

Deep repository and encapsulation plant for spent nuclear fuel

Consultation and environmental impact assessment according to the Environmental Code and the Nuclear Activities Act

Svensk Kärnbränslehantering AB
Swedish Nuclear Fuel and Waste Management Co

November 2002

Svensk Kärnbränslehantering AB

Swedish Nuclear Fuel
and Waste Management Co
Box 5864
SE-102 40 Stockholm Sweden
Tel 08-459 84 00
+46 8 459 84 00
Fax 08-661 57 19
+46 8 661 57 19



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Preface

The purpose of this report is to describe the frames which SKB envisions for upcoming consultations for the encapsulation plant, the deep repository, and other facilities in the deep disposal system. In collaboration with the public, non-governmental organizations, municipalities and government agencies, the scope, content and form of the consultations will be concretized. In the initial phase of the consultation, the scope and boundaries will be determined and details clarified so that the interests of various parties can be satisfied as far as possible. The report should therefore be seen as a point of departure for the detailed planning of the extended consultation.

The report is a more in-depth follow-up to SKB report R-01-46 *Environmental impact assessment and consultations for the deep repository – SKB's overall planning* (in Swedish only) /0-1/. The report focuses on extended consultation and environmental impact assessment and is addressed to everyone who will be involved in the extended consultation for the encapsulation plant and the deep repository.

As a part of its programme for siting of a deep repository for spent nuclear fuel, SKB has recently commenced site investigations at Forsmark in Östhammar Municipality and at Simpevarp in Oskarshamn Municipality. At the same time, SKB has initiated the consultation process prior to application for permits/licences under the Environmental Code and the Nuclear Activities Act. Early consultation has been carried out for both sites, and a consultation report has been submitted to the county administrative boards in Kalmar County (24 January 2002) and Uppsala County (28 June 2002) for decisions regarding significant environmental impact. After decisions by the county administrative boards, SKB will commence the work with environmental impact assessment and extended consultation.

SKB's main alternative for the encapsulation plant is siting adjacent to CLAB. In the spring of 2003, SKB will convene early consultation on the encapsulation plant. This will be followed by extended consultation up to 2005. This process will be coordinated with the extended consultation for a deep repository in Oskarshamn. An alternative is to locate the encapsulation plant at a deep repository at Forsmark. This alternative is being dealt with completely within the extended consultation for the deep repository at Forsmark.

Three different permits/licences are required for both the encapsulation plant and the deep repository: a permit under the Environmental Code, a licence under the Nuclear Activities Act, and a building permit under the Planning and Building Act. Licensing under the Environmental Code and the Nuclear Activities Act takes place in parallel. The applications under both laws must include an environmental impact statement (EIS) prepared according to the rules in Chapter 6 of the Environmental Code. The same EIS is thus used in both applications. Separate EISs are prepared for the encapsulation plant and the deep repository.

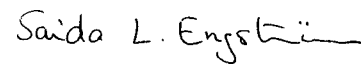
According to the Environmental Code (Chapter 6, Section 5), the consultation shall relate to the location, scope, design and environmental impact of the activity, as well as the content and structure of the EIS to be appended to the application. A proposed

structure for an EIS is given at the end of this report. The content of the EIS will be continually adjusted and augmented in response to the outcome of the consultations and the various investigations and surveys that will be conducted.

Stockholm, November 2002



Claes Thegerström



Saida L. Engström

Contents

1	Background	7
1.1	Deep repository	7
1.2	Encapsulation plant	8
2	Timetable for investigations, consultation and licensing	9
2.1	Deep repository	9
2.1.1	Site investigations	9
2.1.2	Extended consultation	9
2.1.3	Timetable	10
2.2	Encapsulation plant	10
2.2.1	Planning and design	10
2.2.2	Early consultation	11
2.2.3	Extended consultation	11
2.2.4	Timetable	11
3	Licensing	13
4	Consultation	15
4.1	Introduction	15
4.1.1	What the law says – an overview	15
4.1.2	SKB's RD&D-programme – a platform for future consultations	16
4.1.3	Premises	17
4.1.4	Purpose and scope	17
4.1.5	Consultation pursuant to the Nuclear Activities Act	18
4.2	Early consultation	18
4.3	Extended consultation with environmental impact assessment	18
4.3.1	County administrative board, municipalities and government agencies	19
4.3.2	Concerned public	20
4.3.3	Non-governmental organizations	21
4.3.4	Consultation with other countries	22
4.4	Forms for consultation	22
4.5	Handling of questions, reporting and documentation	23
4.5.1	Questions at consultation meetings	23
4.5.2	Questions between consultation meetings	23
4.5.3	Consultation report	23
5	Environmental impact assessment	25
5.1	Purpose	25
5.2	Contents	25
5.3	Document structure	26
5.4	Target groups	27
5.5	Scoping	27
5.6	Proposed structure of EIS	29
6	References	31

Appendix 1 Government agencies and others who may be affected by the issues dealt with by consultations for the deep repository and the encapsulation plant	33
Appendix 2 Proposal for structure and contents of an environmental impact statement	35

1 Background

1.1 Deep repository

In December 2000, SKB submitted an integrated account of method, site selection and programme prior to the site investigation phase (RD&D-K /1-1/). Three alternatives – Forsmark, Tierp north/Skutskär and Simpevarp – were prioritized for site investigations. SKI (the Swedish Nuclear Power Inspectorate) and KASAM (the Swedish National Council for Nuclear Waste) submitted statements of comment to the Government presenting the results of reviews by government agencies and experts. On 1 November 2001, the Government made a decision in the matter giving the go-ahead to SKB to continue the work according to the account given in RD&D-K. The Government had no objections to the commencement of site investigations on the three sites Simpevarp, Forsmark and Tierp north by SKB¹.

In December 2001, the municipal council in Östhammar consented to a site investigation at Forsmark. A similar decision was made by the municipal council in Oskarshamn in March 2002 regarding a site investigation at Simpevarp. Based on the account in RD&D-K and the decisions of the Government and the municipalities, SKB has commenced site investigations at Forsmark and Simpevarp, while Tierp north/Skutskär is no longer a candidate for a site investigation. The site investigations are projected to take 5–6 years. The goal is to gather all the material needed for an application to build the deep repository on a specific site.

In May 2001, SKB submitted a notification to the county administrative board in Kalmar County of early consultation for the deep repository. The licensing process pursuant to the Environmental Code and the Nuclear Activities Act was thereby commenced. Early consultation has since been carried out for both sites and a consultation report has been submitted to the county administrative boards in Kalmar County (24 January 2002) and Uppsala County (28 June 2002) for decisions regarding significant environmental impact².

A detailed account of the deep repository project, research, development and demonstration (RD&D), studied methods, the siting process and the sites selected for site investigations can be found in RD&D-K /1-1/, RD&D-Programme 2001 /1-2/, and the final reports from the feasibility studies in the municipalities of Östhammar and Oskarshamn /1-3; 1-4; 1-5/. The general planning for the site investigations is presented in two background reports to RD&D-K /1-6; 1-7/. The planning for the initial site investigation phase on the two sites can be found in the site-specific programmes for the Forsmark area R-01-42 /1-8/ and the Simpevarp area R-01-44 /1-9/.

¹ Älvkarleby was also asked about participation in the site investigations, since it was envisioned that encapsulated nuclear fuel could be transported to the harbour in Skutskär and from there by rail to a deep repository in Tierp. In March 2002, the municipal council in Älvkarleby said yes to continued participation, while the municipal council in Tierp voted no to site investigations by a slim majority. This eliminated Tierp as an alternative.

² Since a nuclear installation according to the Ordinance on Environmental Impact Assessment /1-10/ is always assumed to have a significant environmental impact, the county administrative board's decision is given – extended consultation will be required prior to the preparation of an environmental impact statement and the submission of an application for a permit for the final repository.

