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**NUCLEAR ENERGY AGENCY
COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES**

**NEA/CNRA/R(2010)3
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CNRA Working Group on the Regulation of New Reactors

Report on the Survey on Regulation of Site Selection and Preparation

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The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information.

The NEA Data Bank provides nuclear data and computer program services for participating countries. In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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The Committee on Nuclear Regulatory Activities (CNRA) of the OECD Nuclear Energy Agency (NEA) is an international committee made up primarily of senior nuclear regulators. It was set up in 1989 as a forum for the exchange of information and experience among regulatory organisations.

The committee is responsible for the programme of the NEA, concerning the regulation, licensing and inspection of nuclear installations with regard to safety. The committee's purpose is to promote cooperation among member countries to feedback the experience to safety improving measures, enhance efficiency and effectiveness in the regulatory process and to maintain adequate infrastructure and competence in the nuclear safety field. The CNRA's main tasks are to review developments which could affect regulatory requirements with the objective of providing members with an understanding of the motivation for new regulatory requirements under consideration and an opportunity to offer suggestions that might improve them or avoid disparities among member countries. In particular, the committee reviews current management strategies and safety management practices and operating experiences at nuclear facilities with a view to disseminating lessons learned.

The committee focuses primarily on existing power reactors and other nuclear installations; it may also consider the regulatory implications of new designs of power reactors and other types of nuclear installations.

In implementing its programme, the CNRA establishes cooperative mechanisms with the Committee on the Safety of Nuclear Installations (CSNI) responsible for the programme of the Agency concerning the technical aspects of the design, construction and operation of nuclear installations. The committee also co-operates with NEA's Committee on Radiation Protection and Public Health (CRPPH) and NEA's Radioactive Waste Management Committee (RWMC) on matters of common interest.

FOREWORD

The Committee on Nuclear Regulatory Activities (CNRA), considering that design and construction of advanced nuclear power plants was underway or being considered in a number of countries, decided at its December 2007 meeting to establish a new Working Group on the Regulation of New Reactors (WGRNR).

The WGRNR is responsible for the programme of work in the CNRA dealing with regulatory activities in the primary programme areas of siting, licensing and oversight for new commercial nuclear power reactors (Generation III+ and Generation IV reactors). The working group constitutes an international forum for exchanging information and experience in relation to new builds and plans its work to ensure improvements in nuclear safety through more effective and efficient regulation. Furthermore, the group should facilitate a cooperative approach to identify key new regulatory issues and promote a common resolution.

Consistent with the CNRA/CSNI Joint Strategic Plan (2005-2009) and CNRA Operating Plan, the WGRNR began in May 2008 a task of examining and documenting the various practices used by regulatory authorities in the regulation of nuclear power plant siting. The purpose of the task was to provide the member countries with practical information that would be helpful in assessing and potentially improving their regulatory practices and requirements on the regulation of sites. The task considered also regulatory practices on sites where a mixture of activities are taking place (e.g. operating units, new construction, and decommissioning, etc).

This report describes the outcomes from the task, including the survey with a discussion of the survey responses provided by regulatory organisations. The report includes High Level Summaries describing how sites are evaluated, how the sites are selected and how the preferred site is licensed or permitted.

ACKNOWLEDGEMENTS

Gratitude is expressed to Mr. Philip Webster, Director of Darlington Regulatory Program Division at the Canadian Nuclear Safety Commission (CNSC) for compiling the survey responses and preparing this report. In addition, all members of the CNRA Working Group on the Regulation of New Reactors (WGRNR) are recognised as important contributors to the success of this report by providing answers to the survey and comments to the report. Alejandro Huerta has been the NEA Secretariat officer.

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1. Introduction

The Working Group on the Regulation of New Reactors (WGRNR) was created by the CNRA at its December 2007 Meeting, its Mandate being to “be responsible for the programme of work in the CNRA dealing with regulatory activities in the primary programme areas of siting, licensing and oversight for new commercial nuclear power reactors (Generation III+ and Generation IV).”

At its first meeting in May 2008, the Working Group discussed a task to “Prepare a report reviewing the various practices used by regulators in the regulation of nuclear power plant siting. The report should consider regulator practices on sites where a mixture of activities are taking place (e.g. operating units, new construction, decommissioning, etc) including organization of the regulators organisation, methods, systems, etc.”^[1] Following discussion, the Working Group assigned an Action 1-5 to “develop...a survey on the regulation of nuclear sites including seismicity issues, security issues, multi-units aspects and regulator practices on sites where a mixture of activities are taking place (e.g. operating units, new construction, decommissioning, etc.).”^[2] The revised Mandate of the Working Group, including this action, was approved by the CNRA at its meeting in June 2008.

2. Survey

The Survey was prepared and issued by the NEA in July 2008^[3], with a request to the member states to provide their responses by the next meeting of the Working Group in October 2008.

In addition to addressing the specific topics actioned by the Working Group, the Survey also investigated the broader context of siting, in order to address the Mandate that had been approved by the CNRA. The questions in the survey therefore covered the topics of site evaluation, site selection, regulatory approval, site preparation and regulatory oversight. A topic of particular interest was to what extent IAEA guidance on site evaluation^[4] was followed.

The survey considered the possibility that a body other than the safety regulator may approve the choice of site or permit the applicant to start to prepare it. The survey also investigated the existence of formal requirements and informal expectations, recognizing that these both form part of the regulatory toolkit.

3. History of Responses

Responses were received from all twelve member states that were then members of the Working Group, being Canada, Czech Republic, Finland, France, Japan, Republic of Korea, Slovak Republic, Slovenia, Spain, Switzerland, United Kingdom and United States of America.

The responses were reviewed at the second meeting of the Working Group in October 2008. Because some of the responses had been received only recently, the conclusions were tentative. However, in general terms, it was observed that the responses from the member states displayed similar approaches at a high level in terms of policy or process but varied considerably at the detail level.

In general, it could be stated that new reactors are licensed in several stages, often with separate licences. Site selection and preparation are regulated in almost all states, either directly or indirectly. Site selection is approved by one means or another, though not always by the safety regulator and not always formally (sometimes “consent” is given). Consideration of alternative sites is sometimes required. Public consultation is generally required and some form of environmental assessment is needed prior to site

approval in all cases. Site preparation activities are generally defined and controlled by the safety regulator. Regulatory guidance for oversight of site preparation exists in many member states.

Discussion at the second meeting identified a number of topics that might benefit from further investigation^[5], namely:

- Public consultation/involvement.
- Definition of construction, site preparation.
- Impact of the site on the design.

No immediate action on these topics was assigned at the time. The first version of this report was issued in January 2009 for review and comment by the Working Group members, based on the responses provided in response to the initial questions.

At the third meeting of the Working Group in March 2009, an Action was placed to prepare further questions, to investigate aspects such as public consultation/involvement, definition of site preparation/construction and impact of the site on the design. Actions were also placed on the member states to review their existing answers to make their responses more consistent and homogeneous^[6].

This report was updated in May 2009 for presentation to CNRA on 8-9 June 2009, which approved the additional work. The extra questions were issued by NEA on July 15, 2009^[7] and were answered by the member states in the period ending November 2009.

Since the initial survey, the membership of the Working Group had grown to fifteen states, so the new members answered the full set of questions, namely Poland, Hungary and the United Arab Emirates. The overall survey, comprising both the original and additional questions, is given in Appendix A.

The report was discussed further at the fourth meeting of the Working Group in September 2009, where it was decided to ask each Member State to prepare a half-page summary of their response, addressing four questions:

- How are sites evaluated?
- How is the preferred site selected?
- How is the preferred site licensed or permitted?
- How does the safety regulator oversee site preparation activities?

4. High Level Summaries

Canada

In Canada, the applicant is expected to evaluate candidate sites against the guidance in CNSC Regulatory Document RD-346 “Site Evaluation for New Nuclear Power Plants”. This is based on IAEA NS-R-3 “Site Evaluation for Nuclear Installations”, the Guides to which are adopted by reference in RD-346. Site evaluation involves identifying one or more candidate sites that are then evaluated to identify the impacts of the proposed NPP on the environment and the impacts of the environment on the safe operation of the NPP. Mitigating strategies to reduce the risk to health, safety, security and the environment are identified. Information is gathered during the site evaluation process taking into account all phases of the life of the NPP from site preparation to decommissioning and may also feed into the environmental assessment process, the NPP design process and the license application process. The preferred site is selected by the applicant following consideration of the above factors.

The licence to prepare site is issued by a Joint Review Panel of the nuclear safety regulator (the CNSC) and the Canadian Environmental Assessment Agency, which is also responsible for accepting the Environmental Impact Statement (EIS). The EIS is prepared by the proponent and examines the significance of the potential environmental effects, including cumulative effects, of site preparation, construction, operation, refurbishment, decommissioning and abandonment of the project. Site Preparation

is overseen by the CNSC, in conjunction with other Provincial or Municipal agencies, in accordance with their respective mandates.

United States

In the United States the selection of sites for nuclear power plants is largely made by investor-owned power companies and it is based on many factors. These include, but are not limited to, the forecasted need for power, the proximity to the load center, to water resources, to the energy delivery infrastructure, to rail or other means of transporting components and plant modules, and to existing power plants. The review and approval of a site for the construction and operation of a nuclear power plant is conducted by the Nuclear Regulatory Commission (NRC) with a focus on radiological safety; numerous approvals from other local, State, Tribal and Federal agencies may also be needed. Section 185 of the Atomic Energy Act (AEA) covers construction permits and operating licenses.

The reactor site criteria are addressed in 10 CFR Part 100. The environmental review for new reactor applications is governed by 10 CFR Part 51, which gives the NRC requirements for implementing the National Environmental Policy Act (NEPA). When a reactor design completes the certification process, the NRC promulgates a rule as an appendix to 10 CFR Part 52 that can be referenced in a construction permit and operating license (COL) application. The other licensing actions covered by the regulations cited above lead to NRC staff safety evaluations and environmental impact statements. An ESP results in a site that can be banked and referenced in a subsequent COL application.

The safety reviews relate to site safety and emergency planning. Factors to be considered when selecting the site include: (1) characterization of reactor design and operation; (2) population density and use characteristics of the site environs; and (3) physical characteristics of the site including seismology, meteorology, geology, and hydrology. As a part of NRC's safety review responsibility, site characterization, construction activities (including limited work that may be authorized before a construction permit or COL is granted), vendor processes, and quality assurance are subject to the NRC inspection program. An environmental review that complements the safety review discloses the physical, ecological, social and radiological effects of constructing and operating the proposed facility at the proposed location; the review also considers alternatives to the proposal such as alternative sites, alternative energy sources, and alternative station designs. Guidance for the staff in conducting its reviews is outlined in safety and environmental standard review plans. Finally, before authorizing the issuance of a permit, license or authorization, the staff safety review is subject to an independent review by an advisory committee to the Commission; the environmental review is subject to public comment; both the safety and the environmental reviews are subject to an adjudicatory hearing.

Finland

In Finland, the applicant selects and evaluates candidate sites. Site selection and evaluation involves identifying one or more candidate sites that are then evaluated to identify the impacts of the proposed NPP on the environment and the impacts of the environment on the safe operation of the NPP, according to the regulations presented in the Finnish legislation and regulatory guides. There is no specific Site License in the Finnish licensing system and site selection and acceptance is a process that is addressed in several consequential steps starting from Environmental Impact Assessment (EIA) phase and Decision in Principle phase, both of which may include one or more alternative sites. From siting point of view, a prerequisite for positive Decision in Principle by the government is that the municipality has approved to site the reactor. The site is chosen by the applicant before submitting the Construction License application to the government.

In the Finnish process the first step dealing with siting is the EIA. It is based on environmental legislation and therefore it does not consider nuclear and radiation safety aspects in detail. Nuclear and radiation safety issues are addressed in more detail in the first licensing step which is called the Decision in Principle phase. In this step, especially site safety aspects are evaluated. These include geology and seismology, meteorology and hydrology, transport routes (sea, land and air), industrial activities and population. Also physical protection and emergency preparedness aspects are addressed in this phase. The following licensing step after Decision in Principle is the Construction License phase. In the Construction License phase it has to be shown how the plant design is such that it is able to withstand all site circumstances.

License applicant is allowed to start preparations at the site after receiving a positive Decision in Principle. Site preparations can be done according to the conventional legislation and permits. However, the licensee is not allowed to start constructing any safety classified structures or buildings without prior approval from the nuclear and safety authority (STUK). Site preparation is overseen by STUK, in conjunction with other governmental and municipal agencies, in accordance with their respective mandates.

United Kingdom

In the UK, the government has facilitated the development of new civil nuclear power stations through a Strategic Siting Assessment process which will identify sites which are suitable or potentially suitable for the deployment of new nuclear power stations by the end of 2025 which includes assessing the sites using set criteria. The criteria are based on demographic, environmental, safety and security and practicability issues. They take cognizance of IAEA guidelines on siting and of the HSE Safety Assessment Principles for Nuclear Installations. These sites will be included in a National Policy Statement which will be published in 2010. Nominations were invited from what are termed Credible Nuclear Power Operators. These nominations were reviewed by the relevant regulators against the criteria identified and comments invited from the public. An alternatives study has also been performed by government to confirm that there are no reasonable alternative locations which have not been captured by nominations.

Developers will still need to apply for consent to build on these sites under the planning regime. This will be routed through the newly created Infrastructure Planning Commission (IPC). The IPC has been designed as a non-departmental public body whose role will be to supervise and decide applications for nationally significant infrastructure projects. The IPC will consult with the relevant regulatory bodies to inform its decision making. In addition, representations from local authorities and the general public will be taken into account.

The Nuclear Site Licence will be issued by the Health and Safety Executive through the Nuclear Directorate. The site licence is not the only legal permit or authorization required to construct and operate a nuclear facility in the UK. Other authorizations are required from HSE and other regulators (most notably, the Environment Agencies and also the Department for Transport). Following the issue of the Site Licence, construction, commissioning and operational activities are regulated by HSE under the terms of the Site Licence using a series of hold points.

Poland

At the moment there are no specific regulations explicitly connected with siting of the nuclear power plants. A new NPP like any large industrial investment is subject to regulations under the Building Act, Water Act, Land Use and Planning Act and Environmental Law. Additionally according to existing Atomic Law, a decision on construction and development conditions for the site of a future nuclear facility can be issued only after obtaining a positive opinion from the nuclear regulatory authority regarding nuclear safety and radiological protection matters.

One of the initial steps of Polish nuclear program is revision of existing legal framework resulting in amending of legal acts and developing of new regulations especially in field of NPP licensing.

Siting aspects of those new regulations will be based on best international solutions with special importance given to IAEA safety standards, namely NS-R-3 and supporting safety guides.

Hungary

In Hungary, there are four nuclear reactor units in operation at Paks. On March, 2009 the Parliament endorsed the Paks site expansion. In this way, the site of the new unit(s) is determined.

Site licensing is performed by two authorities, the Environmental Authority and the Hungarian Atomic Energy Agency (HAEA).

The Environmental Authority will issue the environmental protection licence following a preliminary and a detailed environmental impact assessment (EIA). In the licensing process the Environmental Authority will analyze the effects of the new unit(s) from the construction to the decommissioning. The assessment must include the potential alternatives, environmental conditions of the project area, anticipated environmental effects, including those which spread over national boundaries and mitigations measures.

The nuclear safety site licence is issued by HAEA. The scope of the nuclear safety site review is an examination and evaluation of the site hazards and determination of the design basis.

HAEA oversees site preparation, to ensure compliance with regulations and licence conditions.

Czech Republic

In the Czech Republic, the applicant will select and evaluate a site. An environmental impact assessment according to the Act No. 100/2001 Coll. has to be performed. This assessment must be reviewed by multiple regulatory agencies and assessed before issuing the license under the Atomic Energy Act and the Building Code. The condition for the issuance of an SUJB site license is a statement from the Ministry for Environment on the acceptability of the environmental impact assessment.

The criteria for siting of nuclear installations covers all recommendation provided by IAEA NS-R-3. The criteria imply that the assessment should include phenomena registered in that particular locality. They are required to evaluate their site against earthquakes, climate effects, floods and fires, airplane crashes and explosions. Along with the environmental impact assessment the applicant must include several other documents. They must include an Initial Safety Analysis Report which must include a description of the suitability of the selected site, a description of the design from the viewpoint of nuclear safety and radiation protection. It should also include a preliminary assessment of the nuclear installations operational impact on the personnel, the public and the environment, a proposal for safe decommissioning and an assessment of quality assurance in the process of the site selection.

Once the applicant has been granted their license from SUJB they are still required to obtain a Decision on Location of the Structure from the Building Office before they can begin site preparation. Site preparation is then overseen by the Building Office.

France

In France, the site is selected by the applicant. The applicant must submit documentation to ASN that justify that the design of the NPP is compliant with the specific hazards of the site and that the impacts of

the NPP are acceptable. This is determined through an environmental assessment, which describes why this site was chosen over another.

When the applicant submits their application they include an impact assessment, which covers the prior condition of the site and its environment, the direct and indirect, permanent and temporary effects of the new build, measures to prevent, limit and compensate for the impact of the new build and the methods used for assessing the effects on the environment. A non-technical summary of the study is also prepared to ensure the public can understand the information contained within the document. The applicant is also required to give special consideration to natural and manmade factors such as seismicity, meteorology and fires when performing their assessments.

Once the site and design have jointly been assessed and approved, the applicant is granted the decree authorizing the creation of the NPP. From this point on ASN provides regulatory oversight of the site preparation. After this authorization the applicant is still required to obtain approval from other regulatory bodies regarding other regulatory requirements such as building permits. Before operation the applicant is also required to obtain commissioning authorization from ASN.

Korea

There are three major steps to confirm the site suitability and safety for the NPP installation - Site selection, Site evaluation, and Pre-operational inspection. A nuclear power plant site is selected and proposed by the Utility (KHNP). The proposed site is subject to an approval of a Licence for the Site Preparation from the MKE (Ministry of Knowledge and Economy), in accordance with *Electric Source Development Promotion Act*. The regulator, MEST (Ministry of Education, Science & Technology) technically supported by KINS is barely involved at this stage. They provide comments to the MKE on the Preliminary Radiation Environmental Report.

The Utility shall then prepare and submit the result of site characterization of the proposed site described in the chapter 2 of the PSAR (Preliminary Safety Analysis Report) and the RER (Radiation Environmental Report). KINS reviews the application documents, at the MEST's request, and provides the MEST with the Summary of the Safety Analysis Report for its decision upon the issuance of the CP.

After the issuance of the CP, the Utility starts excavation of the NPP foundations to the designed level for the installation of the facilities. At this stage, KINS performs inspections according to the inspection plan to confirm the foundation stability and readiness to the facility installation. Detailed plant/site-specific guides and working procedures for site preparations and regulations are also applied.

Slovenia

In Slovenia, the siting for the new NPP shall be carried out by adoption of National Spatial Plan and Environmental protection consent.

In the first stage of siting of the nuclear facilities, called the process of National Spatial Plan, an Environmental Report is produced, which provides adequate information on the acceptability of the plan's impacts to the environment and the public. A supplemented document Special Safety Analysis is used to assess all predefined factors for the location of the nuclear facility that may affect the nuclear safety of the facility during its lifetime, as well as the effects of the operation of this facility on the population and the environment. Its content, which is prescribed by Slovenian Nuclear Safety Administration (SNSA), is based on IAEA NS-R-3 "Site Evaluation for Nuclear Installation". The Special Safety Analysis determines the suitability of the site(s) and sets basic design requirements and conditions for the new NPP.

The second stage of the siting includes the process of obtaining an environmental consent from the Environmental Agency of the Republic of Slovenia. For this, the operator of the sited nuclear facility shall submit an Environmental Impact Assessment (EIA).

The EIA's main feature is that it evaluates all impacts on the environment and proposes mitigation measures. Conditions, scope and content of it is drawn up by the Environmental Agency of the Republic of Slovenia. A part related to radiation and nuclear safety shall be based on the SNSA's proposal.

In the process, the Environmental Impact Assessment is also adopted by the local community. With these, the final site for the nuclear facility is set.

Once a construction license has been issued all the construction work, including site preparation, can start in accordance with requirements from the construction license, national spatial plan and requirements from Construction Act. SNSA together with other competent inspection bodies perform oversight of the whole construction process of nuclear facilities.

Spain

In Spain, it is up to the utility to choose one site and apply for a site license. The licensee has to submit the documentation and analysis required by the Decree of Nuclear and Radioactive Installations. A review of the site for the construction of the nuclear power plant is conducted by the Nuclear Safety Council (CSN) and the approval is issued by the Ministry of Industry. As part of the early site permit the Ministry of Environment will assess the fulfilment of the Environmental Law.

CSN has the role of an adviser in nuclear safety and radiological protection. These include areas of seismicity, geology, geotechnical engineering, meteorology, hydrology (surface water and groundwater) and external events (natural origin or human induced). The external events assessment must show that the applicant has taken man made factors such as fire, nearby transport routes, airways, other facilities and access to off-site power into consideration.

The CSN also requires supplementary documentation from the applicant when applying for the license. This documentation includes the justification for the installation and the site chosen, a Descriptive report of the project, a Construction draft project, a site characterization study and a description of the preliminary activities that are expected to be carried out once prior authorization is granted.

The final purpose of CSN on reviewing a site evaluation of a nuclear installation presented by the applicant is to verify the adequacy of applied criteria to site and site-installation interaction, in operational states and accident conditions, for the following: evaluating a proposed site to ensure that site related factors and characteristics have been adequately taken into account; analyzing the characteristics of the population in the region and the capability of implementing emergency plans over the projected lifetime of the installation; defining site related hazards; in short, ensuring that site-installation combination does not imply an unacceptable risk to individuals, the population or the environment over the lifetime of the nuclear installation. Once the site permit has been issued, CSN does not provide regulatory oversight of the site preparation.

Switzerland

In Switzerland, the new Nuclear Energy Act (in force since 2005) regulates the licensing process. The selection of sites for new NPPs is made within the first licensing step, i.e. the General License. Several regulatory bodies participate in the application evaluation, including the Swiss Federal Nuclear Safety

Inspectorate (ENSI) for those aspects related to nuclear safety. The applicant selects the site for the new NPPs and is required to perform a comprehensive site evaluation.

Submission documents for the General License are the Environmental Impact Assessment, the report on compliance with the area planning requirements and, within ENSI's responsibility, the Safety analysis report, the Security report, the Concept for the disposal of radioactive waste and the Decommissioning concept. Siting aspects that need to be dealt with in the application are drawn from the IAEA NS-R-3 and include geography and population distribution, traffic routes and industry, logistics and construction site, meteorology, hydrology, geology and connection to the power grid. The anticipated radiation exposure in the vicinity of the facility as well as details regarding staff and organizational structure of the applicant are additional topics for the General License.

Once the General License is issued by the Swiss Government, the next formal step is the Construction License which coordinates all the other permits by the local authorities. This means that formally in order to prepare the site, the applicant needs to have a Construction License.

