





























Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)						(Column 9)	(Column 10)
<b>James Cook University</b>								
LP210300851	<b>Future proofing and restoring Australia's tropical seagrasses</b>	140,984.00	121,276.00	126,340.00	66,748.00	0.00	455,348.00	NORTH QUEENSLAND BULK PORTS CORPORATION LIMITED, FAR NORTH QUEENSLAND PORTS CORPORATION
Rasheed, A/Prof Michael A	<p>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 ecosystem services and place Australia at the forefront of global seagrass restoration efforts.</p> <p><b>National Interest Test Statement</b></p> <p>Australia's coastal communities depend on healthy seagrass meadows to support fisheries, provide food for dugong and turtles and mitigate the impacts of climate change by protecting coasts and storing carbon. In the tropics, seagrasses face losses from coastal development and climate extremes, yet to date, we lack critical knowledge on how to propagate, grow and restore the diverse range of tropical species. This project will develop and apply new techniques for tropical seagrass restoration and deliver a blueprint for seagrass friendly infrastructure for tropical Australia. Application of the project tools through inclusion of coastal managers, industry and government as project partners, as well as a publicly available seagrass restoration information portal, will provide a clear pathway to adoption. By addressing and reversing losses of tropical seagrasses this project will contribute to protection of seagrasses and their related ecosystem services worth hundreds of millions of dollars annually to the Australian economy.</p>							
LP210301250	<b>Breeding super black soldier flies at scale for sustainable food production</b>	226,995.00	221,400.00	161,814.00	0.00	0.00	610,209.00	FLYFARM QUEENSLAND PTY. LTD.
Zenger, Prof Kyall R	<p>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 &amp; 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.</p> <p><b>National Interest Test Statement</b></p> <p>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.</p>							
	<b>James Cook University</b>	367,979.00	342,676.00	288,154.00	66,748.00	0.00	1,065,557.00	

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
<b>Queensland University of Technology</b>								
LP210300839  Mills, Prof Martin D	<b>Career change teachers: Addressing teacher shortages in Australia</b>  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.	96,902.00	121,791.00	143,674.00	0.00	0.00	362,367.00	QUEENSLAND TEACHERS UNION OF EMPLOYEES, QUEENSLAND COLLEGE OF TEACHERS, DEPARTMENT OF EDUCATION, QUEENSLAND CATHOLIC EDUCATION COMMISSION, INDEPENDENT SCHOOLS QUEENSLAND, METROPOLITAN REGION
	<b>National Interest Test Statement</b>  Australia is facing a teacher shortage crisis. Recent policy responses include encouraging people from a diversity of other professions to consider a teaching career. However, evidence shows that 'career change teachers' often leave the teaching profession within their first few years of employment. The shortage and high turnover of teachers has a negative impact on young people's educational outcomes. Ensuring a high quality and stable teaching workforce, will therefore produce substantial educational, economic and social benefits for the Australian community. This project's examination of university provision of teacher education and exploration of school and system supports for new teachers, alongside life histories of career change teachers, will provide the education sector with a significant understanding of how these teachers can be supported to remain in the profession. This partnership with key education stakeholders, will ensure that the research and resources created through this project will inform key policy responses to the teacher shortage crisis and the retention of career change teachers.							
LP210301088  Huggins, A/Prof Anna L	<b>Optimising Digital Compliance Processes in the Financial Services Sector</b>  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.	50,127.00	148,403.00	146,388.00	0.00	0.00	344,918.00	REALTA LOGIC PROPRIETARY LIMITED
	<b>National Interest Test Statement</b>  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.							