1.2 Encapsulation plant

In addition to the deep repository, the system for managing and disposing of spent nuclear fuel also includes an encapsulation plant and a transportation system.

In RD&D-92, SKB proposed Oskarshamn as the main alternative for siting of the encapsulation plant. For this reason, the “EIA group for CLAB and the encapsulation plant” was formed³. Representatives of the county administrative board in Kalmar County, Oskarshamn Municipality, SKI, SSI (the Swedish Radiation Protection Authority) and SKB participated in the group. The EIA group produced a planning report for environmental impact assessment for the encapsulation plant. The report, which was finished in 1996, discussed questions that may arise in conjunction with the design, construction and operation of an encapsulation plant adjacent to CLAB. The research work that was conducted in parallel with the work of the EIA group was reported in SKB report R-98-12 “Safety in the operation of the encapsulation plant” /1-11/ (in Swedish only). The continued planning for the encapsulation plant has subsequently awaited the results of SKB’s feasibility studies for the deep repository. Now that site investigations for the deep repository have been commenced, the work of planning and design and of gathering material for an application for a building permit and an operating license for the encapsulation plant will be resumed.

SKB’s main alternative is still siting at CLAB, but co-siting with a deep repository in Forsmark will also be considered.

³ The group subsequently changed its name to the EIA forum in Kalmar County. Recently the name was changed again to the “Oskarshamn EIA forum”.

2 Timetable for investigations, consultation and licensing

2.1 Deep repository

2.1.1 Site investigations

In the spring of 2002, site investigations started in both Forsmark and Oskarshamn. The work is divided into two stages: initial site investigation and complete site investigation. The purpose of the initial site investigation is to determine whether the feasibility study's assessment of the suitability of the areas is still valid, even with data available from great depth. The goal of the initial investigation is to identify the site within the proposed areas in Forsmark and Oskarshamn that is deemed to be most suitable for a deep repository. The purpose of the complete site investigation is to gather the detailed data that are required to select one of the sites and apply for a permit to site the deep repository on this site.

2.1.2 Extended consultation

The extended consultation is commenced when SKB, after the county administrative board's decision regarding significant environmental impact, invites one of the concerned parties to extended consultation. SKB estimates that extended consultation, for both Oskarshamn and Forsmark, can be commenced during the first quarter of 2003. The extended consultation will then continue until an EIS is completed and SKB submits permit applications for the deep repository.

The extended consultation can be divided into three phases: *scoping, investigation and design* and *verification*.

Scoping

During the initial phase of the extended consultation, SKB will prepare a *scoping report* describing which investigations are planned and the proposed scope and boundaries of the EIS (see section 5.5), plus a preliminary table of contents for the EIS. The scoping report will form the basis for extended consultation with all concerned consultation parties.

Investigation and design

There will be constant feedback between ongoing investigations, surveys, design work and consultations. As the siting investigations and design process progresses and different surveys are carried out, the design of the facilities and their adaptation to their surroundings and impact on the environment will be refined and improved. Results of investigations and surveys as well as proposals for facility design will be presented at the consultation meetings, and the participants will be given an opportunity to offer their viewpoints on SKB's proposals.

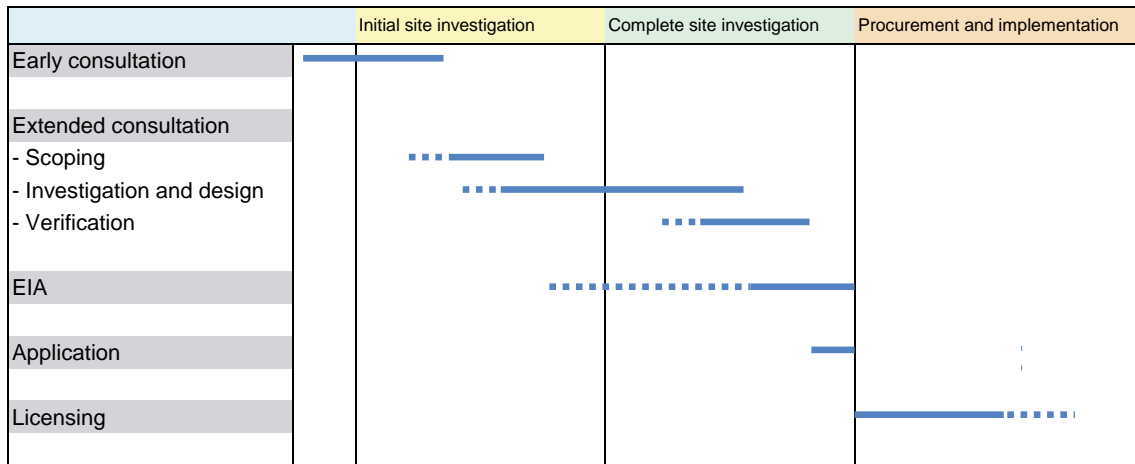


Figure 1. Schematic timetable for investigations, consultations and licensing.

Verification

When the site investigations are concluded and the necessary investigations have been completed, an EIS will be compiled for the site which SKB, after careful evaluation, chooses to proceed with. Before permit applications are submitted, SKB intends to verify with the concerned consultation parties that the EIS meets the requirements of Chapter 6 of the Environmental Code.

2.1.3 Timetable

A schematic timetable for investigations, consultations and licensing is shown in Figure 1.

2.2 Encapsulation plant

2.2.1 Planning and design

During the period 1994–1996, SKB carried out planning and basic design for the encapsulation plant with siting adjacent to CLAB, see SKB report R-98-12 “Safety in the operation of the encapsulation plant” /2-1/ (in Swedish only). SKB plans to resume the work during the first half of 2003 and to carry out design and other surveys required for environmental impact assessment and permit application.

2.2.2 Early consultation

SKB plans to convene early consultation during the spring of 2003. Following this consultation, SKB will compile a consultation report, which will be sent to the county administrative board in Kalmar County for judgement and decision regarding significant environmental impact⁴.

2.2.3 Extended consultation

The extended consultation is commenced when SKB, after the county administrative board's decision regarding significant environmental impact, invites one of the concerned parties to extended consultation. SKB estimates that extended consultation can be commenced during the third quarter of 2003. The extended consultation for the encapsulation plant will be coordinated with the extended consultation for the deep repository in Oskarshamn. The consultation will continue until an EIS is completed and SKB submits permit applications for the encapsulation plant, which according to current plans is expected to occur in early 2006.

Just as for the deep repository, the extended consultation for the encapsulation plant can be divided into three phases: *scoping, investigation and design* and *verification*.

2.2.4 Timetable

A schematic timetable for design, consultation and licensing is shown in Figure 2.

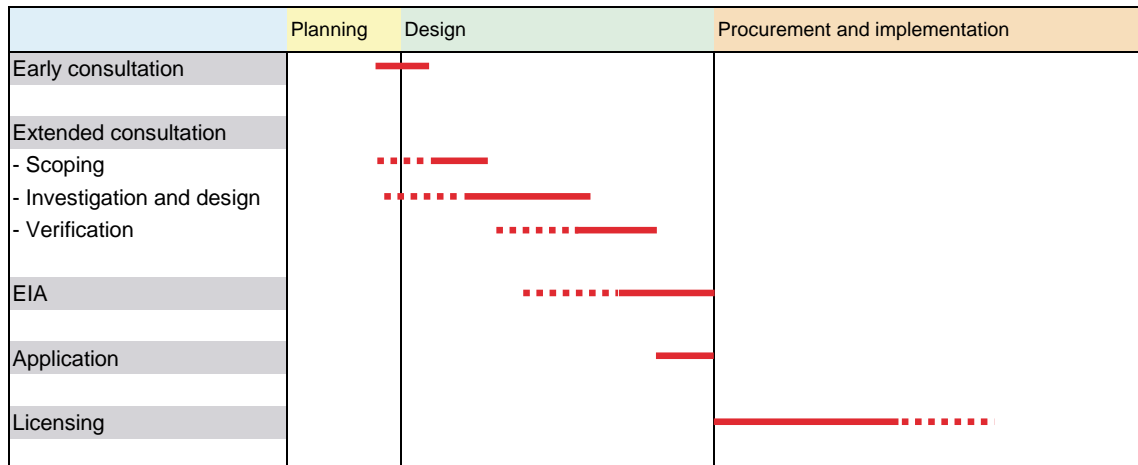


Figure 2. Schematic timetable for design, consultation and licensing.

