

# Project Application and Selection Guidelines

## 1. Objectives of the IMCRC

- 1.1. The IMCRC has a mission to catalyse the transformation of Australian manufacturing through collaborative investment, research impact and innovation. The IMCRC is led by industry to develop innovative new products and services in Australia's manufacturing sector. It operates in the context of the Australian Government's Cooperative Research Centre (CRC) program to improve the competitiveness, productivity and sustainability of Australian manufacturing firms, and to drive digital and business model transformation. The IMCRC will deliver outcomes in line with Commonwealth priorities in key growth sectors and in science, research and innovation, encourage and enable small and medium enterprise (SME) participation in collaborative research, and fund projects to tackle industry specific problems through research partnerships between industry entities and research organisations.

The IMCRC currently has four research themes which will continue to evolve over time to align with new innovations and industry demand:

- Theme 1 **Additive Manufacturing Processes.** Also known as 3D printing, this is the fastest-growing sector of manufacturing globally, due to the many benefits it offers companies in terms of new product development, time to market, reduced waste and product cost. Additive manufacturing allows for the design and production of complete complex products and associated advanced business models such as customer-led design processes and just-in-time production.
- Theme **Automated and Assistive Technologies.** Currently available industrial automation lacks flexibility because it is designed for high-volume, low-variation processes and is economically unviable for many SMEs. Assistive robots work collaboratively with humans and each other, to improve sensing, awareness and decision-making capabilities that allow full autonomy and self-learning behaviour.
- Theme 3 **High value Product Development** - directed towards the development of new diagnostic tools, implantable materials and other technologies and utilise the new development paradigms enabled by digital manufacturing. These will enable Australian manufacturers to rapidly develop, produce, supply and support new products and technologies into international markets and supply chains
- Theme 4 **Industrial Transformation Program** focused on improving technology uptake and embedding innovative practices in the manufacturing sector. This will be addressed through research and education activities focused on how the agility, competitiveness and resilience of companies, particularly SMEs, can be transformed through application of advanced manufacturing technologies including digital technologies through Industry 4.0, innovative business models and stronger manufacturing leadership. The scale of engagement with industry through multiple channels will result in significant breadth of research and implementation of manufacturing technologies and innovation processes.

## 2. Operating Principles and Funding Guidelines

2.1. The management framework and budget structures for IMCRC projects are summarised in a set of key operating principles, as set out below. The following principles are derived from the provisions of the Commonwealth Agreement, Participants Agreement and the IMCRC:

- 2.1.1. Industry participants define the problem which will enable the research participants to devise a collaborative research plan and budget that will deliver an effective solution and appropriate outcomes within the industry participants' timeframe.
- 2.1.2. The IMCRC under the Commonwealth Agreement has been granted a total of \$40 million from the Commonwealth over a seven-year term from 2015 to 2022. Of this, \$30 million is allocated to Industry led research Projects. With matched funding from the Commonwealth for industry projects, this results in \$60 million of investment in research through Australian research organisations.
- 2.1.3. In addition, under the Commonwealth Agreement, the Research Organisations contribute cash to the IMCRC, and with expectations that this is at least in the order of \$1 for every \$2 and up to a maximum of \$4 of combined industry and Commonwealth cash over the term of the IMCRC. Research Organisation cash contributions will be utilised to operate the Centre and will provide Research Organisations through approved projects with a minimum of 2:1 return and up to a maximum of 4:1 return. Where a Research Organisation exceeds this maximum, they will be required to make additional cash contributions to IMCRC in order to maintain a maximum return of 4:1.
- 2.1.4. Included within the IMCRC program is a requirement to fund PhD students through Industry led Projects, as well as other higher education outcomes. Funding for the Industry led PhD students is derived from the cash contributions to the Industry led Projects, which is funded equally between Industry and IMCRC cash contributions.
- 2.1.5. An Industry participant to a Project could be an Essential Participant, Other Participant or a Project Participant.
- 2.1.6. An Essential Participant is one that contributes a minimum of \$500,000 cash during the term of the IMCRC. An Other Participant is one that also contributes cash or in-kind during the term of the IMCRC, however the value of this may be less than \$500,000.
- 2.1.7. IMCRC Valuation Principles:
  - Industry led Projects are co-funded by the Commonwealth Government through the IMCRC on a dollar for dollar basis, i.e. \$1 of Commonwealth cash for every \$1 of industry cash invested in the project.
  - Cash contributions provided through a Portal Organisation (through membership of Australian Industry Group or prefabAUS) may be considered as Industry cash.
  - Research organisations also contribute cash.
  - The maximum cash Contribution profile of a single new Project is \$6 million (\$3 million cash Contribution from Industry matched with \$3 million cash IMCRC Contribution) over the term of the IMCRC.
  - The total value of a Project will be greater than the total cash value of the Project as it will include cash and in-kind Contributions.

