Fortum Power and Heat Oy
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ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE LOVIISA 3 NUCLEAR POWER PLANT UNIT; STATEMENT BY THE CONTACT AUTHORITY

On 3 April 2008, Fortum Power and Heat Oy (hereinafter Fortum) provided the Ministry of Employment and the Economy with an assessment report (EIA report) in accordance with the environmental assessment procedure (hereinafter the EIA procedure), pursuant to the Environmental Impact Assessment Act (468/1994; EIA Act), on the third unit of the Loviisa nuclear power plant.

1 Project information and EIA procedure

1.1 Responsible organisation and contact authority

The organisation responsible for the project is Fortum Power and Heat Oy, which holds the operating licences for the two present units in the Loviisa nuclear power plant until 2027 and 2030 respectively. Fortum Power and Heat Oy is a subsidiary wholly owned by Fortum Oyj.

Pöyry Energy Oy acted as the main consultant to Fortum in the EIA procedure.

Pursuant to the EIA Act, the Ministry of Employment and the Economy will act as the contact authority in the EIA procedure, having inherited the task from the Ministry of Trade and Industry, which acted as the contact authority in the initial phases of the procedure, as of 1 January 2008.

1.2 Project and its alternatives

Fortum has explored the opportunities to expand the nuclear power plant, located on the island of Hästholmen in Loviisa, with a third nuclear plant unit. The purpose of the project is to increase power production capacity, both to satisfy growing demand and replace capacity about to be withdrawn from the market.

The electrical output of the planned unit would range from 1,000 to 1,800 megawatts and the thermal power from 2,800 to 4,600 megawatts. A pressurised water reactor and a boiling water reactor are both being considered. The Loviisa 3 unit is designed as a base-load

power plant and, excluding the annual service shutdown, it would run continuously throughout the year. The unit has an estimated technical lifecycle of approximately 60 years.

In addition, the project includes, on-site, the treatment, storage and disposal of spent nuclear fuel generated by the new unit and low- and intermediate level radioactive waste, the decommissioning of the power plant unit, and the treatment and final disposal of waste generated by the decommissioning. The project will require an overhaul of the Loviisa power plant's raw water supply system, the extension of the present sewage works and the construction of a loading area for sea transport. In addition, the implementation of power transmission links to the national grid is included.

The project has also been assessed as an installation suitable for the co-generation of heat and power.

A situation in which the Loviisa 3 project would not be implemented is regarded as the zero option. Since Fortum would not consider building another type of power plant on the Loviisa plot instead of the new nuclear power plant unit, the area would remain unused for the time being.

The limitation of the alternatives is made on the basis of the importance of utilising existing infrastructure in nuclear plant projects and the forms of production at the company’s disposal.

According to Fortum's plans, the construction of the nuclear power plant would take place between 2012 and 2018 or thereabouts.

1.3 Licensing of nuclear facilities

Pursuant to the Nuclear Energy Act (990/1987), the decision-making and licensing system is based on a principle whereby safety is continuously reviewed, the assessments being further defined throughout the procedure so that the final safety assessments are only made at the operating licensing stage.

The licensing procedure of nuclear facilities is described in the Nuclear Energy Act pursuant to which the decision-making and licensing system is based on a principle whereby safety is continuously reviewed, the assessments being further defined throughout the lifecycle of the nuclear facility.

In addition, the construction of a nuclear power plant requires a significant number of other permits and licenses, such as permits in accordance with the Environmental Protection Act and the Water Act, and the municipal building permit. Land use planning of the nuclear power plant must be finalised before the applications for the building permit and construction licence can be filed.

1.3.1 Environmental impact assessment

The EIA procedure constitutes part of the safety and environmental impact assessment for nuclear power plants laid down in a decision-in-principle pursuant to the Nuclear Energy Act. However, it does not constitute part of the actual licensing process of a nuclear power plant unit.

The EIA procedure is implemented in two stages. First, the organisation responsible for the project will draw up a plan on environmental impact assessment, i.e. the EIA programme. Finally, the contact authority will submit a statement based on the comments and opinions invited and presented on the programme.

After this, the organisation responsible for the project will draw up an EIA report on the basis of the assessment programme, the statement by the contact authority, and various reports.

During the second hearing, the Ministry of Employment and the Economy will invite several ministries, authorities and organisations to submit their comments and opinions on the EIA report. Private citizens will also have the right to participate in this consultation as well as the consultations during the programme phase. On the basis of the EIA report and subsequent comments, the Ministry of Employment and the Economy will prepare its final statement, concluding the EIA procedure. In the case of nuclear power plant projects, the EIA procedure typically lasts at least one year.

1.3.2 Decision-in-principle

The planned nuclear power plant complies with the definition of a nuclear plant of considerable general significance, as laid down in the Nuclear Energy Act, requiring the Government's project-specific decision-in-principle on whether the construction project is in line with the overall interests of society. In accordance with the Nuclear Energy Decree (161/1988), the decision-in-principle shall include an EIA report complying with the Environmental Impact Assessment Act. The scope of the project, outlined in the application for the decision-in-principle, may not exceed that described in the EIA report. Accordingly, the thermal power of the plant cannot exceed the highest thermal power proposed in the EIA procedure.

The processing of the application for the decision-in-principle is not solely based on the material provided by the applicant. The authorities will acquire supplementary reports, both those required pursuant to the Nuclear Energy Decree and other reports deemed necessary, providing a broader analysis of the project. In preparation for the processing of the application, the Ministry of Employment and the Economy will obtain a statement from the municipal council intended to be the site of the power plant, and from its neighbouring municipal councils, the Ministry of the Environment and other authorities, as laid down in the Nuclear Energy Decree. In addition, the Ministry of Employment and the Economy will obtain a preliminary safety assessment from the Radiation and Nuclear Safety Authority (STUK).

Pursuant to section 24(h) of the Nuclear Energy Decree, the application for the decision-in-principle shall include an overview of the applicant's plans and available methods for arranging nuclear waste management. The submission of plans based on binding agreements involving matters such as the nuclear waste management of the nuclear power plant project cannot be expected during the decision-in-principle stage. This rule also applies to fuel supply management (section 24(g) of the Nuclear Energy Decree).

The Ministry of Employment and the Economy will provide local authorities, residents and municipalities in the immediate vicinity of the power plant with an opportunity to express their opinions in writing before the decision-in-principle is made. The process will be based on the overview of the power plant project published by the applicant, and the assessed environmental impact and safety of the plant. The assessment shall be made available to the public and, for instance, in the municipality intended as the site of the power plant it will be distributed to every household (section 13 of the Nuclear Energy Decree).

The Ministry will also arrange a public hearing, where members of the public will have the opportunity to express their opinions verbally or in writing. These responses will be submitted to the Government.

Pursuant to the Nuclear Energy Act, before making the decision-in-principle, the Government shall ascertain whether the municipality planned as the location of the nuclear power plant is in favour of the facility, and ensure that no facts indicating a lack of sufficient prerequisites for constructing and using a nuclear facility in a safe manner without causing injury to people, or damage to the environment or property, have arisen in the statement from STUK or elsewhere during the processing of the application. The Government's decision-in-principle shall be forwarded, without delay, to Parliament for perusal. Parliament may reverse the decision-in-principle or decide that it should remain in force as it stands.

1.3.3 Construction licence

The actual licensing procedure follows the Government's decision-in-principle. Construction of the nuclear power plant requires a licence issued by the Government, stating that the construction project is in line with the overall interests of society. Furthermore, plans for the plant with a view to safety must be sufficient, protection of workers, the population’s safety and environmental protection measures must have been taken into account appropriately when planning the operations, and the location of the nuclear power plant must be appropriate with respect to the safety of said operations.

Any decision regarding the construction licence shall describe how the EIA report and the related statement by the contact authority have been applied (section 13 of EIA Act).

During the construction licence application, checks will be made to ensure that a site has been reserved for construction in the local

detailed plan and that the applicant has possession of the site, as required for the operation of the plant (section 19(4) of the Nuclear Energy Act). Therefore, the planning process must be finalised by this stage (cf. section 9 of the EIA Act). However, the information and reports produced by the EIA procedure can be used in the planning process.

A hearing procedure involving municipalities, authorities and citizens will be established during the application process for the construction licence.

1.3.4 Operating licence

Operation of a nuclear power plant requires a licence issued by the Government. In order to receive a licence, the operation of the nuclear facility must be arranged so that it is in line with the overall interests of society, and so that the protection of workers, safety and environmental protection have been taken into account as appropriate.

A hearing procedure involving municipalities, authorities and citizens will be established during the operating licence application process.

1.3.5 Other necessary permits and licenses

Any operations causing a danger of environmental damage require a permit in accordance with the Environmental Protection Act. In the case of a condensing power plant, the thermal load of cooling water is the most significant impact requiring assessment. The operations are subject to a licence pursuant to the Environmental Protection Act (86/2000) and the Environmental Protection Decree (169/2000) issued on its basis. The environmental permit covers all issues relating to environmental impacts, such as emissions into air and water, waste issues (excluding nuclear waste), noise issues, and other issues relating to environmental impacts. Separate environmental permits are required for any operations during construction, and actual construction requires a building permit granted by the local authority.

In this project, the environmental permit authority is the Western Finland Environmental Permit Authority. The EIA procedure must be finalised before any permits can be granted.

A permit in accordance with the Waters Act (264/1961) is required in order to draw waters from the waterway. In this case too, the permit authority is the Western Finland Environmental Permit Authority.

Other technical permits associated with environmental impacts include reactor vessel permits and permits in accordance with the Chemical Safety Act.

2 Communicating the assessment report and related hearings

A public notice announcing the publication of the EIA report was published on 15 April 2008 in the following newspapers: Helsingin Sanomat, Hufvudstadsbladet, Loviisan Sanomat, Östra Nyland, Borgåbladet, Etelä-Suomen Sanomat, Kymen Sanomat, and Uusimaa. The public notice and the EIA report are available for viewing at the Ministry of Employment and the Economy website (address: www.tem.fi).