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		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  Zhu, Prof Dr Huai-Yong	<b>Scale-up of catalytic furandicarboxylic acid production at room temperature</b>  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.	132,000.00	113,000.00	0.00	0.00	0.00	245,000.00	BJP LABORATORIES PTY LTD
	<b>National Interest Test Statement</b>  Producing valuable materials from renewable plant-based resources, such as natural sugars and starches, is critical to sustainable rural development and addressing the problem of environmental pollution caused by our reliance on oil. This project will deliver an efficient, energy-saving new technique for the industrial-scale production of commodities such as plastics that are critical to modern life using plant-based rather than petroleum sources. The project will use a newly developed, low-cost recycling method to convert plant products to the building blocks for materials such as plastics and design a new production process that uses novel chemistry that requires no external heat input so it requires much less energy than standard production methods. This enables agricultural plant materials to be converted to more valuable products with the added benefit of creating biodegradable and recyclable plastics. Therefore, the project will directly contribute to the global effort to end plastic waste (since petroleum-based plastics are difficult to break down and mostly end up in oceans or landfill) and reduce the plastic chemical industry's reliance on fossil fuels by demonstrating viable production of biodegradable plastics sourced from renewable, completely carbon-neutral, plant-based materials. The goal is to produce materials with the convenience of modern plastics, but which can be composted or recycled like any food or plant based waste.							
	<b>Queensland University of Technology</b>	279,029.00	383,194.00	290,062.00	0.00	0.00	952,285.00	
<b>The University of Queensland</b>								
LP210300105  Keenan-Jones, Dr Duncan C	<b>Diving into the Desert. Indigenous and Future Floodplain Management</b>  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 communications – seek to benefit Australia's cultural life and flood mitigation, and to protect the Mithaka Aboriginal Corporation's culture and country.	175,414.00	203,419.00	216,328.00	0.00	0.00	595,161.00	MITHAKA ABORIGINAL CORPORATION RNTBC, AUSTRALIAN NATIONAL MARITIME MUSEUM, DISASTER RELIEF AUSTRALIA
	<b>National Interest Test Statement</b>  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.							



# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
LP210300584  Batstone, Prof Damien J	<p><b>Sewer Monitoring and Management in the Digital Era</b></p> <p>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.</p> <p><b>National Interest Test Statement</b></p> <p>Sewer systems are critical infrastructure for modern urban societies. Australia has 120,000 km sewers with a total value of \$40 billion. However, sewer systems are subject to overflow, blockage, corrosion, and odour and 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 tools so that the water industry can achieve proactive, system-wide, and optimal sewer management. In wet weather, the frequency and volume of wastewater spills and sewer overflows will be reduced, protecting public and environmental health. In dry weather, energy consumption and emissions of hydrogen sulfide and methane will be reduced, thus reducing sewer corrosion and odour, and contributing to carbon-neutral sewage management. This project will support long-term planning by identifying optimal strategies for capital works, resulting in major economic benefit for water utilities. The tools will have strong potential for commercialisation, contributing to knowledge-based economic development.</p>	195,189.00	210,395.00	219,848.00	200,000.00	50,000.00	875,432.00	CENTRAL SEQ DISTRIBUTOR-RETAILER AUTHORITY, WATER CORPORATION, SOUTH EAST WATER CORPORATION, HUNTER WATER CORPORATION, ENVIROSUITE LIMITED, WATER RESEARCH AUSTRALIA LIMITED, MELBOURNE WATER CORPORATION, DETECTION SOLUTIONS PTY LIMITED
LP210301066  Wang, Prof Guoxiong G	<p><b>Low emission iron and steelmaking using hydrogen to pre-reduce lump ore</b></p> <p>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 expands Australian export of iron ores.</p> <p><b>National Interest Test Statement</b></p> <p>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.</p>	215,000.00	190,000.00	190,000.00	0.00	0.00	595,000.00	HAMERSLEY IRON PTY. LIMITED, HBIS GROUP CO., LTD.

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
LP210301206 Cave, Dr Robyn L	<p><b>Applications-oriented elucidation of germination triggers for Emu Bush seed</b></p> <p>The project aims to determine the environmental and genetic mechanisms that currently limit seed germination in Emu Bush (<i>Eremophila</i>) 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.</p> <p><b>National Interest Test Statement</b></p> <p>The project aims to increase knowledge about seed formation and germination triggers and inhibitors in the genus <i>Eremophila</i> (Emu Bush), a large and diverse Australian plant genus that is adapted to dry and drying climates. The research will develop technologies and protocols that will enable the mass production of <i>Eremophila</i> from seed, which has previously proven impossible. Field trial sites, videos and workshops will demonstrate the accessibility and outcomes of the seed germination techniques. This knowledge will help maintain genetic diversity, aid efficient production of new varieties by commercial and not-for-profit nurseries, satisfy the growing demand for Australian native plants suitable for a drying climate, and increase genetic robustness in landscape restoration. The project will therefore contribute economic and commercial benefits to the Australian plant nursery industry, and environmental benefits through maintenance of the genetic diversity of Australia's plants and through land rehabilitation of Australia's degraded lands.</p>	52,183.00	67,993.00	67,993.00	51,206.00	0.00	239,375.00	AUSTRALIAN NATIVE PLANTS SOCIETY (AUSTRALIA) INCORPORATED, KERSBROOK LANDCARE GROUP INC., AUSTRALIAN GENOME RESEARCH FACILITY LIMITED
LP210301248 Nogita, Prof Kazuhiro	<p><b>Systematic investigations of low temperature Sn-Bi based solder alloys</b></p> <p>The project aims to reduce the temperatures used in the manufacture of 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.</p> <p><b>National Interest Test Statement</b></p> <p>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.</p>	151,883.00	151,883.00	151,883.00	0.00	0.00	455,649.00	MASTERS & YOUNG PTY. LTD., NIHON SUPERIOR CO. LTD

