

Minutes from Advisory Group Meeting

Date: 11th November 2025

Location: Digital Meeting

Members of Advisory Group: Johan Andersson, Catherine Banet, Steve Barlow, Simon Carroll, Tom Heldal

Participants from NND: Pål Mikkelsen and Grete Rindahl. *Secretary:* Cindy Eriksen and Katrine Christensen

Date for next meeting: 11th – 12th May 2026 – in person meeting

Agenda

| Time | Agenda item | Presenter |
|-----------|--|--|
| 9:00 AM | Welcome | Director General/CEO Mr. Pål Mikkelsen |
| 9:10 AM | Competence: Nuclear Baseline Organization (NBO) | Adviser Mr. Knut Ivar Rønning |
| 09:40 AM | Clarification | |
| 9:45 AM | Input from the Advisory Group | Mr. Steve Barlow, Mr. Tom Heldal, Ms. Catherine Banet, Mr. Simon Carroll, Mr. Johan Anderson |
| 10:05 AM | Break | |
| 10:15 AM | Waste and repository competence | Head of Technical and Decom. Section Mr. Nils Lund-Bøhmer |
| 10:45 AM | Clarification | |
| 10:50 AM | Input from the Advisory Group | Mr. Steve Barlow, Mr. Tom Heldal, Ms. Catherine Banet, Mr. Simon Carroll, Mr. Johan Anderson |
| 11:10 AM | Buffer time | |
| 12:30 PM | Break | |
| 1:00 PM | FLYT | Head of IT Branch Mr. Ole Jakob Ottestad and Product Owner for FLYT Mr. Marius Korum |
| 1:30 PM | Clarification | |
| 1:35 PM | Input from the Advisory Group | Mr. Steve Barlow, Mr. Tom Heldal, Ms. Catherine Banet, Mr. Simon Carroll, Mr. Johan Anderson |
| 1:50 PM - | Break | |
| 2:00 PM - | Sum up of the meeting Administrative | Director General/CEO Mr. Pål Mikkelsen |
| 3:00 PM | End of meeting | |

Welcome from Director General/CEO, Mr. Pål Mikkelsen

Mr. Pål Mikkelsen gave a presentation including a brief introduction of the meetings participants and a short update on developments on selected topic since last meeting.

Competence: Nuclear Baseline Organization (NBO), Mr. Knut Ivar Rønning, Adviser

Mr. Knut Ivar Rønning gave a presentation with questions for the Advisory Group.

Concerning the Nuclear Baseline's content and application in daily operations, what recommendations does the Advisory Committee have regarding other relevant reference documents?

Summary of the Advisory Groups' input and discussion:

- *International Atomic Energy Agency (IAEA): SSG-47, Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities*
- *Western European Nuclear Regulators' Association (WENRA): Decommissioning Safety Reference Levels v2.3 2024*
- *SSMs föreskrifter SSM FS 2008:1 (Sweden)*
- *Office for Nuclear Regulations (ONR - UK):*
 - o *NS-INSP-GD-036 LC36 Organisational Capability*
 - o *Safety Assessment Principles (SAPs)*¹ - particularly the section on leadership & management. (Note that the SAPs are currently under review and may be updated)
 - o *Licence Condition Handbook (Feb 2017)*²
 - o *Function and Content of a Safety Management Prospectus*³

The Norwegian regulator leans on the UK regulation regime. DSA (Norwegian Radiation and Nuclear Safety Authority - the Norwegian Regulator) has a cooperative agreement with Office for Nuclear Regulation (ONR), UK.

¹ [Safety Assessment Principles \(SAPs\) - 2014 edition \(Revision 1, January 2020\) | Office for Nuclear Regulation](#)

² [ONR - Licence Condition Handbook](#)

³ [Function and Content of a Safety Management Prospectus](#)

Swedish is more prescriptive in its regulatory practice. UK regulation is more non-prescriptive. The nuclear operator must describe more instead of following set solutions described in the regulations.

Are there any insights or recommendations from the Advisory Committee concerning the definitions of the Nuclear Baseline?