Members of the public were able to view the assessment report between 15 April and 16 June 2008 in the local government offices of Loviisa, Lapinjärvi, Liljendal, Pernaja, Pyhtää and Ruotsinpyhtää and the libraries of the above-mentioned municipalities. Together with the organisation responsible for the project, the Ministry organised a public meeting to discuss the project on 8 May 2008 in Loviisa.

The following organisations were invited to comment on the assessment report:

Ministry of the Environment, Ministry of the Interior, Ministry of Social Affairs and Health, Ministry of Defence, Ministry of Finance, Ministry of Transport and Communications, Ministry of Agriculture and Forestry, Ministry for Foreign Affairs, State Provincial Office of Southern Finland, Regional Council of Eastern Uusimaa, Eastern Uusimaa Fire and Rescue Services, Western Finland Environmental Permit Authority, Finnish Environment Institute, Radiation and Nuclear Safety Authority, Safety Technology Authority, Uusimaa T&E Centre, Occupational Safety and Health Inspectorate of Uusimaa, Regional Environment Centre of Uusimaa, City of Loviisa, Municipality of Lapinjärvi, Municipality of Liljendal, Municipality of Pernaja, Municipality of Pyhtää, Municipality of Ruotsinpyhtää, Confederation of Unions for Professional and Managerial Staff in Finland (AKAVA), Confederation of Finnish Industries EK, Finnish Energy Industries, Greenpeace, Loviisan puolesta ry, Central Union of Agricultural Producers and Forest Owners, Miljöringen rf, Central Organisation of Finnish Trade Unions, Finnish Association for Nature Conservation, Federation of Finnish Enterprises, Central Union of Swedish-speaking Agricultural Producers in Finland, Finnish Confederation of Salaried Employees, WWF, Fingrid Oyj, and Posiva Oy.

Comments were not received from the following organisations:

Ministry of Defence, Ministry of Transport and Communications, Western Finland Environmental Permit Authority, Finnish Environment Institute, Loviisan puolesta ry, Central Union of Agricultural Producers and Forest Owners, Central Union of Swedish-speaking Agricultural Producers in Finland, Finnish Confederation of Salaried Employees, and WWF.

The so-called Espoo Convention (Treaty Series of the Statute Book of Finland 67/1997) on the assessment of cross-border environmental impacts was also applied to the project. The parties to the Espoo Convention have the right to participate in the EIA procedure in Finland, if they so wish and if the negative effects of the project have a potential

impact on their regions. The Ministry of the Environment was responsible for the practical arrangements for conducting the international hearing.

In the assessment procedure with respect to cross-border environmental impacts, the Ministry of the Environment notified the authorities of the following countries: Swedish Environmental Protection Agency (Sweden), Ministry of the Environment (Denmark), Ministry of the Environment (Norway), Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Germany), Ministry of the Environment (Poland), Ministry of the Environment (Lithuania), Ministry of the Environment (Latvia), Ministry of the Environment (Estonia), and Ministry of Natural Resources (Russia).

After the programme phase of the project, the Federal Ministry of Agriculture, Forestry, Environment and Water Management (Austria) joined the procedure. In the reporting phase the Ministry of the Environment asked the Swedish, Norwegian, German, Polish, Lithuanian, Estonian, Russian and Austrian authorities for comments by 24 June 2008.

Sweden, Norway, Germany, Poland, Lithuania, Estonia and Austria submitted their comments on the EIA report. The Ministry of the Environment did not receive replies from Russia. If any of the potential participants in the cross-border procedure submit a comment at a later stage, it will be delivered to the organisation responsible for the project.

3 Summary of the comments and opinions submitted

3.1 Comments invited by the Ministry of Employment and the Economy

Ministry of the Environment

In its statement, the Ministry of the Environment pays attention to how the issues presented by the ministry in the statement on the EIA programme have been taken into account in the EIA procedure. At this point, the Ministry does not take a stand on the acceptability of the project or its environmental impacts or the necessity of the project in the first place.

In its statement on the EIA programme, the Ministry of the Environment proposed that the EIA report should separately handle at least the various reactor alternatives on the market that could come into question and their environmental impacts, as well as the differences between them with a view to nuclear safety. The EIA report briefly introduces some nuclear reactor types available on the market. The report fails to explore in detail the differences between the alternative reactor types (types of plants and reactor output) with a view to nuclear safety and environmental impact. The Ministry of the Environment regards this as a significant deficiency.

The Ministry of the Environment finds the assessment of the environmental impacts of the various plant alternatives from a

conservative perspective – i.e. in accordance with the highest possible environmental load – too broad and inadequate. The ministry regards the claim that there is not much difference in environmental impacts between the plant alternatives as misleading. According to the EIA report, the volume of cooling water and the heat load thus discharged into the sea as well as the amount of spent nuclear fuel depend on the output of the power plant. The total activity and the quantity of operating waste as well as the quantity and activity of decommissioning waste depend on the reactor type and output. The ministry proposes that the alternatives be explored in detail so that the analysis will show how the alternative with two smaller units differs from the alternative with one unit with a comparable output, in terms of environmental impact and nuclear safety. The purpose of the EIA procedure is not to evaluate the project and its various alternatives together with the measures intended to alleviate their impacts, but to make an express distinction between them, and elucidate the environmental impacts of various alternatives, comparing them with each other.

In its statement on the EIA programme, the Ministry of the Environment suggested that the report should clearly present the alternative cooling water intake and drainage sites, the related environmental impacts, and the essential differences between the alternatives. The EIA report fails to present the cooling water calculation results for one intake and drainage site (O3 and P3), and the report does not clearly explain why this analysis has been left out. Another question remains open as to why the intake and drainage sites have been grouped together as intake and drainage areas, and whether the environmental impacts inside the area are the same regardless of where the intake and drainage sites are located.

The Ministry of the Environment points out that, on the basis of the information presented in the report, it is not possible to estimate the reliability of the results of the cooling water model and is of the view that the assessment of the impacts on waterways should be supplemented with documentation on the cooling water model employed and the uncertainty factors associated with it. The results for all proposed intake and drainage areas should be shown and comparisons made between them, and possible differences between the various intake/drainage sites within the intake/ drainage area should be brought out. The transfer of the cooling water intake and drainage sites of Loviisa 1 and Loviisa 2 units further out to the sea should also be included in the overall assessment. In the EIA procedure, the impact of the project on Natura 2000 areas has been assessed on the basis of the cooling water model. As far as the impact of cooling waters is concerned, the Ministry of the Environment emphasises that the modelling and the methods used as the basis for the conclusions drawn in the Natura assessment must be sufficiently reliable.

In its statement on the EIA programme, the Ministry of the Environment proposed that the report include an assessment of the impacts of risks associated with climate change on the operation and safety of the power plant and a report on what precautions will be taken against these risks. The ministry considers it a deficiency that the EIA report lacks an assessment of what kind of impacts oil catastrophes on the Gulf of Finland, and phenomena associated with climate change mentioned in

the EIA report, could cause in terms of the safety of the plant and fails to describe the precautions taken to avoid them.

In its statement, the Ministry of the Environment points out that the data concerning radiation doses and fallout levels caused by a Level 6 accident on an INES scale is not identical in the tables and the maps presented. The EIA report does not provide a reason for the differences.

The new nuclear power plant unit is a project subject to the general convention (so-called Espoo Convention) on the assessment of cross-border environmental impacts. On this basis, the Ministry of the Environment has reserved the Baltic Sea region states and, upon special request, the Austrian authorities the opportunity to participate in the project's EIA procedure. These countries are primarily interested in the environmental impacts of radioactive substances potentially transported outside the borders of Finland in case of an emergency. The matter is handled briefly in chapter 13.3.2 "Use of land and water areas" and presented in a table of radiation levels at certain distances from the power plant. It is good that such a review has been included in the report, but examining the cross-border environmental impacts in a separate section, as has been done in the document summary translated into various languages, would have been clearer. The Ministry of the Environment points out that the ^{131}I fallout levels presented in table 13-1 of the EIA report or table 2 of the document summary are incorrect.

The Ministry of the Environment points out that both its comment on the EIA programme and the statement by the contact authority emphasised that the EIA report should examine nuclear waste management as a whole, including the extensions of the necessary storage sites and final disposal facilities and their environmental impact as well as any impact on the current licensing of nuclear waste plants. According to the Ministry of the Environment's assessment, this analysis is partly insufficient and needs to be supplemented. The environmental impact of the extension of the final disposal facility for low- and intermediate level waste is mentioned only briefly and the licensing procedure required for the extension has not been explained. As concerns the intermediate storage of the spent nuclear fuel from the new power plant unit, the report does not mention whether the facility is intended to be water- or air-cooled, neither does it present an environmental impact assessment, nor handle the licensing procedure for intermediate storage. The final disposal project for spent nuclear fuel is referred to only very superficially and the environmental impact of final disposal is not explained very clearly. The report fails to mention that the final disposal of spent nuclear fuel from Loviisa 3 requires a new decision-in-principle.

One of the key objectives of the EIA procedure is to enhance the possibilities of citizens to participate and influence decision-making. The report (chapter 2) briefly mentions the subjects that have been discussed in audit group, municipal advisory group and EIA working group meetings and in public meetings. It points out that the comments of the audit group have been taken into account in the implementation of the EIA procedure and the EIA report, but does not specify the matter in any greater detail. The report does not mention whether the matters brought up in other group meetings and public hearings have had an

effect on the EIA procedure. The report does not say anything about the basis on which the participants have been selected or attend group meetings. Based on what has been presented in the report, it can be concluded that opportunities for presenting opinions and participating in the EIA procedure have been arranged, but it remains unclear whether this participation has had any actual impact on the assessment of the environmental impact. Here, the Ministry of the Environment reiterates the point already made in the statement on the EIA programme, that the report should include the results of participation and their effect on the assessment of the environmental impact. In addition, the report should cite the basis upon which the participants have been selected or attend meetings. The Ministry of the Environment finds the EIA report lacking in these respects.

