

# Project description

## Project summary

This project will codesign pathways to reduce the impact of target waste materials, such as plastics, paper, glass, that have been affected by the waste export bans under the *Recycling and Waste Reduction Act 2020*, and other target waste streams, e.g. solar photovoltaic (PV). Codesign is and will take place with stakeholders across the full supply chain, including industry, researchers, government, and communities, including Indigenous communities. The aim of this project is to understand the barriers and opportunities to increasing materials circularity in the Australian economy, to reduce waste volumes, and engage with key stakeholders in defining success, connecting supply to strong end markets, and codesigning solutions to waste resource management challenges. The codesign activities will lay the foundations for future technical and non-technical solutions, which will be codeveloped with our partner research users in subsequent projects under Research Plan 2 (RP2) and beyond within the Sustainable Communities and Waste Hub (SCaW) program.

## Project description

Recently, many of Australia's unprocessed recyclables were exported to offshore markets (and to uncertain futures). The *Recycling and Waste Reduction Act 2020* means that this practice is no longer permissible for various high volume waste streams. Hence, the Australian waste industry will need to transition to local materials processing and product development. To identify processing solutions that are likely to succeed in an Australian context, the waste generators, aggregators, re-manufacturers, and buyers need to collaborate on options that meet their unique needs and the broader waste management challenges. Participants in Impact Priority 2 (IP2) are uniquely positioned to support this change because of their partnerships across all sectors of the Australian economy and experience in delivering technical solutions to meet the complex social, environmental, and financial aspects of resource management challenges. The Hub consortium and its industry and community partners bring the experience and expertise necessary to support Department of Agriculture, Water and Environment (DAWE) in achieving the goals of the SCaW Hub program.

The purpose of this first research task under this Research Plan 1 (RP1) is to collaborate with key stakeholders in defining localised material flows, issues, and opportunities for increasing circularity of target materials - plastics, paper, and glass.

### 1. Stakeholder mapping

The first task involves mapping major flows of target materials through the Australian economy, using existing data accessed through DAWE. This will include flows associated with importation, manufacturing, consumption, export, local recovery and/or disposal and storage and focus on identifying stakeholders and opportunities along supply chains. Consideration will be given to urban, regional, and remote settings.

The supply chains will be verified with representative stakeholders to ensure definitions, boundary conditions and key processes are appropriate for this exercise. These supply chains will be presented in flow diagrams with supporting commentary to facilitate ease of understanding amongst the stakeholders likely to participate in the subsequent engagement activities. Clear and concise information will be key to ensure the stakeholders have the context necessary to make a meaningful contribution to proposed stakeholder engagement activities.

Critical to the success of the project will be the engagement of stakeholders, including local governments, community organisations, and businesses (SMEs – small, medium and large enterprises), involved in supply-chains of materials that need recycling initiatives, and offtake of products or materials.

It is essential therefore, to have their input to identifying the needs of industry and communities, barriers to change and critical factors to success. It is also key to have their 'buy-in' and ownership for solutions to meet the unique needs of their industry, community, or organisation to ensure uptake beyond the Hub.

Government priorities in this field are well understood as they have already been documented in the *National Waste Policy Action Plan 2019*, *National Plastics Plan 2021*, various product stewardship investments and other waste infrastructure strategies developed nationally and by the states. The relevant priorities, actions and timelines will be incorporated in the proposed documentation on stakeholder needs, as well as program planning for the SCaW Hub program.

Stakeholder mapping will be undertaken to ensure broad coverage of all stakeholders involved in the current supply chain of the target materials, as well as industry more broadly as potential markets for any new materials and/or products created from the target materials. This is so that waste materials can become valued resources delivering benefits to our communities, both environmental and social value by creating new pathways for jobs. A broad range of stakeholders will be considered in terms of their interest and potential influence on improving materials circularity. Examples of best practices where collaboration with indigenous and local communities can deliver solutions that are both codesigned and co-implemented will be showcased. Their level of interest would be indicated by public sustainability commitments, existing partnerships with organisations seeking to increase resource recovery, or other ancillary waste avoidance activities. Their level of influence will be informed by their market position, size and integration across multiple segments of the supply chain (e.g., major retailers involved in production, transport and retail of goods). This interest and influence stakeholder mapping will be graphically displayed to show the process by which stakeholders are shortlisted for engagement and consultation.

