

Proposal for

**"PLAN FOR THE ESTABLISHMENT OF A FINAL
REPOSITORY FOR DANISH LOW AND MEDIUM LEVEL
RADIOACTIVE WASTE"**

with related scoping

DRAFT JUNE 2014

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1. Background

An inter-ministerial working group is reviewing 3 possible solutions for the handling of Danish low and medium level radioactive waste. The solutions are: a final repository, a medium-term storage and export of all waste.

This plan will define the overall guidelines for setting up a final repository, which includes delimitation of six designated areas for its location.

In 2003, the Danish Parliament unanimously voted that closure of the nuclear research facilities at the Risø DTU National Laboratory for Sustainable Energy should be accelerated. Parliament also gave its consent to the government starting to compile the research report needed for a Danish final repository for low and medium level radioactive waste.

The Risø DTU National Laboratory for Sustainable Energy has acted as the central collection station for all radioactive waste in Denmark since it was established. The waste originates from research activities at Risø, from the healthcare sector and from industry. In parallel with closure of the nuclear research facilities, the intention is to set up a final repository that is able to take the radioactive waste from Risø plus that generated elsewhere in the country for many years to come.

The research report for a final repository for low and medium level radioactive waste looked at waste types and amounts, the general principles for protection of the public and the environment, including safety criteria and analyses, the general principles for choice of location and repository design, and the process moving forwards. The report was presented to Danish Parliament in January 2009 (R4) and will form the basis on which a plan is drafted.

2. Feasibility and area studies

The research report recommended that feasibility studies covering 3 subjects were commissioned:

- A study of repository concepts and safety analyses looking at the concepts in more detail, with generic safety analyses performed. The objective was to obtain the necessary data to choose which concepts to carry forward to the next stage of the process for establishing a final repository.
- A study of radiation doses from transporting radioactive waste.
- A study of regional geography that could influence where a final repository could be located. The objective was to identify suitable or unsuitable areas for the location of the final repository.

The results of the feasibility studies were presented in May 2011 and followed up by area studies looking at the ramifications of development plans and local authority plan frameworks for the designated areas, with additional boring etc. in such areas.

2.1 Area delimitation

Regional surveys from the feasibility studies designated 22 areas that were deemed to be suitable for the location of a final repository.

Designation was based on existing information and data, using criteria and methods according to the guidelines of the International Atomic Energy Agency (IAEA). The key selection criteria were the presence of fine-grained and undisturbed deposits or rock types with low water permeation, a thickness of > 50 m and considerable horizontal extension. They should be able to enclose or lie under a final repository, helping to prevent any leaks. Geological and groundwater factors were also looked at when designating the 6 areas, and the ability to use the areas no matter which depository concept was finally chosen. Please also refer to "Forstudier til slutdepot for lav- og mellemaktivt affald – sammendrag indeholdende hovedkonklusionerne og anbefalinger fra tre parallelle studier; Maj 2011; Afsnit 3.3 – 3.4." (Feasibility studies for a final repository for low and medium level radioactive waste - a summary containing the main conclusions and recommendations from 3 parallel studies: May 2011, Sections 3.3-3.4).

Six areas that were more suitable than others were identified by the feasibility studies, with the recommendation that further studies should be conducted. The 6 areas are 1) Østermarie-Paradisbakkerne, Bornholm Regional Municipality; 2) Rødbyhavn, Lolland Municipality; 3) Kertinge Mark, Kerteminde Municipality; 4) Hvidbjerg, Thyholm, Struer Municipality; 5) Thise, Salling, Skive Municipality and 6) Skive Vest, Skive Municipality. All these areas were larger than actually needed for a final repository (estimated to be 150 m x 150 m), and therefore most of the area will not be used.

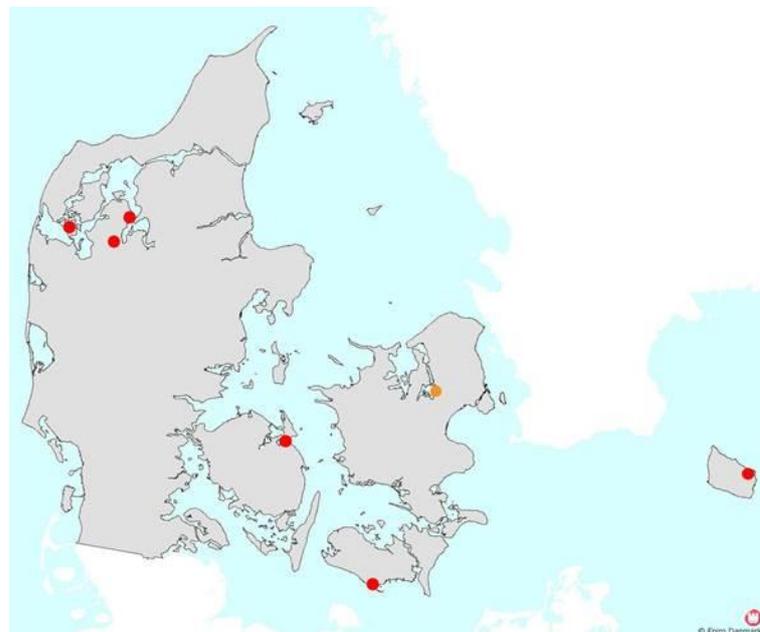


Fig. 1. Map illustrating the six potential areas for a final repository and the 0-alternative at Risø (see description of the 0-alternative in "Scoping APPENDIX", section 1.4).

A report was subsequently written on each of the areas that covered the collection and analysis of information on geology, earthquakes, groundwater, use of the area, nature, management of natural areas, preservation, archaeology and drinking water bore holes etc. The five municipalities in which the 6 areas are located were visited, and collaboration on technical aspects was established to gain maximum insight to local conditions. References:

1. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 1. Østermarie-Paradisbakkerne, Bornholm Regional Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/123.
2. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 2. Rødbyhavn, Lolland Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/124.
3. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 3. Kertinge Mark, Kerteminde Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/125.
4. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 4. Hvidbjerg, Thyholm, Struer Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/126.
5. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 5. Thise, Skive Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/127.
6. Gravesen, P., Nilsson, B., Binderup, M. Larsen, T. & Pedersen, S.A.S., 2012: Lav- og mellem radioaktivt affald fra Risø, Danmark (Low and medium level radioactive waste from Risø, Denmark). Area studies. Report no. 6. Skive Vest, Skive Municipality. Nat. Geol. Survey Denmark and Greenland Report 2012/128.

2.1.1 Østermarie-Paradisbakkerne, Bornholm Regional Municipality

The Østermarie-Paradisbakkerne area lies in the north-western corner of Bornholm (Fig. 1). The area totals approx. 15 km² in size.

The area is high, relatively flat terrain at an altitude of 65 to 80 m above sea level, bisected by valleys.

To the north, it borders the Baltic Sea, but with a swing inland at Gyldens Å between Listed and Bølshavn. To the west, it borders a line running from Saltuna, eastwards around Østermarie to the north-western corner of Paradisbakkerne. The east-west border runs along the northern edge of the hills.

This area consists of Bornholmsk gneiss and Paradisbakke pegmatite and is bordered on the east by Svaneke granite. The rock types are dense and low-

permeable, but shot through with horizontal and vertical faults. The crystalline gneiss types can be compared with the rock types used for repositories in Sweden and Finland, where the problem with faults is also present and where extensive risk analyses have been carried out for many years.

