

NGUTU KĀKĀ

SHEAR WOOL POWER 2026



INDUSTRIAL DESIGN YEAR 2
15 - 23 OCTOBER 2026



SHEAR WOOL 2026

Strong wool makes up approximately 80 - 90 percent of Aotearoa's total wool production. Characterised by coarse, thick fibres, strong wool has traditionally been used in carpets, insulation, and bedding. As the wool in these applications was replaced with synthetic alternatives through the mid-1900s, a decline in the demand for strong wool relegated this high-performance fibre to a low value by-product of the meat industry. As a result, it has been costing farmers more to shear their sheep than they are getting for the sale of their wool.

A recent resurgence in the demand for natural and regenerative materials and traceable supply chains has led to increasing demand for Aotearoa's wool. While this is promising, demand is primarily in traditional application areas. There remains an opportunity to capture the power of strong wool in innovative product designs that open new market categories within circular material systems.

In its fifth year, Shear Wool Power showcases the work of Year 2 Industrial Design Students exploring the potential of strong wool across a range of product applications, from agricultural and acoustics to educational, sports and beyond.

Kahu Wūru

Kahu Wūru is a portable acoustic privacy screen that draws on the idea of a protective covering. Designed for students and workers in open-plan spaces, it creates calm and focus while maintaining connection to the environment. The name combines kahu, meaning cloak, covering, or protective layer, with wūru, meaning wool. This relationship informs the form and materiality, positioning wool as a spatial layer that provides warmth and acoustic separation.

As a locally sourced material, wool connects Kahu Wūru to Aotearoa's landscape in a design that translates a cloak from something worn around the body into something that surrounds, encases, and protects space. Wool felt provides acoustic absorption, tactility, and warmth, transforming a temporary boundary into a space for privacy and focus. Three angled panels create a folding structure that balances enclosure with openness. Kahu Wūru's intuitive form allows for privacy when needed in an ergonomic, collapsible bag for storage and transport.



