

Minister's Approval for Linkage Projects 2023 Round 2 for Funding Commencing in 2024 Schedule

Approved Organisation, Leader of Approved Research Program (Columns 1 and 2)	Approved Research Program (Column 3)	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)			Total (\$)	Partner Organisation(s)
		2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)

Australian Capital Territory

The Australian National University

LP230200957	Re-emergence of First Nations burning in contemporary grassy woodlands	239,000.00	234,000.00	239,000.00	239,000.00	0.00	951,000.00	ENVIRONMENT, PLANNING AND SUSTAINABLE DEVELOPMENT DIRECTORATE - DEPARTMENTAL, RIVERINA LOCAL LAND SERVICES (LLS), SOUTH EAST LOCAL LAND SERVICES, CENTRAL TABLELANDS LOCAL LAND SERVICES, COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
Lindenmayer, Prof David B	<p>This project aims to inform the re-emergence of First Nations burning in contemporary endangered woodlands in south-eastern Australia by: (a) implementing a First Nations led burning program, and in conjunction, (b) monitoring the relative ecological responses, including those that influence fire-risk. The expected outcomes include new evidence to guide contemporary First Nations burning programs implemented by our project partners and others. The project will establish an interface between First Nations knowledge and western science to achieve long-lasting multi-disciplinary and cross-cultural outcomes. These include ecological and fire risk-mitigatory benefits and important cultural, social and economic benefits for First Nations peoples.</p>							

National Interest Test Statement

Prior to European colonisation, First Nations peoples used fire as a management tool in grassy woodlands in south-eastern Australia. These ecosystems are now endangered, with many degraded due to grazing, clearing and an absence of traditional burning. The reintroduction of First Nations burning as a management tool is still emerging in south-eastern Australia, and therefore, research on the corresponding ecological responses is limited. In contrast, this practice has been well-resourced and researched in Northern and Central Australia. This project aims to fill this research gap by (a) implementing a First Nations led burning program across contemporary grassy woodlands in NSW and the ACT, and in conjunction, (b) monitoring the corresponding ecological outcomes. This will generate new knowledge needed to inform and support future First Nations burning programs implemented by our project partners and others. The project will generate an interface between First Nations knowledge and management, western science, and government on how to best support the re-emergence of First Nations burning in contemporary landscapes to maximise cross-cultural benefits and generate long-lasting legacy outcomes. This project is timely and should be prioritised for bushfire-risk mitigation, to conserve ecological values, and to provide cultural, social and economic benefits for First Nations communities.

The Australian National University	239,000.00	234,000.00	239,000.00	239,000.00	0.00	951,000.00
Australian Capital Territory	239,000.00	234,000.00	239,000.00	239,000.00	0.00	951,000.00

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New South Wales								
Australian Catholic University								
LP230200003	Utilising Digital Texts to Foster Volitional, Proficient Readers	179,217.00	180,567.00	179,921.00	0.00	0.00	539,705.00	CHANCELLOR STATE COLLEGE, PALMVIEW STATE SECONDARY COLLEGE, COOLUM STATE HIGH SCHOOL
Scholes, A/Prof Laura	This project responds to our partner schools’ deep concern about falling reading levels – a national issue. It aims to investigate how to use digital texts to advance student volitional, proficient reading – a strategy that has not yet been trialled. Working collaboratively with our partner schools and the Centre for Literacy and Social Justice in the UK, we aim to generate interdisciplinary knowledge to enrich reading pedagogies. Expected outcomes include an open access digital resource for use in schools nationally to advance teaching expertise and student next generation reading proficiencies, vital for lifelong learning and transition to study and work in digital society.							
National Interest Test Statement								
Reading is essential for learning. It remains pivotal to success in school, tertiary study and every-day life. The nature of reading however is changing markedly due to the acceleration of technology over the past 5 years. Skills to read and understand digital texts are now essential in society. Many teachers are eager to embrace digital texts in their daily practice and see potential in deploying students’ digital enthusiasm to foster volitional proficient readers. The problem is teachers have identified a significant gap in their expertise and the availability of resources for utilising such texts in their classes. To address this problem, the interdisciplinary project team works with Australian teachers and the Centre for Literacy and Social Justice in the UK to generate evidence-based reading strategies utilising digital texts to advance reading volition and competence. Together we co-design, implement and evaluate digital reading pedagogies in schools and generate an open access website with evidence-based resources for use in schools to empower teachers nationally. Through forums, policy briefings and workshops we will share findings with Australian government departments to help them translate the findings into policy and targeted support to advance teaching expertise and young people’s next generation reading proficiencies, vital for lifelong learning and transition to study and work in digital society.								
LP230200847	Deadly Teaching: Enhancing Indigenous School Attendance and Well-being	298,301.00	294,545.00	294,585.00	297,973.00	294,373.00	1,479,777.00	WONNARUA NATION ABORIGINAL CORPORATION, CATHOLIC SCHOOLS NSW LIMITED
Craven, Prof Rhonda G	This project aims to significantly improve Indigenous students' school attendance, engagement and wellbeing. Indigenous students do not attend and engage in school, nor achieve educational and wellbeing outcomes commensurate with their non-Indigenous peers leading to long-term poorer socio-economic and wellbeing outcomes. This program will enable teachers to create a classroom culture where engagement and attendance are normative, thus enabling students' wellbeing. Expected outcomes will be greater school engagement, attendance and wellbeing for students; and teaching efficacy and job satisfaction. Benefits include enabling Indigenous achievement, wellbeing and full potential; teacher retention; and Australia's socio-economic wellbeing.							
National Interest Test Statement								
Indigenous students' school attendance, engagement, and educational outcomes have for decades remained lower than for non-Indigenous students, particularly in regional areas. High teacher turnover in regional schools also remains problematic. Engaging in school enables Indigenous students' wellbeing and educational outcomes. This project will capitalise on research-demonstrated advances from overseas and the wisdom of Indigenous communities to enhance teachers' knowledge and skills in changing the classroom climate to a supportive environment that increases Indigenous students' school attendance and engagement. This will enable student wellbeing and educational outcomes; and teacher job satisfaction and retention. Society will benefit by closing the gap to enable Indigenous students to get the most out of schooling and life's opportunities, increase teacher job satisfaction and retention, meet Indigenous community needs, advance educational policy and practice, benefit economic productivity and growth, and add materially to strengthening the socio-economic fabric of Indigenous communities.								
LP230201137	Game-Changers: Enablers of Indigenous University Students' Success	216,778.00	255,528.00	262,500.00	246,359.00	258,288.00	1,239,453.00	WONNARUA NATION ABORIGINAL CORPORATION
Craven, Prof	This project aims to identify game-changers that enable Indigenous students to complete university capitalising upon research advances and a powerful synergy							

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

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(Columns 1 and 2)	(Column 3)							
Rhonda G	<p>of Indigenous and empirical methods. The project will generate new knowledge about enablers of university completion, leveraging research-derived interventions, and Indigenous voice and agency. Expected outcomes include effective interventions, university completion and associated socio-economic benefits, and wellbeing. Benefits include identifying drivers of university completion, designing effective interventions, advancing data-driven Indigenous higher education policies and practices, promoting Indigenous socio-economic wellbeing, and building research capability and capacity.</p> <p>National Interest Test Statement</p> <p>Completing university is a game-changer for Indigenous Australia and a potent force for enabling full potential. Indigenous Australians are 3X more likely to be unemployed compared to non-Indigenous Australians but graduating from university closes this gap completely. However, Indigenous university students do not complete university (53%) at the same rate as non-Indigenous students do (26%), a gap of 27%. Unfortunately, there is a significant lack of essential research leveraging advances in both Indigenous and Western scientific research to underpin effective intervention. This research provides an unprecedented opportunity to contribute to closing this gap by identifying what works to enable Indigenous students to complete university and glean the long-term wide- ranging socio-economic benefits derived therefrom. The project is expected to produce measurable significant practical outcomes in enabling completion, wellbeing, and employment; research-derived policy; and conceptual advances and new knowledge about what works of relevance globally. The project also will deliver robust data- driven evidence for cross- sectoral policies, and enhanced research collaboration, capacity, and training for Indigenous students and communities. This is expected to yield innovation in enabling Indigenous completion; add materially to strengthening the wellbeing and socio-economic fabric of Indigenous communities and Australia; and advance global innovation in Indigenous higher education.</p>							
	Australian Catholic University	694,296.00	730,640.00	737,006.00	544,332.00	552,661.00	3,258,935.00	
Macquarie University								
LP230201022	Ethical Enterprise Representations for Personalised Sustainable Finance	247,917.00	232,867.00	202,807.00	0.00	0.00	683,591.00	FUTU SECURITIES (AUSTRALIA) LTD
Cao, Prof Longbing	<p>The rapidly evolving field of sustainable finance requires responsible services, satisfying environmental, social and governance (ESG) criteria. This requires disruptive FinTech innovations - ethical enterprise learning from whole-of-business financial data, however the corresponding valid theories and industrial solutions are unavailable. We aim to develop forward-looking ESG-integrated enterprise learning theories and tools to represent and analyse entire businesses and data and develop novel ESG ratings and ESG-efficient investment solutions. These will advance knowledge and capabilities in enterprise AI and sustainable finance, transform financial services, and enhance Australia's leadership in FinTech research and innovation.</p> <p>National Interest Test Statement</p> <p>Sustainable financial services play a pivotal role in today's economic, social and environmental developments, where there are critical gaps in building an enterprise understanding of complex data, environmental, social and governance (ESG) factors, clients and interactions across business lines for responsible and sustainable investing, risk, decisions and services. Hence, this project aims to address these demands and challenges by developing forward-looking AI-driven FinTech innovations, capabilities and a talent pipeline to provide automated and ethical enterprise AI to enable smart sustainable financial innovations. This will address multiple national science and research priorities including environmental change and cybersecurity. It will also result in significant national benefits including enhancing Australia's leadership in the rapidly growing ESG, AI and sustainable finance areas by producing a number of submissions to top-tier venues; transforming smart sustainable financial services to achieve sustainability goals (e.g., carbon footprint, sustainable growth) and personalised and sustainable investment and financial services; uplifting enterprise innovations and competitive advantage in responsible and ethical AI for interpretable evidence-based transformation and to lift productivity. The LP's multi-disciplinary research and linkage nature will nurture significant new research, innovation and training opportunities bridging computer science and finance.</p>							
	Macquarie University	247,917.00	232,867.00	202,807.00	0.00	0.00	683,591.00	

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LP230200283 Yip, Dr Andrew S	Co-designing Aboriginal Digital Museology Frameworks in the Southern Gulfs Museums around the world are increasingly scrutinised for how they represent First Nations peoples. Digital practices offer new ways to record and exhibit cultural knowledges, but they can also exacerbate existing biases. Through collaboration with Kaurna, Narungga and Nukunu peoples from Australia's Southern Gulf Country, this project aims to explore how a co-designed approach to digital museology can provide meaningful ways to record and share First Nations stories, addressing significant gaps in museum practices. Its outcomes will include new interactive tools for museums and communities to collect and interpret cultural data. Its benefits include structural solutions for museums and increased First Nations institutional agency.	159,897.00	167,311.00	114,325.00	62,759.00	0.00	504,292.00	SOUTH AUSTRALIAN MUSEUM, HISTORY TRUST OF SOUTH AUSTRALIA, NUKUNU WAPMA THURA (ABORIGINAL CORPORATION) RNTBC, KAURNA YERTA ABORIGINAL CORPORATION RNTBC, NARUNGGA NATION ABORIGINAL CORPORATION, POINT PEARCE ABORIGINAL CORPORATION
National Interest Test Statement Through collaboration with Aboriginal peoples from Australia's Southern Gulf Country, this project will design new culturally appropriate digital tools for Aboriginal communities to work with museums to record and present their histories. Museums worldwide have an obligation to tell First Nations stories. However, outdated museum systems and methods of recording data have limited institutional awareness of, and access to, First Nations knowledges and experiences. In collaboration with museums in Adelaide and Aboriginal partner organisations in the Spencer and St Vincent Gulfs of South Australia, researchers will develop digital tools that address these shortcomings and identify novel ways for community partners to record lived experiences. The project will produce new technologies and protocols for museums across Australia and internationally to work with First Nations communities to record and analyse digital data. It will provide tools for interacting with data that enable its use across divergent digital platforms, including desktop, mobile and on-site systems. It will lead to enhanced digital methods of preserving, collecting and exhibiting Aboriginal heritages that will be deployed in public exhibitions in both state institutions and community organisations.								
LP230200851 Michael, Dr Aron	Programmable active surface for next generation optical switch engines The global power consumption of data centers is set to exceed 3000TWh by 2030 if electrical switches are continued to be used. Electrical switches must be replaced by optical switches to reduce this exuberant power consumption. But, the dominant optical switch technology, pioneered by Finisar Australia, has power, speed, and mass production issues. This project aims to develop novel optical switch technology using lead titanate (PT) films on silicon to address the issues. It is expected to generate new knowledge in optical properties and microfabrication of PT-based films on silicon. The outcome will benefit Finisar to improve its product, capitalize on the huge market opportunities in data centers, and innovate new display technologies.	154,536.00	157,661.00	168,901.00	0.00	0.00	481,098.00	FINISAR AUSTRALIA PTY LIMITED
National Interest Test Statement The project aims to develop the next generation optical switch technology using programmable pixelated solid-state active surface. The new technology will address the power, speed, and mass production issues associated with the existing Liquid Crystal based technology, pioneered by Finisar Australia, that dominated the world market. As the technology will be developed in Australia, it has a potential to lead to a dedicated semiconductor foundry in Australia for large scale production in line with the Australian Government National Manufacturing Priority scheme. As such, the project will benefit Finisar Australia, the partner organization, commercially by enhancing its product quality, reducing cost, giving competitive advantage over its major competitors, capitalizing on new emerging market opportunities in data centers and driving innovation in display technologies. From market point of view, data centres will open up US\$17Billion market opportunity in the next 5 years. The market for display technologies is projected to grow to US\$2Billion by 2030. The commercial benefit to Finisar will have a direct flow-on effect to Australian economy.								
LP230200929 Gwilt, Prof Alison	Redesigning Clothing Waste Using a Circular Design Framework The project aims to develop an innovative circular design framework to map pathways to convert waste clothing into new products. It will do this through the application of a novel design process using redesign activities to create	52,074.00	102,055.00	66,344.00	0.00	0.00	220,473.00	ANGLICARE SA LTD., JAMFACTORY CONTEMPORARY CRAFT & DESIGN

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	commercial solutions. Collaborating with our partners AnglicareSA and JamFactory, it demonstrates how resource conservation can be increased by empirically testing original concepts for clothing, textiles and objects that advance social innovation. It transforms our understanding of textile waste and how it can be creatively reused in small-scale production runs with outcomes that optimize the social enterprise model to benefit local community and business.									INCORPORATED
	National Interest Test Statement The Project provides a circular design framework to creatively reuse clothing waste for new value-added products. Circular economy principles underpin the National Waste Policy Action Plan, which sets out a series of targets to address waste in Australia. In 2021 clothing was added to the Minister's Product Stewardship Priority List. The project supports Australia's increased resource conservation by robustly testing repair, refurbishment and repurposing strategies that create novel commercial solutions. Through expanding and detailing the creative scope for designing with discarded materials, it supports a social enterprise to build a culture of interdisciplinary collaboration across its clothing sorting and product manufacturing teams. The outcome will also benefit clothing brands, designer-makers, and charitable organisations, as each involve processes to keep materials in use that can be enhanced through a circular design framework.									
LP230201054 Zheng, A/Prof Min	Zero emission nitrogen removal process Eliminating greenhouse gas (GHG) emissions marks a transformative shift in the wastewater industry. This project aims to capitalise on our recent breakthrough to develop a wastewater process that operates with near-zero GHG emissions. This project assembles a multidisciplinary team to conduct extensive laboratory investigations on this process, glean advanced insights crucial for process optimisation, and also implement comprehensive testing in real field conditions. Two major Australian water utilities partners—jointly servicing about one-fourth of the country's population—will commit to adopting this process, to ensure consistent delivery of tangible, long-term economic, environmental, and social benefits to Australian communities.	292,052.00	291,858.00	291,858.00	291,858.00	296,858.00		1,464,484.00		MELBOURNE WATER CORPORATION, WATER CORPORATION
	National Interest Test Statement In Australia, water utilities have set ambitious targets to achieve zero-emission wastewater services by 2030. However, these objectives face hurdles due to substantial greenhouse gas emissions, particularly nitrous oxide, generated in the traditional nitrogen removal process. Leveraging recent discoveries in iron-mediated microbial reactions, this project aims to pioneer a novel technology that drastically minimises nitrous oxide emissions to near zero. Additionally, it maximises bioenergy recovery by converting wastewater organics into biogas, while reducing chemical and energy consumption by up to 80%. Conducting real-field process investigations, this project anticipates demonstrating the effectiveness and scalability of this technology and seeks to establish a benchmark for global adoption of the technology in wastewater treatment facilities. Collaborating closely with two major Australian water utilities—jointly serving about a quarter of the country's population—this project promises substantial benefits for Australian communities and aligns with their pursuit of economically and environmentally sustainable wastewater services.									
LP230201076 White, A/Prof David	Meta-expertise: A new class of human expert for responsible AI oversight Recent advances in Artificial Intelligence can efficiently protect the Australian passport from identity fraud and enhance identity management across society. To meet the major global challenge of responsible AI, effective oversight by human operators is essential, but there is no scientific basis for defining this role. This project aims to develop understanding of how perception and cognition combine in identification decisions, to define a new workforce of 'meta-experts' that oversee face recognition technology. Outcomes include new individual difference tests, targeted training and model face identification evidence reports. Benefits include enhanced trust in government and security of Australian identities across sectors of society.	165,084.00	284,138.00	175,652.00	159,624.00	76,672.00		861,170.00		DEPARTMENT OF FOREIGN AFFAIRS AND TRADE
	National Interest Test Statement									