In the summary of its statement, the Ministry of the Environment advises that the handling of the following matters in the assessment report is especially inadequate:

- Reactor options (types and sizes of plants), their environmental impact and differences between them with a view to nuclear safety;
- The cooling water model used for the assessment of the impact on waterways and the uncertainty factors associated with it;
- The comparison between the alternative cooling water intake and drainage areas (and sites) and an overall assessment of the impact of the transfer of the cooling water intake/drainage sites of Loviisa 1 and Loviisa 2 further out to sea;
- The extensions of storage and final disposal facilities needed for nuclear waste management and their environmental impact, and the related impacts on the current licensing of the nuclear waste plants;
- The impact of participation on the assessment procedure and selection of the participants.

The Ministry of the Environment is of the view that supplementary information must be provided on the inadequacies specified above, and submitted to the contact authority before moving on to the potential filing of the application for a decision-in-principle. The Regional Environment Centre of Uusimaa will give a separate statement on the Natura 2000 assessment after supplementary information concerning cooling waters has been provided.

Ministry of the Interior

The Department for Rescue Services of the Ministry of the Interior states that the EIA report has been comprehensively prepared and that the description of emergency preparedness arrangements and protective measures for the public under section 12.4 is adequate. During the planning phase of the potential implementation of the project, the organisations responsible for the implementation must ensure, in co-operation with the local rescue services and sectors participating in the rescue services, that rescue services are maintained at an adequate level during the construction and use of the plant.

Ministry of Social Affairs and Health

In its statement, the Ministry of Social Affairs and Health points out that, with its appendices, the EIA report comprises a book of more than 200 pages, describing the development of the demand for electricity in Finland, the project itself, the purpose and participation process of the EIA procedure, a technical description of the project, the legislative and planning environment concerning licensing, including safety viewpoints and monitoring obligations, and the relationship between this project and the plans and programmes concerning the exploitation of natural resources and environmental protection. The EIA report defines the necessary geographical limits for the assessment of the environmental impact and describes the present state of the environment, and the impacts of the construction, normal use and decommissioning of the plant on the environment and people, while also considering the impact of the zero option. It also explores nuclear safety and radiation protection viewpoints under normal and emergency circumstances, presents the nuclear fuel chain from production to final disposal, ponders ways of reducing the harmful effects on people during the entire lifecycle of the plant, and describes the monitoring programme with respect to the environmental impact.

The EIA report is comprehensive when it comes to the presentation of viewpoints associated with environmental health and radiation protection under the normal operation of the plant. An overall description of nuclear waste and hazardous waste management has also been provided.

The EIA report describes the operating principles of both a pressurised water reactor and boiling water reactor in a comprehensible manner as well as 1) the principle of in-depth security thinking, which is further enhanced by 2) multiple barriers independent of each other, and 3) new technical requirements aimed at increasing the management of a severe reactor accident. The descriptions of these safety principles/requirements help to provide a concrete understanding of why the risk of a severe nuclear accident is trivial. Even in the worst case scenario, the consequences of an accident for the general population would remain insignificant and acceptable. The health effects/radiation doses to which the public would be subjected have been systematically and informatively compared to exposure caused by other sources of radiation and their irrevocable (deterministic) and statistic (stochastic) health effects.

The EIA report includes an assessment of social impacts, such as (demographic) effects on the population and employment, and the impact on tax income (both personal and corporation tax revenues). The assessment is based on a survey sent to both permanent and summer residents. The ministry draws attention to the modest response rate, but comes to the conclusion that, in spite of the low response rate, the assessment of social impacts can be deemed adequate.

The Ministry of Social Affairs and Health is of the opinion that the EIA report Fortum Power and Heat Oy commissioned from a consultant is written in a comprehensible manner, based on realistic assumptions, and describes the project’s health and social impacts with sufficient accuracy. The Ministry of Social Affairs and Health regards the report as

being based on appropriate expertise in the basic principles of nuclear safety and radiation protection.

Ministry of Finance

According to the statement of the Ministry of Finance, Loviisa 3 is an extensive project of broad regional and national importance. The Ministry takes the view that the key questions of the project have been assessed comprehensively under the EIA procedure.

The Ministry of Finance proposes a few issues that should be taken into account in the further preparation of the project. One such issue is the non-implementation of the project. Furthermore, it was not possible to assess the total economic impact of the project in the EIA report. Naturally, the organisation responsible for the project has not been in a position to assess the various energy policy alternatives, responsibility for which belongs to the Ministry of Employment and the Economy.

The Ministry of Finance is of the opinion that the EIA report available for review does not provide enough information on questions related to its area of expertise, supposing that the ministry is obliged take a stand on the issue due to an application for a decision-in-principle with a view to the overall interests of society. Accordingly, the ministry requests that the Ministry of Employment and the Economy ensure that, during potential further preparation of the issue, more accurate assessments of the above-mentioned questions be provided, including their overall economic impact, so that the ministry can take an actual stand on the issue when necessary.

Ministry of Agriculture and Forestry

The Ministry of Agriculture and Forestry is of the opinion that, in accordance with the statement provided by the ministry, the EIA report describes changes in the sea level and potential sea levels, and takes climate change into account. The ministry points out that the uncertainties associated with the above-mentioned issues should also have been included in the figures. The EIA report lacks essential information about the planned elevation level of the new plant unit. The EIA report also fails to explain the planned precautions should the sea level rise.

Furthermore, the ministry points out that key questions related to cooling water intake have been taken into account in the EIA report. However, the ministry is of the opinion that the environmental impacts have not been examined from the point of view of fish farming. The ministry therefore proposes that the EIA report be clarified in this respect.

The ministry feels that the EIA report does not present any information on agricultural production, even though the ministry proposed the need for such an assessment in its statement on the EIA programme. In addition, the report lacks an assessment of the kind of impact changes in land use would have on the agricultural or forestry industry.

Ministry for Foreign Affairs

The Department for External Economic Relations of the Ministry for Foreign Affairs points out that the Ministry of the Environment has informed the environmental authorities of the Baltic Sea region countries and Norway about the launch of the project's EIA procedure. The ministry states that, in the spirit of the Espoo Convention, it would be useful to receive a sufficient amount of information reciprocally on the assessment of cross-border environmental impacts.

Furthermore, the ministry points out that the distance from the cooling water tunnel of the Loviisa 3 project to the international zone seems to be adequate.

State Provincial Office of Southern Finland

According to the State Provincial Office of Southern Finland, the review of the impacts on health is good. However, according to the State Provincial Office, more attention should be paid to the issues described in the following. Attention must be paid to traffic safety with a view to light traffic on road sections where the amount of heavy traffic will increase significantly. If the noise levels during construction or use of the plant exceed the standard values for residential buildings, an evaluation should be performed of whether the indoor noise exceeds the set values. The State Provincial Office requires that the tremors caused by construction do not compromise the safety of the final disposal facility of low- and intermediate level operating waste.

The State Provincial Office states that the impact on people has been examined from various perspectives. The citizens and municipalities have been offered opportunities to participate in the procedure. It remains unclear whether municipal social services officials have been involved as experts in the assessment of social impacts. It also remains unclear whether people with impairments and the most vulnerable population groups have been guaranteed the opportunity to participate.

The State Provincial Office considers it important that, during the implementation of the project, the monitoring of the impacts on people continue from various perspectives, taking account of the various viewpoints presented by citizens. Close co-operation with municipalities and municipal social and health officials is also important.

Regional Council of Eastern Uusimaa

The Regional Council of Eastern Uusimaa maintains that the EIA report has explored the various environmental impacts of the project. The council is of the opinion that it would be necessary to thoroughly investigate the possibility of the co-generation of power and heat, which would reduce the warming of seawater and facilitate the heating of, for instance, the capital region and promote the mitigation of climate change.

Eastern Uusimaa Fire and Rescue Services

In their comment, the Eastern Uusimaa Fire and Rescue Services bring up the need to assess the combined impact of the planned nuclear power plant units, since a significant concentration of activity, both in terms of personnel and operations, is involved. The issue involves the impact of two separate nuclear power plants on each other in both exceptional and emergency situations, and in the event of large-scale accidents, during so-called normal circumstances.

If the project proceeds to the implementation phase, a centralised study should be conducted to map out the qualitative and quantitative needs of various services in order to ensure the availability of public administration services. In addition, during further preparation, attention should be paid to activities remaining outside the actual construction area, such as residential areas and sea and traffic routes and their technical solutions and arrangements, the administration of safety arrangements, monitoring systems, sectors responsible for various activities, and quality management.

Radiation and Nuclear Safety Authority (STUK)

STUK states the following views concerning the assessment of radioactive emissions under operating circumstances. Based on experience, the emissions from Finnish nuclear power plants causing exposure to radiation have remained way below the specified limits. It can be justifiably expected that, were the new nuclear power plant units to be added, the situation would become no worse in this respect.

As concerns the radiation control and situation of the surrounding areas, STUK states the following. The EIA report does not make any reference to extensive publications covering the radiation control of the surrounding areas of Finnish nuclear power plans. These publications describe sampling and analysis methods using various examples, and present estimates of the control results over many years.

With respect to the radiation effect of emissions from severe accidents, STUK states the following. According to STUK’s estimate, the estimated impacts of an accidental emission in the immediate vicinity correspond sufficiently with the results of the safety analyses of the license holder of the Loviisa nuclear power plant. The results of the assessment of the impact of the long-range transportation of emissions largely depend on the assumptions used for emission dispersion and dose calculation, and it is impossible to present any unambiguous miscalculation margins.

With respect to the assessment of cooling water intake and drainage, STUK points out the following. Estimates concerning the ultimate limits of sea level changes affect the elevation of the installation and its protection against changes in sea level. STUK will monitor the issue, to ensure that these factors are properly taken into account in the implementation of the project. According to STUK, remote drainage would be the only alternative that would not increase the thermal load and eutrophication of Hästholmsfjärden. As far as the remote intake

arrangements presented in the EIA report are concerned, STUK has no comments to make at this stage.

Concerning information on nuclear waste management, STUK states the following. The present storage practice for spent nuclear fuel and the alternative air-cooled dry storage are both tried and tested technologies. They can be implemented in an acceptable manner with a view to nuclear safety.

Safety Technology Authority

The Safety Technology Authority has no comments to make on the EIA report.

