

**Partial Contract concluded on the basis of the Framework Agreement signed on
12 October 2016 with the title:**

**Utilization of foreign experience in the siting process for a deep
geological repository for radioactive waste in the Czech Republic**

between

CONTRACTING PARTIES

Client: **Česká republika – Správa úložišť radioaktivních odpadů**

Registered office: Dlážděná 6, 110 00 Praha 1, Czech Republic

Represented by: RNDr. Jiří Slovák, Managing Director

ID: 66000769,

Banking details:

Name of Bank: ČNB, Na Příkopě 28, Praha 1

Account No.: xxxxxxxxxxxxxxxxxxxx

Not a payer of VAT

(hereinafter referred to as the “**Client**”) and

Name of company: **Posiva Oy (lead party) in consortium with Saanio & Riekkola Oy**

Registered office: Olkiluoto, FI- 27160 Eurajoki, Finland

Represented by: Janne Mokka

ID: 1029258-8,

Tax ID: FI10292588,

Banking details:

Name of Bank: Nordea (NDEAFIHH)

Account No.: xxxxxxxxxxxxxxxxxxxxxxxxxxxx

(hereinafter referred to as the “**Supplier**“)

(hereinafter both referred to as the “**Contractual Parties**”)

Contractual Parties conclude the following Partial Contract in accordance with the provisions of Article 5 and in the format of Annex No 4 of the Framework Agreement.

Utilization of foreign experience in the siting process for a deep geological repository for radioactive waste in the Czech Republic

Name of Partial Contract:	The utilization of POSIVA experience in the development of data management in the DGR project
Area of Services:	iii. the assessment and or/development of a database for geological data storage
ID of Services:	2016-120-04

	Function	Name	Date	Signature
Client approved for chapter 1	Project Manager	Ilona Pospíšková		
Worked out by	Project Manager of the Partial Contract	Martin Eliáš		
Partial Contract approved by the Client	Managing Director	Jiří Slovák		
Supplier approved project manager	Project Manager	Kimmo Lehto		
Supplier approved manager for partial contract	Project Manager of the Partial Contract	Niina Ahtonen		
Partial Contract approved by the Supplier	Sales Director, Posiva Oy	Mika Pohjonen		
	Managing Director, Saanio & Riekkola Oy	Timo Saanio		
	Managing Director, Posiva Solutions Oy	Mika Pohjonen		

Note: This Partial Contract (PC) is concluded in compliance with the conditions of the Framework Agreement (FA) signed on 12 October 2016 entitled: "Utilization of foreign

experience in the siting process for a deep geological repository for radioactive waste in the Czech Republic”.

1 CLIENT’S ASSIGNMENT

1.1 Requirements for the scope and technical specifications

The purpose of this agreement is to improve current "DGR data management procedures" using the knowledge acquired by Posiva in the process of developing and operating own data management procedures.

The transfer of Posiva’s knowledge will take place in the following areas:

1) Analysis of the current state of SÚRAO’s data management

The Client will provide information on current methodologies applied and future plans with respect to SÚRAO’s data management procedures and the Supplier will provide their comments on the procedures and propose suggestions for, and participate in the implementation of improvements. The Supplier’s outputs will serve as input for consultation that will take place at the Client’s premises.

2) Presentation and description of data acquisition and data interpretation during the siting process and DGR development phase

The Supplier will describe and present their experience with the data acquisition process and subsequent data storage and usage during the siting process, by describing the quality procedures in sampling and other data acquisition (measurements), data handling and evaluation processes.

With respect to safety assessment and technical feasibility evaluation purposes, the Supplier will describe the data selection chain for the safety assessment modelling (here meaning performance assessment and radionuclide transport assessment). Particular attention will be devoted to constructing a site descriptive model of a locality and safety reports from the data management perspective.

3) Presentation of data storage and using in decision-making process

Supplier will prepare a suggestion for methodology of data acquisition and interpretation and how these interpretations are implemented in decision-making process which will be provided for the client in the form of report. The methodology will be conceptually demonstrated by using examples of 3D geosphere and safety models and will be particularly focused on raw field data acquisition, storage into the databases and using in the decision-making process. Supplier will also describe the data preparation for modelling, data control mechanism and its correctness, result control and reverse confirmation of correctness. This particular part will be focused on methodology of long-term models storage including input data, in time with changing of the operational systems, program versioning and data formats.