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The task of deciding whether two images are of the same unfamiliar face is a critical component of modern identity management systems. This check safeguards against identity fraud which cost Australians over \$3.1 billion dollars in 2019 and is often linked to national and international organised crime. Since 2011, the Australian Passport Office has used Facial Recognition Technology to protect the Australian Passport from identity fraud, and use of this technology to authenticate identity of citizens has expanded across all sectors of society with the introduction of the government-provided Identity Matching Service. Robust human oversight of this technology is essential to ensure accurate and equitable outcomes for government and citizens, but the role of this new workforce has not been defined. This project will develop a new knowledge framework that will support selection and training of this workforce, define the inherent requirements for the job, and the form of face identification evidence they should produce. Expected benefits include improved accuracy, human oversight, and explanation of face identity decisions – supporting equitable and secure identity management across sectors of society. This project will also contribute more generally to defining the role of Australian workers in an era of Artificial Intelligence.								
	The University of New South Wales	823,643.00	1,003,023.00	817,080.00	514,241.00	373,530.00	3,531,517.00	
The University of Newcastle								
LP230201048	A new intelligent control model for tunnel boring machines	168,680.00	171,440.00	54,400.00	0.00	0.00	394,520.00	CHINA RAILWAY ENGINEERING EQUIPMENT GROUP CO., LTD.
Wang, Prof Shanyong	Aims: This project will develop a new intelligent tunnelling optimisation control model for TBMs based on an experimental and numerical study of rock fragmentation by drilling bits. Significance: The proposed method will provide a novel tool for engineers who wish to understand the fundamental mechanism of tunnelling in complicated rock mass of TBM and optimize TBM performance. Expected Outcomes: A series of charts and design recommendations will be developed, which have the potential to result in reduced infrastructure costs. Benefits: This technique will provide geotechnical, mining and transport engineering firms in Australia with a competitive edge in ensuring the safety of underground openings locally and nationally.							
	National Interest Test Statement							
	Most major geotechnical, mining or transport infrastructure projects that involve the construction of tunnels or new mines are likely to use tunnel boring machines (TBMS) for rock excavation. This is a potentially dangerous process as current technologies fail to accurately predict the performance of TBMs in complicated rock masses, which means that firms cannot implement measures to minimize the cost and scheduling problems associated with rock excavation. This project will develop a novel tool and design recommendations for engineers who wish to understand the fundamental mechanism of tunnelling in complicated rock masses. Use of these tools has the potential to enable some of Australia's biggest industries to optimise TBM performance and reduce costs, and provide geotechnical, mining and transport engineering firms in Australia with a competitive edge in ensuring the safety of underground openings locally and nationally. This project aims to create benefits to the economy, ensure the safety of the workforce and contribute to the long-term viability of the Australian transport network and tunnelling industry. The outcomes of the research will be shared with the relevant industries through industry trade journal articles and presentations to partners to ensure this technology is widely available to open new development avenues and increase construction opportunities for Australian businesses.							
	The University of Newcastle	168,680.00	171,440.00	54,400.00	0.00	0.00	394,520.00	
The University of Sydney								
LP230200712	Convert and compress: on-chip photonic processing for resilient RF systems	150,000.00	165,000.00	180,000.00	0.00	0.00	495,000.00	CRITICAL FREQUENCY DESIGN
Merklein, Dr Moritz	This project aims to develop a novel radio frequency (RF) photonic signal processor harnessing integrated analogue photonic signal processing to frequency convert and compress any RF signal across the entire spectrum within the receiver amplitude and frequency range. The project will create new knowledge in on-chip nonlinear optics and photonic integration. Expected outcomes of this project are new photonic-chip based systems with unprecedented frequency range, bandwidth, speed, latency and ultra-low size, weight, and power requirements. This compact system will play a vital role for situational awareness, and high data rate communication systems for defence and civilian use-cases.							

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	National Interest Test Statement This project develops critical capability in photonics, radio frequency (RF) photonics, signal processing and photonic chip integration. The key research gap it addresses is the lack of wide bandwidth RF signal processing capabilities covering tens of GHz. Addressing this gap and establishing sovereign RF processing capability is essential for Australia for managing and maintaining the integrity of the electromagnetic spectrum and operating next generation systems for high data rate communication, smart sensor networks and radar systems for situational awareness, to protect critical defence assets and ensure border security. Working with the Partner Organisation will ensure the developed technology is fit-for-purpose with a strong end-user focus. The ubiquitous use-case of the developed technology will be perfectly suited for translation outside of the research lab and grow a sovereign Australian high-tech industry. Translation of the project outcomes aligns with the goal of strengthening sovereign advanced manufacturing and develop on-shore semiconductor manufacturing. Australia has a unique opportunity to become a key player in photonic integration and this project will provide the foundation for an advanced photonic chip-based signal processing architecture ready for commercialisation. This project will train a new generation of photonics experts at the interface of engineering and physics within a strongly growing field.							
LP230200761 Troy, Dr Laurence J	Rental vulnerability in Australia Rental vulnerability means households face difficulties accessing and keeping affordable, appropriate rental housing. The project aims to measure and map rental vulnerability in Australia, and understand its drivers and lived experience. Through innovate methodologies combining narrative-based qualitative data, quantitative rental system datasets, together with digital mapping, this project will generate an Australian Rental Vulnerability Index (RVI) and advance our understanding of rental vulnerability's complex multi-dimensional nature and spatial distribution. The RVI will provide a powerful publicly accessible tool for partner tenant organisations as they plan and deliver services and advocate for renters across Australia.	220,743.00	291,371.00	295,990.00	74,755.00	0.00	882,859.00	TENANTS QUEENSLAND LTD, TENANTS' UNION OF NSW CO-OPERATIVE LIMITED, TENANTS VICTORIA LTD, CIRCLE GREEN COMMUNITY LEGAL, TENANTS UNION OF TASMANIA INC, DARWIN COMMUNITY LEGAL SERVICE INC
	National Interest Test Statement More Australians living in rental housing, and problems of access and affordability are deepening. This research will provide important and timely new knowledge about the vulnerability of households to rental housing problems. For the project's partner organisations - six peak tenants' organisations from across Australia - the research will be a powerful tool for planning and delivering tenants' advice services, and an evidence base for reforming rental housing policy and law. Employing a new methodology that shows the multidimensional nature of rental vulnerability, the project will show how rental vulnerability is constituted in clusters of indicators (such as rental stress, unemployment, and disability), and how rental vulnerability distributed geographically throughout Australia. The currently untapped client data of the partners will be deidentified and drawn on, along with other unpublished tenancy tribunal data, and interviews with local renters and stakeholders, to create a comprehensive new resource on rental housing problems. Published as an interactive online map, the Australian Rental Vulnerability Index (RVI) will be freely available to the public. Detailed findings and implications for rental housing policy will be discussed with service funders and other stakeholders in forums in each partner's state/territory. The project's wider significance as a piece of cutting edge data communication will be discussed at an international workshop and in scholarly outputs.							
LP230200886 Wei, Dr Li	Enable Sustainable Chemical Production by Multi-scale Electrode Engineering This project aims to realise efficient and sustainable hydrogen peroxide (H2O2) production from decentralised electrolyzers by engineering key electrolyser components at different scales. Efficient catalysts will be obtained from innovative chemical and physical methods and fabricated into an electrode with improved mass transfer efficiency. It will couple with a property-optimised solid porous electrolyte to assemble an electrolyser that can produce pure H2O2 solution with high energy efficiency. The project can also provide transferable design guidelines to other similar processes, advancing sustainable chemical production from electrolyzers and helping Australia secure a leading position in global sustainable technologies.	182,000.00	182,000.00	50,900.00	0.00	0.00	414,900.00	TOHOKU UNIVERSITY, AUSTSUN PTY LTD, SMS SCITECH PTY LTD, DR DAVID FREDERICK FLETCHER
	National Interest Test Statement The sustainable production of hydrogen peroxide, a green oxidiser and disinfectant, from renewable electricity-powered electrolyzers provides an attractive zero-emission alternative to the traditional production method. The electrolyzers can be deployed at the end user's premises to produce hydrogen peroxide of suitable concentration from air and water for direct consumption, eliminating the safety risks of handling traditional concentrated products. However, the electrolyser's unsatisfactory energy efficiency prevents this promising technology from fast expansion. With the partnership between universities and Australian industries, this project aims to improve the electrolyser							

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	performance by engineering key electrolyser components at different scales. An efficient electrolyser will be demonstrated and tested under real conditions. It provides a convenient supply of hydrogen peroxide that will benefit various applications, for example, sanitation in medical facilities and households and water treatment in regional Australia to secure clean water accessibility. The new knowledge generated from this project is transferable to other zero-emission chemical electro-production processes, accelerating the fast expansion of these clean technologies in Australia and, ultimately, boosting Australia's manufacturing sector and helping Australia become a global leader in emerging sustainable technologies.							
LP230200894 Kenny, Dr Katherine E	The Cost of Living (Well): A Sociological Study of Cost, Value, and Care This project aims to uncover the full extent and consequences of rising out-of-pocket healthcare costs in Australia. Out-of-pocket costs (OOPCs) often come as a rude shock and can lead to financial distress, compromised care, increased inequalities, and significant suffering. Taking a person-centred, strengths-based approach, this project will identify how people in need of high-cost care, their carers, and their healthcare providers navigate the difficulties posed by the new OOP economy of healthcare. Expected outcomes include publicly accessible resources and targeted policy and practice advice that will provide significant benefit by reducing the burdens, suffering, and harms caused by high OOPCs in Australia's current healthcare system.	53,596.00	67,670.00	82,611.00	0.00	0.00	203,877.00	CARERS NSW LIMITED
	National Interest Test Statement The problem of out-of-pocket costs (OOPCs) in the Australian healthcare system has reached crisis level resulting, most recently, in the NSW Government's Special Commission of Inquiry into Healthcare Funding (August 2023) and the Federal Government Strengthening Medicare Taskforce (July 2022). However, to date, economic approaches have predominated and little attention has been paid to the lived experiences of health, illness, cost, and care. Mobilising diverse patient, family, and service-provider perspectives, this project will create a person-centred qualitative evidence base detailing the full extent and consequences of the escalating OOPC crisis. This will underpin the development of publicly accessible and partner relevant resources to advance the cultural conversation about the costs of care and provide crucial input for policy and practice improvement. In this way, the project will directly contribute to Australia's Science and Research Priority of 'Health', which seeks to build healthy and resilient communities throughout Australia by improving outcomes and providing higher value care. The project will yield considerable social and cultural benefits by facilitating more open conversations about the costs of care; informing evidence-based resources to support and guide these conversations, and; reducing the harms and suffering caused by OOPCs in the Australian healthcare system.							
LP230200954 Meikle, Prof Steven R	Awake animal imaging: A transformative capability for second generation PET Recent advances in biomedical engineering have led to sophisticated devices for imaging the brains of laboratory animals. However, a major limitation of these devices is that the animal must be anaesthetised to keep the head still which interferes with the chemical signals in the brain we aim to measure. The aim of this project is to overcome this technological barrier by developing a fully enclosed animal cradle with integrated motion tracking and correction, thus enabling awake animals to be imaged in current generation scanners. The technology we create will open up new capability to study chemical signalling in the brain and generate new knowledge about the mechanisms underpinning the brain's responses to a changing environment.	97,003.00	101,371.00	53,314.00	0.00	0.00	251,688.00	BRUKER PTY LTD
	National Interest Test Statement The Australian Government, in partnership with universities, has made significant investments through the National Imaging Facility (NIF) into the latest, cutting-edge devices capable of imaging the brain at high spatial resolution. It is critical that, as imaging researchers, we maximise the value of the scientific information extracted from these technologies. The NIF small animal PET system at USyd has outstanding performance. However, like all NIF PET systems it requires the animal to be anaesthetised which limits the information we can obtain about the functioning brain when the animal is exposed to changes in its environment (e.g. a drug or environmental stimulus). Our research will create new capability that enables awake animal imaging to be performed on PET systems, thus ensuring their scientific potential is fully realised. This new technology will provide the Australian advanced manufacturing sector with a competitive edge by creating a powerful tool for evaluating neuroactive drugs in animal models. In the long term, it will lead to economic and health benefits for Australians by opening up new cross-disciplinary avenues for understanding the causes and developing novel therapies for mental health conditions, such as dementia, depression and drug abuse. We will promote this research and its long term benefits to the wider community via traditional and new media, public webinars and community forums.							

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(Columns 1 and 2)	(Column 3)	2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)
LP230200972 Payne, Prof Richard J	Reprogrammed cyclic peptides as next-generation targeted protein degraders This project aims to pioneer a technology for the discovery of bioactive peptides called PEPTACs. These innovative circular peptide molecules will be capable of interacting with two proteins simultaneously, leading to the targeted elimination of specific proteins within a cell. Expected outcomes include the delivery of a transformative method for the rapid discovery of bioactive molecules, significant advances in artificial intelligence for medicinal chemistry applications and the training of industry-ready early career researchers. This will provide significant benefits to Australia including strengthening our growing pharmaceutical and biotechnology sectors.	278,400.00	279,700.00	279,550.00	0.00	0.00	837,650.00	INSAMO SOUTH PTY LTD
	National Interest Test Statement This project will establish a cutting-edge technology for the discovery of high value bioactive molecules that will have wide-reaching application in fundamental research and in the biotechnology, pharmaceutical and agricultural industries. Many molecules currently used as drugs or pesticides are not as specific as we would like them to be and so have undesirable properties. Our new technology platform will allow the design and discovery of more specific molecules. This platform will also allow new disease causing proteins to be targeted in the future. Our work will be of significant interest to the Australian biotechnology and pharmaceutical sectors and will contribute to the advanced manufacturing national science and research priority. It will also establish critical capacity and advanced interdisciplinary skills in the rapidly growing fields of artificial intelligence, bioactive molecule discovery and manufacturing in Australia by training industry-ready early career researchers.							
LP230200977 Huang, Prof Dr Jun	Micro-structured zeolites for direct carbon capture for high humidity air This project aims to develop hydrophobic zeolites to prevent water adsorption and selectively capture CO2 from high-humidity air from ventilation and cooling systems in energy-intensive industries. By optimizing zeolite hydrophobicity and designing high-performance carbon capture processes via in situ nanoscale characterization, the project will significantly improve the efficiency and cost-effectiveness of direct air capture. The outcome will overcome current limitations in carbon capture, reducing investment and operating costs, and facilitating its successful deployment in industrial applications. This research aligns with Australia's 2030 climate change targets by providing a breakthrough solution for reducing greenhouse gas emissions.	300,000.00	300,000.00	300,000.00	0.00	0.00	900,000.00	SEAGULL COOLING TECHNOLOGIES ASIA PACIFIC SDN. BHD.
	National Interest Test Statement This project aims to develop hydrophobic zeolites for enhanced direct air capture in energy-intensive industries, targeting the critical challenge of water adsorption and selective CO2 capture from high-humidity air. The expected outcome is a significant reduction of energy consumption and overall capture costs, making carbon capture commercially viable worldwide. By providing cost-effective capture technology, the project enhances the competitiveness of energy-intensive sectors by reducing their carbon footprint and operational expenses. It supports the growth of clean energy industries, driving economic prosperity. The decarbonization of vital sectors like steel, cement, and chemicals benefits Australia's economy. The energy-efficient CO2 removal supports carbon reduction targets and promotes public awareness of sustainable practices. Industry collaboration facilitates the integration of hydrophobic zeolite based capture process into existing cooling systems, improving carbon capture efficiency and cost-effectiveness. This research has the potential to bring transformative change to Australia's fight against climate change and contribute to a sustainable future. The adoption and widespread deployment of this breakthrough technology will be fostered through collaboration, regulatory support, and knowledge dissemination, supporting sustainable goals and emission reduction targets.							
LP230200997 Dehghani, Prof Fariba	Elastic Biopolymer for Designing Surgical Sutures This project aims to address the shortcoming of a class of degradable biopolymers by the application of polymer chemistry and surface functionalisation. It is expected to render these polymers suitable for the creation of sutures using an innovative methodology. Expected outcomes encompass fortifying collaborations with industry, the development of technologies and products for additive manufacturing, the establishment of local sutures production capabilities, and a	263,200.00	277,100.00	298,775.00	0.00	0.00	839,075.00	ECOPHA BIOTECH PTY. LTD.