Japan

In Japan, the location of the reactor facilities should cause no hindrance to the prevention of the hazard as prescribed in the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. This is determined using the Examination Guide for Nuclear Reactor Siting Evaluation and Application Criteria, which corresponds to NS-R-3 in principle.

The implementation of an environmental impact assessment is required under law. The applicant is also required to give special consideration to natural factors. Specifically external flooding, tsunamis, high winds, freezing, snow, and earthquakes must be looked at. Along with natural hazards, manmade hazards such as airplane crashes and explosions must be taken into consideration.

After the site has been evaluated and the licence granted the regulator has no oversight of the site preparation.

Slovak Republic

In the Slovak Republic, the siting of nuclear installations are only permitted on sites that meet specific characteristics. This is outlined in Annex 2 of the Regulation No. 50/2006 Coll which reflects IAEA NS-R-3. Annex 2 outlines site characteristics which would prohibit the siting of a nuclear facility at that location. An example is land that extends into a protected area for industrial or other economic facilities with which there may be undesirable operational clashes.

In order to grant a site license a full environmental impact assessment must be performed to assess the suitability of the site. Regulation No. 50/2006 Coll requires the applicant to take natural factors such as seismicity, meteorology and hydrology into account.

Once all the siting requirements have been fulfilled the nuclear regulatory authority of the Slovak Republic (UJD) will review and agree or disagree with the siting of the nuclear facility. From this point the licence will then be issued by the regional building authority. However after this stage no regulatory oversight of site preparation occurs.

United Arab Emirates

In the United Arab Emirates, the Federal Authority for Nuclear Regulation (FANR) regulates the selection of sites for nuclear activities. The UAE Federal Law by Decree No 6 requires the operator to hold a licence to conduct the regulated activity of selecting a site.

The FANR draft regulations require the operator to evaluate the potential effects of a nuclear facility on the region. Natural factors including seismicity, geotechnical, meteorology and hydrology have to be given special consideration when selecting the site. Man-made factors such as fires, nearby transportation routes and malevolent events also have to be considered in the site evaluation and selection.

Once the site has been assessed the operator requires a further licence in order to prepare the selected site. After this licence has been issued to the operator, the regulator will then oversee the site preparation.

5. Discussion

The survey had assumed that all member states would follow a similar system of site evaluation, site selection and site preparation before construction could start. As a result, the questions were patterned to enquire into the formal approvals, the guidance available to applicants on the factors to be considered and the manner in which the regulator would review the information and then oversee site preparation. However, review of the responses revealed that although most states do adhere to this rough order of steps, there are considerable variations between them in the manner in which they are performed.

Evaluation of alternative sites is a good practice and it may be concluded that, in general, the site evaluation factors in NS-R-3 are considered in all member states, though commonly through a local interpretation. Since most of the member states are also members of the European Union or their national safety regulators are members of WENRA, recommendations from these sources form part of national practice.

It is also a common practice in the member states to perform an environmental assessment, to address the impact of the station on the area around the site and the impact of the site on the station.

Tables 1 and 2 in Appendix B offer a summary of the responses to those questions that could be reduced to a Yes/No choice, with an attempt to reduce each answer to one of those alternatives; while Appendix C provides detailed responses to the survey.

It may be a gross over-simplification to state that site selection is approved by the safety regulator in the various member states but it appears that without at least the consent of that body, a project will not proceed. The consent may not be provided explicitly at the site selection stage, instead being in the form of advice provided to the decision-making body or being linked to the environmental assessment or the approval to commence site preparation, but it seems that the various factors expressed in Reference 4 are taken into consideration by the safety regulator in all member states before the proponent may prepare the site. Although guidelines are sometimes available, these are very seldom binding. WENRA recommendations are also commonly used.

The majority of the respondents do not require an applicant to evaluate other sites. Although this may be for a variety of pragmatic reasons, such as the site already containing operating reactors, this will require the site to be justified retrospectively against the evaluation criteria, instead of using the factors in advance to select a qualified site. If, on the other hand, an applicant is required to evaluate other sites before

selecting the site for which the application is made, this implies that site selection is regulated, though some responses did not seem to be fully consistent on this point.

One area where a universal response was received from all member states was on an environmental assessment being required as part of site selection or before site preparation may begin (question 1.7). There was, as ever, considerable variation in the manner in which this is performed, the issues which are examined (e.g. in some countries a thorough analysis of the impact of the nuclear installation on cultural heritage, and the analysis of the emission of noise and light are required), the title afforded to the activity and even the organization by which it is performed, but nonetheless all states appear to do it. The assessment generally addresses the impact of the site on the surrounding area and the impact of the surrounding area on the site.

In the framework of nuclear safety, external factors always play a major role when justifying the suitability of a selected site, be they natural factors (question 1.8) or human-induced factors (question 1.9). Natural factors include seismology, geotechnics, meteorology and hydrology. Specific natural effects are considered in certain member states depending on local conditions, such as tsunamis, tornadoes, fires, drought or ice formation. Broader climatic effects such as global warming are also sometimes considered. Human-induced factors often include aircraft crashes, explosions, dam breaks and releases of dangerous fluids or gases.

Security (i.e. resistance to malevolent events) is a rather controversial issue; in some member states it is not considered in the licensing process, and therefore is not reviewed by the safety regulator, but in the national security framework.

Public consultation, be it by the applicant or the national safety regulator, is a rather uneven practice. Although it is generally accepted that in order for the public to accept new nuclear development, they must be consulted, this is often done by transmitting information rather than entering into a dialogue. In some cases, even the one-way communication is done via a formal venue, such as a licensing hearing, instead of seeking input on the issues so that consideration can be given to addressing them. In most member states, the regulatory body undertakes some type of consultation, which may be formal or informal. In some countries the applicant is also required / expected to consult the public for a new site. Some countries have the consultation during the environmental assessment while others have it at the site licensing period. A few have it at both.

In contrast to site evaluation and site selection, where the responses showed quite a bit of consistency in the process of site evaluation, approval to prepare a site is handled in many different ways. For example, in Switzerland the Government issues a General Licence, France uses an authorization of creation, the Slovak Republic does not licence site preparation and in the UK the NII issues a licence for the site, not for individual stages of activity on the site.

Guidance for site preparation activities is again informal, seldom binding, but sometimes available and usually referring to international practice (IAEA Safety Guides). Conversely, data collected at this stage and used for the site safety assessment are subjected to very strict procedures for collection, processing and interpretation, as described in national and international guidelines for siting and also for the SAR content of the nuclear installations.

Where a site contains other facilities, such as other operating/decommissioning units, requirements generally exist or are being created to require applicants to consider the potential impacts of existing operations onsite on the new build and vice-versa.

The responses on the specific topics assigned by CNRA, namely “security issues, and impacts of site on designs and definition of site preparation” were insufficient to permit a summary to be made.

6. References

1. Notification of the 1st Meeting of the CNRA Working Group on the Regulation of New Reactors, NEA/SEN/NRA/WGRNR/A(2008)1, 15 May 2008.
2. Summary record of the 1st Meeting of the Working Group on the Regulation of New Reactors, NEA/SEN/NRA/WGRNR(2008)1, 17 December 2008.
3. E-mail from Jong Chull JO to Working Group members, 2008-07-22 “Proposed Survey on the Regulation of Nuclear Sites”.
4. International Atomic Energy Agency “Site Evaluation for Nuclear Installations”, Safety Standards Series No. NS-R-3, IAEA, Vienna (2003).
5. Summary record of the 2nd Meeting of the Working Group on the Regulation of New Reactors, NEA/SEN/NRA/WGRNR(2009)1, 2 June 2009.
6. Summary record of the 3rd Meeting of the Working Group on the Regulation of New Reactors, NEA/SEN/NRA/WGRNR(2009)2, 16 June 2009.
7. E-mail from Alejandro Huerta to Working Group members, 2009-07-15 “Proposed Survey on the Regulation of Nuclear Sites – Additional Questions”.

Appendix A: Survey on the Regulation of Site Selection and Preparation

The purpose of this survey is to generate information on the various practices used when regulating nuclear power plant siting and site preparation. The information will be analysed for common practices, requirements and principles and will be used to prepare a report summarizing areas of agreement and best practices. The questions cover the topics of site evaluation, site selection, regulatory approval, site preparation and regulatory oversight and are grouped into two parts, the first focussing on site evaluation and selection, the second focussing on site preparation and oversight. Because of differences in national practices, not all questions will be applicable to all countries.

Part 1: Evaluation and selection of sites for a new NPP

- 1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?
- 1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.
- 1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.
- 1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?
- 1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?
- 1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?
- 1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?
- 1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?
- 1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?
- 1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?
- 1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?
- 1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

1.13.1 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

2.6 If yes, what are they?

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

2.8 If yes, please describe their key features.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

2.11 What form of regulatory oversight is performed of site preparation?

2.12 Do inspection plans or programs exist to guide your inspectors?

2.13 If yes, please describe their key features.

2.14 Are there any other elements of national practice that would be relevant?

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

- 3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.
- 3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.
- 3.5 To what extent is the impact of the site on the design considered?
- 3.6 Can you provide examples of conditions that may be attached to a licence or permit?
- 3.7 Are there any lessons-learned from recent experience with site selection?
- 3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?
- 3.9 What form of regulatory oversight is performed of construction?

Appendix B: Summary of Responses to Survey Questions

Table 1: Survey Responses to Part 1 of the questionnaire

Q	CAN	CR	FIN	FR	JPN	KOR	SL	SLO	SPN	SWT	UK	USA
1.1	N	Y	Y	N	Y	N	Y	Y	N	Y?	Y?	Y?
1.4	Y	Y	Y	?	Y	Y?	Y	Y	Y?	Y?	Y	Y?
1.5	Y	N	Y	Y	N	N	N	Y	N	N	N	Y
1.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1.9	Y	Y	Y	Y	Y?	Y	Y	Y	Y	Y	Y	Y
1.10	N	Y	Y	N	N	?	N	Y	Y	Y	Y?	Y
1.11	Y	N	Y	N?	N	N	Y	N	Y	N	Y	N
1.12	Y	N	Y	Y	?	N	Y	Y	Y	Y	Y?	Y
1.13	N	Y	Y	N?	Y?	Y	N	Y	Y	Y	Y	Y

Table 2: Survey Responses to Part 2 of the questionnaire

Q	CAN	CR	FIN	FR	JPN	KOR	SL	SLO	SPN	SWT	UK	USA
2.1	Y	Y	Y	N?	N	Y	N	Y	?	n/a	Y?	Y?
2.4	Y	Y	-	n/a	Y	N	-	Y	?	-	N	Y
2.5	Y	Y	Y	?	N	Y	-	Y	N	-	N	Y
2.7	Y	Y	N	N	N	Y	-	Y	N	-	-	Y
2.9	N	Y	Y	-	N	N	-	N	Y	-	Y	Y
2.10	N	Y	Y	Y	N	Y	-	Y	Y	-	Y	Y
2.11	Y	Y?	Y	N	N	Y	-	-	Y	-	n/a	Y
2.12	N	Y	Y	N	N?	Y	-	N	N?	-	N	Y
2.14	N	N	-	-	Y	-	-	-	-	-	-	Y

Appendix C: Detailed Responses to the Survey on the Regulation of Site Selection and Preparation

Response on behalf of Switzerland

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

The selection of sites for new NPPs is made within the process of granting the so-called “General License”. Several regulatory bodies participate in the application evaluation (e.g. ENSI, the Federal Office of Energy, and the Federal Office for the Environment). The License is officially issued by the Swiss Government (Bundesrat).

The site is selected by the applicant and a comprehensive site evaluation is required in the application for the General License. No alternative sites need to be evaluated.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

At the Swiss legislative level there is the Nuclear Energy Act and the underlying Nuclear Energy Ordinance (both in force since 2005) that give some indications as to siting. The ENSI-regulatory guides (currently undergoing a thorough review) deal with some siting issues as well. However, siting is not covered in detail in the legislative/regulatory framework.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

The Swiss Nuclear Energy Act and Ordinance define the submission documents required to apply for a General License.

The following documents have to be submitted for a General License Application:

Environmental Impact Assessment

Report on compliance with the area planning requirements

Safety Analysis Report

Security Report

Concept for the Disposal of Radioactive Waste

Decommissioning Concept

Documents 3 to 6 are to be submitted to ENSI’s attention.

The Nuclear Energy Ordinance in fact clarifies that the safety analysis report and the security report shall include the following information:

Site characteristics;

Purpose and outline of the project;

Anticipated exposure to radiation in the vicinity of the facility;

Details regarding staff and organisational structure.

The outline of the project shall contain indications about the reactor type (e.g. LWR), its thermal power, its main cooling system (e.g. cooling tower) and about the arrangement of the main buildings.

It should be noted that on the subject of the General License there is no self-containing ENSI-regulatory guide (as is planned instead for the Construction and Operating License). To clarify its expectations ENSI has discussed with the applicants the content of the submittal documents.

The site characteristics that need to be discussed in the application are:

Geography and population distribution

Traffic routes and industry (includes aircraft crash hazards)

Logistics and construction site

Meteorology

Hydrology and ground water

Geology, foundation material and seismology

Connection to the power grid

The hazards originated by a combination of external events shall be investigated too. Deterministic and probabilistic arguments need to be considered as well as the newest data and state-of-the-art models.

As regards radiation exposure in the vicinity of the facility, the reactor type not being exactly specified at this licensing step, the applicant needs to commit himself to the fulfilment of the 3 radioprotection principles (justification, limitation, and optimization) respecting the source related dose limit of 0.3 mSv p.a. that is valid for each site. The applicant has to give indications as to the expected yearly releases in normal operation. This requires a commitment to the best available technologies as well as a qualitative statement about liquid and gaseous releases (comparison with the newest Swiss plants and/or a selection of representative west European NPPs).

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The content of the General License application resembles pretty much the indications contained in the NS-R-3 (see answer to 1.3). To define its expectations ENSI has in fact taken reference from international practices and guidelines as well as from the IAEA Safety Standards.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

Not applicable.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes, a comprehensive environmental impact assessment has to be provided by the applicant as a submission document for the General License. Responsible for the evaluation of the environmental impact is the Federal Office for the Environment.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, a comprehensive evaluation of the site hazards has to be provided by the applicant in his safety analysis report as a submission document for the General License. Severe weather conditions (applicable

for the site), as well as, earthquake and flood hazard have to be analysed considering events with a frequency of 1E-4/year or more.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, these issues have also to be addressed by the applicant in his safety analysis report as a submission document for the General License. Malevolent events need to be discussed by the applicant in the security report. As regards aircraft crash, ENSI is interested to promote an international agreement among regulators on the design criteria to be required.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Yes, this topic has to be addressed explicitly in the Chapter “Connection to the power grid” of the safety analysis report.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

There are no requirements on the applicant, except his own interest in preparing for the public vote (see answer to 1.12).

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

All acts of the regulatory body are in principle open for public consultation under the Law on Transparency in the Public Administration. As concerns the General License, the cantons are invited to express their opinion (beside various federal technical organisations). On a broader level, after the regulatory bodies have completed their evaluations, the application and the relevant evaluation reports are published. Within 3 months after the publication everybody can formally raise an issue against them. At this stage neighbouring countries are also consulted. The draft of the General License has to be approved by the Swiss parliament. Lastly the granting of the General License is subject to a public vote.

Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes, the issues of land use, population growth forecasts and the basic feasibility of emergency measures have also to be addressed by the applicant in his safety analysis report as a submission document for the General License.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Site preparation is not a formal step in the licensing process. After the General License in fact the next formal step is the Construction License which coordinates all the other permits by the local authorities. This means that formally in order to prepare the site, the applicant needs to have a Construction License. It should be noted that in Switzerland the new Nuclear Energy Act and Ordinance have changed the procedure surrounding the Construction License in very important points (unification of licensing under the nuclear law). The new law has not been applied yet to any new NPP, i.e. there is no precedence case for the interpretation of the law. The current understanding is that you need a construction license before you are allowed to do any work on site.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Not applicable.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

Not applicable.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

Not applicable.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Some activities related to measurement collection (e.g. geotechnical drillings) are allowed on a case by case basis within a process of permit granting. In particular on existing sites, the permit applicant should demonstrate that the normal operation of the existing NPP(s) is not affected by the planned activities.

2.6 If yes, what are they?

Not applicable.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

Not applicable.

2.8 If yes, please describe their key features.

Not applicable.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

Not applicable.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Not applicable.

2.11 What form of regulatory oversight is performed of site preparation?

Not applicable.

2.12 Do inspection plans or programs exist to guide your inspectors?

Not applicable.

2.13 If yes, please describe their key features.

Not applicable.

2.14 Are there any other elements of national practice that would be relevant?

Not applicable.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

In the process of granting the general license there are several opportunities for the public to intervene: the application as well as the safety evaluation of the authorities are officially published and everybody can raise an issue
the Swiss regional political bodies (cantons) are formally asked to give their evaluation on the application
the neighbouring countries are formally involved in the process of arriving at the governmental decision on the application
the governmental decision as approved by the Swiss parliament is subject to a country-wide popular vote (referendum)

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The evaluation of the environmental impact assessment is performed by the Federal Office for the Environment. The content of the application is specified by the Federal Office for the Environment based on the Environment Protection Act and the corresponding Ordinance on the Environmental Impact Assessment.

3.3 Does a definition exist of the activities that would be permitted under the heading of "Site Preparation"? If so, please provide it or a reference.

In the Swiss regulations no such definition exists at present.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

In the Swiss regulations no such definition exists at present.

3.5 To what extent is the impact of the site on the design considered?

In the General License application all site hazards with a possible impact on plant safety have to be identified. The General License will contain then a set of conditions indicating which hazards the design has to cope with. In the successive step, i.e. in the Construction License application, the applicant has to demonstrate how the proposed design meets these conditions.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

Answers to this question may be provided by fall 2010 (at the earliest).

3.7 Are there any lessons-learned from recent experience with site selection?

Not applicable.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

If there is a common position on siting issues at the level of WENRA or EC it will be evaluated by the ENSI; for example, in the Swiss licensing process there is formally no such thing as site preparation.

3.9 What form of regulatory oversight is performed of construction?

This issue is still under discussion within the regulatory body. It will take some time until this discussion inside the ENSI is concluded (probably around 2013).

Response on behalf of Canada

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Site selection is not regulated. Typically, a site is selected by the proponent and the basis for the selection of that site is justified via the Environmental Assessment and application for a Licence to Prepare Site. Where an existing site is owned by a Provincial government, that government may be involved in site selection, or may even direct a proponent to select a specific site.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Not applicable.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

Not applicable.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

RD-346 *Site Evaluation for New Nuclear Power Plants*, published in late September 2008, represents the Canadian Nuclear Safety Commission's adoption or adaptation of the criteria contained in NS-R-3, *Site Evaluation for Nuclear Installations*. The scope of RD-346 goes beyond NS-R-3 in several areas such as protection of the environment, site security, and protection of prescribed information. The IAEA guides that directly support NS-R-3 are listed as Associated Documents in RD-346.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

Under the *Canadian Environmental Assessment Act*, The Canadian Environmental Assessment Agency recommends that "alternatives to" a project be considered as part of an assessment by a Review Panel (the general method for evaluating new NPP projects); however, consideration of alternatives to the project is at the discretion of the Minister of the Environment.

Figure 4.1 of RD-346 *Site Evaluation for New Nuclear Power Plants* (see below) recommends that the proponent (not yet an applicant) consider potential sites before making the final selection.

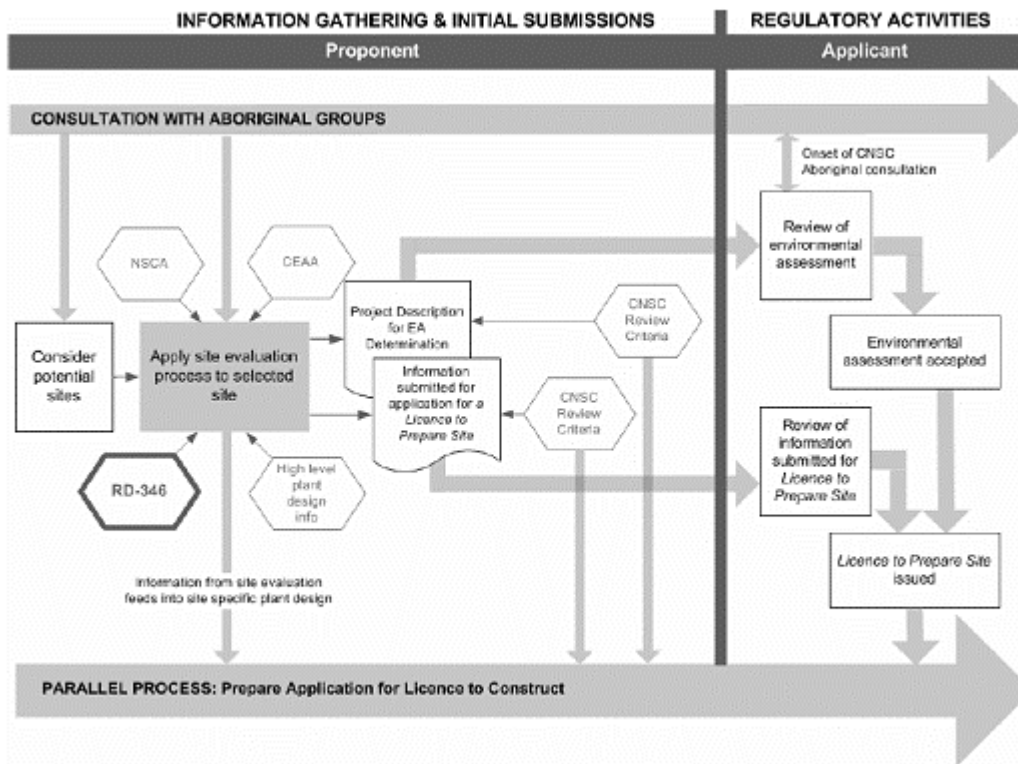


Figure 4.1: Site evaluation within the initial stages of NPP development

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

The depth of evaluation is generally left to the discretion of the proponent; however, additional information may be requested by the review panel.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. The *Canadian Environmental Assessment Act* requires that an Environmental Assessment (EA) be prepared to demonstrate that a project does not lead to significant adverse environmental effects. An application for a *Licence to Prepare Site* under the *Nuclear Safety and Control Act* will not be considered until the EA process has concluded with a positive outcome.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes. Section 4 of the *Class I Nuclear Facilities Regulations* under the *Nuclear Safety and Control Act* (*Licence to Prepare Site*) contains the following regulatory requirements:

An application for a licence to prepare a site for a Class I nuclear facility shall contain the following information...

- (a) a description of the site evaluation process and of the investigations and preparatory work that have been and will be done on the site and in the surrounding area;
- (b) a description of the site's susceptibility to human activity and natural phenomena, including seismic events, tornadoes and floods;

When the EA is triggered, the proponent is required to submit an Environmental Impact Statement in accordance with Guidelines produced by the CNSC and Canadian Environmental Assessment Agency. The guidelines reinforce the above regulatory requirements to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes. Same response as for question 1.8.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

In Canada, transmission access and adequacy is a Provincial responsibility. Each has its own policies and requirements that may influence the location of a new NPP to maintain grid stability while providing efficient access to markets.

