

# Specification

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Consulting services regarding  
seismology in connection to Swedish  
Radiation Safety Authority's review of  
the Forsmark area as a candidate site  
for a spent nuclear fuel repository in  
Sweden

# 1 Specification

## 1.1 Introduction

This procurement regards consulting services for the Swedish Radiation Safety Authority's (SSM) regarding seismology in connection to the review of geosphere performance for a repository for spent nuclear fuel. The work described here concerns for example the review of the SR-Site safety assessment published by the Swedish Nuclear Fuel and Waste Management Company (SKB). The SR-Site covers long-term nuclear safety and radiation protection for the post-closure phase and is part of the licence application by SKB. This procurement regards framework agreements to be established for a three-year review period. The framework agreements may be extended by a maximum of one additional year. This framework agreement may include other topics regarding seismology for consulting services for other organisational units at SSM. This can for example include review of frequency- and magnitude- distributions of natural earthquakes in connection with reviews of other nuclear facilities than the above described.

## 1.2 Instructions

The description of the assignment has the form of a questionnaire which is to be used for responding to questions and requirements.

1. All questions and requirements are to be responded.
2. Responses may not be omitted.
3. If a requirement has been met, the supplier must describe in which way this has been done when a response is requested. Please note that a response to any single item should not exceed two A4 pages.
4. The response is to be written in a text field immediately following the stipulated requirement. The size of this field adapts to the length of the response written. In order to move between the various fields, click by using the mouse cursor or use the arrow or tab keys. Click or use the space key in order to tick the boxes.
5. Appendices with explanatory text and illustrations may be submitted as supplementary information, but the responses in the various text fields must be sufficient for assessing how the supplier meets the stipulated requirements.

## 2 The Forsmark area as a candidate site

According to the KBS-3 disposal concept developed by SKB, the repository for spent nuclear fuel is planned to be placed at about 500 m in depth in crystalline rock. The concept is based on encapsulation of the spent nuclear fuel in copper canisters. The impermeable copper canisters are then embedded in a bentonite clay buffer placed in deposition holes in the crystalline rock.

The Forsmark candidate area for the spent fuel repository in Sweden can be described as a tectonic lens in the Baltic shield, which was thoroughly investigated as part of a site investigation programme between 2002 and 2007. The required consulting services specified here are mainly related to the current properties and the long-term evolution of the bedrock after the sealing of the disposal facility. To some extent, the construction and operation phases of the repository will also be considered. The review effort connected to the Forsmark site will consider the now completed review of the SKB site characterisation programme (by the Swedish authorities SSM, SKI and SSI). The Forsmark review has been broken down into the following review topics

- Key consultant for safety assessment integration with focus on bedrock properties and evolution
- Groundwater chemistry
- Hydrogeological analysis
- Engineering Geology and Rock Engineering
- Structural geology
- Rock mechanics modelling related to long-term site evolution
- Seismology

This procurement regards the review topic Seismology.

More than one consultant can be included. If a consultant outside the tenderer's own organisation is proposed, sub-contracting arrangements must be made.

For some review topics that involve other tasks apart from technical and scientific review of SKB material (e.g. mathematical modelling, literature studies, quality checks), the tenderer may include one or two consultants for technical assistance. This is the only way a differentiated man hour cost can be specified. In this procurement, an anticipated proportion of work by this category is specified and a different price may be given here (i.e. for the review topics that include the option of using consultants for technical assistance). If the tenderer chose not to use this option, it also needs to use the same man hour cost for this part of the work.

## 2.1 Requirements for consulting services

The tenderer **shall** provide one (1) or two (2)<sup>1</sup> named consultant who will be responsible for the assignment. The consultant's education and experience **shall** be documented in an accompanying Curriculum Vitae.

Have these requirements been met?

State the name of the proposed consultant:

The named consultant **shall** have knowledge and experience of<sup>2</sup>:

### 2.1.1 *Previous assignment connected to natural or induced seismic events*

The consultant(s) **shall** have completed at least three (3) assignments over the past 5 years connected to natural earthquakes or induced seismic events.

Has this requirement been met?

Submit a brief description of completed assignments:

### 2.1.2 *Impartiality requirement*

The consultant **shall not** have been involved directly, or indirectly through subcontracting, in work for the Swedish Nuclear Fuel and Waste Management Co. (SKB), any of its subsidiaries or its Finnish counterpart, POSIVA<sup>3</sup>, in the past two years. The tender must include a declaration that individuals intended for review or modelling tasks have not been involved in work commissioned by these companies after 01/01/2010. Furthermore, all work conducted by the consultant for SKB or any of its subsidiaries, directly or indirectly through subcontracting during the past four years must be stated in the application. SSM reserves the right to disqualify a consultant who has made essential contributions to the license application through assignments for SKB or any of its subsidiaries, directly or indirectly through subcontracting during the past four years. Moreover, SSM will evaluate the significance of other engagements and financial ties according to the appended SSM policy document dealing with disqualification and conflicts of interest.