Uusimaa T&E Centre

According to the Uusimaa T&E Centre, the impacts of the project on fish stocks and the fishing industry have been assessed with sufficient accuracy. The impact will remain nominal and will mainly be caused by the increased discharge of cooling water into the nearby sea area. The T&E Centre points out that, if the project is implemented, the impact can be verified more accurately by means of the watersystem and the fishing industry monitoring to be prescribed by the licences.

Occupational Safety and Health Inspectorate of Uusimaa

The Occupational Safety and Health Inspectorate of Uusimaa finds that the EIA report is sufficiently comprehensive.

Regional Environment Centre of Uusimaa

The Regional Environment Centre of Uusimaa states that the EIA report for Loviisa 3 has comprehensively examined the environmental impacts of the nuclear power plant, but in many general issues the examination lacks quality and sufficient detail. From the readers' viewpoint, the structure of the EIA report is difficult since certain matters are handled under various chapters.

The Regional Environment Centre of Uusimaa proposes that, with a view to further planning of the project, the EIA report be supplemented with the following overall topics:

- Exploration of the opportunities to implement the co-generation of power and heat or process steam;
- Comparison of all proposed cooling water intake and drainage areas, including the cooling water intake and drainage areas of Loviisa 1 and Loviisa 2 in the overall assessment;
- Documentation of the cooling water model used and the related uncertainty factors, alongside supplementing the assessment of the impact on waters based on this model, where necessary;
- The revision of the Natura 2000 assessment;

- Documentation of the present state of the soil, bedrock and groundwater;
- Detailed planning of the handling, storage, processing and use of extracted soil and excavation material generated during the construction of the power plant;
- Foresight of environmental risks associated with the transportation of fuel;
- Investigation of the environmental and health impacts of the final disposal of low and intermediate level radioactive waste;
- Planning of waste management and responsibilities concerning radioactive waste generated as the result of a disturbance or an emergency situation;

The Regional Environment Centre of Uusimaa proposes that the monitoring of the habitats and groundwater used as a basis for the selection of Natura 2000 areas be added to the monitoring programme proposed in the EIA report.

In the opinion of the Regional Environment Centre of Uusimaa, the organisation responsible for the project has succeeded in the participation and interaction arrangements.

The Regional Environment Centre of Uusimaa will provide a separate statement on the Natura 2000 assessment after the insufficient information concerning cooling waters has been supplemented.

According to the Regional Environment Centre of Uusimaa, the EIA report presented frequencies of the occurrence of sea floods and an estimate of the increasing effect of climate change on flooding. However, the report does not state at what risk level and in what manner sea floods have been taken into account in the planning and operation of Loviisa 3. The risk level and danger of flooding must be estimated in connection with the area planning process and reconfirmed at the stage when the building permit is granted.

The Regional Environment Centre of Uusimaa points out that, in the EIA report, the sea construction work has been described in a somewhat general fashion and that all such works require an application for a permit in accordance with the Water Act.

City of Loviisa

According to the statement by the City of Loviisa, the EIA report is comprehensive and expertly drawn up. It presents an adequate account of the short- and long-term impacts of the nuclear power plant project on the natural environment, landscape, built environment, as well as the surrounding society and its activities. The EIA report provides an adequate image of the separate impacts of the various phases of the project’s lifecycle and also of the overall impact of the project until the decommissioning of the plant. Furthermore, it is pointed out in the statement that the report pays special attention to the specification,

monitoring and management of the risks associated with the use of the plant, and their impact.

The statement avers that the impact of the construction of cooling water tunnels may be significant at local level. The intake and drainage sites with locking devices would be located on rocky islands or islets, access to which might have to be limited locally. The construction will also change the flow conditions, which constitutes a disturbance with local effects, experienced during the construction process. The negative effects will impact on holiday housing and the natural environment. It is mentioned in the City of Loviisa's statement that the negative effects will be local and may be more extensive than estimated, but they should not be decisive from the point of view of the social importance and overall economic impact of the project.

Furthermore, the City of Loviisa states that when planning the plant, investments should be made in the minimisation of the thermal load discharged into the sea and in the design of the installation with respect to the production of district heating.

Municipality of Lapinjärvi

According to the statement by the Municipality of Lapinjärvi, the EIA report is comprehensive and expertly drawn up. It is an adequate account of the short- and long-term impacts of the nuclear power plant project on the natural environment and landscape, built environment, and the surrounding society and its activities. The EIA report provides an understandable and adequate image of the separate impacts of the various phases of the project's lifecycle and also of the overall impact of the project until the decommissioning of the plant.

The municipality also mentions that, from the municipality's point of view, the most important impacts will become visible in the population structure, employment rate, occupations and habitation. These circumstances have been examined with sufficient accuracy.

Municipality of Liljendal

According to the statement by the Municipality of Liljendal, the viewpoints presented in the programme and the comments on it have been taken into account in the EIA report. The EIA report provides an adequate overall picture of the impact of the project. The statement mentions that, in terms of the environmental impact, combined power and heat production would be the preferred alternative.

Municipality of Pernaja

According to the statement by the Municipality of Pernaja, the EIA report fails to assess a situation where there would be more than three nuclear power plant units in the same area. The quality of the report is lacking when it comes to the assessment of the impact of cooling water, since the starting values used are largely mean values and hypotheses, not

actual measured values. However, the EIA report is adequate since it observes the legal parameters, deals with the significant impacts at a sufficient level, and is of high informative value.

Municipality of Pyhtää

In its statement the Municipality of Pyhtää points out that the EIA report has taken account of the statements provided and addressed the impacts on Pyhtää. Pyhtää will experience positive economic and employment impacts during the construction phase. Special attention should be paid to traffic safety, since the volume of traffic is increasing.

Municipality of Ruotsinpyhtää

The Municipality of Ruotsinpyhtää approves of the fact that no plans have been made to further increase the environmental load of Lappomträsket from the present level. It is important that the opportunities to reclaim heat from cooling water be investigated. It is also important that an impact assessment be conducted for a situation in which there would be a nuclear power plant within the area of the municipality.

Confederation of Unions for Professional and Managerial Staff in Finland (AKAVA)

In their statement, the Finnish Association of Graduate Engineers TEK states that the EIA report includes a comprehensive description of the impacts of the power plant during its construction, use and after decommissioning, based on the long-term experience of those responsible for the project. In general, the impacts and preparation for them are well described. In addition, the need for the project has been well explained. The implementation of a new unit in the near vicinity of the existing power plant units will not significantly change the nature of Hästholmen or its environs. TEK’s statement proposes an alternative way of reducing the volume of traffic, which would lower vehicle numbers and further reduce traffic emissions. The nuclear safety and the radiation effect of the new plant have been described accurately, and arrangements for nuclear safety have been well handled. Estimates view the radiation impact as remaining quite low.

The association considers the extensive communication and interaction on the project and the involvement of interest groups as particularly positive factors. All key interest groups have been provided with an opportunity to participate and express their opinions about the project in its various phases.

In its comment, the Finnish Medical Association states that the combined condensation heat of the three nuclear power plant units contains substantial heating potential. It would therefore be necessary to investigate the profitability of building district heating pipes or tunnels in the capital region or Kotka area.

Confederation of Finnish Industries EK

The EIA report has been drawn up in a comprehensive fashion. It includes all information and reports of fundamental importance in accordance with the EIA Decree and takes account of the statement by the contact authority.

Finnish Energy Industries

The Finnish Energy Industries regards the EIA report as expertly drawn up and comprehensive. The assessment has taken advantage of the research information the company has acquired on the environment of Loviisa over past decades. Linkage to the national grid has been taken into account and handled to the extent required by the contact authority.

Greenpeace

According to the statement by Greenpeace, the EIA report makes no attempt to assess the impact of a severe nuclear accident. According to the organisation, the emission level used as a starting point for a nuclear accident is only about a ten thousandth part of the radioactivity contained by a modern reactor. On the basis of this, Greenpeace requests that the volume of radioactive substances contained in a modern high discharge burnup nuclear reactor be used in such an assessment. Greenpeace criticises the provision the company has made for the expenses of a nuclear accident and health hazards.

Greenpeace points out that sources must be presented for the claims included in the EIA report concerning the durability of copper canisters and the environmental impact of the excavation of uranium.

Greenpeace further points out that the proposed nuclear power plant project would have no impact on the need to reduce greenhouse gas emissions in Finland or Europe, since if the project was not implemented, Finland would achieve the set emission targets in some other way. A genuine alternative to a nuclear power plant would be an energy solution which would address energy needs by improving energy efficiency and increasing the versatile use of renewable energies, without using nuclear or fossil fuels or increasing energy imports.

Miljöringen rf

In its statement, Miljöringen rf criticises the low response rate of the resident survey, the overestimation of the growth of electricity consumption and the claim that nuclear power production would not produce carbon dioxide. It is proposed in the statement that, from the point of view of emissions, the whole lifecycle of the plant must be assessed.

The statement hopes for an assessment of how the intake of cooling water would affect fish and fry.

Central Organisation of Finnish Trade Unions

In its statement, the Central Organisation of Finnish Trade Unions refers to the key issue that the EIA report mentions the future possibility of using nuclear power for the co-generation of power and heat. According to the organisation, the company must take account of any potential views presented by STUK in their entirety in the EIA process, since one of the key objectives is to ensure the undisturbed operation and safety of the plant under any circumstances.

The Central Organisation of Finnish Trade Unions considers it important that the company continue its interaction with local residents and emphasises that trade union representatives, of all employee groups, must be kept appropriately informed of the project.

The EIA report provides a good basis for further preparation of the project.

Finnish Association for Nature Conservation

The Finnish Association for Nature Conservation states that there are no valid justifications for a power plant unit and that the delimitation of the alternatives and their presentation is insufficient. As concerns the impact assessment, the association points out that the impact of the cooling waters should have been taken into account in a larger context, especially in a situation where the cooling waters of three reactors are in question. The association feels that the reproduction of newcomer species and their impact on the sea ecology locally and on a wider perspective has not been sufficiently assessed. In the assessment of the employment impacts, there is no mention of the estimated share of foreign workforce.