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
LP210301261  Bermingham, Dr Michael J	<p><b>Towards use-as-manufactured titanium alloys for additive manufacturing</b></p> <p>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.</p> <p><b>National Interest Test Statement</b></p> <p>Australia is a leader in metal 3D printing with growing sovereign capacity to supply bespoke titanium products into global markets. The most common metal 3D printing method, powder bed fusion, is unrivalled in its precision but the process may create unwanted material properties that make as-printed parts unusable for service. After 3D printing, parts can be made fit for service by implementing thermal processing but this can add 18-30% to the product cost and extend lead time. This project takes a new approach, and by carefully controlling the titanium alloy chemistry it seeks to achieve desirable material properties directly from the 3D printing process, thus eliminating the need for downstream processing. This will enable Australian manufacturers to produce high quality titanium products faster and more affordably, allowing them to more competitively participate in global supply chains. As a material with many applications, including defence, this strengthens our sovereign advanced manufacturing capability and supports the growth of an important industry, while also boosting jobs and local economies.</p>	112,791.00	191,184.00	138,396.00	0.00	0.00	442,371.00	STRYKER EUROPEAN OPERATIONS LIMITED
LP210301317  Zhang, Prof Xiwang	<p><b>Pore Engineering of Chromatography Membranes for Bioseparation</b></p> <p>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.</p> <p><b>National Interest Test Statement</b></p> <p>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.</p>	280,317.00	241,584.00	240,003.00	0.00	0.00	761,904.00	CSL BEHRING (AUSTRALIA) PTY LTD

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		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  Hobson-Peters, Dr Jody M	<b>New vaccines and diagnostics to control viral disease in farmed crocodiles</b>  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 pen-side 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.  <b>National Interest Test Statement</b>  This project will establish effective strategies to prevent West Nile virus infection of farmed saltwater crocodiles in northern Australia. This will significantly reduce skin lesion occurrence and the rejection rate of crocodile hides for the quality leather market, allowing the Australian crocodile industry to compete more effectively with overseas rivals who are not held to the same standards of animal welfare, OH&S and fair wages. Due to the active participation of the crocodile industry in the Indigenous Advancement Strategy, additional benefits of these outcomes will flow to indigenous communities in northern Australia who are involved with the crocodile industry through egg collection and hatchling rearing enterprises and are dependent on its continued success and competitiveness in the international markets for the return of royalties and employment opportunities. Establishing a comprehensive system to detect the transmission of West Nile virus and other mosquito-borne pathogens on crocodile farms provides a strategic "One Health" arbovirus surveillance system that will benefit the Darwin region.	238,405.00	208,287.00	217,958.00	214,314.00	0.00	878,964.00	PRI FARMING PTY LTD
	<b>The University of Queensland</b>	1,421,182.00	1,464,745.00	1,442,409.00	465,520.00	50,000.00	4,843,856.00	
	<b>University of Southern Queensland</b>							
LP210301072  Buttsworth, Prof David R	<b>Remote diagnostics for space-access flight testing</b>  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.  <b>National Interest Test Statement</b>  Australia's large land mass and the extent of its ocean territories makes it heavily dependent on satellite assets for communications, Earth monitoring, positioning, and navigation. To fast-track the development of sovereign Australian satellite launch systems, this project develops the capabilities needed for remote optical measurements on prototype space launch vehicles, and for other high speed flight testing that will help grow the Australian space economy. Optical data in video and scientific formats are required to assess system performance and contribute to forensic investigations of failures. By delivering the tools and techniques needed for the acquisition and interpretation of such data, this project can establish an enduring diagnostic capability that supports aerospace enterprises that are developing technologies and delivering products for Australian aerospace, including Rocket Technologies International, Hypersonix, and Southern Launch, and providing economic and commercial benefits to the Australian community.	209,644.00	227,015.00	216,804.00	192,679.00	163,428.00	1,009,570.00	UNIVERSITY OF STUTTGART, ROCKET TECHNOLOGIES INTERNATIONAL PTY LTD, GERMAN AEROSPACE CENTER(DLR) R&D, SOUTHERN LAUNCH, HYPERSONIX LAUNCH SYSTEMS PTY LTD
	<b>University of Southern Queensland</b>	209,644.00	227,015.00	216,804.00	192,679.00	163,428.00	1,009,570.00	
	<b>Queensland</b>	2,678,281.00	3,040,121.00	2,923,863.00	970,548.00	213,428.00	9,826,241.00	