Other relevant considerations include geographic distribution and scale. Stakeholders would be categorised by metropolitan, regional and remote groupings across Australia. This includes remote Indigenous communities, some of which do not have access to waste services. Other demographic considerations such as income, dwelling types and cultural and linguistic diversity will be included at a later stage where community participation is a key component of proposed technical solutions. Stakeholders access to scale of supply and/or offtake will be considered, to identify opportunities to connect those with similar scales and interests later.

The outcomes of this task will identify potential stakeholders to engage with, by stakeholder type, geography, interest, influence, and scale. In consultation with DAWE, these stakeholders would subsequently be shortlisted for the next phase of the project which is stakeholder engagement.

Key deliverables:

- codesigned parameters for detailing key flows, and subsequent mapping of target materials to inform the stakeholder mapping task and potential solutions pathways for stakeholders
- list of key stakeholders ordered by type, geography, and scale.

## **2. Stakeholder engagement**

Critical to the success of the project will be stakeholder engagement in the codesign, development, and implementation of proposed solutions. Engagement, including Indigenous engagement, would be led by project partners at Curtin University who are experts in this field. Technical content to inform engagement activities would be provided by the relevant technical leads within the Hub consortium.

The aims of engagement activities include:

- Needs: Understanding the management challenges associated with target materials (e.g., scale, regulatory, and environmental and socioeconomic challenges, and opportunities)

- **Priorities:** Understanding the priorities of organisations and communities interested in sustainable resource management (e.g. employment generation or value creation from waste materials)
- **Definition of success:** Collaboration on metrics for success (e.g., sustainability readiness, diversifying business lines or culturally appropriate resource management solutions)
- **Partnerships:** Linking organisations with common interests (e.g., opportunities in local, regional and remote communities).

The community engagement program would be informed by the framework of *the International Association for Public Participation* (IAP2). The IAP2 framework proposes different engagement approaches in line with public participation objectives. These include 'inform', 'consult', 'involve', 'collaborate' and 'empower'. As the purpose of this initiative is to support the public, private and 'not for profit' sectors in improving materials circularity in Australia, the consultation activities will be centred around the 'involve', 'collaborate' and 'empower'. As recycling outcomes are most likely to be delivered through local community/industry partnerships, these stakeholders are prioritised for 'collaborate' and 'empower' methods of engagement. Government organisations, community groups and 'not for profit' organisations will also be part of the solution. Their contribution is largely through supply and offtake, so the method of engagement proposed for them is 'consult' and 'involve'.

The proposed 'inform' and 'involve' activities for the first six months include:

- stakeholder workshops to understand issues, opportunities, interest and appetite for change amongst the broader stakeholders list
- consultation with peak bodies to understand industry needs
- consultation with DAWE, state government and regional groups of councils to understand broader community needs.

The proposed 'collaborate' and 'empower' activities for the first 1-2 years include:

- connecting waste generators with recycled material buyers in 'recycling and manufacturing local and regional Materials Supply Networks (MSNs)
- workshops to codesign and create recycling opportunities or new markets for recycled target materials, with industry and community groups.

The initial stakeholder list will include organisations who provided letters of support to the Consortium's bid for the SCaW Hub and other local community groups who have participated in stakeholder meetings. Other stakeholders to engage at this preliminary research stage include government agencies across the three tiers of government, including local government representation for metropolitan, regional, and remote communities (including indigenous communities), peak bodies and industry partners across supply chains for target materials.