The question arises because Institute for Energy Technology (IFE) had a broader definition where everything was part of the NBO. NND is now aiming to make the NBO a smaller segment within the overall organization. This means NND will need to put in more effort to ensure that that part of the organization is fit for purposes. The question focuses on how NND will define all the roles, functions, and personnel that will fit into the complete NND structure.

Summary of the Advisory Groups' input and discussion:

There is a distinction between the two definitions.

NNDs states that it is a “*description*” whereas ONRs states “*the means by which the licensee demonstrates that they are and will remain suitable and sufficient.*” Having just a description without making that demonstration that they are suitable and sufficient is a gap. A description is a description, but the difference is if the description is fit for purpose.

NNDs definition seems narrower than the definition provided by ONR. In terms of tasks but as well scope.

It is common for the security organization to be included in the definition of the Nuclear Baseline Organization. At this stage, one would also expect security to be clearly addressed as part of that definition.

Considering NND's organizational framework, what do you define as the Operating Organization?

Summary of the Advisory Groups' input and discussion:

The organizational structure should identify all the roles, responsibilities, and accountabilities of all the various positions in the organizational chart. With that in mind, NND has been an operation organization and is moving to become a decommissioning organization. This means you are currently in an important phase of transition between the two.

As you move from operating to decommissioning, the roles will change. The organization chart should reflect this. If you make a *Safety Management Prospectus*, then you can do a mapping to ensure that the roles and responsibilities are in the right place. For decommissioning you might need additional roles and responsibilities, and the reactor manager might move to a new position. In UK, such changes to the organization chart have to go through regulatory authority, and the changes had to be explained through the *Safety Management Prospectus*.⁴

NND has ongoing activities to provide updated organizational charts for 2031 and 2036. At 2031 the nuclear facility at Kjeller will have been transferred to NND. These organizational descriptions will serve as important benchmarks for future planning. NND intends to create one organizational chart for operating and one for decommissioning. The Advisory Group will be presented further details at a later stage – at which point they will be asked to provide concrete advice.

An important aspect of a safety organization could be an auditing board that reviews all proposed changes. It is essential to ensure that audit competence is in place. Should the focus be solely on managers, or should it also include functions? These are critical questions that need to be addressed, and the approach must be clarified to show how this connects to the core of safety. When considering NND more broadly, it is important that there is a division between the reactor manager – the operational part of your organization - and the maintenance and the decommissioning team. There must be a designated person who is responsible for the continued safety of your organization. Roles and responsibilities need to be clearly separated so that the operator is responsible for ongoing safety and when it is handed over for Post Operational Cleanout (POCO) or decommissioning, an appropriate safety system ensures that the plant or

⁴ [Function and Content of a Safety Management Prospectus](#)

equipment is safe to work on. The organization chart should reflect that division. Having it all under one branch may potentially lead to unsafe situations.

The Nuclear Baseline Organization also needs to identify competencies and staffing levels required to maintain safety.

Could you provide guidance on how Core Capability and Safety-Critical Functions should be understood, defined, and applied in practice?

Summary of the Advisory Groups' input:

Every role that may affect safety should be included in the NBO, i.e., maintenance, role for writing work instructions etc. Decommission work should be subject to approved processes, somebody has to write this process.

Fitters and workers must have confidence that the work they are performing is safe. The NBO is not required to specify the number of personnel but should clearly define the necessary roles and competencies.

The application of the management system may also affect the Nuclear Baseline Organization.

In addition, documents that may be of use for NND in this context:

- The World Association of Nuclear Operators (WANO):
 - Independent Oversight of Activities Related to Decommissioning
 - Roadmap to guide operators through the transition to decommissioning.

Waste and Repository Competence, Mr. Nils Lund-Bøhmer, Head of Technical and Decom. Section

Mr. Nils Lund-Bøhmer gave a presentation.

Summary of the Advisory Groups' input and discussion:

Waste Management Program (WMP) was helpful and beneficial in understanding where you are and where you are going.

In addition to the competence you already have identified, you will need some basic competence in safety assessment. You will need the ability to evaluate how systems are functioning and how to judge operational safety assessment – anything you do in terms of decommissioning activities and later in e.g. repository selection you need to connect into what are the safety implication, both short term and long term. But also, if you are a buyer, you will also need some competence in order to be a competent buyer.