4) Independent consultancy and upgrading of Clients internal database structures and processes with respect to the following particular data management topics:

The Supplier will participate in the upgrading of DGR data management methodology in the following areas:

- a. **Management of data acquisition** - most of the data required for the decision-making process related to the selection of a suitable site for the DGR has been provided by various contractors. An efficient transfer process from the supply chain to SÚRAO and the standardization of requirements relating to projects providing the required data form essential pre-conditions for obtaining comparable results from all SÚRAO's suppliers; this refers to both the data acquisition methodology and the metadata provided.
- b. **Data identification** – The most important considerations in terms of the clear and unambiguous identification of the data obtained consist of: the data storage method, a description of the metadata, the identification of the supplier, the project itself and the methodology via which the data has been generated. The aim therefore is to create methodologies for both describing the data to be stored and its subsequent clear and explicit description.
- c. **Data storage** – it is essential that the multidisciplinary data stored in the SÚRAO database is stored securely and in such a way that it can be easily accessed when required. The creation of an efficient "central data storage" system which includes the multidisciplinary data acquired during the site selection process currently makes up one of SÚRAO's top priorities.
- d. **Management of supplier to SÚRAO data exchange** - the aim is to create a uniform methodology for the acceptance and verification of data at the beginning of the storage process and the verification of data which is entered into SÚRAO's "central data storage" system. A further objective is to build an Intranet / Extranet system.
- e. **Control mechanisms** - the aim is to incorporate control mechanisms into the transfer of data to, and the storage of data in the central data storage system. The control mechanisms should be aimed at eliminating both technical errors (i.e. text fields, numerical values, missing values, etc.) and content errors such as unexpected/non-existent value ranges (e.g. pH 20, the wrong units etc.).
- f. **Metadata** - a transparent site selection procedure must be based on credible data input material, i.e. data with the following features accurately documented: acquisition methodology, accuracy of measurement, etc. The introduction of standardized metadata profiles for all the data concerning the DGR site selection process will assist in substantiating this process.
- g. **Data mining** – the mining and use of data from the "central data storage" system. The organization of the "central data storage" system should be adapted and equipped with tools to assist in searching for and subsequently processing the data required for the relevant decision-making processes.
- h. **HW - SW** - when obtaining data for the selection of suitable sites for a DGR, and the various procedures related to the site selection process, it is essential to select the most appropriate software and hardware resources available. The use of the appropriate scalable infrastructure and software tools enables the optimum exploitation of the data stored.
- i. **Backup and long-term storage**

of data for future generations - all the input data relating to the DGR site selection decision-making process is extremely valuable. It is essential that the appropriate technologies and procedures be selected with concern to the backup, archiving and storage of these records, both in terms of security against the loss of data due to technical reasons and for the purpose of transferring this information to succeeding generations who will be responsible for this long-term project in the future.

- j. **Data actualization** – data stored in the central data warehouse should be updated throughout the time in which it remains valid. Defining the updating procedure, i.e. with concern to replacements (the invalidation of superseded files / records), the updating of related data and metadata and the evidencing of the data makes up an important element of data management.

5) Technical report on SÚRAO's data management strategy

On the basis of activities undertaken under Articles 1 - 4 of the PC, the Supplier shall draw up a draft of a technical report to be entitled the "Data management strategy of SÚRAO" (the outcome of the project will consist of a set of recommendations - the methodology created by the Supplier split according to individual relevant topics). This draft will then be handed over to SÚRAO for comments, which will subsequently be discussed between the two contractual parties (via correspondence or at face-to-face meetings depending on the level of seriousness or complexity). The Supplier will then draw up a final version of the technical report and hand it over to the Client who will then append a final statement to it.

The Client nominates the following person as the Project Manager for the Partial Contract (PC): Martin Eliáš, e-mail: elias@surao.cz. The Supplier will communicate directly with this person with correspondence copied on all occasions to Ilona Pospíšková, e-mail: pospiskova@surao.cz and Lukáš Vondrovic vondrovic@surao.cz.

The Client requires the Supplier to nominate those PC participants that will be financed from this Partial Contract.

Changes of persons nominated either by the Client or the Supplier are permitted without the requirement for amending the PC. In case of a change of Project Manager either on the side of the Client or the Supplier, the Project Manager of the one party shall be required to notify his/her counterpart in writing of the change.

1.2 Required Services deadlines

Milestone 1: Consultation at the Supplier's premises, Presentation and description of data acquisition and data interpretation during the siting process and DGR development phase (Article 1.1 point 2)	03/2017
Milestone 2: Consultation at the Client's premises	05/2017
Milestone 3: : Handover of the Client's data management methodology to the Supplier (Article 1.1 point 1)	06 /2017
Milestone 4: Comments from the Supplier concerning the	09/2017

Technical Report and handover to the Client Presentation of data storage and using in decision-making process (Article 1.1 point 3)	
Milestone 5: Final version of the Technical Report drawn up by the Supplier and handover for the Client's final statement Independent consultancy and upgrading of Clients internal database structures and processes with respect to the following particular data management topics (Article 1.1 point 4)	12/2017
Milestone 6: Final statement from the Supplier	03/2018

1.3 Estimated labour intensity or its limitation

The Client estimates the volume of work involved to be 810 hours.