According to the association, the EIA report should have been clearer in its descriptions of the safety risks of nuclear waste and final disposal, and their potential realisation, and the environmental and social impacts of nuclear fuel production in quarries from which the uranium for the Loviisa power plants is acquired. Insufficient attention has been paid to the avoidance and management of risks related to the transport of uranium. The possibility of terrorism or human error and the accidents caused by them have not been examined and assessed sufficiently.

The EIA report has not taken the consequences of accidents or global warming sufficiently into account, or the impacts of risk factors due to extreme weather conditions such as water level increases caused by winter storms. Furthermore, the EIA report fails to present a comprehensive account of the factors that might cause an accident.

Federation of Finnish Enterprises

The Federation of Finnish Enterprises points out that, according to a comprehensive review, the project does not have any significant environmental impacts. In addition to negative environmental effects during construction, the most important negative effects are associated

with cooling water intake and drainage. The negative impact of cooling water drainage could be reduced by reclaiming the heat for the production of district heating.

The Federation of Finnish Enterprises is of the opinion that a comprehensive cost/effect survey should be undertaken of the utilisation of cooling water for heating the capital region. In addition, the licensing conditions should require that the installation be built in a manner technically facilitating heat reclamation, or that the heat be utilised for district heating immediately as of the launch of the plant.

Fingrid Oyj

In its statement, Fingrid Oyj points out that plans have been drawn up to link the new plant to the national grid with a separate switch plant to be built in the near vicinity of the existing Loviisa plant area. The new switch plant would require a new 400 kV power line to the Kymi-Tammisto line and a new link in the direction of Hausjärvi-Hikiä substation. The EIA procedure concerning the power lines ended in 2004.

The company also points out that the location of the plant would affect the construction of the necessary connecting lines and reinforcement of the national grid. Fingrid Oy will launch the EIA procedure concerning these once the decision-in-principle on the project has been made. The final technical solutions of the necessary connecting lines will be made after the final plant size and technical specifications of the Loviisa plant have been determined.

Posiva Oy

Posiva Oy avers that it has had the opportunity to comment on the EIA report in various phases during its preparation. Fortum Power and Heat Oy has taken Posiva's points of view into account in the EIA report to a sufficient extent.

3.2 Statements from the international hearing

Sweden: Swedish Environmental Protection Agency

Sweden's environmental authority, the Swedish Environmental Protection Agency (Naturvårdsverket), held a public hearing and received comments from 14 authorities and organisations. In its statement, Sweden's nuclear safety authority, the Swedish Nuclear Power Inspectorate (Statens Kärnkraftinspektion SKI), views the EIA report as fulfilling the requirements of Directive 97/11/EC and Swedish environmental and nuclear legislation.

In the other statements invited by the Swedish environmental authority, an emphasis is laid on the assessment of radioactive emissions from various perspectives. According to the Swedish Radiation Safety

Authority SSI (Statens strålskyddsinstitut), the EIA report lacks information on how emissions of radioactive substances will be prevented and on the impacts of the transportation of fresh fuel on Sweden.

Attention was also paid to alternatives to nuclear power. For instance, the Swedish Energy Agency suggests a description of energy efficiency and energy conservation efforts.

Norway: Ministry of the Environment

Acting as Norway's contact authority, the Ministry of the Environment points out in its statement that, according to table 13-1, the inhabitants in the near areas would be exposed to relatively low doses of radiation in any accident at the Loviisa 3 nuclear power plant. Norway points out that the report should have assessed the probability of an accident in which the five protective structures of the unit are destroyed. In addition, the environmental impact of the said accident should have been assessed.

Germany: Innenministerium Mecklenburg-Vorpommern

Acting as the contact authority for Germany, Innenministerium Mecklenburg-Vorpommern is of the view that the reactor safety and the intermediate storage of spent nuclear fuel require additional clarification. Germany hopes to receive answers to the questions it has posed in its letter.

Estonia: Ministry of the Environment

Acting as Estonia's contact authority, the Ministry of the Environment points out in its statement that the EIA report meets the requirements of the Espoo Convention, and that it contains an adequate description of the environmental impact of emergency situations. The EIA report might have included a description of the responsibilities and tasks of the parties involved as well as plans for informing the neighbouring countries in case of an accident. In addition, it might have contained a more precise description of the monitoring of environmental impacts.

The statement also brings out the fact that a public hearing was organised in Estonia on 12 June 2008 and the Estonians had an opportunity to express their opinions or give their statements between 23 May and 16 June 2008.

Lithuania: Ministry of the Environment

The Lithuanian Ministry of the Environment poses some questions in its statement, and hopes that Fortum Power and Heat Oy will answer these questions in writing. The questions concern, for instance, emission limits.

Austria: Federal Ministry of Agriculture, Forestry, Environment and Water Management

Austria's Federal Ministry of Agriculture, Forestry, Environment and Water Management is acting as the country's representative in the procedure in accordance with the Espoo Convention. It sent a letter to the State of Finland in February 2008, in which Austria announced that it would join the EIA procedure.

In June 2008, Austria provided Finland with a report by the Austrian environmental authority Umweltbundesamt (in collaboration with the Austrian Institute of Ecology and Lebensministerium) "NPP Loviisa-3 Expert Statement to the EIA Report", undated expert report, Vienna 2008 (66 pages).

According to the report, the project does not fulfil the requirements of the EC EIA Directive (EC 97/11) and Espoo Convention, since the EIA report does not adequately introduce the project and its alternatives. Because of these insufficient descriptions, it is impossible to estimate the cross-border impacts. According to the report, the level of emissions in possible emergency situations cannot be assessed without knowing, for instance, the reactor type of the power plant unit in question.

The Ministry of the Environment organised a consultation with Austria in accordance with the Espoo Convention in Helsinki on 27 June 2008. After this, Austria sent a letter on 17 July 2008, setting forth recommendations for Finland concerning the EIA procedure. The recommendations concern the phenomena associated with a severe reactor accident, in particular the so-called source term. Austria hopes for an exchange of information on safety and feasibility assessments.

Poland: Ministry of the Environment

According to the Ministry of the Environment, acting as Poland's contact authority, Poland has no comments to make on the documents. Poland hopes to continue being informed about the project in the future.

3.3 Other statements and opinions

This summary will raise issues and views presented or emphasised in other statements or opinions. A total of 26 other statements or opinions were submitted, of which 13 represented corporations, organisations or networks and 13 came from private citizens. Lists of names opposing the Loviisa 3 project collected by Bundesverband Bürgerinitiativen Umweltschutz e.V. were also submitted to the Ministry of Employment and the Economy.

The following corporations presented a statement or opinion: Atomfreie Zukunft, The Edelleen ei ydinvoimaa popular movement against nuclear energy, the international network "Artists for A Clean Future", Huntsmen of Loviisa Region, Loviisa movement, Women against Nuclear Power, Women for Peace, Women's Network, ProSaaristo, Réseau Sortir du nucléaire, Strömfors och Pernå Fiskeområden, Umweltinstitut München e.V. and VSR-Gewässerschutz e.V.

Several statements and opinions referred to the fact that the assessment of environment impacts should be supplemented by taking account of the entire lifecycle of the project, including the environmental impact of uranium processing, use of the nuclear power plant, including accidents, decommissioning of the power plant units, and nuclear waste management and the related transports.

The statements also addressed the project's social significance and brought up the need to assess other alternative means of energy production. In addition to the topics mentioned above, many of the statements or opinions did not present any viewpoints related to the EIA report, but presented objections to the use of nuclear power in general.

Kai Virtanen presents his opinion that the EIA report did not sufficiently handle the question of nuclear waste management, particularly the final disposal of spent fuel, emissions and risks.

Huntsmen of Loviisa Region, *ProSaaristo* and S*trömfors och Pernå Fiskeområden* presented separate statements where they pay attention to cooling waters and the assessment of their impact. *Huntsmen of Loviisa Region* pays attention to the water quality of nearby waterways. *ProSaaristo* points out certain deficiencies in the modelling of cooling waters. *Strömfors och Pernå Fiskeområden* considers the impact of cooling water on fish stocks as the most significant impact of the project, and proposes a monitoring programme for fish stocks.

The Loviisa movement presents its assessment of the EIA procedure and points out that alternative views should have been observed more effectively. Furthermore, the association criticises the composition of the audit group, consisting of various interest groups.

4 Statement by the contact authority

The preparation of the statement by the Ministry of Employment and the Economy (hereinafter MEE) is based on the statement on the EIA programme given by the contact authority (Statement by MTI 6/815/2007, 16 October 2007), the requirements of the EIA Act and Decree (EIA Act section 1, EIA Decree sections 9 and 10), statements and other comments.

4.1 Project description and the alternatives

Information on the project and project alternatives, including not implementing the project, the purpose of the project, the planning stage, location, organisation responsible for the project, plans, permits and other comparable decisions, and the planning and implementation schedule are presented in chapter 1 of this statement and in the EIA report. In the MEE's view, the description meets the requirements of section 9 of the EIA Decree.

The land use needs of the new nuclear power plant unit are outlined in the EIA report. Final disposal of spent nuclear fuel and power plant waste, power transmission links, road connections, combined power and

heat production, Teollisuuden Voima Oyj's nuclear power plant project, and Fennovoima Oy's nuclear power plant project are mentioned as other projects associated with the new nuclear power plant unit. In the MEE's view, the description meets the requirements of section 9 of the EIA Act.

The EIA report presents the volumes and uses of excavation and quarrying masses, the use of raw water, volume of wastewater, volume of traffic, noise, dust, exhaust emissions, radioactive emissions into the air, other emissions, and cooling water. In the MEE's view, the description meets the requirements of section 10 of the EIA Decree set for the description of the project's technical data.

The EIA report describes the suitability of the project vis-à-vis the combined provincial and regional plan, the provincial plan pending, the comprehensive plan, the draft of the coastal comprehensive plan, and the town plan. The EIA report assesses the relationship between the project and the environmental protection regulations. This assessment is based on the requirements of the acts on nuclear energy, environmental protection and waste, and standard noise values. Furthermore, it assesses the relationship between the project and national and EU plans and programmes, including protection programmes. In the MEE's view, the descriptions and assessments meet the requirements of section 10 of the EIA Decree.