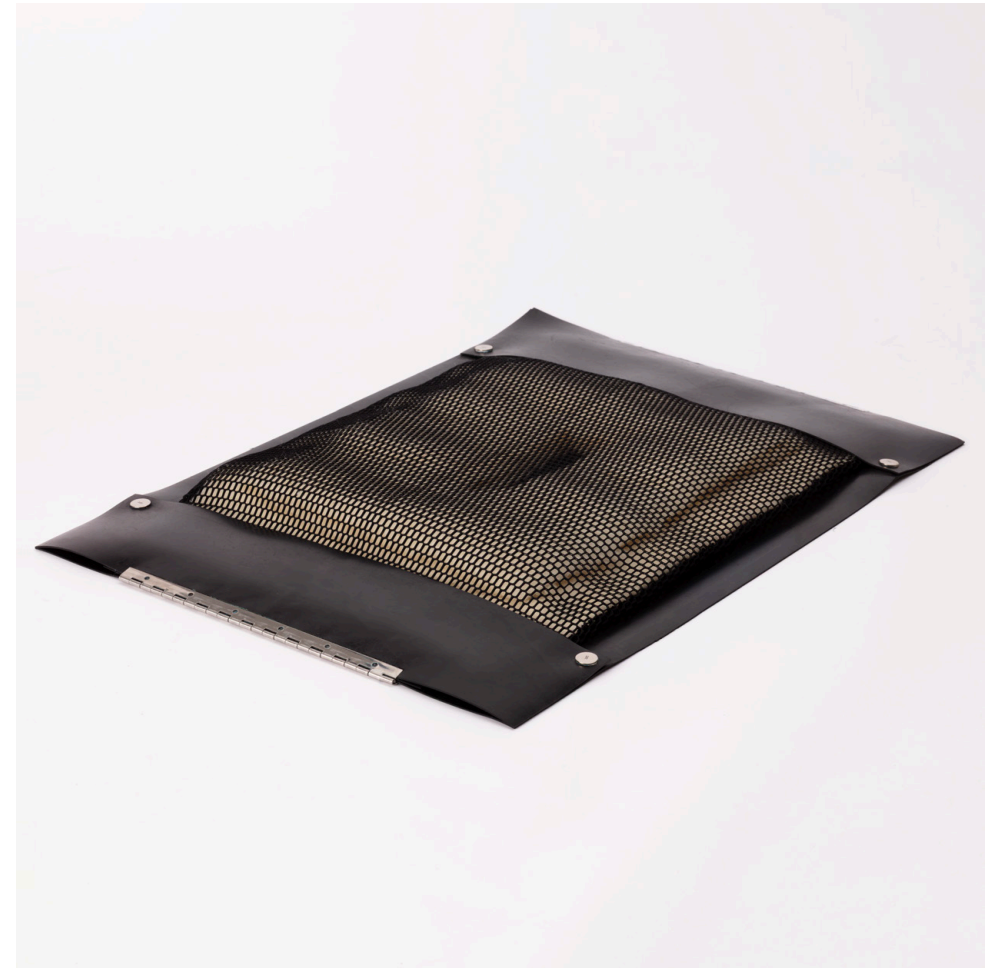
WoolSorb

Vehicle oil spills can enter stormwater drains, polluting waterways and harming aquatic ecosystems. WoolSorb is a wool-based temporary filter blanket designed for council road maintenance and spill-response teams.

Before maintenance work or after a spill, WoolSorb's reusable rubber base is placed over a stormwater drain. A replaceable strong-wool insert is secured within the base beneath magnetic rubber flaps, allowing quick, tool-free installation and removal.

Stormwater runoff passes through two layers of textured strong wool enclosed in a polyester mesh. The wool captures vehicle oils and light hydrocarbons while allowing water to continue flowing into the drain. A built-in bypass area helps prevent water pooling during heavy rainfall.

After use, the wool insert is disposed of, while the rubber base is reused. Unlike disposable synthetic oil-spill products, only the insert requires replacement, utilising New Zealand strong wool in a reusable oil-absorbing product that helps keep our waterways clean.



OPTi

OPTi is a modular strong wool screen that responds to the need for modern, eco-friendly blinds and dividers. OPTi's strong wool forms a thermal barrier and dampens sound, while interchangeable wool layers suit different climates and aesthetics.

Designed as modular panels, OPTi arrives in pieces and is easy to install, scaling in size from window blinds to room dividers for libraries, public areas, studios and offices that struggle with acoustics and noise.

Built from 3D-printed PLA and TPU alongside felted New Zealand strong wool, all materials can be repurposed and given a second life. Designed for motorised smart home automation, OPTi shows how one scalable system can improve quality of life across many environments.



Fleece & Fist

Fleece & Fist is a technical boxing bag designed to elevate the training experience with improved feedback. Fleece & Fist replaces the traditional cylindrical form with a “human” shaped silhouette, constructed with a “head” and “torso” to show users if they’re hitting the head or body. Additionally, an extra layer of felt padding at key striking spots on the body - the liver, kidney, and solar plexus - provides haptic feedback to highlight if key striking spots are being met.

Fleece & Fist includes felt and carded wool inners instead of common nylon and vinyl construction, with carded wool and felt handling impacts more efficiently than regular nylon. Sand is mixed into the carded wool in felt bags, adding weight for a more realistic experience.

Unleash your power, protect the planet.



Sheepker

Sheepker is a soft-body bluetooth speaker designed for adventure sportists such as mountain bikers, skiers and snowboarders. Conventional, hard-bodied speakers are prone to snapping, cracking and breaking when dropped or in collisions. Sheepker's fully woollen, soft-body makes for a product which is highly impact resistant whilst being more sustainable than conventional speakers which break often and pose a risk of injury to their high-action user.

The woollen body of Sheepker is inspired by the form of Mount Ruapehu, one of New Zealand's great mountains which many sportists venture to year after year. Sheepker's outer is constructed with industrial grade strong wool felt and leather, and filled with carded New Zealand strong wool to enhance durability.

Bluetooth connection to wireless devices and USB-C charging capabilities are combined with a robust carabiner and loop system allowing easy attachment to existing gear such as bags, bikes and bodies in a user-friendly solution to music on the move.



FloraFleece

The ever-increasing frequency and damage caused by wildfires significantly impacts ecosystems and is expensive to repair. Machinery used to solve this issue is expensive, large, and requires sufficient infrastructure to deploy. FloraFleece is designed as a substitute in areas where current methods of ecological restoration are not viable.

FloraFleece is a self-supporting lightweight, compact structure that is applied by hand and is secured in place with biodegradable bamboo stakes using a hammer or mallet.