The outcomes of this task will inform collaborative decision making between the consortium and DAWE on priority materials, and geographies.

Key deliverable: a document describing the process of stakeholder identification, prioritisation, engagement, definitions for success and key outcomes from the engagement activities.

### **3. Codesign with priority stakeholders**

Priority stakeholders are defined as stakeholders with the interest and capacity to be part of regional recycling solutions. These include stakeholders that can offer feedstock, facilities, offtake or other valuable contributions, and have a 'readiness' for involvement with, and end user take up of, the Hub and its outcomes.

According to the National Environmental Science Program's (NESP) knowledge-brokering and communications strategy, "a key focus for the next iteration of the program is to engage research users early in the program design, capturing and responding to their research needs. Hub liaison officers and hubs should also work with research users to embed NESP research into policy-making".

A codesign plan has been provided in the Hub's own knowledge brokering strategy, and in the Hub's main Research Plan 1 (RP1), and this provides insights into the desired outcomes for codesign and the principles which will underpin codesign activities.

The aims of codesign in this research program and early phase of development of the SCaW Hub includes:

- issues and barriers to change are explored collaboratively
- proposed research projects are grounded in the needs of the community (households, businesses, and government)
- proposed research projects and potential solutions are developed in an inclusive and collaborative way, with the priorities of stakeholders considered of equal weights
- ownership and accountability of the process and any proposed research projects or potential solutions is encouraged.

In RP1, the codesign process will involve the following elements:

- tailored codesign to suit different audiences as they all have different preferences for engagement. This will involve listening and understanding of various needs and discussing holistic solutions that will benefit our people and our planet by codeveloping solutions
- codesign may span across multiple priorities areas, providing opportunities for stakeholder involvement in blue sky brainstorming and exploring shared aims and collaboration opportunities
- development of criteria for comparing different options and seeking consensus on priority criteria (these may include social or environmental benefits which will facilitate shortlisting of priority areas to inform research tasks in 2022)
- engaging stakeholders (and research users in particular) at different stages throughout the design process
- consulting with the stakeholders in early prototypes to ensure products meet the needs of the research users. Further iterations may be required to modify design to meet shared goals.

The latter two elements of the codesign process will not be included in this initial research task but will be a feature of future prototyping and design projects.

Key deliverables:

- a concise document including initial codesign shared aims (reflective of the priorities of DAWE and other research user partners), principles and priorities that will inform future design and prototyping processes
- codesign research plan (for 2022 and beyond).

# Pathway to impact

This section describes how the project will inform decision making and on-ground action, and the outputs that will be delivered to research users throughout the life of the project.

Outcomes
<p>The Hub is uniquely positioned to support DAWE in increasing materials circularity in Indigenous, remote, regional, and metropolitan Australian communities. The Hub will draw upon industry and community partnerships to codesign solutions to increase circularity of the target materials. This includes different scales of solutions from the micro to larger formats, as well as different degrees of processing from the manual disassembly of parts to the automated manufacturing of market ready products. Codesign will be undertaken with research users and stakeholders and be supported by the technical expertise of researchers.</p> <p>The project outcomes will include:</p> <ul style="list-style-type: none"><li>• advancements in recycling policy - the outputs of the project will provide a framework to develop and promote policies for sustainable national supply chains, reducing the impact of waste materials. DAWE's policy design and decision making will be informed by community codesigned solutions and on-ground success</li><li>• better connections between buyers and sellers of recycled materials and products for building and industrial applications</li><li>• opportunity for manufacturers to increase the amount of recycled waste materials in their products</li><li>• innovative recycling solutions for waste streams including plastics, paper, glass, and solar PV for Australian Indigenous, remote, regional and metropolitan communities</li><li>• delivering priorities in communities around sustainability, job creation and improving wellbeing</li><li>• investigation with project partners on extended producer responsibility for recycling.</li></ul> <p>These outcomes are supported by the following project outputs, which will directly benefit DAWE, industry and Australian communities. These include:</p> <ul style="list-style-type: none"><li>• frameworks and lessons learned in community codesign for waste management challenges, which DAWE can replicate and scale in the future</li><li>• recommendations in materials and product design and manufacturing for high value products and materials from waste, which could be supported by DAWE in the years to come</li></ul>