The EIA report also describes the present state of the environment on the basis of information presented in the EIA programme. In addition, the report includes data on the population and employment, the economy and services, the seismology of the region, ground fauna, and newcomer species. According to the Ministry of Agriculture and Forestry, the description lacks information on the region's agricultural production (feed production, pasturage, animal husbandry and food production). According to the Regional Environment Centre of Uusimaa, the ground and bedrock information should be supplemented with data on the rock types, fragmentation zones, fracture directions and hydraulic conductivity of the bedrock. In the MEE's view, information concerning agricultural production should have been included in the EIA report. The measurement of the ground and bedrock data for the final disposal facility for operating waste forms part of the control of radiation safety, and responsibility for that belongs to STUK. Furthermore, the MEE is of the opinion that the description presented as part of the EIA procedure is adequate.

In its statement concerning the EIA programme, the contact authority requires that the EIA report include a review of current nuclear power plant types on the market which are suitable for the project under review. In the EIA report, the type of the plant has been defined as a lightwater reactor plant. The report introduces ten commercial plant options. The alternatives have been assessed on the basis of their readiness for use and user experience and their market position. In addition, the report includes an assessment of whether the options offered by various suppliers have passed the EUR inspection procedure. In the MEE's view, the description is adequate.

In the statement concerning the EIA programme, the contact authority recommends that the EIA report include a brief description of the cost structure of the project and its alternatives. The MEE points out that the EIA report presents the investment expenditure on the project, its distribution, and the assessment of its domestic content. Corresponding information is missing as far as the project options are concerned.

In the statement concerning the EIA programme, the contact authority requires that the EIA report introduce energy efficiency and conservation efforts undertaken by the organisation responsible for the project. As concerns Fortum's own power plants, the EIA report mentions, for instance, the enhanced efficiency of the power plants and reduction of their energy consumption. Additional examples mentioned include increases in the outputs of nuclear and hydropower plants, the increased co-generation of power and heat, and changes in the fuels used. The statements proposed that the report include a review of energy conservation and the more efficient use of energy as alternative options, a more in-depth introduction on renewable forms of energy, and the presentation of other energy political opinions. Furthermore, the MEE points out that the organisation responsible for the project is a company that produces and sells electricity. In other words, the company itself has limited opportunities for accessing significant means of energy conservation or improving the efficiency of energy consumption. The MEE considers the description of the energy conservation measures and measures for improved efficiency of energy consumption provided by the responsible organisation as adequate.

The MEE points out that the report on the significance of a new nuclear power plant or plants to the national energy supply (Nuclear Energy Act, section 14), to be submitted to the Government for obtaining a potential decision-in-principle, will also handle energy conservation and the enhanced efficiency of energy consumption. However, the perspective taken by the review would also cover Finnish energy supply as a whole, and, as such, could not be applied to the issue of replacing the plant under review.

In addition, the MEE underscores the fact that the Government is in the process of preparing a long-term climate and energy strategy, which also takes a stand on the future use of renewable forms of energy in Finland. The MEE also takes account of the Ministry of Finance's comments on the review of the overall economic impact of the project when launching the processing of the application for a decision-in-principle on the decisive issues.

4.2 Assessment of impact and significance

4.2.1 Cooling waters

The MEE takes the view that the impact of cooling waters is the most significant environmental impact during normal use of the nuclear power plant. Comparison of various alternatives is also emphasised in the case of cooling water solutions. In the statement on the EIA programme, the

contact authority required that the cooling water intake and drainage options be justified and described in close detail.

In the EIA report, three intake sites, one nearby and two more remote ones, and three drainage sites, one nearby and two remote options, have been defined for the new unit. One drainage area option, the furthest away at sea (P3), was eliminated. As an alternative to that one, the impact of drainage site P2 has been assessed, since, with respect to the cooling waters, option P2 is viewed as more limiting than drainage site P3 further out to sea. The limiting criteria include the depth and openness of the sea area. In other words, the worst of the options has been used for the EIA report and its impact on the environment has been assessed.

The Ministry of the Environment and the Regional Environment Centre of Uusimaa remark that the environmental impact of the O3-P3 area presented as one of the cooling water alternatives has not been assessed, and the reasons for eliminating the alternative have not been stated. Furthermore, the Ministry of the Environment also points out that EIA expressly defines the alternatives and estimates their environmental impacts.

The MEE avers that the operating method used in the assessment of the impact of cooling waters, where a new model of the negative impacts of the alternatives is used to create a new model for impact assessment, has its origins in practices utilised in nuclear safety assessment. However, the MEE agrees with the environmental administration authorities that the purpose of the EIA is to assess the environmental impacts of the alternatives and compare these alternatives with a view to their environmental impacts.

In the statement on the EIA programme, the contact authority points out that the analyses must be linked on a wider scale, to the state of sea areas. Moreover, the analyses must be extended to cover a wide sea area in order to define the affected zone. The thermal loads from the existing Loviisa nuclear power plant units must also be taken into consideration in the reviews.

In accordance with the EIA report, in the course of the EIA procedure, assessments have been made of the impact mechanisms related to cooling water and various impact chains, such as the impact of the volume of cooling water on nutrients, and thence on eutrophication and the oxygen level; or the impact of the cooling water temperature on the temperature layer structure of the sea area, and thence the oxygen level. Furthermore, assessments have been made on how these impacts affect the aquatic vegetation and macroalgae, warty comb jelly and ground fauna, fish stocks, parasites and diseases. When examined according to temperature, changes are minimal in the remote intake – remote drainage alternative. Furthermore, when examined according to the quality of water, the remote intake – remote drainage alternative does not change the current situation. Finally, when examined according to eutrophication, the remote intake – remote drainage alternative does not change the current situation. According to the assessment, the changes in aquatic vegetation and ground fauna would remain minimal under the remote intake – remote drainage alternative. With respect to

all of the options, the impact on fish stocks would remain minimal, while the impacts on both surface and deep-water areas have been assessed. The cooling water model covered the sea area surrounding Hästholmen to a distance of approximately 10 km.

Among the statement providers, the Ministry of Agriculture and Forestry recommends that environmental impacts also be examined from the point of view of fish farming. On the other hand, the other statements and opinions emphasise the impacts on fish stock and fry and the assessment of the reproduction of newcomer species.

In the MEE's view, the assessment of the impact of cooling waters is adequate. Qualitative results are shown for various options and have been summarised in a table, which is a very illustrative display method. The MEE proposes that, in the future, the company include an assessment of the impacts on fish farming in the impact assessment.

In the statement concerning the EIA programme, the contact authority requests that the impact of cooling waters on conservation areas be assessed. In addition, a review of the need for a Natura assessment should also be performed pursuant to section 65 of the Nature Conservation Act.

According to the EIA report, there are four cooling water alternatives and two conservation areas. The impacts assessed for all cooling water options include eutrophication and the weakened ice situation and the impact of these potential changes on the habitats and species used as a conservation basis for Natura 2000 areas, such as bird life and grey seal, flora and ground fauna. As a result of the assessment, it is stated that two of the alternatives produce thermal loads and one causes eutrophication. The EIA report also points out that the Natura assessment has been made.

One of the providers of statements, the Regional Environment Centre of Uusimaa, points out the Natura 2000 assessment cannot be performed before the deficiencies in the assessment of the impact of cooling waters have been remedied. The Ministry of the Environment also refers to the Natura assessment in its statement.

The MEE points out that a review of the need for a Natura assessment has been made in the course of the EIA procedure. On the basis of this, the Natura 2000 assessment procedure was launched during the EIA procedure and still continues.

4.2.2 Water supply

In the statement concerning the EIA programme, the contact authority requires that the assessment of the arrangement of water supply must be supplemented, taking account of all options and their environmental impact.

The EIA report proposes that the raw water needed for the construction and operation of the new power plant would have to be taken from a new source. There are two main alternatives for the water supply. The

first is Ahvenkoski on the Kymijoki river and the other is the common water distribution network of the City of Loviisa and the neighbouring municipalities. Whereas the first option would require building an 18-km pipeline and two step-up pumping stations, the second would mean building two water distribution pipes of some 9.5 km each and two step-up pumping stations. With respect to the wastewaters, the report presents data on the volume and nutrient load of the process and domestic wastewater from the existing power plants, and an evaluation of the corresponding data on the new nuclear power plant unit.

In the MEE's view, the assessment concerning the water management presented in the EIA report can be considered adequate. No remarks were made on the assessment.

4.2.3 Power transmission link

In the statement concerning the EIA programme, the contact authority recommends that the EIA review the environmental impacts of the required 110 kV transmission connection up to the next switching substation.

The EIA report states that the new power plant unit requires a separate 110 kV power line. This separate power line can be implemented by replacing the existing 110 kV power line with a new 110 kV double-circuit power line, to be installed on new power transmission line pylons, and by establishing a reinforced link between the new power line and the national grid. The route of the new power line is the same as that of the existing one. The EIA report points out that the environmental impacts of the process of reinforcing the backup connection are insignificant; compared to a 400 kV power line, the effects on the landscape of new power transmission line pylons and the need for land are minimal.

In the MEE's view, the assessment can be considered adequate in this respect. No remarks were made on the assessment regarding this issue.

4.2.4 Traffic

In the statement given on the EIA programme, the contact authority requests that the impact of the increased volume of traffic on nature and the environment be assessed, particularly on a local level and covering a wider area wherever possible.

The EIA report suggests that the increase in the volume of traffic is due to commuter traffic and the transportation of chemicals and fuels. Furthermore, the daily number of vehicles and the volumes of heavy traffic and car traffic have been assessed separately in order to estimate their exhaust emissions. The area under review is from highway E7 to Hästholmen. According to the EIA report, the impact of road plans on nature has been handled as part of the preparation of Loviisa's coastal general plan.

Among the providers of statements, the State Provincial Office of Southern Finland proposes that, in the further planning of the project, attention should be paid to traffic safety.

In the MEE's view, the assessment of the project's impacts is adequate as regards traffic.

4.2.5 Environmental impacts of fuel supply chain and nuclear waste management

In the statement concerning the EIA programme, the contact authority requires that the organisation responsible for the project assess the environmental impacts of the entire fuel supply chain in general, and the company's opportunities to influence this chain.

