Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated ar	nd Approved Exp	penditure (\$) Indicative Funding (\$)		Total (\$)	Partner Organisation(s)	
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Australian C	Capital Territory							
The Australian	National University							
LP210300506 Nicotra, Prof Adrienne B	Understanding snow gum dieback for effective and integrated management The project leverages recent research and infrastructure investments and our determined and collaborative team as it aims to: 1) assess the future geography of snow gum dieback in the high country and identify priority locations for pro-active management, 2) quantify the impact of snow gums on high country water and carbon budgets and thus the socio- economic and biodiversity values, and 3) determine options for mitigation. Dieback of our iconic snow gum forests is diminishing the ecological, hydrological and cultural values of the Australian Alps and will impact state and national water-supply and power-generation systems. Our research will inform Alps-wide management efforts designed for long-term success.	299,299.00	201,845.00	232,348.00	299,392.00	198,421.00	1,231,305.00	NSW DEPARTMENT OF PLANNING INDUSTRY AND ENVIRONMENT, ENVIRONMENT, PLANNING AND SUSTAINABLE DEVELOPMENT DIRECTORATE - DEPARTMENTAL, AUSTRALIAN ALPS NATIONAL PARKS PROGRAM , PARKS VICTORIA, LUND UNIVERSITY, SWEDEN

### National Interest Test Statement

Forest dieback is emerging as a national issue in Australia and overseas. Managing dieback at the forest scale is a daunting problem with no clear solution. Snowgum dieback in particular poses a critical threat to state and national water supply, quality and also to power-generation systems - with far reaching economic implications. Working with our partners this project will combine cutting-edge hydrology and carbon/water modelling to assess biodiversity impacts, enabling us to conduct scenario analyses that quantify dieback impacts and to produce translational outputs for the sector: a solutions roadmap, spatially predictive tools, value assessments, and candidate seed stocks for restoration. The uptake of these tools and resources will enable pro-active Alps-wide management efforts to be effective and realised at scale. Australia will benefit environmentally through proactive and more effective preservation of our alpine ecosystems as well as economically by reducing the threat to our national water supply and generation systems.

LP210301290	Accelerating zero-emission vehicle adoption in Australian cities	95,746.00	95,746.00	97,956.00	0.00	0.00	289,448.00	ENVIRONMENT,
Bai, Prof Xuemei	This project aims to devise effective policy mixes and sequences to inform policymakers on the process of zero-emission vehicle adoption policy development, adjustment, and implementation in Australian cities. Taking Canberra as a case study, it intends to understand and integrate diverse stakeholder perspectives into policy processes, and explore the synergies and trade-offs among multiple goals and measures, to inform and enhance the policy goals and interventions occurring across time scales and sectors. Expected outcomes include a framework to co-design policy measures and incentive structures for shared learning in Australia and globally. This should contribute to both urban mitigation and the incubation of new business ecosystems.							PLANNING AND SUSTAINABLE DEVELOPMENT DIRECTORATE - DEPARTMENTAL, AUSTRALIAN ELECTRIC VEHICLE ASSOCIATION, SG FLEET AUSTRALIA PTY LIMITED

#### **National Interest Test Statement**

The uptake of zero-emissions vehicles (ZEVs) in Australia benefits the environment both in short-term pollution reduction and longer-term climate change mitigation. It is critical to reaching national net-zero goals by 2050, yet uptake so far has been slower than in many other countries. This research will investigate how local policy measures can increase uptake of electric and green hydrogen-powered vehicles. Using Canberra as a case study, this research aims to investigate how effective policy measures for accelerated ZEVs uptake can be co-designed with stakeholders, taking into account the interactions with existing renewable energy policies and local context. The outcome of this research will be a clear understanding of how policy at a city-level in Australia can increase the uptake of ZEVs, and a cutting-edge knowledge on the role of sub-national government in sustainability transition. Working with partners, knowledge will be shared to support policy process in ACT and other jurisdictions that can benefit the Australian environment by reducing pollution and mitigating climate change.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)	
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301416 Jackson, Prof Colin J	Ancestral enzyme engineering for designer fat products Consumers are increasingly turning to plant-based alternatives of meat and dairy products due to concerns about health, animal welfare and sustainability. Taste, nutritional profile, protein content and limited variety are barriers that continue to challenge food manufacturers. This project aims to develop a process for the fermentation of specialty food oils and fats from agriculture production waste, that can deliver the flavour and nutritional benefits of meat and dairy products when added to plant-based alternatives. The outcomes should valorise existing agriculture and food waste, converting waste materials into valuable food ingredients.	141,000.00	141,000.00	141,000.00	0.00	0.00	423,000.00	NOURISH INGREDIENTS PTY LTD

The world food economy is undergoing a revolution. Population growth and consumer preferences are driving demand for meat and dairy that our agricultural industry will struggle to meet. Plant-based alternatives to the fats that give meat and dairy their taste could help solve this problem, but they cannot be produced in sufficient amounts to be environmentally or economically sustainable. To solve this problem, the project will produce plant-based meat and dairy alternatives that will add flavour to plant-based proteins – and do so both sustainably and at industrial scale. This discovery and its commercial development through Australian food manufacturers will give consumers access to plant-based foods that taste like meat and dairy. With a predicted market of \$162 billion by 2030, the project will also deliver benefits for the food industry by creating a competitive advantage over international companies, generating high-tech manufacturing capability and creating hundreds of highly skilled jobs.

The Australian National University	536,045.00	438,591.00	471,304.00	299,392.00	198,421.00	1,943,753.00
Australian Capital Territory	536,045.00	438,591.00	471,304.00	299,392.00	198,421.00	1,943,753.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)		Indicative F	Indicative Funding (\$)		Partner Organisation(s)	
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
New South	Wales							
Macquarie Univ	versity							
LP210301171 Harrison, Prof Linda J	Observe, Reflect, Improve: a tool to enrich Children's Learning (ORICL) This project aims to address long-standing concerns about the quality of education and care for children during their critical first two years. It will introduce a promising, future-focused digital tool, co-designed with practitioners and providers of early childhood services, to support infant-toddler educators' planning and practice. Building on ground-breaking pilot work, we will undertake a national implementation and evaluation of the Observe, Reflect and Improve Children's Learning (ORICL) tool. Expected outcomes include: enhanced pedagogical practices; enriched learning experiences for children birth-two; effective communication with families; and improved resourcing for providers of early childhood education and care services.	236,825.00	230,579.00	76,832.00	0.00	0.00	544,236.00	KU CHILDREN'S SERVICES, GOODSTART EARLY LEARNING LTD, SDN CHILDREN'S SERVICES, GOWRIE NSW, LIVERPOOL CITY COUNCIL, BLACKTOWN CITY COUNCIL, NORTHSIDE COMMUNITY SERVICE LIMITED, FAMILY DAY CARE AUSTRALIA LIMITED, THE CRECHE AND KINDERGARTEN ASSOCIATION LIMITED, EARLY CHILDHOOD AUSTRALIA, UNITING

### National Interest Test Statement

By the age of two, 59% of Australian children attend a centre-based or home-based day care for a regular part of their week. This project will address long-standing concerns about the quality of education and care for children during these first two years that are critical to positive life trajectories. There is an urgent need to increase educators' specialist knowledge of, and skills for supporting, infants' and toddlers' engagement in learning. This project will deliver a future-focused digital tool, co-designed with practitioners and providers of early childhood services, that will for the first time address the interplay between observing, interpreting, planning, facilitating and documenting children's interactions and experiences by educators, enabling the enhancement of pedagogical practices. Implementation of this tool will improve resourcing for providers of early childhood education and care services, and will benefit Australian children and their families by promoting optimal development, learning and wellbeing in child care services and at home.

LP210301259	Deep Pattern Mining for Brain Graph Analysis: A Data Mining Perspective	120,003.00	112,559.00	119,105.00	0.00	0.00	351,667.00	DATON DATA PTY LTD
Wu, Dr Jia	This project brings together experts in the fields of data mining and cognitive neuroscience. This project aims to develop new data analytics tools, algorithms, and models to combine complex multi-source neuroimage brain data and non-imaging data, to explore the interplays among these different data structures and identify novel functional patterns from complex brain graph structures. The research undertaken in this project expects to provide practical data analysis approaches and establish the theoretical foundations for data mining with multiple sources of brain data.							

#### **National Interest Test Statement**

Studies on the human brain include medical imaging and cognitive behavioural therapies. Lacking is a unified approach to analysing how the brain functions to help humans understand and interact with the world. The project will for the first time combine data from medical imaging and behavioural performance techniques to provide a comprehensive analysis of brain function. Society will benefit by extending our understanding of how the wiring of the brain supports specific cognitive skills. It will reveal how the human brain filters and interprets sounds which will have immense benefits for hearing-impaired Australians. Collaborations with clinical and industry partners specialised in data science will enable the development of innovative methods to measure the performance of patients' brains. Doctors can utilise this work to help patients suffering from conditions such as traumatic brain injury or migraines. In addition, learning more about how a person thinks will advance artificial networks that seek to mimic human decision making and are critical to Australia's ongoing innovations in artificial intelligence.

Macquarie University	356,828.00	343,138.00	195,937.00	0.00	0.00	895,903.00
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Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated ar	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
The University	of New South Wales							
LP210300558	Integrated Kids Hubs - Ensuring Equity of Access for Children	218,103.00	222,063.00	236,577.00	240,542.00	0.00	917,285.00	KARITANE, MISSION
Woolfenden, A/Prof Susan R	The Integrated Kids Hubs - Ensuring Equity of Access for Children project aims to determine if integrated Hubs are effective in increasing access to child and family services for disadvantaged urban and regional families with children aged 3 years and under, thus improving early identification of developmental vulnerability, parental wellbeing and capacity, and addressing unmet psychosocial needs. If these issues are not identified and addressed early, these children will go on to struggle in school and life. We will use a pragmatic trial design (meaning the research is embedded in our usual practice), determine the social return on investment, and establish what is needed to scale up the Hubs across NSW and Australia.  National Interest Test Statement One in three children from disadvantaged communities are developmentally vulnerable. economic opportunity. This costs Australia \$15.2 billion annually in education, health, an for Children is nationally significant because we are using an urban and a regional case outcomes in the first 1000 days. This project meets the recommendations of the recent F	They have increase d welfare costs, and study to determine i Productivity Commis	d risk of poor socioer I lost productivity and f Hubs increase acce sion report for early i 2030, and the Nation	notional functioning is likely to worsen ss to child and fami dentification and int al Framework for L	, school failure, post the COVID ly services in di ervention to sup	lifelong disability -19 pandemic. In sadvantaged urb port children at-r ad Family Health	, chronic disease tegrated Kids Hu an and regional ( isk of suboptimal Services	, mental illness, and reduced bs – Ensuring Equity of Access communities to optimise development. It is a national
LP210301049	Determining fossilisation processes of a rare iron-rich Lagerstätte	120,109.00	135,878.00	130,392.00	0.00	0.00	386,379.00	THE AUSTRALIAN
McCurry, Dr Matthew R	Most fossil sites only preserve resistant elements such as bones and teeth, leading to questions about how soft animals and structures have evolved over time. The recent discovery of a fossil deposit in New South Wales appears to demonstrate a new set of conditions for the preservation of soft tissues. This project aims to constrain the age of and assess the fossilisation processes that produced this unique fossil site. We will use an integrative approach to reconstruct the formation of this Lagerstätte. The work will provide significant advances in our understanding of the process of fossilisation and guide the discovery of other exceptionally-well preserved fossil deposits, critical in reconstructing the biological history of Australia.							MUSEUM

### **National Interest Test Statement**

Understanding how changes in the environment affect plant and animal communities has been hampered by a lack of accurate dating equipment. This project uses new techniques to accurately date fossil sites and understand those conditions that favour preservation of plant and animal habitats. Such techniques will identify and date additional sites to help us understand the history of Australia's climate and environment. It is imperative that we learn from past environmental changes and so better predict how future changes in rainfall and temperature may impact Australia's unique ecosystems. An important outcome will be determining how weather patterns influence Australia rainforest ecosystems. This project will return social and economic benefit to Australia through (i) better prediction and thus prevention of environmental threats to ecosystems (ii) educating the general public through outreach activities and museum exhibitions and (iii) building national capacity in the sciences underpinning ecological threats.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)	
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301308	Stable perovskite-unlocking the full potential of low-cost solar cells	261,487.00	266,321.00	270,571.00	0.00	0.00	798,379.00	UNIVERSITY OF SURREY,
Hao, Prof Xiaojing	Despite impressive conversion efficiency, the perovskites' poor stability impedes their commercialization. This project aims to develop strategies for stable perovskite solar cells. This will be realized by a thorough understanding of the degradation origins with stimuli, and development of degradation mitigation strategies including materials and interfaces engineering, defect control and passivation, synergized by a systematic degradation evaluation, state-of-art multi-scale material and device characterizations and device modeling providing feedback for optimization. The project will bring new scientific findings, key technological step-change solutions, unlocking the full potential of perovskites for cheaper photovoltaic technologies. National Interest Test Statement A new type of material for solar panels called "perovskites" has the potential to revolution compared with 25 years for standard silicon panels. This project will investigate how and material using a range of strategies to mitigate their degradation. This technology is likel authorities. It will cement Australia's leading position in solar panel technology, contribut electronic areas, where "perovskites" have demonstrated superior performance.	nise solar module t d why "perovskites" ly to enter the solar e to national manu	technology. However ' deteriorate in the su r panel market within facturing and recons	r its high efficiency i un, and by preventin ı 5 years and is pred truction priorities in	n making electrici g this, improve th icted to occupy a Renewables and	ty degrades in br eir stability. This ~5% market sha Clean Energy, a	ight sunshine, lin will be done by n ıre within 10 year nd potentially attı	hiting its life to a few years nanipulating and monitoring the s according to international fact companies in related
	The University of New South Wales	599,699.00	624,262.00	637,540.00	240,542.00	0.00	2,102,043.00	
The University	of Newcastle							
LP210301068	Differential solidification of steel slag to create a fertiliser co-product	150,836.00	153,036.00	169,982.00	0.00	0.00	473,854.00	BHP INNOVATION PTY LTD
Honeyands, A/Prof Tom A	The project aims to develop a process to separate phosphorus from steelmaking slag while the slag is still molten. Changing iron ore grades in Australia, especially increasing phosphorus content, places Australian iron ore products at a competitive disadvantage and attracts a significant financial penalty. The separation process is intended to facilitate recycling of an iron rich stream within the steelworks and production of a phosphorus rich co-product for agriculture. Benefits are anticipated to include increased utilisation of steel slag, creation of a valuable fertiliser co-product, decreased greenhouse gas emissions, and a reduction in the penalty applied to Australian iron ores.							