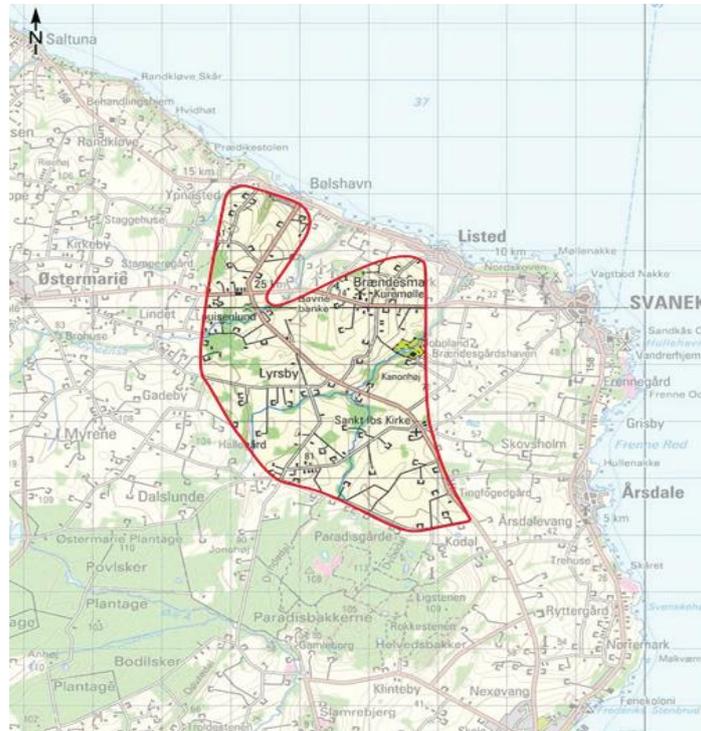


Fig. 2. Østermarie-Paradisbakkerne.

There are local drinking water/groundwater reserves present in this area, but only limited reserves and no Natura 2000 zones. The area is just outside two Natura 2000 zones and encloses a number of lesser paragraph 3-protected nature areas.

2.1.2 Rødbyhavn, Lolland Municipality

This area is located on the island of Lolland, east of Rødbyhavn and covers approx. 20 km² in size.

The western border goes close to the motorway, with part of it currently reserved for construction of the Femern Fixed Link land facilities and motorway, and for buildings used during the construction phase. Most of the area is between 0 m and 4 m above sea level, locally down to 0.5 m below. There are no lakes or watercourses, but there are drainage ditches in the eastern and south-western parts. A dyke that is more than 4 metres high runs along the south coast, protecting the land from flooding from the sea.

The geological structure consists mostly of low-permeable clay deposits which can contain and enclose a repository.



Fig. 3. Rødbyhavn.

There are no Natura 2000 areas or reserves in this area, but outside its boundaries, there are both. There are several small waterholes which are the habitat of amphibians protected by the Habitat Directive. There are no or limited groundwater/drinking water reserves in the area.

2.1.3 Kertinge Mark, Kerteminde Municipality

This area is located in the north-east of the island of Funen and covers approx. 7 km² in size.

The Kertinge Mark peninsula is bordered to the west, north and east by Kerteminde Fjord and Kertinge Nor, with the towns of Kerteminde to the north-east and Munkebo to the north-west. The area consists of flat terrain around 20 m above sea level, sloping down towards the coast. There are no sand dunes along the coast and no lakes or rivers on the peninsula.

Kertinge Mark consists of low-permeable clay deposits, with moraine clay (up to 30 m thick) imposed on a thick layer of highly viscous paleocene clay that is a minimum of 40 m thick.

There are no or limited drinking water reserves on the peninsula. Just to the south-east of the area is a zone with special drinking water reserves that supplies Kerteminde. There are no Natura 2000 areas near this area.



Fig. 4. Kertinge Mark.

2.1.4 Hvidbjerg, Thyholm, Struer Municipality

This area lies in the north-eastern part of Thyholm on the south bank of the Limfjord, south-west of Mors and east of Thy and covers approx. 6.6 km² in size.

The landscape is simple, with regular undulations on top of the generally gentle slope from the highest terrain in the south-west (at an altitude of 25 m) to the north (0–10 m) and north-west (sea level). There is a single hill to the east, close to the coastline. The boundary follows the coastline to the west and east and there is a narrow sand bar along the west coast. The east-facing coast features the presence of a low dune, which is generally covered by vegetation with almost no erosion. There are no lakes or rivers in the area.

The area consists mostly of large, accumulated layers of fine-grain clay deposits (up to 100 m), and clay layers throughout the area.

It is classified as a zone with no or limited drinking water reserves, but just to the south is a special drinking water reserve area near Hvidbjerg. It borders Natura 2000 sea zones. There are a number of nature reserves, especially along the coasts.



Fig. 5. Hvidbjerg.

2.1.5 Thise, Salling, Skive Municipality.

This area lies along the eastern part of the Salling peninsula, it borders the Limfjord to the north-east and south-east and covers approx. 14 km² in size.

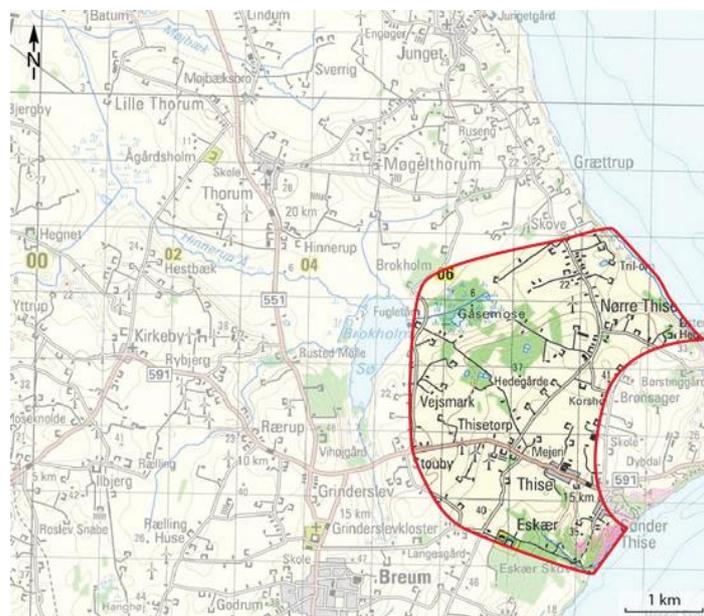


Fig. 6. Thise.

This area has a large, high and almost flat plateau at a height of up to approx. 40 m that includes the majority of the central and south-eastern area. The landscape slopes gently from the plateau to the west and north-west and a little more steeply to the north-east. Directly to the north is another, smaller plateau with a height of between 15 and 20 m. Directly to the south, the slope between the plateau and

river valley/coast zone respectively is very steep and deeply bisected by small, steep slopes.

The area contains silted clay and viscous clay from the Oligocene epoch up to 140 m thick under an ice age layer of moraine clay up to 15 m thick, and with meltwater clay deposits in certain places.

There are no or limited drinking water reserves along the coast, but there is a drinking water zone (OD) further inland. There are no Natura 2000 zones. There are a number of protected objects within the area, such as dykes and beach protection belts, plus designated afforestation areas.

2.1.6 Skive Vest, Skive Municipality

This area lies to the west of Skive and covers approx. 18.5 km² in size.