- All Projects are required to have both staff and non-staff in-kind contributions.
- In-kind Contributions are not matched with Commonwealth funding.
- Staff contributions are the provision of employees of a Project Participant (PP) or a consultant hired by the PP to work on a Project or otherwise for the benefit of the Centre.
- Salary cost of a staff contribution is the direct base salary, or remuneration cost to the PP of providing the Staff Contribution.
- The deemed monetary value of staff contributions will be salary cost to the relevant PP of providing the staff contribution plus 35% for on-costs (allowing for superannuation and other employment costs). The amount of the on-cost can be reviewed annually.
- The value of non-staff in-kind Contributions is determined by the Participant and must be realistic and justifiable and agreed by IMCRC.
- The value of facilities and equipment (refer point above) should be identified separately from the cost of employees or other personnel.
- Capital expenditure, if valued, can only be considered as an in-kind Contribution.

#### 2.1.8. Project funding criteria and guidelines

- Any funding is subject to sufficient funding being made available to the IMCRC by the Commonwealth, together with a successfully executed Project Agreement with the relevant Project participants. No funding is intended to be provided for costs incurred prior to the commencement date as defined in the Project Agreement, unless specifically agreed.
- IMCRC welcomes project applications that are ideally in the range of \$250,000 to \$3 million total cash contribution from Industry and eligible for matching with IMCRC cash contributions. By exception projects may be considered between \$150,000 and \$250,000, where these projects have a strong fit to the IMCRC strategy and project selection criteria.
- The term of any IMCRC project should ideally be more than 2 years and less than 4.5 years in duration (noting that all projects need to be completed by 31 March 2022, with a targeted minimum yearly industry cash contribution budget of \$100,000 per annum).
- Ideally between 75% and 100% of the total project Research effort should be conducted by an Australian university or CSIRO (Research Organisation), i.e. external to the Industry participant(s). Projects will be ineligible if less than 50% of the total project research effort is conducted by Research Organisation (s).
- Research Organisations who are not Essential Participants or Other Participants in the IMCRC will be expected to contribute cash to ideally match the IMCRC cash contribution per project (i.e. \$1 of Research Organisation cash for every \$1 of Commonwealth cash invested in the project).
- As detailed in the Commonwealth Agreement (section 10.2), the IMCRC funding is not to be used or spent:
  - a) *for Activities other than the Commonwealth Funded Activities;*
  - b) *for capital works or for the purchase, construction, renovation or extension of buildings or facilities;*

- c) *for any activities for which the CRC has previously been funded, or is currently being funded by the Australian Government or a State or Territory government either directly or indirectly through any other funding scheme;*
- d) *to reimburse an Essential Participant or Other Participant for In-Kind Contributions;*
- e) *to pay an Essential Participant or Other Participant for the indirect costs of research in relation to CRC Programme funded staff located in their organisation; or*
- f) *for the indirect support costs of research conducted overseas.*
- IMCRC will not provide any funding for Industry participant research costs, which means that all Industry participant research costs are effectively in-kind contributions and are not matched by IMCRC funding.
- IMCRC will provide matched Industry participant funding for Research Organisation costs where these are directly related and relevant to the research project.
- Eligible Research Organisation costs may include:
  - Research employee salaries (including the stipends for PhD students and any internships) plus up to 35% for on-costs (allowing for superannuation and other employment costs) and plus, subject to agreement, a maximum of a further 65% for facility investment recovery costs, which requires detail and justification from the Research Organisation. The maximum level of on-cost is therefore an additional 100% to the base salary (or 2x base salary) cost. Eligible Research Organisation's employee salaries must be paid through the Research Organisation payroll.
  - Operating costs directly related to, or dedicated to, the research project may also be eligible, including for example the cost for consumables, materials, prototypes, software licenses, rental or hire of dedicated tools or systems, energy and utilities, etc. Costs for directly related and relevant project management, travel, marketing, communication may also be eligible. Operating costs ideally should be less than one third of total eligible costs and in any case cannot be greater than the total cost of salaries (including salary on costs).
  - Costs for intellectual property protection and utilisation / commercialisation planning are not considered eligible for IMCRC funding and are therefore considered as (non staff) Other in-kind costs.
  - Research Organisation costs that are ineligible for IMCRC funding (however may be considered as in kind contributions) include any cost for buildings and facilities, or any purchase cost of capital equipment or production tooling. IMCRC will also not provide funding for governance support and costs that are not directly involved in the research project (such as wider management, Directors, etc).
  - Research Organisations will contribute staff in-kind that at least matches 50% of the total cash expenditure on each Project. Senior staff / Key Researcher involvement in Project must be in-kind contributions.