RD-346 *Site Evaluation for New Nuclear Power Plants*, states that the proponent is expected to confirm with the grid owner(s) that, with appropriate grid and plant mitigation measures in place, the location of the plant will not adversely affect the grid. Grid effects on the plant are examined under accidents and malfunctions.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

Prior to applying for a licence under the *Nuclear Safety and Control Act*, the proponent is not formally required to consult with the public; however it is strongly encouraged under the *Canadian Environmental Assessment Act* and CNSC document RD-346 *Site Evaluation for New Nuclear Power Plants*.

Subsequent to applying for a licence under the Nuclear Safety and Control Act and triggering the Environmental Assessment process, an adequate level of public consultation by the applicant is a major consideration when evaluating submissions and making the licensing decision under the *Nuclear Safety and Control Act*.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

Yes. Section 4(1) of the *Canadian Environmental Assessment Act*: (for NPP Environmental Assessment) states:

The purposes of this Act are...

- (b.3) to promote communication and cooperation between responsible authorities and Aboriginal peoples with respect to environmental assessment;
- (d) to ensure that there be opportunities for timely and meaningful public participation throughout the environmental assessment process.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

In Canada, emergency preparedness and planning is a Provincial responsibility. Land use planning control is a Municipal responsibility. There is currently no Federal oversight of the adequacy of these measures.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Site preparation is regulated under a *Licence to Prepare Site* under the *Nuclear Safety Control Act*. Certain site preparation activities may also require permits from other Federal, Provincial or Municipal agencies.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The basis for issuing a licence is described in S.24(4) of the *Nuclear Safety and Control Act* (NSCA) which states that:

No licence may be issued, renewed, amended or replaced unless, in the opinion of the Commission, the applicant

(a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and
(b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

The *General Nuclear Safety and Control Regulations* contain requirements that apply to all licensees and the *Class I Nuclear facilities Regulations* contain specific requirements for NPPs. Terms and conditions for a specific site will be described in the *Licence to Prepare Site*.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

Currently, only formal requirements exist for the *Licence to Prepare Site* in the regulations under the *Nuclear Safety and Control Act*.

However, CNSC Staff is currently preparing a series of topical Review Guides within the framework of Assessment Plans to guide staff when reviewing submissions for a *Licence to Prepare Site* and an Environmental Impact Statement. These guides are not part of the regulatory framework but rather internal staff "tools". When complete, they will be made available to applicants and other stakeholders to describe the criteria that will be used in the various topical reviews and the information requirements for the submissions.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

No *Licence to Prepare Site* has yet been issued in Canada, though consideration is being given to the likely terms of one. At present, Power Reactor Operating Licences issued under the *Nuclear Safety and Control Act* typically have terms of five years. They also tend to contain a mixture of standard and specific conditions.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Yes. The scope of site preparation activities is defined jointly by the proponent and the regulator, with public input, in the Environmental Assessment in the *Environmental Impact Statement Guidelines* by the federal authorities. The resulting Licence to Prepare Site enforces that scope of work.

2.6 If yes, what are they?

Draft conditions are being prepared to be included in a *Licence to Prepare Site*, which identify that site preparation may consist of:

- Establishing a construction project infrastructure on a site.
- Establishing permanent site support infrastructure.
- Subsurface preparation for future construction. This includes drainage trenches and cable tunnels but does not include installation of pilings or other foundation work for future structures.

As a general guideline, in Canada construction begins with laying reinforcement bars and pouring structural concrete.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

Currently no. But see the answer to 2.3.

2.8 If yes, please describe their key features.

The list of topics to be reviewed are based on topics contained in IAEA-GS-G-4.1 *Format and Content of the Safety Analysis Report for Nuclear Power Plants*, but adapted for site preparation activities and the requirements of the *Nuclear Safety Control Act* and the supporting regulations. The review guide format has considered the internal structure of USNRC Standard Review Plans but also considers the needs of Canada's non-prescriptive regulatory regime.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

Not under the *Nuclear Safety and Control Act*. However, in order for the environmental assessment to be as thorough as possible, it is beneficial for an applicant to indicate the means by which waste will be managed, either by their own waste management facility or by an arrangement with another body.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Not at present but this is being considered. The lead site proposed for new NPP construction in Canada is Darlington, which currently contains four operating reactors, which their owner has indicated may be refurbished starting in 2016, which will overlap with the proposed new construction. The applicant is required to characterize, in the application for a Licence to Prepare Site, all potential effects of the

environment on the proposed new build. If there is another nuclear facility on the site (or within the environmental assessment area of the proposed new build), it is considered to be part of the new plant's "environment", so its effects on the new build are expected to be considered and vice versa.

This is not explicitly communicated by the regulator but the applicant is expected to recognize it and act accordingly.

2.11 What form of regulatory oversight is performed of site preparation?

Because site preparation is performed under a *Licence to Prepare Site* under the *Nuclear Safety and Control Act*, regulatory oversight of the activities will be performed by CNSC Staff. The development of this oversight program is planned but is not yet underway.

2.12 Do inspection plans or programs exist to guide your inspectors?

Not at this time. They will be prepared under the oversight program mentioned above.

2.13 If yes, please describe their key features.

Not applicable.

2.14 Are there any other elements of national practice that would be relevant?

No.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

The public is expected to be informed by the applicant, starting prior to any formal application being made (during the site evaluation or site selection phases) and continuing through licensing. The public is formally consulted as part of the Environmental Assessment process by means of hearings which are held to review the applicant's Environmental Impact Statement and application for the Licence to Prepare Site. For subsequent licensing phases which are presided over solely by the Commission of the CNSC, the public is strongly encouraged, via various means, to participate in Commission hearings as it deliberates on the applications for the Licence to Construct and the Licence to Operate.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

Currently, the initial decision-making body for both the Environmental Impact Statement (EIS) and the Licence to Prepare Site is a Joint Review Panel of the CNSC and the Canadian Environmental Assessment Agency. The Guidelines for the EIS on which this panel makes the decision are developed jointly by staff from both agencies and are approved by the Federal Minister of the Environment.

Currently, the initial decision-making body for both the Environmental Impact Statement (EIS) and the Licence to Prepare Site is a Joint Review Panel of the CNSC and the Canadian Environmental Assessment Agency. The Guidelines for the EIS on which this panel makes the decision are developed jointly by staff from both agencies and are approved by the Federal Minister of the Environment.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

An Information Document is being prepared (INFO-0784 “Guidelines for Licence to Prepare Site Applications for Class I Nuclear Facilities”) that contains a list of physical activities that are considered by CNSC staff to be site preparation activities. The applicant may however propose their own list of activities to be performed under the license. The following physical activities are considered by CNSC staff to be site preparation activities when performed on the site of the proposed facility:

- Construction and implementation of ongoing environmental monitoring to ensure adequate mitigation of environmental damage during site preparation and eventual construction activities.
- All activities related to the establishment of temporary and permanent access roads.
- Erection of security fencing to establish early physical security barriers (includes site perimeter and construction island fences).
- Demolition of existing man-made structures.
- All activities related to the installation of temporary and permanent site support services to support site preparation, construction and long term operational activities, such as:
 - construction support buildings (e.g. construction offices, warehouses, equipment staging areas, fuel depot),
 - permanent site support buildings that will be outside the facility protected area (e.g. training buildings, technical support buildings, security buildings, site emergency response facilities, laundry facilities), and,
 - electrical power, water supplies, sewage treatment facilities, parking and communications for the aforementioned buildings.
- Facility construction island subsurface preparation, including:
 - removal of vegetation,
 - land-clearing / re-contouring,
 - land reclamation,
 - coffer dams (for flood protection of the construction island),
 - blasting and excavation of subsurface rock, and
 - clearing of site transmission right-of-ways.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

An Information Document is being prepared (INFO-0784 “Guidelines for Licence to Prepare Site Applications for Class I Nuclear Facilities”) that contains the following in the current draft:

- On-site delivery and storage of any facility components¹ to be used in the physical construction of facility SSCs.
- Construction of facility SSCs including but not limited to (as applicable):
 - facility foundation structures (including support pilings),
 - facility intake and outlet channels and structures (including cooling ponds and related connections to the Ultimate Heat Sink),
 - cooling tower(s) and related connections,
 - non-nuclear facility SSCs,
 - for nuclear power plants (NPP), related electrical distribution and grounding systems “upstream” of the main grid switchyard (“upstream” is defined as everything from and including the main grid switchyard to and including the NPP itself),
 - emergency power supply buildings and systems related to the future facility,
 - facility Water Treatment Plant,
 - facility or site ancillary services facilities (e.g., D2O upgrading facilities, radwaste storage and processing facilities).

The basis for staff recommending that these tasks not be permitted under a Licence to Prepare Site is that the design of the facility needs to be at an advanced stage with the safety case accepted by CNSC and that a number of licensee programs, processes and procedures must be in place (e.g. site security, quality assurance).

3.5 To what extent is the impact of the site on the design considered?

To a certain extent, it is considered at the Environmental Assessment and Licence to Prepare Site stages. However, for the sole project currently proceeding, the design has not yet been selected, so a “bounding” approach is being used to characterize the possible releases from the station as a result of the impact of the site on the design. A particular design will be selected prior to the application for a Licence to Construct being made; it is at this stage that the need for design features to address the impact of site characteristics will be considered.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

The first Licence to Prepare Site is not expected to be issued before April 2011, so no examples are available at this time.

3.7 Are there any lessons-learned from recent experience with site selection?

The only currently active site for new build is Darlington, where there are four operating reactors. This was selected by the owner (the Ontario Government) without evaluating any other sites. Greenfield sites that

are being considered in Alberta and Saskatchewan have the benefit of the availability of RD-346 “Site Evaluation for New Nuclear Power Plants”. One lesson learned in Alberta has been the inadequacy of initial consultation by the proponent with Aboriginal groups with established or potential treaty rights to land that may be affected by the new build.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

Not applicable, though available international information was consulted during preparation of the “Guidelines for Licence to Prepare Site Applications for Class I Nuclear Facilities”.

3.9 What form of regulatory oversight is performed of construction?

This is not yet defined. Once work is complete on “Construction Licence Applications for Nuclear Power Plants: Guidelines”, CNSC will move on to defining regulatory oversight of construction.

Response on behalf of Slovenia

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Yes, Ministry of the Environmental and Spatial Planning, Ministry of Economy, Ministry of Health, Ministry of the Interior, Ministry of Agriculture, Forestry and Food, Ministry of Transport and Ministry of Culture are involved in the process of site selection for new nuclear power plants. The Slovenian Nuclear Safety Administration and the Environmental Agency regulate the selection of sites as the decision-making bodies.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The course of procedure in the licensing process of nuclear facilities such as NPP is stipulated in the Act on Protection against Ionizing Radiation and Nuclear Safety [1] (Atomic Act in the following text), Spatial Planning Act [2], Environmental Act [3], Nature Protection Act [4], Decree on the Categories of Activities for which an Environmental Impact Assessment is Mandatory [5], Decree laying down the Content of Environmental Report and on Detailed Procedure for the Assessment of the Effects from Certain Plans and Programmes on the Environment [6], Decree on Special Protection Areas (Natura 2000 Areas) [7], Rules for Natura 2000 and Protected Areas Assessment [8] and Ordinance on Spatial Planning Strategy of Slovenia [9].

The above - mentioned legislation provides the framework determining the documentation for spatial planning, strategic environmental assessment, environmental impact assessment and the nuclear and radiation safety documentation. It stipulates which consents and licenses are to be issued and the way of participation of the public.

The Spatial Planning Act determines approaches and key activities for Spatial Planning and Strategic Environmental Assessment for identifying the areas in general which could meet requirements for installing nuclear power plant (NPP) into a particular area, also when it considers that public engagement would be particularly important.

The Environmental Act forms general criteria for assessing environmental suitability and also the basis for the Strategic Environmental Assessment and Environmental Impact Assessment. The Decree on Categories of Projects for which an Environmental Impact Assessment is Mandatory determines that an Environmental Impact Assessment is mandatory for new NPPs.

The particulars regarding environmental assessment and public participation/review of new sites in the licensing procedure for a nuclear installation can be found in the Environmental Act and in the Spatial Planning Act.

The Atomic Act determines the selection of a site for the location of a nuclear facility shall be based on a Special Safety Analysis. It will be used to assess all the factors at the site of the nuclear facility which may affect the nuclear safety of the facility during its active life and the effects of the operation of the facility on the population and the environment.

- [1] Act on Protection against Ionizing Radiation and Nuclear Safety, Official Gazette RS, No. 102/2004, Ljubljana, 2004.
- [2] Spatial Planning Act, Official Gazette of RS, No. 33/07.
- [3] Environmental Act, Official Gazette of RS, No. 39/06 and 70/08.
- [4] Nature Protection Act, Official Gazette of RS, No. 97/04.
- [5] Decree on the Categories of Activities for which an Environmental Impact Assessment is Mandatory, Official Gazette of RS, No. 78/06 and 72/07.
- [6] Decree laying down the Content of Environmental Report and on Detailed Procedure for the Assessment of the Effects from Certain Plans and Programmes on the Environment, Official Gazette of RS, No. 73/05.
- [7] Decree on Special Protection Areas (Natura 2000 Areas), Official Gazette RS, No. 49/04 and 110/04.
- [8] Rules for Natura 2000 and Protected Areas Assessment, Official Gazette RS, 130/04.
- [9] Ordinance on Spatial Planning Strategy of Slovenia, Official Gazette RS, No. 76/04.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

There are no informal regulatory expectations, but two main criteria were taken into consideration when deciding on the site selection approach:

- the site together with the nuclear facility should provide a safe solution, which must be supported by the safety assessment and
- the site selection must be performed in agreement with the local community.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The new set of Regulations under the Atomic Act (related also with siting approval for a new NPP) is under preparation at this time. All WENRA requirements are included in the new Regulations. The general requirements given by IAEA NS-R-3 are included in the Atomic Act and Regulations, but not in details.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

The site selection shall be carried out with adopting of a National Spatial Plan after the conclusions of the Strategic Environmental Assessment process and comparison of several alternatives from functional, safety, economical and public acceptance point of view on the basis of site specific Special Safety Analysis. The Special Safety Analysis eliminates all the variants which are not feasible for the site and determinates optimal variant for a new NPP location.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

All the plans and programs shall start on the environmental basis. For those which are subject to Strategic Environmental Assessment, performing the Environmental Report in the earliest phase is mandatory. The environmental Report identifies describes and evaluates likely significant environmental effects of the implementation of the plan and its reasonable alternatives, having regard of the objectives and geographical characteristics of the area to which the plan pertains.

If the Assessment of the plan on nuclear facility is carried out within the Strategic Environmental Assessment, a Special Safety Analysis has to be done as separate part of the Environmental Report in accordance with the Atomic Act. It will be used to assess all the factors in the area of the location of the nuclear facility which may affect the nuclear safety of the facility during its operating lifetime and also the effects of the operation of the facility on the population and the environment. The choice of the area for the location of the nuclear facility shall be based on a Special Safety Analysis.

The Environmental Report includes:

- The content and the main objectives of the plan and its link with other plans.
- The relevant aspects of the current state of the environment.
- Evolution, if the plan is not implemented.
- The characteristics of the environment in the areas likely to be significantly affected.
- The environmental problems which are relevant to the plan.
- The environmental objectives established at international, national and other levels which are relevant to the plan, and the ways in which these objectives and other environmental considerations have been taken into account during its preparation.
- The likely significant environmental effects (which should include secondary, cumulative, synergistic, short-, medium- and long-term effects, permanent and temporary effects, positive and negative effects).
- Measures to prevent, reduce or mitigate any significant adverse effects on the environment, which may result from the implementation of the plan.
- An outline of the reasons for selection and a description of how the assessment was undertaken including difficulties encountered in providing the information to be included such as technical deficiencies or lack of knowledge.
- Measures envisaged for monitoring environmental effects of the implementation of the plan.
- The likely significant transboundary environmental effects.
- A non-technical summary of the information provided.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes, see answers to the questions 1.2 and 1.6

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, the evaluation of all relevant site-related factors likely (seismicity, geotechnology, meteorology or hydrology) to affect the safety of the NPP during its operating lifetime and evaluation of the likely impacts of the facility on individuals, society and the environment shall be taken into account.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, if they affect nuclear safety. They shall be addressed in the Special Safety Analysis.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Transmission access or adequacy is the subject of Environmental Impact Assessment.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

No, there are no legal requirements or expectation.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

In the procedure of drafting the National Spatial Plan, the public involvement is assured through prescribed public hearings, consultations, exhibitions and by making all the information available to the public. A member of the European Union could decide to participate in the procedure of a comprehensive Strategic Environmental Assessment in the case of to cross-border impact.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Projecting population growth around the selected site, controlling land use, considering the feasibility of emergency measures are regulated in accordance with “Decree on the areas of limited use of space due to a nuclear facility and the conditions of facility construction in these areas” (Official Gazette of RS, No. 36/2004).

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Yes.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The licensing process of nuclear facilities is stipulated in the Atomic Act, the Environment Protection Act, the Decree on the Categories of Activities for which an Environmental Impact Assessment is Mandatory, Instruction on the Methodology on Preparing Reports on Environmental Impact, the Spatial Planning Act and the Construction Act.

The Environmental Act forms the basis of the Environmental Impact Assessment. The Decree on Categories of Activities for which an Environmental Impact Assessment is Mandatory determines that the Environmental Impact Assessment is mandatory for new NPPs.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

The Environmental Impact Assessment's main feature is that it evaluates all impacts on the environment and proposed mitigation measures.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

The licence for the operation of a nuclear facility shall be issued for a maximum of ten years according to the Atomic Act. The licence may be renewed on the basis of an application by the licence holder if all the conditions prescribed for obtaining a licence are fulfilled when the licence expires.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Yes.

2.6 If yes, what are they?

The activities that are permitted under the site preparation are determined in the National Spatial Plan.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

Yes, a guide on reviewing an application to prepare a site is specified in Decree laying down the Content of Environmental Report and on Detailed Procedure for the Assessment of the Effects from Certain Plans and Programmes on the Environment.

2.8 If yes, please describe their key features.

The criteria how to estimate the influence of the new object on the environment is defined in the above mentioned Decree.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

The impacts from one unit on another shall be evaluated in the Environmental Report through Strategic Environmental Assessment process. Such cases are expected to be assessed during the site evaluation process (Special Safety Analysis and Environmental Impact Assessment). Based on the results of this evaluation, appropriate conditions and requirements would be issued with the environmental concordance at the end of the siting process.

2.11 What form of regulatory oversight is performed of site preparation?

N/A.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes.

2.13 If yes, please describe their key features.

The Slovenian Nuclear Safety Administration performs inspections according to the annual inspection plan. The annual inspection plan includes different types of inspections. All of them are carried out in accordance with written procedures.

2.14 Are there any other elements of national practice that would be relevant?

N/A.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

The public is involved in the process of siting on few different occasions. According to the Spatial Planning Act and the Environmental Act, the public has a possibility to review the State's Spatial Plan, Environmental Report, Environmental Impact Assessment Report, as well as possibility to raise questions and give remarks. During the siting process, there are two one month public proceedings, where the public is acquainted with the plan and environmental impacts. The public gives remarks and poses questions. It is obligatory for the state to answer to all of the questions, before the process can continue. These processes present the core public involvement envisaged by the law.

The current government has also decided to carry out a referendum, before the siting process starts.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

According to the Atomic Act, the selection of the site for the NPP has to be based on the Special Safety Analysis, of which scope and content is completely set by the Regulatory Body (SNSA).

3.3 Does a definition exist of the activities that would be permitted under the heading of "Site Preparation"? If so, please provide it or a reference.

According to the Construction Act the site preparation is included in the process of construction and as such cannot start before the issuance of a construction license.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

Currently the Construction Act prescribes that all works, including site preparation, can start after the issuance of the construction license.

3.5 To what extent is the impact of the site on the design considered?

In the site evaluation the site characteristics, like hydrology, meteorology, climatology, tectonics, seismology, geology are analysed and based on these analysis the design conditions are set.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

We have not issued such conditions yet, but as an example of the condition for the construction license might be: the design has to withstand the probable maximum flood with the river flow 10,000 m³/s at the site.

3.7 Are there any lessons-learned from recent experience with site selection?

We have not had a recent experience in site selection.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

Depending on the final outcome of this WENRA exercise, the WENRA reference levels can impact the existing domestic criteria or induce introduction of additional ones.

The examples of possible impacts are:

- Probabilistic goals: if quantitative limitation for dominating categories of faults or hazards would be imposed, then it may impact site acceptability criteria.
- New, more stringent safety objectives regarding the potential radioactive releases to the environment due to accidents with core damage - lower frequency for accidents with such consequences, more time for evacuation, limited sheltering, no long time restrictions in food consumptions, etc..
- New, more stringent safety objectives regarding accidents without core damage - no sheltering nor evacuation in the vicinity of the plant.
- Integration of safety and security measures.

3.9 What form of regulatory oversight is performed of construction?

By the current Construction Act the SNSA together with other competent inspection bodies performs oversight over the whole construction process of the nuclear facility. SNSA is responsible to perform surveillance related with nuclear and radiological safety issues.

Response on behalf of Japan

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Yes.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Under the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors, the location of the reactor facilities should cause no hindrance to the prevention of the hazard.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

Examination Guide for Nuclear Reactor Siting Evaluation and Application Criteria.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The safety examination of the reactor establishment under the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors corresponds to NS-R-3 in principle.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

N/A.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Implementation of environmental impact assessment based on the Law for Environmental Impact Assessment and Electricity Utilities Industry Law is required.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

The Examination Guide for Nuclear Reactor Siting Evaluation requires the followings:
Event that induces a large-scale accident had not occurred in past as well as will not occur potentially in future. Additionally occurrence of event that could spread or enlarge a disaster was low.

The Examination Guide for Safety Design of Light Water Nuclear Power Reactor Facilities requires the design of nuclear power plant to consider the measures against the natural phenomena such as external flooding, tsunami, high-wind, freezing, snowing and land slip as well as earthquake. Especially for earthquake, the Examination Guide for Seismic Design of Nuclear Power Reactor Facilities provides the basis to justify the validity of the direction of the seismic design of nuclear power plants on the view point of seismic safety.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

The Examination Guide for Safety Design of Light Water Nuclear Power Reactor Facilities requires that the SSCs, which have safety functions, shall be designed to prevent loss of required safety functions in case of possible artificial hazards such as aircraft crash, dam break and explosion. Additionally, the Examination Guide for Safety Design of Light Water Nuclear Power Reactor Facilities requires the designs of SSCs, which have safety functions, to protect those SSCs against illegal access by third parties to SSCs. For fire protection, the Examination Guide for Safety Design of Light Water Nuclear Power Reactor Facilities requires the design to protect nuclear power plants against any fires by the combination of the measures of fire prevention, fire detection and suppression and mitigation of fire consequence.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

No.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

No. There is no requirement and expectation. However, Ministry of Economy, Trade and Industry (METI) has the first public hearing to make local residents understand and cooperation before the selection of sites for nuclear power plants. Nuclear Safety Commission (NSC) holds the second public hearing which is based on conversation with local residents to receive a variety of comments.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

No. There is no requirement or expectation. However, NSC has the second public hearing to receive a variety of comments from the local residents about the safety of the nuclear plant before NSC investigates and reviews the safety examination of the regulatory body. NSC also receives the comments for the safety examination of the regulatory body from stake holders.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

The following reactor siting conditions are necessary in principle due to the Examination Guide for Nuclear Reactor Siting Evaluation.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

No.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

No informal guidance prepared.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors prescribes that the license shall be invalidated if the licensee does not start reactor operation within the period defined in the order of the competent ministry (five years) after reactor establishment license except for specific allowable reason.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

No.

