Record No.

DECISION VN/7906/2022

Government decision on Fortum Power and Heat Oy's application for a licence referred to in section 20 of the Nuclear Energy Act to operate the nuclear power plant units Loviisa 1 and Loviisa 2 and the buildings and storage facilities belonging to them that are necessary for the management of spent nuclear fuel and nuclear waste.

Adopted in Helsinki on 16 February 2023

APPLICATION

Only the Finnish-language licence is authentic

In its application dated 18 March 2022, Fortum Power and Heat Oy (hereinafter also referred to as "the applicant" and "Fortum") has applied for the licence referred to in section 20 of the Nuclear Energy Act (990/1987)

- to operate the nuclear power plant units Loviisa 1 and Loviisa 2 for the production of energy no longer than until the end of 2050 and in the manner required by the preparation for the power plant units' decommissioning no longer than until the end of 2055.

- to operate the buildings and storage facilities, with any necessary expansions thereto, required for the management of nuclear fuel and nuclear waste no longer than until the end of 2090.

In relation to the aforementioned, Fortum is applying for a licence to possess, produce, handle, use and store nuclear waste, nuclear substances and other nuclear material elsewhere in the plant site than in the disposal facility for low- and intermediate-level waste (hereinafter also "LILW repository") as follows:

- A maximum of 12,800 fuel bundles of spent nuclear fuel generated in the operation of Loviisa nuclear power plant.

- A maximum of 10,000 m^3 of operational waste (including decommissioned radiation sources) generated in connection with or as a result of the operation of Loviisa nuclear power plant.

- A maximum of 2,000 m^3 of radioactive waste with an activity concentration equivalent to low- and intermediate-level waste generated elsewhere in Finland

In addition, the company is applying for a licence to possess, handle, use and store fresh nuclear fuel needed in the operation of the power plant, provided that a licence for import of the fresh nuclear fuel has been granted pursuant to the Nuclear Energy Act. The same

applies to other nuclear material already in the power plant area and other nuclear material beside those, provided that a licence pursuant to the Nuclear Energy Act has been granted for any nuclear materials subject to an import licence.

The company has also applied for an immediate enforcement of the operating licence.

In its application for an operating licence, the applicant has requested that the Government, when granting the licence, decides that the decision be enforced regardless of a possible appeal, given that the decision's enforcement should not be postponed due to the public interest. The applicant has stated in its application among other things that the Loviisa power plant plays an important role as a producer of stable base power free of carbon dioxide emissions, and it produces approximately 10 percent of the electricity used in Finland. An extension to the service life will require investments in the nuclear facility's usability and safety.

Furthermore, the applicant has stated that it is in the public interest to dismantle the FiR 1 research reactor in Otaniemi, Espoo, and dispose the radioactive waste from the research reactor and the EU (Otakaari 3), which is set to be decommissioned, in the Loviisa nuclear power plant area. Any delay in the enforcement of the power plant's and the disposal facility's licence would also cause a delay in the reception of the aforementioned waste, which would need be stored and possibly even dispose somewhere else.

In its application, the company has provided, for example the following information on the nuclear power plant units:

Loviisa 1 and Loviisa 2 nuclear power plant units are water-moderated and water-cooled pressurised water reactors. Both units have a nominal thermal power of 1,500 megawatts (MWt) and the net electric power 507 megawatts (MWe). The plan is to use the power plant units for energy production until the expiry of the operating licence applied for at the end of 2050, extending the units' service life to approximately 70 years.

The company has appended to its application the information referred to in section 34 of the Nuclear Energy Decree (161/1988).

The company has also submitted on 18 March 2022 a separate operating licence application concerning the disposal facility for low- and intermediate-level waste (hereinafter also "LILW repository") located in the Loviisa nuclear power plant area in Hästholmen. Until now, the operating licence for the LILW repository has been in the power plant units' operating licence decision of 1998. Now the licence will be the subject of a separate decision.

Currently valid operating licences of the power plant units

On 26 July 2007 (record number of decision is 6/330/2006), the Government granted Fortum Power and Heat Oy the licence referred to in section 20 of the Nuclear Energy Act to use the nuclear power plant units Loviisa 1 and Loviisa 2 located in the 12th district of the City of Loviisa on the island of Hästholmen, each with a nominal thermal power of 1,500 MWt, for the production of electricity, and to use the buildings and storage facilities, with

the necessary expansions thereto, required for the management of nuclear fuel and nuclear waste, , for Loviisa 1 until 31 December 2027 and for Loviisa 2 until 31 December 2030.

Applicable provisions

According to section 16(1) of the Nuclear Energy Act, a licence to operate a nuclear facility is granted by the Government. A licence may be granted if the prerequisites laid down in section 20 of the Nuclear Energy Act for the operation of a nuclear facility are met and the nuclear facility and the operation thereof otherwise fulfils the principles laid down in sections 5–7 of the Nuclear Energy Act.

According to section 5 of the Nuclear Energy Act, the use of nuclear energy, taking into account its various effects, shall be in line with the overall good of society. Furthermore, according to section 6 of the Nuclear Energy Act, the use of nuclear energy must be safe and it shall not cause harm to people or damage to the environment or property.