Have these requirements been met?

Submit the declaration and, if applicable, a summary of the consultant's work for SKB or any of its subsidiaries, directly or indirectly through

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<sup>1</sup> If the tenderer submits more than two names of consultants to be in charge of the assignment for this review topic, SSM will select and evaluate only two of them.

<sup>2</sup> Fulfilment of mandatory 'shall' requirements shall be demonstrated with references. SSM shall be entitled to request referenced reports, or published reports from the tenderer, in order to verify the contributions if necessary. For all included assignments, reference to a person who is in a suitable position to verify the contribution of the proposed Consultant must also be given if required by SSM.

<sup>3</sup> A current or previous contract with POSIVA during the past two years is disqualifying because SKB and POSIVA have collaborated extensively regarding site characterisation and site analysis.

subcontracting during the past four years. In addition, fill in and submit the appended SSM form dealing with disqualification and conflicts of interest, enclosure 5.

Even excepting current or previous directly disqualifying assignments, SSM may, on the grounds of impartiality, disqualify a proposed consultant who belongs to the same organisational unit as one that currently has or had assignments for SKB during the past two years. Rigorous precautions to avoid conflicts of interest are needed if such assignments for SKB correspond to the same technical/scientific topic as for the submitted tender. However, if the Consultant can show that there is no risk of situations of conflicts of interest occurring, SSM may accept the participation of the consultant in the procurement.

Is the proposed consultant affiliated with an organisational unit that currently has or had assignments for SKB during the past two years?

If yes, the consultant should submit a description of how conflict of interest situations are avoided in the organisation with which the consultant is affiliated. SSM reserves the right to disqualify the proposed consultant if the stated measures to separate assignments from SKB and SSM respectively are insufficient.

### *2.1.3 Fluency in the English language in speech and writing*

The consultant **shall** have fluency in English in speech and writing.

Has this requirement been met?

### *2.1.4 Other consultant(s) within the area of seismology for technical assistance*

The tenderer may propose one (1) or two (2) consultant(s) for technical assistance for the assignments requested. All the proposed additional consultant(s) **shall** have at least two (2) years knowledge and experience from seismology projects **and** fluency in the English language in speech and writing.

Have both these requirements been met?

State the name(s) of the proposed consultant(s) and submit a brief description of their expert knowledge and experience.

## 2.2 Criteria for the award

### 2.2.1 The “should” criteria (corresponding to a total weighting of 65% in the evaluation)

The consultant(s) who will be responsible for the assignment will be evaluated in accordance with the following criteria. Each criterion will be evaluated and attributed 1-4 points. A weighting factor is given for each criterion. After consideration of all “should” criteria, the remaining weighting up to 100% is determined by the price. The consultant(s) “should” have:

1. Documented experience of earthquake magnitude and frequency assessments. A maximum of 10 references may be selected (weighting factor 20%).
2. Documented experience of post-glacial seismicity. A maximum of 10 references may be selected (weighting factor 10%).
3. Documented experience of probabilistic estimates of seismic risk and/or hazard. A maximum of 10 references may be selected (weighting factor 10%).
4. Documented experience of seismic wave propagation and/or fault displacements. A maximum of 10 references may be selected (weighting factor 15%).
5. Documented experience of scientific or regulatory review of articles/assignments regarding earthquakes. A maximum of 5 references may be selected (weighting factor 10%).

### 2.2.2 Remuneration for the Consultant (corresponding to a total weighting of 35% in the evaluation)

Submit the hourly rate excluding VAT in the table below. Please note that the submitted price is the ceiling price throughout the contractual period. The price submitted will be used to give evaluation points by considering the relationship to the other tender prices submitted.<sup>4</sup>

Category	Name	Price per hour in SEK	Number of hours <sup>5</sup>	Total (SEK)
The Consultant who will be responsible for the assignment			800	
<b>Tender price (sum)</b>				

<sup>4</sup> See item 6.4.2 in the enquiry documents.

<sup>6</sup> Please note that the price will be evaluated in accordance with item 6.4.2 of the enquiry documents. The hourly price submitted will be multiplied by a fictitious number of hours (800) in order to compute the tender price submitted.