Research Translation programs
Instruction Guide on how to complete project activities and outcomes

1. PURPOSE OF THIS APPLICANT GUIDE

The purpose of this Applicant Guide is to assist researchers, university research offices and industry organisations to formulate comprehensive project plans (activities and outcomes) as part of funding applications that align with the relevant published program guidelines.

The department has worked closely with applicants and/or university research offices over recent funding rounds to improve the design, clarity and relevance of the project activities and outcomes of funded projects. Going forward, the department's expectation is that applicants will be more rigorous in ensuring that comprehensive project plans are compiled at time of application that adhere to the program's requirements regarding program activities and outcomes. Assessors will also be more stringent on assessing and scoring applications in this regard.

Programs offered by the department in the research/industry collaboration area require a strong focus on the translation of research outcomes into practical application with the industry partners, and the demonstrated benefit and impact of the project for industry partners and/or the broader industry. Applicant project plans therefore need to be able to clearly outline the activities to be undertaken AND the outcomes expected from undertaking those activities AND the impact/difference achieved as a result.

The most effective means of articulating translation of research is through activities and outcomes which are tangible and quantifiable. This will assist assessors to identify more easily what the research aims to achieve by the end of the project AND how the successful impact of the project will be measured.

The aim is to produce a more efficient and effective reporting process for grant recipients and the department, and to reduce the workload on all parties during the on-boarding process for successful recipients. For ease of reference, we have used a three-year project timeframe in the examples below.

2. APPROACH TO COMPLETING THE PROJECT PLAN

a) Milestone Activities

Set out the key activities which are planned to be undertaken.
4 – 5 key activities should be listed for each milestone reporting period (each twelve month period)

Years 1 and 2 of the project

- Focus on the research aspects of the project. For example – data collection, data analysis, development of tool and models, testing, trialling, and validation.
- The easiest approach is to use action words when structuring the individual activities, for example: test, synthesise, validate, design, develop, investigate.
- By the end of year 2 all planned research-related activities should be completed.

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

Year 3 of the project

- No research activities should be undertaken in the final year of the project.
- Focus on the translation of the research findings for practical application by the industry project partners.
- The activities in Year 3 should clearly demonstrate:
  (a) How the researcher is working with the industry partners to adopt/implement the research findings, and
  (b) How the impact and/or benefit of the research will be expanded to or applied by the broader industry sector.

b) Milestone Outcomes

Detail a corresponding outcome for each listed activity. If five activities are listed, an outcomes for each of those activities should be documented.
The outcome is what is expected to have been achieved by undertaking the activity or what is the aim of doing the activity relevant to the project. Ask why is this activity being undertaken and what it is that is hoped to be achieved as a result?

An outcome is not a simple restatement of the activity saying that the activity has been completed.

Years 1 and 2 of the project

- The outcomes of the research activities should clearly state what result is expected from completing an activity.
- Quantifiable and measurable outcomes demonstrate the intent of the research activity.
- If measurable outcomes are difficult for identified research activities, then the outcomes, at a minimum, should be clear on what will be achieved, the importance and relevance of that finding.

Year 3 of the project

- The outcomes in Year 3 are most important because they demonstrate the difference your project is expected to achieve.
- The outcomes should be clear statements on what will be delivered by completing the activity AND how the impact of that change will be measured.
- Outcomes in Year 3 must be quantifiable and measurable, demonstrating the impact on the industry or the changes/improvements made as a result of the project.
- The outcomes in Year 3 should answer the following questions:
  (a) What is the tangible outcome from the project?
  (b) Do the outcomes align with the project description provided in the application form?
  (c) How is the industry project partner/s adopting/implementing the project outcome in its business/industry?
  (d) What difference has the project made to the industry/industry partner compared to the time prior to commencing the project?
  (e) Have quantifiable measures been included that demonstrate impact on the industry/industry partners?

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

3. EXAMPLES

Following are examples of acceptable milestone activities and outcomes to assist applicants compile a comprehensive project plan in accordance with program expectations. The examples are intended to demonstrate how impact of undertaking the activities can be addressed and how to incorporate quantifiable measures that demonstrate impact of your project.

The examples cover a range of sectors and project types and are provided as a guide only.