- The following table summarises costs that are eligible for IMCRC funding:

<b>Description</b>	<b>Industry Participant(s)</b>	<b>Research Organisation(s)</b>
Cost of employee salaries plus agreed on costs (including PhD students and internships) where directly related and relevant to research project(s) and undertaking research activities	No Only considered as Staff In-Kind	Yes
Operating costs including for example the cost for consumables, materials, prototypes, prototype tooling, software licenses, rental or hire of dedicated tools or systems, energy and utilities	No Only considered as Other In-Kind	Yes
Operating and 'out of pocket' costs for directly related and relevant Project Management	May be considered Otherwise as Other In-Kind	Yes
Operating and 'out of pocket' costs for directly related and relevant travel, marketing, communications, etc	May be considered Otherwise as Other In-Kind	Yes
Costs for initial intellectual property protection and utilisation / commercialisation planning	No Only considered as Other In-Kind	No Only considered as Other In-Kind
Cost for buildings and facilities, or any purchase cost of capital equipment or production tooling	No Only considered as Other In-Kind	No Only considered as Other In-Kind
Costs for Management / Senior staff / Key Researcher involvement in Project	No Only considered as Staff In-Kind	No Only considered as Staff In-Kind

- 2.2. The IMCRC Executive maintains oversight of the delivery of agreed milestones across the whole investment portfolio. Research projects are carried out under the terms of individual Project Agreements and entitlements to new project intellectual property are defined in the Project Agreements.
- 2.3. Each project has an accountable Project Leader (researcher) and a demanding customer (industry). The key accountability of the industry participants is definition and execution of the overall Project plan and the Utilisation plan, and overall responsibility for the management and outcomes of the project.
- 2.4. All projects are structured around a series of defined milestones - which where possible are aligned with Manufacturing Readiness Levels (MRLs), and participants are paid upon acceptance of a report verifying completion of milestones. Quarterly progress reports must be signed off by the Project Leader, Chair of the Project Management Committee (who is an industry representative) and IMCRC Executive.
- 2.5. IMCRC project funds will enable its Industry and research participants to co-invest in highly valued and collaborative partnerships, where identified gaps exist, that both strengthen Australia's manufacturing capabilities, positively impact SMEs, and



importantly, translate them to marketable outcomes and enable access to global supply chains.

- 2.6. Industry project participants are invoiced (on a frequency to be agreed and determined by the nature and duration of the research) and must pay IMCRC in advance of cost being incurred for research activities.
- 2.7. Research organisations are paid quarterly in arrears, in line with terms of the Project Agreement (including approval of the quarterly report).

### **3. Purpose of the Project Plan**

- 3.1. The Project Plan provides a framework for the planning, management and execution of a coordinated suite of activities whose progress can be measured against a set of outcome-focused and time-bound milestones. In developing the Project Plan, all project participants need to ensure they are actively involved in the planning and delivery of the project, aligned with the allocation of resources and agreed responsibilities each has committed for the duration of the project.
- 3.2. To initiate the project selection process, a Project Plan application must be completed and submitted by the lead Industry participant using the template which accompanies these guidelines. The template comprises sections requiring information consistent with details that are set out in the Project Agreement and aligned with the IMCRC Project criteria. As an initial Expression of Interest (EOI) the Project Plan could be used to provide early, short form / bullet point answers to the questions to gauge potential eligibility.
- 3.3. In summary, the Project Plan must clearly articulate Industry demand for and technology readiness of the project, outline how it will contribute to the additional goals of knowledge diffusion, business innovation and Industry transformation, and provide sound justification for the investment based on the estimated costs, risks and ability of the project partners to deliver tangible benefits to manufacturing industry, to other SMEs and the wider economy.
- 3.4. The Project Plan also needs to outline how the activities are underpinned by a clear Project management and implementation strategy which will be overseen by a Project Management Committee.