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)						(Column 9)	(Column 10)
<b>South Australia</b>								
<b>The University of Adelaide</b>								
LP210300715	<b>Solving smoke taint: Overcoming the impacts of vineyard exposure to smoke</b>	167,991.00	170,390.00	172,824.00	0.00	0.00	511,205.00	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
Wilkinson, Prof Kerry L	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) and contributes more than \$45 billion to the Australian economy each year, via domestic sales, exports and wine-related tourism. However, making and selling Australian wine, even in a 'good' year, has become increasingly challenging due to climate change; not only due to prolonged drought and heatwaves, but the increasing risk of vineyard exposure to bushfire smoke. In 2020, approximately 4% of the Australian wine grape crop was discarded due to 'smoke taint', resulting in revenue losses estimated to be in the hundreds of millions of dollars. The need for strategies that enable the wine sector to prevent, mitigate and recover from vineyard smoke exposure is paramount. The proposed research will improve our understanding of the effects of smoke on grapevines and develop novel strategies for detecting and mitigating 'smoke taint' in wine. As such, the project has the potential to deliver significant economic benefit to the Australian wine industry, and it is therefore in Australia's national interest.							
LP210301062	<b>Breeder-ready genetic tools for sustaining wheat yields under heat stress</b>	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
Tucker, A/Prof Matthew R	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.							
	<b>National Interest Test Statement</b>							
	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.							

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		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  Warin, Prof Megan	<b>Situating care: Addressing obesity in disadvantaged communities</b>  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.	128,462.00	149,063.00	131,381.00	0.00	0.00	408,906.00	THE AUSTRALIAN CENTRE FOR SOCIAL INNOVATION INC, UNITING COMMUNITIES INCORPORATED
	<b>National Interest Test Statement</b>  Australia urgently needs better interventions to reduce obesity that causes costly and life-limiting chronic diseases. We aim to move obesity management away from a "medical model" that focusses only on bodyweight. Instead, our new program will be developed and led by families within seriously disadvantaged Australian communities, and it will be delivered by people who understand first-hand the difficult social factors, like whether families have income to buy food, and other stressors like mental health and domestic violence. By participating in the design of a new model of care that is specific to their local, cultural issues, residents and community members can provide solutions and support that are more likely to work and will be accepted. We will make these authentic, practical ideas and peer-support solutions accessible in easy-to-understand formats like podcasts and videos, which will ultimately be built into existing obesity policies and programs across the country.							
LP210301373  Lambert, Prof Martin F	<b>Closing the Gap in Pipe Condition Assessment using Hydro-Acoustic Waves</b>  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.	145,000.00	107,000.00	116,000.00	0.00	0.00	368,000.00	DETECTION SERVICES PTY LIMITED
	<b>National Interest Test Statement</b>  Australia's public health and economic prosperity rely on the effective operation of over 162,000 km of water mains. Current water asset management is reactive, as buried pipe renewal programs are not adequately guided by factual detailed pipe health information. This unsustainable practice brings a major challenge: almost half of all assets, with a total value of over \$80b, will need to be replaced in the coming three decades. Efficiently determining the condition of buried pipe infrastructure is highly complex. The project will develop new condition assessment techniques that are significantly more affordable and effective than existing technologies. The enhanced cost-effectiveness will result in broader adoption of the technology in the water industry, guiding predictive repair, avoiding disruptive events, and saving millions of dollars from annual maintenance costs. Cities will see fewer pipe breaks, meaning less interruption to service and traffic, less property damage and less water loss. Australia will become a leader in this transferable technology, which has commercial potential globally.							
LP210301380  Howe, A/Prof Joanna	<b>Undocumented Migrants- Unearthing Knowledge on a Key Source of Farm Labour</b>  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.	55,469.00	57,382.00	51,137.00	0.00	0.00	163,988.00	UNITED WORKERS UNION

