Project Concept Template

Project Proposals for the RCA Programme 2024/2025

Part 1: Information Sheet

Project proposals for the RCA Programme 2024/2025 are to be prepared using the attached template and submitted BEFORE 31ST OF DECEMBER 2021. Completed templates will be reviewed by the RCA PAC in January 2022.

Resource documents required for developing Project Concepts can be found in the RCA web-site – (RCA Regional Office (rcaro.org)), under Projects/Resource Documents. (see below for the list of resource documents.

The Project Concept should be prepared in consultation with the stakeholders of the other participating GPs. Information on RCA stakeholders can be found in the RCA web-site (RCA Regional Office (rcaro.org)), under Projects/Project Information.

Please request access to the RCA Members Only web-site from RCARO (email: rcaro@rcaro.org) through your National RCA Representative if you do not already have access.

A proposal will be evaluated against the following criteria:

- Alignment of the objectives with priorities set out the RCA Regional Programme Framework (RPF) for 2024/25.
- Whether the project addresses a regional need.
- Whether nuclear technology is an essential component of the project.
- Whether outcomes and achievements of previous projects in this area of technology are considered.
- Does the proposal overlap or duplicate current or previous RCA projects?
- Is a convincing case made to justify further projects in this area?
- Is there a strong TCDC component?
- If the proposal is essentially an extension of previous projects in this area that have been implemented for more than 2 TC Cycles, does the proposal include arrangements for the transfer of project leadership to another GP?

List of Resource Documents on RCA web-site (www.rcaro.org)

1. Timeframe for preparation, review and approval of Project Concepts
2. Brochure on Logical Framework Matrix (Quick Reference Guide on Designing IAEA TC Projects)
3. RCA Regional Programme Framework for 2024-29
4. Details of RCA TC Projects implemented in 2007-2019
5. List of TC Projects being implemented in 2020/21 and projects approved for 2022/24
6. Recommendations on Technical Cooperation among Developing Countries (TCDC)

Please note that your National Representative will be reviewing the concept document to ensure that it has been prepared in compliance with the RCA and IAEA Criteria for TC Projects

Please contact the Chair of the RCA Programme Advisory Committee, Dr. Prinath Dias at prinathd@yahoo.com if you need assistance.

Part 2: Concept Template[1]

Title:

The title should be as concise as possible and should summarize the objective of the project.

Strengthening and empowering the role of radiology medical physics services in clinical practice through regional cooperation

Analysis of gaps / problems / needs as applied to the RCA region:

Outline the major gaps / problems/ specific needs to be addressed by the project (~ max 300 words):

Diagnostic radiology is the most readily available clinical imaging service and the most frequent source of medical radiation exposure to individuals. UNSCEAR surveys over the last decades have confirmed an increase in both the number of examinations per 1000 population and per capita effective dose contribution from diagnostic radiology. The availability and technology of diagnostic radiology is variable between countries in the region, but even in low and middle income countries, major clinical centres offer high-dose clinical imaging such as Computed Tomography (CT) and interventional radiology. At the same time, the IAEA has continuously emphasized the importance of medical physics support in radiology for the appropriate, effective and safe use of radiation by means of standard requirements and guidelines.

The major gap in the delivery of diagnostic radiology in the region includes the absence of an established, recognised, clear and prominent role for radiology medical physicists in clinical practice. This is further exacerbated by the expansion of diagnostic radiology in all Government Parties, regardless of the level of medical physics support available and required for safe and effective implementation. As a result, the problem is an increase in diagnostic radiology investment without concern for the active engagement and participation of medical physicists. Even in Government Parties where certified, clinically qualified medical physicists are available, their role and contribution to quality health care is challenged as their presence and impact has been historically limited. Therefore, there is a need for strengthening the role of radiology medical physicists and empowering them to support the effective and important role of radiation medicine in the region. By doing so, it will also be possible to attract more interest in the medical physics profession and increase capacity in a field where there is critical shortage in both high and less resourced countries.

[1] If you have not been involved in drafting a concept before and if you are not fully acquainted with the RCA and its Programme you are encouraged to support advice and assistance from your RCA National Representative.

Review the resource documentation and list any past RCA projects that have addressed similar problems/needs in this area of technology. Consider outcomes and achievements of previous projects, and avoid any overlap or duplication.