NND has some slides showing the safety case in connection with the closure of the repository. NND is building up a branch focusing on *design and safety case*. This will be input to this branch.

With regards to the repository, you will need someone with insights into the geotechnical issues to lead such a program. NND is working towards a framework agreement with Geological Survey of Norway (NGU). The geological competence NND needs will partly be provided by NGU, but NGU has informed that NND still will need someone within NND that can understand what NGU is delivering (i.e Intelligent Customer capability).

WMP outlines a range of needs, possibilities, and requirements that you are not yet ready to show how you can meet. One of the key challenges is a “catch 22” – to revise the plan, you need further analysis and decisions that need to be informed by your plan. It is a difficult set of looping requirements that you have to meet. NND is aware that it is a complex situation. Operational waste is also reduced substantially; we can no longer use those numbers in the WMP as a baseline. The WMP is more an identification of “which holes we need to fill”, and then how do we “fill them.” Before we have any storage capacity, it will be difficult to fill these holes.

A clearer framework for what can be released and its implications will be critical. Once boundaries are defined, the scope of what needs to be delivered on the radioactive waste management side will narrow. This requires understanding both what can be released and thorough characterization of materials to know exactly what you have in relation to those parameters. The concept of Waste hierarchy is not formally recognized by regulators; and is not mentioned in IAEA safety guides. However, in today's context, in a world where sustainability and circular economy is much more important, it is positive to see that Waste hierarchy has been included in the WMP.

Recommendation in terms of improving your teams' capabilities, working with your overseas waste management organizations, the experience is that they are willing to help and to share knowledge.

Progress can be achieved through participation in IAEA projects and by arranging secondments with other organizations. Experience shows that a comprehensive suite of generic safety cases can be developed, building upon the hard work other organizations have done.

The waste hierarchy is referenced in the WMP but is not yet fully adopted within NND. For example, issues like waste storage could be minimized by prioritizing waste reduction according to the hierarchy.

This issue is not purely theoretical. The LLW disposal facility in Cumbria was originally expected to be full by early 2000s; however, through the implementation of rigorous procedures that encourage recycling, reuse, and consideration of alternatives before materials are deemed waste, its projected capacity has now been extended until 2050. Importantly, the focus is not solely on volume, but also on radiological considerations. Putting on a price for waste will still give a signal of importance to the disposal of low-level waste. In a few years NND will both be the waste producer and the waste handler. Price as an incentive to reduce waste is considered less effective in Norway.

WMP is a dynamic document, will be updated regularly. The Advisory Group will have the opportunity to provide input for future revisions.

It was noted that an evaluation of deep borehole disposal by NND—specifically whether it remains a feasible option for SF—would be a valuable topic for future consideration. NND participates in the IAEA CRP Deep Borehole Disposal Option⁵, which examines the technical aspects of borehole disposal and aims to assess the Technology Readiness Level (TRL) of this method. This involvement will provide further insights into deep borehole disposal. At present, NND views it as a potential solution, though it will be analyzed alongside other concepts in subsequent assessments. Considerable uncertainty remains concerning safety issues. NND is approaching this matter with due diligence, weighing both the risks and relevant factors. The suitability of deep borehole disposal also depends on the characteristics of the bedrock and results from previous trials and tests. Borehole sites occupy specific geological environments like those areas where NND has already achieved social acceptance. NND has been attending SKB repository school. This has been useful.

The Advisory Group may provide guidance on the development of requirements for the Swedish repository at a later stage.

