# FRAMEWORK AGREEMENT

## TERMS OF REFERENCE

## ENGINEERING SERVICES ASSOCIATED WITH DISMANTLING OF IGNALINA NUCLEAR POWER PLANT REACTOR CORES

2019 m. _____ ___d. Nr._____
Visaginas

### SECTION I

### GENERAL BACKGROUND INFORMATION

1. Ignalina nuclear power plant (INPP) is comprised of two units with RBMK-1500 reactors. In implementing the commitment of the Republic of Lithuania pursuant to the provisions of Protocol No 4 "On the Ignalina Nuclear Power Plant in Lithuania" of the Treaty of Accession to the European Union, Unit 1 of the INPP was shut down on the 31st December 2004 and Unit 2 – on the 31st December 2009. At that time the INPP mission changed from that of an electricity producer to that of a decommissioning organization while still a regulated nuclear facility, with the goal of gradual and safe decommissioning in order to reach the unrestricted use of the site or under conditions set out by the legislation.
2. Due to the nature of financing and ownership there is a number of stakeholders involved in INPP decommissioning that will have their role in the implementation of this project on INPP side. The description provided below does not include the INPP regulatory framework. INPP decommissioning is funded through a number of financial mechanisms, among which the major is Ignalina Programme. Contracts to be signed within this framework are also to be funded through Ignalina Programme. INPP shall be a contracting authority, nevertheless there is a number of other stakeholders that shall be involved or INPP shall have to consult with in the implementation of the framework. Ignalina Programme is a special financial instrument of European Union. Under the Ignalina Programme, assistance is provided for the decommissioning of INPP and the related social consequences as well as supporting measures in the energy sector in INPP region to mitigate the loss of electrical generating capacity. European Commission is the main body controlling the implementation of Ignalina Programme. European Commission made a direct Delegation Agreement with Public Institution Central Project Management Agency as the National Agency for the implementation of decommissioning of INPP under "indirect" management. The owner of the State Enterprise Ignalina Nuclear Power plant is the Republic of Lithuania, represented by the Ministry of Energy of the Republic of Lithuania (Ministry of Energy). For the supervision of the implementation of this framework there will be a Technical Advisory Group[1] and Technical Support Group[2] established. INPP will be responsible for communication with TAG and TSG.
3. Dismantling of reactors of INPP is the most challenging activity in the whole INPP decommissioning project pipeline. This especially concerns the dismantling of reactors cores

[1] A Technical Advisory Group (TAG) will advise the European Commission and the Ministry of Energy of Republic of Lithuania with regard to completeness and soundness of solutions to be developed in the course of implementation of this framework agreement. The TAG, comprised of senior level experts, will review the deliverables and the progress of the framework, working under a separate agreement with the European Commission.

[2] A Technical Support Group (TSG) will assist INPP in implementation of this framework especially in the aspects of contract management. The TSG will be contracted by INPP in a separate tender and will work under its own contract.

since it is a pioneering activity. Reactor dismantling activity was split into three into 3 parts (Zones R1, R2 and R3) by INPP. Where zone R1 is upper equipment and structures of main circulation circuit, R2 is lower structures and equipment of the main circulation circuit and zone R3 is the reactor core and related structures. Currently it is being assumed that Zones R1 and R2 dismantling design and physical dismantling of equipment shall be performed solely by the staff of INPP and shall be completed before the start of zone R3 dismantling. Detailed description of zone R3 is provided in Annex 1 to these Terms of Reference.

4. Physical implementation of Zone R3 dismantling together with associated radioactive waste management are currently planned to be performed by the staff of INPP.

5. Procurement of tools, equipment and any necessary construction works will be conducted outside the scope of this Framework Agreement by INPP.

## SECTION II

## GENERAL OBJECTIVES OF THE FRAMEWORK AGREEMENT

6. The overall objective to which this Framework Agreement contributes is dismantling of INPP Unit 1 and Unit 2 reactor facilities and safe management of resulting radioactive waste.

7. The objective of the services is development of engineering, safety and licensing documents and providing support in interactions with stakeholders and regulatory bodies in particular for obtaining permits needed to proceed with dismantling of the reactor cores.

