Plastic Waste CRC

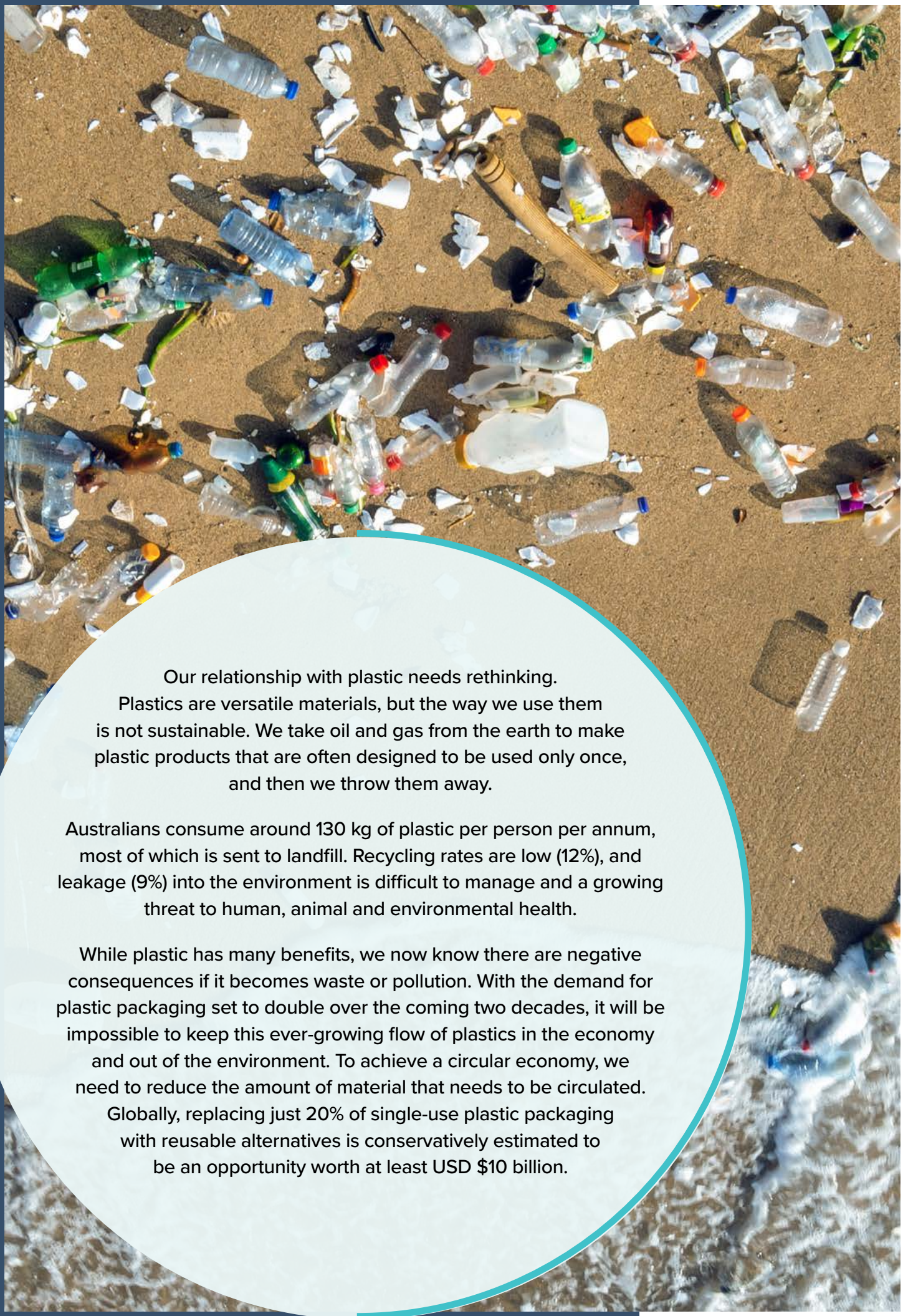
"It's our waste. It's our responsibility"

Rethinking the way we design, use, and reuse plastics to create a valuable circular economy for plastic, and a cleaner, safer environment.









Our relationship with plastic needs rethinking. Plastics are versatile materials, but the way we use them is not sustainable. We take oil and gas from the earth to make plastic products that are often designed to be used only once, and then we throw them away.

Australians consume around 130 kg of plastic per person per annum, most of which is sent to landfill. Recycling rates are low (12%), and leakage (9%) into the environment is difficult to manage and a growing threat to human, animal and environmental health.