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$) (Column 9)	Partner Organisation(s)  (Column 10)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
<b>National Interest Test Statement</b>								
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  Qiao, Prof Shizhang	<b>Solid Oxide Electrolysis Cells with Novel Perovskite-based Cathode</b>  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.	249,868.00	246,744.00	238,508.00	0.00	0.00	735,120.00	AUFU GROUP PTY LTD
<b>National Interest Test Statement</b>								
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.								
		<b>The University of Adelaide</b>	916,770.00	875,708.00	826,729.00	61,192.00	0.00	2,680,399.00
		<b>South Australia</b>	916,770.00	875,708.00	826,729.00	61,192.00	0.00	2,680,399.00

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

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

## Tasmania

### University of Tasmania

LP210301148 Flies, Dr Andrew S	<b>Developing a wildlife health intelligence and vaccine distribution system</b>  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.	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00	THE TRUSTEE FOR 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.

<b>University of Tasmania</b>	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00
<b>Tasmania</b>	95,960.00	108,940.00	0.00	0.00	0.00	204,900.00



# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)  (Column 9)	Partner Organisation(s)  (Column 10)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
<b>Victoria</b>								
<b>Deakin University</b>								
LP210301166  Ingold, A/Prof Joanne F	<b>Creating sustainable employment for disadvantaged and vulnerable groups</b>  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.	72,764.00	57,305.00	60,622.00	0.00	0.00	190,691.00	JOBS VICTORIA, ASURIA PEOPLE SERVICES PTY LIMITED, SOCIAL VENTURES AUSTRALIA LIMITED, JOBSBANK LIMITED
	<b>National Interest Test Statement</b>  Despite Australia's low unemployment rate, up to 2M disadvantaged Australians are without work. Employers' hiring and work practices pose a critical barrier for disadvantaged Australians, yet employers are disconnected from government employment services. The project focuses on improving both employer engagement in employment services and job quality to improve employment opportunities for those who face barriers. The project will work with employers and disadvantaged groups to co-design two toolkits: one to enhance employers' job quality, and another to assist government and employment service providers to better engage employers. Working with Partner Organisations, employer associations and government the project offers a public website, social media, podcasts and masterclasses to inform policymaking to build better jobs and improve the capacity of employment services providers to work with employers. This will reduce cycling between work and welfare and assist more disadvantaged Australians into sustainable, good-quality jobs, improving economic and social well-being and boosting the Australian economy.							
	<b>Deakin University</b>	72,764.00	57,305.00	60,622.00	0.00	0.00	190,691.00	
<b>Monash University</b>								
LP210300465  Ellis, Dr Kirsten A	<b>Making eMaking Accessible for People with Intellectual Disabilities</b>  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.	108,244.00	119,907.00	123,907.00	0.00	0.00	352,058.00	WALLARA AUSTRALIA LTD.
	<b>National Interest Test Statement</b>  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.							

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
LP210300791  Skouteris, Prof Helen	<b>Improving outcomes for young people transitioning from out-of-home care</b>  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
	<b>National Interest Test Statement</b>  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  Ailleres, Dr Laurent	<b>Three-dimensional Bayesian Modelling of Geological and Geophysical data</b>  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 sub-surface 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).	176,225.00	180,725.00	180,725.00	0.00	0.00	537,675.00	GEOSCIENCE AUSTRALIA, RESEARCH FOR INTEGRATIVE NUMERICAL GEOLOGY, GEORESSOURCES, 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

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)	(Column 9)	(Column 10)
<b>National Interest Test Statement</b>								
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  Walker, Prof Jeffrey P	<b>Smart Irrigation: integrating UAV soil moisture maps &amp; variable rate sprays</b>  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.	103,983.00	114,106.00	87,995.00	72,950.00	0.00	379,034.00	PROSENSING , SWAN SYSTEMS
<b>National Interest Test Statement</b>								
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  Simonov, Dr Alexandr N	<b>High-productivity ammonia electrosynthesis</b>  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.	119,846.00	122,657.00	126,497.00	0.00	0.00	369,000.00	JUPITER IONICS PTY LTD
<b>National Interest Test Statement</b>								
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.								