8. The dismantling of the RBMK reactor cores is a pioneering activity and the services concern expert technical assistance to INPP to define the optimal approach:
   - for dismantling of the reactor core structures, primarily graphite stacks and surrounding constructions (denoted Zone R3) from the reactor shafts of Unit 1 and Unit 2;
   - for processing and packaging of all relevant radioactive waste for interim storage or disposal;
   - to the interim storage facility for radioactive waste arising for which no appropriately licensed facility is currently available at INPP, in particular - irradiated graphite (hereinafter Reactor Waste Interim Storage Facility – RWISF).

## SECTION III

## DEFINITIONS AND ABBREVIATIONS

**ALARA principle** – ALARA is an acronym used in radiation safety for "As Low As Reasonably Achievable." The ALARA radiation safety principle is based on the minimization of radiation doses and limiting the release of radioactive materials into the environment by employing all "reasonable methods";

**B4S** Facility – buffer storage for short-lived low and intermediate level solid radioactive waste;

**CD** – Conceptual Design;

**Controlled zone -** an area subject to special rules for the purpose of protection against ionizing radiation or of preventing the spread of radioactive contamination and to which access is controlled;**DOR** – Design Options Report;

**D&D** – dismantling and decontamination;

**EIA –** Environmental Impact Assessment;

**EIAP** – Environmental Impact Assessment Programme;

**EIAR** – Environmental Impact Assessment Report;

**Espoo Convention** – Convention on Environmental Impact Assessment in a Transboundary Context (informally called the Espoo Convention). It is a United Nations Economic Commission for Europe (UNECE) convention signed in Espoo, Finland, in 1991 that entered into force in 1997.

**F-ANP** – concrete container designed by Framatome Advanced Nuclear Power and used at INPP.

**GA** – Gap Analysis;

**GDS** – General Data Sets (on Radioactive Waste Disposal Plans);

**INPP** – Ignalina Nuclear Power Plant;

**LRW** – liquid radioactive waste;

**MADM** – Multi-Attribute Decision Making;

**MODM** – Multi-Objective Decision Making;

**NPP** – Nuclear Power Plant;

**NSR –** Near Surface Repository;

**PSAR** – Preliminary Safety Analysis Report;

**RBMK** – Russian acronym which means "channel type high power reactor";

**RWISF** – Reactor Waste Interim Storage Facility;

**SAR** –Safety Analysis Report;

**SE** – State Enterprise;

**Security area** – an area that is surrounded by a physical barrier around the perimeter of nuclear facility to which access is controlled, for the purpose of physical protection;

**SPH** – Storage Pool Hall;

**TD** – Technological Design;

**WAC** – Waste Acceptance Criteria;

**Zone R1** – area with equipment above the reactor in reactor shaft, including channels;

**Zone R2** – area with equipment below the reactor in reactor shaft;

**Zone R3** – area with reactor equipment in reactor shaft

## SECTION IV

## SCOPE AND DESCRIPTION OF SERVICES

9. The engineering services shall be executed under one or more contract(s) (hereinafter, "the main contract(s)") based on this Framework Agreement. Main Contract No.1 shall come into force together with this Framework Agreement. Further main contracts may or may not be concluded at the discretion of the Client depending on results achieved.

10. The indicative activities and respective outcomes of the engineering services shall be:

10.1 Development of Methodological Document(s) for Implementation

For each main contract under the Framework Agreement, an Implementation Methodology Document setting out, as a minimum: the approach and methods adopted appropriate to that main contract; the detailed activities and resources required to fulfil the contract; all responsible persons showing their fields of expertise, responsibilities and organizational interfaces; the detailed schedule for the activities and identifying potential risks that may affect implementation of tasks and set out measures to mitigate them.

The main purpose of the Methodological Document(s) for Implementation is to ensure the efficient and timely performance of the respective main contract.

10.2 Development of Design Options Report

The Design Options Report (DOR) is a report explaining and summarizing for each technological process of dismantling of INPP Unit 1 and Unit 2 reactor facilities and

safe management of resulting radioactive waste: the available and feasible options; the selection of such options according to justified methods; compatible scenarios combining the selected options further assessed for risk and cost-effectiveness; and, a recommended scenario for further development.

The main purpose of the DOR is to satisfy the relevant regulatory bodies and stakeholders that a solution exists that can be developed into a Conceptual Design.

10.3 Development of Conceptual Design

The Conceptual Design, based on a scenario selected by the Client from the DOR, is a document describing to a level of detail defined by the Client (see Annex S1-2), the overall design for dismantling of INPP reactor facilities and safe management of resulting radioactive waste, including proposals regarding development of RWISF.