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	reduced dependence on the global supply chain. The expected advantages include proprietary products for industry partner, the enhancement of Australian export potential, and a reduced risk of suture failure in future veterinary and medical surgical procedures.							
	National Interest Test Statement The global pandemic has highlighted the susceptibility of supply chains, underscoring the strategic importance of establishing local manufacturing capabilities. Australia's innovative MedTech industry is well-positioned to take a global lead; however, maintaining competitiveness necessitates the establishment of a reliable local manufacturing facility. This project addresses this challenge by creating an innovative functional suture using locally sourced degradable biopolymers. Employing advanced polymer chemistry and surface functionalisation technology in conjunction with processable biodegradable polymers, the project aims to produce sutures with diverse sizes and desirable properties. This includes introducing customisable absorption characteristics and reducing the risk of infections. The technology holds broad applications across various surgical procedures, encompassing veterinary and medical fields such as cardiovascular, neurological, ophthalmic, and wound applications. The outcomes of this project will significantly benefit Australian small and medium enterprises, particularly in the competitive and volatile MedTech sector characterised by narrow profit margins. As the global demand for new health supplies continues to grow, the successful completion of this project has the potential to enhance the competitiveness of Australian research. Additionally, it is poised to contribute to the development of proprietary products with prospects for commercialisation.							
LP230201092 Lenzen, Prof Manfred	Sustainable and secure future energy pathways for Australia This project aims to investigate energy pathways to facilitate Australia's transition to a net-zero economy, whilst generating jobs and incomes, and building resilience against future geopolitical and climate change. It will generate new knowledge by creating an innovative Integrated Assessment Model for Australia, resulting in a set of sustainable and secure energy pathways. Outcomes include the Australian Energy Transitions Lab, a collaborative research platform for scientists, industry and policy-makers for energy system modelling. This will provide significant benefits, such as to enhance the NSW Department of Primary Industries' ability to inform national policy, and to position Australia as a global leader in climate change research.	103,088.00	108,534.00	111,327.00	0.00	0.00	322,949.00	DEPARTMENT OF PRIMARY INDUSTRIES
	National Interest Test Statement The project aims to find future energy pathways for Australia, that provide energy security, jobs and incomes, net zero emissions, resilience under future geopolitical and climate change. The project addresses a gap in our understanding of the opportunities and risks in transitioning to new energy systems. It will investigate questions such as: What does a future energy system look like if it is to supply secure energy to Australians; meet our net zero climate target; create jobs, household incomes and export revenues; and be resilient against increasing political instability, climate change and conflict in the world? By developing an innovative Integrated Assessment Model, this project will create the Australian Energy Transitions Lab, a collaborative research platform for scientists, industry and policy-makers for energy system modelling. The new knowledge generated in this project will show us where to invest in energy infrastructure, how to turn Australia into a self-reliant renewable energy powerhouse, and how to build resilience against future economic shocks, conflict, and supply-chain disruptions. It will enhance the NSW Department of Primary Industries' ability to undertake research and inform national policy. Designing the new Integrated Assessment Model to align with international standards will enable Australian researchers to develop future scenarios for the Intergovernmental Panel on Climate Change, and position Australia as a global leader in climate research.							
	The University of Sydney	1,648,030.00	1,772,746.00	1,652,467.00	74,755.00	0.00	5,147,998.00	
University of Technology Sydney								
LP230200030 Yang, A/Prof Yang	Multimaterial 3D Printed Antenna Arrays for Intelligent Wireless Systems The project aims to build a new class of 3D-printed antenna array designs using conductive and dielectric multi-material 3D printing solutions. It will drive the advancement of knowledge for rapidly prototyping smart antenna arrays for intelligent wireless communication and sensing applications. Low-cost and high-performance 3D-printed antennas will be delivered by addressing these challenges and providing a solution that combines technology, cost-effectiveness, and accessibility. The project has the potential to contribute to antenna systems,	104,853.00	114,749.00	114,749.00	0.00	0.00	334,351.00	SPARK3D PTY LTD

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	microwave electronics, electronic packaging and manufacturing. The implications extend beyond the technical aspects, impacting Australia's broader innovation and entrepreneurship ecosystem.							
	National Interest Test Statement For 5G and beyond, compact beam-forming mobile antennas will be extensively used in various mobile applications, including personal health care, device-to-device communications, radar sensing for unmanned vehicles, and intelligent transport. The intensively increasing exploding demand from many industrial sectors is expected to increase market growth considerably. The project will enable the industry partner to meet predicted future performance requirements demand in many ways, linking to 5G, 6G, the Internet of Things and artificial intelligence, enabling Australia. The project will undoubtedly allow our nation to take early advantage of millimetre wave technology for next-generation communications and consumer applications. The project's successful delivery will help maintain Australia's pioneering status in the global wireless industry into the future.							
LP230200824 Li, Dr Jun	Eco-friendly Ultra-High Performance Rubberised Concrete To reduce the carbon footprint of cement production in the construction industry, the development of low-carbon construction materials made from less Portland cement is a national priority. This project aims to replace natural aggregates in concrete with rubber particles from recycled tyres and replace energy-intensive cement with supplementary cementitious materials in a way that overcomes current problems with rubberised concrete. After developing an ultra-high performance eco-friendly rubberised concrete the project will explore its static and dynamic material and structural properties. The application in engineering practices such as roadside barriers will be studied leading to many advantages to construction industries and society. National Interest Test Statement Concrete is the second most consumed material in the world, the first being water. Twice as much concrete is used in construction as all other building materials combined. It is one of the most carbon-intensive industries, making up more than 8% of global greenhouse gas emissions globally per year. The need for viable and cost-effective solutions in the concrete industry are critical to support global changes to meet net zero targets. Our project aims to deliver an ultra-high performance concrete utilising tyre rubber and recycled fibre to reduce Portland cement consumption, improving the structural strength of concrete while addressing a global environmental issue. In Australia, 11.3 million used tyre are being stockpiled, landfilled and illegally dumped, which creates a significant environmental and health impact on communities. Attempts to address challenges in concrete reduction and tyre waste are not unique, but there is a notable gap in research regarding rubberised concrete mixture design involving high rubber content and supplementary cementing materials. Partnering with an industry leader in recycled rubber products will allow us to explore pre-treatments for cement bonding and deliver a comprehensive dataset on the mechanical behaviour of the new eco-friendly concrete, bringing economic and social benefits to the construction industry in a deliberate and expedited way.	74,000.00	74,000.00	74,000.00	0.00	0.00	222,000.00	TYREX AUSTRALIA PTY LTD
	University of Technology Sydney	178,853.00	188,749.00	188,749.00	0.00	0.00	556,351.00	
University of Wollongong								
LP230201046 Jiang, Prof Zheng Y	A novel austenitic stainless steel bipolar plate for hydrogen fuel cells This project aims to develop a green, efficient and cost-effective manufacturing process to produce a new stainless steel bipolar plate (BP) for hydrogen fuel cells (HFCs). This project expects to solve the long-standing issues in traditional BP materials that are either brittle, costly or susceptible to corrosion in acidic, high-humidity and temperature environments. The expected outcomes are a breakthrough in steelmaking and HFC industries by significantly reducing industrial pollution and operational costs and enhancing the overall performance of HFCs. This project will advance clean energy manufacturing in Australia and instil a new impetus to achieving the nation's net-zero target by 2050 in the context of long-distance hauling.	175,701.00	190,329.00	199,163.00	0.00	0.00	565,193.00	BAOSTEEL COMPANY, SNS UNICORP PTY LTD

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		2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)

National Interest Test Statement

Hydrogen energy is deemed a clean fuel due to zero or low emissions and flexibility in fuel sources. Hydrogen energy is expected to form an important part of Australia's and the world's decarbonisation strategy, especially when hydrogen fuel cell (HFC) vehicles are playing a superior role in long-haul travel and freight transport than battery electric vehicles. This project will significantly advance steel rolling theory and nanolubrication technology together with subsequent heat treatment and stamping of rolled sheets to produce a new bipolar plate (BP) with high performance for HFCs in a green, efficient and cost-effective manufacturing process. This project aligns well with the National Manufacturing Priority area of Recycling & Clean Energy, aiming to initiate a revolution replacing traditional BP materials to meet the demands of future clean energy manufacturing. The successful completion of this project will make significant contributions to Australia's steelmaking and HFC industries and thus help address the nation's environmental challenges in net-zero emissions by 2050. The research outcomes will be promoted by reinforcing the university-industry research alliance and partnership in rolling, lubrication and processing of steels and realising the commercialisation of the novel BP products and associated manufacturing and processing technologies, leading to a long-term collaboration in advanced manufacturing for Australia's clean energy transition in the future.

University of Wollongong	175,701.00	190,329.00	199,163.00	0.00	0.00	565,193.00
New South Wales	3,937,120.00	4,289,794.00	3,851,672.00	1,133,328.00	926,191.00	14,138,105.00

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Northern Territory

Charles Darwin University

LP230200709	Cat management guided by Country	192,300.00	221,242.00	164,775.00	0.00	0.00			578,317.00	TIWI LAND COUNCIL
Murphy, Prof Brett P	<p>The project aims to understand the seasonal variation in feral cat ecology and management effectiveness on the Tiwi Islands—where cats are rapidly eroding biodiversity values. Working with Tiwi Traditional Owners, the project plans to deeply embed Indigenous perspectives in the design and implementation of a cat management program. The project expects to deliver new knowledge of feral cat ecology and management effectiveness, and provide a framework for planning, communicating and evaluating management that is culturally meaningful to Indigenous managers. This should improve the uptake, effectiveness and longevity of feral animal management—and therefore enhance biodiversity conservation—on Indigenous lands.</p> <p>National Interest Test Statement</p> <p>Feral animals continue to have a devastating impact on biodiversity and ecosystem health across Australia's vast Indigenous estate, that covers 57% of Australia's land area. So far there has been little attempt to align the management of feral animals with Indigenous perspectives on land management, despite it being increasingly recognised that Indigenous Peoples must be involved in the co-design and implementation of land management programs, if those programs are to be successfully applied to their lands. In collaboration with an Indigenous land management organization, the project will focus on the development and implementation of a feral cat management program on the Tiwi Islands, a region of high biodiversity values that are being rapidly eroded by cats. It will provide a framework for developing feral animal management programs (including planning, implementation and communication) that are more meaningful to Indigenous people than existing or commonly applied approaches. This framework will provide a template that can be applied across much of Australia's vast Indigenous estate, increasing the cost-effectiveness of feral animal management across these areas. Effective management of feral animals will lead to improvements in environmental health and biodiversity, including the status of many threatened or culturally-significant species. In the future it may also allow Traditional Owners to earn payments through emerging biodiversity markets.</p>									
	Charles Darwin University	192,300.00	221,242.00	164,775.00	0.00	0.00			578,317.00	
	Northern Territory	192,300.00	221,242.00	164,775.00	0.00	0.00			578,317.00	

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Queensland								
Griffith University								
LP230200526	Culture for Climate: the performing arts and eco-creative sustainability	70,843.00	171,036.00	88,693.00	0.00	0.00	330,572.00	PAC AUSTRALIA PTY LTD, ONE STONE ADVISORS
Beer, Dr Tanja	This project will fill an urgent knowledge gap that is stalling the transition of Australia's performing arts to environmental sustainability. We will determine how performing arts organisations can respond to the climate crisis using creative sustainability approaches in production and operational processes. Our project will deliver creative sustainability strategies that have been tested and proven in Australia's performing arts sector, plus a framework for embedding sustainability goals in the National Cultural Policy. Australia's performing arts sector has an appetite to transition to sustainability and to be leaders in meeting the challenges of climate change. This project will deliver tangible tools to fast-track this transition.							
National Interest Test Statement								
The Australian Government aims to be Net Zero by 2050, with emissions reductions of 43% below 2005 levels by 2030. This project aims to investigate strategies to enable Australia's performing arts sector to adapt and contribute to this future reality. Despite the escalating climate crisis, the environmental challenges and opportunities facing the sector remain under-researched. It is vital to understand the significant leadership role that performing arts organisations can play in addressing climate change through the creative greening of their production and operational processes. This project will generate new knowledge and protocols that support this leadership, and will be a framework that can be scaled up to the cultural and creative industries as a whole. Project outcomes will also make a significant contribution to cultural policymaking, especially Australia's next National Cultural Policy, in respect of embedding context-sensitive environmental sustainability goals. The research design directly responds to the challenge of knowledge translation. A practical case study approach links artistic creativity and environmental sustainability to support the agency of project partners and performing arts organisations to take the lead in the transition. The outcomes of the project will be promoted in the sector through a range of industry-accessible forums with national reach, hosted by Griffith University and supported by Partner Organisations PAC Australia and One Stone.								
LP230200736	Reducing the Informal Vote in Queensland Elections	57,665.00	60,535.00	51,003.00	68,028.00	105,113.00	342,344.00	ELECTORAL COMMISSION OF QUEENSLAND
Martinez Coma, Dr Fernando	Queensland's informal vote rate is not only high and rising, but in a pattern that defies explanation. In order to combat the problem of hundreds of thousands of wasted votes at every Queensland election we must first understand it. This collaboration with the Electoral Commission of Queensland addresses the problem at both state and local levels over 4 election periods using 6 distinct studies. Combining experimental data, aggregate-level data and individual-level data, the project will provide a thorough, multi-dimensional picture of informal voting. It will then propose remedies to be trialled and assessed. In sum, this project will represent the most complete and nuanced study of informality ever conducted in any Western democracy.							
National Interest Test Statement								
Australia —and Queensland in particular —experiences high and rising rates of informal voting at every election. These wasted votes are undesirable because they compromise the central democratic values of inclusiveness, equality and legitimacy, depriving citizens of the representation they need. A key strategic objective of the Electoral Commission of Queensland (ECQ) is to reduce levels of informal votes, particularly in communities with high rates and also high numbers of young, disadvantaged and culturally and linguistically diverse electors. This project proposes to achieve just that. But first we must fully understand the nature of the problem in Queensland where the pattern of informality is atypical. This collaboration with the ECQ will produce knowledge of the patterns and sources of informal voting at both state and local Queensland elections. Combining 6 distinct yet inter-related studies over 4 elections, this will be the most ambitious, multi-dimensional study of informal voting ever conducted in an advanced democracy. The project will also develop test solutions for arresting the problem and thereby assist the ECQ in meeting its goal of reducing informal voting. Despite its Queensland focus, the study's findings will be applicable to all Australian jurisdictions, including the Commonwealth, as well as other compulsory voting regimes around the world. This will enhance Australia's reputation as one of the most inclusive and successful voting systems in the world.								
LP230200778	The key to the long-term health of Australian rivers	280,902.00	298,068.00	298,881.00	0.00	0.00	877,851.00	SYDNEY WATER

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Burford, Prof Michele A	<p>This project tackles the challenging issue of predicting the ability of rivers to process anthropogenic nutrients (=assimilative capacity). This foundational information is needed for catchment restoration efforts, including market-based approaches. The project will combine the world-class expertise of modellers, biogeochemists, water and environmental managers, and catchment restoration experts to undertake targeted experimental work, analysis of long-term monitoring data, and modelling studies. Using this multipronged approach, expected benefits include improving the accuracy of predictions of the capacity of rivers to assimilate nutrient sources, now and in future conditions, such as population growth, and climate change scenarios.</p> <p>National Interest Test Statement</p> <p>Halting the water quality decline of rivers by undertaking effective catchment management actions is desperately needed globally. Poor water quality impacts drinking water supplies and ecosystem health. However, the key to assessing the benefits of management actions is understanding the ability of rivers to process or assimilate nutrients coming from human activities. This includes the use of market-based approaches to reduce catchment nutrients. However, our understanding of the ability of rivers to process nutrients from different sources remains limited, with models typically relying on limited data, resulting in high uncertainty in predictions. We will take an innovative approach by linking the expertise of environmental managers in government, the water industry, and researchers to establish an evidenced-based understanding of how multiple rivers are able to process nutrients and then use a sophisticated model to predict how catchment rehabilitation, population growth, and climate change will affect water quality. By collaborating with government and water industry partners, the outputs of the project can be translated into action to guide investment in catchment and river rehabilitation. It will also provide the scientific foundation to enhance the nutrient trading schemes to maximise environmental and social benefits and bring catchment management to a new level.</p>	Griffith University	409,410.00	529,639.00	438,577.00	68,028.00	105,113.00	1,550,767.00	CORPORATION, DEPARTMENT OF ENVIRONMENT AND SCIENCE, COUNCIL OF MAYORS (SEQ) PTY LTD, HEALTHY LAND AND WATER LTD
Queensland University of Technology									
LP230200806	Assessing the operation of voluntary assisted dying laws in Australia	130,626.00	134,272.00	128,012.00	0.00	0.00	392,910.00	QUEENSLAND HEALTH, QUEENSLAND VOLUNTARY ASSISTED DYING REVIEW BOARD, WESTERN AUSTRALIAN VOLUNTARY ASSISTED DYING BOARD, DEPARTMENT OF HEALTH OF WA, VICTORIAN VOLUNTARY ASSISTED DYING REVIEW BOARD, VOLUNTARY ASSISTED DYING COMMISSION TASMANIA, SA DEPARTMENT FOR HEALTH AND WELLBEING	
White, Prof Ben P	<p>This project will undertake the first national assessment of how Australia's new voluntary assisted dying (VAD) laws are operating in practice. Working with VAD Boards and health departments in 5 states, this research will use, for the first time, non-public Board data to better understand the VAD experience at state and national levels. Semi-structured interviews with key stakeholders will address knowledge gaps including about community awareness of VAD, access barriers and health professional experiences. Based on research findings, the project will recommend changes to law, policy and practice which, if implemented, will improve VAD quality and safety for the benefit of patients, families, health professionals and the community.</p> <p>National Interest Test Statement</p> <p>Australia has voluntary assisted dying (VAD) laws in all states allowing terminally-ill patients who are suffering to seek assistance to die. The significance of these new laws means they must be carefully monitored but there has been only limited research about them. This project collaborates with VAD Review Boards (independent bodies that oversee the operation of VAD) and health departments in 5 states to assess whether these VAD systems are operating safely: the system should be accessed only by eligible patients, but there should not be unfair barriers to this choice. A unique feature of this research is that it uses, for the first time, non-public data from 5 state Boards to provide a national assessment of VAD systems. Outcomes of this research include proposed changes to VAD law, policy and practice to enhance its safety and accessibility. Working with the Boards and departments who are partners in this research will assist in translating these recommendations into practice. The researchers will also engage with government, health and other stakeholders to shape and disseminate findings. This research will benefit patients who want this choice and their families through enhanced access while still ensuring system safety to protect potentially vulnerable members of society. Health professionals participating in VAD will benefit through better supports for their involvement and the community as a whole will benefit through confidence in system oversight.</p>								