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)						(Column 9)	(Column 10)
LP210301332	<b>3-D Printed Catalytic Monoliths for Energy Efficient Carbon Conversion</b>	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 due to increased global gas demand, which is supplied from our shores. This project is aimed at developing technologies for utilising this CO2 to make syngas (CO+H2), a platform chemical for the production of wide range of chemicals. We aim to achieve this by developing 3-D printed monolithic catalysts which will be electrically heated using renewable energy. This new technology will replace the energy which is otherwise be provided via natural gas combustion. Therefore, this project has the potential to eliminate the CO2 emissions from the conversion process and add value to the CO2 captured from natural gas processing. This may help the Australian industries, especially LNG companies, meet the Net-Zero targets by 2050, while creating value for these companies by providing a pathway for revenue generation from a new and emerging circular carbon economy. This project aligns closely with the Technology Investment Roadmap by developing a novel Australian technology for carbon capture and utilisation for chemicals production.							
	<b>Monash University</b>	826,433.00	866,485.00	831,678.00	72,950.00	0.00	2,597,546.00	
	<b>RMIT University</b>							
LP210300230	<b>Diamond-based wideband radiofrequency fibre-optic sensor</b>	125,000.00	125,000.00	95,000.00	0.00	0.00	345,000.00	DIAMOND DEFENCE PTY LTD
Gibson, Prof Brant C	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.							
	<b>National Interest Test Statement</b>							
	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.							

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)						(Column 9)	(Column 10)
LP210301389	<b>Museum Digital Social Futures</b>	61,378.00	63,599.00	64,473.00	0.00	0.00	189,450.00	ACMI X, AUSTRALIAN MUSEUMS AND GALLERIES ASSOCIATION
Hjorth, Prof Larissa	<p>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.</p> <p><b>National Interest Test Statement</b></p> <p>Museums have been shown internationally to enhance wellbeing, informal literacy and social innovation. However, the COVID-19 pandemic has affected traditional face to face patronage. In response, some museums have pursued digital innovation to reach diverse audiences. This project examines the increasingly essential role of digital media in the engagement, experience, literacy and inclusion of museum audiences. Using new methods across museums, social media platforms and households, this project will provide important social and cultural benefits for Australians by providing new insights into the effectiveness of different museum digital strategies. It will test and validate digital engagement methods and resources that enhance engagement and informal literacy; strengthening the capacity of the sector to engage publics online. It will improve the lives of Australians through enriched digital literacy opportunities for social inclusion. The findings will be consolidated with the Australian Digital Inclusion Index (ADI) to support the role of museums in inclusive, digital futures.</p>							
	<b>RMIT University</b>	186,378.00	188,599.00	159,473.00	0.00	0.00	534,450.00	
<b>Swinburne University of Technology</b>								
LP210301393	<b>Decentralised Data Management for Edge Caching Systems in 5G</b>	72,920.00	83,720.00	85,320.00	0.00	0.00	241,960.00	AIBUILD PTY LTD
He, A/Prof Qiang	<p>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.</p> <p><b>National Interest Test Statement</b></p> <p>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 quickly 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.</p>							
	<b>Swinburne University of Technology</b>	72,920.00	83,720.00	85,320.00	0.00	0.00	241,960.00	