⁴ The encapsulation plant is a nuclear installation. According to the Ordinance on Environmental Impact Assessment /2-2/, such an installation shall always be assumed to have a significant environmental impact. The county administrative board's decision is therefore given – extended consultation will be required prior to the preparation of an environmental impact statement and the submission of an application for a permit for the encapsulation plant.

3 Licensing

Three different permits/licences are required for the encapsulation plant and the deep repository, both of which are nuclear installations: a permit under the Environmental Code (1998:808) /3-1/, a licence under the Nuclear Activities Act (1984:3) /3-2/, and a building permit under the Planning and Building Act (1987:10) /3-3/. Licensing under the Environmental Code and the Nuclear Activities Act takes place in parallel. The applications under both laws must include an environmental impact statement (EIS) prepared according to the rules in Chapter 6 of the Environmental Code. The same EIS is thus used in both applications. Separate EISs are prepared for the encapsulation plant and the deep repository.

According to Chapter 17 of the Environmental Code, the Government shall, after preparation by the Environmental Court, examine the permissibility of the activity. After SKI's preparation of the matter, the Government shall also examine permit applications under the Nuclear Activities Act. If the Government declares construction and operation of the facility permissible under the Environmental Code and grants a permit/licence under the Nuclear Activities Act, it remains for the Environmental Court to grant a permit/licence and stipulate conditions under the Environmental Code.

In as much as the same matter must be examined by several bodies, the Government has expressed a desire for coordination (Gov. Bill 1997/98:90 /3-4/). Since the Environmental Court may not grant a permit under the Environmental Code until the Government has declared the activity permissible, preparation by SKI and the Environmental Court should be conducted so that the Government can issue decisions under the Environmental Code and the Nuclear Activities Act at the same time. A prerequisite for this is that the Environmental Court's consideration of the matter under the Environmental Code be done in parallel with SKI's preparation of the licensing matter under the Nuclear Activities Act so that both can submit their verdicts to the Government at roughly the same time. The legislative history of the Environmental Code notes that both the Environmental Court and the concerned municipality should have access to SKI's and SSI's judgements and reviews regarding examination under the Nuclear Activities Act in their treatment of the permissibility examination under the Environmental Code (Environmental Code Chapter 17, Section 6).

Figure 3 illustrates schematically how examination under various laws can take place. SKB's publication "The licensing process for a deep repository and an encapsulation plant for spent nuclear fuel" /3-5/ contains a fuller account of licensing for the deep repository and the encapsulation plant.

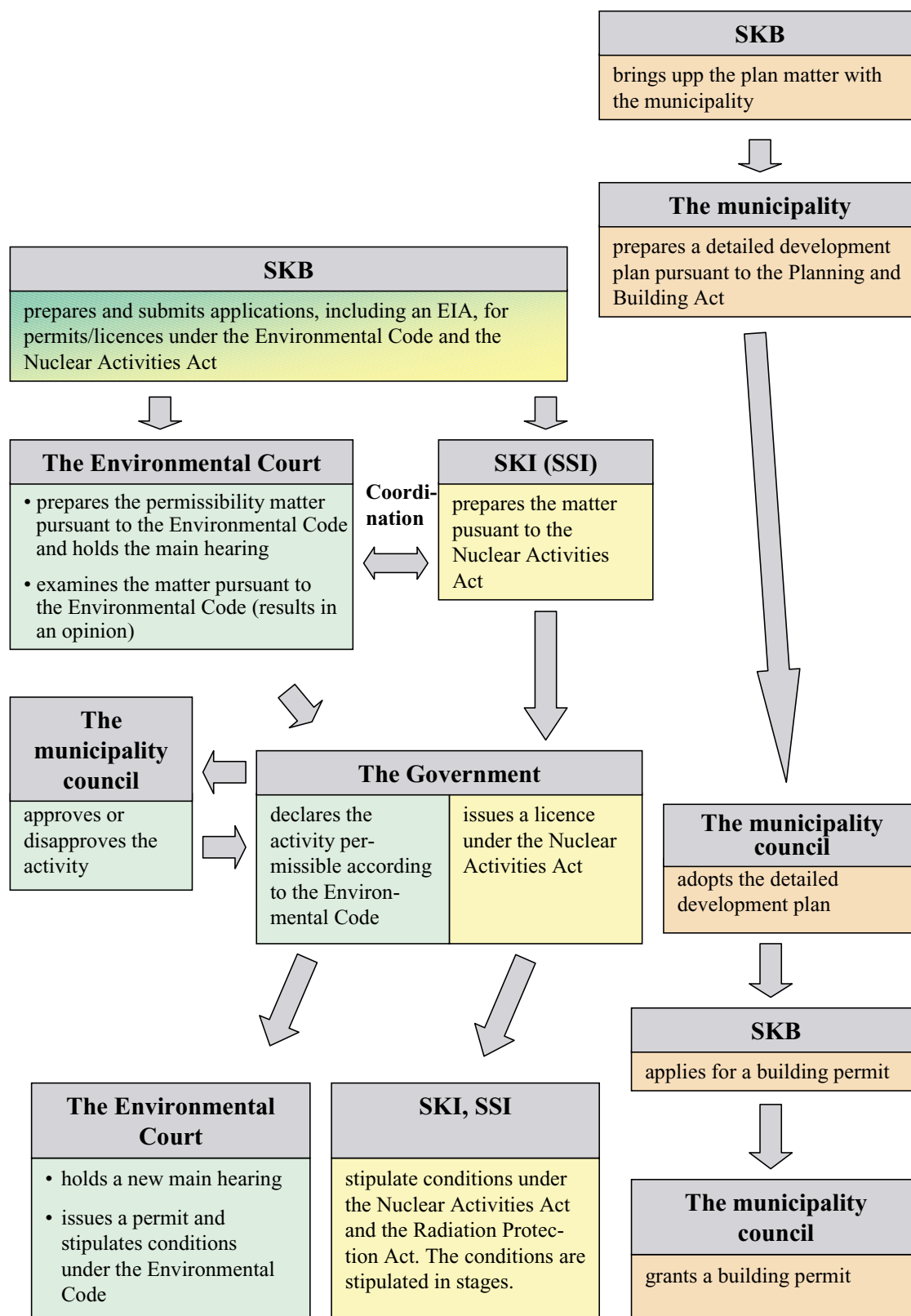


Figure 3. Schematic illustration of the licensing procedure for the deep repository and the encapsulation plant.

4 Consultation

4.1 Introduction

The consultation procedure for the deep repository and the encapsulation plant will take many years. It will therefore be necessary to gradually adapt its forms and content to ongoing advances in technology and the questions that emerge as being of vital importance for participating parties during the course of the consultation. There is therefore great flexibility and openness for viewpoints on the planning presented here.