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- information for research users and other stakeholders about materials and products reformed and recycled from waste products to use in manufacturing, including materials properties, standards, and guidelines. This information can be published on DAWE's website to increase research user confidence in recycled content products, which could in turn, increase demand
- completion of pilot trials that reform waste into materials and products, as well as life cycle assessment and supply chain management that demonstrate feasibility, market acceptance and technical compliance for use in manufacturing
- creation of a high quality, curated and easy to use localised material flow database through the economy, including importation, use and fate of materials during recycling, and materials data.

This new knowledge is expected to inform future policies and industry support for recycling plastics and other waste through manufacturing. The research users in working in IP2 will provide the foundation data sources and data sets to create case studies for these policies and guidelines which can be replicated and scaled across Australia.

Ultimately, this project will help communities to transition to a circular economy where they can recover wastes and use them for new products. The project's outcomes will catalyse supply chains and create new markets. This in turn will provide environmental and socioeconomic benefits to communities.

The environmental value of this project will be high as it directly addresses waste priorities articulated in the *National Waste Policy 2018* and *National Waste Policy Action Plan 2019*. This project will find solutions for wastes which are facing an export ban such as plastics, paper, glass, and solar PV. In particular, the project will find ways to process difficult to recycle waste materials relevant to the large group of industry partners in this project and other stakeholders.

At a high level, the key targets this project is aiming for are:

- reduce total waste generated by 10% per person by 2030
- significantly increase the use of recycled content by governments and industry.

Direct environmental value delivered by the project will be measured in the number of trials completed and new solutions developed for waste management, as leading indicators, or proxy measures for the high-level targets. The project will investigate material supply chains, products, and waste recycling to create new Material Supply Networks (MSNs) that reduce barriers to recycling, improve material circularity, and create benchmarks for recycled materials. MSNs will favour local, decentralised supply chains that address the needs of stakeholders identified through the codesign of the research plan. Benchmarks and metrics such as Sustainable Readiness Levels (SRLs), will be developed to help quantify and monitor the impact of recycling for businesses and communities. These metrics will add to the environmental value delivered by this project, providing measurable outcomes such as data on waste material diversion from landfill and export.