### **4. What the Project Plan should contain**

- 4.1. The Project Plan application template contains the following sections:
  1. Project Details
  2. Industry Lead Details
  3. Other Specified Personnel
  4. Summary Financial Details
  5. Business Case
  6. Project Timing (Gantt Chart)
  7. Risk Analysis
  8. Background Intellectual Property
  9. Confidential Information
  10. Milestones
  11. Specified Personnel
  12. Governance
  13. Other Cooperative Research Centre Participation and Funding
  14. Other Sources of Government funding
  15. Additional Financial Information for the Industry Lead Participant
  16. Checklist for All Participants

- 4.2. Information to be provided within section 5 should not exceed 10 pages. No page limit applies to any other section of the Project Plan.
- 4.3. The budget tables (Part B, item 13) will need to be completed in a separate Excel spreadsheet, a link to which is embedded in the Project Plan template.
- 4.4. A senior officer of the lead industry organisation must authorise the Project Plan prior to its submission to IMCRC. An authorised officer would typically be a company CEO or CFO for example.

## 5. Project Selection Criteria

- 5.1. Each Project Plan will be assessed against defined selection criteria which are set out in **Appendix A** to these Guidelines.
- 5.2. The IMCRC will not fund early-stage research projects that would ordinarily be applicable for support by more relevant government grant programs (e.g ARC). The IMCRC will only consider later-stage industry-led projects with higher Manufacturing Readiness Levels (MRLs), preferably between 4 and 7. For guidance, the definitions of MRLs used by the IMCRC are outlined in **Appendix B** to these Guidelines.
- 5.3. Submitted Project Plans that do not meet all selection criteria will be returned by the IMCRC for revision prior to assessment by the IMCRC Innovation Investment Committee (IIC), a Committee of the IMCRC Board.
- 5.4. Following a review of all Project Plans by the IIC, IMCRC Management will prepare a report for the Board with recommendations in regard to funding support.
- 5.5. The IIC will assess Project Plan submissions on a weighted scoring basis against the IMCRC criteria, with the Project Plan template detailing those questions that relate to criteria that are most essential, essential or desirable. On the basis of the score and fit to the IMCRC criteria, the completeness of the submission, the level of funding and other considerations as the IIC deems relevant, the IIC will determine how the application will proceed.
- 5.6. Further details of the project selection, management and reporting processes which will be used are set out in **Appendix C** to these Guidelines.
- 5.7. The IIC has delegated authority from the IMCRC Board to review and approve projects in line with Delegations detailed in **Appendix D** to these Guidelines.

## 6. Project Management Roles and Structure

- 6.1. The **Project Management Committee (PMC)** for the project will be responsible for project governance at the researcher and project team level, and will monitor the research progress against timelines and budgets.
  - 6.2.1. The PMC will typically consist of:
    - a Chair who is an industry representative, not a research participant;
    - the Project Leader;
    - a member of the research team as determined by the Project Leader;
    - a representative of each Project Agreement organisation; and
    - other relevant stakeholders and end users as requested by the IMCRC Executive.
  - 6.2.2. PMC meetings are to be held monthly either in person or via teleconference or video call, and can be rolled into the research institute's weekly meeting.

- 6.2.3. The IMCRC CEO can convene a meeting of a PMC at any time for the purposes of obtaining a report and to confirm the status of the project.
- 6.2. The **Project Leader** will be responsible for the day to day project management within the research institutes. The Project Leader is expected to be the project champion by leading the project team and communicating with all participants frequently, clearly and consistently. The Project Leader will work collaboratively with the PMC and report to the IMCRC CEO through the IMCRC Manufacturing Innovation Manager (MIM).
- 6.3. In addition to participating in the PMC, the IMCRC **Manufacturing Innovation Manager (MIM)** and **Project Research Officers** will administrate the project in alignment with the Project Management Guidelines. This will include reviewing all reporting, tracking of milestones and issues/risk registers, annual reporting to the Commonwealth, and coordination of PMC meetings
- 6.4. The structure for project management, including schedules for reporting, reporting tools and responsibilities of the project teams and leaders is detailed in the **IMCRC Project Management Guidelines** document. This document is available upon request from IMCRC, and be shared with participants once a Project Plan application has been approved by the IIC or Board and work commences on the formal Project Agreement.