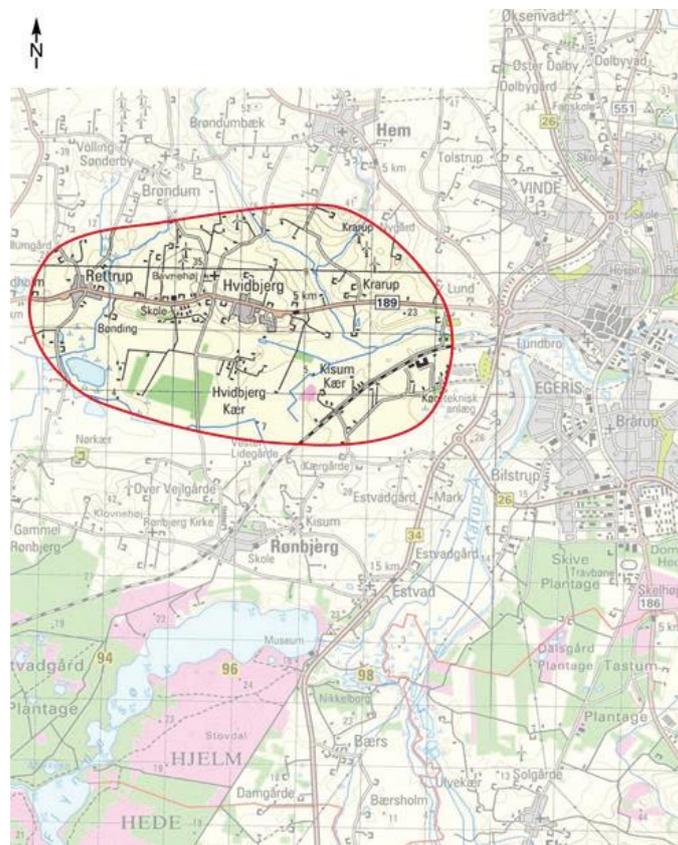


Fig. 7. Skive Vest.

This area consists of two different types of landscapes. The northern half is a high, rolling moraine landscape with meltwater sand and gravel deposits. The terrain lies at an altitude of between 10 and 40 m above sea level, and the two areas are separated by a gentle slope covered in vegetation. The southern half is a low-lying river valley, mostly 5 m above sea level. Parts of this area are waterlogged, with lots of small waterholes and waterlogged meadows.

There are older, thick, fine-grained clay deposits from the Oligocene and Miocene epochs (up to 100 m thick) extending significantly horizontally. These layers are

undisturbed within the area and are covered by younger, quaternary deposits, particularly of moraine clay, but meltwater sand and gravel appear in several places.

Most of the area has no or limited drinking water reserves except one towards the west. There are no Natura 2000 zones. There are a number of protected types of nature, buildings and protection belts, plus afforestation areas and potential wetland areas. These areas are particularly in the southern part of the area.

2.2 Types of structure (repository concepts)

The feasibility studies took a theoretical look at three general repository concepts, combined with four specific, typically Danish forms of geology, along with preliminary safety analyses for such combinations, see "Forstudier til slutdepot for lav- og mellemaktivt affald – sammendrag indeholdende hovedkonklusionerne og anbefalinger fra tre parallelle studier; Maj 2011; Afsnit 1." (Feasibility studies for a final repository for low and medium level radioactive waste - a summary containing the main conclusions and recommendations from 3 parallel studies: May 2011, Section 1).

The three general concepts covered in the feasibility studies were:

- Surface-proximity repository (on the surface and extending to a max. depth of 30 m).
- Surface-proximity repository combined with a bore hole.
- Medium-depth repository (30-100 m below ground).

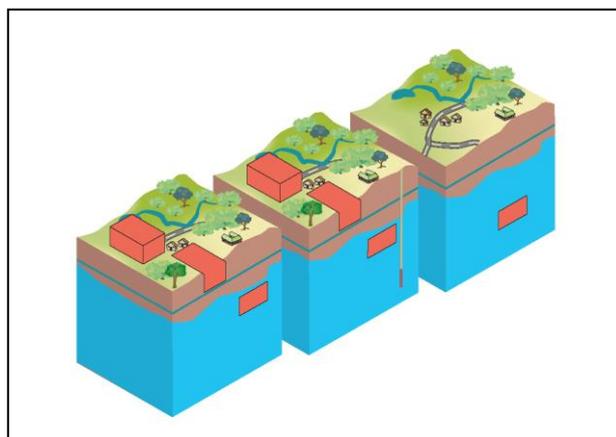


Fig. 8. The three general repository concepts.

Both surface-proximity repositories and the medium-depth repositories can all be established in such a manner that they are reversible, and relevant types of waste can be extracted again at a later date.

No decision has yet been made on which type of repository should be used. This will have to be made in a subsequent project design phase, when more detailed knowledge of the geology in which the repository will be located in or on is available. Similarly, a safety analysis will have to be carried out before any final decision can be made. Only if it transpires that the repository will be completely safe can it become a reality.

2.3 Waste volume and repository size

The waste from Risø originates from earlier nuclear research on the site and from other Danish users of radioactive substances, such as the healthcare sector, research institutions, industry and so on.

It consists of the following low and medium level radioactive waste:

- Compressed low level radioactive waste (paper, plastic, clothing, glass, metal etc.).
- Scrapped radioactively contaminated equipment (used for research purposes or medical treatment, e.g. analytical equipment).
- Residual products from the purification of water at the Risø facility (bitumen-encapsulated evaporation concentrate, ion-exchange waste etc.)
- Scrapped radioactive sources (from the health authorities, industry, research and education, e.g. equipment for industrial process control, smoke detectors, processing equipment)
- Waste from the closure/demolition of nuclear research facilities (concrete, iron and other scrap).
- Special waste - 233 kg long half life waste

Some of the waste includes hazardous substances in the form of heavy metals and other chemical substances, in addition to radioactive substances.

The feasibility studies estimated that the final repository should be able to hold 5000-10,000 m³ of waste. The large difference in the estimate is due to persistent uncertainty as to whether stored tailing material from uranium extraction experiments and the contaminated concrete in which the tailings are stored will be put in the repository. In addition, DD holds 3670 tonnes of low level radioactive uranium ore, which was described as 'potential waste' in the research report. The exact amount of decommissioning waste will not be known until decommissioning is completed.

The Danish Decommissioning report from May 2011 – "Pre-feasibility study for final disposal of radioactive waste. Disposal concepts, section 4.3" estimated that, regardless of the deport concept chosen, an area of around 2-3 ha (20,000-30,000 m², equivalent to approx. 140 x 140 m to 175 x 175 m) will be required.

3. Guidelines for establishing a final repository

The planning phase (Research Report, feasibility and area studies) has resulted in the following guidelines for establishment of a final repository within one of the 6 designated areas (STILL IN DRAFT FORMAT – TO BE REVISED WHEN ENVIRONMENTAL ASSESSMENT IS CARRIED OUT):

1. **Types of waste:** The repository should be able to hold all Danish low and medium level radioactive, short and long half life waste from operations, research activities and the decommissioning of Risø, including the 233 kg of special waste (irradiated experimental fuel) if there is no international so-

lution available, plus the current and future radioactive waste production from hospitals, industry etc., also according to the research report.