2.6 If yes, what are they?

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No.

2.8 If yes, please describe their key features.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

No.

2.11 What form of regulatory oversight is performed of site preparation?

Regulatory bodies of Japan do not oversight site preparations.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes. The national inspector implements the inspection of compatibility of submittal or licensed reports for construction plan with each electric structure constructed at new plant construction, and the inspection (pre-service inspection) of applicability to technical standards. Additionally the national inspector implements the plant inspection by milestones of construction schedule, using the existing pre-service inspection manual.

2.13 If yes, please describe their key features.

The pre-service inspection is implemented on material and dimension, appearance, function and performance, and so on, by milestones of construction schedule.

2.14 Are there any other elements of national practice that would be relevant?

Yes. Public hearing and public release activities to promote reactor siting are implemented as national activity.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

See 1.12.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

See 1.7.

3.3 Does a definition exist of the activities that would be permitted under the heading of "Site Preparation"? If so, please provide it or a reference.

No.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

No.

3.5 To what extent is the impact of the site on the design considered?

As explained before, in Japan, earthquake has large impact on the design.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

Explained before.

3.7 Are there any lessons-learned from recent experience with site selection?

There are no extra lessons-learned.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

For the moment, their impact will be small.

3.9 What form of regulatory oversight is performed of construction?

Regulatory oversight is not performed of construction.

Response on behalf of Poland

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

There are not any regulations existing explicitly for siting the Npp's.

Nevertheless, there are general regulations for new investments in various fields, where an applicant is obliged to obtain licences (see 1.2). There is licence for building the facility required due to Building Act, and in case of hydrotechnical infrastructure it is issued upon the basis of the Water Act, although these both licences first regard obtaining licence due to Environmental Act on the basis of EIA, if it is demanded for the investment (there is a detailed decree upon the Environmental Law which precisely qualifies activities which demand issuing EIA absolutely or conditionally). Near that, to obtain the building licence, investor is obliged to present data from analysis the geotechnical and hydrogeological conditions in connection with infrastructure characteristics.

Moreover authority competent to issue the decision on construction and development conditions for the site of a future nuclear facility under the act on land use planning shall issue this decision after obtaining a positive opinion of the President of National Atomic Energy Agency (nuclear regulatory authority in Poland) on nuclear safety and radiological protection matters.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Building Act and one of decrees issued on its base:

Decree on evaluating geotechnical conditions for infrastructure – includes hydrogeological, hydrogeochemical and geotechnical conditions and hazards evaluation which shall be considered in an adequate scale to prepare site for any infrastructure:

- Decree on detailed requirements of hydrogeological and engineering geological documentations and Decree on geological works projects, both issued on the basis of Mining and Geological Law.
- Environmental Act.
- Act upon giving access to information about environment and its protection, participation of society in environment protection and about environmental impact assessments, issued on the basis of Environmental Act.
- Decree on description types of activities which may significantly affect the environment and detailed criteria qualifying the activity to have the environmental impact assessment done.
- Water Act – relevant from hydrotechnical infrastructure point of view (cooling ponds).
- Act upon infrastructural planning and managing.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

The applicant can ask NAEA for pointers, which are given on the basis of IAEA Safety Series, with regard to adapt it to local conditions.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

Polish national regulations on nuclear law are currently revised and updated, where siting aspect is based on NS-R-3 in Atomic Law and an appropriate, more detailed decree, which is in some cases detailed on the same level as adequate safety guides from the up lying to NS-R-3.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

There is no guidance in that field now.

It is going to be indicated that an appropriate depth should be taken accordingly to the geological conditions, especially due to local tectonic and seismic activity. Most probably informally it will be based on Safety Guides series, i.e. NS-G-3.6, though it still is concerned. Nevertheless, there do general building norms exist, regulating the minimal depth of investigation for geotechnical aspects.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

The EIA report is required in Environmental Law which was updated to introduce the European Union regulations as well, though it doesn't list specific criteria which are necessary to take into account in terms of nuclear facilities.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

In the revision process of Nuclear Law it is stated that all factors mentioned above are to be assessed with adequacy to the particular site. Special attention, near seismicity, should be paid to geotechnical and flood hazard.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, according to conditions in and near the site.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

No.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

It is given in the “Act upon giving access to information about environment and its protection, participation of society in environment protection and about environmental impact assessments”, Environment Act and Espoo convention as well, that public has its participation and access to information about the environment guaranteed.

In terms of receiving public acceptance, there’s no explicit regulations for that, though it is informally pointed as necessary for successful and effective investment process.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

These are majorly stated on the basis of Espoo convention in Polish national regulations:

Environmental Act and Act upon giving access to information about environment and its protection, participation of society in environment protection and about environmental impact assessments

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

It is becoming to be issued that the protection zone should be established in 3km diameter around the NPP and general population changes trends should be assessed for the whole region which may be influenced by NPP operation (commonly set as an area of 30km diameter around the NPP, though it is going to be set as the minimal evaluation zone – other factors which may be relevant on longer distances shall be also evaluated, e.g. in terms of trans-boundary impact assessment). The 3km protection zone itself will be of controlled land use.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Presently it is regulated with standard building, environmental and land-use regulations.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

As, it was indicated in 1.2.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

Basically, it is expected to have fulfilled to an adequate extent the requirements stated in already mentioned regulations. At the stage of preparation it will be necessary to put special accent on local geotechnical hazards, land use plans and environmental restrictions, all in terms of nuclear safety as well.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

As indicated in 2.1, the applicant will be obliged to proceed accordingly with nuclear safety rules. There is no existing or planned licence for site preparation in terms of Nuclear Act. It is considered that the prevailing ones are (and shall be in the future) licences and terms for them, both given upon the Building Act, Water Act and EIA after the nuclear safety and site criteria stated in Nuclear Act are fulfilled. Though, it is going to be stated that the regulatory body supervises every stage of the investment.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

No, there's no restrictive distinction of that two phases.

2.6 If yes, what are they?

Not applicable.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No. Each case is going to be treated with individual approach, accordingly to the formal regulations, as it takes place in case of other infrastructural investments.

2.8 If yes, please describe their key features.

Not applicable.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

Please note the point 1.1.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Not applicable.

2.11 What form of regulatory oversight is performed of site preparation?

Not applicable.

2.12 Do inspection plans or programs exist to guide your inspectors?

Not yet.

2.13 If yes, please describe their key features.

Not applicable.

2.14 Are there any other elements of national practice that would be relevant?

No.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

For current situation see questions 1.7, 1.11 and 1.12. Further public involvement is predicted after nuclear related legislations amendment.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

See questions 1.7 and 1.11.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

No, it doesn't exist.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

No.

3.5 To what extent is the impact of the site on the design considered?

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

3.7 Are there any lessons-learned from recent experience with site selection?

The only existing experience which is applicable comes from founding other infrastructure and building catastrophes.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

WENRA reference levels and EC recommendations are taken to serious account during current “nuclear energy related” legislation revision.

3.9 What form of regulatory oversight is performed of construction?

Construction stage requires licence from nuclear regulatory authority so this activity undergoes all aspects of regulatory oversight: documentation review, assessment and inspections.

Response on behalf of Finland

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Site evaluation is part of the licensing process at all stages (decision in principle, construction licence, operating licence.) STUK regulates the safety issues related to the site. The Ministry of Employment and the Economy is responsible for non-safety aspects of site selection. A reservation for a NPP site must be made in land use plans and local and regional land use planning authorities are therefore involved in the site selection process.

In practice, a utility starts the site selection process with a large number of potential candidate sites. After one or more screening stages the number of alternatives is reduced to a few candidate sites. The early stages of the site selection are not regulated by safety authorities, although discussions between the utility and authorities are possible. More extensive studies are carried out for the selected candidate sites. At this stage the utility can ask the regulatory authorities to give their opinions on specific issues. Mandatory regulatory activities start when an Environmental Impact Assessment Program is submitted to the contact authority (The Ministry of Employment and the Economy).

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Nuclear Energy Act (990/1987) and its updates

Nuclear Energy Decree (161/1988)

Government Decisions (Decrees) on nuclear safety (395/1991) and on physical protection (396/1995)

Regulatory YVL Guides issued by STUK (YVL 1.10 for Siting)

Environmental Impact Assessment Act (468/1994) and Decree (713/2006)

Land Use and Building Act (132/1999)

Site selection is influenced by many other fields of legislation and international treaties, for example, water legislation (Water Act, 264/1961).

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

Meetings and correspondence on a case by case basis. Licence applicant can ask for STUK preliminary opinions on plans and designs according to Nuclear Energy Act, Article 55: "The Radiation and Nuclear Safety Authority (STUK) may, upon request by anyone planning to use nuclear energy, check the plan drawn up by them and issue preliminary instructions on what should be taken into account with respect to safety, physical protection and emergency planning."

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The Finnish national regulations on siting cover the topics presented in NS-R-3. And, in general, the requirements resemble those of NS-R-3. However, the national siting requirements are presented in a number of legislative documents according to national hierarchy of legislation, for example, the procedural requirements and technical requirements are usually in different documents. The national regulations and

the IAEA NS-R-3 have been developed concurrently and draw from the same sources. NS-R-3 is not explicitly referenced in the current Finnish regulations but in practice it influences the assessments by utilities and the regulatory expectations of the authority.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

Regulations or Souk's policy do not explicitly require that. However, it is a normal practice when a new site is selected.

Our experience include selection of two sites of the current NPPs in late 1960's, spent fuel final repository site selection process from early the 1980's to the early 2000's and the ongoing NPP site selection process by a new nuclear utility.

Regarding projects for building additional units on the existing sites, the utilities have not been required to considered new sites as an alternative.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

The depth of evaluation is not explicitly presented in the Finnish national regulations. In practice, the depth of evaluations is determined by the level of information which has been collected for the existing sites in connection with the licence renewals, licensing of the new unit and the associated environmental impact assessments, operating experiences, external events PSAs and emergency preparedness planning. International guides and practices, including IAEA Safety Guides, are also taken into consideration.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

An Environmental Impact Assessment is required according to the European Union Directive and national Environmental Impact Assessment Act and Decree.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

All the above mentioned factors have to be considered in the site evaluation to determine an adequate design basis. However, in the Finnish conditions they are not key safety issues in site selection. The Finnish sites and the candidate sites under evaluation are on coastal locations, and seawater will be used for condenser cooling. The effect of the warming of the seawater is a key environmental issue, with effects of eutrophication, sealife, fishing and ice conditions.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

All of these factors shall be considered. Special emphasis is given to oil transportation, especially for sites on the Gulf of Finland (one of the main routes of Russian oil exports).

Regarding malevolent events, special emphasis is given on airplane collision, but this is not a site specific issue. The possibility for implementing adequate security arrangements is one point in site suitability evaluation.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

It is a part of the site suitability assessment. The suitability of the site regarding the national power grid and its reliability is one factor considered in the licensing process. The Ministry of Employment and the Economy is responsible for non-safety issues in site selection and licensing.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

The licence applicant (utility) is required by the law to provide information to the public and arrange interaction with the public as part of the hearing process at several stages: environmental impact assessment program and report, government decision in principle, construction licence and operating licence. Public information is emphasised especially during the environmental impact assessment and the decision in principle process.

Interaction with the public in the site municipality is considered especially important in the early phases of the decision making process as the acceptance of the local municipal council is a necessary prerequisite for a Government decision in principle.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

There is public information and hearings of the public at several stages: environmental impact assessment program and report, government decision in principle, construction licence and operating licence. These hearings are arranged by the Ministry of Employment and the Economy. Land use planning on the regional and local levels also includes hearing of the public. In addition, non-mandatory information and discussion meetings have been arranged by the site municipalities which have invited experts, e.g. from the regulatory authority.

The Ministry of Employment and the Economy is required by law to arrange the hearings on EIA, decision in principle and construction licence and operating licence. Regional and local authorities arrange the hearings on land use planning.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

The Regulatory Guide YVL 1.10 requires that the number of permanent residents in the protective zone (5 km radius) is at most 200. Though this is not an absolute requirement, it sets some boundary conditions on site selection.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Normal building and environmental legislation is applied. If preparatory works relevant to nuclear safety, e.g. water tunnel excavation are started before the construction licence is granted, agreements can be made on the regulatory activities, see Q 1.3.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

- Nuclear Energy Act (990/1987) and its updates.
- Nuclear Energy Decree (161/1988).
- Government Decisions (Decrees) on nuclear safety (395/1991) and on physical protection (396/1995).
- Regulatory YVL Guides issued by STUK (YVL 1.1).

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

Meetings and correspondence on a case by case basis. Licence applicant can ask for STUK preliminary opinions on plans and designs according to Nuclear Energy Act, Article 55: “The Radiation and Nuclear Safety Authority (STUK) may, upon request by anyone planning to use nuclear energy, check the plan drawn up by them and issue preliminary instructions on what should be taken into account with respect to safety, physical protection and emergency planning.”

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

In the Finnish licensing process there is no specific license for site preparation. Conventional building permits are issued by the local construction authority.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Yes in the Nuclear Energy Act on a general level and in more detail in the regulatory guide YVL 1.1.

2.6 If yes, what are they?

According to the Nuclear Energy Act no major work involving significant investments shall be done before the construction licence is granted to avoid inappropriate pressure on the licensing authorities. According to the YVL 1.1 “The construction of a nuclear facility shall not begin, as far as the structures affecting nuclear safety are concerned, before the Government has granted the construction licence required by the Nuclear Energy Act for the facility. Beginning the formwork and reinforcing work of the safety-classified concrete structures at the building site is considered to be construction of this kind. If the manufacture of

structures and components for the nuclear facility is begun before the construction licence is granted, the licence applicant shall apply for Souk's prior approval for commencing the work.”

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No standard plans or guides are available; review is done on a case by case basis.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No separate site preparation licence.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

These impacts are assessed as an integral part of the licensing process. Finland has no have specific requirements in legislation or regulatory guides related to the issue, although STUK has reviewed licensee's risk management plans related to the hazards caused by construction site to operating units and has required improvements to licensee's activities as a result of inspections efforts on site.

2.11 What form of regulatory oversight is performed of site preparation?

Review and assessment of detailed design of structures important to safety (if any), inspections on the bedrock and excavation works (if any).

2.12 Do inspection plans or programs exist to guide your inspectors?

General guides on inspections are included in STUK's quality manuals and detailed inspection plans and programs are prepared separately for each case. Usually inspections are based on the approved design and construction plans to verify that construction is done according to approved principles.

2.13 If yes, please describe their key features.

List of the applicable regulations, standards and guides, responsibilities of organizational units and key experts, resources, schedules, documents to be produced, internal reporting.

2.14 Are there any other elements of national practice that would be relevant?

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

Any member of the public has a possibility to issue statement(s) or become heard in the public hearings that are organised in connection of the licensing steps. Most important phases for the public to be heard or possibility to give opinions and statements are the Environmental Impact Assessment process, the land use planning phase (performed in the municipality and in the province) and then the decision in principle phase, when municipality agrees or disagrees to site the reactor (political decision making).

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

Scope and content of the EIA is specified in the Environmental Impact Assessment Act and Decree which comply with the European Union EIA Directive. Utility has to establish a programme according to which it will do the EIA. Programme is opened to public comments before EIA can be started. Ministry of Employment and the Economy (MEE) acts as a contact authority and collects all opinions and statements on the programme. STUK is one of the stakeholders that provide a statement. When all statements are collected, MEE will issue its statement on the programme. Utility has to modify its EIA programme according to the MEE statement. After the EIA is done, also the results of the EIA are opened to public comments. MEE acts as a contact authority and STUK is one of the stakeholders that provide a statement on the EIA results. When all statements are collected, MEE will issue its statement on the EIA results. The results of EIA are used as input to the Decision in Principle process.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

There is no definition in STUK regulatory guides for site preparation. However, there is definition on construction. Everything else is considered site preparation activities and can be done with conventional permits.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

Yes. It is defined in STUK’s regulatory guide YVL 1.1 in paragraph 3.1 “The construction of a nuclear facility shall not begin, as far as the structures affecting nuclear safety are concerned, before the Government has granted the construction licence required by the Nuclear Energy Act for the facility. Beginning the formwork and reinforcing work of the safety-classified concrete structures at the building site is considered to be construction of this kind. If the manufacture of structures and components for the nuclear facility is begun before the construction licence is granted, the licence applicant shall apply for Souk’s prior approval for commencing the work.”

3.5 To what extent is the impact of the site on the design considered?

All possible impacts of site on the design have to be considered. In Finland those are:

- Geology and seismology.
- Hydrology and Meteorology.
- Transport routes (sea, land and air routes, pipelines):
 - oil and hazardous substances.
- Industrial activities:

- production, storage.
- Agriculture.
- Population.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

For clarification, there is no separate site license in Finland. Site is approved from safety point of view in the Construction License phase and finally in the operating license phase. Political approval is made in the Decision in Principle phase. Site related issues that are mentioned in the Construction and operating license has to do with all activities that are allowed on site (Operation of the unit, related facilities needed for spent fuel storage, Waste management etc.). Permits issued according to environmental laws include, for example, restrictions on the temperature increase of condenser cooling outlet water.

3.7 Are there any lessons-learned from recent experience with site selection?

Yes, site related issues that have an impact on the design of the plant has to be studied very carefully in the very early phases of the project. Issues that may have an effect on the design basis of the plant have to be clarified and agreed between relevant counterparts before signing the plant contract. It would be best if everything is clear when bid specification is sent to plant vendors. It has been difficult to change for example design values on extreme low and high temperatures in later phases of the project.

There is a presentation about experience on EIA and site safety evaluation in Finland that can be found via following website:

http://www.stuk.fi/sateilytietoa/koulutus/en_GB/workshop_1_4_sept_npp_licensing/_files/80107583710298247/default/05_licensing_ws_siting_and%20eia_jsa_08_r1.pdf

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

STUK reviews national requirements and practices against new international requirements and recommendations issued by international bodies to find out any needs for development.

The regulatory guides (YVL Guides) related to site selection are under revision. The work underway in WENRA will probably have some impact on the details of the requirements, for example, regarding severe accident dose limits.

At the moment, STUK is not aware of needs for changes related to site selection or preparation based on the work done in the EC.

3.9 What form of regulatory oversight is performed of construction?

“Construction” here is understood as civil construction (not manufacturing or installation or commissioning of the plant

Oversight consists of:

- For safety significant structures licensee have to submit for regulatory approval:
 - persons responsible for design and oversight activities on site,
 - standards and codes used for design and construction,

- the detailed design documentation of the safety significant structures,
 - detailed plans for concreting and QC.
- For safety significant structures licensee have to submit for information:
 - description of the organization performing the design.
- Prior to pouring the concrete STUK performs an inspection on site that is focused on:
 - clarity of task distribution between parties,
 - responsibilities between parties,
 - communication and co-operation between parties,
 - concrete batching plant and site provisions for abnormal situations,
 - description of concreting section and work,
 - QC plan for concreting section and its implementation,
 - concreting readiness according to inspection and test plan,
 - handling and status of non conformances,
 - approval status of documentation, field changes,
 - inspection on site.
- During concreting:
 - concrete quality,
 - concrete test cubicles,
 - concreting on the spot,
 - concrete batching station.

Response on behalf of France

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

No. In France, site selection is not regulated. Typically, a site is selected by the applicant. Nevertheless, in the set of documents submitted to ASN, the applicant must justify that the design of the NPP is compliant with the specific hazards of the site and that the impacts of the NPP are acceptable via an Environmental Assessment.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The legal basis for the authorization of creation procedure of a basic nuclear installation is defined in the article 29 of the act related to the transparency and security in the nuclear field (so-called TSN-act). The detail of this authorization procedure is defined in the decree related to the Basic Nuclear Installations (BNI) and the regulation of the transport of radioactive materials (so-called BNI-decree, articles 8 and 9).

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

ASN adopted in 2000 the “technical guidelines for the design and construction of the next generation of PWR nuclear power plant”.

This document describes the main safety objectives, safety requirements and some safety features that the PWR must be compliant with.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The requirements of NS-R-3 are distributed in documents on different levels of the French regulatory framework:

- The TSN-act.
- The BNI-decree.
- The Order of August 10, 1984 related to the quality of the design, construction and operation of basic nuclear installations.
- The “technical guidelines for the design and construction of the next generation of PWR nuclear power plant”.
- The safety rules (for instance, the safety rule n°2001-01 describes a methodology to determine the maximum potential earthquake associated with the site).

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

Yes. In the Environmental assessment, the applicant must expose the reasons for which, in particular from the viewpoint of the environmental concerns, the project was selected over other options (BNI decree, article 9).

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

The depth of evaluation of alternative sites is generally left to the discretion of the applicant. However, additional information and justification could be required during the administrative consultation or the public enquiry.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. The application is accompanied by a file comprising the impact assessment. The content of the impact assessment is fixed in the BNI decree (article 9) and must comprise:

1° An analysis of the state of the site and its environment before the siting of the installation which is the subject of the application.

2° An analysis of the direct and indirect, temporary and permanent effects of the installation on the environment, in particular on public health, salubrity and safety, on the climate, on the quality of life in the neighbourhood, as a result of noise, vibration, odours or light emissions, on the sites, landscapes and natural environment, on the fauna, flora and biological balance, on agricultural production and on the protection of property and the cultural heritage. As necessary, this analysis will differentiate between the various phases of construction and operation of the installation. It takes account of seasonal and climatic variations. This analysis presents the water intake and liquid effluent discharges as atmospheric discharges envisaged. It assesses public exposure to ionizing radiation as a result of the installation. Finally, it presents the waste that is to be produced by the installation.

3° The measures envisaged by the operator to prevent, limit and if possible compensate for the inconveniences created by the installations, along with an estimate of the corresponding expenses.

4° An analysis of the methods used for assessing the effects of the installation on the environment, mentioning any technical or scientific difficulties encountered in drawing up this assessment.

5° A non-technical summary of the study, such as to ensure easier understanding by the public of the information contained therein.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes. In the “technical guidelines for the design and construction of the next generation of PWR nuclear power plant” the natural external hazards to be considered in the safety demonstration and for which design provisions are asked are:

- earthquake,
- lightning and electromagnetic interference,
- extreme meteorological conditions (temperature, wind, snow, rain, ...),
- external flooding,
- drought,
- ice formation.