Pursuant to section 6a of the Nuclear Energy Act, nuclear waste generated in connection with or as a result of use of nuclear energy in Finland shall be handled, stored and permanently disposed of in Finland. Furthermore, under section 7 of the Nuclear Energy Act, a prerequisite for the use of nuclear energy is that there are adequate security and emergency arrangements and other arrangements to limit nuclear damage and to protect the use of nuclear energy against activities that endanger nuclear or radiation safety.

A public notice shall be given on the licence application in accordance with section 23 of the Nuclear Energy Act. Pursuant to section 23 of the Nuclear Energy Act, a statement on the licence application shall be requested from the Radiation and Nuclear Safety Authority and the Ministry of the Environment and, in addition to these authorities, under section 37 of the Nuclear Energy Decree, at least from the Ministry of the Interior and from the Regional State Administrative Agency and the Centre for Economic Development, Transport and the Environment within the jurisdiction of which the municipality and the neighbouring municipalities of the nuclear facility are located. The Radiation and Nuclear Safety Authority shall include in its statement a proposal for licence terms which are necessary in order to implement the safety requirements in accordance with chapter 2a of the Nuclear Energy Act.

In addition, according to section 23 a of the Nuclear Energy Act, the Ministry of Economic Affairs and Employment shall reserve the public an opportunity to express their opinions in writing in the matter relating to the licence. The applicant shall be reserved an opportunity to submit an explanation on the opinions expressed on the application as well as on the statements requested.

Provisions on the content of the licence decision are laid down in section 38 of the Nuclear Energy Decree. The requirements listed in subsections 1 and 3 of section 38 have been taken into account in the content of the licence decision.

Pursuant to section 24 of the Nuclear Energy Act, the licence is granted for a fixed term. When considering the length of the term, particular attention shall be given to the estimated duration of the operations and ensuring safety. According to section 25 of the Nuclear Energy Act, the licence shall include the terms that are necessary in order to implement the general principles referred to in chapter 2. The licensing authority shall also observe the proposals relating to safety presented in the statement of the Radiation and Nuclear Safety Authority referred to in section 23.

According to section 25 of the Nuclear Energy Act, the licence shall include the measures presented by the licence applicant for preventing or reducing significant detrimental environmental impacts in the case of a project which is governed by the Act on Environmental Impact Assessment Procedure (252/2017, hereinafter also referred to as "the EIA Act"). Provisions on the obligation of the licensing authority to include in the licence decision the competent authority's reasoned conclusion and to take the documents of the assessment procedure into consideration in the decision-making are laid down in section 25 of the Nuclear Energy Act and section 26 of the EIA Act. Provisions on the licencing authority's obligation to ensure that the competent authority's reasoned conclusion is up to date are laid down in section 27 of the EIA Act.

Section 26 of the EIA Act states that the licence decision shall contain a reasoned conclusion, and appropriate consideration shall be given in the decision to the results of the public consultations concerning the assessment report and possible results of public consultations on transboundary impacts referred to in section 29. It shall be stated in the decision how the assessment report, the reasoned conclusion and possible documents pertaining to the public consultations on transboundary impacts referred to in section 29 have been taken into account. Section 27 of the EIA Act goes on to state that the licencing authority shall ensure that the reasoned conclusion is up to date when the licence matter is decided on.

Environmental impact assessment procedure and the competent authority's reasoned conclusion

Fortum Power and Heat Oy carried out the environmental impact assessment (EIA) procedure in 2020–2022 by publishing the EIA programme in summer 2020 and the EIA report in September 2021. The EIA also covered the LILW repository. The assessment procedure also included the procedure of the so-called Espoo convention (Convention on Environmental Impact Assessment in a Transboundary Context, Treaty 67/1997). The Ministry of Economic Affairs and Employment as the competent authority gave its reasoned conclusion on the EIA report on 10 January 2022, and it can be deemed up to date in accordance with section 27 of the EIA Act.

According to the reasoned conclusion, the project options reviewed in the EIA report do not have any significant harmful environmental impact which would be unacceptable, or which could not be prevented or mitigated to an acceptable level. In this decision, the Ministry considers the impacts of the options on the power plant units Loviisa 1 and Loviisa 2. Thus, this decision does not address the LILW repository's share of the environmental impacts discussed in the reasoned conclusion. In all of the options, a new operating licence separate from the power plant units needs to be granted for the LILW repository.

The comparison of the different options has been carried out in a sufficient manner in the EIA report. Overall, the environmental impacts of extended operations (VE1) are larger than those resulting from decommissioning (VE0 or VE0+), as the plant must be ultimately decommissioned even if its operations are extended for now. However, the assessment of environmental impacts of the options must also take into account the project's energy-economic significance, which is high nationally.