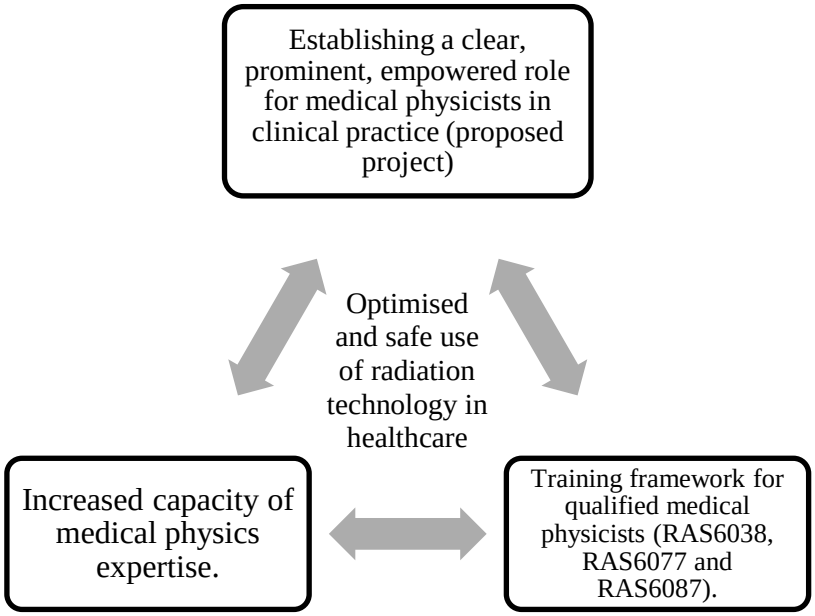
Since 2003, the IAEA has supported the development of training for certified, qualified medical physicists in the region through the following projects:

- RAS6038: Strengthening Medical Physics through education and Training (RCA)
- RAS6077: Strengthening the Effectiveness and Extent of Medical Physics Education and Training (RCA)
- RAS6087: Enhancing Medical Physics Services in Developing Standards, Education and Training through Regional Cooperation (RCA)

The outcome of these projects has been to develop a framework for comprehensive regional training programs that could bring into the workforce clinically qualified medical physicists. The next, important and organic step would be to support these qualified medical physicists into establishing their clinical roles, especially since radiology clinical practices have for years been developed without incorporating medical physicists, as they were not available.

The proposed project supports previous RAS projects (6038, 6077 and 6087) and the investment of the IAEA in medical physics training over all these years. The proposed project aims to establish and strengthen the role and presence of qualified medical physicists who graduated from past RAS projects and to support and empower them to provide their services and expertise in diagnostic radiology. This in turn will promote the role of medical physicists overall in the region and will attract more medical physics training candidates who would be thus encouraged to go through the training framework already developed through RAS6038, RAS6077 and RAS6087. The relationship between the current project, previous IAEA regional projects and the SDG target of access to quality essential health-care services is shown in the following feedback loop diagram.

Feedback loop between proposed and previous RAS projects.



References

- INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements, 2014
- INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety in Medical Uses of Ionizing Radiation, Specific Safety Guides, 2018
- INTERNATIONAL ATOMIC ENERGY AGENCY, Roles and Responsibilities, and Education and Training Requirements for Clinically Qualified Medical Physicists, Human Health Series, 2013
- INTERNATIONAL ATOMIC ENERGY AGENCY, Implementation of a Remote and Automated Quality Control Programme for Radiography and Mammography Equipment, Human Health Series No.39, 2021
- INTERNATIONAL ATOMIC ENERGY AGENCY, Comprehensive Clinical Audits of Diagnostic Radiology Practices: A Tool for Quality Improvement, Human Health Series, 2010
- INTERNATIONAL ATOMIC ENERGY AGENCY, Medical Physics Staffing Needs in Diagnostic Imaging and. Radionuclide Therapy: An Activity Based Approach, Human Health Reports No. 15, 2018

What are the major additional capabilities/skills in this area of technology that will be provided through this project (~ max 200 words).

This project will provide the following major capabilities and skills:

- Development of harmonized Quality Assurance / Quality Control methods for radiology imaging, consistent with IAEA guidelines for example in HHS No.39 (2021);
- Common methodologies of radiological dose assessment and recommendations for dose management and oversight;
- Improvement of radiological medical physics cooperation by sharing expertise on quality management systems and providing external audits, based on QUAADRIL recommendations;
- Raise awareness with regional workshops including professional stakeholders and government parties to discuss and define the strategy to enhance the clinical role of medical physicists;
- Improvements in regulatory requirements and capacity, including staffing levels for medical physicists, consistent with IAEA recommendations in Human Health Report No. 15 (2018);
- Development of synergies with clinical medical physics services in nuclear medicine for cross-discipline support of radiological imaging.