The EIA report contains a description of all processing phases of uranium fuel: uranium mining and milling, conversion and enrichment, the production of fuel rod bundles and transport. As far as environmental impacts are concerned, exposure to radiation and waste levels are mentioned for each phase, and damage to the landscape with respect to the related mines. Based on a long-term agreement, the organisation responsible for the project acquires fuel for the existing power plants from a Russian company and its subcontractors, which use a certified international ISO14000 environmental management system in their operations, requiring the assessment of the environmental impact of their operations.

Some of the statements suggest that the environmental and transport risks should have been assessed as part of the EIA procedure.

The MEE is of the opinion that the general level review of the environmental impacts of the entire fuel supply chain and the company's opportunities to influence this chain, drawn up by the organisation responsible for the project, is adequate.

In the statement concerning the EIA programme, the contact authority states that the EIA report should describe the quantity, quality and treatment of low- and intermediate level operating waste and decommissioning waste, and review nuclear waste management as a whole, including extensions to the necessary storage and final disposal facilities and their environmental impacts. The environmental impacts of the final disposal of spent nuclear fuel must be described on the basis of the results reached in the assessment procedure of environmental impacts conducted by Posiva Oy in 1999, and reports drawn up thereafter.

The EIA report describes the basic principles governing the intermediate storage of spent nuclear fuel and the environmental impacts of final disposal. In addition, the EIA report mentions that the environmental impacts of an extended final disposal facility will be evaluated in the assessment of environmental impacts launched by Posiva in 2008. The EIA report also describes the management of low- and intermediate-level operating waste, grounds for the disposal of the waste in an underground operating waste facility and the solidification of liquid waste in a separate solidification plant. The EIA report mentions that the waste

does not necessarily require an intermediate storage facility, but it may be necessary to build a new solidification plant. In addition, the EIA report describes the monitoring of the long-term safety of power plant waste.

Among the providers of statements, the Regional Environment Centre of Uusimaa points out that, on the basis of the EIA report, the safety of the final disposal of low- and intermediate-level waste is assessed by means of safety analyses and justifications, but the contents of such analyses are not explained.

The MEE points out that the safety of the final disposal of low- and intermediate-level waste will be assessed in the course of a separate licensing procedure. Furthermore, the safety justifications are updated at specified intervals. STUK monitors (e.g. in its monitoring programmes for rock mechanics and groundwater) the safety of final disposal. Safety requirements are prescribed in Government decision 398/1991. In the MEE's view, the description of nuclear waste management is adequate in this respect. Intermediate storage of spent nuclear fuel is also one of the key operations related to nuclear waste management that is carried out by the organisation responsible for the project itself. In this respect, the EIA report description can be considered narrow.

4.2.6 Environmental impacts of emergency situations

In the statement given on the EIA programme, the contact authority recommends that the EIA report present various emergency scenarios involving radioactive emissions and, with the help of illustrative examples, it should describe the extent of the affected zones and the impacts of emissions on people and the environment. The assessment may use the classification system of the International Atomic Energy Agency IAEA, and the EIA report should present a clear summary of the basis used in the review. Furthermore, the statement points out that assessing the impacts must not be limited to the protective zone or the emergency planning zone for rescue operations. The assessment should also include a review of the possible environmental impact of radioactive substances on the states around the Baltic Sea and on Norway.

The EIA report handles a severe class 6 reactor accident in accordance with the IAEA's International Nuclear Event Scale (INES), causing a 100 TBq emission of the cesium-137 isotope. Furthermore, the impacts of a severe accident within the radius of 1,000 kilometres presented include the radiation doses of adults and fallout levels. The EIA report cites the calculation programmes used for the radiation dose and fallout calculations. Weather condition data used is also specified in the report. The assessment explores the short- and long-term contamination of the land areas and waterways, and the impacts on fauna and human health.

The EIA report presents a very limited amount of information on the cross-border environmental impacts of a severe reactor accident. This matter has been handled in a separate summary of the EIA report that has been submitted to countries participating in the international EIA

procedure. The summary states the fallout levels and their impact on the possibility to use agricultural and natural products.

The statements provided refer to the handling of the matter from various perspectives. For instance, the Ministry of the Environment remarks that, to begin with, cross-border environmental impacts should be described in the EIA report, not only in the summary report translated into various languages. However, the Ministry of the Environment sees it as a positive development that the matter has been addressed at least somewhere. In addition, certain other statements point out that the estimated amount of radioactive substances released into the outside air in connection with a severe reactor accident is too small. For instance, according to Greenpeace it should be 10,000 times higher. Austria has made recommendations relating to a severe reactor accident, covering the source term in particular, and describing the radioactive substances released into the outside air and their volumes. Lithuania, Norway, Estonia and Germany have also posed questions relating to this issue.

The Ministry of the Environment comments on the contradictory data presented in the tables. Moreover, the organisation responsible for the project confirms that the data provided in table 13-1 of the EIA report is correct and that in table 2 of the summary report is incorrect.

The MEE is of the view that the accident scenario (i.e. in a severe reactor accident the amount of cesium137 released in the air would be 100 TBq) used for the assessment is justified. Naturally, the scenario is based on legislation on the use of nuclear energy in Finland (Government Decision 395/91 and STUK’s instruction for nuclear power plants YVL 2.8), where the frequency of emissions exceeding the limit of a severe nuclear power plant accident must remain below five times in ten million years.

4.2.7 Environmental impacts of exceptional situations

In the statement given on the EIA programme, the contact authority points out that the organisation responsible for the project claimed in its EIA programme that it would take the impacts of, for instance, climate change into account as part of the assessment of exceptional situations. In addition, the ministry points out that the assessment explores preparations for climate change and pays special attention to changes in sea level.

The EIA report presents the sea level changes and states that the company has monitored sea levels since 1968. Today, the sea level is monitored at the cooling water intake site in Hudöfjärden. The EIA report presents sea level data from the Hamina region, where the changes are about the same as in Loviisa. On the basis of long-term observation of sea level, the company has estimated extreme sea level values and avers that climate change will have an impact on sea level and will probably affect the frequency of the occurrence of extreme sea level values.

Several statements also expressed concern that particular attention should be paid to rises in sea level. The Regional Environment Centre of

Uusimaa points out that a better picture of annual extreme sea level changes would be gained by presenting them both as daily averages and hourly estimates. Furthermore, the Regional Environment Centre of Uusimaa proposes that the risk level of sea floods and the risk of flooding be estimated in connection with the area planning process and reconfirmed at the stage when the building permit is granted.

The MEE considers the reviews presented in the EIA report as adequate. In addition, the ministry points out that a multi-annual project is in progress under the national nuclear safety research programme, aimed at identifying extreme weather phenomena of the future and their risks as regards the nuclear power plant locations (SAFIR2010 programme). In connection with the processing of an eventual application for a construction license, using the latest information it has acquired STUK will assess whether the sea level rise has been taken into account, observing sufficient safety margins in the elevation levels of different facilities of the plant.

4.2.8 Impacts on employment, and current use and value of real estate

In its statement concerning the EIA programme, the contact authority proposes that the employment impacts of the project be assessed in close detail, both during the construction and the use of the production facility. In addition, the impact of the project on the current use and value of real estate must be assessed and means to prevent possible negative effects on these explored.

In the EIA report, the employment impacts during construction have been divided between actual construction, acquisitions of equipment and machinery, and the services needed on the worksite. In the assessment of the domestic employment impact, the value used for the project expenses is EUR 1.4 billion. The impacts have been divided into direct and indirect impacts. The employment impacts taken into consideration during operation include the structure of the workforce, the amount of outside services, and the employment impact of an annual outage. The impacts on the current use and value of real estate have been assessed by conducting a resident survey asking people about their need to move out and their estimates on the development of the value of their properties.

In the MEE’s view, the assessment can be considered adequate. The statements provided have not required further clarification either, except on the assessment of the share of foreign workforce.

4.2.9 Material and methods

In the statement concerning the EIA programme, the contact authority points out that when analysing the environmental impacts of sea water warming, any background material available should be utilised extensively. In addition, the latest available information should be brought up in the assessment, and uncertainties in the calculations must be illustrated clearly. The contact authority specifically requested that the organisation responsible for the project add to or further define the

assessment methods for cooling waters and emergency situations, and incorporate the ICRP's (International Commission on Radiological Protection) latest guidelines on radiological protection.

The EIA report makes references to monitoring measurements conducted by STUK and reports on the status of the water area surrounding the power plant and the effect of cooling waters, and biological monitoring implemented by STUK. References are also made to separate general reports. Natural conditions with an effect on the cooling water model are singled out in the EIA report. The computer programmes used for the assessment of the impacts of emergency situations and the source information used for the calculations, as well as the uncertainties relating to the assessment, are mentioned.

Those giving statements claim that the uncertainty factors are not brought out by the report. For instance, the Regional Environment Centre of Uusimaa would have liked information on the cooling water model. The one-sidedness of the models has been criticised. Moreover, the response rate of the questionnaire sent to local inhabitants is considered low.

In the MEE's view, for the most part, the description of assessment methods and material is adequate. The MEE points out that, at this stage of the assessment, the presentation of uncertainties has been sufficiently illustrative. However, the MEE requires that the organisation responsible for the project pay attention to the matter in the further planning of the project.

The MEE agrees with the providers of statements that the response rate was low. Criticism is called for when viewing the results, but in the MEE's opinion, it has been possible to remedy the shortcomings of the resident survey through other participation arrangements.

4.3 Comparison of alternatives and their feasibility

The EIA report presents the following alternatives to be considered for the implementation of the project. The project is presented one reactor type at a time and the EIA report includes introductions of the models available from the plant suppliers. Furthermore, the criteria used for the assessment are listed under chapter 4.1 of this statement. Under the EIA report, another alternative is the three alternative cooling water intake and drainage sites. The EIA report points out that the implementation of the so-called remote area option would call for a change in area planning. A third review of options is related to raw water supply, for which two possible areas are suggested. Fourthly, various options are considered with respect to the co-generation of power and heat. According to the EIA report, the implementation of this option would require further inquiries.