The requirements about seismicity assessment are fixed in documents on different levels of the French regulatory framework:

- the “technical guidelines for the design and construction of the next generation of PWR nuclear power plant”;
- the safety rule n°2001-01 which describes a methodology to determine the maximum potential earthquake associated with the site;
- in the case of Flamanville 3, in the decree authorizing the creation of the NPP;
- in the case of Flamanville 3, in the set of specific regulatory requirements.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes. In the “technical guidelines for the design and construction of the next generation of PWR nuclear power plant”, for instance, the man-made hazards to be considered in the safety demonstration and for which design provisions are asked, are:

- airplane crash,
- external explosion,
- toxic, corrosive or burnable gases,
- fires,
- load drops.

However, the ASN is not competent on malevolent events.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

ASN do not regulate this topic for NPP. Nevertheless, a specific State Office (Direction générale de l'énergie et du climat) is in charge to check that the site is convenient with the grid constraints created by the new NPP at site selection stage.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

Yes. There are two different major public consultations.

- 1) Prior to the authorization application and for any major project in France as a NPP for instance, a national public debate is organized by a dedicated national independent commission.
- 2) Subsequent to applying for the authorization, the corresponding file is submitted to a public enquiry. The public enquiry is opened in at least each of the cities which are less than five kilometres from the site proposed by the applicant.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

- 1) The national public debate is mandatory according to the act of February 27, 2002 related to the democracy of proximity for any major installation. It is not a specific nuclear regulation and can concern other project such as motorways, electric line of transport...
- 2) The public enquiry procedure is mainly described in the articles 12 and 13 of the BNI-decree and is mandatory to authorize a new NPP.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes. In France, emergency preparedness and planning is a responsibility of the local government representative. ASN can fix around NPP public utility easements related to use of the ground and the execution of work subject to a notification or an administrative authorisation. These easements may also relate to use of the ground on the footprint of the installation and around the installation. Consequently, public protection restrictions can be established in order to prevent or mitigate the effects of a radiological emergency situation.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Yes. Subsequently to the granting of the decree authorising the creation of the NPP, site preparation is regulated by ASN. Before this granting, ASN is not competent. This granting does not exempt the applicant to obtain the authorizations and to respect the requirements fixed by other regulations such as permit building, use of the dependences of the maritime public domain delivered by local State offices. Some of these authorizations have to be granted by the applicant before any site preparation activities.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The basis for issuing the decree authorising the creation of the NPP is described in the article 29 of the act related to the transparency and security in the nuclear field (so-called TSN-act) and in the decree related to

the Basic Nuclear Installations (BNI) and the regulation of the transport of radioactive materials (so-called BNI-decree, articles 8 and 9). ASN does not deliver any specific licence for site preparation.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

There is no available general guidance describing ASN expectations to be applied by the applicant. Nevertheless, for Flamanville 3 worksite, ASN developed a set of specific regulatory requirements about:

- Identification of likely risks caused by the environment of the installation that may induced hostile conditions or damages to structures, systems and components;
- Information of public authorities;
- Identification of construction-worksite risks of Flamanville-3 on Flamanville-1 and 2 operating reactors;
- Specification of a crisis organisation on the Flammville-3 worksite and of the required means for its implementation in association with the internal contingency plan of the Flamanville-1 and 2 installations.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

ASN does not deliver any specific licence for site preparation.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

No. There is no accurate and clear definition fixing the permitted site preparation activities prior to the decree authorising the creation of the NPP. In the case of Flamanville 3; ASN started performing its regulatory oversight on site when the authorization of creation was delivered. The licensee had only started excavation works when the authorization of creation was delivered.

2.6 If yes, what are they?

Not applicable.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

ASN does not deliver any specific licence for site preparation and as a consequence, there is no specific application to prepare a site.

2.8 If yes, please describe their key features.

Not applicable.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No. In the impact assessment, the applicant must provide an analysis of the direct and indirect, temporary and permanent effects of the installation on the environment. This analysis presents the waste that is to be produced by the installation, whether or not radioactive. It mentions its volume, nature, harmfulness and envisaged means of disposal. There is no specific licence required for such disposal in so far as the nature of these means of disposal is not considered as a radioactive waste repository.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes. For Flamanville 3 worksite, ASN developed a set of specific regulatory requirements about identification of construction-worksite risks of Flamanville-3 on Flamanville-1 and 2 operating reactors.

“EDF shall identify which activities on the Flamanville-3 worksite are likely to compromise the safety of both nuclear reactors in service on the site. For each of those activities, it shall also carry out a study including a risk assessment during construction, an analysis of the measures taken to prevent such risks and a description of appropriate measures to limit such accidents and to mitigate their effects.

If the measures taken to prevent such risks apply within the perimeter of [Flamanville 3 worksite], EDF shall submit the aforementioned studies to ASN within three months before the expected date of the activity involved.”

2.11 What form of regulatory oversight is performed of site preparation?

ASN does not perform any regulatory oversight of site preparation.

2.12 Do inspection plans or programs exist to guide your inspectors?

ASN has no specific guide on site preparation oversight.

2.13 If yes, please describe their key features.

Not applicable.

2.14 Are there any other elements of national practice that would be relevant?

No.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

See 1.11 and 1.12. The national public debate takes place at the early stage of the project before the deposit of the applicant file at ASN. The public enquiry can take place during the site preparation phase but after a site selection by the applicant.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The impact assessment is fixed by the article L. 122-1 of the Environment Code specified by the Minister of Environment. However, the content of the impact assessment is defined in the nuclear regulation in the BNI-decree (article 9).

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

No.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

No.

3.5 To what extent is the impact of the site on the design considered?

In France, design and site are jointly assessed. There is no design licensing and site licensing but an authorization granted for an individual NPP on a specific site. Consequently, the impact of the site is totally considered in the review assessment.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

- Decree No. 2007-534 of 10 April 2007 authorising the creation of the “Flamanville 3”, basic nuclear installation including an EPR nuclear power plant at Flamanville (Manche Department).
- Decision No. 2008-DC-0114 of 26 September 2008 by the French Nuclear Safety Authority setting forth specific requirements to be met by Électricité de France – Société anonyme (EDF-SA) at the Flamanville nuclear power generating station regarding the design and construction of the Flamanville-3 (INB No. 167) reactor and the operation of Flamanville-1 (INB No. 108) and Flamanville-2 (INB No. 109) reactors.

3.7 Are there any lessons-learned from recent experience with site selection?

Identification of construction-worksite risks of on operating facilities must be fully addressed and anticipated.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

Actual WENRA mandate is dealing with safety goals for new reactors and is not currently addressing criteria used for site selection or preparation.

3.9 What form of regulatory oversight is performed of construction?

Definition of the activities and regulation scope of construction

For ASN, the EPR construction regulation is focused on the following two key activities:

1. detailed design assessment: the defined and developed design must reach the safety requirements for plant components and systems. The detailed design studies provide the necessary information for the construction activities;

2. construction activities include: on-site preparation, fabrication, construction, qualification (certification) and installation of the equipments, components and structures. These activities take place on Flamanville 3 site or in the manufacturers' works.

The plant operator has the primary responsibility for ensuring the quality, the control and the supervision of the construction activities, except for the pressure nuclear systems which are made under the responsibility of the manufacturer.

ASN's regulatory activities include the consideration of the hazards that EPR construction presents to the two adjacent operating nuclear plants and vice versa. ASN also undertakes conventional safety inspections of on-site construction activities (Flamanville 3).

Practice of regulation of construction activities

One of the key objectives of ASN's regulatory activities is to be certain that the plant operator and the pressure nuclear systems manufacturers exercise their responsibilities and that the plant construction activities are completed in accordance with regulation in force and with the objectives and the technical guidelines defined for new power water reactors.

ASN adopts a proportionate approach to regulation. In this way, the regulatory attention applied to the topic is proportional to its safety, the radiation protection or environmental importance. Sampling of activities is undertaken to demonstrate conformity with the regulatory requirements, the objectives and the technical guidelines defined for new power water reactors. However, some activities, particularly those associated with pressure systems, are subjected to a more thorough review approach by ASN's pressure systems directorate, in accordance with the regulation in force.

Regulation of the detailed design

The regulatory activity on the detailed design is split in assessment of technical documentation and in inspections performed in the operator (and manufacturers) design offices. In this way, the requirements to be inspected during the construction activities are identified, and so, coherence between design and construction activities is ensured.

ASN defined a methodology in order to select the topics to be assessed. In accordance with regulations in force, ASN assessment will focus on:

1. The nuclear and industrial risk management: firstly, ASN will engage assessment related to the nuclear risk. The selection of the topics to be assessed will be done by sampling a matrix which presents in its columns the safety functions and the support functions (I&C, electricity...) and, in its lines, the 5 defence-in-depth levels. Such a matrix will be developed for the reactor building, the fuel pools and the effluents polishing building.

Thanks to each case of this matrix, some SSCs can be identified: the assessment can be done according the requirements linked to the function, the environmental qualification, the external or internal risks or the human and organizational factors. The selection of the SSC and the requirements to be assessed will be done with IRSN technical support and taking into account the feedback of the operating reactors (French and Konvoi ones) or the other construction projects, the issues put forwards by the assessment performed before the publication of the authorization decree, the EPR new technologies...

2. Safety workers, including radiation protection: the two-room design has to be assessed in order to allow the maintenance performed when the reactor is operating.

3. Impact of the normal operating situation: ASN will check, by sampling, the conformity of the installation with the principles used to establish the waste zoning.

4. Security protection, assessment performed in link with the others administrative bodies of French State.

Moreover, ASN will get a global point of view of Flamanville 3 detailed design thanks to the results of the PSA and of the simulator program developed by the operator.

The transition from design to construction - use of hold points

In accordance with the main principle related to the primary responsibility of the operator, no hold point is imposed by ASN before the beginning of the construction activities: the operator does not require any ASN approval about the detailed design to engage the construction activities.

Nevertheless, if a non compliance with the regulation or the technical safety objectives is found during ASN's regulatory activities (inspection or assessment), ASN can ask the operator to stop the problematic activity. Then, the operator must satisfy ASN that appropriate corrective measures have been implemented to allow progress.

Regulation of the on-site construction activities

The following construction activities are subject to regulatory control: manufacture, installation, qualification of SSCs related to safety, as well as the impact of these activities on the neighboring nuclear site or on the environment.

This is achieved through an inspections program on the construction site and the manufacture works. ASN wants to develop and implement a consistent planned and responsive Flamanville 3 construction inspection program. The inspection frequency is adjusted depending on the volume and the diversity of the activities on Flamanville 3 site and manufacturer works and in light of findings of completed inspections. For instance, in 2008, ASN performed 14 inspections at Flamanville 3 site. In 2009 ASN schedules to undertake 2 inspections per month on site (excluding inspections undertaken in response to events on the site). ASN also plans to carry out 8 inspections at the operator's engineering offices.

To know about the progress of construction activities, ASN is in continuous dialogue with Flamanville 3 site: the inspections will focus on the main safety relevant construction activities. The operator is required:

- to report significant events directly to ASN (including non nuclear events during construction) hence ASN can respond rapidly;
- to inform ASN about the scheduled date of some significant activities in order to ensure to ASN the opportunity to inspect or to observe this activity. This requirement is a regulatory requirement for the manufacturer of the pressure systems.

After each inspection, the findings are summarized in a letter that is sent to the operator and placed on ASN's public web site. According the findings and the operator answers, ASN has to identify areas where improvements are desirable or necessary. IRSN may be required to undertake further technical reviews of findings arising from an inspection. In addition, an assessment would be performed by ASN and IRSN depending on the inspection findings or the non compliance observed during the inspection.

Response on behalf of Hungary

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Basically the Environmental Protection Authority (EPA) is responsible for the site licensing. But the Hungarian Atomic Energy Authority (HAEA) also has to issue a permit for the siting of nuclear facilities.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

As for the HAEA sphere of authority the Atomic Law and the Government Decree N.89/2005 empowers the nuclear safety authority to issue such a permit.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

According to ch.1 of the Nuclear Safety Regulation (which is the supplement of governmental decree N. 89/2005.) "In the documentation submitted in the application for site permit the applicant shall make evidence that the unit of the nuclear power plant to be constructed within the given site conditions will comply with the effective statutory provisions and the relevant NSR requirements".

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The new revision of the NSR (to be issued in 2009.) consist a special chapter (ch. 7. Assessment and evaluation of site characteristics for nuclear facilities) which is based on NS-R-3.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

The Hungarian parliament passed a decision in principle about the enlargement of the Paks site, so it is not a question for the authorities.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

See answer to 1.5.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes, first of all the EPA requires a preliminary and a final environmental safety analysis report (and involves the HAEA as a special authority), and then the nuclear safety features will be evaluated by the HEAE (according to the ch. 7. of the NSR).

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, ch.7. prescribes the assessment of earthquakes, geotechnical risks, meteorological parameters, floods etc.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, external man made factors, like aeroplane crashes, chemical explosions, toxic gas clouds, smoke and heat effects and other man made external effects are also to be assessed.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

It is the responsibility of another regulatory body.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

Yes, both the preliminary and the final environment assessments involve a compulsory public hearing (including international hearings).

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

See answer in 1.11.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

There is a protection zone around the nuclear facilities and besides ch. 7. of the NSR prescribes assessment of factors that may affect the emergency plan (demography, land and water use, spreading of radioactivity in surface and under surface water etc.).

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Both the HAEA and the environment protection authority may have prescriptions on site preparation while issuing their permits.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The Administrative Procedure Act describes how to apply these rights of the authorities, written accordingly in the Atomic Act and in the Environment Protection Act.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

The licensing process of the EPA is a two step process, in order to make possible for the EPA to prescribe its expectations after the preliminary assessment. The HAEA doesn't have guidance yet.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

The permit for the site is valid for 5 years.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Provided that other licences stipulated in statutory regulations are available and the conditions determined in the licence are met, site permission allows the investigations and excavations to be carried out in order to identify in depth the site characteristics of the nuclear power plant, as well as landscaping and construction of associated and servicing facilities (roads, railroads, power lines and other route facilities etc.) according to NSR ch.1.

2.6 If yes, what are they?

See answer to 2.5.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

Not yet (but we intend to elaborate it).

2.8 If yes, please describe their key features.

See answer to 2.7.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

See answer to 2.5.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Not yet (but we intend to elaborate it).

2.11 What form of regulatory oversight is performed of site preparation?

According to NSR ch.1: "7.012. The inspection covers:

a) observation of those stipulated in applicable statutory regulations, Nuclear Safety Codes and licenses,

b) operation of the quality assurance system,

- c) observation of requirements made against organizations participating in the process,
- d) investigation of the site characteristics,
- e) the level of documentation prescribed for the activity performed in the given phase, as well as documentation handling.”

2.12 Do inspection plans or programs exist to guide your inspectors?

We have only the prescription above yet.

2.13 If yes, please describe their key features.

See answer to 2.12.

2.14 Are there any other elements of national practice that would be relevant?

Not yet.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

According to the government decree N. 314/2005, the public consultation must be held in case of activities for which EIA is needed. The site licensing by EPA includes the public consultation. The date of public consultation must be published in a national daily paper and on the public places of the area concerned.

The public consultation covers every topic that is in connection with the project.

The participants of the public consultation are: the Environmental authority, other involved authorities, the investor/operator and their experts, designers, independent experts, the public including various civil organizations.

The investor/operator briefly demonstrates the planned activity and the EIA. Furthermore, in most cases there are predetermined topics which are defined by press and questions of different organization and public.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The content of the Environmental Impact Assessment is specified by governmental decree N. 314/2005. The EIA shall contain the following information:

- Introduction, which includes preliminary information on the project and on the process of preparing EIA.
- The potential alternatives in detail.

- Describing the environmental conditions of the project area.
- Estimation and evaluation of the anticipated environmental effects.
- Examination of environmental effects which may have trans-boundary consequences.
- Environmental mitigations.
- Other information which includes reference materials, describing of applied methods etc.
- Summary.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

Provided that other licences stipulated in statutory regulations are available and the conditions determined in the licence are met, site permission allows the investigations and excavations to be carried out in order to identify in depth the site characteristics of the nuclear power plant, as well as landscaping and construction of associated and servicing facilities (roads, railroads, power lines and other route facilities etc.) - according to NSR ch.1.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

According to NSR ch.1: “Provided that other licenses stipulated in statutory regulation are available and the conditions determined in the license are met, the construction permit allows the next activities:

- to carry out activities in order to secure the necessary ground conditions for the construction of one or more units of the nuclear power plant (soil exchange, piling, etc.),
- to erect buildings and structures related to the nuclear power plant,
- to manufacture, purchase, mount and install SSCs specified in the safety category,
- to carry out the tasks of cleaning and washing as a preparation for the commissioning of SSCs, and to perform the inactive functional tests without fuel elements containing nuclear material.”

3.5 To what extent is the impact of the site on the design considered?

According to NSR ch.1: “Provided that other licenses stipulated in statutory regulation are available and the conditions determined in the license are met, the construction permit allows the next activities:

- to carry out activities in order to secure the necessary ground conditions for the construction of one or more units of the nuclear power plant (soil exchange, piling, etc.),
- to erect buildings and structures related to the nuclear power plant,
- to manufacture, purchase, mount and install SSCs specified in the safety category,
- to carry out the tasks of cleaning and washing as a preparation for the commissioning of SSCs, and to perform the inactive functional tests without fuel elements containing nuclear material.”

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

Examples of conditions from the site license of the spent fuel storage facility:

- The site must be supervised periodically (ones in 10 years by governmental decree N. 89/2005).
- An emission- and environmental monitoring system shall be installed in order to demonstrate safe operation of the facility.
- Insure the adequate management of the radioactive waste and its adequate transportation from the site.

3.7 Are there any lessons-learned from recent experience with site selection?

No.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

Yes, the national legal documents include the EC and WENRA recommendations.

3.9 What form of regulatory oversight is performed of construction?

During the construction, the supervision shall cover:

- the fulfilment of the contents of the a Nuclear Safety Regulation and other effective statutory provisions and licences,
- the operation of the quality management system,

- the fulfilment of the requirements for the participating organizations,
- the manufacturing, building, implementation, construction, establishment, of system elements specified in the safety category, the preparation activities required for the commissioning (cleaning, washing, function tests of active system elements), and the realisation of inactive function tests that can be performed without fuel elements,
- the building and construction works on the site that can hardly be supervised or cannot be supervised at all afterwards, especially in case of substructures, insulation, and hermetic equipment,
- the activities related to the main equipment, the safety engineering systems, and especially the reactor, the parts storing the fuel elements, the dams preventing the environmental emission of radioactive material,
- the regulating and energy supply systems related to safety,
- the inactive function tests of safety engineering equipment,
- the training of the operating and maintenance personnel,
- the prescribed level of documentation of the activity performed in the given phase, and the management of written documents.

These are the minimum scope of supervision and the HAEA may perform other supervisions.

Response on behalf of Korea***Part 1: Evaluation and selection of sites for a new NPP***

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

No. Site selection for a nuclear power plant is not regulated but voluntarily done by the applicant (KHNP). After the site selection, however, the proposed site is subject to an approval of a Licence for the Site Preparation - levelling the ground of the site to be ready for the construction, from the MKE (Ministry of Knowledge and Economy) in accordance with *Electric Source Development Promotion Act*, followed by safety review and approval of a site for the construction and operation, conducted by the authority, the MEST (Ministry of Education, Science and Technology), and the technical supporting agency, KINS (Korea Institute of Nuclear Safety). After the issuance of the CP, the Utility can start Foundation Excavation down to the design level, i.e. to the designed elevation of the very bottom of the nuclear facilities.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Note table 1.2-1 and figure 1.2-1.

