



Performance through collaboration



**STRATEGIC PLAN**

2019-2023





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## CONTEXT

Agriculture in Australia has an exciting future.

Demand for quality Australian produce is rising, especially from expanding export markets. The increasing use of digital technologies and improved logistics, along with new trade agreements, present new opportunities for farmers. The challenges are many, especially from rising input costs and a changing climate. However, Australia's farming businesses are resilient and well placed to reap the benefits of new opportunities.

Integral to the future success and prosperity of the Australian agricultural sector are sustainable, productive, high performance soils.

The Cooperative Research Centre for High Performance Soils (the Soil CRC) was established to develop, and provide to farmers, the knowledge, information and tools to make smart decisions and act on complex soil management issues.

The Soil CRC bridges the gap between soil science and farm management, bringing together researchers, industry and farmers to find practical solutions for improving the performance and productivity of Australia's soil. This enables farmers to optimise their

productivity and profitability, and ensure the long-term sustainability of their businesses.

While there are many emerging opportunities for Australian agriculture, there are challenges. Australia's droughts are becoming more intense, the periods between droughts are becoming shorter, temperatures are rising, and the long-term outlook is for a warmer and drier environment. Through its research and innovation program, the Soil CRC will develop new approaches to soil management to unlock the potential of Australia's agricultural sector, while also helping farmers adapt to a changing climate.

The Soil CRC was established in 2017 with funding for 10 years, comprising \$39.5 million from the Australian Government and \$127 million cash and in-kind contributions from its Participants.

The Soil CRC is the largest collaborative soil research effort in Australia's history. The CRC brings together eight universities, four state agencies, 20 farmer groups and a range of industry partners working collaboratively to solve industry problems. The Soil CRC complements the existing soil research investment and activity by Rural Research and

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Development Corporations, CSIRO, other universities and other research providers and seeks to work collaboratively under the National Soil Research, Development and Extension Strategy.

The 40 Participants of the Soil CRC range from small farmer groups to large government agencies and universities. The diversity of farming systems along with the geographical coverage of farmer groups means the Soil CRC is well represented across Australia.

From the inception of the program, a feature of Cooperative Research Centres has been the involvement of all Participants not just in adopting research outputs, but in helping determine research directions. Participants are actively engaged in the research process itself. This has certainly been the approach taken by the Soil CRC.

The Soil CRC research program is shaped by Participant collaboration, which strongly influenced the initial research program. The identified barriers to improving soil performance were:

1. low returns on investment in sustainable soil management
2. limited technologies to measure soil characteristics and performance in a timely manner and at an appropriate scale
3. limited products to solve complex soil constraints
4. lack of guidance on total and integrated solutions to soil-related issues for farms.

The Soil CRC's four research and adoption programs are designed to address these barriers. The CRC will be dynamic and flexible, responding to new challenges and opportunities.

This strategic plan covering the next four years will guide the Soil CRC's investment and activity. There will be a final year independent strategic review, followed by the creation of a new four-year strategic plan to complete the CRC's 10-year mission and ensure the legacy of its research and collaborations. Supporting the strategic plan will be an annual investment process, ensuring that the Soil CRC's investments are flexible, bold and relevant to the needs of Australian agriculture.

# PARTICIPANTS

## MAJOR PARTNERS



## PARTNERS



## ASSOCIATES



# VISION

Australian farmers using best practice soil management to underpin a dynamic, sustainable and profitable agricultural sector.

# MISSION

To contribute new knowledge, tools and practices to help Australia's farmers better manage their soils in order to improve the profitability, sustainability, resilience and well-being of the agriculture sector.

# VALUES

## **Collaborative**

The Soil CRC is a collaborative and inclusive research and adoption organisation, passionate about soil and bold in its approach to delivering outcomes.

## **End-user driven and focussed**

The Soil CRC is end-user driven in all things it does. Through farmer and other groups, industry are genuine partners in the CRC, helping to set priorities, develop proposals, undertake research, interpret results and communicate the new knowledge.

## **Multidisciplinary**

The Soil CRC employs the necessary disciplines and expertise to deliver change during the life of the CRC, while being aspirational in its long-term goals to ensure a continuing legacy.