While plastic has many benefits, we now know there are negative consequences if it becomes waste or pollution. With the demand for plastic packaging set to double over the coming two decades, it will be impossible to keep this ever-growing flow of plastics in the economy and out of the environment. To achieve a circular economy, we need to reduce the amount of material that needs to be circulated. Globally, replacing just 20% of single-use plastic packaging with reusable alternatives is conservatively estimated to be an opportunity worth at least USD $10 billion.

CONTENTS

Partners	4
Why a Plastic Waste CRC?	6
Vision and mission	6
Our bid	7
Our partners	7
Our research	7
Our outputs	8
Education and training program	8
Proposed research programs	9
Our people	12
What is a CRC?	14
Plastic Waste CRC Governance	14
Next Steps	14
Participating in the Plastic Waste CRC	15
Timeline	15
Contacts	16

Research Partners

Griffith University, Queensland, Australia
CSIRO
CQUniversity Australia
Deakin University
Macquarie University, Sydney-Australia
RMIT University
Southern Cross University
University of Southern Queensland
UTS
The University of Western Australia
NSW Government, Department of Primary Industries

Government Partners

NSW Government, Department of Primary Industries
NSW Government, Planning, Industry & Environment
City of Gold Coast
Government of South Australia, Green Industries SA
Illawarra Shoalhaven Joint Organisation
Legatus Group
Lismore City Council
City of Melbourne
National Institute for Environmental Studies, Japan
Northern Rivers Joint Organisation
NSW Circular
NSROC
NSW Government, HealthShare
QLD Dept. of Environment & Science
Sustainability Victoria
Victoria State Government
Major Road Projects Victoria

Materials and Manufacturing

PACT Group
lyondellbasell, Advancing Possible
Martogg & Company
APT, Synthetic Surface Specialists
amcor
Humble Bee Bio
Blue IoT, Building Technology for the Blue Economy
Ant Packaging
Akdeniz Chemson, Beyond Additives
allnex
BM
COAST 4C
coverfields
demtech
DesignByThem
epichem, Our Formula. Your Success.
GreenLife Structures, Greenhouses - Shadehouses - Protective Netting
Jiangsu Jiulang High-Tech Co.,Ltd
kiT Plastics
Medtronic
Mountain Blue, Farming Genetics Nursery Marketing
Qenos
SABRN Technologies
SECOS Group
T.III, Turning The Tide

End Users

coles
Norco, Quality Since 1895
Ford
佛教慈濟醫療財團法人 大林慈濟醫院, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation
GALE Pacific
St Vincent's Lismore
ResMed
Water Research Australia

Recycling and Waste Management

iQRenew
TOMRA
nextek
Containers for Change
Closed Loop
Sunlight Group Australia
CLAW Environmental
earthfix Australia
Enviro Spears
FIBO
GMI Green Machines Lab
GT Recycling
mpower
newaste north east waste
PYROCAL PTY LTD
Revolve Your World Systems for Sustainability
Sniffers Group
SynBio
Containers for Change

Professional Services and Consulting

ARUP
NintiOne Limited
RMCG
ALS
Cornerstone Earth
DMTEK Consulting 디엠테크컨설팅
E-three & Associates
Foresys
GeoLINK environment | engineering | planning | design
IKK Institut für Kunststoff- und Kreislauftechnik
PEGRAS
resourcefutures
SDG
Dr Wah Hin Lee

Industry Bodies and NGO's

APCO
WMRR Waste Management & Resource Recovery Association Australia
ACOR Australian Council of Recycling
AIEN Catalyst to achieving a circular economy
AIP Australian Institute of Packaging
Australian Local Government Association
AUSMAP Australian Microplastic Assessment Project
Keep Australia Beautiful
aora australian organics recycling association
SaffronAid
Bundaberg Fruit & Vegetable Growers
WPO World Packaging Organisation
aaee Australian Association for Environmental Education working for sustainability
Australian Cane Farmers
CWFS Central West Farming Systems
Global Green and Healthy Hospitals
Climate Health Alliance
Committee for Brisbane
Food & Agribusiness Network
AMPC Australian Meat Processor Corporation
International Network of Health Promoting Hospitals & Health Services Task Force on HPH & Environment
NRA National Retail Association
NOMOREBUTTS
NRM Regions Queensland
PLANET ARK Positive environmental actions, for everyone.
Regional Development Australia Northern Rivers NSW
SETAC
spe Australia New Zealand
Tangaroa Blue
Vinyl Council Australia

Why a Plastic Waste CRC?