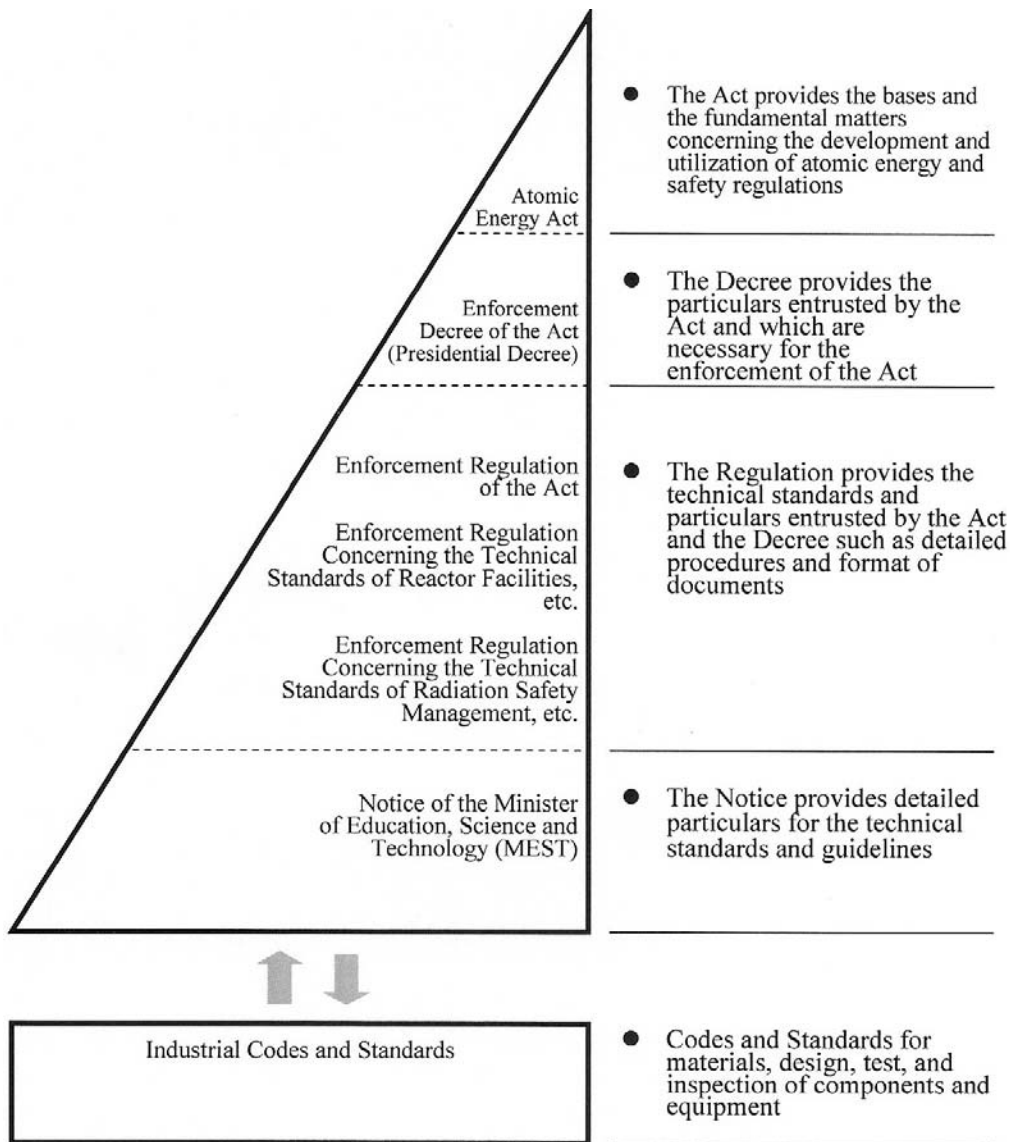
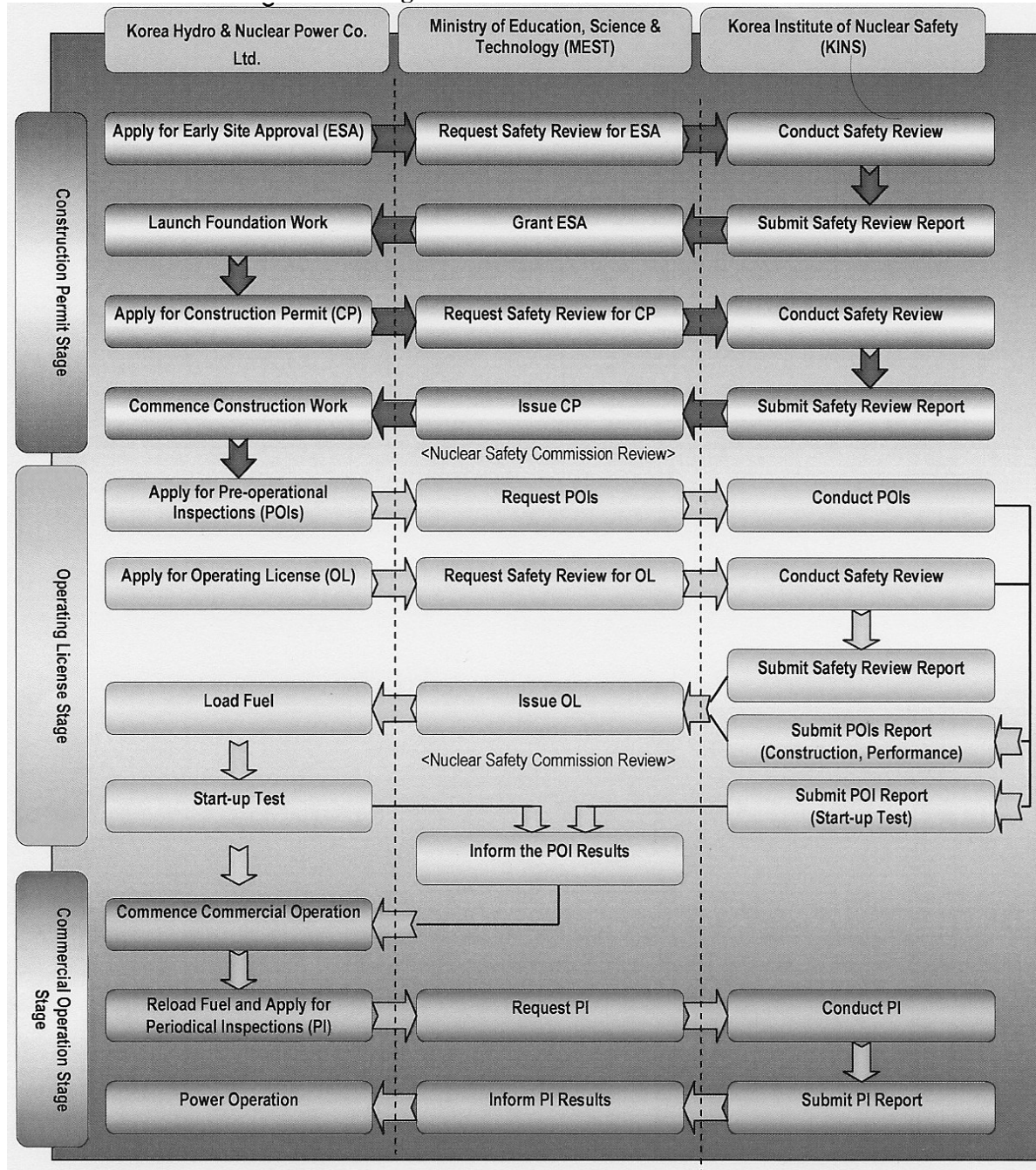


Figure 1.2-1 Atomic Energy Act System of Korea

Table 1.2-1 Licensing Process for Nuclear Installation



Regulations related to siting for nuclear installations are the *Atomic Energy Act*, *Enforcement Decree of Atomic Energy Act article 297-7*, *Enforced Regulations Concerning the Technical Standards of Reactor Facilities*, etc. articles 4 (*Geology & Earthquake*), 5 (*Site Location*), 6 (*Meteorological Condition*), 7 (*Hydrology & Oceanography*) and 8 (*Human-Induced Events*), and the overarching regulations for reactor siting, MEST Notices No. 2008-7, *Technical Standards for the Location, Structure and Installation of Reactor Facilities*, No. 2008-8, *Technical Standards for Investigation and Evaluation of the Meteorological Conditions of Reactor Facility Sites*, and No. 2008-9, *Technical Standards for Investigation and Evaluation of the Hydrological and Oceanographic Conditions of Reactor Facility Sites*.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

KINS has the *Safety Review Guidance* (KINS/GE-001, 1999) for PWR reactors. KINS has been revising the SRG since early this year and the revised version is probably available sometime next year.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

MEST Notices are technical requirements, relevant to “NS-R” series of the IAEA. MEST Notice No. 2008-7, *Technical Standards for Locations of Nuclear Reactor Facilities* covers matters of exclusion area, population, general geology, earthquakes, surface faulting, geotechnical hazards, and external human induced events. MEST Notice No. 2008-8, *Technical Standards for Investigation and Evaluation of the Meteorological Conditions of Nuclear Reactor Facility Sites* covers description and evaluation of meteorological effects. MEST Notice No. 2008-9, *Technical Standards for Investigation and Evaluation of the Hydrological and Oceanographic Characteristics of Nuclear Reactor Facility Sites* covers description and evaluation of hydrological effects.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No. Evaluation or consideration of multiple candidate sites for a nuclear power plant installation is not a lawful requirement but an option for the applicant.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

Not applicable.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. Articles 7-1, 28, 36, 40, 45, 79-4, 129-2, and 133-2 of the Enforcement Regulations of Atomic Energy Act require that a Radiation Environmental Report (RER) be prepared to demonstrate that a project does not lead to significant adverse environmental effects.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes. Note the response to Q 1.2 and 1.4.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes. Note the response to Q 1.2 and 1.4. Fire hazard, however, is rather design criteria, and hence is not considered as an important siting factor. Climate change is not considered as a design basis yet in our nuclear regulatory framework.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Yes. A nuclear power plant site is selected and proposed by the applicant; however, the proposed site is subject to an approval of a Licence for the Site Preparation from the MKE, in accordance with *Electric Source Development Promotion Act*. The MKE hears consultative reviews from the Ministry of Environment (ME) on an Environmental Report (ER) in the application report, followed by consultations with other Governmental Ministers and the authority of the local province in which the site is placed. The regulator - MEST technically supported by KINS is barely involved at this stage.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

There are no regulatory requirements for an applicant to consult the public prior to applying for a construction permit or an operation licence. However, an applicant is required to have public hearings prior to applying for a construction licence.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

No. The applicant, however, shall prepare a PER and a Preliminary Radiation Environmental Report (PRER) and collect opinions of the local government and the residents of the proposed site area on the PER and the PRER through public hearings. The results from the public hearing, i.e. summary of the opinions and the measures, shall be described in the ER – a supplementary document of the application for the licence for Action Plan and Site Preparation as required by the *Electric Source Development Promotion Act*, and in the RER – a supplementary document of the application for the CP as required by the MEST Notice 2008-27 “*Standard Format and Contents of Radiation Environmental Report for Nuclear Power Facilitie*”.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes. Emergency preparedness and planning is required by article 9 (Availability of Emergency Preparedness) of the Enforced Regulations Concerning the Technical Standards of Reactor Facilities, etc.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Yes. An applicant can prepare the site to a certain extent after Early Site Approval issued by the MEST and the technical advisory agency, KINS. Also see the response to Q1-1.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Foundation excavation is regulated under an Early Site Approval issued by the MEST in accordance to article 11 (Construction Permit) of the *Atomic Energy Act*, and articles 8 (Early Site Approval and etc.) and 9 (Scope of Site Preparation under Early Site Approval) of the *Enforcement Regulations of the Atomic Energy Act*. When applying for early site approval, an applicant must prepare a RER and a site survey

report, and submit them to the MEST. The said Minister issues an early site approval on the basis of the results of the safety review by KINS.

The applicant has an option to apply the construction permit in package with evaluation of the safety of site without the procedure of an early site approval.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

The MEST Notice No. 2008-21, *Regulation on Pre-operational Inspection of Nuclear Reactor Facilities* defines scope and activities on Pre-Operational Inspection for the safety-related reactor facilities including the preparation of the geological foundations. Detailed plant/site-specific guides and working procedures for the foundation excavations and regulations are applied differently from site to site.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

Scope of the foundation excavation under an Early Site Approval is generally limited to excavation of the geological foundations to the design level for the nuclear facilities, reinforcement of the foundations if needed, and protection of the foundation at the design level with proper materials such as concrete.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Yes.

2.6 If yes, what are they?

With the Licence for the Site Preparation from the MKE – the promoter, the utility can “prepare” the site including activities like level the ground of the site to be ready for the construction in accordance with *Electric Source Development Promotion Act*. After the issuance of the CP from the MEST – the regulator, the Utility can start Foundation Excavation down to the design level, i.e. to the designed elevation of the very bottom of the nuclear facilities.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No. Note the response to Q 2.5 & 2.6.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No. At least not for the safety issues under the *Atomic Energy Act*. However, non-radiation factors concerned with environmental effects are reviewed by the ME under the *Environmental Law*. An applicant is also required to achieve permission for a site preparation from the Cultural Heritage Administration under the *Cultural Properties Protection Law*.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes. Articles 10 (Multiple reactors at a site) of the *Enforced Regulations Concerning the Technical Standards of Reactor Facilities, etc.* requires that each reactor at a site of multiple units shall be designed so that one do not give adverse effect to the others. Blast Control, Readjustment of control in Exclusion Area, and Underground Cooling Water Intake Tunnel are the typical examples.

Firstly, blast for the foundation excavation is controlled under upper limit defined by several test blasts ahead. Monitoring of the ground vibrations from the blasts is carried out during the construction examining the records from the portable seismometers installed around the construction site and major locations of existing facilities such as closest reactor building, nearest local community, and other facilities that need to be protected from any possible effect from the blast. Activities and records related to the blast control follow relevant working procedures and quality assurance program and subject to the pre-operational inspection by the regulator.

Secondly, director of the existing NPP site should apply relevant measures when the location of a new reactor is planned so close to share some portion of the Exclusion Area of the existing site. The measures mainly involve placement of another fence between the existing and the construction sites and development and performance of the plan to control activities and people of the constructions at normal and abnormal periods in accordance with radiation protection program. All these changes are also subject to the regulatory review in forms of Application to Changes in FSAR and/or Radiation Protection Plans.

Lastly, Underground Cooling Water Intake and Discharge Tunnels are adopted for the newly constructed NPPs adjacent to existing sites that already have at least 4 units in operation. Main reasons for the new design are to minimize the environmental impact from the rise of seawater temperature for the discharge water and to secure stable cooling water supply for the new reactors. This new design to minimize thermal effluent impact was developed through numerous researches and regulatory reviews since 1995 and first installed to the Shin-Kori NPP #1&2 in Korea.

2.11 What form of regulatory oversight is performed of site preparation?

KINS staff conducts inspections.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes. There are inspection guides that are followed and they require preparation of inspection plans for KINS inspectors.

2.13 If yes, please describe their key features.

Site and construction related inspection modules cover verification of geophysical, geotechnical, civil engineering activities, quality assurance attributes etc.

2.14 Are there any other elements of national practice that would be relevant?

Yes. Similar practices are applied to large-scale public constructions such as highways, dams, etc.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

The applicant shall prepare a Preliminary Radiation Environmental Report (PRER), covering environmental effect from the installation and operation of the nuclear facilities in a view of radiation and a brief action plan of the project, and collect opinions of governmental administrations and the local government related to the matter, and the residents of the proposed site area through public hearings. The results from the public hearing, i.e. summary of the opinions and the measures, shall be described in a chapter of the Radiation Environmental Report (RER) that shall be included in the application for the CP as required by the **MEST Notice 2008-27** “*Standard Format and Contents of Radiation Environmental Report for Nuclear Power Facilities*” . RER is subject to the safety review for the Construction Permit (CP) from the regulatory body, and hence the fulfilment of the comments from the public hearing should be confirmed during this process.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

MEST Notice 2008-27 (“*Standard Format and Contents of Radiation Environmental Report for Nuclear Power Facilities*”) covers topics of a brief introduction to the project, environmental conditions of the site region, planned nuclear facilities, environmental effect from the construction, operation, accidents during operation, environmental monitoring plan, results from public hearing, etc. RER is subject to the safety review for the CP from the regulatory body.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

Yes. Proposed site is subject to an approval of a Licence for the Site Preparation from the MKE (Ministry of Knowledge and Economy) in accordance with *Electric Source Development Promotion Act*.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

Yes. Articles 11 (Construction Permit) and 12 (Requirements for Construction Permit) of the Atomic Energy Act.

3.5 To what extent is the impact of the site on the design considered?

Seismic design should be upgraded if a new seismic source would be found. This is not the case happened in Korea yet. For the references, Operating NPPs in Korea were designed for design earthquakes of 0.2g for SSE (Safe Shutdown Earthquake) and 0.1g for OBE (Operating Basis Earthquake). APR-1400 based on Standard Design Certification adopts design earthquake of 0.3g for SSE and 0.1g for OBE and is currently under construction in the Shin-Kori Units 3&4 sites and planned in the Shin-Uljin site. Also note the response to Q3.1.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

N/A.

3.7 Are there any lessons-learned from recent experience with site selection?

N/A.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

Regulatory frameworks and requirements utilized by WENRA or the EC seem to be similar with the Idea's and hence, it wouldn't any visible impact on our licensing process. Korea has experienced Idea's peer review in recent years.

3.9 What form of regulatory oversight is performed of construction?

There are for examples Pre-operational Inspection and review of follow-up items under conditional CP, if any.

Response on behalf of the United Kingdom

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Before a site may be used for the construction of a new nuclear power plant there are a number of bodies which need to give consent or to be consulted as part of the decision making process. These include:

- Nuclear Installations Inspectorate.
- Environment Agency.
- Office for Civil and Nuclear Security.
- Local and national planning authorities.
- Department for Energy and Climate Change*.

* The UK Government created a new department in October 2008 – The Department for Energy and Climate Change (DECC). DECC takes over certain functions previously held by the Department for Business, Enterprise and Regulatory Reform and the Department for the Environment, Food and Rural Affairs. The remainder of this document makes reference to BERR, as final arrangements for splitting of responsibilities have not yet been agreed.

Once the decision making process has been completed and if the proposals are found to be acceptable, a Nuclear Site Licence together with the necessary environmental and planning permits can be granted to allow site preparation and the start of construction.

Under a new Planning Bill, which is currently before the UK Parliament, future sites for potential nuclear power stations will be considered at a strategic level by Government for inclusion in a National Policy Statement on nuclear power. These sites will have been subjected to an initial screening against a set of national strategic criteria, some of which are exclusionary, and some of which are discretionary. The criteria cover areas including demographics, regulatory issues and environmental issues. If the Planning Bill receives the support of parliament, the National Policy Statement on nuclear power, including a list of strategically acceptable power station sites, will be published by spring 2010.

If the Planning Bill is not implemented this work on strategic assessment of sites would form an important input to the existing planning arrangements and any inquiry that was held to consider proposals.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The following is a brief description of the roles of the individual organisations listed above.

Nuclear Installations Inspectorate:

As part of its nuclear role HSE grants Site Licences to allow the construction and operation of nuclear power stations. Before granting a licence, HSE must be satisfied about the safety aspects of the design, manufacture, construction, commissioning, operation, maintenance and decommissioning of the

installation, and the management of radioactive material on the site. The relevant legislation that the NII enforces is:

- Health and Safety at Work etc. Act 1974
- Nuclear Installations Act 1965 (NIA), as amended
- Ionising Radiations Regulations 1999 (IRRs)

Environment Agency:

The Environment Agency (for England and Wales) oversees how each nuclear site disposes of its radioactive waste, including its discharges to water and air, by granting site-based authorisations to the companies who run them. It regulates these sites to ensure they comply with their authorisations.

It also grants and enforces other environmental permits that a nuclear site would need during site preparation, construction, operation and decommissioning, including licences to abstract water from rivers and estuaries, consents to discharge non-radioactive substances to rivers, estuaries or the sea, licences or permits for treatment and disposal of non-radioactive wastes and permits for operation of certain 'conventional' plant such as boilers and incinerators.

The Environment Agency acts for UK Government project managing the submissions that must be made under Article 37 of the Euratom Treaty that ensure potential impacts of a site on neighbouring states are taken into account.

The Environment Agency is also responsible for many flood risk management matters – at nuclear sites it ensures where applicable that the nuclear site operator takes on responsibilities for these matters - as part of the operator's safety case regulated by HSE.

The Environment Agency will only issue the relevant permits to a nuclear site if it considers that the environmental impact of a site will be acceptable - including that the best available techniques have been used to minimise radioactive waste creation and discharges.

In Scotland, the Scottish Environment Protection Agency (SEPA) has similar responsibilities. However, SEPA is not taking part in the Generic Design Assessment process for new Nuclear Power stations.

The principal relevant legislation enforced by the Environment Agencies is:

- Radioactive Substances Act 1993.
- Pollution Prevention and Control Regulations 2000.
- Water Resources Act 1991.
- Environmental Protection Act 1990.

The Environment Agencies together with HSE are joint competent authorities for regulation of sites falling under the Control Of Major Accident Hazards Regulations 1999.

Office for Civil and Nuclear Security:

The Office of Civil Nuclear Security (OCNS), also part of HSE, is the Regulator for security at civil nuclear sites, including nuclear power stations. It is concerned with physical security of nuclear material, IT security, security of nuclear material in transit, and the vetting of people who access nuclear sites.

OCNS requires the holder of the Nuclear Site Licence to submit a site security plan to be approved before nuclear material arrives on site.

Principal legislation: Nuclear Industries Security Regulations 2003 (as amended by the Nuclear Industries Security (Amendment) Regulations 2006).

Local and national planning authorities:

Planning and development consents are needed from local and national planning authorities for all significant construction projects. Currently, in the case of power stations greater than 50 megawatts (MW) consent is required from the Secretary of State for BERR under section 36 of the Electricity Act 1989 (see below).

In May 2007, the Department for Communities and Local Government (CLG), the Department for Business, Enterprise and Regulatory Reform (BERR), the Department for Transport (DfT) and the Department for the Environment Food and Rural Affairs (Defra) jointly published the Planning for a Sustainable Future: White Paper which set out changes to the planning process for major infrastructure developments, including power stations over 50MW. Following this White Paper, in November 2007, the Government introduced a Planning Bill that is currently being considered by Parliament.

Communities and Local Government (May, 2007), Planning for a Sustainable Future: White Paper
<http://www.communities.gov.uk/publications/planningandbuilding/planningsustainablefuture>
<http://services.parliament.uk/bills/2007-08/planning.html>

It is anticipated that the new Infrastructure Planning Commission will come into effect in 2010.

Principal legislation: Town & Country Planning Act 1990

Department for Business Enterprise and Regulatory Reform* - see note above about creation of the Department of Energy and Climate Change.

A key role of BERR is to issue consent under section 36 of the Electricity Act 1989 (Section 36) This Act provides the core legislation for planning consents for the construction and operation of power stations within England and Wales. Under Section 36 of the Act, any power station greater than 50 megawatts onshore and 1 megawatt offshore are determined by the Secretary of State for BERR. Section 36 applications in Scotland are a matter for the Scottish Executive under devolved powers. All Section 36 applications for nuclear power stations must be submitted with an environmental impact assessment statement (see 1.7 below).

BERR will also own the National Policy Statement on nuclear power. In addition, it is responsible for the Justification process for activities involving ionising radiation and ensuring appropriate funding is made available by operators for new nuclear power station decommissioning.

Principal legislation: Electricity Act 1989.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

The HSE publications “Applying for a nuclear site licence for new nuclear power stations – a step by step guide” www.hse.gov.uk/newreactors/ngn02.pdf, and “The Licensing of Nuclear Installations” www.hse.gov.uk/nuclear/notesforapplicants.pdf provides guidance on site licensing requirements. Guidance on planning consents for power stations under Section 36 of the Electricity Act 1989 is available on the BERR website: (<http://www.berr.gov.uk/files/file42017.pdf>).

For other areas such as environmental regulations, the Environment Agency publication “Process and Information Document for Applications for Authorisations for to Dispose of Radioactive Waste from Nuclear Licensed Sites” sets out the process it will follow and the information that it requires to make such decisions. The Environment Agencies “www.netregs.gov.uk” website provides certain general information concerning environmental protection – albeit that this website is directed at small and medium sized businesses rather than nuclear sites.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The framework of safety assessment principles against which safety submissions are judged has been benchmarked against the principles in NS-R-3. In addition, as part of development of the consultation document on strategic siting, due consideration was given to NS-R-3.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No, this is not a requirement. The choice of a site is a matter for the developer. However, it is intended that from around 2010, prospective nuclear power station sites will be included in the national Nuclear Policy Statement.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

N/A.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. A nuclear generating station is a Schedule 1 development pursuant to the Electricity Works (Environmental Impact Assessment)(England and Wales) Regulations 2000. These Regulations implement Council Directive 85/337/EEC as amended by Council Directive 97/11/EC. An environmental impact assessment is mandatory when considering an application for a nuclear power station made under Section 36 of the Electricity Act 1989. Schedule 4 of the 2000 Regulations lists the details to be included in the environmental impact assessment statement. Also, the “site selection” process which populates the list of sites in the nuclear National Policy Statement will be required to be subject to Strategic Environmental Assessment (SEA) in accordance with the SEA Directive of the European Union (European Directive 2001/42/EC).

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes (see 1.7 above).

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes (see 1.7 above).

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

This is partly covered in National Policy statement which has considered the availability of transmission infrastructure to prospective sites. A National Policy Statement dealing specifically with transmission infrastructure is also anticipated. During local planning considerations, this aspect will also be raised. In addition, as part of the Electricity Act Section 36 consent, consideration will be given to the implications on grid stability and structure of any postulated site. Section 37 and 38 of the electricity act also apply.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

For sites that are proposed for inclusion in the nuclear National Policy Statement, it is expected that the applicant will have consulted the public in the immediate environs of any site which is submitted as a potential strategically suitable site.

