

Response to “ITRF – LhARA Working Methods”

STFC document name: 1272-pm-pmp-0003-v1.0-itrf lhara working methods.docx

LhARA EB:

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1. Preamble

1. The LhARA Executive Board welcomes the initiative to set out the working relationship between the Ion Therapy Research Facility (ITRF) Project Management, the LhARA Project and the LhARA collaboration.

2. General observations

- 2.1 The LhARA collaboration notes the resource allocation defined in the table on page 6. While reluctantly accepting the allocation, the collaboration does not agree that this provides the best mitigation of risk.
- 2.2 As the collaboration argued consistently in the ITRF/LhARA alignment discussion meetings in March and April 2022, some of which are documented [here](#), the allocation of resources to the LhARA project should reflect the full project-risk analysis that the collaboration has carried out. Taking the conventional-facilities-and-costing element of LhARA work package 6 out of the risk-mitigation based optimisation of the LhARA programme increases the risk to the LhARA project overall.
- 2.3 The LhARA Executive Board and Project Group members do not have access to [\\fed.cclrc.ac.uk](http://fed.cclrc.ac.uk). An appropriate location for document sharing needs to be identified. The collaboration has adopted a transparent approach to the sharing of information related to its programme and the LhARA project, a [wiki](#) has been set up for this purpose. Of course, some information, such as salary-related data, is confidential. The collaboration has adopted a Microsoft Sharepoint for this purpose. Confidential ITRF documents relevant to the LhARA project management team must be made available through an appropriate, secure resource.

3. Detailed comments and proposed revisions

- 3.1 Page 1: When finalised, the document will define the ITRF – LhARA working methods designed to deliver success in the Preliminary Activity. We therefore propose that the LhARA co-spokespeople, A. Giacca and K. Long, be added to the Document Approval list.
- 3.2 Page 2: The collaboration nominates Dr. Colin White (Strathclyde), who is the LhARA Project Manager, for the role of Work Package 1 Manager in the ITRF OBS.
- 3.3 Page 3: The LhARA OBS has a number of typos. The correct OBS is shown in figure 1 below. The differences compared to the figure on page 3 of the “ITRF – LhARA Working Methods” document are:
 - The second role defined in the LhARA Project Management Board should read “Project Scientist” rather than the Project Sponsor.
 - The names of work packages 1.4 and 1.5 should be updated as indicated in figure 1.
- 3.4 Page 4: The paragraph headed “Delivery approach:” refers to the CDR/TDR gateway process being overseen with “advisory board oversight”. This oversight is more usually carried out by the Project Board and supported by an Oversight Committee (the STFC Project Review Committee defined on page 7) with expertise in all areas of importance to the successful execution of the project; particularly in those areas associated with key project risks. The discussion on page 4 should be updated to reflect this.
- 3.5 Page 4: The paragraph headed “Delivery technology:” does not accurately reflect the risk management programme that will be carried out in the Preliminary Activity. With the resources available, it will not be possible to carry out the work necessary to retire the all key technical

risks associated with the laser-driven source, the capture system, and the ion-acoustic real-time dose-profile measurement in 18 to 24 months. The discussion in this paragraph needs to reflect the need for the risk-mitigation programme to continue into the pre-construction phase. A proposed rephrasing of this paragraph follows:

The ITRF proposal defines the laser-plasma/FFA technology based on the LhARA design as the baseline technology to serve the facility. Alternative technological solutions (a synchrotron based on the NIMMS2 programme and a linac) will also be considered. During the CDR phase, ITRF Preliminary Activity 1 (ITRF-PA1), these technological solutions will be appropriately developed to allow a conceptual design and costing to be carried out. The alternative solutions provide “off ramps” should it prove impossible to mitigate the risks associated with the baseline approach. We foresee a staged infrastructure with a lower-energy (shallower depth, in-vitro) initial capability, followed by a higher-energy (larger depth) provision. Risks inherent in the use of novel high-dose-rate sources will be managed through design and prototyping carried out as part of and in parallel with the Preliminary Activity. We are already engaged in a number of relevant collaborations and projects to develop the key technologies (ion source, pre acceleration, final acceleration, ion-acoustic dose-profile mapping) that are key to the baseline approach.

- 3.6 Page 5: The number of staff years in parentheses after WP1, 27 SY, is not correct. The WP1 allocation will support staff (including research students), equipment, and consumables. Perhaps it is best to omit the number and refer to the LhARA proposal, a draft of which can be provided in advance of the STFC internal bid review.
- 3.6 Page 7: Under “Working method 3” we note there is one LhARA Institute Board (remove plural on line 2). Paragraph 4 should refer to LhARA, or the LhARA Project, rather than LhARA Technology. This change should also be made in the ITRF OBS presented on page 2.

LhARA Project

Organisational Breakdown Structure

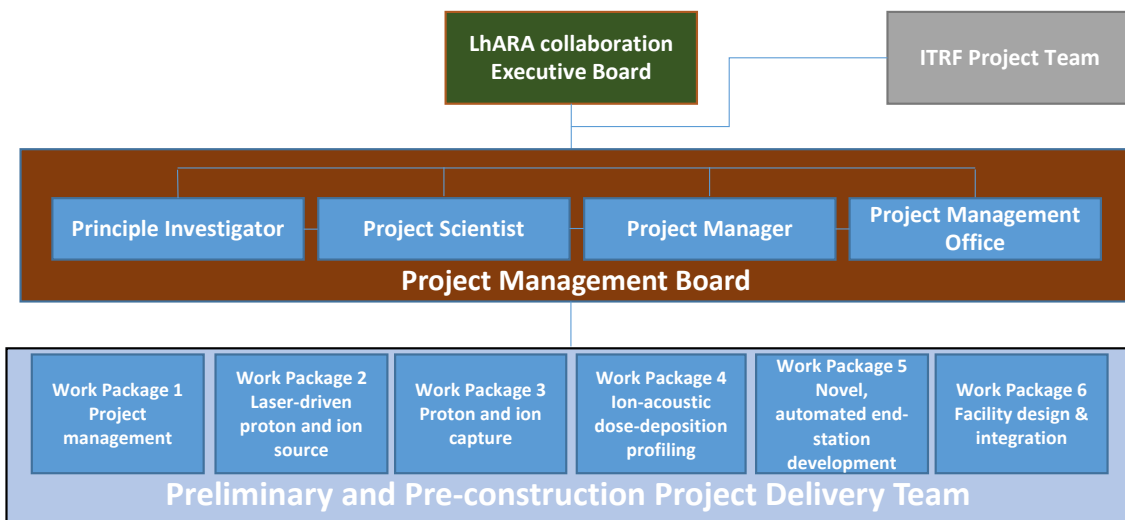


Figure 1: Organisation breakdown structure for the LhARA project.

Version history:

10May22: Final

- Final version.

09May22: Draft 1.0: First version:

- First draft.