2. **Repository types:** The following repository types can be established after more detailed studies in a subsequent project design phase:
 - a. Surface-proximity repository (on the surface and extending to a max. depth of 30 m).
 - b. Surface-proximity repository combined with a bore hole.
 - c. Medium-depth repository (30-100 m below ground).

A decision will also be made on whether an irreversible or reversible repository should be built.

3. **Area required:** An area of around 2-3 ha. (20,000-30,000 m²) will be required. As such, the facility will occupy an area of approx. 150 x 150 metres, or a corresponding total area within the designated gross areas.
4. **Location:** The final repository should be located within one of the 6 designated areas: 1) Østermarie-Paradisbakkerne, Bornholm Regional Municipality; 2) Rødbyhavn, Lolland Municipality; 3) Kertinge Mark, Kerteminde Municipality; 4) Hvidbjerg, Thyholm, Struer Municipality; 5) Thise, Salling, Skive Municipality and 6) Skive Vest, Skive Municipality.
5. **Radiation protection.** The facility should be designed to be able to demonstrate compliance with the reference doses specified when in operation and after closure at any time for those periods and for potential incidents (accident scenarios). Such proof should be provided in the form safety analyses for the facility and its use.
6. **Nature protection.** The facility will not be located in a NATURA 2000 zone. Neither should the plan imply significant impact on abutting Natura 2000 zones.
7. **Cultural monument protection.** The impact on preserved cultural monuments should be taken into account when deciding location. During the construction phase, the provisions of the Consolidation Act on Museums will apply, which will ensure due consideration being taken for finds of historical value.
8. **Groundwater protection.** The facility will not be located in an OSD (areas with special drinking water reserves) area. It should be located taking into account the major groundwater and drinking water reserves within OD (areas with drinking water reserves) areas. Where groundwater lowering is required, consideration must be given to the water table and water quality in nearby watercourses and lakes.
9. **Climate protection.** The facility shall be designed to take into consideration expected climate changes up to the year 2100: a temperature increase of 2°C, more rain in winter and more extreme rainfall and storms. Consideration should also be given to a possible rise in sea levels of max. 1.5 me-

tres above normal up to 2100, and the conditions that can arise from flooding during extreme storms /10/.

10. **Security.** The design and use of the facility shall prevent unauthorised access to the radioactive material stored there, including the prevention of damage, loss, theft or transfer of materials.

4. Environmental assessment.

In accordance with the Executive Order on the Danish Act on Environmental Assessment of Plans and Programmes, see consolidated executive order no. 939, dated 3 July 2013, public agencies shall carry out environmental assessment of plans and programmes that can have significant impact on the environment.

Appendix 1 presents the first phase of environmental assessment in the form of a scoping to determine which environmental aspects should be considered in the environmental report.

APPENDIX – SCOPING

1. Scoping

1.1 Act on Environmental Assessment of Plans and Programmes

According to the Act on Environmental Assessment of Plans and Programmes, see executive order no. 939, dated 3 July 2013, the plans and programmes of public agencies establishing the framework for future facilities and uses of area shall be subject to environmental assessment. In accordance herewith, the Danish Ministry of Health will arrange for an environmental assessment of the plan. The table below presents why the plan is affected by requirements for environmental assessment:

Table 1 Preliminary screening.

Preliminary screening	Yes	No	Comments
Is the plan covered by appendix 3 and/or 4 of the Act (see executive order no. 939 of 3 July 2013)?	X		The plan includes establishment of a facility that is covered by the following points in appendix 3 of the Act: 3.b: iii) final removal of radiated nuclear fuel iv) exclusively for final removal of radioactive waste

1.2 Environmental assessment phases

The actual environmental assessment consists of five phases, apart from the screening in Table 1. Scoping, which is presented in this appendix, is part of the first phase of the environmental assessment.

General description of the phases of the environmental assessment, see Guidelines for environmental assessment of plans and programmes /11/.

The first phase is establishment of the content of the environmental report in the form of an outline. It is in this phase that agencies concerned shall hold hearings, the basis of which shall help determine what information and what knowledge shall be involved in the environmental assessment work. This phase is also known as the scoping phase.

The second phase consists of the actual environmental assessment and preparation of the environmental report, while the plan can at the same time be adjusted according to the information and assessments performed.

The third phase is the hearing phase, where not only involved agencies, but also the public will have the opportunity to present statements on both the plan proposal and the environmental report.

The fourth phase consists of the plan's or programme's final approval or adoption on the basis of the environmental report, comments submitted from the hearing and the compiled statements of the planning agency. The compiled statement shall be published concurrently with publication of the final approved or adopted plan or programme.

The fifth phase is follow-up and monitoring of the plan's or programme's environmental outcomes in accordance with the established monitoring programme.

1.2.1 Official hearing

As part of the initial scoping phase, the potentially significant environmental impacts inherent in execution of the plan for creation of a final repository for low and medium level radioactive waste are identified, and thereby which environmental conditions need to be examined in greater detail in the environmental report. A draft for the scoping report must be submitted for review with agencies concerned.

A concerned agency, see executive order on agencies ¹ Section 1 (3) (5), refers to: “An agency which because of its specific environmental responsibility must approve or provide consent, permission, approval or exemption for the plan or programme to be implemented.” In order to ensure wider involvement of stakeholders beyond the directly involved agencies, the Danish Ministry of Health has also chosen to submit the scoping for hearing with, among others, the community groups that have been involved in the process.

The following agencies and stakeholders are involved in reviewing the scoping:

Ministries:

- Danish Ministry of Higher Education and Science
- Danish Ministry of Defence
- Danish Ministry of Environment
- Danish Ministry of Climate, Energy and Building
- Danish Ministry of Housing, Urban and Rural Affairs
- Danish Ministry of Food, Agriculture and Fisheries
- Danish Ministry of Transport
- Danish Ministry of Ecclesiastical Affairs
- Danish Ministry of Economic Affairs and the Interior
- Danish Ministry of Culture

Agencies:

- Danish Emergency Management Agency
- Danish Nature Agency
- Danish Environmental Protection Agency
- Danish Energy Agency
- Danish Coastal Authority
- Danish Heritage Agency

State-recognised museums:

- Bornholm Museum
- Struer Museum
- Museum Lolland-Falster
- Museum Salling
- Roskilde Museum
- Østfyns Museer

Diocesan authorities and parochial church councils:

- Bornholm
- Lolland
- Kerteminde
- Skive and Thyholm
- Roskilde
- Hvidbjerg Church
- Thise Church
- Ibsker Church

Regions:

- Midtjylland Region
- Sjælland Region
- Hovedstaden Region

Municipalities:

- Struer Municipality
- Skive Municipality
- Kerteminde Municipality
- Lolland Municipality
- Bornholm Municipality
- Roskilde Municipality

Other

- Local Government Denmark
- Danish Regions
- Thyholm Community Group
- MORADS
- BOMA
- Lolland against Nuclear Waste
- Kertinge Mark Community Group
- Roskilde Community Group
- Greenpeace Denmark
- Danish Society for Nature Conservation
- Association of Waterworks in Denmark

The hearing will provide the opportunity to make proposals as to what additional measures should be addressed and evaluated in the environmental report. The

¹ The executive order on concerned agencies and on publications according to the Act on Environmental Assessment of Plans and Programmes (Executive order no. 1102 dated 20 November 2009)

Danish Ministry of Health will be processing the hearing responses received, which, among other things, can result in adjustments to the layout of the environmental report.