Its concertina design naturally incubates seedlings until they are strong enough to develop on their own. As FloraFleece is naturally biodegradable, the fibers break down as the plant matures, with the wool fiber providing natural bio nutrients to feed the plant as it grows. Due to its biodegradable nature, it is also a set and forget design; one that doesn't require additional maintenance or costly removal procedures.

FloraFleece is the lightweight, natural way to bring wildfire-ravaged ecosystems back to life.



Aeropads

Aeropads are knee protection designed for those who are frequently kneeling such as gardeners, roofers, painters, and plumbers. A rubber front protects against abrasions with a denser pattern at the two pressure points of the knee, the patella and the tibial tuberosity, giving greater support. This design also provides breathability, as air can still easily pass through mesh form. The wool layer allows further breathability and cushioning as well as being moisture wicking, reducing sweat and regulating the temperature of the knee to its surroundings. As a natural insulator, the wool also protects against hot pavements.

When dirty, all parts of the Aeropads can safely go through the washing machine. Each piece is also detachable and can be replaced when needed, providing a natural fibre, reusable solution to knee protection.



Cove

What if a child could shape the space around them to suit their needs? Designed for primary school children aged 8-12, Cove is a flexible seating system that allows students to shift between connection, focus and relaxation throughout the school day.

Cove responds directly to the challenges of open-plan classrooms. Research on classroom acoustics shows that background noise and reverberation can affect children's attention, memory and speech intelligibility. Teacher interviews revealed that constant activity can make it difficult for children to focus or unwind.

Inspired by solihiya, a traditional Filipino weaving technique, Cove incorporates a woven panel made from spun waste wool. A plywood frame provides structure, while detachable strong wool panels offer acoustic potential, durability and odour resistance. Their warm, tactile quality helps create a welcoming space where children can focus, relax or reconnect with their classmates.

Cove empowers children to shape their surroundings around what they need.



Woolief

Woolief are acupressure slippers designed for adults whose jobs require prolonged standing which can increase foot fatigue and discomfort. Using acupressure slippers at home may help relieve foot fatigue. After a long workday, the feet may become more sensitive to pressure - Woolief has been designed with interchangeable Strong Wool acupressure pads, allowing users to adjust pressure intensity according to their foot condition.

Strong Wool was selected for its cushioning, moisture regulation, and odour resistance, making it suitable for an indoor slipper used after work. Wooden acupressure balls and a suede sole are stitched in without permanent adhesives. When repairs are needed, individual parts can be repaired or replaced. Users can also change the wool pads according to their foot condition, providing a more personalised experience than fixed-pressure acupressure slippers.

Woolief provides a natural fibre solution for tired feet supporting users to quickly unwind in their own homes.



The Penny Baa-rd

The Penny Baa-rd reimagines the classic 22-inch cruiser deck through a sustainable, high-performance lens. Crafted with laminated maple veneers and interlayers of strong wool in a bio-based resin matrix, this hybrid composite turns low-value agricultural fibers into a technical material.

Wool's complex fiber structure acts as a built-in shock absorber, dampening high-frequency road vibrations from rough asphalt and pavers to give commuters a smoother, less fatiguing ride.

Featuring deep-penetrating perimeter edge protection against moisture and road spray, the board combines outdoor durability with a compact profile designed to strap onto backpacks and stow easily under desks or bus seats.

The result is The Penny Baa-rd: a lighter ecological footprint, reduced reliance on virgin petrochemicals, and an elevated daily ride experience.



Romney Panes

Romney Panes is a bi-folding thermal window treatment that reimagines insulation as an integrated element of the domestic interior. Bringing warmth, comfort, and soft natural light to bedrooms and living areas. Sitting flush within the frame to eliminate the bulk of conventional drapes, the minimalist timber framework houses high-performance, double-layered panels of pure New Zealand strong wool. Organic botanical dye extracted from native Tānekaha bark infuses the textile with a sophisticated, light-diffusing warmth.

Combining performance with longevity, Romney Panes modular wool inserts can be easily removed, repaired, or replaced, extending the life of the product. The bi-folding design offers flexibility and ease of use, while the natural materials bring warmth and texture in a durable, energy efficient window furnishing that enhances everyday comfort and transforms the experience of living with light, privacy, and warmth.