### **National Interest Test Statement**

Iron ore was Australia's top export in 2018-19, with a value of \$77 Billion dollars. Changing ore grades in Australia, especially increasing phosphorus content, places our ore-products at a competitive disadvantage compared to competitors from Brazil and west Africa. We need to develop a process by which phosphorus can be recovered from the steelmaking process so that Australian iron ore suppliers avoid price penalties for high phosphorus content, which currently stand at \$3.47 per 0.01% phosphorus per tonne of ore. This will enable steelmakers to increase the recycle rate of iron and flux currently lost in the slag stream, resulting in decreased cost and greenhouse gas emissions in the iron and steelmaking process, as well as contributing to the circular economy. The process also aims to generate a high value, high-phosphorus fertiliser co-product for use in agriculture, addressing impending shortages in phosphorus based fertilisers, and further ameliorating greenhouse gas emissions through passive CO2 sequestration in soil.

Approved Organisation, Leader of Approved Research Program	Approved Research Program d	Estimated	and Approved Exp	Indicative Funding (\$)		Total (\$)	Partner Organisation(s)	
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301109	A novel drug class for the effective treatment of Giardia infections	67,712.00	135,527.00	79,100.00	0.00	0.00	282,339.00	NEOCULI PTY LTD
McCluskey, Prof Adam	Companion animals play a pivotal role in the lifestyle of the average Australian family. The 9 million cats and dogs, residing in >65% of our households, have provided significant health and well-being benefits to owners, especially during COVID. Ensuring pet health is a primary obligation of pet ownership. Giardia infections (Giardia duodenalis, with 94% of infections in dogs identified as Assemblage A) is the most prevalent enteric parasite identified globally in dogs. Infection rates can be as high as 75% in puppies. Current treatments are failing due to poor efficacy, resistance and poor adherence to treatment schedules. We have identified a novel, extremely rapid acting series of compounds capable of single shot eradication of Giardia.	ustralian household	ds with ownership ra	tas increasing dram	atically since the		emic. Cats and d	oge provide comfort, affection

Cats and dogs, our closest companion animals, are integral members of over 65% of Australian households, with ownership rates increasing dramatically since the COVID-19 pandemic. Cats and dogs provide comfort, affection and assistance to their owners. A significant number of pets develop debilitating gastrointestinal infections, with Giardia infection amongst the most common in dogs and cats. Paradoxically, this is the most difficult infection to treat using current medications. Our multidisciplinary Australian team has developed a unique approach capable of rapidly eradicating Giardia whilst maintaining gut health. This proposal leverages the synthetic chemistry, parasite biology, and pharmaceutical technologies only available in our laboratories to rapidly progress our novel drug towards local Australian production of an animal-specific Giardia treatment, fulfilling a clear market need recognized by the pharmaceutical industry. Success in this companion animal focused project has huge potential to offer solutions to similar infections in the cattle industry, enhancing Australia's food security.

	The University of Newcastle	218,548.00	288,563.00	249,082.00	0.00	0.00	756,193.00	
The University	of Sydney							
LP210300999 Cairney, Prof Julie M	Embrittlement-tolerant alloys for safe hydrogen transmission and storage Hydrogen embrittlement in steels is a major impediment to a safe hydrogen economy. This project will determine how hydrogen affects the deformation behaviour of steel, providing the fundamental information that is required to develop alloys that can be safely used in infrastructure for a future Australian hydrogen industry. We will utilise new technologies that allow us, for the first time, to determine the position of hydrogen atoms around micro-scale features and to compare it to local mechanical behaviour, determined by micro-mechanical tests. The systematic investigation of the effect of hydrogen on different micro-components within steel will allow the development of microstructure-guided alloy design principles.	157,070.00	172,685.00	189,591.00	0.00	0.00	519,346.00	CITIC METAL, POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY, KOREA, MICROSCOPY SOLUTIONS PTY LTD, SHANGHAI JIAO TONG UNIVERSITY, GYEONGSANG NATIONAL UNIVERSITY, SOUTH KOREA

### **National Interest Test Statement**

Clean, cheap, storable hydrogen fuel, produced without emissions and leaving only water when burned, is poised to become a reality for Australia. According to the National Hydrogen Strategy, an Australian hydrogen industry will likely generate ~7,600 new high-skill jobs and provide ~\$11 billion a year in GDP by 2040-2050. However, a critical problem affecting equipment durability is hydrogen embrittlement, a phenomenon that can cause sudden, catastrophic failure of stressed metal components exposed to hydrogen. This project leverages connections with international metals companies and an Australian start up to provide the knowledge required to develop new, hydrogen-tolerant alloys that can be used for the transport and storage of hydrogen. An additional benefit will be the development of a new cryogenic micro-scale mechanical testing facility, which will be available to all Australian researchers in an open access laboratory.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301265	Urban Rewilding: Ecologically and Community-informed Futures	167,141.00	156,797.00	164,339.00	0.00	0.00	488,277.00	
Newsome, Dr Thomas M	Biodiversity is highly threatened in Australian cities. This project aims to prevent further wildlife loss by creating a blueprint for the ecological restoration of urban spaces. Working with seven Councils and three State government agencies in northern Sydney, this project will experimentally assess a new approach to conservation by restoring regionally-present but locally-missing wildlife. Expected outcomes include the restoration of ecosystem services provided by wildlife and increased opportunities for community engagement with nature. Project benefits include initiating rewilding in urban areas, improved public education on the benefits of restoring wildlife and greater potential to conserve our biodiversity and cultural heritage.							AUSTRALIA, MOSMAN MUNICIPAL COUNCIL, NORTHERN BEACHES COUNCIL, KU-RING-GAI COUNCIL, NORTH SYDNEY COUNCIL, HORNSBY SHIRE COUNCIL, WILLOUGHBY CITY COUNCIL, LANE COVE MUNICIPAL COUNCIL, LOCAL LAND SERVICES, NSW DEPARTMENT OF PLANNING INDUSTRY AND ENVIRONMENT

### **National Interest Test Statement**

The natural processes we rely on to produce clean air and water, grow food and regulate the climate are dependent on interconnected communities of plants and animals. In urbanised areas much of this biological diversity has been lost, contributing to environmental challenges such as water crises, increased air pollution and changes in local climate. This project will demonstrate how best to reintroduce native plants and animals to urban Australia in order to restore local biodiversity. Working with local government and the community in northern Sydney, it will assess barriers to wildlife restoration and identify the species best suited for reintroduction. This could re-establish native wildlife populations of eastern pygmy possums, long-nosed bandicoots, eastern water dragons, bush rats and superb lyrebirds which used to be common in this area. Councils and state agencies will be able to employ the framework this project develops to help restore biodiversity in urban areas across the nation. This will ultimately improve natural ecosystems, create opportunities for Australians living in cities to engage with nature and illustrate the importance of conservation and green-spaces for our well-being and quality of life.

	The University of Sydney	324,211.00	329,482.00	353,930.00	0.00	0.00	1,007,623.00	
University of	Technology Sydney							
LP210300004	Low-Cost Multiple Pencil-Beam Lens Antenna System	127,621.00	143,811.00	136,696.00	0.00	0.00	408,128.00	FRONTIER INSTRUMENTS
Yang, Dr Yang	The project aims to develop a new multiple pencil beam antenna system, taking advantage of CIs' preliminary inventions in lens antennas, 3D printed antennas and arrays, and antenna feeding networks. A dual-polarised antenna array architecture will enhance the sensing quality and resolution of our partner organisation's cleaning robot. It will enable the robot to recognise human presence and movement in low-light conditions for rapid and safe disinfection of public spaces. The project will have an immediate socio-economic impact on local businesses and communities. The outcomes of the project will create safer public environments for people living and working in Australia, and boost economic recovery in the post-pandemic period.							PTYLID

### National Interest Test Statement

The project aims to develop a lightweight, high performance and 3D printable multibeam antenna system that will enhance the wireless sensing capabilities of the Partner Organisation's intelligent autonomous cleaning robots. Integration of the developed antenna system would enable them to safely operate in non-line-of-sight and low-light scenarios, making them suitable for safe deployment in high-traffic and complex environments such as trains, hospitals, airports, shopping centres, and warehouses. Deployment of autonomous cleaning robots would enable public authorities and industry to deliver enhanced cleaning routines at a reduced cost to improve environmental hygiene. Demonstrating implementation of the technology will scaffold resilient 3D printing-based supply chains, and unlock new market opportunities for at-scale commercial integration of this advanced sensing technology to meet increasing domestic and international demand. This will stimulate jobs growth in advanced manufacturing, drive productivity and economic growth, and position Australia as a leader in advanced manufacturing innovation.

Approved Organisation,	Approved Research Program	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)	
Leader of Approved Research Program	1							
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301046	Effective, efficient and scalable processing of the graph of graphs	104,404.00	104,404.00	104,404.00	0.00	0.00	313,212.00	ACCESSIBLE ICT PTY LTD
Zhang, Prof Ying	This project aims to develop novel approaches to realise the value of the graph of graphs (GoG), which has been widely used to capture the relations among the structured entities. Several key challenges will be addressed: better models to capture the similarity and cohesiveness of the structured entities, increased efficiency, and greater scalability of the processing and analytics of the GoG. The novel models and algorithms developed within this project will be incorporated into a prototype for both evaluation and to demonstrate real-world practical value for business, industry, and academia. Success in this project should see significant benefits for many important applications such as health, cyber-security and e-commerce.							
	National Interest Test Statement							
	Graph of graphs (GoG) techniques offer powerful insights into the structure of complex applications from the life and material sciences through to e-commerce. This project wil leader of the research field of graph processing and analytics. New knowledge generate cybersecurity solutions based on project findings will benefit Australian e-commerce bus accelerate Australia's transition toward patient-centred consultation and treatment, enal	x entities, like chemical molecules and proteins, and their relati rill develop new methods for systematically processing and ana ted will enable data analysts and researchers to better undersi usinesses and their customers - such as health-related applica abling Australian healthcare operators and patients to benefit the		tionship and inter alysing GoG in a stand and analys ations, e-comme through more ac	ractions with oth an effective, effic le graph data act rce, cyber-secur curate precision	er entities, and an ient, and scalable ross a wide spect ity and social net medicinal produc	e used in many important way, positioning Australia as a rum of applications. Enhanced works. The outcomes will also ts and better health outcomes.	
	University of Technology Sydney	232,025.00	248,215.00	241,100.00	0.00 0.00		721,340.00	
University of V	Vollongong							
LP210300009	Empowering Australia's Visual Arts via Creative Blockchain Opportunities	187,086.00	195,541.00	188,316.00	0.00	0.00	570,943.00	NATIONAL ASSOCIATION
Yecies, A/Prof Brian	A/Prof Brian This project investigates the provision of a blockchain-based solution for protecting the intellectual property and provenance of visual art, and ways to empower its economic, cultural, and social value and benefits. By exploring innovative non- fungible token (NFT) opportunities in a global cyber security context, we will co- design a user-friendly and compliant tool for expanding the creation and movement of art on existing virtual galleries and smart contract-enabled platforms. Building on interdisciplinary synergies between creative and IT practices, we will interrogate the efficacy, risks and governance surrounding this global technology, and produce vital new knowledge for engaging with risks and opportunities in the digital economy.							FOR THE VISUAL ARTS LTD, AUSTRALIAN NETWORK FOR ART & TECHNOLOGY, COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION, COPYRIGHT AGENCY LTD, SKY SHINE GROUP PTY LIMITED, CUBIC A PTY LTD, COMICS2MOVIES, NEXTGENIUS, AUSTRALIAN COPYRIGHT COUNCIL

### **National Interest Test Statement**

This project will contribute to the national economy by addressing the current problem of intellectual property rights infringement in the digital sphere where all forms of visual art are created, bought, sold, and traded. Policymakers, scholars, and Australian artists are all concerned about fakes, imitations, and the lack of trust and transparency in these global transactions. By working with change-makers such as the Australian Copyright Council, Copyright Agency, National Association for the Visual Arts, and Australian Network for Art & Technology, this project will show how the integrity of digital platforms on which artworks are listed and securely traded can be preserved. The aim is to protect the livelihoods of those engaged in the creative arts while safeguarding their contributions, which are forecast to generate \$140 billion for the Australian economy by 2025. This initiative will also place Australia at the forefront of cybersecurity technology applications and prevent rising fraud in the wider copyright industries.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	Estimated and Approved Expenditure (\$) I		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301054	Innovative metamaterial magnetorheological technology for mining machines	50,000.00	95,000.00	95,000.00	0.00	0.00	240,000.00	KOMATSU AUSTRALIA PTY
Li, Prof Weihua	Hard-rock mining machines have been identified as the next generation mining technology, which will finally replace the traditional drill and blast method to increase productivity and mitigate dangerous working conditions. This project aims to develop innovative metamaterial magnetorheological elastomer joints for a typical hard-rock mining machine to improve the mining efficiency by reducing the vibration. The findings and outcomes of this research will advance the knowledge and practice of hard-rock mining machines in Australia. The success of this project will significantly increase mining productivity and reduce human injury							LTD, M&S ENGINEERING PTY LIMITED
	National Interest Test Statement							
	The \$202 billion Australian mining industry is significant for our economic prosperity, sus these have safety risks, are less cost-effective, and harmful to the environment. Next ge safety and efficiency of the mining process. Vibration of such machinery needs to be ad and magnetorheological technologies to solve this challenge. Overcoming the vibration i less environmentally harmful mining. This will place Australia at the international forefror	staining 75% of expo eneration semi-auton dressed as it restrict issues will allow for ht of innovative minin	orts, 10.4% of the eco omous mining equip s mining efficiency a his new cutting techn ng equipment manufa	nomy and 1.1 millic ment can overcome nd potentially induce nology to be implem acturing and design.	on jobs. Mining p this by utilising es mechanical fa ented across Au	processes have tr remotely operate ailures. This proje ustralia's mining in	aditionally used d hard rock cuttii ct, with industry ndustry to create	drill and blast methods, but ng machines to increase the partners, will use metamaterial safer, more cost effective and
LP210301410	High Efficiency Electrochemical Cells	56,793.00	156,793.00	172,770.00	0.00	0.00	386,356.00	HYSATA PTY LTD
Swiegers, Prof Gerhard F	This project will study a recently developed, energy efficient 'capillary-fed' electrochemical cell architecture in the facilitation of various electro-energy and electro-synthetic transformations. The new cell architecture will be examined as a hydrogen-oxygen fuel cell and as a cell for extracting pure hydrogen from a 5-10% mixture of hydrogen in methane (natural gas), amongst others. The work seeks to improve upon the electrochemical performance of the best commercial and academic cells of such types, if possible. In increasing the efficiency with which renewable electricity can be converted into renewable hydrogen and back, this project will support the national priority of net-zero carbon emissions by 2050.							
	National Interest Test Statement							
	Hydrogen strategies for net-zero carbon emissions aim to leverage the natural advantage	jes of Australia in so	lar and wind to gene	rate renewable elec	tricity that will be	e converted to 'gr	een' hydrogen in	large-scale, as an energy-

dense renewable fuel. A key enabler of such initiatives is the development of electrochemical cells/cell architectures that are capable of efficiently transforming renewable electricity into green hydrogen in hydrogen and back. This project will contribute to such initiatives by examining and optimising the reverse of these processes with a new cell architecture that has already demonstrated high energy efficiency in the production of green hydrogen from renewable electricity. The cell will be studied for efficient conversion of green hydrogen into renewable electricity. The Australian industry partner has expressed an interest in commercialising new technology deriving from this project, supporting the development of an Australian led low-cost renewable energy economy that will stimulate economic growth and facilitate decarbonisation.