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Research-user	Engagement and communication	Impact on management action	Outputs
<p><b>Theme 1 – recyclables in a mixed form</b>                      This theme includes all target materials and others that arise in a mixed form (e.g., composite packaging products).</p> <ul style="list-style-type: none"> <li>• York Shire (Indigenous), remote local government</li> <li>• Shoalhaven City Council, Gilgandra Shire Council, regional local government</li> <li>• Northern Adelaide Waste Management Authority (NAWMA), metropolitan service provider</li> <li>• Stakeholders that aggregate the recyclables</li> <li>• Stakeholders that recycle and remanufacture the target material streams</li> <li>• Communities (including Indigenous)</li> <li>• Environment and Planning Directorate (EPD) DAWE</li> </ul> <p><i>For all themes, seller and buyer lists are preliminary only and will be expanded through the course of the project.</i></p>	<p>The researchers in this project have held initial meetings with all the stakeholders and research users listed in this project, including DAWE, local government, and industry partners to identify their needs and discuss the scope of the project. Further stakeholder workshops will be held throughout the two-year project to ensure alignment of research activities, outputs and activities to industry, DAWE, and research user needs.</p> <p>Research-users will be engaged in the shaping of research plans and outputs through codesign and co-development workshops with researchers, other research-users and stakeholders. The workshops will be held virtually, and in person where possible, to maximise engagement.</p> <p>Key stakeholders, including Environment and Planning Directorate within DAWE (EPD), will be engaged to align workplans and outputs to ensure mutual benefits.</p> <p>New research knowledge will be transferred through academic journals and conferences. Industry relevant results and outcomes will be communicated through industry media, the SCaW Hub website and workshops and events. The researchers will work closely with the Knowledge Broker,</p>	<p>This project will codesign Material Supply Network (MSN) models with preliminary, and future, stakeholders to enable greater material circularity.</p> <p>Target products and materials will be identified e.g., waste plastics, solar panels and waste fishing nets if and where applicable, in collaboration with stakeholders that require greater attention and technical solutions for sustainability.</p> <p>This project will create benchmarks for materials, and associated performance of products, that will be developed from waste for use in manufacturing and built environments for enhanced uptake of recycled products and enable better connections between supply and offtake of recycled materials.</p> <p>Benchmarks for waste will create new opportunities for materials for various markets, resulting from innovative guidelines that will transform waste into resources that can be used in multiple settings.</p> <p>Such guidelines based on benchmarks of materials which quantify their quality will provide a foundation for new pathways to create impact through development of supply networks.</p> <p>This will have positive ripple effects such as leading to the creation of new jobs that are based on solutions that will</p>	<p>Knowledge sharing about waste in local communities and how we can transform it into high value products in local areas. Engagement with the Hub data wrangler, and key stakeholders such as EPD, will capture the knowledge in a translatable form.</p> <p>New information relating to performance of products manufactured from recycled materials, through a systematic investigation of the degradation and performance of products.</p> <p>Current distribution and localised material flows mapped and reported in fact sheets, roadshows, seminars, and or digital assets. The data will be captured in a translatable format collaborating with the Data Wrangler.</p> <p>Material performance standards and guidelines for industry, governments and other stakeholders on recycling target materials and new products made from mixed recycled target materials.</p> <p>Codesign of Indigenous, remote, regional, and metropolitan MSNs spanning industries such as the built environment and manufacturing. The MSNs will also provide mechanisms for highlighting recycling hotspots and potential infrastructure opportunities.</p>

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	Industry and Impact Manager and Communications and Media Manager of the SCaW Hub for capturing and transferring the knowledge created in this project.	demonstrate in different parts of Australia that local and regional solutions can be deployed at the right scale and are fit for purpose, driven by research users.	and barriers extending into the second year (IP2.02).
<p><b>Theme 2 – clean stream recyclables</b></p> <p>This theme includes clean (single polymer and easy to isolate) stream plastics, paper, glass and textiles.</p> <p>Research users:</p> <p>Sellers</p> <p><i>Local Government</i></p> <ul style="list-style-type: none"> <li>• Source separated streams at transfer stations or sorting facilities (Shoalhaven City Council)</li> </ul> <p><i>Industry</i></p> <ul style="list-style-type: none"> <li>• Textile Recyclers Australia (TRA)</li> <li>• Native Secrets (Indigenous)</li> <li>• ResMed</li> </ul> <p>Buyers</p> <ul style="list-style-type: none"> <li>• Stakeholders that aggregate the recyclables</li> <li>• Stakeholders that recycle the target material streams</li> </ul>	<p>As above.</p> <p>The researchers in this project have engaged with Shoalhaven City Council, Textile Recyclers Australia, Native Secrets, and ResMed to identify their needs in scoping this project. Further codesign stakeholder workshops will be held throughout the two-year project to ensure alignment of research activities, outputs and activities to industry and customer needs in recycling waste materials.</p>	<p>As above.</p> <p>New research knowledge will be transferred through academic journals, conferences, virtual workshops. Relevant results and outcomes will be communicated through industry relevant media, the SCaW Hub website and workshops and events.</p> <p>Research users, such as Textile Recyclers Australia, Shoalhaven City Council, ResMed, and Native Secrets, will supply the waste material samples for research and investigation, and provide insight in identifying knowledge gaps during the codesign process. Research results will provide stakeholders with new MSNs for reforming waste materials.</p>	<p>As above.</p> <p>Document outlining barriers and opportunities for circularity of targeted materials that result from state/territory policy/laws/standards raised by stakeholders.</p>
<p><b>Theme 3 – recycled materials</b></p> <p>This theme includes new materials that have been produced from the target waste streams. The new materials may range from basic products to advanced materials (e.g., shredded, pelletised, thermally transformed, or new hybrids).</p> <p>Research users:</p>	<p>As above.</p> <p>In addition, industry member groups and peak bodies, e.g., Advanced Manufacturing Growth Centre (AMGC), Plastic Industry Manufacturers Australia (PIMA), LGPro, and Australian Industry Group (AIG) will play a role in disseminating knowledge nationally to advanced manufacturers, local</p>	<p>As above.</p> <p>The manufacturing partners listed in this project are leading Australian manufacturers, willing to invest in technologies to accept more recycled materials and develop mechanisms to accept greater quantities of recycled materials.</p>	<p>Recommendations for solutions for transforming target waste streams based on new reformation processes and performance of products made by these processes.</p> <p>Creation of a built environment and manufacturing material supply</p>