4.1.1 What the law says – an overview

Applications for a nuclear installation must always be preceded by consultation on the project with government agencies, municipalities, organizations and the public. It is the facility operator, i.e. SKB, who is responsible for carrying out the consultation for the deep repository. How the consultation is to proceed, who is involved and what the outcome should be is regulated in Chapter 6 of the Environmental Code (see box).

Chapter 6, Environmental Code

Early consultation

4 § Anyone intending to pursue an activity or take a measure for which a permit or decision concerning permissibility is required according to this Code or to rules issued in pursuance thereof shall consult the county administrative board at an early stage. They shall also consult private individuals who are likely to be affected and do so in good time and to an appropriate extent before submitting an application for a permit and preparing the environmental impact statement that is required in accordance with section 1. Prior to consultation, anyone intending to pursue an activity shall submit information about the location, scope and design of the activity and its anticipated environmental impact to the county administrative board and any private individuals affected.

.....

Following the consultation, the county administrative board shall decide whether the activity or measure is likely to have a significant environmental impact. Such a decision may not be appealed. Before a decision is taken, an opinion shall be solicited on the matter from the supervisory agency, provided that the latter is not the county administrative board.

.....

Early consultation shall thus be held with the county administrative board and with any private individuals who may be particularly affected. The early consultation shall lead to a decision by the county administrative board on whether the activity is likely to have a significant environmental impact.

Since a nuclear installation according to the Ordinance on Environmental Impact Assessment (1998:905) /4-1/ is always assumed to have a significant environmental impact, the county administrative board's decision is given – *extended consultation with environmental impact assessment* will be required – for both the deep repository and the encapsulation plant – before an application can be submitted. The extended consultation shall take place with the county administrative board, other government agencies, and any municipalities, members of the public and non-governmental organizations who may be concerned. According to Chapter 6, Section 5 of the Environmental Code, the consultation shall relate to the location, scope, design and environmental impact of the activity, as well as the content and structure of the EIS.

If it is likely that an activity could lead to a *significant environmental impact in another country (Esbo Convention)*, the Swedish EPA shall “inform the competent authority in that country about the planned activity or measure and give the country concerned and the citizens who are affected the opportunity to take part in a consultation procedure concerning the application and the environmental impact assessment” (Chapter 6, Section 6 of the Environmental Code, see also NFS 2001:9 /4-2/).

Facilities – for example new roads – may come into being as a consequence of the establishment of the deep repository and the encapsulation plant. For such matters, *separate licensing procedures* will take place with associated consultations and environmental impact assessments in accordance with the laws, for example the Road Act, that apply to the facility in question. This notwithstanding, all facilities included in the deep disposal system will be described in the environmental impact statement for the deep repository and be discussed in the extended consultation.

In all likelihood, siting of the deep repository and the encapsulation plant will entail that *consultation under the Planning and Building Act* must be held prior to the adoption of a municipal plan (detailed development plan or area regulations) that precedes the municipality's examination of applications for building permits for the facilities. These consultations are presided over by the municipality in question, but should be coordinated as soon as possible with the consultations held by SKB under the provisions of the Environmental Code. For the deep repository project in particular, several important questions will be decided in conjunction with municipal plan decisions.

4.1.2 SKB's RD&D-programme – a platform for future consultations

According to the provisions of the Nuclear Activities Act, a research and development programme, RD&D-programme, for management of the spent nuclear fuel and nuclear waste is to be submitted every three years. SKI, who circulates the programme for review and comment, and KASAM submit statements of comment on the programme to the Government in which they present the results of reviews by government agencies and experts, after which the Government makes a decision on the RD&D-programme. Through this procedure, concerned municipalities, government agencies and the Government have for many years kept track of SKB's activities with regard to both development of a method for management and disposal of the spent nuclear fuel and the siting process for the deep repository. Now that the siting process has reached the site investigation phase, the municipal councils in the concerned municipalities have also reached decisions regarding their continued participation.

4.1.3 Premises

The following important premises apply to the consultations on the deep repository and the encapsulation plant, as clearly presented and explained by SKB in RD&D-K /4-3/ and RD&D-Programme 2001 /4-4/:

- the spent fuel shall be managed and disposed of according to the KBS-3 method,
- the possibility of siting the deep repository is being investigated for Forsmark and, Oskarshamn
- the main alternative for the encapsulation plant is siting adjacent to CLAB; co-siting with a deep repository in Forsmark will be studied as a secondary alternative.

4.1.4 Purpose and scope

In SKB's opinion, the main purpose of the consultations is to give different actors a concrete opportunity to influence:

- the design and adaptation of the facilities with regard to human health and the environment as well as the natural and cultural values that exist in the area,
- the scope and content of the environmental impact statement,
- which surveys and investigations need to be conducted to arrive at an adequate environmental impact statement.

Another important purpose is to give SKB a good opportunity to solicit information from individuals and organizations with good local knowledge so that areas or sites worthy of protection will not be unnecessarily compromised by planned facilities.

SKB's objective in the consultations on the deep repository and the encapsulation plant is that everyone who wishes to get involved in the question will be given an opportunity to do so. This applies just as much to members of the public and non-governmental organizations as to municipalities and government agencies.

Deep repository

SKB will hold consultations on the deep repository for the two sites – Oskarshamn (Simpevarp) and Forsmark – where SKB has commenced site investigations. If site investigation should be commenced at an additional site, consultation will also be held for this site. The consultations for the different sites will be conducted on an equivalent level throughout most of the site investigation phase, even though the subsequent application will only apply to one site.

Encapsulation plant

For the alternative with an encapsulation plant adjacent to CLAB in Oskarshamn, SKB plans to commence early consultation with the county administrative board and other concerned parties during the first half of 2003. Subsequently, when the county administrative board has decided on extended consultation with environmental impact assessment, there may be reason to coordinate the consultation processes for the encapsulation plant and the deep repository.

Within the framework of the studies of and the consultation process for a deep repository in Forsmark, SKB will, as a secondary alternative, also explore the possibility of co-siting the encapsulation plant with a deep repository at Forsmark.

4.1.5 Consultation pursuant to the Nuclear Activities Act

As is evident from the above, the applications for both the deep repository and the encapsulation plant will be examined in parallel under the Environmental Code and the Nuclear Activities Act. The applications pursuant to both acts must include an environmental impact statement that has been prepared in accordance with the rules in Chapter 6 of the Environmental Code. Thus, the same EIS will be submitted in support of the permit applications for both the Environmental Code and the Nuclear Activities Act. There is therefore no reason to have separate consultations with concerned private individuals, government agencies, municipalities, the public and non-governmental organizations. SKB therefore plans to conduct coordinated and simultaneous consultations pursuant to both the Nuclear Activities Act and the Environmental Code. SKI has expressed its support for such a procedure /4-5; 4-6/.

4.2 Early consultation

Early consultation for the deep repository has been carried out for both sites, and a consultation report has been submitted to the county administrative boards in Kalmar County (24 January 2002) /4-7/ and Uppsala County (28 June 2002) /4-8/ for decisions regarding significant environmental impact.

SKB plans to convene early consultation for the encapsulation plant during the spring of 2003.

4.3 Extended consultation with environmental impact assessment

After the county administrative boards' decisions concerning significant environmental impact, SKB will initiate extended consultation with the county administrative board, other government agencies, and any municipalities, members of the public and non-governmental organizations who may be concerned for each of the siting alternatives. The extended consultation commences when SKB convenes or invites one or more of the parties.