University of Wollongong	293,879.00	447,334.00	456,086.00	0.00	0.00	1,197,299.00
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Approved Approved Research Program Organisation, Leader of Approved Research Program		Estimated a	nd Approved Exper	nditure (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Western Sydne	ey University							
LP210300631 Escudero, Prof Paola	Nurturing Australia's Little Multilingual Minds Despite its substantial multilingual capacity of more than 300 languages, Australia has been described as a 'graveyard for languages'. In partnering with community organisations we will facilitate polyglot early learning, commencing with Spanish and Vietnamese. Expected outcomes are a deep understanding of multilingual families' experiences, a model to support lifespan multilingual education, and openly- accessible database of child language in heritage languages. Benefits include a pivotal contribution to early childhood education with the creation of a tailor-made, principle-based program, which will enhance children's academic achievement, familial social and mental wellbeing, and cultural and economic opportunities for all Australians.	120,104.00	119,493.00	119,493.00	0.00	0.00	359,090.00	GOODSTART EARLY LEARNING LTD, AMIGOSS PRESCHOOL AND LONG DAY CARE CO-OPERATIVE LIMITED, VIETSPEAK

#### National Interest Test Statement

Lifelong bilingualism enhances cognitive, social, and academic skills and in turn employability, productivity, and wellbeing. Thirty percent of Australian children grow up in households where a heritage language (HL) is spoken, reaching 50% by 2050. The majority miss the opportunity to retain their HL and reap the academic, cognitive, economic, psychological, and social benefits of being bilingual. This project will identify specific needs for HL maintenance. A co-designed version of our Little Multilingual Minds (LMM) program will deliver HL retention, and enhanced children's wellbeing. Outcomes of this project will be a model to support lifespan multilingual education, and an openly accessible database of child speech in heritage languages. Our innovative intervention will generate 100 new bilinguals per year. Benefits include a pivotal contribution to early childhood education with the creation of a tailor-made, principle-based program set to unlock Australia's bilingual advantage.

Western Sydney University	120,104.00	119,493.00	119,493.00	0.00	0.00	359,090.00
New South Wales	2,145,294.00	2,400,487.00	2,253,168.00	240,542.00	0.00	7,039,491.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated ar	nd Approved Expe	enditure (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Northern Ter	ritory							
Charles Darwin	University							
LP210300151 Russell-Smith, Prof Jeremy	Transforming Cultural & Natural Resource Management workforce capabilities This project aims to implement a transformative program of transdisciplinary cultural and natural resource management and workforce development research in Northern Australia's Arnhem Plateau region. This project expects to create new knowledge in the areas of cultural knowledges, wildfire, feral animal, invasive plants, mine-site rehabilitation, and climate change, as well as Indigenous training effectiveness. Expected outcomes of the project include practical learnings for application in broader Indigenous community/First Nations capability and supportive policy development contexts. The expected benefits are a long-term platform for enhancing cultural and environmental landscape management and sustainable employment opportunities.	214,532.00	210,419.00	206,105.00	204,826.00	100,000.00	935,882.00	THE NATURE CONSERVANCY, INDIGENOUS LAND AND SEA CORPORATION, GUNDJEIHMI ABORIGINAL CORPORATION, BININJ KUNWOK REGIONAL LANGUAGE CENTRE LTD, NORTH AUSTRALIAN INDIGENOUS LAND AND SEA MANAGEMENT ALLIANCE LIMITED, TERRITORY NATURAL RESOURCE MANAGEMENT INCORPORATED, ENVIRONMENTAL RESEARCH INSTITUTE OF THE SUPERVISING SCIENTIST, ENERGY RESOURCES OF AUSTRALIA LTD., PARKS AUSTRALIA NORTH, ENVIRONMENT AUSTRALIA, ALFA (NT) LIMITED, ARBOR METRICS PTY LTD, ENVIRONMENTAL SYSTEMS SOLUTIONS PTY LTD, TERRESTRIAL ECOSYSTEM RESEARCH NETWORK (UQ), ATLAS OF LIVING AUSTRALIA (CSIRO)

### **National Interest Test Statement**

This project will develop natural resource management strategies and an integrated regional management planning framework for Northern Australia's Arnhem Plateau including Kakadu and Nitmiluk National Parks, based on an intercultural approach, that combines equally, western research and local Indigenous cultural knowledge. The involvement of local Indigenous residents, who will contribute to and endorse the outcomes, will ensure translation of research into; culturally appropriate, effective management solutions. The project will develop and deliver Accredited vocational training for Indigenous residents in conservation and land management, providing the skills to adopt and implement new management strategies through environmental management programs and employment. The project aims to double the numbers of indigenous residents engaged in environmental management within five years, funded through additional carbon credit revenues, earned through the application of traditional indigenous landscape management protecting and managing the Arnhem Plateau; managing feral animals and weeds, protecting at risk plants and animals and landscapes. Thus, safeguarding its unique cultural, social, and environmental values, and preserving its commercial tourism benefit.

Charles Darwin University	214,532.00	210,419.00	206,105.00	204,826.00	100,000.00	935,882.00
Northern Territory	214,532.00	210,419.00	206,105.00	204,826.00	100,000.00	935,882.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Expe	enditure (\$)	Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Queensland								
Central Queens	sland University							
LP210301323	Testing for scale up: An Indigenous social and emotional learning program	96,152.00	182,300.00	169,988.00	0.00	0.00	448,440.00	DEPARTMENT OF EDUCATION, TROPICAL BRAIN AND MIND
McCalman, Prof Janya R	This project takes key learnings from prior research that conceptualised, set up, and tested a social and emotional learning program, Skills for Life (SFL), with Aboriginal and Torres Strait Islander students in grades 7-9 in remote Northern Territory and Queensland schools. It aims to: establish the process and necessary conditions for scaling up SFL to diverse remote schools with Aboriginal and Torres Strait Islander students across Australia's top end. Further evidence for the program's effectiveness will also be built by measuring students' resilience, help seeking, and psychological distress; and teachers' cultural awareness; quality of teacher-student relationships, and perceptions of students' emotional and behavioural difficulties. National Interest Test Statement A history of cultural mismatch has left remote schools struggling to sustain the eng 39% experience high psychological distress. Globally, the teaching of social and er and well-being, with a return of \$11 value for each dollar invested. Skills for Life, de emotional and behavioural symptoms and resilience in students with effects increa	agement of Aborig motional competer eveloped by this re sing with each less	jinal and Torres Str ncies in schools has search team, is the son. Partnering with	ait Islander studen s produced signific only SEL progran	ts. High school a ant improvement n tailored for rem and schools this	ttendance is und s in students' bef ote Indigenous st pilot project will b	er 60% with only naviour, academic udents. Initial tria ridae the researc	FOUNDATION INC, YOUTH EMPOWERED TOWARDS INDEPENDENCE INCORPORATED, WESTERN CAPE COLLEGE, KOWANYAMA STATE SCHOOL, NORTHERN PENINSULA AREA STATE COLLEGE, DJARRAGUN COLLEGE LIMITED, ST TERESA'S COLLEGE, ABERGOWRIE, MANY TRACKS LTD
	perceptions of schools' cultural capability and Indigenous students' educational eng	gagement, resilien	ce and wellbeing.	This will inform trar	slation and adop	tion pathways for	national scale-u	p.
Griffith Univers	Central Queensland University	96,152.00	182,300.00	169,988.00	0.00	0.00	448,440.00	
Grintin Onivers	n y							
LP210301176	Co-designing a resilient water-energy toolbox with Indigenous communities	102,090.00	151,923.00	165,365.00	0.00	0.00	419,378.00	ERGON ENERGY CORPORATION LIMITED, TORRES STRAIT ISLAND
Beal, A/Prof Cara D	The aim is to collaboratively create a toolbox of innovative, community-based approaches for water and energy management in remote Australia. This project will combine digital and cultural approaches to create a novel set of tested and evaluated tools for engaging both community and service providers in transforming water and energy use practises in remote Indigenous communities. The key output will be an empirically-tested and user friendly water-energy toolbox tailored to reduce the currently extreme cost of supplying essential services to remote communities. Application of these outputs will significantly reduce demand on local water sources and diesel-generated energy use while creating a skill base for local employment opportunities.							REGIONAL COUNCIL, TORRES STRAIT REGIONAL AUTHORITY, POWER AND WATER CORPORATION, DEPARTMENT OF ENVIRONMENT, PARKS AND WATER SECURITY, CENTRE FOR APPROPRIATE TECHNOLOGY LIMITED, WATER CORPORATION, INDIGENOUS TECHNOLOGY PTY LTD

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and	d Approved Expen	diture (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3) (0	2022-23 Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)

#### **National Interest Test Statement**

The project will co-develop culturally and technically appropriate solutions to improve access to safe, affordable and reliable water and electricity in non-urban Indigenous communities. Through co-design, testing, and evaluation of innovative water and energy management tools, the resultant framework will reduce the high level of water and energy insecurity in regional and remote Australia, building resilience to climate change impacts. This project will provide economic benefit to Australia by directly addressing the National obligation to provide least-cost services to the public and significantly reduce the hundreds of millions of dollars used in remote essential service operations and maintenance. Water and energy service providers will integrate the tools in their daily operations and IT management systems. Co-design with communities and service providers will strengthen engagement, Indigenous voices and knowledge, ensuring greater adoption of project outputs (climate resilient water and energy management framework) while creating local employment pathways in Indigenous communities.

LP210301338	Multi-service assessment of intertidal treatment wetlands	109,866.00	112,391.00	126,391.00	112,393.00	0.00	461,041.00	LENDLEASE CORPORATION
Adame, Dr Maria Fernanda	This project aims to investigate the use of constructed intertidal wetlands to reduce nitrogen pollution while providing co-benefits including carbon sequestration and biodiversity. This research will generate a holistic assessment of the services, disservices, and cost-effectiveness of intertidal treatment wetlands compared to traditional wastewater treatment approaches. Expected outcomes include a full-scale multi-disciplinary environmental and economic assessment of a constructed treatment wetland in a new urban development, providing industry and government partners the knowledge required to broaden uptake of intertidal wetlands as a cost-effective solution to growing levels of coastal anthropogenic pollution.							LIMITED, DEPARTMENT OF ENVIRONMENT AND SCIENCE, REDLAND CITY COUNCIL, WATER TECHNOLOGY PTY. LTD.

### National Interest Test Statement

Increasing coastal population in Australia has generated additional nitrogen (N) that requires escalating treatment efforts to meet stringent discharge regulations and avoid waterways pollution. Developers and local authorities are faced with the challenge of achieving economic growth while reducing N, investing in costly, engineered wastewater treatment plants. This project will assess how a "green solution", construction of intertidal wetlands, can complement traditional treatment approaches, cost-effectively reducing N while providing co-benefits such as carbon sequestration and fish habitat. This project directly addresses a key aim of the National Science and Research Priorities: to develop solutions for the restoration of water resources in urban catchments and marine ecosystems. A multi-disciplinary team including ecologists and economists will undertake a full-scale assessment of integrating a constructed intertidal wetland in a new urban development, giving confidence to broaden the uptake of this green solution as a cost-effective approach to creating resilient and sustainable coasts.

LP210301365	A "Goldilocks" live attenuated poultry vaccine for Infectious Coryza	92,339.00	175,877.00	224,690.00	133,208.00	0.00	626,114.00	BIOPROPERTIES PTY. LTD.	
Jennings, Prof Michael P	This project aims to develop a safe and effective vaccine for Infectious Coryza using a live-attenuated vaccine approach. Infectious coryza is an acute respiratory disease of chickens and is caused by the bacterial pathogen, Avibacterium paragallinarum. Infectious Coryza can be controlled by appropriate biosecurity practises and this has been successful in the Australian context to date. However, in the USA, Europe and other equatorial regions, infectious Coryza remains an unsolved problem. The expected outcome of this project is a cross-serovar protective vaccine to prevent infectious coryza for use in endemic countries and to act as a biosecurity measure to protect Australia's poultry industry against an incursion of this disease.								

Infectious coryza is an acute respiratory disease of chickens and is caused by the bacterial pathogen, Avibacterium paragallinarum. Infectious Coryza can be controlled by appropriate biosecurity practises and this has been successful in the Australian context to date. However, in the USA, Europe and other equatorial regions Infectious Coryza remains an unsolved problem. There is currently no protective vaccine to prevent infectious coryza in endemic countries or to act as a biosecurity measure to protect Australia's billion dollar poultry industry. The aim of this proposal is to develop a safe and effective live-attenuated vaccine for Infectious Coryza. This vaccine will be developed in partnership a leading Australian manufacturer and global supplier of live vaccines to the intensively farmed food animal industry. The successful development of this vaccine will lead to export sales of the vaccine worldwide and the provision of a ready made response to the biosecurity risk of an incursion of Infectious Coryza in to Australia, thereby guaranteeing this important industry and Australia's food security.

 Griffith University
 304,295.00
 440,191.00
 516,446.00
 245,601.00
 0.00
 1,506,533.00

Approved Organisation,	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
Research Program								
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
James Cook U	niversity							
LP210300851	Future proofing and restoring Australia's tropical seagrasses	140,984.00	121,276.00	126,340.00	66,748.00	0.00	455,348.00	NORTH QUEENSLAND BULK
Rasheed, A/Prof Michael A	This project aims to develop and apply a comprehensive framework for restoration of Australian tropical seagrasses using innovative approaches and partnerships. The project expects to provide coastal managers with tools to mitigate and restore seagrass to minimise effects of climate and development related loss, protecting ecosystem services measured in hundreds of millions of dollars. Expected outcomes include new techniques for tropical seagrass restoration, a blueprint for seagrass friendly marine infrastructure, and restoration decision tools applied at local and regional scales. This will provide significant benefits by protecting seagrass restoration efforts.  National Interest Test Statement Australia's coastal communities depend on healthy seagrass meadows to support seagrasses face losses from coastal development and climate extremes, yet to dat techniques for tropical seagrass restoration information portal, will seagrasses and their related ecosystem services worth hundreds of millions of dollares.	fisheries, provide te, we lack critical andly infrastructure I provide a clear p lars annually to the	food for dugong and knowledge on how e for tropical Austra athway to adoption. e Australian econon	d turtles and mitiga to propagate, grov lia. Application of t By addressing an ty.	ate the impacts of w and restore the the project tools th nd reversing losse	climate change b diverse range of hrough inclusion is of tropical seag	by protecting coa tropical species. of coastal manag rasses this proje	PORTS CORPORATION LIMITED, FAR NORTH QUEENSLAND PORTS CORPORATION sts and storing carbon. In the tropics, This project will develop and apply new ers, industry and government as project ct will contribute to protection of
LP210301250	Breeding super black soldier flies at scale for sustainable food production	226,995.00	221,400.00	161,814.00	0.00	0.00	610,209.00	FLYFARM QUEENSLAND PTY.
Zenger, Prof Kyall R	This project aims to address the current challenges impeding the industrial scale-up of Australian Black Soldier Fly (BSF) farming across diverse feed waste substrates by generating critical on-farm knowledge. This project expects to generate fundamental knowledge in commercial BSF breeding designs whilst also developing and testing new animal evaluation technologies (ie, genetic & spectroscopy) through interdisciplinary approaches that will accelerate industry productivity. Expected outcomes of this project include the long-term growth and competitive advantage of the Australian insect farming industry, as well as promoting the benefits of a circular economy through bioconversion of organic waste into commercially viable products.							LID.
	National Interest Test Statement							

Proteins (fishmeal, soybean) are major components of livestock and aquaculture feeds, but these proteins are unsustainable long term due to diminishing natural resources. Globally, farming of insects are seen as a sustainable replacement protein source for these feeds. Due to high protein content, rapid lifecycle and consumption of readily available organic waste, Black Soldier Fly (BSF) larvae is the ideal candidate to replace traditional animal feed protein. BSF larvae farming is the most promising Australian insect industry for feed replacement and has potential for expansion. Significant challenges must be overcome for BSF larvae farming to thrive at a commercial level, including development of improved genetic lines for BSF, as in traditional agricultural species. This project will undertake selective breeding addressing the genetic challenges of BSF farming that have prevented industrial scale up of larvae production. We will work with farmers and industry to transition from unsustainable livestock feed protein sources and create through an advanced breeding program a high-value protein ingredient.