PROJECT ACTIVITIES AND OUTCOMES – YEARS 1 AND 2 – RESEARCH FOCUSED

MILESTONE ACTIVITY	MILESTONE OUTCOME
Example 1	
Complete two field trials comparing the efficacy of new Product X against industry standard practices for controlling grasshoppers in legume crop on commercial farms at the Project Site.	Analysis of data collated from field trials undertaken for comparison against industry standard to validate: a) an increase of a minimum of 25% yield, b) a reduction of 30% in pesticide use, and c) at least a 50% efficiency gain in production cost.

Example 2	
Undertake testing of the new XX technology at the project partner's facility to evaluate performance, functionality, and effectiveness of the technology.	Evaluation results to: a) support increased performance of 30%, b) demonstrated cost reduction of 25% and c) increased operational capacity in a commercial setting by 50%.

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

Example 3	
Deliver new crop plantlets to the partner organisation's site with subsequent planting occurring at selected farm locations to demonstrate feasibility in actual environmental and growing conditions.	1,000 plantlets planted in field conditions with: a) a minimum 80% plantlet survival rate, and b) demonstrated reduction of between 40 – 60% to produced cloned plantlets at partner organisation's facility in comparison to current imported varieties.

Example 4	
Fit genomic prediction models and determine favourable chromosome segments associated with end-use quality and heat-related traits for crops.	Genomic prediction results calculating individual marker effects for target traits and genomic estimated breeding values for crop lines to validate at least >50% prediction accuracy improvement; depending on the genomic data, with at least >1000 favourable chromosome segments for heat-adaptive and grain quality traits identified.
Select parents using genetic algorithm	Crop lines selected using genetic algorithm showing >50% more genetic diversity.
Design optimum crossing strategy and investigate breeding schemes based on stacking chromosome segments	Computer simulation completed to design optimum crossing strategy based on stacking high-value chromosome segments demonstrated with enhanced genetic gain by 1-2 fold.

Example 5	
Conduct a comprehensive characterisation of at least one Queensland mine tailing.	A database of tailing’s physical and chemical properties which will help in understanding the properties of the Queensland mine tailings.
Review test apparatus and procedures for leaching operation.	A dataset of process parameters for leaching technique for a new and novel feed type. It is expected to recover up to 80% of the critical metal values from the leach solution.

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

Review and establish appropriate solid liquid physical separation (filtration/flotation/hydrocyclone).	An appropriate and efficient physical separation technique with the aim of up to 90% efficiency.
Conduct experiments for critical metal recovery using different approaches.	A record of different process outcomes which will be compared with each other to optimise the final process circuit with the aim of up to 80% critical metal recovery.
Characterise chemical element product and carry out comparative study on different techniques such as melting, burning, vaporisation or organic removal to establish efficient chemical element removal technique from the slurry material.	A comparative data showing chemical element removal efficiency based on the experimental results. It is expected to achieve up to 70% of removal efficiency from the residue slurry.
Carry out experiments using different approaches to recover precious metals such as gold and silver from the downstream processing of the leaching operation.	A comparative data based on the results from different recovery approaches. It is expected to recover up to 50% of the precious metal value from the residue stream.
Conduct a scoping study to recover and purify the chemical element product.	Recovery opportunities for up to 50% of saleable chemical element is expected to be established.
Undertake mass and energy balancing of the full process (from leaching through to metal recovery) to track impurity elements and assess environmental impact of the process.	Mass and energy balance aiming for up to 90% efficiency and optimisation of the process circuit.
Conduct focused studies on mitigation of environmental impact to develop a 'green' process in terms of water balance, carbon emissions and process waste management.	A report detailing 100% of the environment impact of the process that will aid in more rapid adoption of the technology.
Evaluate the permeation of (i) carbon dioxide and nitrogen, and (ii) carbon dioxide and methane through the nanocomposite membranes via macroscale simulation, incorporating the most promising filler and polymer materials identified in year 1.	Completion of the real-scale nanocomposite membrane which demonstrated the separation of (i) carbon dioxide and nitrogen, and (ii) carbon dioxide and methane in simulated environment/testing with separation efficiencies of at least 60% in the greenhouse gases recovered
Enhance the nanocomposite membrane separation efficiency by tailoring the adsorbent particle size, adsorbent content, nanocomposite thickness, and membrane configuration (flat-sheet and/or hollow-fibre) via macroscale simulation.	Identification of the nanocomposite membrane design properties demonstrating separation efficiencies of at least 60% in the macroscale simulations