An applicant for section 36 consent is required to consult the public pursuant to the Electricity (Applications for Consent) Regulations 1990. Furthermore it is proposed that the new planning regime will require pre-application public consultation.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

The NPS has undergone considerable public scrutiny both at the concept stage and during drafting. There will also be considerable public input into all of the associated regulatory processes, including the generic design assessment, the environmental impact assessment, section 36 consents and local planning enquiries.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

The NPS provides guidance on the levels of population which are acceptable around nuclear installations. This is administered by NII on behalf of government as part of planning process for new developments around nuclear installations. Indeed, NII are consulted by local authorities for all developments which are within a close proximity to licensed nuclear installations. Emergency arrangements are covered under the REPPIR regulations and the Licensing regime under the NIA. Both of these are regulated by the NII.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

The degree to which site preparation could be undertaken ahead of granting of a site licence is limited to site investigation perimeter fencing etc. In addition some boreholes may be sunk in order to ascertain the geophysical conditions of the site so that this can inform the environmental impact assessment statement.. Such works come within the regulation of the Environment Agencies. Once a site licence has been granted, progress through the site preparation and NPP construction stage will be via a series of hold points which will be agreed between the NII and the Licensee. In addition the security regulator, OCNS may wish to impose additional restrictions regarding access to the site for security reasons.

In addition site preparation forms part of the construction phase and cannot be undertaken until consent under Section 36 has been granted.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Prior to a site licence being granted, local planning authorities may require an application to be made for planning permission under the Town and Country Planning Act 1990, as amended, and may impose restrictions on site preparation works. After a licence has been granted, NII will impose regulatory controls through the conditions imposed as part of the site licence. These conditions are imposed by means of the Nuclear Installations Act 1965. Similarly, the Environment Agencies will impose controls on environmental matters falling within their regulatory responsibility. The security regulator may impose constraints via the Nuclear Industries Security Regulations.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

This is not really applicable.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

NII issue a licence for the site, not for individual stages of activity on the site. Individual activities are permitted via a Licence instrument. These do not generally have fixed terms. If however activities were being undertaken in a fashion which the NII found to be inappropriate, we have the regulatory power to force a cessation of activities.

The Environment Agency permits will have conditions that the site developer must comply with. More generally on all nuclear sites the NII and the Environment Agencies work together to ensure that they deliver regulation at these sites.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

There is no formal guidance, however for the purposes of the Town and Country Planning Act 1990, as amended, Section 56 of that Act sets out what constitutes the start of development.

2.6 If yes, what are they?

See 2.5.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

See previous responses.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes, the site licence requirements on the operating reactor would require consideration of the impacts and demonstration of tolerable risk ahead of any activities being undertaken. The influence of each activity on any adjacent activity in normal and fault conditions needs to be well understood.

2.11 What form of regulatory oversight is performed of site preparation?

None, given that at that stage, no Licence has been issued.

2.12 Do inspection plans or programs exist to guide your inspectors?

N/A.

2.13 If yes, please describe their key features.

2.14 Are there any other elements of national practice that would be relevant?

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

The public are consulted at many different stages. Initially on the criteria for strategic selection of sites, secondly following the nomination of sites and thirdly as part of the planning process.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The requirements are laid down in UK and European legislation. The Environment Agency is the enforcing authority.

3.3 Does a definition exist of the activities that would be permitted under the heading of 'Site Preparation'? If so, please provide it or a reference.

No, this is negotiated on a site by site basis

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

There is no precise definition, however it is broadly termed as safety significant works.

3.5 To what extent is the impact of the site on the design considered?

There is a requirement for a site specific pre construction safety report to be produced.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

All UK nuclear site licences have an identical set of conditions. The arrangements which the licensee will make under those conditions will vary significantly.

3.7 Are there any lessons-learned from recent experience with site selection?

There are a number of issues which cannot be addressed at a strategic level which have the potential to rule a site out as suitable.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

No

3.9 What form of regulatory oversight is performed of construction?

There are a series of hold points agreed under the licence conditions which require consent from the regulator to proceed further. Regular site inspections and design reviews are held with the Licensee during the construction phase. This includes reviews of conventional safety during the construction activity.

Response on behalf of United States of America

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

No specific decision-making authority regulates the selection of sites for power plants at the Federal (National) level; some States have implemented power plant siting programs. The selection of sites for nuclear power plants is largely made by investor-owned merchant power companies, based on need for power, proximity to the load centre, availability of infra-structure such as, transmission lines, railroad and other transportation facilities, proximity to existing power plants, and other factors. However, the review and approval of a site for the construction and operation of a nuclear power plant is conducted by the NRC in matters related to radiological safety, subject to permits by local and State authorities with jurisdiction in the site area.

It should be noted that as a part of the environmental review that complements the safety review, the NRC determines whether or not there is an “obviously superior” alternative site to that proposed by the applicant. If the evaluation of the construction and operation of the proposed project at the proposed site determines that there would be significant environmental effects that could not be adequately mitigated, then the site may not be approved. The NRC findings and recommendations are included in an environmental impact statement.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The Atomic Energy Act (AEA) of 1954, as amended, 42 U.S.C. § 2011 et seq., is the fundamental U.S. law on both the civilian and the military uses of nuclear materials. Section 185 of the AEA covers the Nark’s authority to issue permits and licenses. The regulatory criteria related to the issuance of construction permits and operating licenses are located in Title 10 of the Code of Federal Regulations (10 CFR) Part 50. The regulatory criteria related to early site permits, and combined construction permits and operating licenses (COLs) are located in 10 CFR Part 52. In addition, the National Environmental Policy Act of 1969, as amended, 42 U.S.C. § 4321 et seq., is the fundamental U.S. law on environmental policy for all Federal agencies. The environmental impact statement for a proposed production and utilization facility is governed by the criteria in 10 CFR Part 51. The overarching regulation for reactor siting is 10 CFR Part 100.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

Regulatory requirements governing radiological safety of sites are specific. Numerous regulatory guides (such as 1.70, 1.206, and 4.2) and review plans (e.g., NUREG-0800, and NUREG-1555), aid the public, prospective applicants and the staff in ensuring that the licensing process is stable and predictable. While there are additional guidance tools (such as review standards, branch technical positions, generic communications, etc.), the NRC operates under a system of revealed standards; consequently, there are no informal regulatory expectations that are not adequately documented.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

NS-R-3 was published in November 2003 and is an update of a 1988 document No. 50-C-S (Rev. 1). NRC regulations, regulatory guides and standard Review Plans pre-date NS-R-3. Many of the regulatory expectations in NS-R-3 emulate the attributes of site safety considerations addressed in many NRC regulatory guides. There are several guides in the Environmental and Siting Division, these are Series 4 guides. In addition, there are power reactor guides (Series 1) that are relevant to site hazards addressing natural man made transportation and site proximity hazards.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

The NRC expects the applicant to perform a search for suitable sites and to select the proposed site based on a systematic process that accounts for safety and environmental factors as well as business objectives. Additional information is provided in Regulatory Guide 4.7.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

In addition to the guidance in Regulatory Guide 4.7, additional insights can be found in the staff's Environmental Standard Review Plan (ESRP, NUREG-1555), Section 9.3.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Certain activities to prepare the site do not have a reasonable nexus to radiological safety and do not require NRC approval; however, the prospective applicant must obtain NRC approval to undertake the specific construction activities defined in 10 CFR 50.10. The NRC staff will develop an environmental impact statement to assess the impacts of such construction activities as well as the impacts of operation for 10 CFR Part 50 or Part 52 permits or licenses.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, these are covered in the regulations at 10 CFR Part 100, Part 50 Appendix A (General Design Criterion 2), Part 50 Appendix S and associated regulatory guides and NUREG-0800, the safety standard review plan.

Special consideration to natural factors, such as seismicity, geotechnology, meteorology or hydrology is covered in the US regulations. Criteria that describe the nature of the investigations required to obtain the geologic and seismic data necessary to determine site suitability have been set forth in 10 CFR Part 100, "Reactor Site Criteria", in Section 100.23, "Geologic and Seismic Siting Criteria" (59 FR 52255). Safety-related site characteristics are identified in Part 1 of Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)", Regulatory Guide 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion", and Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants". In addition to geologic and seismic evaluation for assessing seismically induced flooding potential, Section 2.4 of Regulatory Guide 1.70 and Regulatory Guide 1.59 describe hydrologic criteria, including coincident flood events that should be considered.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, climate variability is considered for the expected life of the permit and the license. The period considered is about 100 years – 20 years for a site or a construction permit, plus 40 years for a plant license, plus 20 years or more for extended operation. Fires, other hazards, nearby transportation routes or malevolent events are all considered.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Access to off-site power from a grid is considered by the NRC at the site approval stage.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

There are certain requirements for an applicant to work with public officials on certain matters, such as emergency planning. Should the NRC determine that it can approve a request to construct and operate a facility, that alone is not sufficient; there are numerous other permits that must be obtained from other public Federal, State, Tribal and local agencies. Consequently, it is prudent for the prospective applicant to reach out to stakeholders early in the process.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

Yes. In 10 CFR Part 50, 51 and 52 there are specific requirements for an adjudicatory hearing after an applicant requests approval from the NRC; that may result in public participation either as a party to the proceeding or for a limited appearance before the adjudicatory panel. In addition the NRC's environmental review provides opportunities for public participation in the process to define the scope of the environmental review as well as to comment on the environmental impact statement. In addition, the NRC has elected to conduct public outreach meetings around the time that it expects to receive a site approval request or a request to construct and operate a facility.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes, during the NRC safety and environmental reviews, the staff considers projected changes in population around the selected site for the life of the station, projected land use, and the feasibility of emergency plans.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Certain activities that do not have a reasonable nexus to radiological safety can be undertaken by the applicant without NRC approval, inspection or other oversight. See further discussion below. However,

activities related to site investigations for the determination of site characteristics for radiological safety and design inputs are subject to NRC review and approval.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Section 185 of the Atomic Energy Act of 1954 and 10 CFR Parts 50, 52 and 100 provide the overarching requirements; 10 CFR Part 50.10 addresses the requirements for limited work authorizations as well.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

In addition to the guidance in Regulatory Guide 4.7, additional insights can be found in the staff's Environmental Standard Review Plan (ESRP, NUREG-1555).

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

An early site permit is issued for a period not less than 10 years or greater than 20 years; it can be renewed.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

In the U.S., construction activities that have a reasonable nexus to radiological safety can be initiated prior to the issuance of a construction permit under 10 CFR Part 50 or a combined construction permit and operating licence under 10 CFR Part 52 provided that the applicant obtains a limited work authorization [see 10 CFR 50.10 and Interim Staff Guidance (ISG) – 4]. Other site preparation activities that do not have a reasonable nexus to radiological safety do not need NRC approval; such activities may require the approval from other Federal, State, Tribal or local agencies.

2.6 If yes, what are they?

A list of activities is provided in 10 CFR 50.10(a).

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

The construction activities, whether or not related to radiological safety, will result in environmental impacts. These are evaluated in the Nark's environmental impact statement either as direct impacts of construction [as defined by the NRC in 10 CFR 50.10(a)] or as part of the cumulative impacts of the project (construction and operation) when taken together with other past, present or reasonably foreseeable activities.

2.8 If yes, please describe their key features.

NUREG-1555 provides guidance on construction and cumulative impact analysis affecting environmental resources such as land use, cultural and historic properties, terrestrial and aquatic ecology, water resources, air resources, socioeconomics, etc.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

The applicant may also need permits or approvals from authorities other than the NRC, such as State and local jurisdictions, to conduct certain LWA or pre-construction activities. There are separate regulations related to waste management of high and low level nuclear waste, fuel fabrication plants, test reactors and others.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes. As examples, activities at new facility may present an unreviewed industrial hazard at an adjacent operating facility. Workers involved in site preparation and construction activities are protected from the radiological hazards from the operating facility. The presence of the additional workforce needs to be considered in the emergency plans of the operating facility.

Our requirement is governed by the provision of 10 CFR Part 52.79(a)(31), "For nuclear power plants to be operated on multi-unit sites, an evaluation of the potential hazards to the structures, systems, and components important to safety of operating units resulting from construction activities, as well as a description of the managerial and administrative controls to be used to provide assurance that the limiting conditions for operation are not exceeded as a result of construction activities at the multi-unit sites."

2.11 What form of regulatory oversight is performed of site preparation?

NRC staff conducts inspections. Certain site preparation activities are excluded.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes, there are inspection modules that are followed and they require preparation of inspection plans.

2.13 If yes, please describe their key features.

Site and construction related inspection modules cover verification of geophysical, geotechnical, civil engineering activities, quality assurance attributes etc. For standard plant designs, detailed inspection procedures are being developed to verify that appropriate Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) are being met in an on-going manner.

2.14 Are there any other elements of national practice that would be relevant?

Adherence to national consensus standards comes from commitments made by the applicants in the applications. A few examples are standards of the American Society of Civil Engineers, American Society of Testing Metals, American Society of Mechanical Engineers, American Concrete Institute etc.

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

The applicant conducts and documents its site selection process in an environmental report (ER); the description of the process and characterization of the proposed and alternative sites is made available to the public as part of the application. The public can elect to participate in the NRC process to establish the scope of the environmental review and by offering comments on the staff's evaluation of the environmental effects of constructing and operating the proposed nuclear power plant and the assessment of alternatives, including alternative sites. The staff's independent evaluation is provided in the NRC environmental impact statement (EIS).

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The NRC performs its independent evaluation of the environmental effects of the proposed action under the National Environmental Policy Act (NEPA) and its implementing regulations (i.e. 10 CFR Part 51). Public involvement is an important requirement of NEPA, especially in determining the appropriate scope of the analysis. The framework for conducting this independent evaluation of the effects of constructing and operating a nuclear power plant is outlined in NRC guidance, NUREG-1555 – Standard Review Plan for Environmental Reviews for Nuclear Power Plants.

3.3 Does a definition exist of the activities that would be permitted under the heading of “Site Preparation”? If so, please provide it or a reference.

Yes, the NRC has defined those activities that do not require NRC approval prior to NRC authorization to begin construction in 10 CFR 50.10(a)(2). While these activities are referred to as “pre-construction,” they can occur prior to, during and even after construction and include site exploration; clearing of the site; grading; excavation; and installation of drainage, erosion, and other environmental mitigation measures.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

Yes, the NRC has defined the activities that require NRC authorization in 10 CFR 50.10(a)(1). These activities are referred to a “construction” and include the driving of piles, subsurface preparation; placement of backfill, concrete, or permanent retaining walls within an excavation; installation of foundations; or in-place assembly, erection, fabrication or testing of structures, systems, and components.

3.5 To what extent is the impact of the site on the design considered?

Applicants submitting a reactor design for Nark's review and certification base their designs on a set of conservatively established “site parameters”. These can include establishing Site Design Envelopes for precipitation, hydrology, and seismology (e.g. soil type, flood level, wind, temperature, and geology). Site parameters include a hypothetical set of nearby physical characteristics (e.g. population and facilities - military, transportation, and/or industrial). Site parameter discussions for the design certification applications currently under review at the NRC can be found the NRC Public Website <http://www.nrc.gov/reactors/new-reactors/design-cert.html>. The impact of the “proposed” site on the reactor design is addressed in an applicant's site-specific application to construct and operate one or more nuclear reactors (i.e. in their Final Safety Analysis Report or FSAR). The actual site characteristics are then compared to the surrogate site parameters to ensure that the earlier analyses were bounding, otherwise a site-specific analysis may be necessary.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

Three early site permits have been issued so far and they are discussed in final staff safety evaluations published as NUREGs. Combined license reviews are on-going. Examples of site permit conditions can be obtained from Clinton, and North Anna NUREG-1835 and NUREG-1844 respectively. These documents contain the staff safety evaluations.

3.7 Are there any lessons-learned from recent experience with site selection?

NRC has established a pre-application readiness assessment program that allows for informal conferences with prospective applicants; this voluntary program provides early feedback concerning issues related to their site selection process, site safety, emergency planning and environmental impact assessment. General lessons learned include increased effectiveness with earlier interactions (i.e. when plans are being formulated) and increased confidence with the thoroughness and objectivity of the applicant's site selection process.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

We intend to review the outcome to determine how to take advantage of experiences described from the WENRA or the EC. Siting of reactors in relatively densely populated areas or any changes in the radiation exposure limits are potential areas of consideration.

3.9 What form of regulatory oversight is performed of construction?

The NRC regulates the construction of new reactors; ensuring activities are accomplished in accordance with both NRC regulations and the specific requirements of the license. The NRC will utilize a combination of resident inspectors, stationed at each construction site and specialist inspectors from both the NRC regional offices and NRC headquarters. Results of these inspections will be publicly available on the NRC web page. Previous responses to questions 2.11 and 2.13 also address the US regulatory oversight of reactor construction.

Response on behalf of Czech Republic

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Yes. Please find licensing process scheme for nuclear installations at the end of this questionnaire.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

SUJB – State Office for Nuclear Safety (state nuclear and radiation protection regulatory authority). According to Czech legislation, there is a distinction between a LICENCE FOR SITING OF A NUCLEAR INSTALLATION issued by SUJB (according to the Atomic Act) and a DECISION ON LOCATION OF THE STRUCTURE for any building issued by Building Office (Act. No. 183/2006 – Building Act). Without approval of SUJB, the Building Office cannot issue a Decision on location of the structure.

1.2A/ An environmental impact assessment according to the Act No. 100/2001 Coll., on environmental impact assessment has to be apply before issuing the approval under the Atomic Act and the Building Code.

1.2B/ Decision on location of the structure according to the Building Code (Act. No. 183/2006 Coll.) Decision on location of the structure according to the Building Code delimits the building plot, sites the designed structure, determines its type and purpose, conditions for its location, for processing the project documentation for issuance of the building permit, for notification of the structure, and for connection to public and technical infrastructure.

1.2C/ LICENCE FOR SITING OF A NUCLEAR INSTALLATION Issued by SUJB (nuclear regulatory body)

Siting of a nuclear installation is one of the activities, to which SUJB has to issue an approval in accordance with the provision of Section 9 of the Atomic Act, from the nuclear safety and radiation protection point of view.

Application for the nuclear installation siting must be, in accordance with the Appendix A of the Atomic Act, documented by the following documentation:

I. Initial Safety Analysis Report, the content of which shall include:

- description and evidence of suitability of the selected site from the aspect of siting criteria for nuclear installations and very significant ionizing radiation sources as established in an implementing regulation,

- description and preliminary assessment of the design concept from the viewpoint of requirements laid down in an implementing regulation for nuclear safety, radiation protection and emergency preparedness,
- preliminary assessment of the nuclear installation operation impact on the personnel, the public and the environment,
- proposal of concept for safe decommissioning,
- assessment of quality assurance in the process of the selection of site, the method of quality assurance for preparatory stage of the construction and the quality assurance principles for linking stages.

II. Analysis of needs and possibilities to provide physical protection

The SÚJB Decree No. 215/1997 Coll. establishes criteria for the assessment of the particular site suitability from the aspect of nuclear safety and radiation protection. At the same time, protection of other interests, resulting from the valid legislation, remains preserved. This Decree defines the exclusion and conditioning criteria.

Exclusion criteria are those limiting characteristics, which unequivocally exclude utilization of a particular region for siting nuclear installations. These criteria include radiological impacts of the planned installation on its vicinity under normal operating conditions and radiation emergency, as well as effects of the site on nuclear safety and radiation protection of the same installation.

Conditioning criteria are such characteristics, which make an area or land suitable for siting nuclear installations under the condition that it is feasible or technically possible to offset the unfavorable regional conditions, both natural and the ones caused by human activities.

In the implementing SÚJB Decree No. 195/1999 Coll., on basic design criteria for nuclear installations with respect to nuclear safety radiation protection and emergency preparedness, and particularly in the SÚJB Decree No. 215/1997 Coll., on criteria for siting of nuclear installations and very significant ionizing radiation sources, IAEA recommendations and guidelines for nuclear installations siting are taken into account.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

The legislative framework is concluded with recommendations and guidelines published since 1998 by the State Office for Nuclear Safety in a special non-periodic series of publications: “Safety of Nuclear Installations - Requirements and Guidelines” such as “Initial Safety Analysis Report Guidance on Radioactive Waste Repository”.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The national legislative framework, particularly the Atomic Act and its Regulations such as “Decree No. 215/1997 Coll., on criteria for siting of nuclear installations” cover all requirements and recommendations given by NS-R-3.

It implies that assessments within the siting process should consider the historically most significant phenomena registered in the particular locality and its vicinity, as well as a combination of natural phenomena, phenomena resulting from human activity and accident conditions due to these phenomena. Within the siting and design, nuclear installations must be evaluated as to their resistance against the following natural phenomena and phenomena initiated by human activity:

- earthquakes,
- climatic effects (wind, snow, rainfall, outdoor temperatures, etc.),
- floods and fires,
- air crash, and flying and falling objects
- explosions of industrial, military and transport means, including explosions in nuclear installations buildings,
- release of dangerous and explosive fluids and gases.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

No. This obligation is not included in current legislation. Because of NPP construction public acceptance in different places the applicant evaluates various sites in practice.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

N/A.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. Environmental Assessment is regulated by the Act No. 100/2001 Coll. on Environmental Impact Assessment.

The subject of the environmental impact assessment pursuant to this Act shall be the site of a nuclear installation or radioactive waste repository, construction of a nuclear installation, particular stages of decommissioning of a nuclear installation (including changes which capacity or extent is to be increased by 25 percent or more, or if there is a significant change in the technology, management of operations or manner of use). This Act provides procedure for Preliminary public hearing and Public hearing.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, see Item No. 1.4 above.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes, see Item No. 1.4 above.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Yes. Transmission access is for the first time taken into account during Environmental Impact Assessment process.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

No. There are no legal requirements with the exception of Environmental Impact Assessment process.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

No. There are no direct legal requirements with the exception of Environmental Impact Assessment process.

The “Territorial Construction Plan” are performed and approved on the different levels of state administration (municipal, regional, state levels). The NPP construction site must be included in such type of plans. If public in concrete place does not like nuclear power, its local government does not allow to put NPP construction in such plan.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes. This all elements of national practice are included in the legislative framework (see Item No. 1.4 above).

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Yes. Please find detail licensing process scheme for nuclear installations at the end of this questionnaire.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

According to Czech legislation, there is a distinction between LICENCES FOR NUCLEAR FACILITIES (issued by SUJB according to the Act No. 18/1997 Coll. – Atomic Act) and a BUILDING PERMIT for any building issued by building office and FINAL INSPECTION APPROVAL (Act. No. 183/2006 – Building Act).

2.2A/ The Building Code (Act. No. 183/2006 Coll.)

In the BUILDING PERMIT the building office determines the conditions for the realization of the structure, and if necessary also for its use, and it decides the objections of the participants in the proceedings. The office secures the protection of public priorities by conditions and it determines especially the relation to other conditional structures and installations, observance of general requirements for construction, including the requirements for a barrier less use of the structure, or technical standards. As necessary it determines which phases of construction will be notified to the office by the developer for the purpose of making the inspections of the structure, the office may also determine that the structure can be used only on the basis of the final inspection approval.

A structure with properties that cannot be affected by the future users, for example, hospital, school, block of flats, structure for trade and industry, structure for assembly of bigger number of persons, transport structure and the civil infrastructure structure, structure for accommodation of the convicted and accused persons, furthermore the structure, within which the performance of the test operation was prescribed, and a change in structure, which is the cultural monument, may be utilized only under the FINAL INSPECTION APPROVAL. The approval is issued at the request of the developer by the respective building office. Within the application the developer states the identification data on the structure and the expected term of its completion.