 James Cook University
 367,979.00
 342,676.00
 288,154.00
 66,748.00
 0.00
 1,065,557.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Expe	enditure (\$)	Indicative	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Queensland Ur	niversity of Technology							
LP210300839	Career change teachers: Addressing teacher shortages in Australia	96,902.00	121,791.00	143,674.00	0.00	0.00	362,367.00	QUEENSLAND TEACHERS UNION
Mills, Prof Martin D	Australia is facing a teacher shortage crisis. Consequently, there have been concerted efforts by governments to attract people into teaching from other sections of the workforce. However, career change teachers often do not stay longer than five years in the profession. There is little evidence on how their retention can be enhanced. This project aims to better understand the differing motivations and experiences of these teachers from diverse backgrounds, and to determine how they can be better prepared and supported through their early years of teaching. A clear benefit of this project will be the longer term success for career change teachers and their schools and will ensure young people are not disadvantaged by high teacher turnover. National Interest Test Statement Australia is facing a teacher shortage crisis. Recent policy responses include encoleave the teaching profession within their first few years of employment. The shorta workforce, will therefore produce substantial educational, economic and social ben supports for new teachers, alongside life histories of career change teachers, will p with key education stakeholders, will ensure that the research and resources creat	uraging people fro age and high turno efits for the Austra provide the educat ed through this pro	m a diversity of oth ver of teachers has alian community. Th ion sector with a sig oject will inform key	er professions to o s a negative impac his project's examin policy responses	consider a teachin t on young peopl nation of universi iding of how thes to the teacher sh	ng career. Howev e's educational or ty provision of tea e teachers can be ortage crisis and	er, evidence show utcomes. Ensurin ucher education a e supported to rer the retention of ca	OF EMPLOYEES, QUEENSLAND COLLEGE OF TEACHERS, DEPARTMENT OF EDUCATION, QUEENSLAND CATHOLIC EDUCATION COMMISSION, INDEPENDENT SCHOOLS QUEENSLAND, METROPOLITAN REGION ws that 'career change teachers' often g a high quality and stable teaching nd exploration of school and system main in the profession. This partnership areer change teachers.
LP210301088	Optimising Digital Compliance Processes in the Financial Services Sector	50,127.00	148,403.00	146,388.00	0.00	0.00	344,918.00	REALTA LOGIC PROPRIETARY
Huggins, A/Prof Anna L	This project aims to develop a new approach to optimise digital compliance processes in Australian financial services firms. Effective digital compliance is needed to reduce growing regulatory burden and improve compliance with increasingly complex laws. This project expects to deliver new ways to optimise digital compliance that drive innovation and reduce the societal risks of non-compliance for end-users. Expected outcomes include industry guidance strategies and innovative digital tools that capture the complexity of digital compliance and inform practical solutions. This will provide significant cost reduction benefits for firms and ensure that new digital compliance processes promote the public interest goals of law and regulation.							LIMITED
	National Interest Test Statement							

Expanding legal and regulatory requirements impose growing costs on financial services firms. Digitising regulation to improve compliance is a priority of the Australian Government and business community. Unsophisticated digitisation approaches provide incomplete and ineffective compliance solutions, increasing legal and reputational risks. This project develops new digitisation strategies and mapping tools to optimise digital compliance processes for Australian financial services firms. It aims to create a world-first framework for digital compliance that comprehensively addresses legal, regulatory, computational and organisational needs. Research outputs are relevant to financial services and other sectors, both in Australia and globally. The framework provides a more sophisticated understanding of digital compliance to improve compliance with complex laws that protect the end-users of financial services. Optimised digital compliance processes will enable innovation and are expected to translate into millions of dollars of savings for financial services firms and other regulated entities.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	and Approved Exp	enditure (\$)	Indicative	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301424	Scale-up of catalytic furandicarboxylic acid production at room temperature	132,000.00	113,000.00	0.00	0.00	0.00	245,000.00	BJP LABORATORIES PTY LTD
Zhu, Prof Dr Huai- Yong	This project will use new knowledge acquired from our laboratory-scale discoveries to develop a new process feasible for industrial-scale production of 2,5-furandicarboxylic acid (FDCA). The method makes FDCA, a platform chemical for future chemical industry, from a completely renewable source derived from plant sugars, 5-hydroxymethyl-furfural. This is an essential process for production of biodegradable plastic from sugar that has not been commercialised. This technology will realise sizeable industrial-scale production of FDCA at low costs and without heating. The production development of this valuable commodity from renewable plant sugars will provide high-quality postgraduate training in future green chemical production methods. National Interest Test Statement Producing valuable materials from renewable plant-based resources, such as nature on oil. This project will deliver an efficient, energy-saving new technique for the interplact will use a newly developed, low-cost recycling method to convert plant proheat input so it requires much less energy than standard production of biodegrad, modern plastics, but which can be composted or recycled like any food or plant based methods.	ural sugars and sta dustrial-scale prod ducts to the buildin s enables agricultu istic waste (since p able plastics source ased waste.	arches, is critical to uction of commodit 19 blocks for mater ural plant materials betroleum-based pl ced from renewable	sustainable rural d ies such as plastic ials such as plastic to be converted to astics are difficult to , completely carbo	levelopment and s that are critical s and design a n more valuable pr o break down and n-neutral, plant-b	addressing the protomodern life usi ew production pr oducts with the a d mostly end up in ased materials. T	roblem of environ ng plant-based ra ocess that uses r dded benefit of cr n oceans or landf he goal is to proc	mental pollution caused by our reliance ather than petroleum sources. The novel chemistry that requires no external reating biodegradable and recyclable ill) and reduce the plastic chemical duce materials with the convenience of
	Queensland University of Technology	279,029.00	383,194.00	290,062.00	0.00	0.00	952,285.00	
The University	of Queensland							
LP210300105	Diving into the Desert. Indigenous and Future Floodplain Management	175,414.00	203,419.00	216,328.00	0.00	0.00	595,161.00	MITHAKA ABORIGINAL
Keenan-Jones, Dr Duncan C	This project aims to discover how Indigenous communities managed cycles of drought and flood in the Lake Eyre Basin, and to learn from this to manage Australia's inland rivers sustainably. By integrating archaeology – done underwater, on land and from the air – with Indigenous knowledge and environmental and flow modelling, the project expects to uncover a deep history of Indigenous environmental engineering in one of the world's last unregulated desert river systems. The project's outcomes – an Australian National Maritime Museum touring exhibition plus written, audio and 3D immersive							CORPORATION RNTBC, AUSTRALIAN NATIONAL MARITIME MUSEUM, DISASTER RELIEF AUSTRALIA

communications - seek to benefit Australia's cultural life and flood mitigation,

and to protect the Mithaka Aboriginal Corporation's culture and country.

### **National Interest Test Statement**

By pioneering wetland archaeology in Australia, this project aims to identify and date the first physical remains of the Mithaka people's fish traps and weirs. It will learn how these Indigenous installations shaped critical flows in the Channel Country. This will help remedy the lack of Indigenous input in water management by publicising the importance of "cultural flows" (First Nations water entitlements). The anticipated outcomes will assist governments and land managers to manage inland river systems by learning from Indigenous innovations honed over millennia, such as flood-adapted road crossings inspired by fish trap designs. The project aims to boost cultural tourism as well as protect Mithaka culture and country in one of the world's last unregulated desert river systems. A National Maritime Museum touring exhibition, plus written, audio and 3D immersive communications, will showcase the complexity of Mithaka resource use to regional and urban Australia, informing the nationally significant Indigenous Voice to Parliament debate. Data gathering will increase Australia's capacity to map flood impacts.

Approved Research Program ed	Estimated a	and Approved Exp	enditure (\$)	Indicative Funding (\$) 2025-26* 2026-27*		Total (\$)	Partner Organisation(s)
(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Sewer Monitoring and Management in the Digital Era	195,189.00	210,395.00	219,848.00	200,000.00	50,000.00	875,432.00	CENTRAL SEQ DISTRIBUTOR-
Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing sewers. Current sewer maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in IoT sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sewer management including network-wide real-time control. The project aims to generate significant social, environmental and economic benefits by enabling utilities to better protect public and environmental health, reduce sewer odour and greenhouse gas emissions, and extend sewer asset life. <b>National Interest Test Statement</b> Sewer systems are critical infrastructure for modern urban societies. Australia ha greenhouse gas emissions, causing persistent and costly issues for utilities. This system-wide, and optimal sewer management. In wet weather, the frequency and and emissions of hydrogen sulfide and methane will be reduced, thus reducing se optimal strategies for capital works, resulting in major economic benefit for water	s 120,000 km sewe project aims to ger d volume of wastew ewer corrosion and utilities. The tools v	ers with a total valu nerate new knowled vater spills and sew odour, and contrib will have strong pot	e of \$40 billion. Hov dge for the develop er overflows will be uting to carbon-neu ential for commerci	wever, sewer sys ment and applica reduced, protect tral sewage man alisation, contribu	tems are subject tion of novel digit ing public and er agement. This pr uting to knowledg	to overflow, block al tools so that th ivironmental heal oject will support e-based econom	RETAILER AUTHORITY, WATER CORPORATION, SOUTH EAST WATER CORPORATION, HUNTER WATER CORPORATION, ENVIROSUITE LIMITED, WATER RESEARCH AUSTRALIA LIMITED, MELBOURNE WATER CORPORATION, DETECTION SOLUTIONS PTY LIMITED
Low emission iron and steelmaking using hydrogen to pre-reduce lump ore	215,000.00	190,000.00	190,000.00	0.00	0.00	595,000.00	HAMERSLEY IRON PTY. LIMITED, HBIS GROUP CO., LTD.
<sup>ng</sup> This project aims to develop and apply a new route of lump iron ore pre- reduction with hydrogen or H2-enriched gases for ironmaking to minimise CO2 emission from steel production. The route will be built up on the base of H2 reduction kinetics of iron ore and with novel technologies such as CO2 recycle and H2-heating using hot blast, underpinning the hydrogen economy by addressing the environmental concerns in mineral and steel industries. It is not only significant for low-carbon steel production, but also for better fundamental understanding to develop the future zero-emission iron and steelmaking with hydrogen. The project will be very beneficent because it increases the use of lump iron ore and expends Australian export of iron ores.							
	Approved Research Program (Column 3) Sewer Monitoring and Management in the Digital Era Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing sewers. Current sewer maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in IoT sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sewer management including network-wide real-time control. The project aims to generate significant social, environmental and economic benefits by enabling utilities to better protect public and environmental health, reduce sewer odour and greenhouse gas emissions, and extend sewer asset life. National Interest Test Statement Sewer systems are critical infrastructure for modern urban societies. Australia ha greenhouse gas emissions, causing persistent and costly issues for utilities. This system-wide, and optimal sewer management. In wet weather, the frequency and and emissions of hydrogen sulfide and methane will be reduced, thus reducing se optimal strategies for capital works, resulting in major economic benefit for water Low emission iron and steelmaking using hydrogen to pre-reduce lump ore This project aims to develop and apply a new route of lump iron ore pre- reduction with hydrogen or H2-enriched gases for ironmaking to minimise CO2 emission from steel production. The route will be built up on the base of H2 reduction kinetics of iron ore and with novel technologies such as CO2 recycle and H2-heating using hot blast, underpinning the hydrogen conomy by addressing the environmental concerns in mineral and steel industries. It is not only significant for low-carbon steel production, but also for better fundamental understanding to develop the future zero-emission iron and steelmaking with hydrogen. The project will be very beneficent because it increases the use of lump ir	Approved Research Program       Estimated a         add       2022-23 (Column 3)       (Column 4)         Sewer Monitoring and Management in the Digital Era       195,189.00         Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing sewers. Current sever maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in IoT sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sewer management including network-wide real-time control. The project aims to generate significant social, environmental and economic benefits by enabling utilities to better protect public and environmental health, reduce sewer odour and greenhouse gas emissions, and extend sewer asset life.         National Interest Test Statement       Sewer systems are critical infrastructure for modern urban societies. Australia has 120,000 km sewer greenhouse gas emissions, causing persistent and costly issues for utilities. This project aims to get system-wide, and optimal sewer management. In wet weather, the frequency and volume of wastew and emissions of hydrogen sulfide and methane will be reduced, thus reducing sewer corrosion and optimal strategies for capital works, resulting in major economic benefit for water utilities. The tools of the production. The route will be built up on the base of H2 reduction kinetics of iron ore and with novel technologies such as CO2 recycle and H2-heating using hot blast, underpinning the hydrogen economy by addressing the environmental concerns in mineral and steel industries. It is not only significant for low-carbon steel production, but also for better fundamental understanding	Approved Research Program       Estimated and Approved Exp         Image: State State State Statement       2022-23 (Column 4)       2023-24 (Column 5)         Sewer Monitoring and Management in the Digital Era       195,189.00       210,395.00         Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing severs. Current sever maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in In D sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sever management including network-wide real-time control. The project aims to generate significant social, environmental and economic benefits by enabling utilities to better protect public and environmental health, reduce sewer odour and greenhouse gas emissions, and extend sewer asset life.         National Interest Test Statement         Sewer systems are critical infrastructure for modern urban societies. Australia has 120,000 km sewers with a total valu greenhouse gas emissions, causing persistent and costly issues for utilities. This project aims to generate new knowled system-wide, and optimal sewer management. In wet weather, the frequency and volume of wastewater spills and sew and emissions of hydrogen sulfide and methane will be reduced, thus reducing sever corrosion and dour, and contrib optimal strategies for capital works, resulting in major economic benefit for water utilities. The tools will have strong pot envision from atel production. The route will be built up on the base of H2 reduction with hydrogen or H2-enriched gases for ironmaking to minimise CO2 emission from steel production. The route	Approved Research Program Estimated and Approved Expenditure (s)  (Column 3)  (Column 3)  2022-23 2023-24 2024-25 (Column 6)  Sewer Monitoring and Management in the Digital Era 195,189.00 210,395.00 219,848.00  Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing sewers. Current sewer maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in IoT sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sewer management including network-wide real-time control. The project aims to generate significant social, environmental and economic benefits by enabling utilities to better protect public and exitend sever asset life.  National Interest Test Statement Sever systems are critical infrastructure for modern urban societies. Australia has 120,000 km severs with a total value of \$40 billion. Hor greenhouse gas emissions, causing persistent and costly issues for utilities. This project aims to generate significant social, environmental health, reduce sewer corrosion and docur, and contributing to carbon-nee, optimal strategies for capital works, resulting in major economic benefit for water utilities. The tools will have strong potential for commerci to develop and apply a new route of lump iron ore pre- reduction with hydrogen or H2-enriched gases for ironmaking to minimise CO2 emission from steel production. The roue will be built up on the base of H2 reduction kinetics of iron ore and with novel technologies such as CO2 recycle and H2-heating using hour blast, underpring the hydrogen economy by addressing the environmental and steel for deutaries, it is not only significant for low-carbon steel production, but also for better fundamental understanding to develop the future zero-emission iron and steelmaking with hydrogen. The project will be with up on the bas	Approved Research Program       Estimated and Approved Expenditure (s)       indicative i         intervention       2022-23       2023-24       2024-25       2025-26*         (Column 3)       2002-23       2023-24       2024-25       (Column 6)       2005-26*         Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing severs. Current sever maintenance is reactive, and focuses on solving problems in local networks, despite that optimal solutions require a system-wide approach. Capitalising on recent development in IoT sensors, wireless transmission, and machine learning, this multidisciplinary project aims to develop digital-twin supported data analytics for proactive sever management including network-wide real-line control. The project aims to generate significant social, environmental heath, reduce sever odour and greenhouse gas emissions, and extend sever asset life.         National Interest Test Statement         Sever systems are critical infrastructure for modern urban societies. Australia has 120,000 km severs with a total value of \$40 billion. However, sever system-wide, and optimal sever management. In wet weather, the frequency and volume of wastewater spills and sever overflows will be reduced, hus reduced, thus reducing sever corosion and docu, and contributing is carbon-neutral sevage man optimal strategies for capital works, resulting in major economic benefit for water utilities. The tools will have strong potential for commercialisation, contribut and emission from and steelmaking using hydrogen to pre-reduce lump reduction with hydrogen or H2-enriched gases for ironmaking to minimise CO2 emission from steel production. The rous will be buitity pore-reduce lump reduction kinetics of iron reand	Approved Research Program       Estimated and Approved Expenditure (s)       Indicative Funding (s)         rd       2022-23       2023-24       2023-25       2025-26*       2026-27*         (Column 3)       2000,000.00       50,000.00       50,000.00       50,000.00         Sever Monitoring and Management in the Digital Era       195,189.00       210,385.00       219,848.00       200,000.00       50,000.00         Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing severs. Current sever maintenance is reactive, and focuses on solving problems in local networks, desplating project aims to develop digital-kin supported data analytics for proactive sever management including network-wide real-line uses for utilities to better protect public and environmental healt, reduce sever dodur and greenhouse gas emissions, and extend sever asset life.         National Interest Test Statement       Sever systems are critical infrastructure for modern urban societies. Australia has 120,000 km sever swith a total value of \$40 billion. However, sever systems are subject greenhouse gas emissions, causing persistent and costly issues for utilities. This project aims to generate new knowledge for the development and application of novel digit system-wide, and optimal sever management. In wet weather, the frequency and volume of wastewater spills and sever overflows will be reduced, protecting public and et and emission iron and steelmaking using hydrogen to pre-reduce lump iron experi- reduction kindle and methane will be reduced, thus reducing and edwing and expended thus reducing and so for the develop and apply a new route of lump iron ore pre- reduction kindle and methane	Approved Research Program       Estimated and Approved Expenditure (s)       Indicative Funding (s)       Total (s)         rd       2022-23       2022-243       2022-25       2025-26*       2025-26*       2025-27*       (Column 9)         Sever Monitoring and Management in the Digital Era       195,189.00       210,395.00       219,848.00       200,000.00       50,000.00       875,432.00         Overflow, flooding, corrosion, and odorous emissions are persistent issues for utilities managing severs. Current sever maintenance is reactive, and focuess on solving problems in local anelytics for proactive sever management. This individual project aims to severe sever odour and greenhouse gas emissions, and extend sever asset life.       National Interest Test Statement         Sever Systems are critical infrastructure for modern urban societies. Australia has 120,000 km severs with a total value of \$40 billion. However, sever systems are subject to overflow, block greenhouse gas emissions, causing persistent and costly issues for utilities. This project aims to generate new knowledge for the development and application of novel digital lools so that the system-wide, and optimal sever management. In vet weather, the frequency and volume of wastewater spills and a sever overflow will be reduced, protecting public and environmental healt         Sever systems are critical infrastructure for modern urban societies. Australia has 120,000 km severs with a total value of \$40 billion. However, sever systems are subject to overflow, block greenhouse gas emissions, causing persistent and costly issues for utilities. The tools will have atrong particula swage management. The project will sever aphalworks, resulting i