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

PROJECT ACTIVITIES AND OUTCOMES – YEAR 3 – TRANSLATION FOCUS

MILESTONE ACTIVITIES	MILESTONE OUTCOMES
Example 1	
Platform is live and operational across three sites; Program modules finalised for release to the partner organisation's regional teams and stakeholders.	Demonstrated 50% decrease in water usage and 25% increase in yield for broadacre farmers who adopted the platform or used the program modules to improve productivity and/or performance.
Apply for a patent for the technology, in partnership with the partner organisation.	Patent application lodged reaching 'In-progress' classification.
Provide upskilling and training for partner organisation staff in relation to machine learning and deep learning to enable effective technology transfer to enable in-house maintenance of developed products.	Evidence obtained from integration that supports a reduction of 3% in costs and energy consumption incurred during the production stages in terms of tonnes/Kw or equivalent of $X in cost savings per site.
Testing and performance evaluation of developed solutions and hardware to identify modification and refinement as required.	Adoption of the measurement system has achieved a 3% to 5% increase in production across the sites where the system has been implemented.
Conduct discussions with partner organisation to determine commercialisation opportunities and mapping pathway.	Agreed commercialisation pathway and implementation plan delivered.
Workshops and demonstrations delivered to other Queensland based mining companies to promote benefits of the platform	Workshops delivered to 8 mining companies with 50% of those commencing formal discussions to adopt the platform.

Research Translation programs
Instruction Guide on how to complete project activities and outcomes

Example 2	
Conduct workshops to assist partner organisation staff design, operate and maintain energy device, energy storage systems, and use the remote monitoring and performance evaluation tools.	80% of partner organisation staff skilled in the operation and maintenance of the energy device, the energy storage systems, and competent use of remote monitoring and performance evaluation tools.
Support commercial installation by the partner organisation of the energy device and monitor energy storage using the new energy forecasting tool at the Project site.	Partner organisation has successfully installed a fully operational energy device and energy storage unit at Project site. Project site installation achieved up to 20% reduction in CAPEX through delivered renewable fraction of 70%.
Discussions with partner organisation to reach agreement on IP ownership.	Terms of IP ownership agreed, and IP Lawyers engaged to draft IP Agreement.

Example 3	
At the last stage of population development, collect samples from the newly developed crop lines and send for genotyping; and deliver the newly developed populations.	Genotypic data of the newly developed lines that will be used in future genomic evaluations; approx. 1000 newly developed populations delivered to Partner organisation. The newly developed lines will add value as potential candidates for new varieties or more product options with enhanced levels of heat resilience and better-quality traits.
Complete haplotype catalogue for crops	Crop haplotype catalogue (100% complete) delivered to partner organisations serves as important resource providing detailed information on the current genomic landscape of their breeding materials, that will help accelerate the discovery of new genetic factors critical for grain quality and heat-adaptive improvement.

Demonstrate pipeline of AI-guided strategies to partner organisations	The AI-guided breeding strategy integrated within partner organisations showcases 2-fold accelerated breeding efficiency for crop genetic improvement. This is accompanied with industry partner's increased technical capacity, fully equipped with transformative breeding toolkit to implement AI-driven breeding operations that can be translated to other crop or trait genetic improvement.

Example 4	
Scoping for a pilot plant operation with a continuous process circuit combining the developed technology in co-operation with both the research sites.	Pilot test demonstration of up to 60% improvement of the leaching technique of tailing feed and metal values extraction from the tailings, at processing volumes of 100 kilogram in the first test run and with 80% scale up in second test run.
Train and educate the staff members for the successful plant operation.	At least 2 workshops delivered to train at least 80% of the partner's technical staff involved in the production process to eliminate the knowledge gap.

Example 5	
Liaise with the industry partner to monitor the abrasion and fracture toughness to determine whether there is a performance variation between the industrially cast versus laboratory cast alloys.	Specifications for production procedures tailored to the new alloy(s). Abrasion resistance improvements by at least 10% compared with benchmark alloys.
Industry Partner Pty Ltd to conduct an analysis of the project data from the viewpoint of manufacturability and market demands. Further intensive discussions with the researcher regarding the need for necessary late modifications to alloy chemistry and production parameters for commercial production commissioning	Industry Partner Pty Ltd produce analysis report confirming manufacturing and market opportunities for the new alloys. Report to identify lower GHG emissions (minimum target of 10% savings) compared to currently available alloys