A national and strategic approach to finding and developing solutions to challenges associated with our use of plastics is essential.

Accelerated by market and policy pressure to reduce waste and emissions, Australian businesses are well positioned to become competitive global players through innovation and collaborative R&D. The Plastic Waste CRC will provide a platform to unite and galvanise key stakeholders to jointly develop leading solutions that promote accountability for our own plastic waste.

The CRC's ability to deliver outstanding research, education and training opportunities, and build capabilities throughout the value chain, will be unrivalled. No current collaborative forum offers a platform and opportunity to address the plastic waste challenge at a sovereign level, working in harmony across the plastics value chain to enable a national outcome that can position Australia as a global leader.

Vision and mission

The Plastic Waste CRC will drive game-changing industry research and collaboration across the entire plastics value chain transforming the way plastics are designed, manufactured, used, recovered, recycled and how plastic pollution is remediated, by developing new materials, products, technologies, processes and systems.

It will deliver new jobs, skills and regional solutions by growing sustainable businesses and new markets, whilst creating a valuable circular economy for plastics resulting in a cleaner and safer environment.

Our research will unite, incentivise and galvanise industry and stakeholder action to deliver national waste targets and build the capabilities to make Australia a global leader in plastics manufacturing, recycling and reprocessing.

Our bid

The remarkable support from our partners secured cash commitments of approximately $38 million and in-kind contributions of around $76 million. We have requested funding of $40 million from the Commonwealth, which will see the value of our CRC rise to $154 million over 10 years.

Our partners

The Australian plastics value chain is complex, comprising a diverse array of upstream and downstream stakeholders of varying scale, sophistication and business interest. Over 100 Partners have joined our bid spanning raw material suppliers; manufacturers and converters; retailers and brand owners; local government authorities; waste management and recycling companies; State government agencies; Industry bodies; non-government organisations; and universities.

Our research

Our research will incentivise industry action to deliver national waste targets, positioning Australia at the forefront of plastics design, manufacturing, models of reuse, recycling and reprocessing. It will serve as a significant platform in supporting the achievement of Australia's Plastics Plan and National Waste Action Plan targets.

Our outputs

Key outputs will include:

- new plastics that can be manufactured using Australian sourced renewable materials and valorisation principles
- demonstration of economically viable innovative systems, products, materials and technologies for reuse, remanufacture and recycling
- plastic material flow and recycling information apps, evidence-based decision support tools, and education and behaviour change tools
- innovative and valuable circular business models
- new systems thinking to inform avoidance of plastic usage and therefore waste
- new approaches and technologies to detect, remove and remediate plastic pollutants
- guidance to inform the setting of industry standards

The CRC's critical legacy will be PhD students and researchers who are well trained, possessing industry-led experience and who can become leaders in the new circular economy for plastics.

Education and training program

The CRC's PhD program complements all four research programs through increased engagement, development of new technology, preparation of skilled employees and enhanced research and development capacity within industry entities. Importantly, CRC PhD students and Postdoctoral Fellows will be embedded with industry partners to ensure that research is directed towards the provision of solutions to real industry challenges both immediate and long term. Their background and experience will span the science, technology engineering and mathematics sectors as well as environmental and social sciences, and regulatory policy.

- A suit of post-graduate programs will offer a range of courses with flexible arrangements to meet the needs of industry candidates and provide a continuous pathway to post-graduate degree courses for career and professional advancement.
- A Master degree will include an industry practicum with a choice of six-month full time study or one year part-time study.
- Executive courses (Diploma or Master) will cater for industry business managers, planners or program coordinators.

The CRC will also hold a regular series of training workshops open to public and industry practitioners. Through these, the CRC will advocate for sustainable plastics, showcasing new technologies and new developments in the area.

The CRC will also organise at least two to three national or international meetings on plastic waste and pollution, and new polymer and circular economy, which will help accelerate novel knowledge transfer and uptake.