## 7. Project Agreement

- 7.1. Project participants will be required to enter into a formal and legally binding Project Agreement with IMCRC. The agreement will cover items such as payment schedules, project management and risk management requirements, IP management and utilisation, performance monitoring, reporting format, auditing requirements including record keeping, insurances and indemnities, and will include the (non-negotiable) General Terms and Conditions.
- 7.2. Several schedules will be included within or appended to the Project Agreement including:
  - Commencement Date
  - Special terms
  - Valuation Principles
  - Final Reporting Date
  - Insurance Obligations
  - Project Management Committee terms of reference
  - Intellectual Property arrangements and Utilisation
  - Project Plan (project outcomes, milestones, budget, risk management strategy, etc)
  - Milestones and reporting format
  - Financial reporting format
  - Approved Utilisation Plan
  - Template Collaboration Agreement



## APPENDIX A

### IMCRC Project selection criteria

Selection Criteria	Indicators
<b>Why, What, and How</b>	1. Project should demonstrate that a specific industry problem (s) can be addressed, or significant opportunity created, through high quality research, and should fit in with one of IMCRC's research themes, in line with Commonwealth milestones.
	2. A plan for transfer of knowledge through close collaboration between research and industry partner should be developed.
	3. To ensure that IMCRC funding has a benefit not only to all project partners, but also a positive impact on the wider manufacturing industry, the project should ideally have outcomes that can be readily commercialised/utilized by the end of project period, or through a feasible commercialisation plan.
<b>Project Benefits</b>	1. Apart from high quality research, the Industry lead should aim to utilise IMCRC funding in developing positive business changes. For example, discover or develop opportunities for industry diversification to access new markets; new product or process development; new business models; service extension or improvement; value chain creation; local supplier development; global supply chain access; net export growth; collaboration and industry SME involvement etc.
	2. Prior background research should be performed to ensure the project is unique and is not currently in development. If there are similar projects, application should also state what makes this project more competitive.
	3. Global organisations must demonstrate how the local Australian project will be prioritised with outcomes delivering local benefit.
<b>Markets and Competition</b>	1. Industry partner should have performed prior research on competition (whether it be within the same or different industries, or local/global competitors.)
	2. A plan to access or create new markets should be developed, and potential barriers should be acknowledged and a plan to overcome barriers developed.

<b>Fit with IMCRC objectives</b>	1. A plan to access global markets should be developed (e.g. creation of export opportunities). If industry partner is unable to access these markets, potential collaborators could be sought to gain access.
	2. Creation of local and broader manufacturing value-add outcomes and industry transformation is a key objective of IMCRC. Project should seek to provide opportunities for value chain deepening and development of Australian suppliers.
	3. Project should aim to incorporate business innovation (e.g. seek new opportunities for further value capture through bundling of additional service offerings), and introducing industry 4.0 concepts into business model. If industry partner does not have digital transformation plan in place, assistance can be provided by IMCRC or collaboration sought through a research partner.
	4. Potential strategies could include Living Laboratories, Industry Demonstration days, workshops etc. Future collaborations could be found through such communication strategies.
<b>Commercialisation</b>	1. Industry partner should have a plan as to how final product will be commercialised, and what type of business risks are involved.
	2. Outline key technical and business risks, including any anticipated cash flow issues associated with the project, and how these risks will be identified and managed.
	3. Return of investment should also be estimated prior to project start to ensure that research will be financially beneficial to industry partner.
<b>Personnel</b>	1. Project application should demonstrate that it is Industry-lead, and that it has support from an authorized officer of the Industry Partner.
	2. It should be shown that the specific experience and capabilities of the research partner is the best fit for the industry partner for this particular project.
<b>Intellectual property</b>	1. IP can be in the formal sense e.g. patents, and also new knowledge that is relevant and commercially valuable, e.g. methods, procedures, standards etc.

	<p>2. Background and project IP arrangements should be communicated between all research partners prior to project application. IMCRC encourages that IP should be owned by the entity that is best placed to enable commercialisation opportunities.</p>
	<p>3. Legal office / Research office / Tech transfer office / similar entities should also be consulted and advice sought so as not to delay project start date should project application be successful.</p>

## APPENDIX B

### Definitions of Manufacturing Readiness Levels (MRLs)

Manufacturing Readiness Level (MRL) is a measure developed by the United States Department of Defense (DOD) to assess the maturity of manufacturing readiness, similar to how Technology Readiness Levels (TRL) are used for technology readiness. The intent was to create a measurement scale that would serve the same purpose for manufacturing readiness as TRLs serve for technology readiness – to provide a common metric and vocabulary for assessing and discussing manufacturing maturity, risk and readiness. They can be used in general industry assessments, or for more specific applications in assessing capabilities of organisations, possible suppliers, etc.

