air quality monitoring.

DAWE policy and reporting responsibilities

The identification and prioritisation of DAWE research priorities will also be influenced by policy and reporting needs.

Key DAWE policy documents that will inform research priorities analysis include:

- National Waste Policy: Less Waste, More Resources - 2018
- National Plastics Plan 2021
- National Waste Policy Action Plan - 2019
- National Clean Air Agreement
- National Climate Resilience and Adaptation Strategy
- Australia's Strategy for Nature 2019-2030
- Hazardous Waste (Regulation of Exports and Imports) Act (1989)
- Environment Protection and Biodiversity Conservation Act (1999)

Key national and international reporting needs include:

- State of the Environment
- Sustainable Development Goals
- UN Convention on Biological Diversity
- The Ramsar Convention on Wetlands
- UN Framework Convention on Climate Change

Partner priorities

One of the strengths of our Hub is our extensive network of partners in government, industry and community groups. Codesign activities guided by RP1 will elicit and prioritise the research needs of partners. DAWE is the main investor in our Hub and will retain final approval of research activities identified in research plans. However, other research user needs will be important in shaping research activities, particularly in areas where DAWE has less direct policy and management responsibility such as urban planning and liveability.

Annex D: Project level codesign checklist

Establishment phase

- The scope of the codesign process is well-defined and funded.
- The level of codesign is agreed (from basic codesign to full knowledge coproduction).
- The researchers and research users responsible for the codesign process have been identified.
- Suitable researchers and research users to participate in the codesign process have been identified in Hub research institutions, DAWE, and research user partner organisations.
- These actors have been permitted by their organisations to participate in codesign processes, allocated the time and resources to conduct the codesign process.
- A plan of researcher - research user interactions has been agreed by all participants:
 - e.g. workshops, focus groups, interviews; and/or
 - some face-to-face interactions are encouraged (COVID-permitting) to establish relationships.
- Researcher training has been conducted.
- Engagement and participation by Indigenous communities has been considered.
- Any background IP needs have been identified and addressed.
- Human ethics approvals have been sought where appropriate.

Implementation phase

- Data to support codesign is prepared by participants (e.g. reports, powerpoint presentations, spreadsheets, etc):
 - Research users
 - Research needs
 - Current policy and decision-making landscape.
 - Researchers
 - Researcher capability
 - Current state of knowledge.
- Researcher user interactions are managed professionally, in conjunction with the Hub Communications manager:
 - Documentation is prepared and shared early, consistent with Hub communications policy documents

Sustainable Communities and Waste Hub knowledge brokering strategy

- Invitations and follow ups are inclusive and timely
 - Scheduling respects the needs of all participants.
- Suitable researchers, DAWE staff, and partner research users have been invited to participate in these interactions.
- Formal researcher - research user interactions (e.g. workshops) are facilitated (as required)
 - via the Hub Operational Knowledge-broker
 - local independent facilitators engaged.
- Facilitation should use techniques to help researchers and research users elicit deeper research needs and priorities – moving beyond simple ‘extraction’ of needs from research users.
- Researcher user interactions use structured processes to enable creativity and innovation, seek input from all participants, and support open and transparent, and inclusive participation,
- Data generated through these facilitated interactions:
 - E.g. audio recordings are transcribed.
- Data analysed and used to inform research planning.
- Appropriate social-science methods are used to make sense of data:
 - E.g. moving beyond literal interpretation of research user needs, using deeper understandings generated through facilitation.
- Opportunities for feedback on these data and analyses are provided to all participants.
- Adaptive processes are used to improve subsequent researcher user interactions.

Finalisation phase

- The researchers responsible for implementing the research are selected (these may vary from those responsible for the codesign process).
- Research plans are developed based on interpretation of data generated through the codesign processes.
- Extensive consultation with relevant researchers and research users on the research plan is conducted.
- Feedback is respected and incorporated into the research plan:
 - A summary of how feedback has been incorporated into the research plan should be provided.
- A pathway to impact agreement is completed.