⁵ [Deep Borehole Disposal Options | IAEA](#)

Additional comments on the topic:

EURAD Roadmap and the School of Radioactive Waste Management. The School of Radioactive Waste Management aims to compose a diverse portfolio of tailored basic and specialized training courses. In this section, you can view the courses organized within EURAD and the courses given by external providers in the field of radioactive waste management. [EURAD School of Radioactive Waste Management](#)

Regarding requirements there is a short introduction to the subject developed within the Eurad 1 project. This report is written by Johan Andersen. See <https://www.ejp-eurad.eu/sites/default/files/2024-02/EURAD%20Domain%20Insight%201.2.6%20-%20Require...>

The IAEA offers twelve online learning courses on spent fuel and radioactive waste management, and decommissioning and environmental remediation. These courses consist of 50 modules and almost 100 lectures. They are free of charge and intended for anyone looking to understand the fundamentals of these topics, including young professionals and new entrants to the respective areas. [E-learning on Spent Fuel and Radioactive Waste Management, Decommissioning and Environmental Remedi...](#)

2023 IAEA general safety guide on application of the concept of clearance. Providing recommendations on the application of the concept of clearance for materials, objects and buildings that are to be released from regulatory control, this publication supports the application of the relevant requirements of IAEA Safety Standards Series No. GSR Part 3. It includes details on the regulatory framework for clearance; the clearance process; the derivation of clearance levels; the application of clearance to solid materials, liquids, and gases; generic clearance and specific clearance using activity concentration and surface contamination clearance levels. It also provides recommendations on the involvement of interested parties. Intended for governmental officials, and those working for regulatory bodies and operating organizations, this publication will also be of interest to technical service providers in radiation protection. The recommendations provided are applicable to facilities that use, manufacture, process, or store radioactive material, such as nuclear power plants, research reactors, other nuclear fuel cycle facilities, and facilities for the management of radioactive waste. [Application of the Concept of Clearance | IAEA](#)

2023 IAEA general safety guide on application of the concept of exemption. Intended for use by government officials, and those working for regulatory bodies and operating organizations, this publication will assist in the application of IAEA Safety Standards Series No. GSR Part 3 in relation to the concept of exemption of practices or sources within practices from regulatory control. It addresses the application of a graded approach to the concept of exemption with generic exemption and specific exemption. It explains the concept of exclusion and its relationship to exemption and clearance. The recommendations provided in this publication are applicable to all facilities and activities that use, manufacture, process, trade, or store radioactive sources or material containing either natural or artificial radionuclides. [Application of the Concept of Exemption | IAEA](#)

Reflection for the whole external Advisory Group.

It is considered that NND needs more focus on short term solutions (3-5 years), e.g., in order to be able to produce methodology and procedures on clearance and classification. We need these solutions to move forward.

NND has been asking for advice on long-term solutions, not the short-term one. We will work on separating these streams in our upcoming meetings.

To provide concrete feedback and identify barriers or constraints, the Advisory Group will need preparation documents in advance. This will enable a better evaluation of alternatives. The Advisory Group also recommends that NND prepare a list of topics where advice is needed for the next meeting. This list can be updated if new developments arise.

It is challenging for NNDs owners to maintain an overview of the potential financial liabilities of the entire portfolio due to numerous moving parts. The documents the advisory group have seen so far have been related to specific projects rather than the whole. In the UK, NDAs assessment of the financial liabilities has been a volatile moving target, generally trending upward. It is interesting to get an understanding to what extent NND is currently working on this topic.

NND presented a report of the whole portfolio for the first time in April this year to our Ministry of Trade, Industries and Fisheries and to the Ministry of Finance. The figures are uncertain, and the report will be updated yearly.

NND is still working on how to engage the Advisory Group to provide concrete advice on these specific items. At the same time, much of the current focus is on sharing information about NND to build a complete understanding and develop comprehensive plans. In addition, there are significant uncertainties around key decisions that need to be made, and NND is actively working to reduce these uncertainties.

FLYT, Mr. Ole Jakob Ottestad, Head of IT Branch and Mr. Marius Korum, Product Owner

Mr. Ole Jakob Ottestad and Mr. Marius Korum gave a presentation.

Answer to clarifying questions:

The system is in total valued as restricted (as defined by the Norwegian Security Act) - and is stored on an approved information system appropriate for the value.

Owner of the data is diverse roles due to the breadth of the system scope. The owner of the data is clearly defined through roles connected to the different processes supported by the system.

Access to both processes and data is governed by role-based access controls.

The data storage site manager will operate on an air-gapped system approved by national security authorities because of the valuation of the system.