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(Columns 1 and 2)	(Column 3)	2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)
LP230200917	One-step separation and collection for pharmaceutical industry	198,737.00	203,377.00	208,028.00	208,028.00	0.00	818,170.00	TIGER PHARM PTY LTD
Sun, Prof Ziqi	<p>This project aims to design and manufacturing large-scale separation and collection membranes with tuneable surface properties to achieve effective oil/emulsion/microparticles separation and collection performance by learning from natural one-step separation and collection functionalities. The outcomes will provide a realistic solution to the key challenges in separation and separation demands in current pharmaceutical industries, including high contamination, easy blocking, low-efficiency, and lacking sustainability. This project will advance the knowledge base of sustainable separation technologies and brings technological breakthroughs to industry partners, pharmaceutical industries, and separation end-users.</p> <p>National Interest Test Statement</p> <p>Separation and collection of floated or dispersed oils, emulsions, and microparticles from aqueous media are one of the most critical processes in pharmaceutical industry and represent up to 80% of pharmaceutical manufacturing costs, which urges the upgradation of pharmaceutical separation and collection technologies. This project will design and manufacture large-scale separation and collection membranes with tuneable wettability to achieve effective separation and collection performance by learning from the natural one-step principles. The outcomes of the project will offer a realistic solution to the challenges of high contamination, easy blocking, low-efficiency, and lacking sustainability in current pharmaceutical separation technologies and finally provide a breakthrough technology to lower the overall cost of the entire pharmacy industry. This project aligns well with the core strategy of the industry partner, and the outcomes of this project will be translated to real-world pharmaceutical industries together with the industry partner. This project will hence contributes to cutting-edge technology innovations, leads to research transformation to end-users, and brings significant economic, environmental, and social benefits to both Australian and international communities.</p>							
LP230200994	Superior Cold-formed Steel Floor Truss Systems to Modernize Construction	149,804.00	149,925.00	79,774.00	0.00	0.00	379,503.00	SCOTTSDALE CONSTRUCTION SYSTEMS
Mahendran, Prof Mahen	<p>This project aims to develop new and improved high strength cold-formed steel (CFS) floor truss systems for use in mid-rise CFS buildings worldwide. It will generate new knowledge of the true behaviour and capacity of various CFS truss systems using extensive experimental and numerical studies. Expected outcomes are improved truss systems through simple strengthening techniques, new connections and built-up sections with reliable design methods. New lightweight CFS floor truss systems made of optimised sections and truss configurations will also be developed. These outcomes will enable modernized off-site construction to produce faster, safer, sustainable, and low-cost mid-rise building solutions, thus addressing the current housing crisis.</p> <p>National Interest Test Statement</p> <p>Significant timber and labour shortage and lack of modernized construction have led to the current housing crisis in Australia. Modernized off-site construction using prefabricated lightweight and high strength cold-formed steel (CFS) products will produce faster, safer, sustainable, and low-cost mid-rise CFS building solutions, and help achieve the Australian government's target of 1.2 million new homes in 5 years by the construction of mid-rise residential apartments in the suburbs. However, there is lack of knowledge, design methods and innovative systems for one of the critical mid-rise building component, CFS floor truss. This project will provide new knowledge of the complex behaviour and design of various high strength CFS floor truss systems, and develop improved, new and optimised systems. Adopting the project outcomes via an intelligent software integrating design, fabrication and construction will enable widespread, safer and sustainable use of low-cost CFS floors in mid-rise residential buildings, and benefit the Australian design, manufacturing and construction industries and the community. Australian companies manufacturing high strength steel sections will gain significantly by expanding their applications worldwide. Project outcomes will contribute to the government priorities of advanced manufacturing and climate resilience in built environment. Importantly, they will provide a solution to the current housing crisis involving both shortage and affordability.</p>							
LP230201082	Biorefining of Brewer's Spent Grain into Novel Dietary Fibres	124,321.00	129,321.00	129,321.00	0.00	0.00	382,963.00	GRAINSTONE PTY LTD, ALLOZYMES PTE LTD
Zhang, A/Prof Zhanying	<p>Dietary fibres have a market value of multi-billion dollars. This project aims to produce novel dietary fibres from a food industry waste, brewer's spent grain, using low-cost green alcohol solvents and novel enzymes. The expected outcomes include two types of novel dietary fibres, new knowledge in understanding of property-functionality relationships of the dietary fibres as well</p>							

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	as improved process sustainability and economics achieved with the use of innovative biorefinery technologies. The biorefinery technologies are applicable to other cereal grains and grain processing by-products, such as wheat bran, accelerating the development of a new multi-billion-dollar nutraceutical manufacturing industry in Australia.							
	National Interest Test Statement The food industry in Australia generates significant amounts of organic wastes and by-products, such as brewer's spent grain and grain brans. These wastes and by-products are rich in protein and dietary fibres. However, currently they are disposed to landfill or used as low-value feed. Existing technologies for extraction of protein and dietary fibres from food processing wastes and by-products can not be commercialised because of the poor process economics. The successful implementation of this project will lead to the development of techno-economically viable biorefinery approaches for upcycling food wastes and by-products. Commercialisation of the multi-product biorefinery process by project industry partner will diversify the products from food wastes and by-products, increase the process economics and sustainability, and reduce the business risk. The new biorefinery technologies will also accelerate the establishment of a new multi-billion-dollar nutraceutical manufacturing industry in Australia. This will not only create hundreds of new jobs, but also strengthen Australia's leading position in manufacturing and exporting nutraceutical products.							
LP230201087 Behrendorff, Dr James B	Resolving bottlenecks in natural product biomanufacturing Biochemicals that cannot be produced through synthetic chemistry are often amenable to biotechnological production, but industrialisation is hindered by inefficient enzymes at key steps. This synthetic biology project aims to address this important problem by combining ancestral protein reconstruction, machine learning for prediction of enzyme function, and multiplexed in vitro metabolic pathway prototyping. The power of this approach will be demonstrated by enhancing cytochrome P450 enzymes and prenyltransferases for biosynthesis of alkaloids and flavones. We expect that the project outcomes will reduce research and development costs associated with biotechnological manufacturing of high-value natural product biochemicals.	176,774.00	181,937.00	187,123.00	0.00	0.00	545,834.00	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION, DELICA THERAPEUTICS PTY LTD
	National Interest Test Statement Australia's Department of Industry, Science and Resources recently identified Synthetic Biology-based manufacturing as a Critical Technology in the National Interest. The value of chemicals produced via synthetic biology exceeding \$11 billion USD in 2022 and projected to reach \$20-30 billion USD by 2030, but Australia currently has negligible domestic manufacturing of small molecules. Advances in synthetic biology present an opportunity for Australia to access this segment of the global economy. Synthetic biology-based manufacturing methods enable biotechnological synthesis of complex natural products that are of high value and can be produced at economically meaningful scales in relatively small facilities. This project advances capability and cost-effectiveness of natural product manufacturing in partnership with an Australian company that aims to establish on-shore production capabilities. Importantly, training opportunities will be created concomitantly, that will increase the domestic skill base necessary for establishing biotechnological small molecule manufacturing. The technological improvements gained from this project will also lower the barrier to entry for biotechnological production of bioactive compounds from Australia's native flora and fauna. This project is to be conducted in collaboration with CSIRO and will benefit national capability building in the use of synthetic biology for biomanufacturing of high value small molecules.							
LP230201118 Barner-Kowollik, Prof Christopher	High Performance Photoinitiators for 3D Laser Lithography To overcome key challenges of 3D printing on the micrometer scale, this projects develops next generation photoresists for 3D laser lithography. Based on a precision photophysical analysis approach, a blue print will be derived that creates the missing link between the chemical structure of photoinitiators and their ability to print in two photon absorption processes. Based on this blueprint, high performance initiators will be synthesised and embedded into photoresists that break two barriers in contemporary 3D laser lithography: (i) Resists that decouple photopolymerisation processes from the printing process to eliminate volume shrinking during printing. (ii) Resists that allow to print 3D structures in the presence of living cells.	60,180.00	60,180.00	60,180.00	0.00	0.00	180,540.00	NANOSCRIBE GMBH & CO KG
	National Interest Test Statement							

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	The manufacturing industry has been revolutionised by 3D printing, which uses a digital blueprint to generate objects in a variety of sizes and shapes. Miniaturized objects have important applications in the fields of telecommunications, data storage, optical devices and human health. The ability to print tiny objects in the presence of living cells will enable key advances in regenerative medicine including the development of 3D printed skin and organs. 3D printing processes for biological applications are currently hampered by slow printing speeds, volume shrinkage and inks that lack water solubility and are toxic to cells. This project will develop new high-performance inks for 3D printing that overcome these critical limitations. Developed in collaboration with a world leader in 3D printing, the project will increase the uptake of 3D printing in a variety of commercial manufacturing processes, building a foundation for on-shore manufacturing capacity in Australia. The choice of industry partner is driven by the fact that Australia does not have any companies that produce two photon printers, yet this technology is essential for 3D precision printing at the micro-level. NanoScribe's technology has applications in microoptics, microfluidics, integrated photonics, life sciences, micromechanics and materials engineering. Australia needs to connect with the world-leader in 3D laser lithography and hold intellectual property in this space to protect its manufacturing future.							
LP230201126	Precursors for perovskite solar from an Australian minerals supply chain	149,500.00	149,750.00	143,000.00	146,500.00	0.00	588,750.00	LAVA BLUE LTD
Couperthwaite, Prof Sara J	The aim is to develop production processes for transforming Australian resources into photovoltaic (PV) perovskite precursor specialty materials for next generation solar cells. Expected outcomes of this project include: (1) sourcing Australian resources, including mine wastes, to secure supplies for precursor materials, (2) demonstrate at scale, using novel processing methods, the production of bespoke precursor materials, and (3) enhance knowledge in impurity impacts on perovskite efficiency and stability in order to develop capacity in building next generation PV perovskite solar cells. This research will develop significant sovereign capabilities to supply and produce new energy technologies to achieve net zero emissions by 2050.							
	National Interest Test Statement							
	Solar power systems that use silicon as the photovoltaic material to capture the light are the current industry standard. However, companies around the world are starting to commercialise solar cells using halide perovskites, either as an added layer on top of silicon to increase the light capture, or as a standalone device to take advantage of good efficiency, cheaper manufacturing processes, good low light performance and the potential to be constructed on flexible surfaces. The precursors for these perovskites are manufactured from minerals that are found and mined in Australia including tin, bismuth and lanthanum. Growing demand for perovskites is creating new opportunities for Australia to supply these minerals in a highly value-added form, processed from the primary ores mined in Australia into very pure materials that are needed to manufacture the solar cells. This project will develop, demonstrate and commercialise methods for manufacturing these high purity, high value materials in Australia starting from primary ore. As well as opening up new export markets for Australian minerals, the project will also make it possible for Australian manufacturers of perovskite solar cells to secure supplies of the necessary inputs from Australian suppliers.							
	Queensland University of Technology	989,942.00	1,008,762.00	935,438.00	354,528.00	0.00	3,288,670.00	
The University of Queensland								
LP230200469	Identifying sources of contaminants of concern entering Australian sewers	192,076.00	197,887.00	198,695.00	0.00	0.00	588,658.00	QUEENSLAND URBAN UTILITIES, MELBOURNE WATER CORPORATION, CITY OF GOLD COAST, SOUTH EAST WATER CORPORATION, TOWNSVILLE CITY COUNCIL, DEPARTMENT OF ENVIRONMENT AND SCIENCE, ENVIRONMENT PROTECTION AUTHORITY VICTORIA, QUEENSLAND HEALTH, QUEENSLAND WATER DIRECTORATE, JAUME I UNIVERSITY
Mueller, Prof Jochen F	This project aims to identify and quantify sources of contaminants of concern entering Australian sewer systems by mapping industrial inputs into catchments. A world-first systematic sampling and archiving program will be established for trade waste, combined with an ongoing analytical program to profile chemical contaminants linked to industry. The project will also determine baselines for domestic inputs and associated chemical fingerprints. Comparing domestic and industrial inputs will aid in identifying the main polluters in a catchment that is critical to designing the best source control options. This forms the basis for effectively reducing releases of chemical contaminants into wastewater treatment plants and receiving environments.							
	National Interest Test Statement							

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LP230200690 Healy, Prof Karen E	<p>Empowering peer-parent and family advocacy in Australian child protection</p> <p>This project addresses a pressing national challenge of escalating threats from contaminants of concern. Wastewater treatment processes are not able to effectively remove persistent chemical hazards, hence the release of such chemicals into waste streams results in the continuous contamination of wastewater effluent and/or biosolids. In this collaboration between academia, utilities, and regulatory bodies, we aim to establish a robust program for sampling and archiving wastewater from different industries from initial release into the sewer networks, as well as from sub-catchments without industry input, which contributes to domestic baselines. We will use state-of-the-art analytical techniques to profile samples and use this to establish a source tracking toolkit that will aid in identifying key polluters within catchments. Outcomes will be used by policymakers to formulate evidence-based regulations, by water utilities to improve trade waste management, and by communities to understand and reduce chemical exposure. In the long term, effective source control will lead to cleaner waste streams, delivering substantial benefits through reduced chemical footprints and is key to high-quality resource recovery products. By enhancing Australia's capacity to monitor, regulate, and mitigate contaminants, this project significantly contributes to Australian environmental sustainability, public health, and the transition towards a circular economy.</p> <p>This project aims to transform Australian child protection systems by building national capabilities in peer-parent and family advocacy (PPFA). Its significance lies in being the first study to examine the scope, characteristics, and the resources needed to build and sustain PPFA in Australian child protection systems. Using mixed research methods, this co-designed project entails a unique partnership with families with experience of child protection intervention, family support and disability services, and Aboriginal and Torres Strait Islander communities. Expected outcomes include strengthening of PPFA capabilities to reduce the incidence, and the financial and social costs, of children's removal from families, communities, and Country.</p>	233,000.00	239,000.00	227,000.00	0.00	0.00	699,000.00	MICAH PROJECTS LTD, COMMUNITY LIVING ASSOCIATION INC, LIFE WITHOUT BARRIERS, ABSEC- NSW CHILD, FAMILY AND COMMUNITY PEAK ABORIGINAL CORPORATION, QUEENSLAND ABORIGINAL & TORRES STRAIT ISLANDER CHILD PROTECTION PEAK LIMITED, FAMILY INCLUSION STRATEGIES IN THE HUNTER INCORPORATED, THE FAMILY INCLUSION NETWORK WA INC
<p>National Interest Test Statement</p> <p>Australian child protection systems are in crisis. In 2021-2022, Australian governments spent \$8.2 billion on child protection services, a real increase of 7.5% from the prior year, and a doubling of costs over the previous decade. The over-representation of families with complex needs, children of parents with intellectual disability, and of First Nations families as subjects of child protection investigations and child removals to out-of-home care is substantial and growing. Concern exists about the financial sustainability of Australian child protection systems and of the harms these systems can cause to children and to their relationships with parents, families, communities, and Country. This project aims to build knowledge and practical resources to empower parents and families, with lived experience of child protection systems, as peer-advocates and change leaders. Our approach involves a unique partnership between researchers, peer-parent and disability advocacy groups, Aboriginal and Torres Strait Islander child protection peak bodies, and community services. Project outcomes will progress the Australian Child Protection Framework's (2021-2031) vision for all children to grow up safe, connected to and supported by their family, community and culture. Our Partner Organisations will use the knowledge generated to strengthen parents' and families' roles in advancing family inclusive approaches to child safety and to reducing the incidence and costs of child removals.</p>								
LP230200765 Craik, Prof David J	<p>Robotics & automation for plant-based production of pharmaceutical peptides</p> <p>The aim of the project is to produce peptide-based drugs in plants. This is significant because peptides are viewed as exciting new generation drugs that are potentially safer and more effective than traditional 'small molecule' drugs. Plants offer the possibility of producing these drugs in a sustainable, eco-friendly way, avoiding harsh chemicals and solvents used in traditional drug manufacture. Expected outcomes are (i) engineered plants custom designed for peptide production, (ii) peptide drugs suitable for plant-based production and (iii) proof of concept that these designer peptides can be produced in a host plant. Anticipated benefits are economic (from future potential products) and environmental (from sustainable manufacture).</p>	297,160.00	297,072.00	298,848.00	0.00	0.00	893,080.00	PHYLLOME PTY LTD, PHARM-A-CARE LABORATORIES PTY. LIMITED
<p>National Interest Test Statement</p>								