The main purpose of the Conceptual Design is to satisfy the relevant regulatory bodies and stakeholders that INPP has a sufficient technical basis to proceed with the technological design and full safety analysis.

10.4 Development of Gap Analysis Report

The Gap Analysis Report sets out, and prioritizes, the actions required to proceed with solution as defined in Conceptual Design.

The main purpose of the Gap Analysis Report is to assist INPP in the further development of the project for dismantling of INPP reactor facilities and safe management of resulting radioactive waste.

10.5 Preparation of Environmental Impact Assessment Report

An Environmental Impact Assessment Report (hereinafter referred to as EIAR) is a statutory requirement to ensure that options and proposals for Zone R3 dismantling and RWISF development comply with the national procedure for evaluating the likely impact of a proposed activity on the environment. The scope of the EIAR shall be for the respective dismantling in both INPP Units, processing resulting waste and implementation of RWISF.

Requirements for environment impact assessment of proposed economical activities in Lithuania are harmonized with EU requirements. Lithuanian EIA requirements are published on website of Ministry of Environment http://am.lrv.lt/lt/veiklos-sritys-1/poveikio-aplinkai-vertinimas (mainly in Lithuanian, but some documents in English).

The EIAR shall be prepared in accordance with the EIA Programme (provided at INPP website: https://www.iae.lt/data/public/uploads/2019/03/en_pav__programa_en.pdf).

10.6 Development of Technological Design for dismantling works

The Technological Design (TD) is prepared on the basis of the Conceptual Design in line with requirements set in nuclear safety requirements BSR 1.5.1-2019 “Eksploatavimo nutraukimas” (Decommissioning) (section XVI in particular) and guided by the template of previous TDs prepared for dismantling works in other parts of the plant. Requirements are available at VATESI website http://vatesi.lt/index.php?id=545#c2875 (in the Lithuanian language).

10.7 Development of Safety Analysis Report for dismantling works

The Safety Analysis Report for dismantling works (DSAR), is developed in parallel to the Technological Design (TD) in line with requirements set in nuclear safety requirements BSR 1.5.1-2019 “Eksploatavimo nutraukimas” (Section XVI in particular) and guided by the template of previous DSARs prepared for dismantling

works in other parts of the plant. Requirements are available on the VATESI website http://vatesi.lt/index.php?id=545#c2875 (in the Lithuanian language).

10.9 Development of RWISF Basic (Technical) design

Based on Conceptual Design the Basic (Technical) design for Reactor Waste Storage Facility shall be prepared in line with requirements set in nuclear safety requirements BSR 3.1.2-2017 "Radioaktyviųjų atliekų tvarkymas branduolinės energetikos objektuose iki jų dėjimo į radioaktyviųjų atliekų atliekyną / Pre-disposal Management of Radioactive Waste at the Nuclear Facilities" (section V in particular). Requirements are available on the VATESI website http://vatesi.lt/index.php?id=545#c2884 (in the Lithuanian language).

10.10 Development Preliminary Safety Analysis Report for RWISF (RWISF PSAR)

In parallel to RWISF Basic (Technical) design, a Safety Analysis Report for nuclear facility construction or reconstruction shall be prepared in line with requirements set in nuclear safety requirements BSR 3.1.2-2017 "Radioaktyviųjų atliekų tvarkymas branduolinės energetikos objektuose iki jų dėjimo į radioaktyviųjų atliekų atliekyną / Pre-disposal Management of Radioactive Waste at the Nuclear Facilities" (Section V in particular). Requirements are available on the VATESI website http://vatesi.lt/index.php?id=545#c2884 (in the Lithuanian language).

10.11 Preparation of RWISF Preliminary Decommissioning Plan

RWISF Preliminary Decommissioning Plan shall be in line with requirements set in nuclear safety requirements BSR 1.5.1-2019 "Eksploatavimo nutraukimas / Decommissioning" (section VI in particular). These requirements are available on the VATESI website http://vatesi.lt/index.php?id=545#c2875 (in Lithuanian language).

An example of such a plan for a similar facility, the Preliminary Decommissioning Plan for the Solid Radioactive Waste Management and Storage Facility, is available for reference purposes or, if RWISF will be developed on the basis of B4S or on B3/4 site, updating.

10.12 Development of General Data Sets on Radioactive Waste Disposal Plans

General Data Sets on Radioactive Waste Disposal Plans (hereinafter referred to as GDS) are required in accordance with EURATOM Treaty Article 37.