Reducing carbon dioxide (CO2) emissions from ironmaking blast furnaces is a critical issue that will have long-term impacts on the sustainability of Australia's iron ore exports, worth approximately \$150 billion in 2020-2021. Currently, iron and steel making rely on coking coal ('coke') which results in carbon dioxide emissions, whereas hydrogen used in the same processes releases only water vapour. This project aims to understand how hydrogen can be used in blast furnaces, addressing heat management and integration issues that currently limit use of this technology. The outcomes will improve the long-term competitiveness of Australian iron ore exports globally while significantly reducing CO2 emissions from the industry. Through working with industry, the knowledge and technologies derived from the project will lead to new routes for Australia to export higher-value iron ore products that have been pre-treated in Australia using renewably generated hydrogen. It will develop future hydrogen ironmaking to achieve carbon neutral and "green" steel production in Australia and the world.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Exp	enditure (\$)	Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301206 Cave, Dr Robyn L	Applications-oriented elucidation of germination triggers for Emu Bush seed	52,183.00	67,993.00	67,993.00	51,206.00	0.00	239,375.00	AUSTRALIAN NATIVE PLANTS SOCIETY (AUSTRALIA) INCORPORATED, KERSBROOK
	I he project aims to determine the environmental and genetic mechanisms that currently limit seed germination in Emu Bush (Eremophila) species. The anticipated project outcomes aim to develop new technologies for efficient and mass production of Emu Bush seedlings. The outcomes will improve land restoration by increasing plant diversity and reducing establishment costs, and will also provide the nursery industry with novel products for home gardens. The intended project benefits are to increase the diversity of Australian native plants used for restoration and ornamental purposes and to promote the conservation of species in this plant family and its genetic diversity. National Interest Test Statement The project aims to increase knowledge about seed formation and germination trig The research will develop technologies and protocols that will enable the mass pro accessibility and outcomes of the seed germination techniques. This knowledge will	gers and inhibitors duction of Eremop ill help maintain ge	s in the genus Eren hila from seed, wh netic diversity, aid	nophila (Emu Bush) ich has previously efficient production	), a large and div proven impossibl o of new varieties	erse Australian p e. Field trial sites by commercial a	ant genus that is , videos and worł nd not-for-profit r	LANDCARE GROUP INC., AUSTRALIAN GENOME RESEARCH FACILITY LIMITED adapted to dry and drying climates. (shops will demonstrate the jurseries, satisfy the growing demand
	for Australian native plants suitable for a drying climate, and increase genetic robu- and environmental benefits through maintenance of the genetic diversity of Austral	stness in landscap ia's plants and thr	e restoration. The ough land rehabilita	project will therefor ation of Australia's o	e contribute ecor degraded lands.	nomic and commo	ercial benefits to	the Australian plant nursery industry,
LP210301248 Nogita, Prof Kazuhiro	Systematic investigations of low temperature Sn-Bi based solder alloys The project aims to reduce the temperatures used in the manufacture of	151,883.00	151,883.00	151,883.00	0.00	0.00	455,649.00	MASTERS & YOUNG PTY. LTD., NIHON SUPERIOR CO. LTD
	electronic circuitry through the development of Sn-Bi alloys for low temperature assembly processes without compromising productivity or reliability. The project will use a range of innovative solidification and microstructure development techniques to obtain an understanding of the dynamic processes of precipitation, dissolution and microstructure evolution that occur in these alloys during manufacture and application. The outcomes include a reduction in the energy consumed in electronic assembly processes and a capacity to manufacture advanced circuitry based on next-generation temperature-sensitive components and substrates without compromising reliability.							

### **National Interest Test Statement**

The project aims to create new Pb-free Sn-Bi based solder alloys that enable reliable connections in electronic circuitry with low processing temperatures. Lowering processing temperatures minimises energy consumption which has both economic and environmental benefits. The technology will also enable increased use of temperature sensitive components and result in new opportunities for electronics assembly. The project involves an international partner based in Japan who manufactures, and supplies solder alloys used by some of the world's most prominent electronics manufacturers giving them a unique insight into current industry demands and trends. The inclusion of an Australian based electronics manufacturer who is active in relevant national associations will allow for broad transfer of this technology to the local industry. This will result in adoption of new and emerging technologies by Australian electronics manufacturers decreasing the sovereign risk associated with reliance on international markets.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Expe	enditure (\$)	Indicative F	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301261	Towards use-as-manufactured titanium alloys for additive manufacturing	112,791.00	191,184.00	138,396.00	0.00	0.00	442,371.00	STRYKER EUROPEAN
Bermingham, Dr Michael J	Australian manufacturers of 3D printed titanium products face grand challenges in affordably producing useable and reliable as-printed products because the 3D printing process may create unfavourable material characteristics. To ensure products meet acceptance criteria, manufacturers usually apply expensive and time-consuming post processes such as heat treatment. This project aims to discover how alloy composition can be modified to produce more favourable material characteristics directly from 3D printing, preventing the need for post processing. Australian manufacturers will likely benefit through a streamlined manufacturing process resulting in increased profitability in existing markets as well as expansion into new global markets. <b>National Interest Test Statement</b> Australia is a leader in metal 3D printing with growing sovereign capacity to supply the process may create unwanted material properties that make as-printed parts u cost and extend lead time. This project takes a new approach, and by carefully cor need for downstream processing. This will enable Australian manufacturers to proc material with many applications, including defence, this strengthens our sovereign	bespoke titanium nusable for service ntrolling the titaniur duce high quality ti advanced manufa	products into globa 2. After 3D printing, n alloy chemistry it tanium products fa cturing capability a	I markets. The mor parts can be made seeks to achieve c ster and more affor nd supports the gro	st common metal e fit for service by desirable material rdably, allowing th owth of an import	3D printing meth implementing th properties direct nem to more com ant industry, while	nod, powder bed ermal processing ly from the 3D pr petitively particip e also boosting jo	OPERATIONS LIMITED fusion, is unrivalled in its precision but but this can add 18-30% to the product inting process, thus eliminating the ate in global supply chains. As a bbs and local economies.
LP210301317	Pore Engineering of Chromatography Membranes for Bioseparation	280,317.00	241,584.00	240,003.00	0.00	0.00	761,904.00	CSL BEHRING (AUSTRALIA) PTY
Zhang, Prof Xiwang	Protein separation and purification is an essential unit operation in manufacturing processes of therapeutic proteins. The project aims to advance the practical applications of chromatography membrane, an emerging technology for protein separation and purification, by tailoring membrane pore geometry and surface functionality to achieve enhanced separation performance. The project expects to generate advanced knowledge and techniques in the fields of reactive polymer synthesis, functional membrane fabrication and application in bioseparation. The innovative membranes developed in the project are able to improve the production capacity of therapeutic protein manufacturing processes, providing significant economic benefits to Australia.							LTD

### **National Interest Test Statement**

Protein separation and purification is an essential step in order to manufacture therapeutic proteins, such as those used in monoclonal antibodies to treat an array of different infectious diseases. The current process, however, is slow, labour-intensive and expensive, acting as a bottleneck in the biopharmaceutical industry. This project aims to develop and scale up an emerging technology to speed up protein separation and purification. This project expects to boost the production capacity of biomanufacturing processes (the production of biological products from living cells), strengthening Australia's competitiveness in the global biotechnology industry. It will help position Australia at the forefront of advanced manufacturing in therapeutics and to be less dependent upon overseas biomanufacturing. Through the industry partner collaboration, this project includes testing of the new technology under industry conditions, essential to determine its validity at scale. Proof of concept at scale opens the door for potential adoption into other industries such as food processing, water treatment and seawater desalination. Its application therefore has potential to provide Australia with significant economic, societal and environmental benefits.

Approved Organisation, Leader of Approved	Approved Research Program	Estimated a	and Approved Exp	enditure (\$)	Indicative	Indicative Funding (\$)		Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301351	New vaccines and diagnostics to control viral disease in farmed crocodiles	238,405.00	208,287.00	217,958.00	214,314.00	0.00	878,964.00	PRI FARMING PTY LTD
Hobson-Peters, Dr Jody M	Infection of farmed crocodiles with West Nile virus (WNV) causes lesions in the skin that render the hides unsuitable for high quality leather products. This results in >\$20 million lost revenue to the Australian crocodile industry annually. We have developed a novel technology to generate safe and effective vaccines and diagnostic tests for WNV in animals. We aim to 1) conduct vaccine trials in farmed crocodiles to determine the optimum dose formulation and immunisation regime to provide long-lived protection against WNV disease; 2) validate penside tests to rapidly diagnose WNV infection in crocodiles on farms; and 3) transfer the technology to a manufacturing facility to ensure a commercial supply of the vaccines and diagnostic tests.							
	National Interest Test Statement							
	This project will establish effective strategies to prevent West Nile virus infection of the quality leather market, allowing the Australian crocodile industry to compete m of the crocodile industry in the Indigenous Advancement Strategy, additional bene and hatchling rearing enterprises and are dependent on its continued success and detect the transmission of West Nile virus and other mosquito-borne pathogens of	of farmed saltwate nore effectively wit efits of these outco d competitiveness n crocodile farms	r crocodiles in north h overseas rivals w omes will flow to ind in the international provides a strategic	ern Australia. This ho are not held to ti igenous communiti markets for the retu "One Health" arbo	will significantly r he same standar es in northern Au urn of royalties ar virus surveillance	reduce skin lesion ds of animal welf ustralia who are ir nd employment o e system that will	n occurrence and fare, OH&S and fa hvolved with the c opportunities. Esta benefit the Darwi	the rejection rate of crocodile hides for air wages. Due to the active participation procodile industry through egg collection ablishing a comprehensive system to n region.
	The University of Queensland	1,421,182.00	1,464,745.00	1,442,409.00	465,520.00	50,000.00	4,843,856.00	
University of S	outhern Queensland							
LP210301072	Remote diagnostics for space-access flight testing	209,644.00	227,015.00	216,804.00	192,679.00	163,428.00	1,009,570.00	UNIVERSITY OF STUTTGART,
Buttsworth, Prof David R	Aerospace flight testing is essential for assessing the reliability of space-access technologies including re-usable rockets and hypersonic air-breathing systems. Development of such technologies relies on acquisition of optical data in video and scientific formats, and such capabilities are now required in Australia. By leveraging contributions to international missions, this project develops the essential optical diagnostic tools and techniques and establishes an enduring capability for space-access flight testing in Australia, thereby accelerating the research and development pathways for Australian enterprises and designating Australia as a prime destination for international aerospace businesses.							ROCKET TECHNOLOGIES INTERNATIONAL PTY LTD, GERMAN AEROSPACE CENTER(DLR) R&D, SOUTHERN LAUNCH, HYPERSONIX LAUNCH SYSTEMS PTY LTD
	National Interest Test Statement							
	Australia's large land mass and the extent of its ocean territories makes it heavily Australian satellite launch systems, this project develops the capabilities needed f economy. Optical data in video and scientific formats are required to assess syste interpretation of such data, this project can establish an enduring diagnostic capal Technologies International, Hypersonix, and Southern Launch, and providing eco	dependent on sat or remote optical is m performance as bility that supports nomic and comme	ellite assets for con measurements on p nd contribute to fore aerospace enterpr ercial benefits to the	nmunications, Earth prototype space lau ensic investigations ises that are develo Australian commu	n monitoring, posi nch vehicles, and of failures. By de oping technologie nity.	itioning, and navi d for other high sp elivering the tools as and delivering	gation. To fast-tra peed flight testing and techniques r products for Austr	ick the development of sovereign that will help grow the Australian space needed for the acquisition and ralian aerospace, including Rocket