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LP230200820 Mercer, Prof Timothy R	Improving Quality Control of mRNA Manufacture with Nanopore Sequencing The mRNA manufacturing industry has grown rapidly to address the worldwide demand for vaccines. However, more than half the time and cost to manufacture an mRNA vaccine is required for quality control, which is currently slow, expensive, and inaccurate. We have developed a streamlined nanopore sequencing test, VAX-Seq, that analyses mRNA quality with superior accuracy and at reduced cost and time. This project partners with Oxford Nanopore to validate VAX-seq for use in routine mRNA manufacture. To demonstrate its advantages, we will benchmark VAX-seq against current quality control methods. Whilst we anticipate its adoption across the pharmaceutical industry, the greatest benefit of VAX-Seq will be safer and more effective mRNA vaccines.	277,977.00	288,263.00	173,216.00	0.00	0.00	739,456.00	OXFORD NANOPORE TECHNOLOGIES
National Interest Test Statement The mRNA manufacturing industry has been prioritized by the Australian Government for pandemic preparedness, future growth, and high-value jobs. However, the quality control of mRNA vaccines is currently slow, expensive, and inaccurate. Our nanopore sequencing test can quickly and accurately analyse mRNA quality control. The BASE mRNA facility, in partnership with Oxford Nanopore Technologies, proposes to qualify this test for regulated use during mRNA manufacture. Given its advantages, we anticipate the test will be widely adopted across the pharmaceutical industry, and will position Australia at the forefront of mRNA manufacture. The test will support our sovereign capabilities in mRNA vaccine manufacture, and support the development of new mRNA vaccines in response to future pandemics and for emerging agricultural pests.								
LP230200835 Wang, Dr Liguang	Enhancing flotation for sustainable production of lithium minerals The project aims to develop a greener and more sustainable particle separation process based on froth flotation for increased production of lithium mineral concentrates. This research builds on a recent breakthrough in flotation process intensification to overcome the challenge faced by the industry – how to improve product quality without sacrificing the recovery. The expected outcomes of this project include increased flotation recovery and product grade and important knowledge for full-scale design. This should boost production of lithium mineral concentrates while utilising existing equipment and reduce costs and adverse environmental impacts in processing the ores, underpinning a low-carbon future.	98,401.00	102,542.00	92,682.00	0.00	0.00	293,625.00	GLOBAL LITHIUM RESOURCES LIMITED
National Interest Test Statement A low-carbon economy needs efficient and sustainable concentration and recovery of critical minerals for making batteries to store renewable energy. This project aims to develop and demonstrate a new particle separation process to improve concentration and recovery of lithium mineral concentrates at reduced costs and environmental burden. This project will advance the knowledge base of mineral processing and propel technological innovations in recovery of lithium minerals whose global demand is projected to increase by multiple folds by 2050. It will help Australia grow its economy through boosting production of high-quality critical minerals in a sustainable way to meet global demand for energy transition. The research results will be shared with Australian mining companies. The knowledge generated from this project will be translated into improved efficiency of lithium beneficiation processes adopted by Australian lithium mineral producers. This project fits into one of Australia's current Science and Research Priorities - Resources, and addresses the Practical Research Challenge - technologies to optimise yield through effective and efficient resource extraction, processing and waste management. It also fits into one of the National Manufacturing Priorities – Resources Technology and Critical Minerals Processing.								
LP230200892 Yin, Prof Hongzhi	Building an Aussie Information Recommendation System You Can Trust This project aims to address the escalating public distrust in online media platforms arising from misinformation, compromised user privacy, echo	176,178.00	203,742.00	205,804.00	0.00	0.00	585,724.00	MOSTWA MEDIA AND ENTERTAINMENT

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

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	chambers, and community bias. Collaborating with a well-established Australian online media platform, the project expects to build Australia's inaugural trustworthy information recommender system by spearheading the design and development of cutting-edge misinformation filters, user-controlled privacy protection mechanisms, diversity-aware information recall algorithms, and community fairness-enhanced ranking algorithms. These technology advancements will seamlessly integrate into online media platforms to create a more reliable information dissemination environment and foster public trust.							
	National Interest Test Statement Online media platforms have become the primary channels for news dissemination. Yet, these platforms are grappling with a pressing challenge of public distrust arising from pervasive issues such as misinformation, compromised user privacy, echo chambers, and community biases. This challenge is particularly acute in the context of Australia's multicultural society. This project aims to tackle this challenge by spearheading the design and development of trustworthy information recommendation technologies, including automated misinformation filtering techniques, user-controlled privacy protection mechanisms, diversity-aware information recall algorithms, and community fairness-enhanced information ranking algorithms. These technical advancements will tackle existing issues of distrust in Aussie online media platforms and lay the groundwork for a more reliable and secure cyberspace. In addition, the generated diversity-aware information recall algorithms will champion cultural diversity in information dissemination, shatter information cocoons, and cultivate an environment that fosters cross-cultural communication. The developed community fairness-enhanced information ranking algorithms will facilitate significant strides in mitigating community biases and amplifying the voices of minority communities in the online world. In a strategic move, these groundbreaking advancements will seamlessly integrate into ongoing industrial collaborations with leading online media platforms.							
LP230200901 Fitzsimmons, Dr Terrance W	Amplifying Leadership and Voices of Indigenous women environmental rangers Indigenous women rangers face significant challenges in having their collective wisdom heard by governments and other bodies. Whilst empowered as community leaders through their deep knowledge borne from millennia of cultural practice, their leadership voices have less impact beyond their communities. This project partners with Indigenous women rangers across Northern Australia to establish new pathways for their leadership voices to be heard, increasing their leadership impact. Expected outcomes will enable Indigenous communities to lead change in the field of land management through their women rangers. This will result in more successful promotion and implementation of their ideas, knowledge and practices beyond their communities.	291,987.00	288,151.00	289,853.00	0.00	0.00	869,991.00	WORLD WIDE FUND FOR NATURE AUSTRALIA, MIMAL LAND MANAGEMENT ABORIGINAL CORPORATION
	National Interest Test Statement Despite their deep cultural understanding of country, Indigenous women rangers have relatively little influence over decisions affecting the management of Australia's natural environment. This project, co-created with Indigenous women rangers and harnessing on-country learning and Indigenous knowledge sharing, advances Australia's capacity to apply the ideas, knowledge, and wisdom of Indigenous women rangers to influence change in the preservation of Australia's natural environment and the impact these women have upon their local communities. An important outcome is the identification of new strategies and communication pathways that support Indigenous women rangers, as individuals, and as a collective, to grow their day-to-day leadership influence and their ability to influence longer term policy discussions that impact their roles and their communities more broadly. The empowerment of Indigenous women rangers enhances their profile, influence, and leadership roles, granting them greater voice in resolving broader social issues within their communities, creating further opportunities through education, job creation, environmental and economic development. An ultimate objective is to support the foundation of a national body for and by Indigenous women rangers, representing their collective voice and interests which will provide resources for Indigenous women to influence environmental management practices, Indigenous community policies and outcomes across Northern Australia.							
LP230200960 Meehan, Prof Paul A	Development of an Advanced Flexible Chain-die Forming Process The project aims to design and validate an Advanced Flexible Forming Process to manufacture a wider range of stronger, lighter and cheaper products for many industries. The newly-designed, one set of tooling, will also improve quality and energy efficiency (by around 30%). The primary outcome will be a validated optimized Flexible Chain-die forming system with automatic control. The results of the project can significantly increase the energy and cost efficiency in manufacturing many steel products, such as automobile parts and solar panel support structures. The project will enhance Australia's leadership in	159,270.00	175,366.00	175,366.00	159,270.00	0.00	669,272.00	SNS UNICORP PTY LTD

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	commercializing niche advanced forming technologies while greatly reducing carbon emissions to achieve a sustainable future.							
	National Interest Test Statement Traditional sheet metal forming technologies are experiencing difficulties such as unwanted deformation, excessive energy consumption and poor geometrical accuracy, especially when fabricating steel products with high strength and low weight. This project will develop and validate an advanced sheet metal forming mechanism with an advanced control system to solve these problems, making stronger, lighter and cheaper parts for many industries. This new innovative technology (patent application) will be commercialized by an Australian company, benefiting Australia's advanced manufacturing industry. This will increase the competitiveness of local enterprises by; reducing capital costs of new production lines and maintenance costs due to reduced forming load requirement while significantly improving energy efficiency (by around 30%). Also, the application of the proposed technology will reduce carbon dioxide emissions due to lower power requirements. The project team of experts and inventors, supported by the international license owner of the Chain-die forming technology, will ensure the feasibility of the project and long-term development and commercialization of the proposed niche advanced manufacturing technology.							
LP230200999 Frere, Dr Celine H	Airborne eDNA for northern bettongs The northern bettong is a small kangaroo-relative and one of the top 20 Australian mammals at greatest extinction risk. With feral threats driving their decline, less than 1500 are believed to remain, and data deficiencies hamper their conservation. Airborne eDNA promises an efficient way to bridge evidence gaps about this and other threatened species but approaches to estimate distribution, occurrence and abundance from this technique do not yet exist. By developing those methods and assessing them against camera-trapping for the northern bettong, this project expects to provide partners with crucial information on the species and its feral threats, and significantly advance the application of airborne eDNA for terrestrial biomonitoring.	170,000.00	155,000.00	155,000.00	0.00	0.00	480,000.00	DEPARTMENT OF ENVIRONMENT AND SCIENCE, AUSTRALIAN WILDLIFE CONSERVANCY
	National Interest Test Statement Australia's fauna biodiversity is amongst the most distinctive in the world, but we have extraordinary rates of extinction. The endangered northern bettong, a small kangaroo-relative, is one such species at great risk of extinction, largely due to competition and predation by feral animals. Like many other rare, cryptic, elusive and low-biomass species, their adaptive management is hampered by a lack of data because it's expensive and difficult to collect. Airborne eDNA (the analysis of DNA in the air) is low cost, easy to deploy and can be used to detect species across taxonomic groups (both threatened and feral) from a single sample. There is a groundswell of interest in airborne eDNA because of the dramatic efficiencies it promises to government agencies, conservation organisations and industry, but approaches don't yet exist for the estimation of species distribution, occurrence and abundance using this technology. With a focus on the northern bettong, this project will develop the new methods needed for the broad uptake of airborne eDNA, whilst providing much needed data to our partner organisations for the management of the species. Like aquatic eDNA, which is now routinely used in a range of regulated settings across the globe, potential applications for airborne eDNA are vast (future uses include environmental impact assessments, terrestrial inventory and monitoring etc.) and this project will bolster Australia's lead at the forefront of its development.							
LP230201058 Wang, Dr Conan K	A molecular platform for design and production of next-generation peptides This project aims to use novel cystine-rich peptides as ultra-stable miniature biologics to solve the problem of a lack of specificity and stability of many existing diagnostic agents. This project expects to generate cutting-edge molecular methods for engineering of these next-generation molecules to bind specific target proteins while retaining their chemical structures, new chemical ways for precise late-stage functionalisation with a metal cage, and new biochemical methods for scalable and sustainable manufacturing. Development of this molecular platform should strengthen a highly successful collaboration with our Australian partner and position them for future development of molecules for the targeted delivery of radiation.	259,878.00	239,278.00	216,528.00	0.00	0.00	715,684.00	TELIX PHARMACEUTICALS LIMITED
	National Interest Test Statement Australia's biotechnology sector worth >\$233B nationally is witnessing rapid growth. Of note is Australia's burgeoning and lucrative radiopharmaceutical market, projected to reach \$52B globally by 2031 with returns of \$180 for every dollar invested. However, developing radiolabelled molecules specifically for the use of targeted delivery of radiation is presenting new unmet challenges including that they need to be highly specific for their target cell and							

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		2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)	
exceptionally stable during manufacturing to tolerate the radioactive metal component. This project will develop next-generation ultra-stable biomolecules that perfectly fits these specific requirements, but it must begin with fundamental scientific understanding of their structural, molecular, and biochemical properties to be better equipped to engineer and functionalise them at will. This project also expects to generate knowledge to enable sustainable and scalable manufacturing of these unique biomolecules. Expected new knowledge and methods will reduce the time and cost burden of the development and manufacturing process. Greater sovereign capacity to design and make next-generation radiolabelled molecules will fortify Australia's reputation as a market leader. Our partner organisation is a leading Australian radiopharmaceutical company and has a strong track record in commercialisation and product distribution globally, and thus is exceptionally well-placed to commercialise project outcomes in the long-term.									
The University of Queensland		2,155,927.00	2,186,301.00	2,032,992.00	159,270.00	0.00	6,534,490.00		
Queensland		3,555,279.00	3,724,702.00	3,407,007.00	581,826.00	105,113.00	11,373,927.00		

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(Columns 1 and 2)	(Column 3)							

South Australia

Flinders University

LP230200783	Evaluation of shedder phenomenon in forensic science	50,000.00	50,000.00	50,000.00	0.00	0.00	150,000.00	FORENSIC SCIENCE SA, VICTORIA POLICE
Goray, Dr Mariya	This project aims to deliver the first standardised shedder test and categorisation, population datasets on shedder types and self/non-self DNA contributions; for casework implementation. This project is expected to generate data on factors affecting individual's propensity to transfer DNA during a contact event (shedder status) which is currently poorly understood. Generated data will be of significant benefit in provision of justice as breakthroughs are urgently needed to bolster forensic DNA expertise in courts. DNA from touch evidence is central to most criminal court cases, yet these data and supporting methods are lacking. New robust methodology and suitable population datasets will pivotally benefit quality of evidence provision.							
	National Interest Test Statement							
	Touch DNA, i.e., the DNA left behind when a person touches a surface, is considered to be highly valuable forensic evidence in court proceedings. However, numerous aspects of touch DNA, such as differences in how people shed their DNA are not well understood. These uncertainties in the quality and quantity reduce the value of touch DNA in forensic analyses, and is a priority issue recognised by the National Institute of Forensic Sciences. The project will address this problem by developing a simple and novel test that will categorise individuals based on how they shed their touch DNA, enabling the construction of data sets that can be used in legal casework. By leveraging our strong links with the Partner Organisations (Victoria Police and Forensic Science SA), the project outcomes will be applied to operational settings via workshops, conferences and publications relevant to our partners and other police and forensics workers in Australia. The Australian community will benefit by improved justice from better evidence provided in court prosecutions against potential offenders.							
	Flinders University	50,000.00	50,000.00	50,000.00	0.00	0.00	150,000.00	

The University of Adelaide

LP230200821	Advanced Data Analytics for Cost-effective Mushroom Cultivation	114,854.00	107,854.00	97,854.00	0.00	0.00	320,562.00	CLEVER MUSHROOMS PTY LTD, PIXELFORCE SYSTEMS PTY LTD, HOKKEN CO., LTD
Zhang, Dr Wei	Bringing together experts in data mining, machine learning, the Internet of Things and bioscience, this project aims to develop innovative models and algorithms, to monitor and understand the automated greenhouse mushroom cultivation environment with multi-modal multi-structured data. The project expects to explore the interplays among these different data modalities and structures to provide practical data analysis approaches establish the theoretical foundations, and generate new knowledge for Precision Agriculture. The cost-effective solution should provide significant benefits to Australian horticulture cultivators.							
	National Interest Test Statement							
	The mushroom production industry and market in Australia has reached a production plateau, as global and domestic demand is impeded by high production costs caused by labour-intensiveness, and large waste. This project will develop a suite of models and techniques to scrutinise the relationship between the greenhouse mushroom cultivation environment with energy usage, mushroom growth, yield and flavour. This will allow cultivation environment optimisation for waiving human labours, decreasing energy usage and waste, and enhanced interpretability of the cultivation process. Outcomes will benefit the Australian greenhouse cultivation industry and are poised to bolster Australia's global standing in agricultural innovation. The generation of new knowledge, establishment of practical data analysis methodologies, and theoretical foundations will not only benefit local mushroom cultivation but also contribute to the broader field of Precision Agriculture. The research will also be critical to preserve our hard-won reputation for clean, safe and sustainable production. The adaptable learning framework and cultivation data of various mushroom types collected from the systems will be publicly shared. We intend to work directly with our partners to promote rapid uptake and adoption of the research findings.							
LP230200846	Preventing extinctions of threatened mammals with DNA in sediment archives	200,000.00	225,000.00	115,500.00	0.00	0.00	540,500.00	BUSH HERITAGE AUSTRALIA, WORLD WIDE
	This project aims to prevent further extinctions of Australian mammals by							