Intermedial level waste is included, but the spent nuclear fuel will not be managed within FLYT.

In FLYT you may aggregate data for the waste.

The groundwork for FLYT was good but FLYT also needs good implementation. FLYT and connections to other relevant projects have been a challenge, part of this challenge is due to NNDs' ongoing work on defining processes and procedures. NND is now taking steps to have FLYT considered when defining the processes and procedures in the management system.

Summary of the Advisory Groups' input and discussion:

Does the advisory group see any risk factors related to FLYT that we should pay attention to?

Proper labelling of waste packages, particularly considering the potential loss of labels over extended periods, such as 40-50 years. It is fundamental to ensure label durability in the long term, and technologies like laser-etched labels may provide an effective solution.

FLYT was considered an impressive system, the kind of system most waste management organizations wished they had from the very beginning.

The nuclides that you are recording and the fingerprints you are using will be determined by the safety case – and the safety case for safer operations and for dismantling might identify gamma remitters - doses to the workforce. But for the disposal, you need to think of the disposal safety case. This might flag up nuclides that for the reactor operations are not an obstacle but may have obstacles that have to be managed for disposal. It is of importance to consider these safety cases and how they will be incorporated in the fingerprints and into your characterization process.

Record physical and chemical data. Groundwater Directive (Directive 2006/118/EC) is also applicable in Norway. This you will need to be aware of and record different hazardous substances accordingly.

Other NEA projects focus on preservation and best practices for recording data, but how do they ensure this information remains viable over many decades? How can it be made accessible a hundred years from now?

Quality assurance and error assessment during the processes. Both manual and automated error accounts and how you address them should be documented.

You may create a visual record of the waste package by photographing and scanning it, then integrating these images with your documentation. Complementing the datasheet records with visual identification of both the package and its contents is recommended. This can be efficiently accomplished by incorporating a camera-based process.

We are working with a lengthy time frame, so criteria may change. The system should allow updates over time, enabling records to be retrospectively modified to match new standards.

Engineers continue to face a significant workload. Incorporating AI tools to automate some processes could help save time.

Inventory and chemical and physical composition is also of importance. FLYT will also include radioactive waste handling and existing waste packages. In FLYT the data that the regulator requires is prioritized, authoritativeness is also embedded in how we will use FLYT e.g., procedures, measurement equipment and calibration of the equipment used.

The need to include more nuclides in the charts is thought of. It is not just inventory; it is also where inventory sits. The system is flexible around logistics and transport, storage, incoming and outgoing WACs. However, the trick is to make this workable for the workforce.

Controlled data usage is essential: always retrieve information directly from the database, and the system should identify provenance of data and notify users when updates occur.

Learning from past mistakes is equally important, such as an example in Sweden where records no longer matched the actual content. To correct this, waste has to be removed from the repository. Taking lessons from this to avoid them may also be beneficial.

Comparing FLYT's processes with those of other projects can clarify systems and outputs. The Advisory Group could explore this further, focusing on technical capabilities at a future meeting. This should include how NND defines requirements and success criteria and assesses progress toward achieving them.

There may be a risk that incorporating more and more features into FLYT will make the system too complicated and hard to implement eventually. Start using the system as soon as possible, according to its defined scope - even if that scope is initially limited. Then use the user's experience for updating the system.

Sum up of the meeting

The digital meeting worked well overall, though this format still has its pros and cons. Having the material in advance allowed us to add more value by digesting the content and thinking it through before the meeting.

Moving forward NND should make a work plan with topics NNDs would like to discuss with the Advisory Group, suggestions to include were:

- legal issues
- details on Nuclear Baseline Organization
- cost estimation methodology for NNDs decommissioning mission

Other input to the topics of this meeting:

NND waste management plan should be updated on regular basis. The Advisory Group may be reviewer.

Waste Package Data, you should be sure that you really know what data you need.

The NDA may not be the most suitable comparison for the NND. Facilities of equivalent size, like the one at Ispra, could provide a more relevant benchmark. Comparing waste volumes and related challenges on a scale proportionate to NND would likely offer better insight.