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		2022-23 (Column 4)	2023-24 (Column 5)	2024-25 (Column 6)	2025-26* (Column 7)	2026-27* (Column 8)		
(Columns 1 and 2)	(Column 3)						(Column 9)	(Column 10)
<b>The University of Melbourne</b>								
LP210300666	<b>Community Publishing in Regional Australia</b>	53,118.00	62,468.00	0.00	0.00	0.00	115,586.00	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
Driscoll, A/Prof Elizabeth F	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.							
	<b>National Interest Test Statement</b>							
	The Australian publishing industry, worth \$1.9bn, is going through a period of immense disruption due to digital technology. New opportunities also exist for stakeholders outside the usual publishing centres of Sydney and Melbourne to create and distribute books, including regional publishing initiatives such as local histories, creative anthologies and children's books. The project will support the dissemination of the latest publishing tools and knowledge and employ a community-focused and grassroots approach to facilitate their adoption by regional creative groups, including Indigenous Australian groups. National benefits include improved access to and knowledge of publishing services that will better enable regional Australians to catalyse their significant creative energy into cultural and economic outcomes, such as preserving cultural memory and local storytelling traditions, and developing new income streams. These initiatives have the potential to inform the development of future pathways for the Australian publishing industry.							
LP210301006	<b>Securing the next generation in farming and food careers</b>	108,873.00	112,545.00	116,213.00	0.00	0.00	337,631.00	CENTRAL RANGES LOCAL LEARNING AND 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
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.							
	<b>National Interest Test Statement</b>							
	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.							
	<b>The University of Melbourne</b>	161,991.00	175,013.00	116,213.00	0.00	0.00	453,217.00	
	<b>Victoria</b>	1,320,486.00	1,371,122.00	1,253,306.00	72,950.00	0.00	4,017,864.00	

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

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

## Western Australia

### Curtin University

LP210300068	<b>Art of Peace: New perspectives in visual art on peacekeeping from the 1990s</b>	150,833.00	117,025.00	168,126.00	0.00	0.00	435,984.00	ART GALLERY OF WESTERN AUSTRALIA, NATIONAL TRUST OF AUSTRALIA (NSW)
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.							
	<b>National Interest Test Statement</b>							
	Art from international peacekeeping missions—'art of peace'—has been vital in shaping how we understand Australia's role in the world, as a peacekeeper and nation-builder. The 1990s was especially important for peacekeeping, with missions in Rwanda, former Yugoslavia and Timor Leste. Our team's previous work has shown that art powerfully shapes our views of Australia's involvement in war by focusing empathy on the experiences of our troops. This project expands on this, working with artists from countries where Australia sent peacekeepers and asking how they see our military and diplomatic efforts. We will share our expertise with those artists, and bring them and their art to Perth and Sydney for exhibitions, education programs and events. These activities can improve international relations by building relationships for exchanging viewpoints across cultures, and deepen Australians' appreciation of how our military is viewed by others. The project benefits Australians more broadly by expanding our understanding of this important period in Australia's military history and enriching our cultural heritage.							
	<b>Curtin University</b>	150,833.00	117,025.00	168,126.00	0.00	0.00	435,984.00	

### The University of Notre Dame Australia

LP210301390	<b>Intergenerational cultural transfer of Indigenous knowledges</b>	65,256.00	178,135.00	166,748.00	204,382.00	85,890.00	700,411.00	MADJULLA ASSOCIATION, MARTUWARRA FITZROY RIVER COUNCIL, MILLENNIUM KIDS INC, WATER CORPORATION, WESTERN AUSTRALIAN MUSEUM, YURMULUN ABORIGINAL CORPORATION
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.							
	<b>National Interest Test Statement</b>							
	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.							

# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

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)
	<b>The University of Notre Dame Australia</b>	65,256.00	178,135.00	166,748.00	204,382.00	85,890.00	700,411.00	
<b>The University of Western Australia</b>								
LP210300691	<b>Unsaturated zone functioning in a semi-arid flash flood driven climate</b>	206,292.00	220,209.00	242,491.00	101,296.00	0.00	770,288.00	RIO TINTO LIMITED, INNOTECH ALBERTA INC.
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.							
	<b>National Interest Test Statement</b>							
	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-scale flooding constitutes a risk 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 on the most challenging 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 to periodic flooding in inland 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 project outcomes will be shared with government policy makers and used to improve groundwater management and foster development through our working partnership with industry.							
LP210300698	<b>Characterising satellites using un-resolved optical observations</b>	104,080.00	100,055.00	99,026.00	0.00	0.00	303,161.00	POLISH SPACE AGENCY, SYBILLA TECHNOLOGIES, ITTI, 6ROADS
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.							
	<b>National Interest Test Statement</b>							
	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.							



# Minister's Approval for Linkage Projects 2021 Round 3 for Funding Commencing in 2022 Schedule

Approved Organisation, Leader of Approved Research Program  (Columns 1 and 2)	Approved Research Program  (Column 3)	Estimated and Approved Expenditure (\$)			Indicative Funding (\$)		Total (\$)	Partner Organisation(s)
		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, 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.

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