MRLs are quantitative measures used to assess the maturity of a given technology, component or system from a manufacturing perspective. They are used to provide decision makers at all levels with a common understanding of the relative maturity and potential risks associated with manufacturing technologies, products, and processes being considered. Manufacturing risk identification and management should begin at the earliest stages of technology development, and continue vigorously throughout each stage of a program's life-cycles.

MRLs were designed with a numbering system to be roughly congruent with comparable levels of TRLs for synergy and ease of understanding and use

MRLs provide a common language and standard, for example, in:

- Assessing the manufacturing maturity of a technology, product, or manufacturing process
- Understanding the level of manufacturing risk to produce a system or transitioning a technology into a system
- Integration of manufacturing into the acquisition process and milestone decisions
- Establishing the agenda for manufacturing risk management within existing Systems Engineering processes and technical reviews
- Achieving manufacturing maturity at critical acquisition decision points
- Pinpointing potential risk areas through independent Manufacturing Readiness Assessments (MRAs)

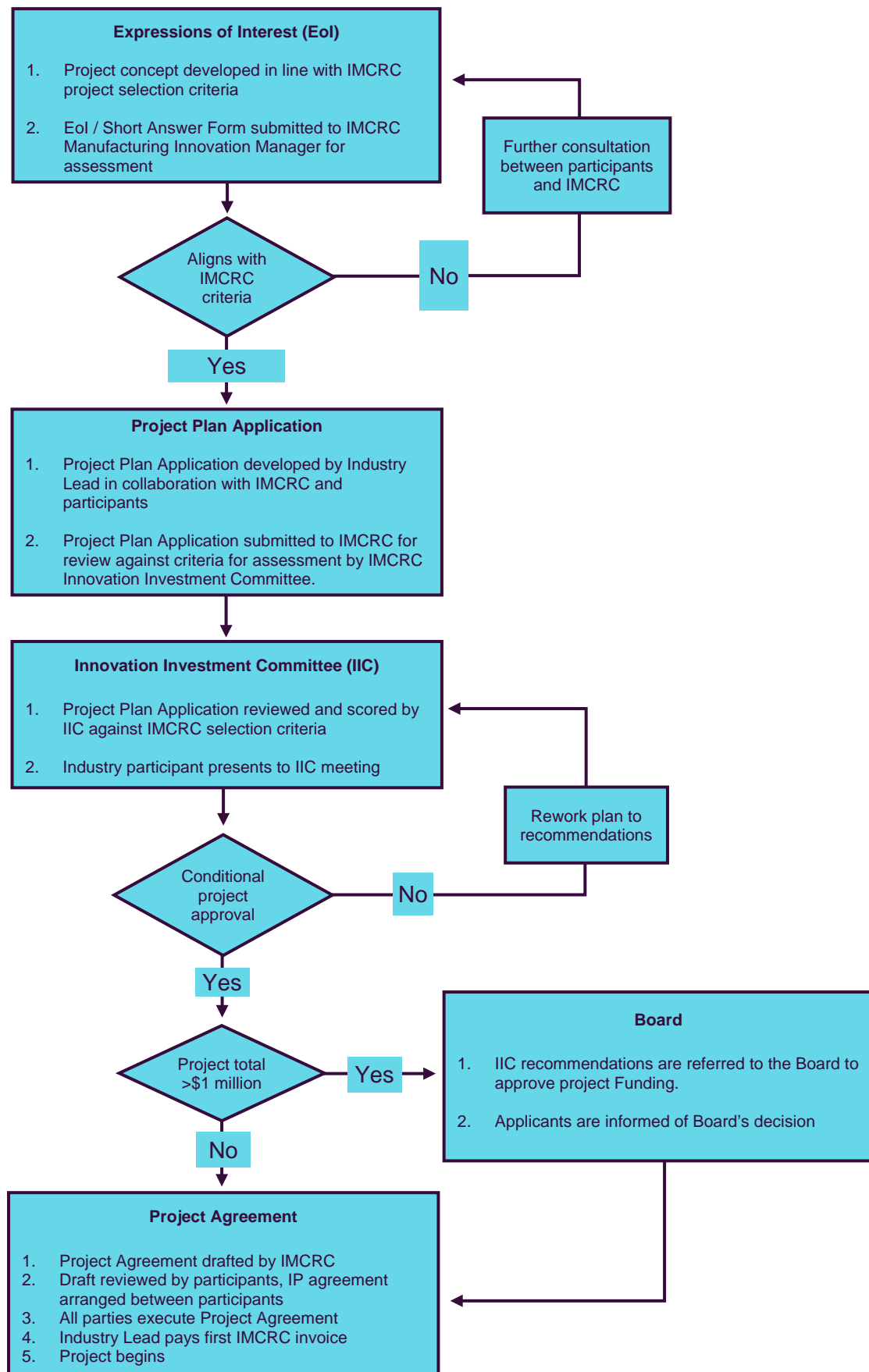
Manufacturing Readiness Assessments (MRAs) address these unanswered questions in order to reduce manufacturing risk. However, it still does not address the question of whether the product is reliable or maintainable.