Playpatch

Inspired by the need for engaging, tactile environments, Playpatch transforms everyday play into a rich sensory experience for children aged 3-4. In the form of interactive tiles Playpatch encourages children to shape their own environment with varying textures that can be used to create pathways, landscapes, seating, or settings for storytelling, while supporting children's cognitive skills, social interaction, vestibular development, communication, creativity, problem solving, focus, and sensory exploration.

While conventional synthetic foam play tiles and mats contribute to a linear material system, Playpatch's hexagonal tiles are created with natural and renewable materials, supporting a circular economy. A lightweight cork base provides a biodegradable foundation, layers of shaped wool felt provide shock absorption and stability, and Maxwell Rodger's Superfelt offers a soft surface. The tiles are modular and can be rearranged by toddlers, climbed over, and walked across in imaginative play. By incorporating natural materials with open-ended play, Playpatch creates space to play where children can imagine, explore, and grow.



Fractional Fleece

Fractional Fleece is a box set of 18 dice designed to help primary school age students with fractions through interactive and haptic play. Fractions can be complex and confusing to teach, but are an important foundational mathematical skill. Fractional Fleece provides an additional tool that students can use independently in the classroom to supplement taught lessons.

Made from dyed strong wool Fractional Fleece are stuffed with strong wool to make them soft, providing a quiet roll across a surface to reduce noise for students and teachers in the classroom and subsequently reducing stress and increasing focus. Colour is used as a visual cue to link fractions to answer sheets, as well as providing visual appeal to help keep children engaged.

Fractional Fleece are fun and colourful dice that allow for independent interactive mathematics in the classroom.



Sheep Shapes

Sheep Shapes is a sustainable toy set designed to encourage imaginative play for children of eco-conscious parents. Combining soft and hard biodegradable materials, Sheep Shapes gives kids a simple, hands-on way to explore how different materials behave.

With only minor directions to start, Sheep Shapes encourages open-ended storytelling, experimentation, and world-building. Its tactile pieces support hand-eye coordination and help kids understand how materials interact in everyday life. It also provides a link to the natural world around them and allows exploration of natural, organic materials.

Sheep Shapes offers a low-environmental-impact alternative to conventional toys, blending sustainability with creativity in a way that grows with a child's imagination.



WoolWicks

WoolWicks offers a compact, entry level hydroponics system for people living in small spaces. Typically, hydroponic systems use synthetic materials, such as rockwool, which are not biodegradable. WoolWick takes a superior direction by replacing synthetic growing mediums with felted strong wool, leveraging its key properties of moisture retention, breathability, and biodegradability, as well as providing nutrients to support plant growth.

WoolWicks also replaces the commonly used nylon wick with a spun wool passive wick, which uses capillary action to hydrate the wool growing medium. Additionally, the growing pots and accessories are 3D printed using PHA filament, which has the unique attribute of being 100% compostable.

The WoolWick System provides everything you need in a compact starter kit: pre-felted wool, starter seeds, nutrient solution, pH down and tester. WoolWick lets you grow herbs and microgreens on your countertop in the comfort of knowing you are using earth-friendly products. .



WoolStation

WoolStation transforms the traditional laptop case into a portable study station designed for students on the move. When closed, it protects and carries a laptop along with essential study supplies. When unfolded, it becomes a compact personal workspace featuring a fold-out pinboard, mouse pad and storage pockets.

Magnetic attachments allow users to reposition components to suit their needs, accommodating both left- and right-handed users. The pinboard displays notes and reminders, while detachable storage pockets keep stationery and accessories organised and accessible.

Through material experimentation, physical prototyping and user feedback, WoolStation has been refined to improve protection, portability and flexibility. Strong wool felt forms the soft interior, providing natural cushioning and durability, while the leather exterior offers protection and a refined finish. By combining traditional materials with adaptable features, WoolStation showcases an innovative application of strong wool, helping students create an organised, personalised workspace wherever they choose to study.



Rituwool

Rituwool is designed to create a warm and intimate space for everyday rituals and shared moments. With busy routines and constant demands, it can be difficult to slow down. Inspired by Iranian korsī tables, Rituwool responds with a grounded setting for eating, drinking, and conversation.

The low table encourages floor-level interaction, while wool panels line the interior to provide softness, insulation, and a sense of enclosure. Modular cushions can be folded to adjust seating height and stored beneath the table when not in use. A connected blanket extends comfort around the lower body to immerse the user. Material experimentation of strong wool's texture and insulating qualities informed its use as an active part of Rituwool, rather than simply a surface material.