## **Research excellence**

The Soil CRC is committed to research excellence – in science practice, capacity building, governance, management, integrity and ethics. The CRC is committed to being a national collaborative leader, recognised as an integral part of Australia's agricultural innovation system.

# OUR STRATEGIES

## STRATEGY 1. RESEARCH

We will undertake high quality research that enhances the productivity, profitability and sustainability of Australian agriculture, and meets our agreed commitments.

Objectives	Outcomes	Actions
<ol style="list-style-type: none"> <li>1. Complete all Commonwealth Funding Agreement research outputs and milestones</li> <li>2. Ensure research is practical, applicable, timely, relevant to industry needs and readily available</li> <li>3. Ensure research excellence</li> <li>4. Collaborate with end-users in all aspects of research to ensure practical solutions and ease of adoption</li> <li>5. Ensure intellectual property is appropriately protected and managed</li> </ol>	<ol style="list-style-type: none"> <li>1. We excelled in the delivery of the Commonwealth Funding Agreement</li> <li>2. Our research is relevant to industry partners, the broader community and end-users</li> <li>3. We produced high quality research</li> <li>4. We are recognised as a highly credible source of soils knowledge and expertise</li> <li>5. Our end-users have adopted new practices that support profitability and sustainability</li> <li>6. Our commercially-valuable intellectual property is identified and developed, with a pathway to providing impact and commercial return to partners</li> </ol>	<ol style="list-style-type: none"> <li>1. Monitor, review and revise (where appropriate) all Commonwealth Funding Agreement outputs and milestones, especially in the context of a changing climate</li> <li>2. Implement an annual investment process based on assessment of current investments, Commonwealth Funding Agreement commitments and end-user needs</li> <li>3. Ensure project teams pursue high quality science through sound project design, rigorous implementation and reputable scientific publication</li> <li>4. Actively contribute to public fora on soil management and health</li> <li>5. Involve end-users in design and implementation of delivery plans through existing and new pathways</li> <li>6. Encourage research partnerships within and across the Soil CRC</li> <li>7. Ensure active intellectual property register and engage expertise to assist with commercial opportunities</li> </ol>

## STRATEGY 2. ADOPTION

We will deliver new and useful knowledge to our industry partners, end-users and Australian agriculture, using multiple platforms and formats, through existing channels and the CRC's own communication pathways.

Objectives	Outcomes	Actions
<ol style="list-style-type: none"> <li>1. Ensure new knowledge is delivered to industry partners, end-users and advisors through existing and innovative pathways</li> <li>2. Facilitate relevant knowledge being adopted and used effectively by next-and end-users</li> <li>3. Use intellectual property to maximise impact by developing and managing commercial opportunities with delivery partners</li> </ol>	<ol style="list-style-type: none"> <li>1. We improved the capacity of the Australian agricultural sector, including our partners, to manage soils to enhance productivity and sustainability</li> <li>2. Our industry partners and end-users received new knowledge through multiple formats that suited their needs</li> <li>3. We delivered knowledge and tools to end-users by the most appropriate pathway, including commercialisation</li> </ol>	<ol style="list-style-type: none"> <li>1. Hold regular Soil CRC conferences</li> <li>2. Deliver Soil CRC information face-to-face, through websites, newsletters, social media, fact sheets and through other communication products</li> <li>3. Hold specific integrated theme workshops</li> <li>4. Undertake project-based outreach through existing networks, processes and activities</li> <li>5. Regularly review and assess project intellectual property for public good or commercial potential, and develop plans accordingly</li> </ol>

# OUR STRATEGIES

## STRATEGY 3. CAPABILITY AND CAPACITY BUILDING

We will support the development of agriculture industry professionals and industry's capacity to manage soils for sustainable outcomes that support Australian agriculture.