Overall Objective: (Required for the preparation of the IAEA Regional Programme Note)

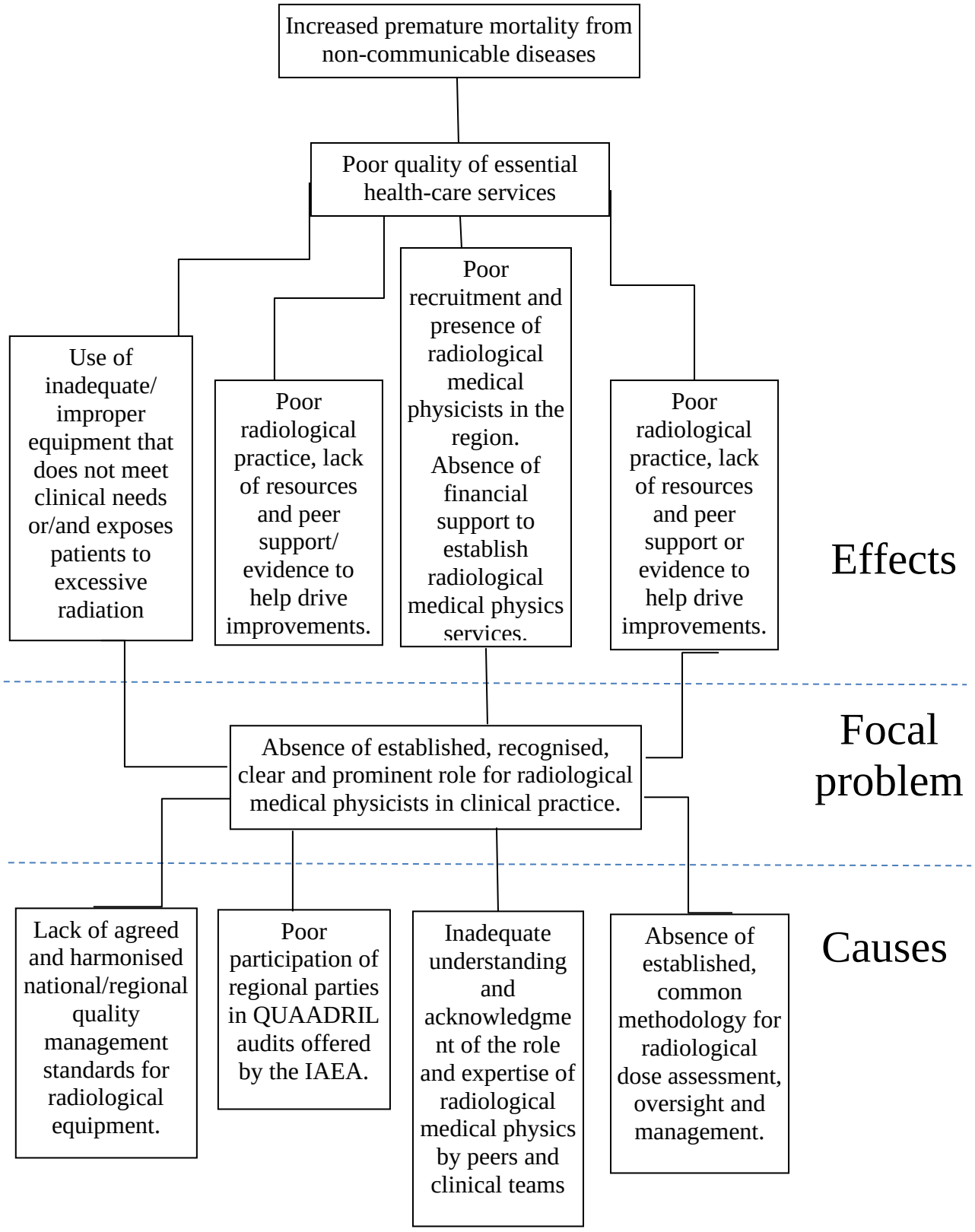
State the overall long-term objective to which the project will contribute. This should reflect an impact related to the RCA Regional Programme Framework for 2024/29.
Problem and objective analysis using objective and problem trees is recommended. (See pages 9 and 10 of the Quick Reference Guide on Designing IAEA TC Projects in resource documents)

The RCA Regional Programme Framework for 2024/29 identified Medical Physics as a priority area (HH2), contributing towards SDG 3- Ensure healthy lives and promote well-being for all ages.

The overall long-term objective of the proposed project would be to establish and strengthen the role of medical physicists in clinical radiology. The project would run collaboratively with clinical medical physicists of other disciplines (nuclear medicine and radiotherapy) who often also support radiological technology. The project would focus on the development of guidelines and regional cooperation on their implementation, with special focus on high radiation dose procedures and, where available, new technologies.