University of Southern Queensland	209,644.00	227,015.00	216,804.00	192,679.00	163,428.00	1,009,570.00
Queensland	2,678,281.00	3,040,121.00	2,923,863.00	970,548.00	213,428.00	9,826,241.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Exp	enditure (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
South Austra	alia							
The University of	of Adelaide							
LP210300715 Wilkinson, Prof Kerry L	Solving smoke taint: Overcoming the impacts of vineyard exposure to smoke Vineyard exposure to bushfire smoke can taint grapes, causing significant revenue losses where smoky, ashy characters render wine unsaleable. Smoke taint therefore remains an ongoing threat to the viability of the wine industry. This project aims to safeguard grape and wine quality by building the wine industry's capacity to predict, mitigate and respond to risk associated with vineyard smoke exposure. Expected outcomes include establishing the mechanism by which smoke compounds are taken up by grapes and the factors that influence their sensory impact on wine. The development of innovative and interdisciplinary strategies for detecting and alleviating smoke taint will deliver important economic benefit to the Australian wine sector. <b>National Interest Test Statement</b> The Australian wine industry employs almost 70,000 people (predominantly in regional areas However, making and selling Australian wine, even in a 'good' year, has become increasing! bushfire smoke. In 2020, approximately 4% of the Australian wine grape crop was discarded enable the wine sector to prevent, mitigate and recover from vineyard smoke exposure is pa detecting and mitigating 'smoke taint' in wine. As such, the project has the potential to delive	s) and contributes y challenging due due to 'smoke ta ramount. The pro r significant econ	170,390.00 s more than \$45 bill e to climate change int', resulting in rev posed research wil omic benefit to the	ion to the Australi ; not only due to p renue losses estim Il improve our und Australian wine in	0.00 an economy eac rolonged drough nated to be in the erstanding of the dustry, and it is t	0.00 h year, via dome t and heatwaves hundreds of mill effects of smoke herefore in Austr	511,205.00 stic sales, exports , but the increasin ions of dollars. The on grapevines a alia's national inte	AUSTRALIAN WINE RESEARCH INSTITUTE, E. & J. GALLO WINERY, COMPOLYTICS, ACCOLADE WINES AUSTRALIA LIMITED, AVL WINES, PETER MICHAEL WINERY, ATTENTIS PTY LTD, LAFFORT AUSTRALIA PTY LIMITED
LP210301062 Tucker, A/Prof Matthew R	Breeder-ready genetic tools for sustaining wheat yields under heat stress Yield losses in wheat due to heat stress are increasing with climate change, driving an urgent need for new heat-tolerant varieties; however, few resources for heat tolerance are available for use in breeding. This research aims to use comprehensive genetic and agronomic approaches to provide breeders with the tools and evidence to select WtmsDW, a newly discovered genetic region that protects pollen fertility and sustains grain yield under heat stress. These tools are expected to significantly boost productivity for the \$9.8B Australian wheat industry, benefitting rural communities and industry partners and supporting food security, both directly and through longer-term extension of novel heat tolerance mechanisms to other crop species.	169,980.00	145,129.00	116,879.00	61,192.00	0.00	493,180.00	ARVALIS, INSTITUT DU VEGETAL, AUSTRALIAN GRAIN TECHNOLOGIES PTY LTD

The value of Australia's \$9.8B wheat industry is increasingly being challenged by environmental stresses that are worsening through climate change. For example, heat effects on grain set in Australian wheat are leading to losses of around \$353M per annum. This project will address the need for new heat-tolerant wheat varieties by investigating a genetic region that protects grain set under heat stress. The project aims to identify natural variants of this region that confer the strongest heat-tolerance, and facilitate their introduction into wheat breeding programs. Critically, this research aims to demonstrate the yield benefit of this heat tolerance in multi-site field trials. Support from Australian and international breeding partners will provide clear pathways to adoption by Australian growers. Deployment of this genetic information should limit yield losses due to heat stress, delivering economic and social benefits to Australian rural communities, industry partners, and ultimately improve food security.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	nd Approved Expe	enditure (\$)	Indicative F	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301337	Situating care: Addressing obesity in disadvantaged communities	128,462.00	149,063.00	131,381.00	0.00	0.00	408,906.00	THE AUSTRALIAN
Warin, Prof Megan	The project aims to drive an urgently needed shift from top-down interventions that focus on obesity as an individual problem of diets and exercise, to collective solutions of care generated by families for families, empowering social change at a local, community level. In collaboration with Australia's leading designers of social innovation, this anthropology project expects to generate new knowledge about care and food practices in disadvantaged communities, and to construct new digital, policy, and program frameworks for broader adaptation. The advances are likely to have a strong bearing on how obesity interventions, and more equitable health policy and practice, evolve in Australia and internationally.							CENTRE FOR SOCIAL INNOVATION INC, UNITING COMMUNITIES INCORPORATED
	National Interest Test Statement							
	Australia urgently needs better interventions to reduce obesity that causes costly and life-lim our new program will be developed and led by families within seriously disadvantaged Austra income to buy food, and other stressors like mental health and domestic violence. By particip solutions and support that are more likely to work and will be accepted. We will make these ultimately be built into existing obesity policies and programs across the country.	iting chronic dise alian communitie: pating in the desig authentic, practic	ases. We aim to mo s, and it will be deliv gn of a new model o al ideas and peer-so	ove obesity manag vered by people w of care that is spec upport solutions a	gement away fro ho understand fi cific to their local ccessible in easy	m a "medical moo rst-hand the diffic , cultural issues, i y-to-understand fo	del" that focusses ult social factors, residents and cor prmats like podca	only on bodyweight. Instead, like whether families have nmunity members can provide sts and videos, which will
LP210301373	Closing the Gap in Pipe Condition Assessment using Hydro-Acoustic Waves	145,000.00	107,000.00	116,000.00	0.00	0.00	368,000.00	DETECTION SERVICES
Lambert, Prof Martin F	Worldwide, the deterioration of water distribution pipeline infrastructure is driving an unsustainable explosion in maintenance and repair costs. In collaboration with industry leader Detection Services, this project will develop new methods to detect pipe condition faults at a scale and precision not currently possible. The outcome will be an advanced, yet practical, technology that provides critical information on pipe condition using new innovative active hydro-acoustic signal generators and sensors, combined with state-of-the-art signal analysis methods. The unprecedented cost-effectiveness of the technology will ensure a broad use in the water industry for targeted and efficient action, creating jobs and saving costs.							PTYLIMITED
	National Interest Test Statement							
	Australia's public health and economic prosperity rely on the effective operation of over 162, factual detailed pipe health information. This unsustainable practice brings a major challenge the condition of buried pipe infrastructure is highly complex. The project will develop new con effectiveness will result in broader adoption of the technology in the water industry, guiding p breaks, meaning less interruption to service and traffic, less property damage and less water	000 km of water i e: almost half of a ndition assessme predictive repair, a r loss. Australia w	nains. Current wate Il assets, with a tota nt techniques that a avoiding disruptive e ill become a leader	er asset managem al value of over \$8 are significantly mo events, and saving in this transferable	eent is reactive, a 60b, will need to l ore affordable ar g millions of dolla le technology, wi	as buried pipe ren be replaced in the nd effective than e ars from annual m hich has commerc	ewal programs a coming three de existing technolog laintenance costs cial potential glob	re not adequately guided by cades. Efficiently determining ies. The enhanced cost- . Cities will see fewer pipe ally.
LP210301380	Undocumented Migrants- Unearthing Knowledge on a Key Source of Farm Labour	55,469.00	57,382.00	51,137.00	0.00	0.00	163,988.00	UNITED WORKERS UNION
Howe, A/Prof Joanna	The Australian horticulture industry has endemic labour challenges, both in terms of labour supply challenges and a systemic problem of non-compliance with labour standards. A core component of both problems is the entrenched reliance on undocumented migrants. Given complex supply chains transiting fresh fruit and vegetables from the farm to the consumer, undocumented workers are largely invisible. There is very little research on undocumented workers on farms. Addressing this critical Australian and international knowledge gap, this project is the first study to comprehensively analyse the role of undocumented migrants in the horticulture industry from a multi-stakeholder approach, involving government, employers and workers.							

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and	Approved Expen	nditure (\$)	Indicative Fu	ınding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)

### **National Interest Test Statement**

This project responds to a need identified in the Federal Government's National Agriculture Workforce Strategy which found that undocumented migrants are a critical, yet hidden, component of Australia's harvest workforce. This industry-driven project will uncover how undocumented migrants gain access to work on farms and remain undetected. It will also identify on-going labour challenges faced by farmers and how third-parties, including labour-hire contractors and accommodation providers contribute to the hire of undocumented migrants in the harvest workforce. The project will generate a new regulatory and policy framework for improving compliance with labour and immigration laws in order to enable farmers to access a lawful and regulated harvest workforce. Addressing labour challenges caused by the reliance on undocumented migrants will improve the horticulture industry's economic performance and address labour-related crop loss and contribute to food security in Australia.

LP210301397	Solid Oxide Electrolysis Cells with Novel Perovskite-based Cathode	249,868.00	246,744.00	238,508.00	0.00	0.00	735,120.00	AUFU GROUP PTY LTD
Qiao, Prof Shizhang	The electrochemical reduction of CO2 and steam to value-added fuels in a high- temperature solid oxide electrolysis cell (SOEC) is practically promising, but technologically challenging. This project aims to develop next generation SOECs using a perovskite-based cathode and scale-up engineering for rapid, bulk production of H2, CO and syngas fuels. Expected outcomes include material engineering, new knowledge on energy conversion technology, and advanced manufacturing technologies. The success of the project will provide a practical solution to reduce fossil CO2 emissions and potential technology for hydrogen production. These will significantly aid Australia in important climate goals and ambitions.							

#### National Interest Test Statement

Australia has an ambitious renewable energy target for 2023, which this project will address by developing and producing a new generation of fuel cells called Solid Oxide Electrolysis Cells (SOECs). These have the potential to produce large amounts of "green" hydrogen and "clean" syngas fuels without CO2 emissions. Currently the efficiency of these systems is low, but with an Australian industry partner we will develop more efficient SOECs that will allow better conversion and storage of intermittent renewable energies such as wind and solar power. By increasing availability of green fuel sources, and also making them more reliable across regions on demand, Australia can realistically increase future use of electric vehicles. In the shorter term, this research will also make our local manufacturing in this field more technologically and economically advanced, to secure Australia's global leadership in this area.

The University of Adelaide	916,770.00	875,708.00	826,729.00	61,192.00	0.00	2,680,399.00
South Australia	916,770.00	875,708.00	826,729.00	61,192.00	0.00	2,680,399.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated an	d Approved Exp	enditure (\$)	Indicative I	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Tasmania								
University of Ta	Ismania							
LP210301148	Developing a wildlife health intelligence and vaccine distribution system	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00	THE TRUSTEE FOR
Flies, Dr Andrew S	This project aims to establish an industry-linked pipeline for vaccines to be delivered to animals in edible baits and a near real-time monitoring system for assessing the impact of management actions. This project will develop ultrasensitive diagnostic tests and incorporate biomarkers into baits from Australia's leading pest animal control company. Bait uptake and disease status in the field will be monitored using artificial intelligence technology developed in Tasmania. This integrated wildlife health intelligence and scalable vaccine platform can help protect the iconic Tasmanian devil from disease and increase Australia's preparedness for looming threats to the livestock industry such as African swine fever.							ANIMAL CONTROL TECHNOLOGIES AUST UNIT TRUST, DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT TASMANIA, WILDCARE, EVOKEEDGE PTY LTD, USDA NATIONAL WILDLIFE RESEARCH CENTER

### **National Interest Test Statement**

Enhancing Australia's ability to respond to Environmental Change is a national science and research priority, and the 2016 National Research Infrastructure Roadmap lists biosecurity as a focus area. This project will develop a comprehensive system for managing wildlife disease. We will develop rapid field tests for the Tasmanian devil facial tumour disease and biomarker system for assessing uptake of vaccines distributed in edible baits. A near real-time monitoring system will allow disease and vaccination to be tracked in the wild. This pipeline can be rapidly adapted for emerging threats. For example, the predicted economic cost to the Australian pig industry of intrusion of African swine fever is \$400 million. Our national and international partner organisations have the experience and capacity to upscale feral pig bait production and distribution to implement a rapid and efficient oral bait vaccination campaign. The remote monitoring technology developed in this project can be translated to other species to provide unprecedented insight into the efficacy of management actions.