In the EIA report, comparisons have been made by assessing the important environmental impacts of the project. The results of the environmental impact assessments have been summarised in table format. Alternative cooling water intake and drainage solutions have been assessed on the basis of specific criteria. In the assessment of the

raw water supply options, the criterion used was the change in the landscape.

Statement providers hope for additional reviews of the co-generation of power and heat. In addition, according to the Regional Environment Centre of Uusimaa, the uncertainty factors in the cooling water model have not been analysed sufficiently, and on the basis of the data presented in the EIA report it is difficult to assess which would be the best cooling water intake and drainage sites with a view to the environment.

In the MEE's view, the options and their feasibility have been assessed in the EIA report as required by section 10 of the EIA Decree. The criteria used for the feasibility assessment are justified. However, the assessment of the environmental impacts of the various alternatives is not comprehensive enough in all respects, or it has been conducted in a different manner than intended in the EIA procedure. All in all, the assessment has generated information on the project and the feasibility of its various alternatives, but has also raised questions with respect to which additional information is needed.

4.4 Prevention and monitoring of negative effects

The nuclear safety requirements set the framework for the prevention of harmful radiological effects. Monitoring systems developed since the 1970s are based on, on one hand, the operations of the power companies themselves and, on the other hand, monitoring conducted by STUK. The developed nuclear safety technology and continuously developing regulatory control have to be taken into account in the assessment of the environmental impacts of emergency situations. In the MEE's view, for the most part, these measures and the assessment of environmental impacts have been described adequately in the EIA report.

The EIA report presents measures for the prevention and mitigation of negative effects by impact category both during construction and operation. Correspondingly, the organisation responsible for the project raises the issue of co-operation between the company, municipalities and local entrepreneurs as one of these means. Means by which the impact of cooling waters and their estimated impacts on the environment can be alleviated, are presented in the EIA report. The proposed measures include various intake structures and depths for the intake, increasing the turnover of water, the combined intake and drainage of cooling water, partial drainage into deep areas, a combined intake and drainage tunnel, the centralisation of cooling waters, and a cooling tower.

The statements propose issues to be taken into consideration during the further planning of the project. For instance, the Ministry of the Environment and the Regional Environment Centre of Uusimaa propose that an assessment be conducted of the possibility of moving the cooling water intake and drainage sites of the existing power plants further out to sea. Before starting the excavation, the quality and suitability of the bedrock as raw material for rock material processing should be

assessed. In addition, proposals were made to supplement emergency planning, for instance, with regard to responsibilities for waste management in case of an emergency.

In the MEE's view, the prevention of negative effects has been described in an adequate manner in the EIA report. In addition, the EIA report handles certain measures by which it is planned that the harmful effects of cooling waters will be reduced, which the contact authority required in its statement concerning the EIA programme.

It is stated in the EIA report that the Loviisa power plant has an environmental management certificate (ISO 14001), which calls for continuous observance of the environment in all operations. The monitoring programme would include the monitoring of the radioactive emissions from the project and radiation control, the monitoring of cooling waters and wastewaters, the monitoring of waterways, the monitoring of the fishing industry, the control of flue gas emissions, noise control, waste accountancy, and the monitoring of effects on people.

Among statement providers, the Regional Environment Centre of Uusimaa proposes that the monitoring programme be supplemented by the monitoring of habitats and ground waters used as a basis for the selection of Natura 2000 areas.

In the MEE's view, it would be justified to include the monitoring of the habitats of Natura 2000 areas under the monitoring programme, so that the validity of conclusions drawn in the Natura assessment can be verified. This may be of importance in the processing of future license applications. In other respects, in the MEE's view, sufficient account has been taken in the project of the prevention of negative effects and the monitoring programme is adequate.

Furthermore, in the statement concerning the EIA programme, the contact authority requires that the EIA report present the basic principles of safety planning concerning the control of emissions of radioactive substances and environmental impacts, and an assessment of the possibility of meeting the currently valid safety requirements. According to the EIA report, in the case of the new power plant unit, meeting the safety requirements means that the containment can withstand, for instance, a collision with a passenger airplane, and that account is taken of potential oil catastrophes in the Gulf of Finland. In addition, precautions are being taken against possible outside hazards caused by natural phenomena, as well as global warming and the ensuing changes such as the warming of the sea and rises in the sea level. The MEE is of the opinion that the EIA report has described radioactive emissions and their impacts as well as safety assessment to an adequate extent, considering the planning phase.

4.5 Organisation of participation in the EIA procedure

In the statement concerning the EIA programme, the contact authority points out that sufficient attention should be paid in communications and interaction, to the entire affected area of the project across municipal

borders and all population groups. The ministry requests that, in the EIA report, the parties consider ways of presenting the impact of participation.

In the EIA report, the impact of participation has a chapter of its own (chapter 2), describing, for instance, the arrangements for participation and the work of the audit group, and presenting how the contact authority's statement has been taken into account in the assessment.

Certain statements point out that the views of statement providers have been taken into account during the EIA procedure. In its statement, the Ministry of the Environment states that one of the key objectives of the EIA procedure is to enhance the possibilities of citizens to participate and have an influence. It further states that the EIA report briefly mentions the subjects that have been discussed in the audit group, municipal advisory group and EIA working group meetings and in public meetings. Furthermore, it avers that the comments of the audit group have been taken into account in the implementation of the EIA procedure and the EIA report, but does not specify the matter in any greater detail. According to the Ministry of the Environment, the report does not mention whether the matters raised in group meetings or public hearings have had an impact on the EIA procedure. The State Provincial Office of Southern Finland mentions that the EIA report does not indicate whether the municipal social officials have participated in the EIA procedure.

The MEE is of the view that the participation arrangements during the EIA procedure have been organised as proposed in the EIA programme. The EIA report describes the EIA procedure, communication and participation. It also includes a description of how Fortum has taken account of the statement by the contact authority and the remarks included therein. In the MEE's view, the participation arrangements fulfil the requirements of EIA legislation and, for the most part, the questions posed in the statements and opinions have been addressed.

The MEE agrees with the Ministry of the Environment that the actual impact of participation in the EIA procedure is not set out very clearly in the EIA report. Topics discussed in various groups are mentioned, but no examples are given of their impact on the actual procedure. In the MEE's opinion, the EIA report should have presented the results of the participation and their impact on the EIA procedure. The EIA report should also have recorded the basis on which the participants have been selected or have attended meetings.

After the EIA report was finalised, the MEE announced its publication and made it available for viewing, inviting the authorities to comment on it. The statement on the EIA report, prepared by the MEE in its capacity as a contact authority, will be delivered to the municipalities in the affected area and to the appropriate authorities.

In the report phase, Sweden, Norway, Germany, Poland, Lithuania, Estonia and Austria participated in the procedure, in keeping with the Espoo EIA Convention. A hearing was organised in Tallinn, Estonia on 12 June 2008. The statements by Sweden, Norway, Germany, Estonia and Lithuania include questions. In addition, Austria requested a

consultation and written responses to the questions it had presented. The consultation meeting was organised on 27 June 2008 in Helsinki. Austria submitted its final statement on 17 July 2008 in which it made recommendations to Finland, mainly concerning the source term of a severe accident.

4.6 Assessment report (reporting) and submitting the decision-in-principle

The MEE points out that Fortum has taken account of the contact authority's recommendation on phasing of the processing of the EIA report and the application for the decision-in-principle in accordance with the Nuclear Energy Act. The company has announced that it is considering the submission of an application for a decision-in-principle.

Should Fortum submit an application for a decision-in-principle, the contact authority's statement on the EIA procedure will thereby be available for processing. The MEE requires that clarifications be presented on the points requiring supplementation as presented in this statement, for the processing of a potential application for a decision-in-principle.

4.7 Summary and adequacy of the assessment report

The MEE states that the EIA report for the Loviisa 3 nuclear power plant unit meets the content requirements under EIA legislation. Furthermore, the EIA report has been processed in accordance with the requirements of EIA legislation. The contact authority's statement has been taken into account in the assessment.

Moreover, the statements given have found the EIA report appropriate and comprehensive. However, for instance, the Ministry of the Environment, the Ministry of Agriculture and Forestry, and the Regional Environment Centre of Uusimaa have pointed out that the EIA report is insufficient in certain respects.

The MEE points out that the questions posed in the statements of Sweden, Norway, Germany, Estonia and Lithuania must be answered in writing. The MEE will deliver the answers to the Ministry of the Environment, which is responsible for the international hearing. In addition, Finland will separately assess the recommendations presented by Austria in a consultation process, in keeping with the Espoo Convention, and provide the necessary answers to Austria.

However, the MEE requires additional clarification of the following topics handled during the course of the EIA procedure. These are necessary in case Fortum Power and Heat Oy decides to file an application for a decision-in-principle.

- Co-generation of electricity and heat, including environmental impacts and nuclear safety;
- Combined impact of cooling waters from various reactors, including criticism related to cooling water modelling;
- Key technical data with a view to the environmental impacts of

various power plant options;
- The revision of the Natura 2000 assessment;
- Environmental impacts of nuclear waste management;
- Issues to be taken into consideration in the further planning of the project;
- Agricultural production, fish farming;
- Cost structure of power production.

The report must be submitted to the MEE by 30 November 2008. For justified reasons, it is permitted that the assessment of the combined impact of cooling waters from various reactors deviate from the proposed schedule. Any potential application for a decision-in-principle shall be circulated for comments after all clarifications have been submitted to the MEE. However, the schedule of the requested Natura review may deviate from this schedule and assessment of this review will be made separately pursuant to the Nature Conservation Act.

5 Communicating the statement

The Ministry of Employment and the Economy will deliver the statement on the EIA report to the authorities that gave their statements. The statement can be viewed on the Internet at the address www.tem.fi

The ministry will send copies of all the statements and opinions it has received concerning the assessment programme to the organisation responsible for the project. All statements and opinions received by the ministry are available for viewing on the Internet.

The original documents will be filed in the archives of the ministry.

Minister of Economic Affairs Mauri Pekkarinen

Senior Inspector Jaana Avolahti

DISTRIBUTION Authorities that have submitted statements