Objectives	Outcomes	Actions
<ol style="list-style-type: none"> <li>1. Develop the next generation of researchers in areas relevant to soil</li> <li>2. Ensure all Soil CRC postgraduate students have exposure to end-users and industry</li> <li>3. Increase the capacity of grower groups and advisory services to deliver technical information on improved soil management practices</li> <li>4. Develop the ability of Soil CRC Participants to collaborate and innovate</li> </ol>	<ol style="list-style-type: none"> <li>1. We have made significant progress to our end target of 46 PhD student enrolments and 40 PhD student completions</li> <li>2. All our students have had exposure to the broader Soil CRC community, especially to end-users</li> <li>3. We trained 30 advisory specialists in soil management</li> <li>4. We increased capacity of industry to manage soil for productivity and sustainability</li> <li>5. Soil CRC Participants (researchers, industry, farmer groups) demonstrate enhanced collaboration and innovation abilities</li> </ol>	<ol style="list-style-type: none"> <li>1. Use the annual investment process to ensure PhD students are enrolled and supported in projects that complement the delivery of our outputs and milestones</li> <li>2. Develop and deliver a comprehensive PhD 'industry exposure' program to enhance skills in writing, grant applications, intellectual property, commercialisation, communication and working with industry and farmers</li> <li>3. Develop and deliver, with industry partners and suppliers, theme and project-based training packages and workshops</li> <li>4. Deliver training activities and resources that improve the collaboration skills of Soil CRC Participants</li> </ol>

## STRATEGY 4. PARTNERSHIPS AND LEADERSHIP

We will actively engage our partners in all stages of planning, design, development and implementation of research activities and we will demonstrate national and international leadership in soil research.

Objectives	Outcomes	Actions
<ol style="list-style-type: none"> <li>1. Ensure all partners are engaged and active</li> <li>2. Develop and enhance national and international collaboration and opportunities for research and impact</li> <li>3. Seek additional funding to increase resources available for research and adoption</li> <li>4. Advocate for the importance of soil, soil management, soil research and the Soil CRC for maximising agricultural productivity and sustainability</li> <li>5. Demonstrate effective and dynamic national leadership in collaborative soil research and innovation</li> <li>6. Instil a culture of a collaborative community and a sense of belonging</li> <li>7. Ensure that the Soil CRC will have a legacy of ongoing beneficial research, collaboration and practice change</li> </ol>	<ol style="list-style-type: none"> <li>1. Our partners are active and vocal supporters of the Soil CRC</li> <li>2. Enduring partnerships and collaborations have arisen from the Soil CRC</li> <li>3. New international partnerships and collaborations have been established, allowing for greater impact</li> <li>4. We have increased our resources, allowing us to deliver greater impact.</li> <li>5. We are widely known and recognised as a national leader in soil research and innovation</li> <li>6. Our Soil CRC community is engaged, outcomes focussed, supportive and committed to the CRC and future collaborations</li> <li>7. Our partners are actively engaged in maximising the legacy of the Soil CRC and its collaborations</li> </ol>	<ol style="list-style-type: none"> <li>1. Engage and communicate consistently and regularly with partners through multiple platforms, including face to face</li> <li>2. Undertake strategic business development activities to seek partnership and collaboration opportunities</li> <li>3. Use partner networks and other relevant mechanisms to seek international collaboration and delivery opportunities</li> <li>4. Actively engage in promotion of the value of soil, soil management, soil research and the Soil CRC at multiple fora, including through government submissions and networks</li> <li>5. Create the culture of community and inclusiveness, with regular opportunities for engagement by CRC Participants and external stakeholders</li> <li>6. Begin consultation and 'life after the Soil CRC' (i.e. post 2027)</li> </ol>

# OUR STRATEGIES

## STRATEGY 5. GOVERNANCE AND MANAGEMENT

We will pursue the highest standards of governance and management, including the development of capacity and capability, embracing diversity and equal opportunity. Our management systems will be fit for purpose, efficient and focussed on supporting the Soil CRC's goals.