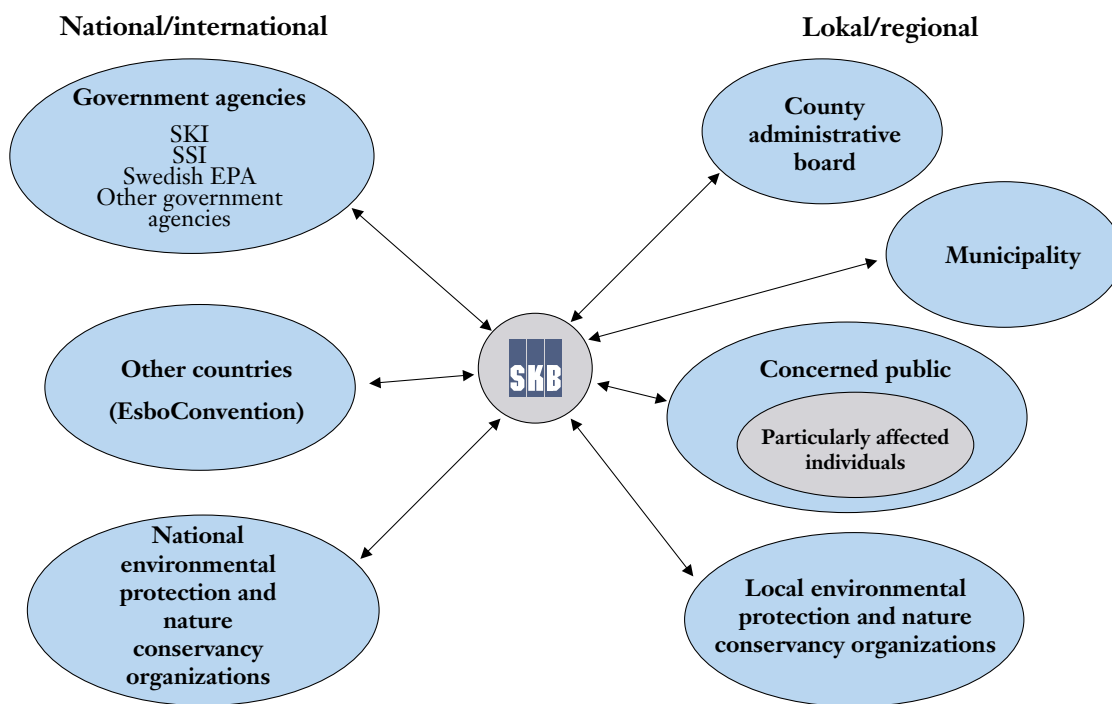


Figure 4. Circle involved in the extended consultation for the deep repository and the encapsulation plant.

4.3.1 County administrative board, municipalities and government agencies

The extended consultation includes continued consultation with concerned *county administrative boards*. During the feasibility study phase, the county administrative boards have had a coordinating responsibility for consultations with municipalities and government agencies in accordance with the Government's decision regarding SKB's supplement to RD&D-Programme 92. The consultations have been held within the *EIA Forum in Kalmar County* and the *regional consultation in Uppsala County*. SKB considers the knowledge and the work forms that have been built up there to be valuable and intends to build further on the experience and forms for consultation that have existed since the feasibility study phase.

The roles of the parties change with the transition to consultations pursuant to the provisions of the Environmental Code, however. It is the party who is responsible for conducting an activity, in this case SKB, who is responsible for holding consultations on the project. This means it is SKB who is responsible for convening and preparing an agenda for the consultation meetings, as well as for keeping minutes and preparing a consultation report.

In order to adapt the consultations to the requirements in the Environmental Code, the EIA Forum in Kalmar and the Regional Consultation Forum in Uppsala County are changing their work forms. In each region, the forum consists of representatives of SKB, the county administration, the municipality, SKI and SSI. Other government agencies and neighbouring municipalities will be co-opted on one or more occasions to the forums, which plan to hold 3–4 meetings per year.

The objective of the work in the consultation forums in Kalmar and Uppsala counties is that all concerned parties in those counties should give an account of implemented and planned activities associated with the deep repository and the encapsulation plant.

According to the Swedish EPA's general recommendations regarding environmental impact assessments, the county administrative board should in its decision on significant environmental impact stipulate which government agencies are to be included in the consultation. Agencies not directly affected by the matter are informed and can notify their interest in participating if they like. A sending list is prepared in collaboration with the county administrative board. Agencies that are directly affected by certain issues are invited by SKB on the basis of which matters are on the agenda for the meeting.

For agencies and organizations that are not directly affected by the matter, it may be sufficient that they receive written information regularly. A preliminary list of the agencies and others who may be affected by the issues dealt with by consultations for the deep repository is presented in Appendix 1.

SKB has been consulting for some time now with *SKI and SSI* concerning the *site investigations* in keeping with the Government's decision of 1 November 2001. The Government decision also stipulates that SKB shall consult with SKI and SSI regarding how and when renewed accounts of *system analyses and safety assessments* are to be presented. Consultations with government agencies that have been initiated by a Government decision are expected to be held throughout the site investigation phase. At these meetings SKB provides information on the current status of the site investigations. Questions brought up at the meetings or in conjunction with the regulatory reviews of SKI's RD&D-programme are followed up. Minutes of meetings are signed by SKB and verified by SKI and SSI. Since these consultations are not a consequence of the provisions of the Environmental Code, the minutes will not be included in the consultation report submitted together with the permit application for the repository. However, SKB may refer to them in its reports on consultations pursuant to Chapter 6 of the Environmental Code. SKB will provide updates on these consultations at meetings with the consultation forums in Kalmar and Uppsala counties.

4.3.2 Concerned public

The extended consultation concerns a much wider circle of the public than the early consultation. During the extended consultation as well, SKB will devote special attention to individuals who may be *particularly affected* by a future deep repository or encapsulation plant. However, those who are regarded as being particularly affected by the deep repository project in Oskarshamn will be limited in relation to the circle that was invited to the early consultation. This is because one goal during the initial site investigations in Oskarshamn is to limit the very large area which SKB has designated to be of interest for a deep repository. Particularly affected individuals will receive invitations to consultation meetings sent to their homes, along with background material for the meeting and minutes. For this group, it is natural to continue the discussion initiated at the early consultation of what concrete impact the project might have in the immediate vicinity.

Other members of the public will be invited to consultation via notices in the local press. These notices will indicate where background material for the meeting can be obtained. Minutes from the meetings will be available on SKB's website, at SKB's head office in Stockholm, and at SKB's site offices. Interested persons can contact one of these locations to obtain a copy of the minutes of the consultation.

The *consultation meetings* deal with subjects such as:

- the current situation from the site investigations and results obtained thus far,
- the status of the design and planning work for infrastructure build-up,
- some topical subject, for example:
 - the encapsulation plant's impact on the near environment,
 - the deep repository with associated infrastructure – adaptation to existing development and to protected and valuable areas,
 - handling of rock spoils,
 - community development,
 - alternative methods and sites.

Naturally, the subjects presented and discussed at the consultation meetings will change over the years during which the extended consultation is held.

The proposed scope and boundaries of EIA as well as work forms will be dealt with at the first meeting within the framework of the extended consultation. SKB plans to hold at least one consultation meeting about the deep repository with the public at each site during the initial site investigations. The need for consultations during the complete site investigation should be determined before it starts. The consultation about the encapsulation plant will be coordinated in a suitable manner with the consultation for the deep repository.

4.3.3 Non-governmental organizations

According to the Environmental Code, the organizations that are likely to be affected shall be invited to consultation on the project. According to the legislative history of the Environmental Code, this refers above all to *environmental protection and nature conservancy organizations* active in the locality where the activity is planned. SKB therefore intends to hold consultation meetings with the local environmental and nature conservancy organizations at the concerned sites. These consultations give SKB an opportunity to obtain information on local conditions and ecological values. With their local knowledge, the local organizations can contribute to designing and locating the deep repository in such a way that the impact on man, environment and landscape can be limited. Extended consultation with local organizations is held at least once during both the initial and complete site investigations.