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(Columns 1 and 2)	(Column 3)							(Column 10)
Fordham, A/Prof Damien A	strengthening reintroduction programs. It will combine ancient DNA extracted from sediment and bulk-bone deposits with ecological models to reconstruct spatial patterns of mammals and plants across Australian landscapes. Its significance is that it will establish historical distributions and habitats of Australian threatened mammals at geographic scales and spatial resolutions needed for evidence-based ecological restoration. Expected outcomes and benefits are new data, verified models and conservation decision-making frameworks that will enrich the protection and recovery of many of Australia's most threatened species and reinstate their important ecosystem services.							FUND FOR NATURE AUSTRALIA, AUSTRALIAN MUSEUM, DEPARTMENT OF PLANNING AND ENVIRONMENT NSW, AUSTRALIAN WILDLIFE CONSERVANCY
National Interest Test Statement Australia's unique mammals have suffered the highest rate of recent extinctions of any continent. Reversing further declines, and averting new extinctions, requires more detailed understanding of past distributions and preferred habitats. This project will use innovative models and advances in sedimentary ancient DNA and bulk-bone metabarcoding to reconstruct spatial patterns of native mammals and plants in Australia and predict possible futures. Resulting data and ecological models will establish losses of mammals and changes in habitat at key conservation areas since 1788, pinpointing reintroduction and restoration areas that will best safeguard Australia's distinct mammals, including under climate change. New scientific understandings will encourage investments in conservation activities that deliver clear, measurable net gains for imperilled mammals and their ecosystems. This will help Australia meet objectives of its national Threatened Species Action Plan, by improving vital reintroduction and restoration actions needed to prevent future extinctions, and its Nature Positive plan, by developing computational tools that help to increase protected areas in ways that maximise benefits to biodiversity. Project outcomes will be communicated via links with government, conservation and museum partners, and other national and international agencies, including Australia's Threatened Species Commissioner and Scientific Committee, maximising cross-disciplinary research and impact.								
LP230200963 Smith, Prof Scott T	Multifunctional Structural FRP Panels Incorporating Recycled Plastic Waste The project aims to develop fibre-reinforced polymer (FRP)-based structural panels that incorporate recycled plastic composite (RPC). This project expects to identify the manufacturing processes to innovate RPC as a construction material. Sustainable panel systems will develop by utilising RPC and/or stiffeners as the inner core with a strong outer made from FRP. The expected outcomes include innovative RPC, experimental validation, numerical optimisation, design guidelines and field investigation for the panel system to adopt this new panel technology. The panel systems will increase our plastic recycling capacity in Australia. The RPC and panel systems present a step change in construction technology and sustainable infrastructure.	139,170.00	164,643.00	165,965.00	0.00	0.00	469,778.00	SUSTAINABLE INFRASTRUCTURE SYSTEMS PTY LTD
National Interest Test Statement There are currently large stockpiles of plastic waste collecting throughout Australia. It is of national importance to find viable uses for this waste and to contribute to Australia's response to the National Plastics Plan 2021 and the National Waste Policy 2018. This project aims to develop technology to convert waste plastic into sustainable, valuable and recyclable, easy to use, self-locking panels for use in the construction industry. Along with Partner Organisation Sustainable Infrastructure Systems, we will conduct lab experiments and numerical optimisations, develop long-term prediction models, guidelines and field trials, to identify optimal combinations of waste plastic and epoxy resins, and the most efficient processes required to create the fibre reinforced polymer panels. This technology will be amenable with a wide range of commercial and industrial construction applications. Economic, social and environmental benefits are anticipated to result from reduced reliance on costly construction materials such as timber, steel and concrete, and increasing the use of waste materials. Project outcomes will be promoted widely through industry forums such as Trade Shows and Expos promoting rapid translation and adoption of the technology. The interest expected from environmental groups will result in television and radio promotion to a wide public audience. Progress of the research project will be accessible through social media platforms, blogs and websites.								
LP230201055 Tucker, Prof Matthew R	Development of rapid-drying barley for sustainable malting Barley is a fundamental ingredient in the brewing and distilling industries, but traditional malting processes that germinate and dry grain are resource-intensive and challenged by rising energy costs. This project aims to identify natural genetic variation in barley that contributes to improved performance during gas-powered kilning, the most costly processing step for the \$484M malt export industry. The multidisciplinary project team of seed biologists, maltsters, and breeders, is expected to generate new information regarding the basis for variation in grain drying. This is expected to deliver reduced-input barley varieties for Australian growers that require less energy to process and are	80,872.00	109,640.00	117,562.00	223,703.00	0.00	531,777.00	COOPERS BREWERY LIMITED, AUSTRALIAN GRAIN TECHNOLOGIES PTY LTD

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

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(Columns 1 and 2)	(Column 3)							
	highly valued in domestic and export markets.							
	National Interest Test Statement							
	Barley is Australia’s second most important cereal crop and adds ~\$2B to the economy. Around 30% of Australia’s barley grain is used for malt production in an energy-intensive process that requires water for seed germination and gas for drying. Increasing energy costs are challenging industry’s ability to produce cost-effective malt. This project will address the need for resource-efficient barley varieties that meet these demands in an increasingly eco-conscious market. The project aims to identify barley grain features and genes that influence drying efficiency of malted grain and assess their ability to limit energy inputs during kilning. Promising gene variants will be introduced into barley breeding programs and tested in field trials. Economic benefits for maltsters and breeders will come from reduced reliance on energy resources and improved commercial marketability of grain to domestic and export customers. Grain growers will benefit from having access to new value-added barley varieties. Reduced reliance on fossil energy sources will contribute to the social drive to mitigate global warming and climate change. Australian maltsters and barley breeders will provide pathways to adoption by Australian growers and offer advantages to export markets demanding high-quality barley with an improved sustainability profile. Field days and interactions with regional barley advisory groups will also play an important part in our promotion, translation and adoption strategy.							
	The University of Adelaide	534,896.00	607,137.00	496,881.00	223,703.00	0.00	1,862,617.00	
	University of South Australia							
LP230200579	Cultivating Systemic Safety to Prevent Workplace Sexual Harassment	142,309.00	136,755.00	139,886.00	0.00	0.00	418,950.00	OUR WATCH LIMITED, COMCARE AUSTRALIA, SAFEWORK SA, RETURN TO WORK CORPORATION OF SOUTH AUSTRALIA, SAFEWORK NSW, QUEENSLAND HUMAN RIGHTS COMMISSION, EQUAL OPPORTUNITY SA, WORKING WOMENS CENTRE INC, BASIC RIGHTS QUEENSLAND INC, TEAMGAGE PTY LIMITED
Tuckey, Prof Michelle R	A major barrier to preventing workplace sexual harassment is that common protections intervene at the individual level, targeting harassing behaviour but overlooking the underlying causes. This project aims to extend knowledge of its roots in the organisational system, then develop, implement, and evaluate novel interventions to cultivate systemic safety and reduce harassment risk. Expected outcomes include advanced understanding of the risk contexts for sexual harassment, evidence for intervening at root cause level, and detailed case studies outlining what works in realising positive duty obligations. Significant anticipated benefits include pragmatic strategies and resources for creating workplaces resistant to sexual harassment.							
	National Interest Test Statement							
	Workplace sexual harassment is a significant issue in Australia, costing our economy more than \$3.5 billion each year. Sexual harassment disrupts business operations and slows down progress in achieving gender equality at work. Traditional prevention methods include policies, training, and reporting, which focus on the behaviour itself without addressing its root causes. This misdirection of effort is a major reason why the problem persists. Our project will learn more about the origins of sexual harassment in the organisational system, looking deeper into aspects like organisational culture, social dynamics, job and task characteristics, technology, and the physical work environment. By gaining a richer understanding of these risk factors, we will develop new evidence-based prevention strategies. Our research will provide valuable insights into where and how to intervene to change the organisational systems in which sexual harassment occurs. Second, it will offer a model approach and resources for taking action to create workplaces that are resistant to sexual harassment. To transfer knowledge beyond the project, our alliance of partners will work together to develop and disseminate a prevention toolkit, case studies, and recommendations. These resources will assist businesses in meeting the new positive duty related to sexual harassment under the Sex Discrimination Act. Additionally, government and human rights agencies will be better prepared to combat this pressing issue.							
	University of South Australia	142,309.00	136,755.00	139,886.00	0.00	0.00	418,950.00	
	South Australia	727,205.00	793,892.00	686,767.00	223,703.00	0.00	2,431,567.00	

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Tasmania								
University of Tasmania								
LP230200693	Removing rabbits to restore large scale natural habitat and wildlife	220,000.00	180,000.00	180,000.00	0.00	0.00	580,000.00	DEPARTMENT FOR ENVIRONMENT AND WATER, SOUTH AUSTRALIAN ARID LANDS LANDSCAPE BOARD, BUSH HERITAGE AUSTRALIA, AUSTRALIAN WILDLIFE CONSERVANCY, WORLD WIDE FUND FOR NATURE AUSTRALIA, FOUNDATION FOR RABBIT FREE AUSTRALIA INC, ARKAROOLA WILDERNESS SANCTUARY, ARKABA CONSERVANCY
Jones, Prof Menna E	The project aims to experimentally test whether targeted removal of rabbit warrens will allow vegetation to recover and reduce cat presence, expanding and connecting habitat for entire communities of wildlife at large landscape scale. High rabbit densities support high cat densities causing broad-scale environmental degradation and species declines. Project outcomes include the delivery of evidence-based guidelines for implementing an efficient and low technology method for ecosystem restoration at large scale, well-suited to a broad range of land managers. The method offers a significant advance in effective methods for restoration and conservation in unfenced landscapes.							
National Interest Test Statement								
High densities of introduced rabbits support feral cats, causing both broad-scale environmental degradation and native wildlife decline in Australia. This project, in the semi-arid South Australian Flinders Ranges, will demonstrate how removing dense patches of rabbit warrens leads to reduced browsing by rabbits and decreased activity of cats, allowing vegetation, soils and wildlife to recover. We will show how strategic removal of patches of warrens can be used to link isolated areas of intact habitat. We will test the effectiveness of the method over timescales from new removal to 30 years. Warren removal is a cost-effective, low technology method which can be applied to large scales by a broad range of landowners. It presents a step-change improvement in restoration methods for large, unfenced landscapes, a major challenge in Australia where current methods of lethal control of cats are inefficient. Restoration of vegetation, soils and wildlife will help to deliver major economic, environmental, and Aboriginal cultural benefits.								
LP230200771	Living Climate Change Lab: co-researching Ecological Futures on Country	53,740.00	59,740.00	74,995.00	0.00	0.00	188,475.00	TASMANIAN ABORIGINAL CORPORATION, MATERIAL INSTITUTE LIMITED
Duhn, Prof Iris	This project integrates Aboriginal knowledges with biodiverse ecological systems thinking for young children. It explores climate change, aiming to develop a place-based, Aboriginal-informed climate change education model for early years. This principle-based model will be co-designed with our partner organisations and a group of young Aboriginal children. The project will create a Living Climate Change Lab (LCCL) on Country in the form of a biodiverse ecological system and utilise insights from the LCCL to generate an education model. The project aligns with Federal initiatives, responds to global climate change research, and has potential for scalability across Australia. It privileges Aboriginal knowledge as a gift to communities.							
National Interest Test Statement								
The project seeks to develop new climate and place learning with Aboriginal children. In partnership with Connected Beginnings Tasmania, Material Institute and the University of Tasmania, the aim is to create a place-based Aboriginal-informed climate education model for early years, firstly for the Kutralayna region in Southern Tasmania, but with strong principles that can be scaled up across Tasmania, and Australia. Such a model will have significance for early years education internationally as there is a gap in early years’ research and practice around climate change education. The emphasis on Aboriginal and western knowledge in aligns with federal initiatives for Aboriginal children and addresses an important issue for early childhood education in Tasmania and in Australia, as there is a policy imperative, evident in the updated Early Years Framework Learning Framework (2022), to integrate Aboriginal knowledges into everyday pedagogical practice. The project will generate new knowledge by exploring biodiverse ecological systems as learning environments that foster children’s sense of belonging and care for place as Country. Biodiversity loss and climate change are interrelated issues, affecting every Australian community. This project seeks to develop children’s knowledge, skills and understandings of place as sites for transformative actions to build climate change resilience. It does this by privileging Aboriginal children’s pivotal role as guardians of culture.								

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LP230200956	Devil facial tumour disease vaccine development and field trials	175,148.00	108,391.00	265,120.00	191,299.00	0.00	739,958.00	CEVA WILDLIFE RESEARCH FUND, DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT TASMANIA, BONORONG WILDLIFE SANCTUARY PTY LTD, THE TRUSTEE FOR ANIMAL CONTROL TECHNOLOGIES AUST UNIT TRUST, USDA NATIONAL WILDLIFE RESEARCH CENTER, NATIONAL CENTRE FOR SCIENTIFIC RESEARCH, FRANCE (CNRS), UNIVERSITY OF TEXAS, AUSTIN, JOHNS HOPKINS UNIVERSITY, MAYO CLINIC, MILLENNIUM SCIENCE PTY LTD, ILLUMINA AUSTRALIA PTY LTD, GENSCRIPT
Flies, Dr Andrew S	Two independent Tasmanian devil facial tumours (DFT1, DFT2) are infectious cancers with nearly 100% case fatality rates. Despite rare cases of natural tumour regressions, most Tasmanian devils (<i>Sarcophilus harrisii</i>) suffer and die from DFT1/2 by age 4. This has resulted in >80% declines in regional devil populations where DFT1 and/or DFT2 are present. Few tools exist for controlling DFT1 and no attempts have been made to control DFT2, which to date exists only in southern Tasmania. The overarching goal of this project is to develop a DFT1/2 vaccine that can help rebuild the wild devil population ravaged by DFT1 and prevent spread of DFT2 across the state. This oral bait vaccine project will be model for combatting other wildlife diseases.							
National Interest Test Statement								
Australia's unique marsupial species play key roles in Australia's tourism economy, maintaining healthy environments, and are part of our cultural identity. Disease and human activities (e.g. roadkill, introduction of invasive animals) are increasingly drivers of wildlife population declines and extinctions. Few tools are available to control wildlife disease on a broad scale in the landscape. Two independent devil facial tumours (DFT1, DFT2) are transmissible cancers that have driven >80% declines in regional Tasmanian devils populations. Our team has been working to develop a vaccine to prevent DFT1 and DFT2. In parallel to vaccine development, we have been developing a system to deliver the vaccine in edible baits, which will eliminates the need to trap and jab every devil with a vaccine. This project will validate new vaccine platforms and formulations that are specifically-designed for marsupials. The vaccines will be tested in the field with the goal of rebuilding the wild devil population and preventing DFT2 from spreading across the state. We are working with key industry partners to develop this pipeline, which can be rapidly modified to combat other emerging infectious diseases in other marsupial species. In addition to improving our understanding of the Tasmanian devil immune system, the vaccine vectors developed in this study will be used to better understand the immune system of other marsupial species.								
	University of Tasmania	448,888.00	348,131.00	520,115.00	191,299.00	0.00	1,508,433.00	
	Tasmania	448,888.00	348,131.00	520,115.00	191,299.00	0.00	1,508,433.00	

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Victoria								
Deakin University								
LP230200802	Attracting and retaining a culturally diverse teacher workforce	152,111.00	168,778.00	148,833.00	0.00	0.00	469,722.00	AUSTRALIAN EDUCATION UNION FEDERAL, AUSTRALIAN SECONDARY PRINCIPALS' ASSOCIATION INC., AUSTRALIAN COUNCIL OF STATE SCHOOL ORGANISATIONS LIMITED
Arnold, Dr Ben	<p>This Deakin partnership with teacher, parent, and principal organisations investigates factors impacting the attraction and retention of a culturally diverse teacher workforce in public schools. Through co-designed national surveys, policy workshops, and case studies, our project examines, from sociocultural, postcolonial, and Indigenous perspectives, three teacher career transitions: from school student aspirations to initial teacher education and into schools. This interrogation of workforce supply and demand will yield significant evidence to inform policies and planning for partners, universities, and governments, and identify strategies for creating interculturally capable and culturally safe school and teacher education systems.</p> <p>National Interest Test Statement</p> <p>A national crisis of attracting and retaining teachers confronts schools and education systems, particularly public schools in disadvantaged communities. Furthermore, the teacher workforce does not represent Australia's multicultural and Indigenous student population. The research team partnering with key stakeholders- teacher, parent and principal organisations- aims to widen participation of culturally minoritised groups and First Nation Peoples in teacher education and the teacher workforce. The project will investigate three critical career moments- school student aspirations, accessing teacher education and graduates transitioning into schools, thereby addressing priorities 1-3 of the National Teacher Workforce Action Plan. The project aims to build intercultural capacity within education systems by providing teachers, parents, students, Indigenous educators and their communities, the partner organisations, universities and policymakers with comprehensive evidence and strategies to inform planning, policies and practice for developing a culturally and linguistically diverse teacher workforce. Through guides, reports, research publications and videos to be shared with key stakeholders and the public, the project will advance knowledge and provide insights into strategies related to student career choices and the creation of interculturally capable and culturally safe schools. This will benefit all students, particularly those in disadvantaged communities.</p>							
	Deakin University	152,111.00	168,778.00	148,833.00	0.00	0.00	469,722.00	
La Trobe University								
LP230200751	Supporting Trauma-Informed Legal Services: A Stepped-Wedge Multi-Site Study	93,000.00	215,000.00	130,000.00	0.00	0.00	438,000.00	LEGAL AID COMMISSION OF NSW, VICTORIA LEGAL AID, NORTHERN TERRITORY LEGAL AID COMMISSION
Maylea, A/Prof Chris	<p>Trauma-informed practices are widely recognised for their effectiveness across various service sectors. This project would be the first controlled implementation and empirical research of these practices in publicly funded legal services. Partnering with Legal Aid Commissions in New South Wales, Victoria, and the Northern Territory, it aims to empirically assess the impact of training, supervision, and coaching on legal service delivery. Anticipated outcomes include enhanced client experiences and improved legal outcomes, potentially setting new standards in legal assistance. This strategic research alliance promises significant community benefits by developing an evidence-base for trauma-informed practices in the Australian legal system.</p> <p>National Interest Test Statement</p> <p>People's legal needs often intersect with poor mental health and trauma. This project could improve Australia's legal system by implementing and assessing trauma-informed legal assistance. This project is vital for Australia's national interest as it could lead to an evidence base on which to build a more humane, efficient, and effective legal system. The transition to trauma-informed legal assistance has been endorsed by the Commonwealth Attorney-General, who commissioned and launched the intervention that this research project will assess. Economic benefits include streamlined, effective legal services that can reduce court delays and costs, offering taxpayers considerable savings. Social benefits include the implementation of trauma-informed practices in legal assistance. This could lead to reduced reoffending rates and better outcomes, thus strengthening social cohesion. Successful adoption of these methods could also become a benchmark for quality in the legal industry beyond the legal assistance sector. For First Nations and other groups, culturally sensitive, trauma-informed legal services can make the</p>							