Proposed research programs

Towards Net Zero Emissions

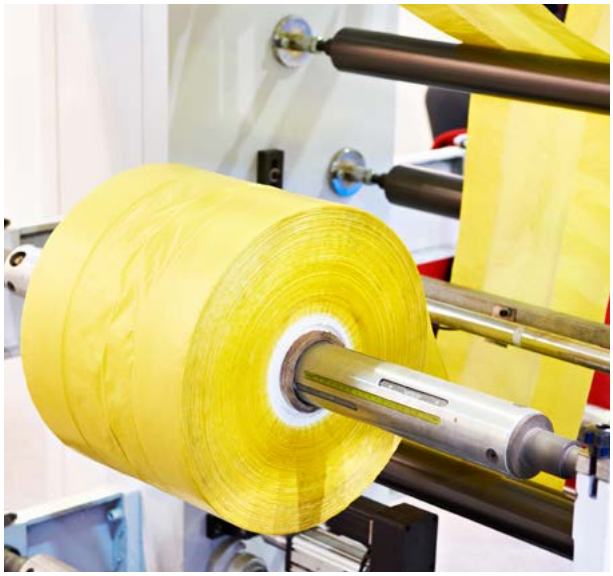
2032 Plastic Waste OLYMPICS BRISBANE

Zero Plastic Waste at the 2032 Olympics

A key project within Research Program 4 will be to support the 2032 Brisbane Olympics to meet global, national and community expectations to deliver a zero plastic waste event.

Proposed research programs

Research Program 1:
Plastics design for circularity



This program will design, develop, manufacture and commercialise new plastic materials and products that enable greater avoidance, reuse, recycling, decomposability and degradability. Subsequently, minimising waste production and creating new and profitable circular businesses, jobs and capabilities.

Priority areas of research interest identified by industry and end-users include:

- Bio-based plastics
- Easily recyclable plastics
- New plastics to infinite recyclability
- Malleable and recyclable thermosets
- Biodegradable and compostable plastics
- Plastics demonstration plant for circular economy

Research Program 2:
Transforming plastic waste

This program will develop and commercialise new technologies that maximise plastic recycling and value through better sorting and separation, recycling technologies and processes optimisation, creating new advanced manufacturing opportunities, regionally based recycling infrastructure and facilities, skills and jobs.

Priority areas of research interest identified by industry and end-users include:

- Artificial Intelligence (AI) techniques for smart sorting of mixed plastic wastes
- Advanced plastic recycling processes
- Upcycling plastic waste for high value-added applications
- Transforming plastic waste into synthesis gas, hydrogen and synthetic liquid fuel
- Life Cycle Assessment (LCA) models for plastic waste management
- Standards and specifications for plastic waste derived materials/products

Research Program 3:
Clean up and remediate the environment

This program will develop approaches and new technologies to detect, remove and remediate plastic pollutants and minimise further plastic waste entering the environment; thereby reducing the potential impacts of plastic pollution on human, animal and environmental health.

Priority areas of research interest identified by industry and end-users include:

- Detection of macroplastics in aquatic and terrestrial environments
- Removal of plastics from aquatic environments
- Determining microplastic contamination in Australia's agricultural land and vegetation
- Mitigation of plastic pollution in environmental matrices
- Developing novel protocols for evaluating impacts and risk of plastic pollution

Research Program 4:
Collaborating for a circular plastic economy

This cross-cutting program will develop innovative education tools and effective engagement and collaboration across key stakeholder groups. It will serve as a driver in how we rethink, reimagine, develop and implement a viable and valuable circular economy for plastics in urban, regional and remote communities.

Priority areas of research interest identified by industry and end-users include:

- Evidence-based decision support tools for industry and Government
- Mapping stakeholder innovations for circular collaboration
- Engagement and behaviour change in urban and regional communities
- Enabling a circular economy for plastics via product stewardship
- Zero plastic waste 2032 Olympics

Our people

Interim Advisory Board Chair

Dr Georgina Davis

Bid Leader and Interim CEO

Professor Dr Chengrong Chen

Griffith University

Interim Advisory Board Member

Dr Ian Dagley FTSE, FRACI, MAICD

Bid Chief Operating Officer

Dr Maryam Esfandbod

Griffith University

Interim Advisory Board Member

Joyanne Manning

Education and Training Lead

Professor Cordia Chu AM

Griffith University

Research Program 1 Lead

Professor Hao Wang

University of Southern Queensland

Research Program 2 Lead

Professor Minoo Naebe

Deakin University

Research Program 1 Deputy Lead

Dr Lachlan Yee

Southern Cross University

Research Program 2 Deputy Lead

Dr Mohamed Elchalakani

University of Western Australia

Research Program 3 Lead

Distinguished Professor Andrew Ball

RMIT University

Research Program 4 Lead

Professor Rodney Stewart

Griffith University

Research Program 3 Deputy Lead

Dr Mehran Rezaei Rashti

Griffith University

Research Program 4 Deputy Lead

Professor Damien Giurco

University of Technology Sydney

What is a CRC?