The IMCRC sees particular benefit in the use by participants of TRL and MRL terminology and milestones in Project Plans, including:

- Common language and measurement across different projects and with the Advanced Manufacturing Growth Centre
- Articulation of key IMCRC focus areas for both Research Projects and Business and Industry Transformation Projects
- Creating and managing IP Utilisation Plans, outcome planning and measurement, Project reporting, etc.

LEVEL	MRL 1	MRL 2	MRL 3	MRL 4	MRL 5	MRL 6	MRL 7	MRL 8	MRL 9	MRL 10
Phase	Technology assessment and initial proving				Technology development and pre-production		Engineering and Manufacturing development		Production and deployment	Operations and support
IMCRC Project Research focus	Not core focus level	Influencing role		Primary IMCRC Project Research focus				Influencing role	Not core focus level	
Definition	Basic manufacturing implications identified	Manufacturing concepts identified	Manufacturing proof of concept developed	Capability to produce the technology in a laboratory environment.	Capability to produce prototype components in a production relevant environment.	Capability to produce a prototype system or subsystem in a production relevant environment.	Capability to produce systems, subsystems or components in a production representative environment.	Pilot line capability demonstrated. Ready to begin low rate production.	Low Rate Production demonstrated. Capability in place to begin Full Rate Production.	Full Rate Production demonstrated and lean / six sigma production practices in place.
Description, Outputs and Outcomes	Basic research expands scientific principles that may have manufacturing implications. The focus is on a high level assessment of manufacturing opportunities. The research is not confined or restricted.	Invention begins. Manufacturing science and/or concept described in application context. Identification of material and process approaches are limited to paper studies and analysis. Initial manufacturing feasibility and issues are emerging.	Conduct analytical or laboratory experiments to validate paper studies. Experimental hardware or processes have been created, but are not yet integrated or representative. Materials and/or processes have been characterized for manufacturability and availability but further evaluation and demonstration is required.	Required investments, such as manufacturing technology development identified. Processes to ensure manufacturability, producibility and quality are in place and are sufficient to produce technology demonstrators. Manufacturing risks identified for prototype build. Manufacturing cost drivers identified. IP Utilisation plan developed. Producibility assessments of design concepts have been completed. Key design performance parameters identified. Special needs identified for tooling, facilities, material handling and skills.	Manufacturing strategy refined and integrated with Risk Management Plan. Identification of enabling/critical technologies and components is complete. Prototype materials, tooling and test equipment, as well as personnel skills, have been demonstrated on components in a production relevant environment, but many manufacturing processes and procedures are still in development. Manufacturing technology development efforts initiated or ongoing. Producibility assessments of key technologies and components ongoing. Cost model based upon detailed end-to-end value stream map.	Initial manufacturing approach developed. Majority of manufacturing processes have been defined and characterized, but there are still significant engineering/design changes. Preliminary design of critical components completed. Producibility assessments of key technologies complete. Prototype materials, tooling and test equipment, as well as personnel skills have been demonstrated on subsystems/ systems in a production relevant environment. Detailed cost analysis include design trades. Cost targets allocated. Producibility considerations shape system development plans. Long lead and key supply chain elements identified.	Detailed design is underway. Material specifications are approved. Materials available to meet planned pilot line build schedule. Manufacturing processes and procedures demonstrated in a production representative environment. Detailed producibility trade studies and risk assessments underway. Cost models updated with detailed designs, rolled up to system level and tracked against targets. Unit cost reduction efforts underway. Supply chain and supplier Quality Assurance assessed. Long lead procurement plans in place. Production tooling and test equipment design and development initiated.	Detailed system design essentially complete and sufficiently stable to enter low rate production. All materials are available to meet planned low rate production schedule. Manufacturing and quality processes and procedures proven in a pilot line environment, under control and ready for low rate production. Known producibility risks pose no significant risk for low rate production. Engineering cost model driven by detailed design and validated. Supply chain established and stable.	Major system design features are stable and proven in test and evaluation. Materials are available to meet planned rate production schedules. Manufacturing processes and procedures are established and controlled to three-sigma or some other appropriate quality level to meet design key characteristic tolerances in a low rate production environment. Production risk monitoring ongoing. LRIP cost goals met, learning curve validated. Actual cost model developed for Full Rate Production environment, with impact of Continuous improvement.	This is the highest level of production readiness. Engineering/design changes are few and generally limited to quality and cost improvements. System, components or items are in rate production and meet all engineering, performance, quality and reliability requirements. All materials, manufacturing processes and procedures, inspection and test equipment are in production and controlled to six-sigma or some other appropriate quality level. Full Rate Production unit cost meets goal, and funding is sufficient for production at required rates. Lean practices well established and continuous process improvements ongoing.
Complementary Technology Readiness Level	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9	
	Basic research. Principles postulated and observed but no experimental proof available	Technology formulation. Concept and application have been formulated.	Applied research. First laboratory tests completed; proof of concept.	Small scale prototype build in laboratory environment ("rough and ready" prototype).	Large scale prototype tested in intended environment.	Prototype system tested in intended environment close to expected performance.	Demonstrated system operating in operational environment at pre-commercial scale.	First of a kind commercial system. Manufacturing issues solved.	Full commercial application, technology available for consumers.	