Point of PC	Activities	Estimated labour intensity [hours]
1	Analysis of the current state of SÚRAO's data management procedures	80
2	Consultation at the Client's premises	
2a	Management of data acquisition	50
2b	Data identification	60
2c	Data storage	50
2d	Management of Supplier to SÚRAO data exchange (projects)	70
2e	Control mechanisms	50
2f	Metadata	50
2g	Data mining	60
2h	HW – SW	30
2i	Backup and long-term storage of data for future generations	50
2j	Data updating	80
3	Consultation at the Supplier's premises	80
4	SÚRAO's Data Management Strategy Technical Report	100

1.4 Specific requirements concerning the organisation of the Services

The Supplier proposes the location and timing of meetings with the Client's experts deemed necessary to fulfil the objectives of the Partial Contract. Communication by

phone, emails and videoconferences is acceptable when information security is ensured.

2 CONFIRMATION / MODIFICATION OF THE ASSIGNMENT OF SERVICES BY THE SUPPLIER

2.1 Scope of the Services and technical specification

The Supplier will perform the assignment of Services by the Client as stated in Article 1.1. The Client provides the sufficient documentation describing the Client's data management for the Supplier in English (described in Article 1.1. point 1). The way Supplier participates in the implementation of improvements (Article 1.1. of the Partial Contract 4) is consultancy, presentation of Supplier's knowledge and training.

2.2 Fulfilment dates

The Supplier suggests the time schedule of the Services as stated in Article 1.2 by the client. This time schedule depends on when the information provided by Client is delivered to Supplier.

The Supplier may suggest changes to the partial deadlines: however, the final deadline should be in line with the requirements of the Client. If there are delays in delivering information to the Supplier, this has to be taken into account in the deadlines and overall schedule.

2.3 Price of the Partial Contract

The Supplier states here the price limit of the Partial Contract which is based on labour intensity determined in accordance with Article 2.4 of this document and the rates specified in Article 4.3 of the FA. Based on the preliminary allocation of working hours to experts and their hourly rates the cost estimate without travel costs is 101 902 euros. The Supplier shall be required to justify all his necessary expenses. At least tasks concerning consultation in the Client's premises will cause travelling expenses.

2.4 Organization of Services

The Supplier has specified the activities corresponding to the schedule and the persons involved in those activities and their roles in table 1. When determining labour intensity, the Supplier shall take into account the limit required by the Client in Article 1.3 of the Partial Contract 4 (810 hrs).

The Supplier has described in the table 1 the organisation and accountability of the individual persons involved in the Partial Contract. The estimated hours per category are listed in the table 2.

Table 1. Personnel and roles in the Partial Contract work.

Name	Role/position	Knowledge areas relevant for this PC
Kimmo Lehto	Project Manager	Project Management

Niina Ahtonen	Project Manager PC4 Senior Expert	Geoscientific data, data management, data models, databases, data processes, metadata, quality of data
Janne Kallunki	Senior Expert	Data management, databases, software, hardware
Harri Issakainen	Senior Expert	Data management, databases, software, hardware
Jussi Mattila	Senior Expert	3D- modelling: source data and results
Heini Reijonen	Senior Expert	Content management systems, models and data for safety case, data evaluation (hydrogeochemistry)
Seppo Paulamäki	Senior Expert	3D- modelling: source data and results
Markku Paananen	Senior Expert	3D- modelling: source data and results

Table 2: Personnel hours by category

Category	Hours	%	Price/euros
1	-	-	-
2	487	60	67 206
3	283	35	31 696
4	40	5	3 000
5	-	-	-
Total	810	100	101 902

2.5 Risk identification

Risk identification, assessment and management procedures are presented in the Annex No. 3 of FA. Time schedule depends strongly on the availability of the information in English.

3 CONCLUSION OF THE PARTIAL CONTRACT

Articles numbers 1 and 2 of this Partial contract are valid.

The sub-project is subject to the approval of persons authorised in contractual matters pursuant to Article 1.3 of the FA.

The Partial Contract will be concluded in line with Article 5 of the FA.

This Partial Contract becomes valid and comes into force on the date of its signature by authorized representatives of both Contractual Parties.