2.2B/ The Atomic Act (Act No. 18/1997 Coll.)

The legislative framework governing the issue of a LICENCE FOR CONSTRUCTION OF A NUCLEAR INSTALLATION and PERMISSIONS FOR PARTICULAR STAGES OF NUCLEAR INSTALLATION COMMISSIONING; which covers the nuclear safety and radiation protection aspects is established by the Atomic Act and its implementing regulations, in particular:

- *SÚJB Decree No. 195/1999 Coll.*, on basic design criteria for nuclear installations with respect to nuclear safety radiation protection and emergency preparedness,
- *SÚJB Decree No. 132/2008 Coll.*, on quality assurance in activities related to the utilization of nuclear energy and in radiation practices, and laying down criteria for the assignment and categorization of classified equipment into safety classes,
- *SÚJB Decree No 309/2000 Coll.*, on assurance of technical safety of selected equipment,
- *SÚJB Decree No. 307/2002 Coll.*, on radiation protection, as amended by the SÚJB Decree No. 499/2005 Coll.,
- *SÚJB Decree No. 144/1997 Coll.*, on physical protection of nuclear materials and nuclear installations and nuclear facilities and their classification, as amended.

Application for an approval for a nuclear installation construction must be in accordance with the Appendix B of the Atomic Act documented by the following documentation:

I. Preliminary Safety Report which shall include

- Evidence that the proposed design meets all requirements for nuclear safety, radiation.
- Protection and emergency preparedness as laid down in an implementing regulations.
- Safety analyses and analyses of the potential unauthorized handling of nuclear.
- Materials and ionizing radiation sources, and an assessment of their consequences for.
- Personnel, public and environment.
- Information on predicted lifetime of nuclear installation or very significant ionizing.
- Radiation source.
- Assessment of nuclear waste generation and management of it during commissioning.
- And operation of the installation or workplace being licensed.
- Conception of safe termination of operation and decommissioning of the installation.
- Or workplace being licensed, including disposal of nuclear waste.
- Conception for spent nuclear fuel management.
- Assessment of quality assurance during preparation for construction, method of.
- Quality assurance for the carrying out of construction work and principles of quality.
- Assurance for linking stages.
- List of classified equipment.

II. Proposed method of providing physical protection.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

The legislative framework is concluded with recommendations and guidelines published since 1998 by the State Office for Nuclear Safety in a special non-periodic series of publications: "Safety of Nuclear Installations - Requirements and Guideline" such as "Initial Safety Analysis Report Guidance on Radioactive waste repository".

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

The BUILDING PERMIT according to the Building Act expires, if the construction was not commenced within 2 years from the date, when it came into force. The building office may extend

the period of validity of the building permit at the justified request of the developer submitted before its expiration.

The FINAL INSPECTION APPROVAL according to the Building Act does not have fixed term. LICENCE FOR CONSTRUCTION OF A NUCLEAR INSTALLATION and PERMISSIONS FOR PARTICULAR STAGES OF NUCLEAR INSTALLATION COMMISSIONING according to the Atomic Act include the licence validity time period.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

Yes.

2.6 If yes, what are they?

Licence should set conditions for performance and termination of the practice being licensed, as required from the aspect of nuclear safety, radiation protection and physical protection and, subject to discussion with the District Authority, conditions for emergency preparedness.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

Besides legislative framework and guidelines mentioned in Item 2.3 above SÚJB (nuclear regulatory body) use in reviewing process the IAEA publications issued in Safety Standards Series and also USNRC NUREG 800.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

Yes. There are Permissions for DISCHARGE OF RADIONUCLIDES INTO THE ENVIRONMENT and IONISING RADIATION SOURCES MANAGEMENT according to the Atomic Act.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes.

2.11 What form of regulatory oversight is performed of site preparation?

There is no site preparation nowadays. SUJB would ensure regulatory oversight by a resident inspectorate for carry out routine daily inspections and by planning of specialized system inspection if the site was prepared.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes.

2.13 If yes, please describe their key features.

Most of the inspections are performed according to the half a year inspection plan that covers specified safety related areas. Ad-hoc inspections are performed when a safety event occurs. An essential part of inspection activities is regular inspections performed monthly by site inspectors. Specialized inspections are targeted at special system or topic (quality assurance, radiation protection, industrial safety) usually performed by inspectors specialists from SUJB headquarters in Prague.

Several databases have been developed to document and facilitate the inspection and decision making activities. The use of electronic databases is understood by the SUJB management as an important development for improving regulatory effectiveness.

2.14 Are there any other elements of national practice that would be relevant?

N/A.

ANNEX to the QUESTIONNAIRE

LICENSING PROCESS for NUCLEAR INSTALLATIONS

The so-called “licensing” process for nuclear installations is regulated by the Building Act (No. 183/2006 Coll.), the Atomic Act (No. 18/1997 Coll.) and the Environmental Impact Assessment Act (No. 100/2001 Coll.) and their implementing decrees.

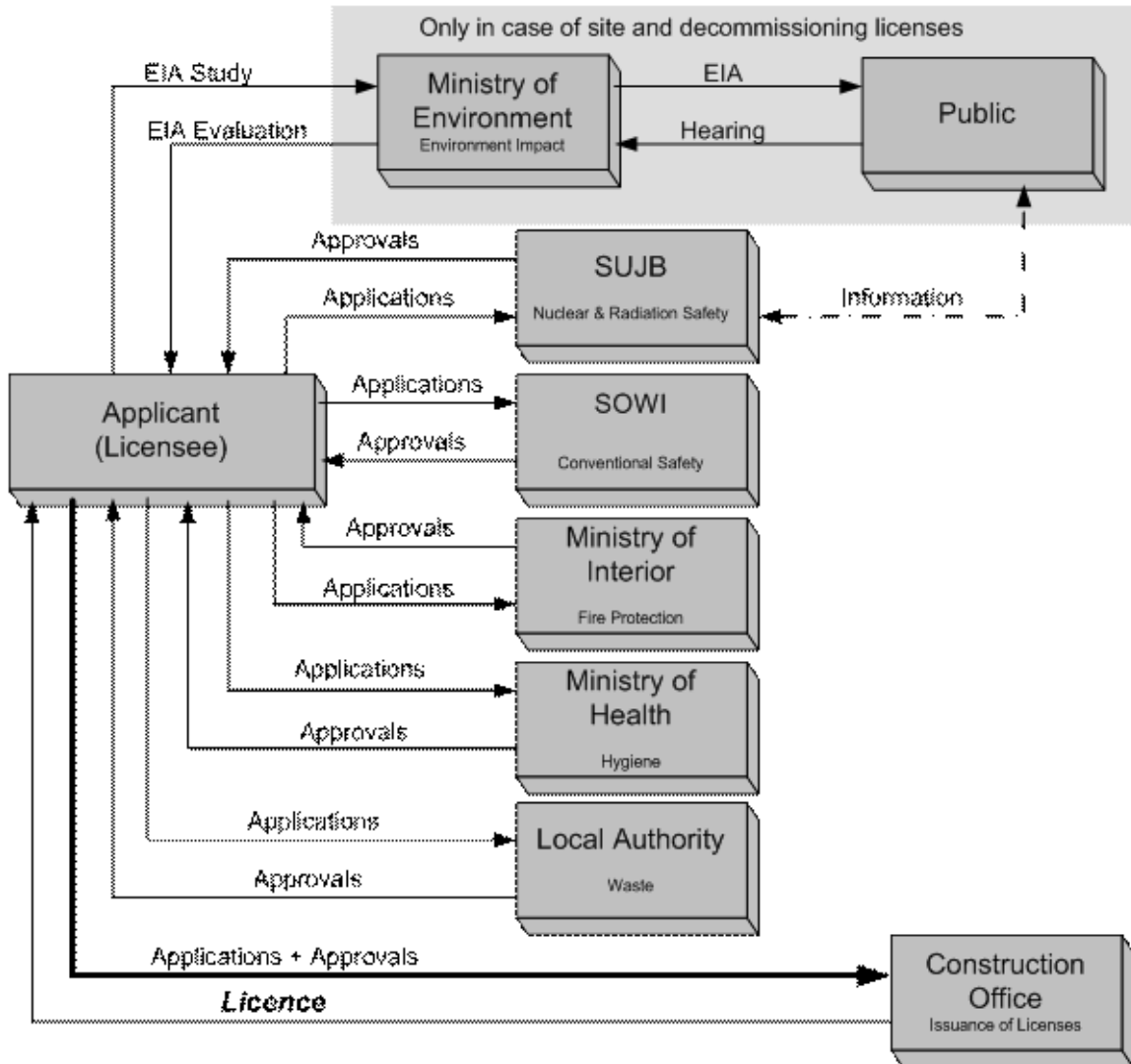
Issuance of three basic authorizations (licences) for all nuclear installations, i.e. site permit, construction permit and operation permit from the standpoint of the Building Act, is within the competence of the corresponding Construction Office. It is the local Construction Office for the site permit and the Ministry of Trade and Industry for construction and operation permits.

In the case that issues protected by special regulations arise during the course of licensing proceedings, the Construction Office decides by agreement or with the consent of the State Administration Body which protects those particular interests. The nuclear installations licensing procedure includes bodies illustrated in Annex. The Body concern may condition its consent on the fulfillment of conditions established in its decision issued in compliance with authorization of relevant specific law.

*Those bodies are in particular: • **Ministry of Interior** - concerning fire safety, • **Ministry of Environment** - in the case of site and decommissioning licences – Environmental Impact Assessment (EIA) • **Local Authority** - concerning waste management, water consumption and waste water discharges, • **Ministry of Health** – concerning occupational health protection, • **State Office for Work Inspection (SOWI)** - concerning conventional safety, including the safety of the electrical systems, • **State Office for Nuclear Safety (SUJB)** - concerning nuclear safety, radiation protection, physical protection, emergency preparedness and industrial safety (pressure vessels).*

The Construction Act directly impose on the Construction Office the duty to obtain from the applicant (constructor, operator) the permission issued by the State Office for Nuclear Safety in compliance with the

Atomic Act still before the issuance of the site permit, construction permit, and of any subsequent permit in respect to the nuclear installation containing project. In compliance with the provisions of the Act, the decision of the Construction Office cannot be issued without this permission.



Response on behalf of Slovak Republic

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Yes, nuclear regulatory authority of the Slovak Republic – UJD SR gives its agreement for siting of any nuclear facility. The final licence is issued by the regional building authority.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The requirements for nuclear safety of nuclear installations during the siting stage are characterized by land features which exclude the siting of nuclear installations on such land and are listed in Annex 2 of the *Regulation No. 50/2006 Coll. laying down details of the requirements for nuclear safety of nuclear installations during siting, design, construction, commissioning, operation, decommissioning and closure of storage sites, and also the criteria for the categorization of selected installations into safety classes.*

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

Basic expectation is that the proponent is able to show that natural and societal properties of selected site will not interact with any nuclear safety requirements in future.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

National legislative framework for site evaluation reflects all the essentials from NS-R-3, nevertheless, does not cover all the details as listed in NS-R-3.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

N/A.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

N/A.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

A full process of environmental impact assessment is one of the conditions for granting a siting licence.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes, all of these factors have to be considered based on the above-mentioned Regulation No. 50/2006 Coll.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Not explicitly, but implicitly yes. One of the land features which exclude its use for the siting of nuclear installations: the land extends into a protected area for industrial or other economic facilities with which there may be undesirable operational clashes.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

No.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

Yes, within the environmental impact assessment process (see question No. 1.7). Possible consultations can be raised based on the Espoo convention.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

Yes, within the environmental impact assessment process (see question No. 1.7).

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

None.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

No.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

N/A.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

N/A.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

N/A.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

N/A.

2.6 If yes, what are they?

N/A.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

N/A.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

N/A.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

N/A.

2.11 What form of regulatory oversight is performed of site preparation?

N/A.

2.12 Do inspection plans or programs exist to guide your inspectors?

N/A.

2.13 If yes, please describe their key features.

N/A.

2.14 Are there any other elements of national practice that would be relevant?

N/A.

Response on behalf of Spain

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

In Spain site selection is not regulated, this means that is up to the utility choose one site and apply for the site license. The licensee has to submit the documentation and analysis required the Decree of Nuclear and Radiactive Installations. The review of a site for the construction of the nuclear power plant is conducted by the CSN and the approval is issued by the Ministry of Industry.

CSN has responsibility on nuclear safety (this includes seismic, geological and hydrological, etc) and radiological protection issues, but not in other types of applications that are responsibility of local and regional authorities.

One very important issue in this step of site license is the environment assessment, the Government department in charge of this is the Ministry of Environment, and the CSN plays as its advisor in this case.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The licensing steps requested in the Spanish Decree of Nuclear and radioactive Installations are the following ones:

- Prior or early site permit. Acceptance of the project and site. Initial infrastructure civil works may begin.
- Construction. Needed to build up the facility.
- Operation. Nuclear fuel may be used, plant operated. Granted for a given time (10 years). Permit has to be renewed decennially.
- Modification. Any change in the license, either in the installation, procedures, analysis, etc, beyond certain criteria established in CSN Safety Guide 1.11, as endorsed in the license.
- Decommissioning. - Needed previously to initiate dismantling.

In relation to the site assessment for the prior or early site permit, the CSN will consider the documents submitted by the applicant when applying for the prior license. This documentation is:

The request for prior authorisation shall be accompanied with the following documents:

a) Declaration on the needs whose satisfaction is intended, the justification for the installation and the site chosen.

b) Descriptive report. This report shall consist of a description of the fundamental elements that shall be comprised by the installation, and in general, must include the basic information on the installation, the technology that is to be used, the prior supply plan and the provisions for its dismantling.

c) Construction draft project. Phases and execution deadlines. Prior economic study regarding the financial investments and the expected costs.

d) Site characterisation study, and of the site's area of influence, including sufficient data on the site parameters that may affect nuclear safety and radiological protection, including those of a demographic and ecological nature, as well as those activities related to land use and planning.

e) The organisation foreseen by the requesting party in order to supervise the project and to guarantee quality during construction.

f) Description of the preliminary activities and infrastructure work that are expected to be carried out once the prior authorisation is granted and before requesting the construction authorisation.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

There are no informal regulatory expectations that are not within the scope of the regulations, although there can be meetings and agreement of schedules, etc.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

All of the regulatory attributes considered in the NS-R-3 are included in the Spanish Decree mentioned before.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

This is not considered in the Spanish rules. It is up to the Licensee to select the site and submit to CSN the documents applicable.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

Not applicable.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes, as part of the early site permit the Ministry of Environment will assess the fulfilment of the Environment Law. CSN will play the role of an adviser in nuclear safety and radiological protection to this Ministry.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

Yes. As mentioned previously, these topics are assessed for the prior or early site permit.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

Yes. Fires, nearby transportation routes, other facilities in the surrounding area are considered.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

Yes. Access to off-site power from a grid is considered by the CSN for prior or site permit.

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

Yes. With the prior or early site documentation submitted by the applicant, the Ministry of Industry and Energy shall present a copy of this to the respective Government Delegation to initiate the public information period, that shall begin from the moment of publication in the "Official State Gazette", and in the corresponding Autonomous Community Gazette of a public announcement in which the aim and main characteristics of the installation shall be defined. In the announcement, mention shall be made of the fact that the persons and bodies that consider themselves affected by this project may present, within thirty days, and before the corresponding Government Delegation, writs of allegations that they consider appropriate.

2. The public information process shall be carried out together with that foreseen for the study of environmental impact in its specific regulation.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

Yes, as explained above.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

Yes, in the documentation submitted by the licensee there will be information about the population and its growth around the selected site for the life of the station, future land use, and the feasibility of emergency plans.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

There are certain activities that do not require CSN oversight although they are not clearly specified.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

Not applicable.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

Not applicable.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

This is not specifically mentioned in our rules.

2.6 If yes, what are they?

Not applicable.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No.

2.8 If yes, please describe their key features.

Not applicable.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

Besides the environment assessment approval, may also be needed to apply for permits or approvals from authorities other than the CSN, such as municipal/state jurisdictions.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Yes, they have to be considered.

2.11 What form of regulatory oversight is performed of site preparation?

With inspections.

2.12 Do inspection plans or programs exist to guide your inspectors?

Yes, but currently the regular inspection plan covers only operating plants and there is a specific one for the plan the plant under decommissioning and for the fuel facility.

2.13 If yes, please describe their key features.

Not applicable.

2.14 Are there any other elements of national practice that would be relevant?

Response on behalf of United Arab Emirates

Part 1: Evaluation and selection of sites for a new NPP

1.1 Do you, or another decision-making body, regulate the selection of sites for nuclear power plants?

Yes, FANR regulates the selection of sites for the selection of nuclear activities.

1.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

The UAE Law by Decree No 6 Concerning the Peaceful Uses of Nuclear Energy describes the “selection of a site for construction of a nuclear facility” as a regulated activity which no one may conduct unless licensed by the Authority.

FANR has drafted regulations and guides that set out the technical requirements for site evaluation.

1.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when seeking a decision.

None.

1.4 To what extent do your legislative framework or regulatory expectations draw from, reference or resemble, NS-R-3?

The FANR draft regulations are based on NS-R-3 and the associated guides with mostly minor adaptations.

1.5 Do you require or recommend that the applicant evaluate various sites before selecting a particular site?

Evaluation of candidate sites is not a specific requirement of the regulations.

1.6 If so, what guidance is given to the applicant regarding expectations for the depth of evaluation of alternative sites?

None.

1.7 Do you require any form of environmental assessment to be performed as part of site selection or before site preparation may begin?

Yes. The UAE Law by Decree No 6 Concerning the Peaceful Uses of Nuclear Energy does not require an EA.

The FANR draft regulations for site evaluation do require the operator to evaluate the potential effects of a nuclear facility on the region.

However, other competent authorities, specifically example the Environment Agency of Abu Dhabi, require an EA under their own legislation. FANR and EAD plan on liaising regarding the review of the EA.

1.8 Do you require an applicant to give special consideration to any natural factors, such as seismicity, geotechnology, meteorology or hydrology?

The draft regulations require evaluation of natural factors including geology, meteorology and hydrology among other “ologies”.

1.9 Do you require an applicant to give special consideration to any man-made factors, such as climate change, fires, nearby transportation routes or malevolent events?

The draft regulations require consideration of external hazards and malevolent events.

1.10 Do you, or another body, require an applicant to take transmission access or adequacy into account at the site selection stage?

The draft regulations require consideration of grid adequacy (but it is recognized in practice that the grid will be developed should the project go ahead).

1.11 Are there any requirements or expectations that an applicant consult the public, either prior to applying or subsequently?

No.

1.12 Are there any requirements or expectations that the regulatory body or other government agency consult the public?

The UAE white paper commits to “complete operational transparency”. The UAE Law requires the Authority to publish information about licence applications and reasons for decision. No specific requirements have yet been developed for more extensive public consultation.

1.13 Are there any other elements of national practice that would be relevant (such as projecting population growth around the selected site for the life of the station, controlling land use, considering the feasibility of emergency measures)?

The draft regulations require consideration of future socio-economic development in the region and their impact on emergency plans.

Part 2: Preparation of the selected site for a new NPP

2.1 Do you, or another decision-making body, regulate site preparation for new nuclear power plants?

Yes. The UAE Law by Decree No 6 Concerning the Peaceful Uses of Nuclear Energy describes the “preparation of a site for construction of a nuclear facility” as a regulated activity which no one may conducted unless licensed by the Authority.

2.2 If so, please describe the key elements of your legislative framework (i.e. statutes or regulations) that apply.

No regulations have been drafted to address this activity.

2.3 Please describe any informal guidance (such as regulatory expectations) that describes what is expected of a proponent when applying for a licence to prepare a site.

None.

2.4 If a licence is issued for site preparation, does it have a fixed term or any standard conditions?

A licence will be issued for site preparation with conditions attached which will define the term of the licence and other matters including the activities permitted under the licence.

2.5 Do you define, by a licence or otherwise, the activities that are permitted under Site Preparation, as opposed to what would be considered to be construction?

FANR intends to do so through licence conditions.

2.6 If yes, what are they?

The permitted activities will include “early mobilisation” and “non-nuclear construction” such as clearing and grading the site, putting up fencing, construction of buildings, roads, shipping docks, worker accommodation, etc. Not permitted will be placing foundations or any building connected with nuclear safety.

2.7 Do standard plans or guides exist for use by the regulator in reviewing an application to prepare a site?

No. The main justification of the suitability of the site will be submitted at the construction licence stage.

2.8 If yes, please describe their key features.

N/A.

2.9 Are applications for any other licences required in conjunction with a site preparation licence (such as waste management or nuclear substances)?

No.

2.10 If a site being prepared for construction contains other facilities (such as operating units or units being refurbished or decommissioned) do you impose particular requirements to avoid impacts from one unit on another?

Not applicable in the UAE case.

2.11 What form of regulatory oversight is performed of site preparation?

An inspection has been carried out of site evaluation activities and more are planned.

2.12 Do inspection plans or programs exist to guide your inspectors?

In preparation.

2.13 If yes, please describe their key features.

2.14 Are there any other elements of national practice that would be relevant?

Part 3: Additional Questions

3.1 To what extent is the public consulted or involved, either during the site selection phase or site preparation phase?

No formal requirements exist. The national practice in other sectors has involved limited public consultation.

3.2 If an Environmental Assessment (or Environmental Impact Statement, etc.) is required, to what extent are its scope or content specified by the nuclear regulator or other decision-making body?

The EIA scope has been specified by the Environment Agency of Abu Dhabi.

3.3 Does a definition exist of the activities that would be permitted under the heading of "Site Preparation"? If so, please provide it or a reference.

No formal definition exists.

3.4 Does a definition exist of the activities that fall under the heading of Construction (that is, would not be permitted under the heading of site preparation)? If so, please provide it or a reference.

Yes. The UAE Law by Decree No 6 Concerning the Peaceful Uses of Nuclear Energy defines construction as "the process of manufacturing and assembling the components of a Facility, the carrying out of civil works, the installation of components and equipment and the performance of associated tests".

3.5 To what extent is the impact of the site on the design considered?

FANR regulations for site evaluation and design of nuclear plants require comprehensive consideration of the impacts of the site features and conditions on the design of the nuclear power plant.

3.6 Can you provide examples of conditions that may be attached to a licence or permit?

3.7 Are there any lessons-learned from recent experience with site selection?

No.

3.8 Do you feel that work underway in WENRA or the EC may impact on the criteria you use for site selection or preparation?

No.

3.9 What form of regulatory oversight is performed of construction?

A licence will be issued for construction based on regulatory review and assessment of the application which must include a Preliminary Safety Analysis Report. Once licensed, FANR plans to carry out inspection and oversight of construction activities. An important outstanding issue is the potential role of third-party inspection bodies for component-level inspection.

Report on the Survey on Regulation of Site Selection and Preparation

CNRA Working Group on the
Regulation of New Reactors