University of Tasmania	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00
Tasmania	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	and Approved Expe	enditure (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Victoria								
Deakin Univers	ity							
LP210301166	Creating sustainable employment for disadvantaged and vulnerable groups	72,764.00	57,305.00	60,622.00	0.00	0.00	190,691.00	JOBS VICTORIA, ASURIA
Ingold, A/Prof Joanne F	This project aims to address long-term unemployment and labour market exclusion of disadvantaged and vulnerable groups by generating new employer-led solutions. The project expects to create, with employers, successful strategies for recruiting disadvantaged workers into better quality jobs, and to co-produce best practice employer engagement toolkits and minimum job quality standards. Anticipated outcomes include increasing the success of government-funded employment programs by improving employment opportunities and reducing cycling between work and welfare. Significant benefits for disadvantaged groups, businesses and society will result in increased employee wellbeing, organisational performance and economic competitiveness.  National Interest Test Statement Despite Australia's low unemployment rate, up to 2M disadvantaged Australians are witt government employment services. The project focuses on improving both employer engle employers and disadvantaged groups to co-design two toolkits: one to enhance employ Organisations, employer associations and government the project offers a public websit providers to work with employers. This will reduce cycling between work and welfare an Australian economy.	hout work. Employ agement in employ ers' job quality, and e, social media, po d assist more disad	ers' hiring and work j /ment services and j d another to assist gr dcasts and mastercl dvantaged Australiar	practices pose a cri ob quality to improv vernment and emp asses to inform poli is into sustainable,	tical barrier for d e employment o loyment service icymaking to buil good-quality jobs	isadvantaged Ar pportunities for providers to bet d better jobs an s, improving eco	ustralians, yet em those who face b ter engage emplo d improve the cap nomic and social	PEOPLE SERVICES PTY LIMITED, SOCIAL VENTURES AUSTRALIA LIMITED, JOBSBANK LIMITED
	Deakin University	72,764.00	57,305.00	60,622.00	0.00	0.00	190,691.00	
Monash Univer	sity							
LP210300465	Making eMaking Accessible for People with Intellectual Disabilities	108,244.00	119,907.00	123,907.00	0.00	0.00	352,058.00	WALLARA AUSTRALIA LTD.
Ellis, Dr Kirsten A	This interdisciplinary research will create an evidence based eMaking program that empowers people with Intellectual Disabilities. eMaking benefits include collaborative problem solving and employment pathways; however, people with disabilities are often excluded. Through a unique, inclusive, outreach van, strategies to build accessible eMaking will be generated. Project outcomes include replicable, scalable eMaking activities and toolkits to facilitate Science, Technology, Engineering and Mathematics for all. Project benefits include opportunities for people with Intellectual Disability to participate in meaningful recreational or work-focused eMaking, and changing community attitudes through shared eMaking participation.							

National Interest Test Statement

To create a healthy, wealthy and wise Australia for all citizens, we need a nation that embraces Science, Technology, Engineering and Maths (STEM), yet people with significant and permanent disabilities are often excluded from everyday life. The benefits of inclusive STEM programs include greater autonomy and fostering of social connections, self-belief and trust. This project will run integrated STEM programs with local communities, empowering people with Intellectual Disability to engage in electronic design and fabrication ("eMaking") of their own technology. The outreach aspect of the research – with an eMaking van travelling to communities – will provide a valuable cultural contribution, growing community capacity and changing perceptions about what people with disabilities can achieve. Australia will also benefit from the project's potential economic contributions through employment for people with disabilities (e.g. microbusinesses; sales), and commercialisation of accessible eMaking tools.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated	and Approved Exp	enditure (\$)	Indicative I	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210300791 Skouteris, Prof Helen	Improving outcomes for young people transitioning from out-of-home care The central aim of this project is to generate the new knowledge needed to support the development, implementation, and diffusion of evidence-based innovations for young people as they transition from out-of-home care to adulthood. The project is significant because young people living in out-of-home care are more likely to enter juvenile justice, become a teenage parent, be socially excluded, have mental and physical health problems and addictions. Outcomes include a world first longitudinal data evidence base, exemplars of best practice, and guidance to advance the application of transition pathways and plans to inform future innovations in Victoria and across Australia for improving transition from care with, by, and for young people.	183,096.00	190,496.00	180,596.00	0.00	0.00	554,188.00	THE DEPARTMENT OF FAMILIES, FAIRNESS AND HOUSING, MACKILLOP FAMILY SERVICES LIMITED, ANGLICARE VICTORIA, BAPTCARE LTD, THE CENTRE FOR EXCELLENCE IN CHILD AND FAMILY WELFARE INC., VICTORIAN ABORIGINAL CHILD CARE AGENCY CO OP LTD, BENDIGO AND DISTRICT ABORIGINAL CO-OPERATIVE LTD

### **National Interest Test Statement**

Young people leaving out-of-home care (OOHC), as compared to their peers in the general population, are more likely to experience multiple and bewildering transitions that evoke feelings of instability, powerlessness, unpreparedness, abandonment and mistrust. This project will develop new insights with the ultimate goal of improving the transition for young people from OOHC to adulthood. Knowledge generated will provide the evidence base needed to impact policy and practice, ensuring that interventions for care leavers can be scaled up effectively to support this transitional life phase. For one potential intervention, the overall cost/benefit ratio of the program has been estimated as \$1.84 in direct savings or in increased income to the individual and the community. Hence, this project will reverse the cycle of vulnerability and disadvantage experienced by young people living in OOHC, as they transition to independent living, and will reduce the financial burden on the Australian economy by fostering young people's ability to reach their full potential for social and economic participation in society.

LP210301239	Three-dimensional Bayesian Modelling of Geological and Geophysical data	176,225.00	180,725.00	180,725.00	0.00	0.00	537,675.00	GEOSCIENCE AUSTRALIA,
Ailleres, Dr Laurent	The project aims to develop technologies enabling rapid informed decision-making related to the management of natural resources, including critical metals, copper and water. This new technology will support a greener future, securing our energy future, our access to clean water and reduce the mining footprint. Expected outcomes include an enhanced capability in interoperable, integrated three-dimensional geological and geophysical modelling in order to predictively characterise subsurface geology. The outcome will be an open-source forecasting dashboard enabling decision making while considering underlying risk related to resource extractions and management with significant benefits to the Australian society (lower emissions, clean water).							INTEGRATIVE NUMERICAL GEOLOGY, GEORESSOURCES, UNIVERSITÉ DE LORRAINE, UNIVERSITÉ DE LORRAINE, UNIVERSITY OF ORLÉANS, BRITISH GEOLOGICAL SURVEY, COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION, AUSCOPE LTD, GEOLOGICAL SURVEY OF WESTERN AUSTRALIA, NORTHERN TERRITORY GEOLOGICAL SURVEY, DEPARTMENT FOR ENERGY AND MINING, DEPARTMENT OF STATE GROWTH, GEOLOGICAL SURVEY OF QUEENSLAND, DEPARTMENT OF JOBS, PRECINCTS AND REGIONS, RWTH AACHEN UNIVERSITY OF TECHNOLOGY, GERMANY

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and	d Approved Expend	liture (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3) (C	2022-23 Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)

#### National Interest Test Statement

Australia is rich in underground natural resources. This project will improve our ability to discover new subsurface resources, and make better decisions regarding their ongoing management. The project will develop interoperable 3D geological modelling tools to add significant value to data held by taxpayer- funded Geological Survey organisations and facilitate the management of Australia's subsurface resources, including critical metals and water. A key output from the project will be an open-source platform, available to industry and decision & policy makers, and the public. This platform will improve resources assessment, management and exploitation, and will underpin urban management decisions related to subsurface geology so that our underground resources are managed sustainably.

LP210301314	Smart Irrigation: integrating UAV soil moisture maps & variable rate sprays	103,983.00	114,106.00	87,995.00	72,950.00	0.00	379,034.00	PROSENSING , SWAN
Walker, Prof Jeffrey P	This project will develop a state-of-the-art precision irrigation system for optimising water use and crop yield. Specifically, a novel UAV soil moisture mapping system based on passive microwave satellite remote sensing technology at L-band will be developed for near-surface soil moisture mapping at accuracies and spatial scales currently not attainable. These soil moisture maps will then be merged with irrigation water delivery models to calibrate for spatial variation in soil properties and/or correct errors in spatial variation of rainfall and evapotranspiration inputs. Ultimately the water balance predictions will be used for implementation of variable rate irrigation control at scales hitherto unattainable.							SYSTEMS
	National Interest Test Statement							

Irrigated agriculture uses about 60% of the water available for human use. This project will develop new technologies aiming at smarter use of irrigation water to better manage water resources and improve agricultural productivity. The project will integrate new technologies in soil moisture remote sensing (including drones) with soil monitoring and prediction platforms to give farmers and land managers access to the soil moisture data they need for daily land management decision-making. The application of these technologies will have economic and environmental benefits such that the available water can be optimised for food production, contributing to a more resilient and environmentally sustainable agricultural sector that is better prepared for climate change, and the food production challenges of the future.

LP210301321	High-productivity ammonia electrosynthesis	119,846.00	122,657.00	126,497.00	0.00	0.00	369,000.00	JUPITER IONICS PTY LTD
Simonov, Dr Alexandr N	The aim of this project is to develop and demonstrate high-performance devices for ammonia production from renewables by a scalable electrolysis method. This will be achieved by experimental and modelling investigations of the nitrogen reduction reaction to guide the design of tailor-made cathodes. New knowledge in catalysis and materials science is expected to be generated. The target outcome of the project is a sustainable and affordable ammonia synthesis method as an alternative to the current fossil-fuels-based and excessively greenhouse-emitting process. The technology to be developed in this project is anticipated to be of significant benefit to the Australian agriculture sector as a local, on-demand source of low-cost fertilisers.							

#### National Interest Test Statement

This project aims to develop and optimise high-performance devices for ammonia production from renewable sources. The innovative, Australian-invented electrolytic process underpinning the project has the potential deliver a new export market for fertilisers powered by abundant Australian renewable energy, and reduce the reliance on fossil fuels for a large part of the chemical sector. To achieve this, the project will develop new materials to increase the efficiency of the ammonia production process and dramatically improve the sustainability and affordability of the technology. This will enable the process to be commercialised by Australian industry, and ultimately underpin the production of local, on-demand, low-cost fertilisers for use in Australian agriculture.

Approved Organisation, Leader of Approved	Approved Research Program	Estimated ar	nd Approved Expen	diture (\$)	Indicative F	unding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301332	3-D Printed Catalytic Monoliths for Energy Efficient Carbon Conversion	135,039.00	138,594.00	131,958.00	0.00	0.00	405,591.00	WOODSIDE ENERGY LTD.
Tanksale, A/Prof Akshat	Carbon Capture and Utilisation (CCU) is an essential pathway for reducing carbon in the Earth's atmosphere. However a major hurdle in the carbon utilisation part is that the conversion technologies often rely on energy derived from fossil sources. Electrification of carbon conversion processes can overcome this hurdle by providing this energy via renewables. This project aims to develop an electrically powered energy efficient catalytic process for carbon conversion. A modular 3-D printed monolithic catalytic reactor prototype powered by induction or resistive heating will be developed to minimise energy loss in the carbon conversion process. An expected outcome of this project is translation of this prototype in a CCU pilot scale facility. <b>National Interest Test Statement</b> Carbon dioxide (CO2) emissions from natural gas processing in Australia is on the rise of to make syngas (CO+H2), a platform chemical for the production of wide range of chemin new technology will replace the energy which is otherwise be provided via natural gas con captured from natural gas processing. This may help the Australian industries, especially generation from a new and emerging circular carbon economy. This project aligns closed production.	due to increased glo icals. We aim to ach ombustion. Therefor y LNG companies, n ly with the Technolo	bal gas demand, whi ieve this by developi e, this project has the neet the Net-Zero tar gy Investment Roadr	ch is supplied from ng 3-D printed mor potential to elimin gets by 2050, while nap by developing	our shores. Th olithic catalysts ate the CO2 er e creating value a novel Austral	is project is aime s which will be el nissions from the for these compr ian technology fr	ed at developing t ectrically heated e conversion proc anies by providing or carbon capture	technologies for utilising this CO2 using renewable energy. This wess and add value to the CO2 g a pathway for revenue e and utilisation for chemicals
	Monash University	826,433.00	866,485.00	831,678.00	72,950.00	0.00	2,597,546.00	
RMIT Universi	ty							
LP210300230 Gibson, Prof Brant C	Diamond-based wideband radiofrequency fibre-optic sensor This project aims to address the growing problem of ultra-wide radiofrequency signal monitoring. Developing a rugged and portable solution for whole-spectrum monitoring is a critical unmet need for Defence and other industries, and an important scientific challenge. Our approach is based on a diamond radio frequency sensor with fibre-optic readout. The project is expected to generate knowledge in the areas of quantum science and photonics by integrating advanced optical fibres with quantum-grade diamond. Expected outcomes of the project include the development of a strategic academic and industry alliance through the establishment of a sovereign capability that will benefit Australia in the areas of cybersecurity and advanced manufacturing.	125,000.00	125,000.00	95,000.00	0.00	0.00	345,000.00	DIAMOND DEFENCE PTY LTD

### National Interest Test Statement

Quantum sensing and measurement technologies are projected to create more than 3,000 jobs and around \$1B in revenue for Australia by 2040. This project has potential to significantly contribute to this growth in the quantum technology industry. This project will develop an all optical diamond sensing platform to monitor radiofrequency signals to operate across the 5G spectrum. Outcomes from this project have potential to benefit the Australia economically (job creation and expanded growth), commercially (new quantum technology intellectual property), socially (monitoring of radiofrequency signals), and by establishing a sovereign capability for defence. In addition, the radiofrequency sensor technologies developed within this project have a direct application in electronic warfare, which lies within the practical research challenge of new technologies and approaches to support the nation's cybersecurity. This research will contribute to Australia's future workforce with skills and capabilities in quantum technologies for the defence sector and is aligned with the Defence Science and Technology Strategy 2030.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	and Approved Expe	enditure (\$)	Indicative F	Funding (\$)	Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210301389	Museum Digital Social Futures	61,378.00	63,599.00	64,473.00	0.00	0.00	189,450.00	ACMI X, AUSTRALIAN
Hjorth, Prof Larissa	This project aims to understand and transform the digital experience of museum audiences post COVID-19 through collaborating with ACMI who pioneered digital curation methods through a Living Lab model. This project will generate new methods for engaging diverse audiences across social and digital worlds in domestic and public spaces through codesigning with national museum peak body, AGaMA, stakeholders. Expected outcomes include resources (i.e. toolkits for implementation), online repository (website) and symposium for knowledge sharing and transferring of learnings. This should provide significant benefits to the museums sector including digital innovation for social inclusion strategies and resources. <b>National Interest Test Statement</b> Museums have been shown internationally to enhance wellbeing, informal literacy and s pursued digital innovation to reach diverse audiences. This project examines the increase museums, social media platforms and households, this project will provide important social validate digital engagement methods and resources that enhance engagement and infor literacy opportunities for social inclusion. The findings will be consolidated with the Austri	ocial innovation. H singly essential role cial and cultural ber mal literacy; streng alian Digital Inclusi	owever, the COVID- of digital media in t nefits for Australians thening the capacity ion Index (ADII) to s	-19 pandemic has a he engagement, ex s by providing new i y of the sector to er upport the role of m	affected traditiona perience, literac nsights into the e ngage publics on nuseums in inclus	Il face to face p y and inclusion iffectiveness of line. It will impro sive, digital futur	atronage. In respo of museum audie different museum ove the lives of Au res.	MUSEUMS AND GALLERIES ASSOCIATION
	RMIT University	186,378.00	188,599.00	159,473.00	0.00	0.00	534,450.00	
Swinburne Uni	versity of Technology							
LP210301393	Decentralised Data Management for Edge Caching Systems in 5G	72,920.00	83,720.00	85,320.00	0.00	0.00	241,960.00	AIBUILD PTY LTD
He, A/Prof Qiang	This project aims to deliver a suite of decentralised data management approaches to facilitate practical edge caching systems in the 5G mobile edge computing (MEC) environment. Edge caching offers great promises for Australia's post-COVID economic recovery and resilience with the ability to enable real-time mobile and IoT							

software applications in various domains, e.g., telehealth, online learning/working, advanced manufacturing, etc. This project tackles new and urgent challenges in edge data storage, manipulation, maintenance, and protection with optimisation, distributed consensus, graph analytics, and cryptography techniques. The outcomes should build the pillars of edge caching systems and promote Australia's 5G software innovations.