Translating my cultural experiences of gathering, floor-level interaction, and shared warmth, Rituwool provides a contemporary table that creates space to pause, connect, and enjoy everyday moments.



WoolFrame

WoolFrame is an accessory for weightlifting and bodybuilding squatting workouts that removes the need for dedicated footwear or the use of unsafe practices during training. The design of WoolFrame was inspired by my experience during squat workouts and my observations of accidents and injuries in the gym.

A key feature of WoolFrame is its raised heel and solid midsole to help with balance and stability. The wooden heel is made of Paulownia and plywood and NZ strong wool fibers. The raised, stiff and inflexible midsole provides strong support while transferring the force exerted onto it to the floor through the wooden midsole. An anti-slip rubber sole provides security to prevent feet from slipping during use, and a durable strap improves the fit of the squat shoes for all users.

WoolFrame uses recyclable materials to provide comfort and simplify the experience of squat training while providing a more effective workout.



Urna

Saris are more than clothing; they hold cultural and sentimental value. However, they are often worn infrequently and stored for long periods, where they can be exposed to moisture, odour and dust through unsuitable storage methods.

Urna is a modular sari storage system designed to store and preserve precious garments. Each box holds two saris in individual compartments, reducing pressure and unnecessary folding while allowing easy access. Wool is used as an inner lining for its natural moisture and odour management properties, helping regulate humidity within the box while providing soft cushioning for the garments. Decorative ventilation panels support airflow while adding a distinctive aesthetic. The modular system allows for stacking of multiple boxes, providing flexible storage to match the size of a user's sari collection.

Urna combines textile care, functionality and cultural value in a dedicated storage system.



SlickSorb

Oil booms are used to contain and soak up oil, fuel, and other hazardous liquids that have contaminated water or land. Current oil booms are made from synthetic materials, such as plastics. These booms, once deployed in the water, release microplastics and, once used, end up in a landfill or are incinerated, so although they reduce one pollution problem (oil spillage), they create another.

SlickSorb is a fully sustainable oil boom designed to address ocean spills and benefit local Marinas, using a mix of wool and lanolin to capture up to 11.81x its dry weight in oil, reducing pollution from microplastics and plastic waste. Unlike synthetic booms, SlickSorb is also reusable through a wring-out process, allowing it to be used again for future hazardous spills and reducing single-use waste.

SlickSorb prevents further waste in the ocean and on land, supporting sustainability and innovation for a better future.



Oleo

After cooking, fats and oils are often washed down the sink, contributing to the build-up of fat-burges within wastewater systems and increasing the risk of sewage blockages and environmental pollution. While existing methods of collecting and disposing of cooking fats can be messy, inconvenient, and time-consuming, Oleo offers a simple alternative in a compact disposal unit.

Designed for use in residential kitchens, Oleo's replaceable pads use wool's natural oleophilic properties to capture fats and oils before they enter the drain in a contained and mess-free compact ceramic design. When full, wool pads are easily disposed of in the bin or compost.

Oleo is thoughtfully designed to sit openly in the kitchen, rather than being hidden away as a waste-management product. By creating a familiar kitchen object, and combining it with a renewable, biodegradable material, Oleo makes responsible fat disposal easier to integrate into everyday cooking routines.



Ewe & Fruit

Ewe & Fruit is a fruit gifting packaging system that is designed for a premium and personal gifting experience while protecting fruit during transport and delivery. The act of gifting fruits is a long-held tradition in many Asian countries, as an act of good gesture or to simply wish well to their loved ones. Premium fruits or fruits are generally delicate and prone to bruises during transporting and handling which results in the need of protection. However, traditional fruit protection packaging is often made of single use synthetic foam.

Ewe & Fruit aims to offer an alternative by harnessing the natural resilience and shock-absorbing qualities of strong wool to help cushion and distribute impact in a reusable and aesthetically designed packaging system. Ewe & Fruit reimagines the gifting experience, combining function and aesthetic to create a more meaningful experience.



AUT RAU Textiles Research Centre



rau@aut.ac.nz

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Curator & Manager: Stephen Cleland
Exhibition Designer: Eddie Clemens
Operations Administrator: Nat Tozer
Gallery Assistant: Mitchell McGrath

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