Espoo Hearing

Concurrent with sending the scoping for consideration by the Danish authorities, it also has to be subject to an “Espoo Hearing” according to the Espoo Protocol – part of the UN Espoo Convention. The objective of the protocol is to ensure a high level of protection for the environment, including health and across national boundaries. This objective is achieved by taking the environment into consideration as early as the planning stage, and ensuring public participation in the Environmental Assessment, including affected parties from other countries (if relevant), where the plan can have major cross-border effects on the environment.

But when a plan concerns radioactive waste, it is always subject to the Espoo Protocol, and this scoping will therefore be sent for consultation by all neighbouring countries and the Baltic States:

The United Kingdom, Germany, Norway, Sweden, Finland, Russian Federation, Estonia, Latvia, Lithuania and Poland.

1.3 Community meetings

Six community meetings will be held as part of the scoping phase, intended both to provide information on the process and to gather information on local conditions and potential environmental impacts. This information has been part of the basis on which scoping is carried out.

Minutes from all of the meetings are available on the Danish Ministry of Health’s website². The following provides a brief presentation of which information on local conditions has been raised in the meetings and which environmental issues are of particular focus.

1.3.1 Østermarie-Paradisbakkerne

Local conditions

Special attention was drawn to the fact that Bornholm is highly dependent on tourism, locally produced food products and fisheries. Both tourism and food production are strongly associated with terms such as ecology and Bright Green Island. The planning area encompasses Joboland, for example, and nearby are some of the most frequently visited coastal towns on the island.

Focus areas

Bornholm’s substrate has shifted over time, and there is a concern over earthquakes and leakage via seepage to cracks in the rock. There is also concern that already elevated radon concentration means that residents of Bornholm will be exposed to high levels of radiation. There is concern for risk during transport, particularly during marine transport, but also during transport on small local roads. Even though the waste is not hazardous, it will affect social conditions, including relocation into and out of the area.

There is concern that a facility of this type can scare off tourists and affect sales of goods from Bornholm. It has been suggested that Bornholm is a peripheral region that cannot tolerate further negative impact.

² <http://www.sum.dk/Sundhed/Slutdepot/Borgermoederne.aspx>

1.3.2 Rødbyhavn

Local conditions

The selected area is flat with a very low level of elevation and a flat topology. This is relevant in terms of both flooding and the effect on landscape. It has been suggested that Lolland has very high-quality arable land. It is therefore a bad idea to contaminate it by establishing a final repository. The area also contains a zone of raw material value, primarily with bentonite.

Lolland is considered a tourist island from a political standpoint, and any location of a repository on Lolland would run counter to this. Lolland is rich in nature and home to rare insect, plant and amphibious species. This might be affected in the event of any accident at the repository. There are also rare types of stone and loam.

Focus areas

The low terrain is a problem with respect to potential flooding or storm surge events. There is concern that Lolland will be below sea level in the future and that the water will thereby become radioactive. Construction of high dykes to prevent flooding would be unsightly.

There is a concern regarding the risk of a terrorist attack and intrusion into the facility, particularly because of its location near a future fixed connection with Germany.

There is concern as to whether one can reside above the facility, and whether the facility will cause home values to decline in an area that will be subject to future emigration. There is also a concern over economic collapse since fewer people will come to the area. Lalandia has also been brought up, along with the risk of a drop in number of visitors. Concern has also been expressed that it will not be possible to sell crops if they are grown in proximity to a final repository containing radioactive waste.

1.3.3 Kertinge Mark

Local conditions

Efforts are being made to make Kertinge Nor into a reference waterway, and all of Kertinge Nor and Kertinge Fjord are unique areas. The Marine Biology Research Centre is located in Kerteminde, and there is therefore a major focus on the marine biology conditions in the area, as well as on the valuable natural conditions. It is a very sandy area (Kalvehaverne).

Cultural heritage conditions, including the Ladby Viking ship and museum, coastal cultural heritage, ancient ruins and protected areas.

Focus areas

Seawater penetrates into Kertinge Mark, and there is concern over the possibility of seepage into groundwater, seawater and natural areas, including the risk of bioaccumulation. Salt water penetrates into drinking water wells, and there may be a risk of salinating the facility, which can destroy the concrete.

There are questions as to whether there would be a greater risk for spreading into the surrounding environment through climate changes, rises in sea level and high tides in the event of storms. There is also focus on falling home values, fewer visitors, declines in tourism in general and a decline in profits for local organic agriculture.

1.3.4 Hvidbjerg, Thyholm

Local conditions

Investments in natural and water areas are being made in this area in order to promote higher levels of residency and tourism. The area is dependent on agriculture and fisheries, including mussels, nurseries and tourist activity. The Thy National Park concept cannot support having a waste repository in such proximity. Part of the area also falls within the coastal protection line.

Focus areas

Concern with respect to the character of the waste, including content of hazardous materials such as lead and cadmium, and whether one can ensure that it is not hazardous, even after closure. There is concern regarding transport of waste and for CO₂ emissions when transporting it from Risø to the other end of the country. There is concern that the facility may cause anxiety and upset.

Risk of impact on groundwater and water in the fjord (including lead and cadmium) has been raised, along with risk of earthquakes. There is concern regarding the impact on business and socio-economic conditions – sale of organic goods, mussel export, oysters and malt barley.

1.3.5 Thise, Salling and Skive Vest

Local conditions

The citizens have pointed out that there are many shifts in the substrate, and that there may be cracks in the clay that have not been found. There is a shortage of groundwater throughout all of Salling, and there is no certainty of accurately finding aquifers in conjunction with drilling, as aquifers in loamy soil are typically very narrow. There are many salt domes in the area, which will create tears in the clay layer because of pressure. The area has a history of earthquakes, such as the earthquake on Fur 5 years ago.

The area surrounding Limfjorden contains features of natural interest, including, among others, Natura 2000 areas and proposals for the Flyndersø-Sønder Lem Vig local park.

Focus areas

Concern for the consequences for the town of Skive and the scarcely 21,000 residents when run-off from Skive Vest passes through the town via Skive Å brook and out into Limfjorden, if the repository is not sealed.

Concern over both the radioactive waste and the content of cadmium and lead in the waste, where the risk of spread of materials into the groundwater has been brought up. There is a shortage of drinking water in the Skive Municipality, as they are already drawing on groundwater resources in the Viborg Municipality. There may be aquifers in Hvidbjerg – this has not been fully investigated yet.

Concern over impact on business, including Thise Mejeri, agriculture and food production (particularly organic goods), companies and tourism. This may lead to emigration, job losses etc.

1.3.6 Roskilde

Local conditions

The current low-activity storage facility at Risø requires major structural improvements within the next 2–3 years. Some of the existing containers are leaking, which is why the waste generally has to be repackaged. If the waste remains at Risø, the 2,000 tonnes from Kvarnefjeld should be covered over.

Geology at Risø is not sufficient – there is not enough clay and there is risk of earthquake. The Veddelev fault is also highly water-bearing.

Focus areas

Concern as to whether Risø can be selected as a location, because it is included in the environmental assessment as the 0-alternative, and what would happen with the Risø waste over the long term if it remains there. Concern over what would happen with spread of radioactivity when the building is torn down, as it may be radiated. If the waste needs to be repackaged, workers will be exposed to radiation risk. In addition to the radioactive waste, the content of heavy metals in the waste must also be taken into account.