## APPENDIX C: Project Preparation and Selection Processes





## Project implementation, monitoring, knowledge transfer and utilisation

Stage	Task	Responsibility	Action	Comments
Implementation	Project staff assigned and/or to be appointed incl. PhD students	Project Leaders, delegated personnel of Participant organisations	Vacant positions advertised and filled with minimal delay; staff seconded; postgraduate students commence	Project files set up; Project reporting templates distributed
Monitoring progress	PMC to approve quarterly reports of achievements against milestones and budget (and annual 'traffic light' review as required)	Review of reports by IMCRC Executive, including feedback, and summaries prepared for the IIC	Project Leaders to ensure timely submission; IMCRC Executive to follow up	Satisfactory reports will trigger release of funds for following quarter
Communicating research highlights	Key project highlights summarised quarterly for widespread distribution	IMCRC Executive, Industry participants, Portal Organisations and Project Leaders	Project highlights forwarded to Portal Organisations for distribution to members	Other IMCRC communication channels used – website, e-newsletters, media, wikis, social media
Completion of projects	Preparation of final reports within three months of completion of project for submission to IMCRC	Report preparation by Project Leaders with oversight from participants and PMC	IMCRC Executive to undertake performance assessment against milestones and budget IMCRC Executive to prepare project performance summaries for Board	Final reports and summaries submitted to Board Summaries uploaded onto IMCRC website
Adoption of outcomes and utilisation of IP	Information packages, events, training, self-assessment tools, access to IP	IMCRC Executive, Portal Organisations and specialist service providers	Preparation of tools, case studies, IP agreements plus lab visits, technology demonstrations	Notification and distribution via media and communication channels

## **APPENDIX D**

### **Delegation of Authority for the Innovation Investment Committee (IIC)**

1. The Board has determined that the IIC has the delegated authority to review and approve project applications in accordance with the following:
  - 1.1. Total project funding of \$1,000,000 or less
    - 1.1.1. the IIC may elect to approve the project, or recommend to the Board for approval.
  - 1.2. Total project funding of greater than \$1,000,000
    - 1.2.1. the IIC must recommend to the Board for approval.
  - 1.3. Total project funding is defined as
    - 1.3.1. the value of total cash contributions only (i.e. not including any form of in-kind contribution), and inclusive of the value of all matched Commonwealth funding; and
    - 1.3.2. for the total duration of the project.
2. This Delegation of Authority may be reviewed and modified at any time by the Board in its sole discretion. The IIC may make recommendations for consideration by the Board.