Objectives	Outcomes	Actions
<ol style="list-style-type: none"> <li>1. Employ best practice governance standards, including Board and committee review, diversity and professional development</li> <li>2. Ensure best management practices employed in the Soil CRC office, including risk management, professional development, diversity and equal opportunity, succession planning and demonstration of values</li> <li>3. Ensure rigorous fiscal accountability</li> <li>4. Collate and evaluate evidence to demonstrate the value of Soil CRC investment to partners, stakeholders and funders</li> <li>5. Ensure the strategic direction of the Soil CRC is reviewed and revised as appropriate</li> </ol>	<ol style="list-style-type: none"> <li>1. The Board was actively engaged in setting the strategic directions and monitoring performance of the organisation</li> <li>2. Risks, including financial, were clearly identified and actively managed and minimised</li> <li>3. Resources were used efficiently, effectively and appropriately to maximise the impact of the Soil CRC</li> <li>4. Monitoring and evaluations efforts provided clear evidence of the value of the Soil CRC and the value to each Participant</li> <li>5. An independent review informed the development of a revised strategic plan to maximise impact and shift directions as needed for the remaining four years of the Soil CRC</li> </ol>	<ol style="list-style-type: none"> <li>1. Undertake annual reviews of Board and committee performance</li> <li>2. Actively manage risk through the risk register and the Audit and Risk Management Committee</li> <li>3. Develop an annual operational plan and Board-approved budget</li> <li>4. Develop, deliver and continuously review corporate communication, including branding, activity and outcomes</li> <li>5. Develop and implement a monitoring and evaluation plan to provide evidence of the Soil CRC's value</li> <li>6. Undertake an independent external review of the Soil CRC in Year 6 followed by a revised strategic plan for years 7–10 (2023–2027)</li> </ol>



# OUR PROGRAMS

## PROGRAM 1. INVESTING IN HIGH PERFORMANCE SOILS

Outputs	Outcomes	How outcomes will be achieved
<ol style="list-style-type: none"> <li>1. Guide for developing and implementing market-based instruments</li> <li>2. Interactive online tool to assess adoptability and feasibility of new soil technologies and policy</li> <li>3. Risk assessment of new soil management interventions</li> <li>4. Partnership model and resources to support innovation</li> </ol>	<ol style="list-style-type: none"> <li>1. Financial rewards for assured soil stewardship</li> <li>2. Increased adoption of sustainable soil management practices</li> <li>3. Improved soil management policy design</li> <li>4. Improved design and uptake of new soil management products and services</li> </ol>	<ol style="list-style-type: none"> <li>1. Understanding consumer (industry and broader) perspectives on soil stewardship</li> <li>2. Integrating approaches that encourage systemic soil management practice change</li> <li>3. Addressing constraints on soil research and management practice change</li> <li>4. Enabling more accessible and relevant knowledge creation</li> <li>5. Fostering innovation through capability building</li> </ol>

## PROGRAM 2. SOIL PERFORMANCE METRICS

Outputs	Outcomes	How outcomes will be achieved
<ol style="list-style-type: none"> <li>1. Key indicators of high performance soils</li> <li>2. Sensor networks for on-demand assessment of key soil indicators</li> <li>3. Intelligent analysis of 'big' data</li> <li>4. Mobile apps to deliver data for day-to-day soil management</li> </ol>	<ol style="list-style-type: none"> <li>1. Increased farm productivity and profitability resulting from improved soil management</li> <li>2. Improved resource use through mapping and monitoring of key soil indicators</li> <li>3. Optimised fertiliser inputs mitigating offsite environmental impacts</li> <li>4. Increased adoption of sustainable soil management practices</li> <li>5. Assurance of environmental credentials through use of sensor technologies</li> </ol>	<ol style="list-style-type: none"> <li>1. Developing agreed indicators of soil function and health</li> <li>2. More rapid, cost-effective and simple collection of the highest value soil data</li> <li>3. Deriving new, actionable and predictive insights from soil data</li> <li>4. Developing novel soil management technologies that meet farmer needs</li> </ol>