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<p>Sellers:</p> <ul style="list-style-type: none"> <li>Listed in previous two themes</li> </ul> <p>Buyers:</p> <ul style="list-style-type: none"> <li>ResMed</li> <li>Spark Furniture</li> </ul> <p>Communities</p>	<p>governments, councils, and communities.</p>	<p>The research findings will improve national waste and sustainability policies relating to new or improved supply chains for materials and recycled products, reducing the impact of waste materials.</p> <p>Research findings that lead to new solutions for manufacturers and suppliers will enable Australian companies to make products onshore that are otherwise imported, such as plastic filaments for 3D printing, and Green Ceramics™ for sustainable housing products or homewares that are made by recycling and reforming materials to create engineered solutions.</p> <p>Project plans will be developed with the view to translate findings and pilot projects between similar metropolitan, regional and remote settings.</p>	<p>Networks to manage supply and offtake of the target materials.</p> <p>To identify nonrecyclable mixed waste and target waste stockpiles.</p> <p>Fact sheets, technical information, prototype products from the pilot trials about materials properties for use of recycled target materials in manufacturing.</p>
<p><b>Theme 4 – market ready products</b></p> <p>This theme relates to new products prepared from the recycled materials. These products are considered 'market ready' as they are designed to meet a certain industrial, business or consumer needs.</p> <p>Sellers:</p> <ul style="list-style-type: none"> <li>Organisations such as sellers of materials and processors,</li> </ul> <p>Buyers:</p>	<p>As above.</p>	<p>As above.</p>	<p>As above.</p> <p>Data about product performance and potential suppliers.</p>

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<ul style="list-style-type: none"><li>• Spark Furniture</li><li>• Mirvac</li><li>• Consumers</li></ul>			
<p><b>Additional outputs</b></p> <p>The Hub proposes to work in partnership with DAWE in project delivery, working with research users in EPD, including with Kate Lynch (A/g First Assistant Secretary), Rachel Burgess, Matt Ryan (Waste Policy and Planning), and Cameron Colbatch (Plastic, Packaging and Food Waste), among others. UNSW also presented at the Australian Textile Exhibition in May 2021 to connect with stakeholders and invite them to participate in upcoming codesign activities. Development of project partnerships and networks is another output which will enable solutions and best practices to be shared and adopted by developing various partnerships and creating new models for engagement with research users in local/state governments, businesses, and communities.</p>			

# Indigenous consultation and engagement

As custodians of the land, Aboriginal people and culture have deep and spiritual connections with the land. Aboriginal culture encourages the sustained protection and care of the land. However, waste streams that include plastics, tyres, glass, metal, textiles and wood from furniture litter the landscape of rural and remote areas of Australia. These waste streams are of growing concern for the traditional custodians of the land.