The deep repository is a matter of great concern to nationwide non-governmental organizations. Large national environmental protection and nature conservancy organizations will be invited to a consultation meeting dealing primarily with general questions, such as alternative methods and sites, or long-term safety and environmental protection.

4.3.4 Consultation with other countries

SKB's judgement is that consultation with other countries should be held in accordance with the rules of the Esbo Convention⁵ /4-9/ for both the deep repository and the encapsulation plant. As an example, it can be mentioned that consultation is being held with Sweden, Estonia and Russia regarding Finland's plans for a final repository for spent fuel in Finland. SKB consults with the Swedish EPA to discuss the need for and scope of consultation with other countries, and with which countries consultation should be held.

SKB is responsible for ensuring that background material is made available in the language of the country in question. According to the Swedish EPA's general recommendations, the need for and scope of translation should be determined in consultation with the concerned country. SKB is also responsible for any information meetings in the country in question, as well as for defraying any costs incurred by the country for experts and the like.

SKB foresees that the consultation with other countries will be held jointly for the deep repository and the encapsulation plant.

4.4 Forms for consultation

During the extended consultation, SKB will employ a number of different meeting and work forms. The work form judged to provide the best results with regard to the issues to be dealt with and the target group in question will be chosen for each consultation occasion. The SKB report "Environmental impact assessment and consultation for the deep repository – SKB's general planning", SKB R-01-46 /4-10/ (in Swedish only) describes different ways to carry out consultation and which activities are recommended with regard to the purpose and target group of the consultation:

- meetings,
- town meetings,
- open house,
- seminars,
- study circles,
- working groups,
- excursions and field trips,
- letters and telephone,
- Internet communications.

⁵ According to the Swedish EPA's general recommendations, NFS 2001:9 /4-2/, the county administrative board should notify the Swedish EPA already at the time of the early consultation in the case of activities that are likely to cause significant environmental impact in another country.

4.5 Handling of questions, reporting and documentation

4.5.1 Questions at consultation meetings

At each consultation meeting, SKB will keep minutes in which viewpoints and questions are noted. The questions and viewpoints brought up at the consultations must be handled with a view to their character and scope. Concrete questions and viewpoints that can be answered and acted on based on present-day knowledge should be dealt with directly at the meeting, if possible, and be answered or commented on in the minutes of the meeting in question. Other questions may require more thorough discussion and possibly further investigation. How SKB has dealt with such questions will be reported at a subsequent consultation meeting when the results are available and will be noted in the minutes of that meeting. Questions that are beyond the scope of the consultation and not relevant to the project in question are commented on by SKB, but not included in the consultation report appended to the EIS.

Questions and viewpoints expressed in connection with the meetings via for example letters, telephone, e-mail or visits to SKB's site offices will also be noted. Minutes with questions/viewpoints and SKB's answers will be made available to the public on SKB's website, at SKB's site offices and at the head office. Anyone who wishes can also receive their own copy on request. SKB will regularly go through questions and viewpoints from previous consultation meetings to see whether the answers need to be updated or modified in the light of new knowledge. Information on such updates will be provided at the following consultation meeting. If SKB finds that great changes have occurred within a given subject area, they may deem it appropriate to convene a special consultation meeting on this subject.

4.5.2 Questions between consultation meetings

SKB has long had an active dialogue with the inhabitants of the municipalities affected by the deep repository project, for example via its information offices. This dialogue will naturally continue during the site investigation phase and may give rise to questions and viewpoints that are discussed at consultation meetings.

4.5.3 Consultation report

The extended consultation is concluded before SKB submits applications, each accompanied by an EIS, for permits to site and build the encapsulation plant and the deep repository. According to the provisions of Chapter 22, Section 1 of the Environmental Code, the applications shall contain information about any consultations that have taken place pursuant to Chapter 6 of the Code. According to the Swedish EPA's general recommendations, the consultation report should describe how the consultations have been conducted and indicate that government agencies, municipalities, concerned parties, the public and organizations have been properly invited to the consultations and that they have been given reasonable time to submit viewpoints on the material presented. A compilation of proffered viewpoints should be included in the consultation report. The compilation should include the viewpoints and facts that have emerged during both the early consultation and the extended consultation, as well as how such viewpoints have been taken into account. If viewpoints emerging during the consultations have not been acted on, the reasons for this should be given.

The consultation report which SKB appends to the permit applications for the deep repository and the encapsulation plant will contain the minutes prepared by SKB in conjunction with all consultation meetings. In this way, a complete account will be submitted of the scope of the consultations and how the viewpoints that have emerged have been handled.

5 Environmental impact assessment

5.1 Purpose

The purpose of environmental impact assessments is given in Chapter 6, Section 3 of the Environmental Code /5-1/, see box below.

Environmental Code, Chapter 6

The purpose of environmental impact assessments

3 § The purpose of an environmental impact assessment is to identify and describe the direct and indirect effects which a planned activity or measure can have on people, animals, plants, land, water, air, climate, landscape and cultural environment, on the management of land, water and the physical environment in general, and on other management of materials, raw materials and energy. Another purpose is to enable an overall assessment to be made of these effects on human health and the environment.

See also the Swedish EPA's general recommendations concerning environmental impact assessments NFS 2001:9 /5-2/.

5.2 Contents

What an environmental impact statement should contain is described in Chapter 6, Section 7 of the Environmental Code, see box below.

Environmental Code, Chapter 6

Contents of environmental impact statements

7 § An environmental impact statement relating to an activity or measure that is likely to have a significant environmental impact shall contain the information that is needed for the purpose referred to in Section 3, including:

1. a description of the activity or measure with details concerning its location, design and scope;
2. a description of the planned measures with a view to avoiding, mitigating or rectifying adverse effects, for example action to prevent the activity or measure from leading to an infringement of an environmental quality standard as referred to in Chapter 5;
3. the information that is needed to identify and assess the main impact on human health, the environment and the management of land, water and other resources that the activity or measure is likely to have;
4. a description of alternative sites, if such are possible, as well as alternative designs, together with an explanation of why a given alternative has been chosen and a description of the consequences if the activity or measure is not implemented; and
5. a non-technical summary of the information given in 1–4.

If the county administrative board decides pursuant to Section 4, third paragraph, that the activity or measure is likely to have a significant environmental impact, it may require a report describing other comparable ways of achieving the same purpose when alternative designs such as are referred to in the first paragraph of point 4 are presented.

See also the Swedish EPA's general recommendations concerning environmental impact assessments NFS 2001:9 /5-2/.

The form and contents of the environmental impact statement shall be discussed within the framework of the extended consultation.

5.3 Document structure

From Chapter 6, Section 7 of the Environmental Code

The environmental impact statement should be well structured, appropriately arranged, and provided with a table of contents, index or the like, as needed.

The documentation that is to be presented to government agencies and the Government in conjunction with an application for a permit to site and build the *deep repository* on a designated site is very extensive. It is therefore reasonable that some form of structure for the documentation be devised that is based on an increasing degree of detail and technical/scientific definition the further down in this structure a document is located.

At the same time as the EIS with its subordinate documents should have a structure that provides a coherent overall picture, different reviewers should be able to find and identify “their” questions easily.

Figure 5 illustrates a possible structure. Documentation for the *encapsulation plant* will be basically the same, but less extensive for many questions.