The Cooperative Research Centre (CRC) Program is a Commonwealth Government program providing grants for up to 10 years.

CRCs are independent entities, established and governed as incorporated companies limited by guarantee and comprise industry led collaborations between industry, researchers and the community. The focus is on research and development that will have commercial uses. The CRC program aims to improve the competitiveness, productivity and sustainability of Australian industries, especially in government priority areas, use high quality research to solve industry identified problems, and encourage SMEs to take part in collaborative research.

With more than 226 CRCs being funded since the program's commencement, the Australian Government has committed more than $4.5B in CRC funding.

Plastic Waste CRC Governance

The Plastic Waste CRC will be established as a not-for-profit company limited by guarantee. It will be governed by an independent skills-based board. The CRC will establish Consultative Committees for each Research Program and for Partners.

The CRC will maintain a flexible approach in considering options for ownership and use of IP beyond a default position of the Plastic Waste CRC owning the legal title to the IP, with alternative arrangements stipulated in Project Agreements. The CRC will have two participant categories, one for research institutes and the other for non-research institutes such as industry and government.

The Plastic Waste CRC has a draft term sheet, developed in consultation with participants, which articulates the governance and management of the CRC. The draft Term Sheet will form part of the package of information made available to CRC partners.

Next steps

Our bid will be assessed over the next few months, with the expectation of knowing by the end November 2021 whether we are short-listed for the CRC Program's Stage 2 process.

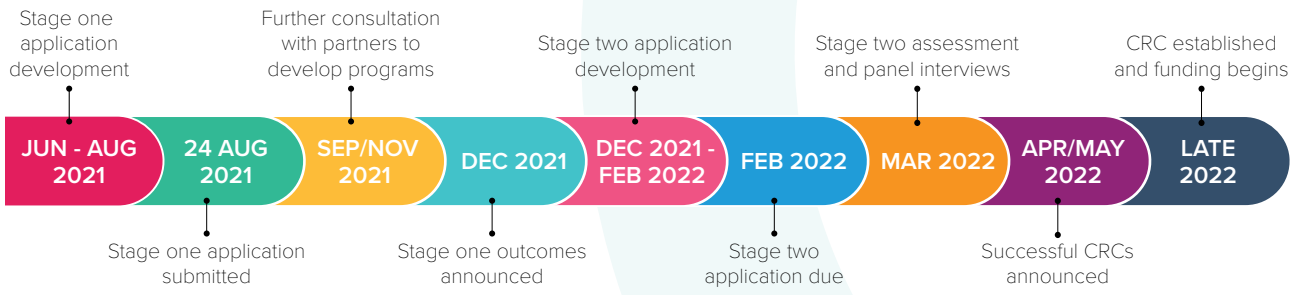
In the meantime, we will continue to work with our partners in preparation for the next Stage, anticipating several new partners to join the bid in the next few months.

Participating in the Plastic Waste CRC

The Plastic Waste CRC seeks to raise $3.5 million per annum from key stakeholders (including $2 million per annum from industry participants) for the 10-year life of the CRC which will see an additional $35 million matched Commonwealth funding being requested.

Partner Tier	Core	Key	Supporting	Affiliate
Membership contributions/annum	$200k or >	$100k or >	$10k or >	<$10k or in-kind only
Membership of CRC Company	✓	✓	×	×
Nominate Board Members	✓	✓	×	×
Nominate a representative to Research Program Consultative Committees	✓	✓	×	×
Access to industry embedded PhD and Masters students and opportunity for co-supervision	✓	✓	×	×
Nominate the theme and host an annual plastic waste innovation challenge	✓	✓	×	×
Hosting potential pilot / demonstration sites	✓ (up to 3)	✓ (up to 2)	×	×
Discounted professional training and development	✓ (tailored)	✓	✓	×
May be eligible for offsets under the R&D tax incentive	✓	✓	✓	×
Other benefits, including participation in CRC conferences, seminars and other networking events; regular news updates and reports	✓	✓	✓	✓

Timeline



To find out how to become a participant in the Plastic Waste CRC, or for more information, contact:

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Plastic Waste CRC