# OUR PROGRAMS

## PROGRAM 3. NEW PRODUCTS TO INCREASE FERTILITY AND PRODUCTION

Outputs	Outcomes	How outcomes will be achieved
<ol style="list-style-type: none"> <li>1. New, targeted and high performance fertiliser products</li> <li>2. New, targeted and low residual pesticide delivery systems</li> <li>3. Novel materials to address surface and subsurface soil constraints</li> <li>4. Effective delivery mechanisms for beneficial microorganisms</li> </ol>	<ol style="list-style-type: none"> <li>1. Increased farm productivity and profitability resulting from improved soil management</li> <li>2. Optimised fertiliser inputs mitigating offsite environmental impacts</li> <li>3. Better synchronised release of soil nutrients to match plant demand</li> <li>4. Increased capture and re-use of nutrients</li> <li>5. Soil constraints (e.g. subsoil acidity) mitigated using novel materials and application technologies</li> <li>6. Reduced agrichemical (e.g. herbicide) residues affecting soil and environmental health</li> <li>7. Increased microbial (e.g. rhizobium) inoculation efficiency in soil</li> </ol>	<ol style="list-style-type: none"> <li>1. Undertaking meta-analysis of the supply of waste streams in Australia</li> <li>2. Developing technologies to recover nutrients from waste streams</li> <li>3. Mapping and undertaking economic analysis of use of amendments to mitigate soil constraints</li> <li>4. Synthesising novel organic-based amendments to mitigate soil constraints</li> <li>5. Developing technologies for the target-zone placement of soil amendments</li> <li>6. Sourcing alternative substrates and media for effective delivery of microbial inoculation</li> </ol>

## PROGRAM 4. INTEGRATED AND PRECISION SOIL MANAGEMENT SOLUTIONS

Outputs	Outcomes	How outcomes will be achieved
<ol style="list-style-type: none"> <li>1. Novel plant-and systems-based soil re-engineering methods</li> <li>2. Novel physicochemical-based soil re-engineering methods</li> <li>3. Soil re-engineering decision support tools</li> </ol>	<ol style="list-style-type: none"> <li>1. Increased farm productivity and profitability resulting from better soil management</li> <li>2. Increased drought resilience</li> <li>3. More plant-based and management options to address complex and multiple soil constraints</li> <li>4. Maintained and enhanced soil function, focusing on rhizosphere processes</li> <li>5. Enhanced landscape-scale soil carbon storage</li> <li>6. Improved environmental outcomes from better soil management</li> <li>7. Management decisions simplified</li> </ol>	<ol style="list-style-type: none"> <li>1. A more integrated approach to managing complex, multiple soil constraints in a drier climate</li> <li>2. Better understanding of the rhizosphere and options for optimising its function</li> <li>3. Field trials across grower group networks to evaluate new practices and assessment of soil resilience</li> <li>4. Apply learnings from regenerative farming systems to broader soil management decisions</li> <li>5. Management decision tools evaluated by grower groups before wider adoption</li> </ol>

# SUPPORTING PLANS AND DOCUMENTS

The four-year strategic plan of the Soil CRC is supported by the following plans and documents:

Plan/document	Purpose
Commonwealth Funding Agreement	Overarching agreement between Commonwealth of Australia and the Soil CRC to deliver outputs and milestones
CRC for High Performance Soils Limited Constitution	Constitution of the CRC for High Performance Soils Limited company defining the rules of the company
Major Partners Agreement	A multilateral agreement between the Soil CRC and the 11 largest Participants (Major Partners) in the CRC listing agreed obligations of all parties
Partner Agreements	A series of bilateral agreements between the Soil CRC and each of the 11 medium-sized Participants (Partners) in the CRC listing obligations of each party
Associate Agreements	A series of bilateral agreements between the Soil CRC and each of the 18 smaller-sized Participants (Associates) in the CRC listing obligations of each party
Annual operational plan	An annual plan (financial year) that gives effect to the Soil CRC strategic plan
Program investment process	Overarching process for how Soil CRC cash resources are allocated to programs and projects
Guidelines for proposals	A call for project proposals that identifies the immediate priorities for investment as part of the annual investment process
Soil CRC policies and procedures	A collection of policies and procedures that inform how the Soil CRC operates
Risk register	A register of risks, likely consequences and identified mitigation and management actions, reviewed by the Audit and Risk Management Committee each quarter
Intellectual property and commercialisation management plan	A plan for how the Soil CRC manages intellectual property and manages the use of commercially valuable intellectual property
Communication strategy	A strategy for how the internal and external communication activities support the Soil CRC strategic plan
Monitoring and evaluation plan	A plan for monitoring and evaluating the impacts and benefits of the Soil CRC





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