Requirements for GDS in Lithuania are set in the Description of the Procedure for the Submission to the Commission of the European Communities of Data Relating to the Disposal of Radioactive Waste, approved in 2012 by the resolution No. 326 of Government of the Republic of Lithuania.

It is agreed between INPP, VATESI and the European Commission, that the General Data Set for reactor dismantling shall summarize information about already implemented dismantling activities at INPP. Relevant GDS prepared in the course of decommissioning are available.

10.13 Design for Construction Works inside the Reactor Building

On the basis of Technological Design for dismantling works Consultant shall prepare engineering documents for construction works (i.e. demolition of load bearing structures, wall openings, etc.) inside reactor building if such constructions works will be necessary to proceed with Zone R3 dismantling.

10.14 Preparation of Specifications and Technical Requirements for Equipment and Tools Procurements

On the basis of Technological Design for dismantling works, specifications and technical requirements for tools and equipment in order to procure tools necessary to proceed with Zone R3 dismantling and associated waste processing. Market analysis for such tools shall be made by Consultant, however procurement of the tools and equipment will be carried on by SE Ignalina NPP.

10.15 Design of mock-ups and/or digital models

On the basis of Conceptual and/or Technological Design / SAR for dismantling works Consultant shall prepare set of engineering documents for development and implementation of mock-ups (i.e. specifications for tools, specifications for civil constructions, assembling drawings, testing programs, etc.) and/or a digital model if such mock-ups, tests and /or digital models will be necessary to demonstrate the safety and technical feasibility of dismantling works in Zone R3.

10.16 Specific working procedures

On the basis of Technological Design for dismantling works and waste management Consultant shall prepare working procedures for specific dismantling works (i.e. those which shall be performed using specific tools and requires specific training).

11. Where so requested by the Client in a main contract:
    - the Consultant shall assist the Client in responding to, and resolving, questions raised by state institutions, regulatory bodies, TAG, public and financial stakeholders for agreement and / or approval of key results. This assistance may take the form of providing presentations, consultations and support in writing or in meetings and amending of documents which shall be agreed by the regulatory bodies and stakeholders;
    - the Consultant shall provide training and knowledge transfer activities to staff of INPP and/or familiarization activities to other stakeholders identified above and /or regulators of the Republic of Lithuania relevant to the subject matter of the main contract concerned;
    - the Consultant shall prepare additional or alternative reports or other documentation in order to achieve the General Objectives of the Framework Agreement.

## SECTION V

## GENERAL REQUIREMENTS FOR THE ORGANIZATION OF THE SERVICE

12. During implementation, the Consultant shall identify information required to fulfil the contract that has not already been provided in the frame of contract tendering. The Consultant shall present these requests to the Client providing justifications for the need of additional information according to the terms of reference of the contract and / or agreed Implementation Methodology.
13. Based on the justified requests, the Client will provide information no later than 10 working days when such information is available. In general, information (documents, drawings, etc.) will be provided as electronic copies (not editable) in its original form and language. If the requested information is not easily accessible, timeframes for its submission must be agreed case by case.
14. If the requested information is not available because of the pilot nature of RBMK reactor decommissioning, the Consultant shall introduce and justify the assumptions made to overcome the lack of data / information and explain these as appropriate (i.e. in DOR, Gap Analysis, Conceptual Design and/or other documents to be developed in the course of contract).

**15.** The Team Leader of the Consultant, nominated under the Framework Agreement, shall be responsible for the internal organisation and coordination of the Consultant's team of experts and communications with the Client in all main contracts. The Team Leader shall, in particular, countersign all finalised deliverable documents under all main contracts provided to the Client. The respective main contracts may further require the Consultant to nominate a qualified expert as Task Manager for each, or for specific, tasks therein taking responsibility for organisation, coordination and communication, and for countersigning the finalised deliverable document(s) provided under that task. Unless otherwise agreed with the Client, the Team Leader and Task Manager shall not be the same expert.

**16.** Deliverable documents shall, in all cases, indicate the name(s) of the expert(s) responsible for their preparation including, where appropriate, the respective topical contribution(s).

**17.** Deliverable documents and other documents identified in the main contracts provided by Consultant for review and agreement of the Client will be reviewed within 20 working days. unless it is identified otherwise in the main contracts;

18. Detailed arrangements for providing requests and responses shall be described by the Consultant in the respective Implementation Methodology. These arrangements shall comply with the provisions of the Contract (e.g. INPP response duration to information requests and requests for review and approval of documents).