### National Interest Test Statement

Many Australian industries in health, education and manufacturing, require a fast and powerful data network to overcome barriers such as distance, isolation and access to services. Current data management techniques for 5G networks spread over wide distances are forced to make compromises between data speed, storage efficiency, and cybersecurity. This project will develop a suite of approaches to dynamic data storage distributed across the network (known as Edge computing) to address these barriers. The techniques will be used by our industry partner to create Australia's first 5G-powered virtual and augmented reality education platform. The outcomes will inspire widespread adoption of 5G by Australian businesses to capitalise on the benefits of these advanced techniques and improve productivity while contributing to future economic growth and improving access to services. It will lay the groundwork for Australian software businesses to make full use of 5G mobile communication to connect people across Australia guickly and efficiently benefitting telehealth - particularly in remote Australia; smart manufacturing where regular downloading of software updates is critical to keeping advanced equipment operating; and remote work and education where video access is important to learning and communication for workers and students.

Swinburne University of Technology	72,920.00	83,720.00	85,320.00	0.00	0.00	241,960.00
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Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
The University	of Melbourne							
LP210300666 Driscoll, A/Prof Elizabeth F	Community Publishing in Regional Australia This project aims to find new ways to support the increasing number of regional Australians, including regional Indigenous Australians, who use digital technologies to write and publish their own books. This project expects to create advanced knowledge of these community practices and their cultural and economic significance, shifting questions about the future of the book from multinational firms to regional communities. Expected outcomes include toolkits to provide access and skills development for regional Australians, and market knowledge for industry. This should provide significant benefits including market development to ensure the Australian book industry's sustainability and new methods to advance regional Australia's culture. National Interest Test Statement The Australian publishing industry, worth \$1.9bn, is going through a period of immense Melbourne to create and distribute books, including regional publishing initiatives such a logund due and employ a experiment for and argument operator protocole to facilitatives the in-	53,118.00 disruption due to di as local histories, cru	62,468.00 gital technology. Nev eative anthologies ar	0.00 v opportunities also od children's books	0.00 exist for stakeh . The project wil	0.00 olders outside ti support the dis	115,586.00 ne usual publishir semination of the	ALICE SPRINGS TOWN COUNCIL, BURDEKIN SHIRE COUNCIL, BOOKTOPIA PTY LTD, INGRAM CONTENT GROUP AUSTRALIA PTY LIMITED, WINTON SHIRE COUNCIL, COUNCIL OF THE CITY OF BROKEN HILL, SMALL PRESS NETWORK INC
	publishing services that will better enable regional Australians to catalyse their significa new income streams. These initiatives have the potential to inform the development of t	nt creative energy ir future pathways for t	the Australian publis	omic outcomes, su hing industry.	ch as preserving	ps. National ber cultural memor	y and local storyt	elling traditions, and developing
LP210301006	Securing the next generation in farming and food careers	108,873.00	112,545.00	116,213.00	0.00	0.00	337,631.00	CENTRAL RANGES LOCAL
Nettle, Prof Ruth A	This project aims to investigate why and how young people (aged 15-35 years) enter, stay or leave jobs and careers in the agri-food sector, including farming, farm services and food processing. This project expects to generate new knowledge to improve youth career trajectories through using an innovative, interdisciplinary and engaged research design with young people. Expected outcomes include the co- design of youth-appropriate industry and education policy proposals, new models of youth engagement in agri-food and better career outcomes for young people. This should provide significant benefits to the sustainability and growth of the agri-food sector and to rural and regional communities and their economic prosperity.							EMPLOYMENT NETWORK INC, WIMMERA DEVELOPMENT ASSOCIATION INCORPORATED, BIRCHIP CROPPING GROUP INC., MURRAY DAIRY LIMITED, GEOFFREY GARDINER DAIRY FOUNDATION LIMITED, AUSVEG LTD, VEG EDUCATION, THE TRUSTEE FOR AGRIBUSINESS RECRUITMENT UNIT TRUST

#### **National Interest Test Statement**

The Australian Government and industry hold ambitious growth targets for Australia's \$65B agri-food sector. These will only be met if worsening staff and skills shortages are addressed. Attracting and retaining young people is especially critical, given Australia's ageing farm population and the importance for the sector of the attitudes, skills and ideas that young people bring. This research will deliver economic and social benefits to Australia by: (1) improving understanding of issues young people face in entering and sustaining agri-food jobs and careers and (2) contributing this knowledge to the co-design of solutions including new policies and services. Building stakeholders' capacity to respond effectively to young people's needs will deliver benefits in reduced workforce turnover, enhanced career paths and the inclusion of young people's ideas and skills. This will lead to enhanced livelihoods for young people, improved business profitability and sustainability, enhanced regional employment and prosperity, increased export income and maintenance of Australia's secure and high-quality food supply.

The University of Melbourne	161,991.00	175,013.00	116,213.00	0.00	0.00	453,217.00
Victoria	1,320,486.00	1,371,122.00	1,253,306.00	72,950.00	0.00	4,017,864.00

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated a	Estimated and Approved Expenditure (\$)		Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
Western Aus	stralia							
Curtin Universit	y							
LP210300068	Art of Peace: New perspectives in visual art on peacekeeping from the 1990s	150,833.00	117,025.00	168,126.00	0.00	0.00	435,984.00	ART GALLERY OF
Messham-Muir, Prof Kit D	Art of Peace investigates the important role of art in Australia's engagement in international peacekeeping. Australian artists such as George Gittoes and Wendy Sharpe have created powerful and memorable images of Australian forces as peacekeepers and nation-builders. Yet, what of the less-visible perspectives of artists from the countries to which Australia sends peacekeepers? Art of Peace will create new knowledge around those artists' perceptions of peacekeeping missions, through a new body of scholarship, public engagement and an exhibition in Perth and Sydney curated by Art Gallery of WA. It engages a national audience to focus on the important role of Australia in international affairs since 1990 through new contemporary art. National Interest Test Statement Art from international peacekeeping missions—'art of peace'—has been vital in shapir peacekeeping, with missions in Rwanda, former Yugoslavia and Timor Leste. Our tea of our troops. This project expands on this, working with artists from countries where <i>A</i> bring them and their art to Perth and Sydney for exhibitions, education programs and Australians' appreciation of how our military is viewed by others. The project benefits <i>A</i> heritage.	ng how we unders m's previous work Australia sent peac events. These acti Australians more b	tand Australia's role has shown that art cekeepers and askir ivities can improve i proadly by expandin	in the world, as a p powerfully shapes o ng how they see our nternational relation g our understanding	eacekeeper and no our views of Austra r military and diplor is by building relation g of this important p	ation-builder. The lia's involvement in natic efforts. We w onships for exchar period in Australia'	1990s was especia n war by focusing e ill share our exper nging viewpoints ac s military history ar	WESTERN AUSTRALIA, NATIONAL TRUST OF AUSTRALIA (NSW) ally important for impathy on the experiences tise with those artists, and cross cultures, and deepen id enriching our cultural
	Curtin University	150,833.00	117,025.00	168,126.00	0.00	0.00	435,984.00	
The University of	of Notre Dame Australia							
LP210301390	Intergenerational cultural transfer of Indigenous knowledges	65,256.00	178,135.00	166,748.00	204,382.00	85,890.00	700,411.00	MADJULLA
Poelina, Prof Anne	Aboriginal cultural systems hold knowledge of national and international significance for Aboriginal wellbeing and addressing climate change, food insecurity, water scarcity and species loss. However, the continuity and integrity of these knowledges is of considerable concern to Aboriginal people, due to disruptions to Aboriginal lifeways. This Aboriginal environmental humanities research will investigate, describe and compare the transfer of knowledge in a Kimberley and a southwest region of Western Australia to understand how cultural values, knowledge and practices can persist despite on-going colonial interruptions. Outcomes will contribute to Aboriginal wellbeing, enhance biodiversity and advance water communication.							ASSOCIATION, MARTUWARRA FITZROY RIVER COUNCIL, MILLENNIUM KIDS INC, WATER CORPORATION, WESTERN AUSTRALIAN MUSEUM, YURMULUN ABORIGINAL CORPORATION

### **National Interest Test Statement**

The disruption of Aboriginal lifeways post-colonisation has put Indigenous knowledge at risk. As droughts and flooding escalate, traditional approaches to sustainable land and water use are in danger of being lost, to the detriment of people, communities and landscapes. This project addresses the national research priority of Water. By investigating how traditional knowledge about water and the environment are passed from one generation to the next it aims to restore Indigenous environmental communication. Aboriginal Elders and young people will work together on two case studies led by Aboriginal people in the Kimberley and Western Australian Goldfields. They will trial a model of on-country revitalisation of Aboriginal water knowledge, drawing on traditional and contemporary cultural practices of story, song and ceremony. Findings will be disseminated through public education and engagement, via innovative multi-media curation to preserve Indigenous knowledge and inform water management practices.

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)		diture (\$)	Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)	(Column 3)	2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
	The University of Notre Dame Australia	65,256.00	178,135.00	166,748.00	204,382.00	85,890.00	700,411.00	
The University of	of Western Australia							
LP210300691	Unsaturated zone functioning in a semi-arid flash flood driven climate	206,292.00	220,209.00	242,491.00	101,296.00	0.00	770,288.00	RIO TINTO LIMITED, INNOTECH ALBERTA
Skrzypek, Dr Grzegorz D	Groundwater is the only perennial water source in arid and semiarid zones, which encompass 1/3 of the global landmass and 70 % of Australia. We still do not fully understand how the unsaturated zone contributes to groundwater recharge in semi- arid zone floodplains. We will study the dynamics of soil moisture, and its contribution to groundwater recharge respective to hydrological regimes and weather patterns. We will measure direct responses to flood events using loggers and compare them to indirect measurements inferred from hydrochemical and isotope tracer models to better understand recharge patterns, evaporative losses, and interactions between surface runoff, floodplains, and aquifers at different positions in the landscape.							INC.
	National Interest Test Statement							
Groundwater reliance in semiarid inland regions is rapidly increasing, driven by uncertainty in water resources availability and exacerbated by climate change. Simultaneously, infrequent but large- for infrastructure and mining. Thus, water resource security and sustainability are directly within the national interest, ensuring that future economic development can succeed. This project focuses hydrological budget components in the semiarid zone: infiltration in the unsaturated zone and groundwater recharge. We will address knowledge gaps in predicting soil and groundwater responses Australia. The results will quantify uncertainty by estimating how floodwater contributes to groundwater recharge and allow us to assess how renewable and secure our groundwater assets are. The shared with government policy makers and used to improve groundwater management and foster development through our working partnership with industry.							ent but large-scal oject focuses on t ter responses to p issets are. The pr	e flooding constitutes a risk he most challenging periodic flooding in inland oject outcomes will be
LP210300698	Characterising satellites using un-resolved optical observations	104,080.00	100,055.00	99,026.00	0.00	0.00	303,161.00	POLISH SPACE
Coward, A/Prof David M	Space situational awareness is a critical priority for Australian national security and the commercial space sector as the economy is investing in space. Space debris is a growing international threat to all major economies that rely on space for communications and defence. This project will understand how defunct satellites degrade over time to produce space debris. To accomplish this the project will collaborate with the Polish Space Agency to employ low resolution spectroscopy to measure the surface degradation of geostationary satellites.							AGENCY, SYBILLA TECHNOLOGIES, ITTI, 6ROADS

National Interest Test Statement

Australia is investing strongly in space related industries and commerce. As Australia continues to extend its commercial footprint in space, monitoring and understanding the space environment is critical for its economic future. Every rocket, satellite and object sent into Earth orbit inevitably produces debris. Space debris can collide with and disable functioning space assets, and is an increasing threat to commercial activities in near Earth space. The threat includes critical national space assets, including communications, military and research satellites. This research seeks to expand our knowledge of the threat from space debris by characterising and identifying satellites from the ground using low resolution spectroscopy. It will develop software tools that use Artificial Intelligence to detect space debris along with their precise orbits and identify collision risks in advance. The software will be adopted by commercial/government space agencies, including our partners, and will additionally allow monitoring satellite surface degradation for timely maintenance and to avoid generating more debris.

Approved Organisation, Leader of Approved Research Program	Approved Research Program r (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
(Columns 1 and 2)		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
LP210300960 Paterson, Prof Alistair G	<b>Mobilising Dutch East India Company collections for new global stories</b> Australia has a rich legacy of archives, art and artefacts, including 4 shipwrecks in WA, from its history of encounters with the Dutch East India Company (VOC). Through comparative research in Australian and overseas museums and archives we aim to situate Australian collections in a global context, creating new stories about Australia as part of the VOC global network. An interdisciplinary team will train 3 ECRs and 7 HDRs and forge partnerships with the Netherlands, Britain, Denmark, Germany, Sweden, Indonesia, Malaysia, and South Africa, strengthening national capacity. Our analysis will enrich the value of collections, provide narratives for museums and sites, and revitalise content for international and domestic tourism markets.	199,755.00	199,692.00	199,695.00	199,727.00	0.00	798,869.00	AUSTRALIAN NATIONAL MARITIME MUSEUM, WESTERN AUSTRALIAN MUSEUM, KERRY STOKES COLLECTION, STATE LIBRARY OF NSW FOUNDATION, CULTURAL HERITAGE AGENCY OF THE NETHERLANDS, EMBASSY OF THE KINGDOM OF THE NETHERLANDS IN AUSTRALIA, NATIONAL ARCHIVES OF THE NETHERLANDS, RIJKSMUSEUM, BRITISH MUSEUM, IZIKO MUSEUMS OF SOUTH AFRICA, MOESGAARD MUSEUM, THE VASA MUSEUM, THE VASA MUSEUM, THE VASA MUSEUM, DEPARTMENT OF BIODIVERSITY CONSERVATION AND ATTRACTIONS, MUSEUM KAAP SKIL

### **National Interest Test Statement**

Australia has the world's largest collection of Dutch East India Company (VOC) shipwreck material. This project reinterprets this extensive collection to provide an alternative view of Australia's historic connections to maritime Asia and the rest of the world. An interdisciplinary team will work across separate collections of VOC related shipwrecks, human remains, objects and archives in Australia, Europe, Africa, Malaysia and Indonesia to recover and analyze the rich history of encounters (1600-1800) between Aboriginal and Torres Strait Islander, Asian and European peoples. Outcomes include a deeper understanding of the role of the VOC in the movement of people around the Indian Ocean, Australia's place in that history and the legacies of the VOC in our region. A digital platform for schools and universities and new interpretations for museums and shipwreck sites will communicate findings to the Australian public. Ten emerging researchers will benefit from Industry situated training and aggregated collection data will be available to researchers with tools for further analysis, discovery and visualisation.

	8,633,584.00	9,260,504.00	8,810,561.00	2,354,855.00	597,739.00	29,657,243.00
Western Australia	726,216.00	815,116.00	876,086.00	505,405.00	85,890.00	3,008,713.00
University of Western Australia	510,127.00	519,956.00	541,212.00	301,023.00	0.00	1,872,318.00

The