The area must be protected against storm floods if it is low-lying – refer to Cyclone Xaver [Bodil], the tidal surge of 2013.

1.4 0-alternative

The Environmental Assessment Act sets requirements for description and evaluation of the so-called 0-alternative. This means the situation in which the plan is not carried out. The 0-alternative thereby serves as a basis for comparison in the environmental assessment.

The 0-alternative can, in certain situations, actually prove to entail greater environmental impact than if the plan is carried out. In this case, the 0-alternative consists of a solution in which the existing and future waste from the healthcare sector and industrial players are stored at Risø in Roskilde. The 0-alternative does not mean status quo, but on the other hand a projection of the development which may be anticipated through continued storage at Risø.

Danish Decommissioning (DD)

In September 2000, the board of the Risø DTU National Laboratory for Sustainable Energy (now Risø DTU) decided that the largest reactor, DR 3, would not be restarted after a shutdown due to a suspected leak in the reactor tank. In subsequent reviews of an imminent decommissioning, it was deemed appropriate to separate the decommissioning task from the future-minded research activities of the Risø Research Centre.

On 15 September 2003, Danish Decommissioning was officially established for the purpose of decommissioning the reactors and other nuclear research facilities at Risø. Danish Decommissioning is an independent agency under the Danish Ministry of Education and Research (then the Danish Ministry of Science, Technology and Development) /8/.

DD's main objective is to decommission the nuclear facilities at Risø within a time frame of 11–20 years (from 2003). DD is also tasked with:

- performing maintenance of the facilities until the time they are decommissioned, in order to uphold their safety;
- continued receipt, handling and storage of radioactive waste from Danish users of radioactive materials until another solution has been instated;
- participation in the process concerning a long-term solution for the low and medium level radioactive waste.

The 0-alternative is defined as a situation where the existing and future radioactive waste remains stored at Risø in the buildings and facilities where it is today. Official requirements on radiation protection and safety, including reference doses, will also remain unchanged after 2023. With respect to B48, decommissioning must be completed by no later than 2023, after which monitoring and operations for which Danish Decommissioning is responsible shall be discontinued. After this point, a decision will be taken as to how the waste will be stored.

In the 0-alternative, it is assumed that no changes will be made to the physical storage conditions, including the storage buildings.

2. Limitation of the environmental report

The following identifies the serious environmental impacts that may be anticipated in implementation of the plan for location of a final repository for low and medium level radioactive waste.

The limitation of the environmental report, known as scoping, is intended to provide the framework of the environmental report. Scoping builds on a draft of the plan and a series of previous investigations, including preliminary studies and area studies as well as comments from community meetings held in the 6 municipalities concerned.

2.1 Method for assessment of significance

The basis for scoping is a very broad and comprehensive environmental concept, which includes (but is not limited to) the following:

- biodiversity,
- population and human health,
- soil,
- water,
- air,
- climate factors,
- material goods,
- landscape,
- cultural heritage, including churches and their surrounding areas, as well as sites of architectonic and archaeological importance.

The data basis for the assessments primarily includes feasibility studies and area studies, charting of protective interests and information from community meetings concerning local stakeholders, concerns and points of contention, including with respect to agriculture, food production, fisheries and tourism.

Evaluation of whether environmental conditions may be seriously affected by the plan is divided into two steps, where step one involves a preliminary assessment of level of significance in relation to the overall environmental goals presented in Table 2.

In environmental conditions, where a potential impact is anticipated (marked "Yes"), the degree of the impact is evaluated in Table 3.

Table 3 also describes why in some environmental conditions no serious impacts are anticipated (marked "No").

2.2 Scoping – stage 1

Table 2 presents an initial evaluation of seriousness on the basis of:

- **Environmental conditions** refer to the broad environmental concept of the Environmental Assessment Act.
- **Overarching environmental objectives** are understood in this context to mean specific goals and planning and legislative limitations from EU, national, regional or municipal levels with bearing on the environmental conditions in question and with an overarching character. EU directives and regulations, legislation, executive orders and government planning for the environmental area are reviewed, along with regional and municipal identifications. Local plans are not looked at in this stage of planning.
- **Potential impacts** on or conflicts with the environmental objectives presented are described.
- **Degree of significance** – evaluation is made as to whether there is any risk that implementation of the plan may cause any of the potential impacts on environmental objectives as described in the table.

Table 2 Preliminary overview of assessment of degree of impact

Environmental conditions	General environmental objectives	Potential impact	Can the plan result in a potentially significant impact?
Bio-diversity	<ul style="list-style-type: none"> • Preservation objectives for Natura 2000 areas, see executive order on habitats • Objectives established through identification of National Parks • 2013 National Planning Report • Protection and conservation objectives in national legislation, including Section 3 of the Danish Nature Conservation Act and selected building and protective lines • Municipal objectives in the identification of, for example, local parks, interconnected natural areas etc. 	<ul style="list-style-type: none"> • Impact on the integrity of Natura 2000 areas (also even if the final repository is located outside the Natura 2000 area). • Impact on appendix IV species, see executive order on habitats • Changes to the physical conditions within Section 3 areas • Location of a final repository within building and protective lines • Impact on interconnection between natural areas 	Yes
Population, health and well-being	<ul style="list-style-type: none"> • Overarching objectives established in the Environmental Protection Act³ concerning nature and the environment, human living standards and preservation of plant and animal life. • Objectives expressed in fixed reference doses • Various objectives from the guidelines of the Danish Ministry of the Environment concerning, for example, limit values for noise, air and water. • 2013 National Planning Report (such as planning in rural districts) • Municipal visions regarding, among other things, social conditions and business development in the area. 	<ul style="list-style-type: none"> • Impact on human health if reference dose of radiation is exceeded • Impact on human health from risk of drinking-water contamination etc. • Impact on population because of noise, emissions, vibrations • Impact on population because of traffic disruption • Impact on population through accidents or intentional events (terror) • Emigration from area/reduced immigration • Reduced profits for food production businesses • Decline in tourism • Impact on social structures either through a direct environmental impact or through concern among the population 	Yes
Soil	<ul style="list-style-type: none"> • The Environmental Protection Act establishes objectives for protection of soil and groundwater.⁴ 	<ul style="list-style-type: none"> • Soil contamination upon release of contaminated substances 	Yes

³ Environmental Protection Act, <https://www.retsinformation.dk/Forms/r0710.aspx?id=132218>

⁴ Environmental Protection Act, *Protection of soil and groundwater: Section 19. Without a permit, substances, products and materials that may contaminate groundwater, soil and substrates may not be 1) buried in soil, 2) discharged or spread on soil or 3) discharged to substrates.*