19. The Consultant shall provide to the Client a monthly progress report containing a summary of progress made, main problems encountered (in particular, where these may delay or impede further activities) and corrective measures proposed. Monthly progress reports shall be developed following the template provided in Annex F3 to these Terms of Reference. Monthly progress reports shall be provided no later than 7 calendar days after end of the calendar month and include an updated Schedule;

20. In order to enter / leave INPP security area and bring any kind of tools and equipment Consultant staff shall follow INPP regulations and procedures in force. Visits to INPP security area to be planned in advance in order to make all needed arrangements in due time.

21. The Consultant's staff, who will visit the INPP security area unsupervised by the Clients staff, must fill in the questionnaires in the prescribed form and receive clearance from the State Security Department of the Republic of Lithuania regarding access to INPP security area. The questionnaires must be filled in after the conclusion of the contract or not later than 40 working days before the planned visit to INPP security area.

22. Client will allow the Consultant personnel to visit premises in controlled zone of INPP under its supervision in case the personal annual external exposure dose for these personnel will not exceed 1 mSv. In case if Consultant staff will work in controlled zone of INPP, Consultant must obtain VATESI license or temporary permission to engage in activities in the environment of ionizing radiation at a nuclear facility. Relevant requirements are set in BSR-1.9.3-2016 „Radiation protection in nuclear facilities ".

23. Consultant, before starting activities in the environment of ionizing radiation at a nuclear facility shall be required to sign a contract on radiation safety assurance with a Client. Form of the contract is available here: https://www.iae.lt/administracine-informacija/pasiulymai/viesieji-pirkimai/98.

24. The Consultant must ensure that authorized employees of INPP, VATESI and other institutions supervising INPP have control over the activities of the Consultant (and its sub-Consultants at all levels) by performing independent inspections (audits, inspections, etc.).

25. Electronic files of documents shall be presented by the Consultant in non-editable format (*.pdf files) and editable form (Word, Excel, etc.). Documents for approval shall be presented as signed hard copies (2 items each). All documents submitted shall be identified with a title block

which contains the following information: title; number; revision; project title; developer name; number of pages (every page shall be numbered).

26. All the documents produced by the Consultant within this framework shall bear the following inscription „  Financed by the Ignalina Programme of the European Union (project No. 1A.18/03/R3D.01)“. This also concerns all information provided in press releases, brochures, slides, conference papers/presentations, webpages, social media, etc.
27. Copies of any computer models or databases created in the course of contracts under this framework agreement implementation shall be provided to the Client in electronic format if requested.
28. The Consultant shall develop and include a draft Risk Register for INPP reactors Zone R3 dismantling project in his proposal. This Risk Register shall be updated upon the signature of the contract and maintained throughout the implementation of the contract on a not less than quarterly basis. During the implementation of the contract the Risk Register will be supplemented by the Issues Register to be maintained on the same basis as the Risk Register.
29. Where a main contract requires activities of the Consultant to be performed at the INPP site, the Client will provide furnished office accommodation thereat, including utilities, free of charge; such at-site office accommodation will not include provision of personal computer(s), access to the computer systems of the Client, internet/intranet access or any other telecommunications. The Client is not responsible for the provision, arrangement or cost of any other office accommodation nor of hotel or living accommodation of the Consultant. The Client is not responsible for the provision, arrangement or cost of any travel to, from or within the Republic of Lithuania of the Consultant. Except for INPP at-site office accommodation described above, all other personnel-related costs of the Consultant are included in the fee-rates of the Consultant’s experts.
30. Where a main contract requires the specification by the Consultant of goods, works or services to be purchased by the Client, such specifications shall be compatible with the provisions of the Public Procurement Law of the Republic of Lithuania but may be prepared in the English language. The approval of the Client shall be required where the Consultant proposes any equipment or technology that is subject to restricted rights or licences or cannot for other reasons be obtained through competitive tender.
31. Where a main contract requires the Consultant to perform activities in an ionising environment at INPP, this shall be indicated in the respective terms of reference. The invitation to conclude the main contract shall set out the steps necessary for the Consultant to obtain valid documents from the authorized institution of Republic of Lithuania which gives the right to the Consultant to perform such activities.

## ANNEXES

1. Annex F1. Description of the Object to be dismantled;
2. Annex F2. Waste inventory and interactions with radioactive waste management facilities.
3. Annex F3. Monthly progress report template