The research goals of the SCaW Hub are aligned to the Environmental Science Program Indigenous Partnership principles and the Hub's Indigenous Partnership Strategy, which include respect and mutual benefit, a right to Indigenous cultural and intellectual property, co-created research, Indigenous lead governance, and relationships-focused and an individual approach. This project for the Hub will draw upon the knowledge of project partners Curtin University and their Centre of Aboriginal Studies, and the Centre Director, Professor Marion Kickett, who is a co-lead of this project. Professor Marion Kickett and Researcher Dr Arthur Wilson will lead the codesign activities with Indigenous community partners. The codesign workshops will seek to capture traditional knowledge in environmental management as well as offer capacity building/training for participants in the field of recycling. If relevant, the project will ensure compliance with Indigenous cultural intellectual property. Professor Kickett will design the engagement program and facilitate workshops with communities selected from her own community. This will be centred in Western Australia including her own country of York, WA. This targeted approach will be considered within the aims of the broader stakeholder engagement plan for consistency in desired outcomes across all stakeholder groups.

The codesign workshops (in 2021) will:

- seek to identify opportunities to improve social and economic prospects of Aboriginal people in rural and remote communities
- test cultural awareness program for SCaW researchers
- plan a baseline case study for the project encompassing written content to capture the impact of the waste streams on the environment and community, the research challenges, and the creation of community and industry demand driven solutions
- discuss future co-implementation strategies in collaboration with stakeholders.

As mentioned in other sections of the Hub's Research Plan 1, the project also seeks to engage with the Indigenous business community. UNSW Sydney has a partnership with Native Secrets which offer insights into Indigenous owned and run businesses, as well as their own community partnerships in Dubbo, NSW.

All activities in this research plan will be grounded within the principles of the Hub's Indigenous Partnerships Strategy. Further information on the general principles of codesign are available in the project summary.

IP2 has held preliminary codesign workshops with Indigenous members to inform this research plan. In August 2021, the UNSW Sydney had the pleasure of hosting an online workshop to identify means to best support indigenous leadership and participation in the process of codesigning solutions to Australia's waste management challenges. The workshop was led by Professor Marion Kickett and Dr Arthur Wilson from the Centre for Aboriginal Studies at Curtin University. Key speakers included industry partner Phil Thompson of Native Secrets and community partners Auntie Audrey Nettele and Sarina Narkle of York, who provided strong ideas about how indigenous Australians may lead or engage in the codesign of local waste management and recycling initiatives. There was a local focus in the industry panel discussion, which brought together Ben Kaminsky of Textiles Recyclers Australia, Andrew

Douglas of Kandui Technologies and Peter Windley of Shoalhaven City Council, who all shared their stories of delivering recycling solutions which created employment opportunities in their communities.

The workshop was attended by researchers from universities within the SCaW Hub as well as DAWE. The workshop provided insights into the way in which the SCaW community can learn from rich cultural knowledge of indigenous communities across Australia. From Professor Kickett, lessons were learned about the importance of respect, active listening and building trust and rapport with Aboriginal and Torres Strait Island communities. Dr Wilson established an important framework for the SCaW Hub which involves respectful and inclusive leadership, strong project culture (influenced by two-way participation), adequate processes and appropriate technology. From community leaders Auntie Audrey Nettele and Sarina Narkle, insights were gained into the importance of caring for country and the creation of opportunities for the next generation. Phil Thompson inspired the group to consider the bio-resources generated through traditional landcare practices as the building blocks for the products likely to be generated from community Microfactorie™ initiatives.

The lessons learned from the two-day workshop form the framework for the SCaW Hub codesign process. The many collaboration ideas that came out of the workshop will be refined and trialled in the coming years in the community of York, which is earmarked to become a SCaW Hub exemplar.