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	legal system more accessible and equitable. This approach respects First Nations perspectives on justice and well-being, fostering reconciliation. This project will be the first empirical research of its kind, promoting translation into practice, literature and legal curricula. There is a clear pathway for implementation with the National Legal Assistance Partnership.							
LP230201021	Scalable fabrication of diamond quantum microprocessors	299,341.00	294,999.00	294,978.00	0.00	0.00	889,318.00	QUANTUM BRILLIANCE PTY LTD
Van Riessen, Dr Grant A	Quantum computing is rapidly emerging, bearing transformative economic and security implications for Australia. This project leverages expertise in diamond materials science and x-ray science to develop a scalable manufacturing process for a distinctive diamond quantum technology that will expand quantum computing to efficiency-critical edge computing applications. Expected outcomes include new capabilities for fabricating the fundamental components of quantum computers using light and plasma to manipulate the surface of diamond. This will provide significant benefits, enhancing Australia's sovereign quantum capabilities and strategically positioning Australia to capitalise on the anticipated \$106B global quantum computing market in 2040.							
	National Interest Test Statement							
	This project will strategically position Australia to leverage the rapid growth of quantum computing by addressing the challenge of manufacturing diamond-based quantum computers at scale. Quantum computing is on the verge of revolutionising industries and transforming our approach to solving complex problems, with the global market projected to grow to \$106 billion by 2040. The National Quantum Strategy calls for action to address challenges in commercialising quantum technology and building sovereign capability for future advancements. Leveraging national strategic strengths in quantum materials and inspired by innovations that drive technology scaling in the semiconductor industry, this project will establish a pathway for precisely manipulating synthetic diamond surfaces. This work will create the fundamental building blocks of an Australian quantum computer technology. Distinguished by its compactness, robustness, and cost-effectiveness, this technology promises to extend quantum computing to applications where computing efficiency and density are paramount, such as in satellites and vehicles. Advancing the scalable, high-precision manufacturing of this technology will enhance Australia's sovereign quantum capabilities, positioning Australia to deliver future-focused technologies for defence and industry and supporting the training of a future quantum industry workforce.							
	La Trobe University	392,341.00	509,999.00	424,978.00	0.00	0.00	1,327,318.00	
Monash University								
LP230200510	Electrified Reactor System for Green Manufacturing of Chemicals and Fuels	166,743.00	260,935.00	260,396.00	106,078.00	0.00	794,152.00	ADVANCED FUEL INNOVATION PTY LTD, ADVANCED CARBON ENGINEERING PTY LTD
Zhang, Prof Lian	This project aims to develop an advanced electrified reactor system for the manufacturing of chemicals and fuels with net-zero or even carbon-negative emissions in Australia. The project is significant for promoting the implementation of renewable energy to mitigate emissions from the chemical industry. The expected outcomes include cutting-edge designs and technologies for modern manufacturing, and the training of next-generation engineers to advance Australia's energy transition initiative and securing its sovereign capability in the chemical supply chain. These efforts can provide key benefits in addressing the major challenges in balancing the sustainability and profitability of Australia's industries in the carbon-constrained future.							
	National Interest Test Statement							
	This project develops a novel electrified reactor system towards using renewable energy in the chemical industry. Success will provide the chemical industry a net zero and even carbon-negative emission profile, in addition to efficient production of value-added chemicals within the future 2050 Net Zero Emission scheme. The chemical industry is currently the third-largest manufacturing sector in Australia, generating around 8% of the total carbon dioxide. There is a significant lack of the adoption of renewable energy and electrification in the industry. Successful completion of the project will promote the energy transition of Australia's chemical industry, unlocking the ability to convert abundant crop waste within the rural Australia into green chemicals and fuel, providing new job opportunities and sovereign capability. Furthermore, the project will enforce Australia's leadership in the Research, Development and Deployment of the next-generation chemical reactor and process design, delivering world-class knowledge and talents essential for achieving net zero emissions by 2050. The project will be conducted through a close collaboration between academics and industry partners with complementary expertise and skills in both the knowledge chain and value chain, as well as existing market, thereby improving the technology readiness level, and overcoming the major technical barriers for the future scale-up and technology translation.							

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(Columns 1 and 2)	(Column 3)	2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)
LP230200649	Engineering optimal particle maturation in multicomponent sprays	184,009.00	182,404.00	180,361.00	0.00	0.00	546,774.00	KINDEVA DRUG DELIVERY LP
Duke, Dr Daniel J	<p>This project aims to develop novel methods to precisely measure and control particle maturation processes in multicomponent technical aerosols. The project expects to generate knowledge in the field of multiphase fluid mechanics and aerosol science through a combination of laser fluorescence, X-ray scattering and microscopy techniques. Expected outcomes of this project include a capacity to engineer particle size and shape in multicomponent aerosols across a range of aerosol devices which are capable of outperforming currently available products while enabling the transition to more environmentally friendly propellant chemicals. This project aims to benefit the pharmaceutical industry by accelerating the design of aerosol delivery systems.</p> <p>National Interest Test Statement</p> <p>This project aims to expand and accelerate the development of aerosol delivery devices used in pharmaceutical products, industrial processes and consumer products through the development of new technologies to study the behaviour of particles in turbulent sprays. The existing tools available to industry for the design of aerosol products are relatively slow and do not provide deep insight into how the aerosol particles form. This project will bring together concepts from the fields of engineering, physics and pharmaceuticals to develop new laser based systems which will enable the measurement of individual aerosol particles inside a spray in real time. This will accelerate the process of designing new generic pharmaceutical devices and consumer aerosol products which are more efficient and environmentally friendly. Australians stand to benefit from these developments through lower pharmaceutical prices and reduced emissions from aerosol products. The research outcomes will be promoted beyond academia via industry trade publications and conferences, and through their adoption by the industry partner as an industry-leading tool for accelerated commercial product design.</p>							
LP230200688	Conversion of lignocellulosic biomass to high value platform chemicals	174,132.00	182,917.00	172,668.00	68,000.00	0.00	597,717.00	HERMAL BIO ENERGY INTERNATIONAL PTY LTD
Bhattacharya, Prof Sankar P	<p>The project aims to improve the sustainability of Australia's third-largest manufacturing sector - the chemical industry - by scaling up our patented process for continuous production of platform chemicals using waste biomass avoiding fossil fuels. Platform chemicals are base compounds that produce many other chemicals and solvents used in daily life. We are unaware of any reactor with continuous production capability. The reactor can produce multiple platform chemicals, but this project will focus on two high-value ones worth over US\$10000/kg. The project will enhance Australia's manufacturing capability and secure its global chemical supply chain position. reducing carbon footprint and contributing to our net-zero emission target by 2050.</p> <p>National Interest Test Statement</p> <p>Based on our patented and published work, this project aims to scale up a continuous process to manufacture high-value platform chemicals sustainably from renewable and low-cost feedstock - waste biomass, available widely in Australia. These platform chemicals have multiple industrial applications, such as manufacturing biodegradable polymers, chemicals for agriculture, and pharmaceuticals. The scale-up will be achieved by integrating fundamental scientific work with engineering work, leading to a simpler reactor design for processing, lower manufacturing costs and high availability of the reactor during operation. The project's outcomes include new intellectual property on product formulation and process parameters for the commercial development of a scalable reactor, thereby contributing to the growth of sustainable biochemicals and biofuel manufacturing from renewable feedstock and reducing fossil-carbon emissions. With continued support from the industry partner, the research outcomes will be promoted towards commercial adoption. The overall impact goes beyond the laboratory, contributing to a greener, more sustainable bioeconomy for Australia.</p>							
	Monash University	524,884.00	626,256.00	613,425.00	174,078.00	0.00	1,938,643.00	
RMIT University								
LP230200785	A Sustainable Process for Critical Metals Production from Laterite Ores	237,872.00	266,675.00	241,811.00	0.00	0.00	746,358.00	QUEENSLAND PACIFIC METALS LIMITED
Bhargava, Prof Suresh K	<p>This project aims to develop an understanding of the underlying chemistry and chemical engineering to directly extract Nickel and Cobalt from laterite resources at atmospheric pressure. This project expects to improve on previously attempted high-</p>							

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(Columns 1 and 2)	(Column 3)							
	pressure processes, as it aims for the almost complete extraction of these critical metals, producing virtually no liquid or solid toxic waste. This should provide significant benefits such as eco-friendly method for providing materials to the global Lithium Ion battery market and the establishment of a novel battery metals platform for the electric vehicle industry. This should yield substantial economic, environmental, and social benefits to Australia.							
	National Interest Test Statement							
	This project will develop new technologies to obtain the critical metals cobalt and nickel from natural resources for Lithium batteries. The expected outcome is the development of expertise in Australia to extract pure metals and supply the rapidly growing global market for energy storage and electric vehicles. A process for value-added processing of minerals to market-ready products will be established through the project, in contrast to current local practices where most minerals are shipped off-shore from Australia unprocessed to be value-added post-delivery. This novel approach will result in minimal waste generation, including completely recycling nitric acid, making it an environmentally sustainable process free of toxic byproducts. The industry partner, Queensland Pacific Metals could directly apply the research findings to establish a processing facility in regional Australia (Queensland), thus creating job opportunities in skilled roles and fostering local development. Additionally, this initiative will open up a new export market for supplying the rechargeable lithium battery industry.							
LP230200897	Sustainable Electrolysis via Functional Hybrids for Ammonia Production	263,283.00	291,957.00	292,798.00	0.00	0.00	848,038.00	EUREKA TECHNOLOGY INNOVATION & INVESTMENT PTY LTD, EVIDENT AUSTRALIA PTY LTD
Ma, Prof Tianyi	This project aims to design hybrid metal phosphonates with tunable chemical compositions and morphology to efficiently convert nitrogen to ammonia powered by renewable energy. It expects to improve selectivity and activity of current renewable ammonia production to reduce dependence on fossil fuel. Expected outcomes include delivery of a new strategy to synthesise novel hybrid catalysts, in-depth understanding of catalysis mechanisms, and ammonia production prototype targeting industry demanded parameters. This should provide significant environmental and economic benefits to Australia such as alleviating climate change and placing Australia at the frontier of new technologies to attract greater investment into renewable energy industry.							
	National Interest Test Statement							
	This project is dedicated to transforming ammonia (NH3) production for a carbon-free energy future, targeting challenges tied to high temperature, pressure, and fossil fuel consumption. Our objective is to create innovative catalysts, comprehend reaction mechanisms, and develop cost-effective, green electricity-powered NH3 production prototypes. In the short term, anticipated outcomes include an immediate reduction in carbon emissions, providing environmental benefits and advancing the cause of green NH3 production, thereby mitigating climate change. Medium-term benefits extend to economic growth through increased investments and job creation in the renewable energy sector. In the long term, the project holds the promise of fostering sustained economic and environmental resilience, positioning Australia as a leader in green NH3 technology. To achieve these outcomes, translation and adoption pathways involve disseminating cutting-edge technology widely within the renewable energy industry. Collaborations with industry stakeholders, engagement with policy influencers, and leveraging technology transfer initiatives will be pivotal in ensuring a seamless transition from research to implementation. By fostering industry-wide adoption and facilitating partnerships, this initiative aims to significantly contribute to Australia's energy sector transformation, emphasising the critical role of green NH3 in promoting innovation and addressing the imperative of a sustainable future.							
	RMIT University	501,155.00	558,632.00	534,609.00	0.00	0.00	1,594,396.00	
The University of Melbourne								
LP230200617	Next-Generation Gas Turbines: Predicting Cooling with In-Service Realism	184,241.00	184,241.00	184,241.00	0.00	0.00	552,723.00	GENERAL ELECTRIC AEROSPACE
Sandberg, Prof Richard D	This project aims to transform our understanding of how roughness (manufacturing and operational) affects the complex cooling flows in gas turbines, to help meet the challenge of ever-growing air transport and power demands in an affordable and sustainable way. We will exploit the latest simulation advances to study realistic roughness effects on cooling flows at engine-relevant conditions and use unique machine-learning approaches to create new models. These knowledge breakthroughs and more accurate models will allow industry leader GE Aerospace to design next-generation turbines, capable of using clean fuels, to efficiently and							

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	reliably power the Australian aviation or energy sectors and benefit the Australian economy and environment.							
	National Interest Test Statement In Australia's transition to net zero, we must reduce emissions from air transport and our electricity grid. Despite increasing research into electric engines for aircraft, gas turbines will be the only viable option for flights for Australians over the next decades. Gas turbines can also deliver grid stability when our renewable energy sources are intermittent. Fueled by hydrogen, new generation gas turbines will produce clean and affordable energy. However, hydrogen gas turbines will subject their components to even hotter temperatures and current industry design-tools are not reliable under the conditions we anticipate for their operation. Better accuracy of predictions is needed to ensure their safe and efficient operation. This project will develop new knowledge and better models to predict how cooling technologies are affected by rough surfaces resulting from operational wear and additive (or 3D) manufacturing. The innovative results of this research collaboration will have a clear pathway for adoption as the research partner, General Electric Aerospace, manufactures clean power generation solutions as well as the jet engines used in most Australian airliners. This research will contribute to Australia's transition to renewable energy. By providing clean and affordable electricity and air transport, it will promote trade, tourism, and socioeconomic prosperity providing environmental, economic, commercial, and social benefits to Australia.							
LP230200862	Long-duration monitoring with teams of autonomous agents This project aims to deliver fundamental knowledge by developing algorithms to support long duration surveillance missions using multiagent autonomous platforms. There are the significant challenges in monitoring Australia's remote coastline, and this project expects to provide capabilities that will assist in delivering more effective and efficient solutions than presently available. The project will also have significant spillover benefits into domains such as emergency response, precision agriculture and aquaculture where information gathered by autonomous systems can lead to better decision making. Furthermore, the proposal encompasses a strong research training aspect, with graduates exposed to leading edge industry and academia.	107,174.00	112,206.00	117,241.00	0.00	0.00	336,621.00	AGENT ORIENTED SOFTWARE PTY LTD, PLATYPUS AUSTRALIA PTY LTD
Manzie, Prof Chris	National Interest Test Statement Monitoring Australia's borders is extremely challenging given the length and remoteness of much of our coastline. Traditional surveillance using crewed flights is costly, inefficient, and sporadic. Although systems of unmanned vehicles have many advantages, to date they have not had the range required in Australia. New systems, however, are being developed that provide vehicles with the capability to recharge without returning to a base. These systems require advanced algorithms to control teams of unmanned vehicles and their recharging to undertake sustained surveillance missions. This project will address these significant theoretical advances. It will deliver novel algorithms with guaranteed performance to assist in understanding how to best monitor large areas using unmanned systems. To demonstrate both capability and to assist in their translation, research outcomes will be implemented in prototypes for unmanned systems developed by the partner organisations. Partner organisations will share both the algorithms and unmanned systems to Defence and more broadly, civilian fields such as precision agriculture, aquaculture, and emergency response. Thus, the project will have economic, social, and environmental benefits in areas of national importance.							
LP230200991	Understanding the immune response to mycoplasma vaccines This project aims to address barriers to greater use of a novel vaccine against a common bacterial pathogen of poultry. The project expects to develop solutions to the challenges of efficaciously delivering the vaccine to day old chicks and of confirming protection in vaccinated flocks. The expected outcomes will include development of methods to vaccinate layer and meat chickens in the hatchery and assays to rapidly determine effective vaccination in the field. This should provide significant benefits by enhancing animal health, welfare and production, and public health, through greatly improved control of this pathogen and reduced use of antibiotics for control of the disease and production loss it currently causes in poultry flocks.	250,442.00	250,442.00	250,442.00	0.00	0.00	751,326.00	BIOPROPERTIES PTY. LTD.
Browning, Prof Glenn F	National Interest Test Statement Mycoplasmas are bacteria that cause diseases that have considerable adverse impacts in agricultural animals, affecting animal health, welfare and productivity across Australia. Vaccines developed by the University of Melbourne and commercialised by Bioproperties Pty. Ltd. have been very successful in controlling mycoplasmas in chickens used for breeding, which can be vaccinated at an older age, but they cannot currently be used to protect egg- and meat-producing chickens, which need to be vaccinated at one day of age, in the hatchery. This project will develop methods to enable a new vaccine developed by the University of Melbourne and Bioproperties to be used to vaccinate chicks in the hatchery, and for assessing whether they have been effectively vaccinated, greatly improving control of an important pathogen in the poultry industry. This will provide a direct benefit to Australian poultry farmers, reducing their costs and improving their productivity, and to animal welfare, by improving the health of Australian chickens. It will also generate a greatly enhanced export market for an Australian veterinary biological							