Water	<ul style="list-style-type: none"> Objectives for ensuring clean drinking water established in the Danish Water Framework Directive if implemented in proposals for water plans and identification of drinking-water stakeholders. Objectives for securing clean drinking water established in the "Proposal for a COUNCIL Directive laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption". The Environmental Protection Act establishes objectives for protection of soil and groundwater.⁵ 	<ul style="list-style-type: none"> Contamination of surface water or groundwater Changes in supply structure (drinking water) 	Yes
Air	<ul style="list-style-type: none"> Danish Ministry of the Environment's air quality guidelines 	<ul style="list-style-type: none"> Impact on air quality through emissions of CO₂, for example 	No
Climate factors	<ul style="list-style-type: none"> Environmental objectives in the 2013 National Planning Report concerning reduction of CO₂ emissions 	<ul style="list-style-type: none"> Impact on climate, such as CO₂ emissions 	No
Material goods	<ul style="list-style-type: none"> Regional identification of raw material exploitation areas Municipal identification of particularly valuable agricultural areas 	<ul style="list-style-type: none"> Location of the facility within an unexploited raw materials area Location of the facility within identified valuable agricultural areas Consumption of resources and materials by the facility itself 	Yes
Landscape	<ul style="list-style-type: none"> Danish Planning Act's rules for planning in coastal zones 2013 National Planning Report on construction in open country National identification of geological interest areas Municipal identification of valuable landscapes 	<ul style="list-style-type: none"> Location of the facility within a coastal zone Location of the facility within valuable landscapes or geological interest zones 	Yes
Cultural heritage	<ul style="list-style-type: none"> Protected areas and ancient monuments Municipal identification of cultural environments 	<ul style="list-style-type: none"> Location of facility in protected areas Location of facility in conflict with protected ancient monuments Location of facility within cultural environments 	Yes

⁵ Environmental Protection Act, *Protection of soil and groundwater: Section 19. Without a permit, substances, products and materials that may contaminate groundwater, soil and substrates may not be 1) buried in soil, 2) discharged or spread on soil or 3) discharged to substrates.*

2.2.1 Summary of assessment of significant topics

The following overarching environmental conditions are considered relevant in relation to the plan's intention and the potential impact of environmental objectives:

- **Biodiversity**
- **Population, health and well-being**
- **Soil**
- **Water**
- **Material goods**
- **Landscape**
- **Cultural heritage**

2.3 Scoping – stage 2

Table 3 Scoping – assessing degree of impact

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
1. Biodiversity (flora and fauna)				
1.1. Plant and animal life			X	Studies address whether there is any risk of serious impact on plant and animal life through implementation of the plan. Field studies are not conducted, but the existing identifications of interconnected natural areas are reviewed, including Section 3 areas and municipal identifications of wild-life corridors etc.
1.2. Natura 2000 areas			X	All plan areas are delimited so that they do not encroach on Natura 2000 areas. One of the plan areas borders a Natura 2000 area, however, and this must be investigated to determine whether there is a risk for impact on the Natura 2000 area (Hvidbjerg Thyholm/Natura 2000 area "Agger Tange, Nissum Bredning, Skibsted Fjord and Agerø"). This is done by way of a continual natural outcome assessment that is attached to the environmental report. In addition, Risø is located near Natura 2000 area "Roskilde Fjord".
1.3. National parks or local parks			X	The closest national park is Thy National Park, situated west of the Skive Vest and

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
				<p>Thyholm plan areas. The national park will not be affected by the plan. In addition, there are proposals for a new national park that includes the southern section of Roskilde Fjord and a collective land area stretching southwards and binding the fjord landscape with the forest around Hvalsø in central Sjælland.</p> <p>Local efforts are being made in municipalities with identification of smaller areas in the so-called “local parks” or “nature parks”. There is currently a proposal for a local park set forth by the Skive Municipality – “Sønder Lem Vig - Flynder Sø” local park.</p> <p>The Skive Vest plan area is located partly within the local park. The plan’s potential conflict with this is addressed in the environmental report.</p>
1.4. Wildlife corridors/biological interest areas			X	See item 1.1.
1.5. Natural protection, see Section 3			X	See item 1.1.
1.6. Afforestation/forest clearing			X	<p>The plan areas include selected areas where forest is relatively desired or undesired. Potential conflict with afforestation is examined in the environmental report, as one of the objectives of appointing afforestation areas is protection of groundwater.</p> <p>Protected forest areas are located within some of the areas. It is assumed that the facility will not be situated within protected forest areas.</p>
1.7. Protected areas		X		Several of the plan areas contain smaller

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
				<p>protected areas (Bornholm, Skive Vest, Hvidbjerg Thyholm). The protected areas are relatively small and primarily associated with areas surrounding churches.</p> <p>There are good possibilities within the plan areas for location of a final repository at a distance from these areas, and the plan can thus be realised without impact on the protected areas.</p>
2. Population, health and well-being				
2.1. Population limitations and disruptions			X	<p>The plan may result in impacts on the population in the form of both direct and derivative effects.</p> <p>Community meetings have focused on the direct impacts on the population, including drinking water and health, and whether these impacts can result indirect impacts on the area with respect to tourism, business, agriculture and food production, and emigration from/immigration to the region.</p> <p>These indirect socio-economic factors are addressed in the environmental report.</p>
2.2. Impact on social conditions			X	<p>Impacts on the social conditions in the immediate surroundings of a potential final repository are examined in the environmental report, with focus on, among other things, outdoor life, agriculture, food production, business and comfort.</p>
2.3. Impact on business			X	<p>Location of a final repository within one of the possible areas may result in direct or indirect impacts on business, including agriculture, fisheries, food production and sales as well as tourism.</p>

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
				Business values are described overall for the local community, and impacts on these are evaluated in the environmental reports.
2.4. Health standards (including radiation protection, safety and security)			X	<p>The construction and location of the final repository were selected on the basis of a number of criteria, all of which shall ensure a responsible and durable storage solution for the radioactive waste.</p> <p>If a decision is taken to continue working with two concrete projects, a series of investigations will be developed to examine conditions concerning both security and safety. These analyses and subsequent official approvals are prerequisites for the facility to be built:</p> <ul style="list-style-type: none"> • Safety: Measures to protect the public and the environment against risk of radiation from a final repository during operation and after closure, i.e. monitoring of radiation sources. • Safety analyses: Charting of potential hazards, i.e. factual investigations of specific problem areas. • Safety assessments: Evaluation of all aspects of the facility relevant for protection (monitoring of radiation exposure) and security (monitoring of radiation sources). This includes a security evaluation, assessments of the location, design and operation (i.e. also safety analyses, such as how quickly various radioactive substances spread into the surrounding environment). Unlike the analysis, the security assessment also includes an evaluation as to whether security is acceptable, both in specific areas and overall. • Security: Measures to prevent unauthorised access to radioactive materials (including a statute of limitations for damages, loss, theft or transfer of material).
2.5. At-risk groups (such as people with disabilities)	X			No impact on at-risk groups resulting from the plan can be identified.
2.6. Outdoor/recreational			X	Several of the plan areas encompass large

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
stakeholders				recreational sites, such as Lalandia on Lolland and Joboland on Bornholm, which may be impacted in the form of fewer visitors/decline in tourism. This derivative effect will be included in the environmental report, which is also described in scoping under item “2.3”.
2.7. Noise and vibrations		X		The plan can be implemented without giving rise to any risk of impacts beyond the objectives established in Danish guidelines on noise and vibrations.
2.8. Transport (including radiation during transport)			X	Transport of radioactive waste shall take place in accordance with Danish provisions, which are based on the guidelines from the International Atomic Energy Agency (IAEA). In the feasibility study (the transport study), the decision was made to focus on road or marine transport. The feasibility study concludes that the risks associated with the modelled accident scenarios are minor /7/. Risk of radiation is addressed in the environmental report.
2.9. Traffic management/load			X	<p><i>Facility construction</i></p> <p>The facility for which the plan establishes guidelines can be built without serious impacts on traffic planning.</p> <p><i>Transport of waste from Risø</i></p> <p>Transport of existing waste from Risø is expected to fill approx. 250 trailer lorries. If filling continues over a period of one year, this will mean one transport per work day.</p> <p><i>Routine transport of waste</i></p> <p>The annually produced volume of waste from hospitals, industry etc. is expected to fill approximately 8 m³.</p>