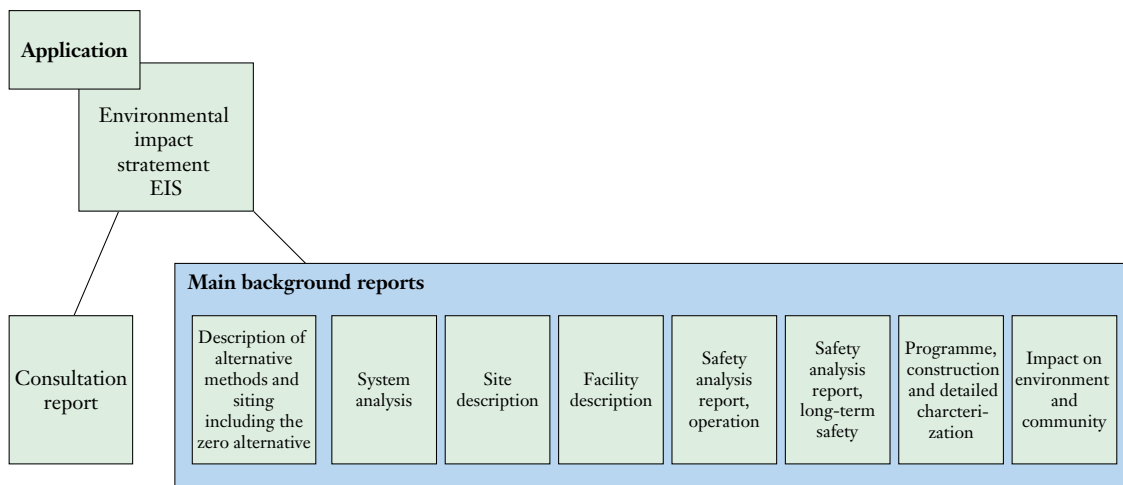


Figure 5. Document structure for application under Environmental Code and Nuclear Activities Act.

The EIS with its subordinate documentation should provide all the supporting material needed for applications for permits to site and build the deep repository and the encapsulation plant. It should also provide a comprehensive picture of the deep disposal system, i.e. encapsulation plant, deep repository and transportation system. However, separate applications with EISs should be submitted for the deep repository, the encapsulation plant and any roads, etc.

5.4 Target groups

An EIS for a deep repository and an encapsulation plant should be able to be read and reviewed by a number of different target groups, each with different interests and backgrounds:

- The Government for examination of permissibility under the Environmental Code and permit/licence applications under the Nuclear Activities Act.
- SKI and SSI for preparation of the matter according to the Nuclear Activities Act and the Radiation Protection Act.
- The Environmental Court for preparation of the matter prior to the Government's examination according to Chapter 17 of the Environmental Code and for permits and conditions under the provisions of the Environmental Code.
- The municipality for a verdict according to Chapter 17, Section 6 of the Environmental Code.
- The county administrative board and formal reviewing bodies.
- Interested members of the public and non-governmental organizations.

5.5 Scoping

From Chapter 6, Section 7 of the Environmental Code

An environmental impact statement shall contain the information that is needed to identify and assess the main impact on human health, the environment and the management of land, water and other resources.

The EIS shall focus on what is essential in view of the chosen site and method. During the initial phase of the extended consultation, SKB will therefore prepare a *scoping report* describing which investigations are planned and the proposed scope and boundaries of the EIS, plus a preliminary table of contents for the EIS. The scoping report will form the basis for extended consultation with all concerned consultation parties.

In its decision concerning significant environmental impact, the county administrative board can express its opinion regarding what the EIS ought to contain, which influences the boundaries SKB will determine.

Boundaries and scope shall be described and explained in the EIS. Everyone who has participated in the consultation shall be able to see how their viewpoints on the scope and contents of the EIS have been acted on by SKB.

Boundaries are defined with respect to:

- Siting.
- Systems.
- Method.
- Alternative design of chosen method.
- Geography.
- Time.
- Nature, environment, health, community.

As is evident from section 4.1.3 above, certain boundaries have already been defined. The spent nuclear fuel will be managed and disposed of according to the KBS-3 method; the possibility of siting the deep repository will be investigated for Forsmark and Oskarshamn; the main alternative for siting of the encapsulation plant is adjacent to CLAB, and co-siting with a deep repository in Forsmark will be studied as a secondary alternative.

Other boundaries will be discussed and presented during the extended consultation.

The geographic boundaries must be determined in consideration of the particular site and the distance from the facility at which disturbances can occur as a consequence of the planned activities.

Boundaries in time mean that the site and its surroundings are described from the perspective of the situation that existed when the site investigations were commenced. Measures and events to come, occurring independently of the deep repository project, will be reported. The deep repository project and its consequences are described from the start of construction with detailed characterization and the ensuing period during operation and closure of the facility. Long-term safety after closure of the deep repository is described in a safety report that covers different possible evolution options for a period extending on the order of 100,000 years into the future.

In view of the fact that the extended consultation will take many years, it is natural that the scope and contents of the environmental impact statement will be progressively defined and detailed during the consultation process.

5.6 Proposed structure of EIS

The environmental impact statement shall provide the information needed to support decisions already made regarding selection of method and site for final disposal of the spent nuclear fuel from the Swedish nuclear power plants. It will in all likelihood be a large document, even though the detailed information is provided in background reports and references. There are naturally many ways to structure an EIS, all of which satisfy the formal requirements regarding what is to be covered. A central goal must be to give the report a structure that clearly describes different alternatives while also clarifying the choices that have been made and the reasons for them.

SKB has chosen not to offer suggestions regarding which investigations may be needed to arrive at an adequate EIS. Instead we believe that this should emerge in the first phase⁶ of the consultation process. However, the appended proposal for structure and contents, Appendix 2, provides some indication of what will have to be studied.

⁶ The scoping phase, see timetable in section 2.

6 References

Preface

- /0-1/ SKB, 2001. Miljökonsekvensbeskrivning och samråd för djupförvaret. SKB:s översiktliga planering. SKB R-01-46, Svensk Kärnbränslehantering AB.

Chapter 1

- /1-1/ SKB, 2000. Integrated account of method, site selection and programme prior to the site investigation phase. SKB TR-01-03, Svensk Kärnbränslehantering AB.
- /1-2/ SKB, 2001. RD&D-Programme 2001. Programme for research, development and demonstration of methods for the management and disposal of nuclear waste. SKB TR-01-30, Svensk Kärnbränslehantering AB.
- /1-3/ SKB, 2000. Förstudie i Östhammar. Slutrapport. Svensk Kärnbränslehantering AB.
- /1-4/ SKB, 2000. Förstudie i Oskarshamn. Slutrapport. Svensk Kärnbränslehantering AB.
- /1-5/ SKB, 2001. Feasibility Studies – Östhammar, Nyköping, Oskarshamn, Tierp, Hultsfred and Älvkarleby. Summary Report. SKB TR-01-16, Svensk Kärnbränslehantering AB.
- /1-6/ SKB, 2001. Geoscientific programme for investigation and evaluation of sites for the deep repository. SKB TR-00-20, Svensk Kärnbränslehantering AB.
- /1-7/ SKB, 2001. Site investigations. Investigation methods and general execution programme. SKB TR-01-29, Svensk Kärnbränslehantering AB.
- /1-8/ SKB, 2001. Program för platsundersökning vid Forsmark. SKB R-01-42, Svensk Kärnbränslehantering AB.
- /1-9/ SKB, 2001. Program för platsundersökning vid Simpevarp. SKB R-01-44, Svensk Kärnbränslehantering AB.
- /1-10/ Förordning om miljökonsekvensbeskrivningar. SFS 1998:905.
- /1-11/ SKB, 1998. Säkerhet vid drift av inkapslingsanläggningen. SKB R-98-12, Svensk Kärnbränslehantering AB.

Chapter 2

- /2-1/ SKB, 1998. Säkerhet vid drift av inkapslingsanläggningen. SKB R-98-12, Svensk Kärnbränslehantering AB.
- /2-2/ Förordning om miljökonsekvensbeskrivningar. SFS 1998:905.