As seen in the problem and objective trees presented in the next pages, the proposed project addresses SDG targets 3.1 (reduce premature mortality from non-communicable diseases) and 3.4 (access to quality essential health-care services).

PROBLEM TREE



OBJECTIVE TREE

PROBLEM	OBJECTIVE
No national/ regional quality management standards for radiological equipment	Radiological equipment meets agreed/approved quality management standards, and can therefore operate optimally meeting clinical and safety needs.
Absence of established, common methodology for radiological dose assessment, oversight and management.	Improved understanding of patient dose for different radiological practices. Peer support in optimisation and adoption of best practices. Establishment of practice baselines and strategies for improvement.
Poor participation of regional parties in QUAADRIL audits offered by the IAEA.	Enhanced role of the IAEA, use of resources and experts in improving the use of radiation in radiological practices. Increased regional collaboration.
Inadequate understanding and acknowledgment of the role and expertise of radiological medical physics by peers and clinical teams	Clear description of the role of the medical physicist in radiology in national and regional guidelines and, where possible, regulatory requirements. Increased recruitment and capacity of medical physicists in radiology.

Project Outcome: (Required for the preparation of the IAEA Regional Programme Note)
The outcome is the planned result of a project, achieved through the collective effort of stakeholders and partners. It represents the change or improvement that occurs as a result of the project. Should be worded in past tense. (eg. The capability for ……developed)

The role of qualified medical physicists in diagnostic radiology is strengthened by improving the capability and recognition of the profession in the region generally and specifically in less sourced countries. Harmonised professional guidelines and standards of practice are published and adopted nationally and regionally on practices of radiological equipment quality management and radiology dose assessment and management. Centres of radiological medical physics excellence are identified and a regional network of peer support is developed. Regional and national recommendations on the need for ensuring capacity enhancement in radiological medical physics expertise are developed.

RCA Projects are to be designed to have a Socioeconomic Benefit:

What is the potential socioeconomic benefit that would be realised from the project concept over a 5 to 7-year horizon?

Potential socio-economic benefits to be realised through the project include:

- Meeting current and future demands for quality essential health care services;
- Increasing the capacity, use and reliability of current and future investments of society in medical radiological services;
- Mitigation of adverse medical radiological incidents and their detriments to the population;
- Developing greater trust of society in the safe and effective use of nuclear technologies in medicine;
- Improving the health and livelihood of local populations.

Proposed Participating Government Parties:

List the Government Parties expected to participate in the project. Indicate target and resource GPs:

Australia is identified as a Resource Government Party and lead country:
AUSTRALIA

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Following is the list of Government Parties that participated in RAS6038, RAS6077 and RAS6087 and are expected to participate in the proposed project. They can be Resource or Target Government Parties, as explained in the section “requirements for participation”:

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Technical Cooperation among Developing Countries (TCDC) Project Component:

Please refer to the resource documents (RPF and Recommendations on TCDC)
Will the project design feature partnering arrangements between those advanced and those less advanced in the technology to be transferred through this project?
If so, list those expected partnerships.

All Government Parties will be encouraged to participate in all aspects of the project. Otherwise, there will be a risk that the outcomes of this project would be seen as guidelines, recommendations or standards developed only for and by those with advanced technology and expertise. Enhancing and empowering the

role of medical physicist in diagnostic radiology will be better approached at a regional level by as many Government Parties as possible, and emphasis should be placed on the fact that it is applicable on technology already in place in both developing and developed countries. There is a critical need to strengthen capacity in radiology medical physics and a regional harmonized approach will be more efficient and sustainable.

The big advantage of the proposed project is that the related nuclear technology is essential and has already widespread use in the healthcare sectors of all Government Parties, developed and developing. In this way, there can be active engagement and opportunities to share existing knowledge and experiences. The proposed project will build upon partnerships between Government Parties already developed from previous RAS projects (6038, 6077 and 6087) to share information and account for any socioeconomic barriers to collaboration.

For example, the collaboration between Australia, the Philippines, Malaysia and Thailand on diagnostic radiology clinical training programmes in project RAS 6038 can evolve into a partnership developing common, harmonised standards and protocols of radiological equipment quality management and patient dose management and assessment methodologies.

Requirements for participation:

Indicate the minimum requirements that the counterpart institutions in Government Parties would need to meet in order to participate in this project.