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LP230201062 Williams, Prof Spencer	product, particularly across Asia. In addition, the replacement of the use of antibiotics to control this pathogen with vaccination will have a global impact on reducing selection for antibiotic resistance in poultry, with concomitant impacts on public health, in Australia and globally.							
	Innovative Strategies for Crafting Precision Kinase Inhibitors	236,739.00	299,604.00	0.00	0.00	0.00	536,343.00	TIANLI BIOTECH PTY LTD
	Protein kinases are key regulators of cellular signaling, playing a pivotal role in diverse biological processes. However, most protein kinase inhibitors target a common binding site, leading to undesired effects on other kinases. This project aims to create highly selective protein kinase inhibitors by using structural biology to pinpoint unique interactions in the peptide-binding site. Using medicinal chemistry, we will enhance kinase selectivity of existing potent but non-selective inhibitors, and will validate their cellular pharmacology. Our innovative approach will be broadly applicable to diverse protein kinases of interest to academia and industry, and in the future will support the development of new drugs by Australian companies.							
	National Interest Test Statement This project aims to create an innovative strategy for developing precision inhibitors that can selectively target a particular class of enzyme called protein kinases. Protein kinases are commercially significant enzymes that play an important role in regulating various biological processes, and many drugs act by selectively inhibiting their actions – but these drugs can also inhibit other enzymes, causing side effects. Through a collaboration with Australian company TianLi Biotechnology, this project will develop methods for developing kinase inhibitors that do not interfere with other enzymes, and then translate the developed methods into the Australian biotechnology sector. This will equip Australian researchers and firms with an effective approach for developing kinase inhibitors with fewer side-effects, which in the long term could have potential as drugs. This strategy for creating precision inhibitors will provide a robust foundation for a globally competitive Australian biotechnology sector, particularly in the field of pharmaceuticals targeting protein kinases.							
The University of Melbourne		778,596.00	846,493.00	551,924.00	0.00	0.00	2,177,013.00	
Victoria University								
LP230200987 Wang, Prof Hua	Distributed Evolutionary Computation for Green AI	178,028.00	180,699.00	183,425.00	0.00	0.00	542,152.00	NEXUS ONLINE PTY LTD
	Despite the tremendous benefits and advantages of artificial intelligence (AI), its growing carbon footprint has emerged as a significant concern. This project aims to develop a distributed evolutionary computation framework to optimize AI's carbon footprint. The project's objectives include advancing knowledge in the areas of green AI, carbon footprints, and computational intelligence. Expected outcomes include precise measurement of AI's carbon emissions, distributed differential evolution algorithms, and cooperative co-evolutionary strategies. This project benefits the nation by promoting sustainable AI technologies, protecting the environment, conserving energy resources, and advancing progress towards the 2025 net-zero goal.							
	National Interest Test Statement The increasing adoption of artificial intelligence (AI) across a wide range of Australian businesses and industries has raised concerns over its growing energy demands and carbon footprint. This project aims to explore and optimise the carbon footprint of AI. It will cover theory and provide practical demonstrations to reduce the environmental impact of AI. The project will analyse greenhouse gas emissions throughout the life cycle of AI systems, including manufacturing, operation, and disposal. The optimisation module will focus on improving energy efficiency in AI algorithms, hardware infrastructure, and data centres. The goal is to minimise energy consumption while maintaining or improving AI performance. The project aims to provide actionable insights in the field of green AI for policymakers, industry professionals, and researchers to make informed decisions and adopt sustainable practices in AI development and deployment. The results will be freely accessible to the Australian government and eco-friendly companies like Apple and Amazon. The expected outcomes include precise measurement of AI-linked carbon emissions, along with new algorithms and strategies for mitigating AI-linked carbon emissions. This project has significant advantages in addressing climate change, conserving energy resources, protecting the environment, and advancing Australia's goal of achieving net-zero emissions by 2050.							
	Victoria University	178,028.00	180,699.00	183,425.00	0.00	0.00	542,152.00	

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		Victoria	2,527,115.00	2,890,857.00	2,457,194.00	174,078.00	0.00	8,049,244.00

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Western Australia

Curtin University

LP230200109	Delivering housing solutions that meet older people's housing aspirations	107,035.00	53,120.00	96,791.00	0.00	0.00	256,946.00	COTA AUSTRALIA LTD, BGC (AUSTRALIA) PTY LTD, MICHELLE BLAKELEY, ARCHITECT PTY LTD, QUEENSLAND DEPARTMENT OF HOUSING
Ong ViforJ, Prof Rachel	Population ageing requires a structural shift in the way policymakers and practitioners think about housing. There is presently a mismatch between Australia's housing stock and the changing needs of ageing cohorts as the potential of age-friendly and adaptable housing models remain unrealised. Drawing on the expertise of a national team of researchers, business, government and not-for-profit partners, this project will co-create evidence-based strategies for delivering innovative solutions to meet older Australians' housing aspirations. Using mixed methods, this project will address diversity among older cohorts and the critical challenge of supporting the housing aspirations of vulnerable older persons facing severe financial constraints.							

National Interest Test Statement

There is a growing mismatch between Australia's housing stock and ageing population. As people age, their housing aspirations and needs change. Yet, there is a lack of diversity in Australia's housing stock, which is comprised largely of houses that are not adaptable to the physical and social changes that accompany ageing. Age-friendly housing models exist, but there is a lack of information regarding their benefits and drawbacks, as many fall outside commonly known mainstream options. This project addresses the mismatch between Australia's housing stock and ageing population by shedding light on older Australians' housing aspirations, how they vary across diverse older cohorts, and how policies can be developed to provide appropriate and affordable housing for vulnerable older persons with financial constraints. This project will generate new ideas for improving the environment that people age in and, in so doing, increase the capacity of older Australians to age in place and participate in the community. The project will benefit industries that cater to this growing cohort, while promoting equity by investigating the circumstances of vulnerable older people and seeking to design solutions that address the restrictions they face. The project will actively drive change by sharing findings with those committed to supporting older Australians through focus group discussions involving seniors and housing policy change-makers, as well as through industry briefings and forums.

LP230200961	Optimising cost-effective services to the aged CaLD community	52,407.00	53,258.00	0.00	0.00	0.00	105,665.00	UMBRELLA MULTICULTURAL COMMUNITY CARE SERVICES INC
Kingshott, Dr Russel P	This project aims to help non-government service providers in the growing aged care sector to identify, develop and offer cost effective community-based services that can improve the lives and wellbeing of their culturally and linguistically diverse (CaLD) clients. Services in this sector will be mapped and costed. An online tool will be developed to (1) 'identify and standardise' the potential range of services on offer, and (2) calculate the cost of offering each service. This tool will directly benefit providers by helping them to decide their optimal suite of affordable services and improve how they realistically cost these services when applying for funding from government entities and other sources.							

National Interest Test Statement

Optimising the cost-effective services for the increasing numbers of aged people from culturally and linguistically diverse (CaLD) communities will help improve the understanding of their unique needs and expectations, which in turn will enhance the quality of services designed and delivered to them. This will lead to greater social cohesion and inclusion as well as better public health outcomes by making CaLD communities feel included and valued in the Australian society. Taking better care of aged CaLD people will also improve Australia's global reputation and soft power as well as attract and retain high quality foreign talent to trigger innovation and sustain economic growth. All these positive outcomes will ensure long-term stability and security of the Australian society and protect Australian national interest amidst the ongoing economic uncertainties and socio-cultural disputes in the world. This project will undertake specific translation and adoption pathways to achieve the above outcomes. For example, we will help understand the gaps in the design and delivery of community-based aged-care services and their impact on the wellbeing of aged people from CaLD communities. We will also develop specific tools to help the aged-care service providers to review and to standardise their costing and service delivery models, which will help them not only provide more cost-effective services to their clients but also seek more funding to support their operations.

Curtin University	159,442.00	106,378.00	96,791.00	0.00	0.00	362,611.00
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The University of Western Australia

LP230200701	Evaluating the benefits of teacher training in Einsteinian science	299,720.00	296,727.00	298,146.00	299,918.00	291,132.00	1,485,643.00	DEPARTMENT OF EDUCATION, ASSOCIATION OF INDEPENDENT SCHOOLS OF WA INC, SCIENCE TEACHERS ASSN OF WA INC, XCALIBUR AVIATION (AUSTRALIA) PTY LTD, INTERNATIONAL GRAPHITE LIMITED, THE TRUSTEE FOR YOUNG ENGINEERS HOLDING UNIT TRUST
Blair, Em/Prof David G	The Einstein-First school science education program developed by this team has been taken up by more than 50 schools and was launched nationally in 2023. It aims to revitalise physical science education across school years 3-10. With early introduction of modern concepts we aim to allow everyone to share the revelations of modern science and our best understanding of the universe. Micro-credential courses and other training vehicles have seen teachers develop confidence and enthusiasm for the new materials. This proposal will evaluate and optimise the teacher training programs, and measure the outcomes in terms of our primary goals of encouraging more students, and especially girls, to choose STEM options with view to future careers.							

National Interest Test Statement

Einstein-First is a national education project aiming to solve three related problems: Students' declining attitudes towards Science, Technology, Engineering, and Mathematics (STEM), the STEM skills crisis, and widespread anti-science sentiments, arising from ignorance of the revelations of modern science. To solve these problems we created Eight Steps to Einstein's Universe, a program in which exciting, relevant modern science is taught over four years of primary school and four years of middle school. Supported by abundant evidence for the effectiveness of this program, we developed training programs for upskilling teachers, raised industry funding to take the program across Australia, expanded the program to 50 schools, held a national launch at the Australian Academy of Science in Canberra, received national funding to provide free micro-credential training for teachers in 2024, and funds for a related program called Quantum Girls. To reap the national benefits we aim for, we need to make sure that our training programs are optimised, that our trained teachers do indeed transfer enthusiasm for science to their students, and that more students, especially girls, go on to choose STEM options and aim for STEM careers. This will be of benefit to the economy and increase the pool of people able to undertake the innovations required to cope with the challenges of the future. We aim to make our programs widely and freely available for the benefit of all schools, and the nation.

LP230200867	Novel decarbonisation via producing lithium carbonate with carbon emissions	220,051.00	245,479.00	220,427.00	0.00	0.00	685,957.00	TIANQI LITHIUM KWINANA PTY LTD
Sun, Prof Hongqi	As a critical metal, lithium will play a pivotal role in energy transition. Tianqi Lithium Kwinana is the first to produce battery-grade lithium in Australia in commercial quantities in May 2022. This project aims to make its refining process greener through effective decarbonisation and waste management. This project expects to generate new knowledge in the area of decarbonising the refining processes of critical minerals. Expected outcomes include a new technology for locking carbon dioxide into lithium products, and a novel approach for managing refinery waste. This should provide significant benefits, such as a boosted lithium production capacity for Australia's exports, and invented leading technologies for critical minerals industry.							

National Interest Test Statement

Critical minerals have endowed Australia a world leading position in exploiting and producing key products for energy transition to a net zero future. As a typical product, lithium plays a pivotal role in manufacturing batteries, which power a range of electronic products. Until May 2022, Tianqi Lithium Kwinana firstly produced battery-grade lithium in Australia in commercial quantities, but current process generates heavy carbon emissions and substantial nonlithium waste. This project aims to address such serious issues, benefiting the whole emerging lithium industry in Australia. The research gaps of decarbonising hard rocks lithium processing and converting non-lithium waste to value-added products will be addressed. This research will boost Australia's lithium production capacity to support the battery manufacturing industry and enhance export value. The outcomes will also help to convert the lithium refining waste to commercial products for greater economic value. The project significantly contributes to decarbonisation, not just broadly promoting energy transition by providing critical minerals but decarbonising the lithium refining process itself. Therefore, it will help Australia achieve the ambitious decarbonisation and net zero targets and make considerable steps in mitigating the effects of climate change. The research outcomes are expected to be adopted by other lithium industries beyond Tianqi and make positive impact to the whole sector of critical minerals.

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		2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)
LP230200910	Quantifying the benefits of time for deep foundations in fine-grained soils	221,425.00	272,890.00	213,110.00	0.00	0.00	707,425.00	LLOYD'S REGISTER EMEA, NORWEGIAN GEOTECHNICAL INSTITUTE PTY LTD, SHELL AUSTRALIA PTY LTD, RWE OFFSHORE WIND GMBH, WOODSIDE ENERGY GROUP LTD, ARUP PTY LIMITED, DELFT UNIVERSITY OF TECHNOLOGY, NETHERLANDS
Lehane, Prof Barry M	<p>Despite increasing demand for foundations in wind & solar farms, transportation & mining infrastructure, as well as coastal & offshore developments, current methods of assessing their axial capacity in fine-grained soil are flawed and outdated. This project addresses an urgent need for improved reliability and reduced costs by integrating empirical, numerical and theoretical state-of-the-art approaches in a unique and innovative manner. The project will develop a long-awaited design method for displacement foundations that incorporates the critical effect of time in its formulation. This advancement will create significant cost savings in upcoming renewable energy projects, as well as in traditional infrastructural developments.</p> <p>National Interest Test Statement</p> <p>Displacement foundations are the backbone to Australia's construction and energy sectors, being essential for onshore and offshore infrastructure. However, poor reliability in current design techniques results in costly and inefficient foundation solutions. This project will employ a comprehensive and targeted campaign of field and laboratory experiments, combined with numerical support, to develop a new and robust methodology for the displacement foundation design in fine grained soil. A key feature of this approach is the incorporation of time since installation in the formulations, recognising its significant influence on axial capacity – a crucial aspect that is overlooked in existing approaches. The step-change increase in dependability of the new approach will lead to more efficient designs with an estimated annual saving, based on data from the Piling & Foundation Specialist Federation, of at least \$75M for Australia's displacement pile industry alone. By prioritising efficiency and cost-effectiveness, this initiative aligns seamlessly with the government's national interest in sustainable infrastructure development, particularly in wind and solar energy infrastructure, while positively impacting existing sectors that are critical to Australia's economic success. The project represents an essential step towards aligning economic prosperity and environmental sustainability in Australia.</p>							
LP230201028	Bandgap engineered bismuth chalcogenides for uncooled infrared detectors	281,826.00	273,976.00	276,676.00	0.00	0.00	832,478.00	PLANARTECH UK LIMITED
Lei, A/Prof Wen	<p>Uncooled infrared detectors are core enabling technologies in civilian and defense applications such as night vision, surveillance, automated driving, and firefighting. However, the industry application of two-dimensional materials in uncooled infrared detectors is hindered by their low device performance and poor fabrication scalability. This project aims to develop low-cost, high performance uncooled infrared detectors with high fabrication scalability by growing bandgap engineered two-dimensional bismuth chalcogenides with controlled doping and enhanced light absorption. This will place Australia in a very competitive position in the billion-dollar uncooled infrared detector market whilst benefit relevant Australian industry sectors.</p> <p>National Interest Test Statement</p> <p>High performance uncooled infrared detectors are core technologies for various civilian and defense applications such as night vision, surveillance, automated driving, firefighting, environment monitoring, and many others. They present a multi-billion-dollar market which is currently dominated by overseas manufacturers. Despite the intensive research on two dimensional materials for fabricating uncooled infrared detectors, their industry applications have been hindered by low device performance and poor fabrication scalability. This project will combat this research gap and provide low-cost solutions through industry-breaking technologies that will solve these prevalent issues. This project will place Australia in the forefront of this technology, and enable Australia to be first to the market. The availability of this new technology will contribute to the long-term development of relevant core Australian industry sectors, and thus benefit the Australian economy, society, environment, national security and international image. Any outcomes deemed patentable will be lodged with the patent office, and outcomes of significant technology developments will be presented in public lectures and relevant industry forums with the aim of translating them to industry manufacturing, production, and potential export.</p>							
The University of Western Australia		1,023,022.00	1,089,072.00	1,008,359.00	299,918.00	291,132.00	3,711,503.00	
Western Australia		1,182,464.00	1,195,450.00	1,105,150.00	299,918.00	291,132.00	4,074,114.00	

Minister's Approval for Linkage Projects 2023 Round 2 for Funding Commencing in 2024 Schedule

Approved Organisation, Leader of Approved Research Program (Columns 1 and 2)	Approved Research Program (Column 3)	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)			Total (\$)	Partner Organisation(s)
		2024-25 (Column 4)	2025-26* (Column 5)	2026-27* (Column 6)	2027-28* (Column 7)	2028-29* (Column 8)	(Column 9)	(Column 10)
		12,809,371.00	13,698,068.00	12,431,680.00	2,843,152.00	1,322,436.00	43,104,707.00	