Chapter 3

- /3-1/ Environmental Code. SFS 1998:808.
- /3-2/ Act on Nuclear Activities (Nuclear Activities Act). SFS 1984:3.
- /3-3/ Planning and Building Act. 1987:10.
- /3-4/ Consequential legislation to the Environmental Code etc. Government Bill 1997/98:90
- /3-5/ SKB, 2002. The licensing process for a deep repository and an encapsulation plant for spent nuclear fuel. Svensk Kärnbränslehantering AB.

Chapter 4

- /4-1/ Förordning om miljökonsekvensbeskrivningar. SFS 1998:905.
- /4-2/ Swedish EPA, 2001. Naturvårdsverkets allmänna råd om miljökonsekvensbeskrivningar. NFS 2001:9.
- /4-3/ SKB, 2000. Integrated account of method, site selection and programme prior to the site investigation phase. SKB TR-01-03, Svensk Kärnbränslehantering AB.
- /4-4/ SKB, 2001. RD&D-Programme 2001. Programme for research, development and demonstration of methods for the management and disposal of nuclear waste. SKB TR-01-30, Svensk Kärnbränslehantering AB.
- /4-5/ SKI, SSI. SKIs och SKIs ståndpunkter om MKB i slutförvarsfrågan. Dnr 6240/3626/99. Swedish Radiation Protection Authority. Dnr 15.2-991427. Swedish Nuclear Power Inspectorate.
- /4-6/ SKI, 2001. Något om miljökonsekvensbeskrivningar i samband med prövning av tillstånd att inneha och driva en kärnteknisk anläggning. Skrivelse till Studsvik Holding AB, 18 december 2001. Dnr 1.3-011357. Swedish Nuclear Power Inspectorate.
- /4-7/ SKB, 2002. Samrådsredogörelse. Samråd enligt miljöbalken kapitel 6, 4 §. Tidigt samråd avseende eventuellt djupförvar för använt kärnbränsle vid Simpevarp. 2002-01-24. Svensk Kärnbränslehantering AB.
- /4-8/ SKB, 2002. Samrådsredogörelse. Samråd enligt miljöbalken kapitel 6, 4 §. Tidigt samråd avseende eventuellt djupförvar för använt kärnbränsle vid Forsmark. 2002-06-28. Svensk Kärnbränslehantering AB.
- /4-9/ Sweden's international agreements. The Esbo Convention. SÖ 1992:1.
- /4-10/ SKB, 2001. Miljökonsekvensbeskrivning och samråd för djupförvaret. SKB:s översiktliga planering. SKB R-01-46, Svensk Kärnbränslehantering AB.

Chapter 5

- /5-1/ Environmental Code. SFS 1998:808.
- /5-2/ Swedish EPA, 2001. Naturvårdsverkets allmänna råd om miljökonsekvensbeskrivningar. NFS 2001:9.

Government agencies and others who may be affected by the issues dealt with by consultations for the deep repository and the encapsulation plant

Ministry of the Environment

KASAM (The Swedish National Council for Nuclear Waste)

SKI (Swedish Nuclear Power Inspectorate)

SSI (The Swedish Radiation Protection Authority)

The municipality – several units, including the town planning and building committee, the environment and health protection committee and the emergency and rescue services

The county administrative board – several units

The county council

National Board of Housing, Building and Planning

Swedish Environmental Protection Agency

National Chemicals Inspectorate

National Board of Health and Welfare

National Board of Fisheries

NUTEK (Swedish Business Development Agency)

Swedish National Energy Administration

Swedish Maritime Administration

National Board of Forestry

Swedish Board of Agriculture

Geological Survey of Sweden

Swedish Rescue Services Agency

Legal, Financial and Administrative Services Agency

Swedish National Defence Forces

Swedish Emergency Management Agency

National Heritage Board

The county museum

The Environmental Court of the Stockholm and Växjö district courts

Local environmental protection and nature conservancy organizations and other non-governmental organizations

Proposal for structure and contents of an environmental impact statement⁷

Overview

- Part 1 Non-technical summary**
- Part 2 Introduction**
- Part 3 Premises**
- Part 4 Method**
- Part 5 Deep repository on selected site**
- Part 6 Deep repository on alternative site**
- Part 7 Safety**
- Part 8 Environment and health**
- Part 9 Impact on community**
- Part 10 Supervision and follow-up**
- Part 11 Information and consultation**
- Part 12 Overall assessment**
- Part 13 References**
- Part 14 Appendices**

⁷ Table of contents for EIS for the deep repository. Basically the same outline is foreseen for the encapsulation plant.

Main structure

Part 1 Non-technical summary

Part 2 Introduction

The subject of the EIS

Administrative particulars

Reading instructions

Scoping

Review and quality control

Part 3 Premises

Background

- The waste system
- The siting process
- The RD&D process

Application procedure

Part 4 Method

Deep repository according to the KBS-3 method

- The deep repository
- Transport
- The encapsulation plant

Alternative methods

Zero alternative

Part 5 Deep repository on selected site

Description of selected site

- General description of site
- Geoscientific conditions
- Existing and planned land use
- Applicable plans and area regulations
- Proposed detailed plan for the deep repository
- Existing and planned infrastructure
- Protected and valuable natural environment
- Protected and valuable cultural environment
- Outdoor recreational activities

Design of the deep repository

Design of the transportation system

Site-adapted system solution for deep repository, encapsulation and transport

- Construction and detailed characterization
- Initial operation
- Regular operation
- Closure

Activities during construction and detailed characterization phase

- Activities
- Timetable
- Buildings and facilities
- Underground facilities
- Construction and civil engineering works
- Activities and number of employees
- Rock excavation works
- Handling of rock spoils
- Vehicles and machines
- Transport
- Working environment

Activities during the operating phase – as above, where applicable

Activities during decommissioning and closure – as above, where applicable

Activities after decommissioning and closure – as above, where applicable

Utilities

Public services

Part 6 Deep repository on alternative site

Part 7 Safety

Safety in operation⁸ (preliminary safety analysis report, PSAR)

Long-term safety

- Premises
- Analyzed scenarios
- Assessment

⁸ In view of ongoing activities at CLAB, a safety analysis report is probably also required for the construction phase for the encapsulation plant sited at CLAB.

Part 8 Environment and health

Current environmental and health situation

Environmental load from the activities, damage-prevention and consequence-mitigating measures plus overall assessment

- Detailed characterization and construction phase
- Operating phase
- Decommissioning and closure
- After decommissioning and closure

Part 9 Impact on the community

Part 10 Supervision and follow-up

Construction and detailed characterization phase

Operating phase

During decommissioning

- Long-term supervision of repository performance
- Safeguards – Verification that fissionable material is not diverted
- Restrictions, for example on excavation and drilling of wells
- Possible environmental impact of a supervision programme

After decommissioning and closure – as above, where applicable

Part 11 Information and consultation

Selected site

- Early consultation
- Extended consultation
- Information

Alternative site

- Early consultaton
- Extended consultation
- Information

Part 12 Overall assessment

Method selection

Site selection

Reconciliation with general rules of consideration in Environmental Code

Reconciliation with environmental quality standards

Reconciliation with environmental objectives

- National
- Regional
- Local

Part 13 References

Part 14 Appendices

System analysis

Site description

- Selected site
- Alternative site

Facility description

Preliminary safety analysis report, operation

(possibly appendix solely to application under Nuclear Activities Act)

Safety analysis report, long-term safety

(possibly appendix solely to application under Nuclear Activities Act)

Impact on human health and environment

Impact on community

Programme for construction of and detailed characterization for the deep repository

Presentation of alternatives to KBS-3, including the zero alternative

Consultation report

- Selected site
- Alternative site