The minimum requirements for government parties would be:

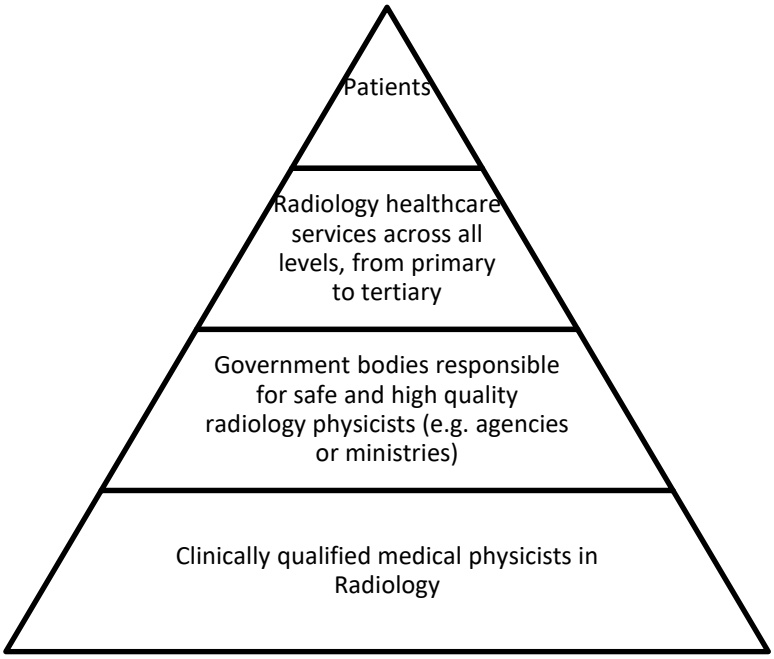
- For Target Government Parties, availability of and expertise in clinical radiological medical physics, including general x-ray, computed tomography, mammography and fluoroscopy/Interventional radiology.
- For Resource Government Parties, availability of and expertise in medical imaging, medical physics and radiation protection.
- Willingness to develop national and regional standards on radiological medical physics clinical practice standards, including guidelines and recommendations.
- Willingness to learn and develop local centres excellence in clinical radiological medical physics.
- Supporting skills in project design and implementation, statistical analysis and data interpretation and reports.

Stakeholder analysis and partnerships:

Briefly describe who are expected to be the end-users and principal beneficiaries of this project. Indicate whether the end-users contributed to development of the Concept.

The primary main beneficiaries of this project will be the clinically qualified medical physicists in radiology and the regional participants and local government organisations from all Government Parties that are responsible for or contribute to the delivery of safe and high-quality diagnostic radiology services. This concept has been developed by clinically qualified radiology medical physicists who would also be

end-users of the outcomes of this project, as it would empower them to support improvements in health care service. The different levels of beneficiaries of this project can be described in the following pyramid.



Have any extrabudgetary funding possibilities been identified?
Not at this stage. However, nationally there may be specific partners identified and engaged to develop and fund collaborative projects.

Role of nuclear technology:

Indicate the essential nuclear technique that would be used and outline why it is suitable for addressing the problems/needs in question.
Is this the only available technique that could be applied to address the problem/ need?
Does it have a comparative advantage over non-nuclear techniques?

There are published professional guidelines on the criteria of selecting diagnostic technologies for different presenting pathologies (e.g. the appropriateness criteria by the American College of Radiology, or referral criteria by the UK Royal College of Radiologists), where the advantage of radiation/nuclear techniques is substantiated with extensive clinical evidence for an extensive number of cases.

Medical physics is an essential requirement for the safe and effective use of radiation/nuclear techniques in the health sector, as also outlined in the International Basic Safety Standards (2014) published by the IAEA.
Whilst non-radiation techniques are available for some aspects of diagnosis of disease, the use of radiation is well established with considerable advantages in clinical outcomes.

Duration of the project:

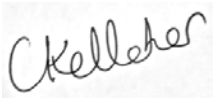
Indicate the number of years required to complete the project.

4 years.

Part 3: National Representative Endorsement for Project Concept

As the RCA NR of Australia, I have reviewed the Project Concept thoroughly and confirm that it meets the following requirements:

1. The objective of the Project Concept is aligned with priorities set out the RCA Regional Programme Framework (RPF) for 2024/25.
2. The project addresses a regional need.
3. Nuclear technology is an essential component of the project.
4. Outcomes and achievements of previous projects in this area of technology have been taken into consideration
5. There is no overlap or duplication with current or previous RCA projects
6. Further projects in this area can be justified (if relevant)
7. The Project Concept has a strong TCDC component

Signature: 

Name: Catherine Kelleher

Date: 23 November 2021