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
3. Soil				
3.1. Existing soil contamination	X			The plan will not be in conflict with any existing soil contaminations, as it will not prevent any future public decontamination initiative.
3.2. Soil contamination			X	The plan may entail location of a final repository that may result in contamination of soil and groundwater over the long term that is not in accordance with Section 19 of the Environmental Protection Act. This risk of future pollution is handled in the environmental assessment, and guidelines can be incorporated into the plan so that it can be ensured that an impact falls within the protection objectives of the Act.
4. Water				
4.1. Surface water, including impact on watercourses and wetlands			X	<p>In accordance with Section 27 of the Environmental Protection Act, substances that can contaminate water may not be allowed into watercourses, lakes or the ocean; similarly, such substances may not be stored in such a way as to present a risk of water contamination. It is assessed in the environmental report whether the plan can be carried out without impacting surface water.</p> <p>The plan must ensure that the facility is equipped in such way as to be adapted to flash flooding (climate security). The surroundings are thereby secured against discharge of materials, even in the case of climate changes and extreme precipitation.</p>
4.2. Discharge of wastewater		X		The plan will result in wastewater of a volume and quality that can be handled via existing wastewater planning and legislation (Environmental Protection Act Section 32, wastewater planning).

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
				No serious impacts are anticipated on this basis.
4.3. Groundwater conditions			X	The plan areas are located so that they are not in conflict with areas with special drinking water reserves (OSD). The environmental report includes an evaluation of whether there is any risk of contamination of groundwater, even if the plan areas are located outside the OSD. Risk of spread of contaminated substances to groundwater shall be investigated in closer detail. As the plan is operating on an overarching level, the area studies are taken as a starting point.
5. Air				
5.1. Air pollution (dust and other emissions)		X		The plan will not in itself cause any established environmental objectives to be exceeded (air quality criteria of the Ministry of the Environment).
5.2. Emissions from any traffic to and from the area		X		<p>Traffic volume will be greatest during facility construction and in conjunction with transportation of existing waste from Risø, see item 2.8. Traffic volume is relatively limited and vehicles shall comply with EU standards for emissions from road vehicles.</p> <p>Overall, the plan's impact in relation to emissions from traffic is considered to be of lesser significance, partly because it involves open country where diffusion of emissions is good.</p>
6. Climate factors				
6.1. Potential climate impact		X		<p>The plan will not cause serious impacts on climate (see also items 5.1 and 5.2).</p> <p>The plan can be designed so that the facili-</p>

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
				ty will be adapted to and secured against future climate changes (see also item 4.1).
7. Material goods				
7.1. Area usage		X		<p>The plan includes a potential area involvement within the selected plan areas of approx. 150 m x 150 m. The final location of the facility is not established in the plan.</p> <p>This is not considered to be a serious environmental impact.</p>
7.2. Energy consumption		X		Overall, and in relation to applicable environmental objectives, the plan is not thought to result in any serious impacts with respect to energy consumption.
7.3. Water consumption		X		Water consumption for the facility is not considered to result in any serious impacts on water resources.
7.4. Products, materials, raw materials			X	<p>The plan can be implemented without giving rise to serious impacts on resources, due to the dimensions and material requirements of the three possible types of repository. This is therefore not addressed in the environmental report.</p> <p>On the overarching planning level, there may be conflicts with respect to identified raw materials areas (Hvidbjerg Thyholm, Skive Vest and Lolland), which will be included in the environmental report.</p>
7.5. Chemicals, pollutants			X	<p>Implementation of the plan will mean that pollutants in the form of, for example, radioactive waste and load of lead and cadmium, will be brought into the area.</p> <p>General risk of spread of substances is addressed in the environmental report in accordance with item 4.3 in the scoping.</p>

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
7.6. Waste, recycling		X		<p>Seen as a whole, the plan is in compliance with the Danish Parliament's basis for decision B48⁶, in which the Danish Parliament provides its consent for the government to begin the development, concomitantly to the decommissioning of Risø, of a basis for decision for a Danish final repository of low and medium level radioactive waste.</p> <p>All radioactive waste, like all other use of radioactive materials, shall be handled in accordance with applicable legislation in the area. Handling, storage, transport and permanent storage of Danish radioactive waste will fall under official control of the Danish National Institute of Radiation Protection.</p> <p>The plan will not present the opportunity to generate waste that cannot be managed within the framework of legislation.</p>
8. Landscape				
8.1. Landscape-related value			X	<p>Several of the plan areas are near the coast and entirely or partly situated within the coastal zone. This condition must be taken into special consideration when selecting the final location and design of the facility, as the landscape adjustments and location within the coastal zone must be accounted for.</p> <p>In addition, some of the plan areas are located within designated landscapes of</p>

⁶ Danish Parliament's basis for decision B48,
<https://www.retsinformation.dk/Forms/R0710.aspx?id=100413>

Environmental conditions	Not applicable	No impact or lesser impact	Potentially serious impact – to be investigated in greater detail	Comments
8.2. Geology			X	Some of the plan areas are located within valuable geological areas (Struer, Kerteminde) and areas of national interest (Struer).
9. Cultural heritage				
9.1. Cultural and historical values			X	<p>The areas include varying extents of building and protective lines, cultural environments, cultural heritage sites and preserved ancient monuments.</p> <p>Stakeholders associated with administration of cultural and historical values, such as the Ladby Viking Museum in Kerteminde, are evaluated in conjunction with impact on socio-economic conditions. This will involve a potential impact on business and tourism, and not directly on the cultural and historical values in the area.</p>
9.2. Churches		X		The plan is not believed to result in any impacts on churches, as there is the possibility to plan for a final repository outside the designated church areas.
9.3. Preserved (or preservation-worthy) buildings		X		The plan is not believed to result in any impacts on preserved and preservation-worthy buildings, as it is assumed that the actual facility will not be situated in conflict with protected buildings.

Environmental assessment?	Yes	No	Comments
	X		The plan is evaluated to be potentially capable of resulting in serious environmental impacts. This will be addressed in an environmental report.

2.4 Conclusion

The scoping has resulted in a screening of the following environmental conditions to be addressed in the environmental report:

- **Biodiversity**
 - Plant and animal life
 - Natura 2000 areas
 - National parks or local parks
 - Wildlife corridors/biological interest areas
 - Natural protection, see Section 3
 - Afforestation
- **Population, health and well-being**
 - Population limitations and disruptions
 - Impact on social conditions
 - Impact on business
 - Health standards (including radiation protection, safety and security)
 - Outdoor/recreational stakeholders
 - Transport (including radiation during transport)
 - Traffic management/load
- **Soil**
 - Soil contamination
- **Water**
 - Surface water, including impact on watercourses and wetlands
 - Groundwater conditions
- **Material goods**
 - Products, materials, raw materials
 - Chemicals, pollutants
- **Landscape**
 - Landscape-related value
 - Geology
- **Cultural heritage**
 - Cultural and historical values

2.5 References

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