The handling, storage and disposal of waste generated elsewhere in Finland presented in the licence application have not been found to have significant environmental impacts. However, the management of such waste would have a positive impact on the national management of radioactive waste overall, as it would contribute to the sustainable and safe disposal of radioactive waste, regardless of its place of origin. The maximum amount of such waste handled at the Loviisa power plant is estimated to be 2,000 m^3. The figure is small compared to the waste generated at the nuclear power plant.

Significant environmental impact of extended operations (VE1)

In the case of extended operations, electricity production at the Loviisa nuclear power plant would continue until 2050. The impacts on the environment would remain mainly the same as during the current period of operation.

The thermal load to the nearby sea area resulting from the discharge of cooling water is the most significant environmental impact from the nuclear power plant during normal operations. In addition to the thermal load to the surface waters, there are also significant environmental impacts on fish and fishing, the climate, people's living conditions and comfort, the community structure and tangible property, as well as the effects of accidents. Extended operations increase the total amount of spent nuclear fuel and other nuclear waste.

The option of extended operations also includes all the environmental impacts related to decommissioning. In the case of extended operations, the plant units will be decommissioned in 2050–2060.

Surface waters

In the case of extended operations, the impacts on surface waters resulting from the intake and discharge of cooling water will remain much the same as currently. The cooling water is taken from Hudöfjärden channel to the west of Hästholmen island and discharged to the east of the plant to Hästholmsfjärden channel, which is part of the Klobbfjärden water body.

In the assessment report, the project's impact on Hästholmsfjärden has been estimated as being reasonably significant and negative. According to the assessment, the overall impact on other parts of the sea area is minor and negative or negligible. The Ministry of Economic Affairs and Employment considers this assessment is likely to be accurate.

The discharge of cooling water has a direct impact on, for example, water temperature, stratification and ice conditions. The assessment also addresses climate change, which may contribute to a temperature increase in the surface sea water in the coming decades.

In addition to the thermal load of cooling water, the state of the water bodies is affected by a nutrient load independent of the power plant, which enters the area mainly as diffuse water pollution from rivers. The sanitary wastewaters from the Loviisa power plant also carry small amounts of nutrients into the sea. As stated in the assessment report, the thermal load of cooling water has contributed to accelerated eutrophication in the area. The increase in eutrophication has been more notable in Hästholmsfjärden than at the nearby comparison station in Hudöfjärden.

Several other chains of causation have also been assessed in the procedure. The thermal load causes locally the poor oxygen levels at the bottom to decrease and thus affects the species of the bottom, which have declined. Phytoplankton and aquatic flora are also affected, in addition to which warmer sea water may favour non-native species such as the dark false mussel.

As observed by the Ministry of Economic Affairs and Employment, the impact of cooling water is particularly significant due to the sensitivity of the affected area. The ecological status of the Klobbfjärden water body has been classified as bad in the third river basin management plan (2022–2027). The classification is based on the EU Water Framework Directive and the Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004). The goal of legislation is to achieve ‘good’ ecological status for all water bodies. The project assessed must not weaken the ecological or chemical status of the bodies of surface water or endanger the achievement of ‘good’ status of surface waters.

The report states that a continued thermal impact may contribute to a slower achievement of ‘good’ status for the water body. The Ministry of Economic Affairs and Employment requires that this be taken into account during the extended operation of the power plant.

According to the report, the continued thermal impact from cooling water will continue to no later than 2050. The impact of the end to the thermal load caused by the power plant is discussed in connection with the impacts from decommissioning. Uncertainties concerning the assessment include those related to climate change and nutrient input and the complexity of interactions in the environment.

Fish and fishing

The impact of the power plant’s extended operations is assessed to be moderately negative on fish and minor and negative on fishing. Warmer sea water favours species that have adapted to it, including pike-perch and cyprinids. The round goby, a non-native species, is also likely to become more abundant. Warm water also prevents the formation of ice in the area, which hinders the reproduction of species that spawn under the ice, such as burbot, as well as practicing winter fishing in the region.

Biomass carried to the power plant with the cooling water intake consists mainly of fish. The amount of fish carried to the power plant in biomass has been 10–25 tonnes per year. The collection of this biomass can be seen as having a positive impact, as it also removes nutrients from the sea.

Greenhouse gas emissions and climate change

According to the assessment, the climate impacts of extended operations are moderate and positive. The direct greenhouse gas emissions from the operations are low compared to the impacts of the power plant's carbon-free energy production, which are significant to Finland on a national level. Finland has set itself the goal of carbon neutrality by 2035, which requires an increased production of emissions-free energy.

People's living conditions and comfort, community structure, tangible property

As the project owner, Fortum has assessed the project's impacts on people's living conditions and comfort, as well as on the energy market, security of supply and regional economy. While EIA legislation does not require the energy market, security of supply and regional economy to be assessed, the Ministry of Economic Affairs and Employment considers these to involve significant socio-economic impacts. The project's impacts on the energy economy were also highlighted in the statements received and during the programme stage of the procedure, when several statement providers as well as the Ministry of Economic Affairs and Employment called for a review of developments in the electricity market.

According to the assessment, the impact of extended operation on people's living conditions and comfort is minor but negative. Residents in the nearby areas feel more negative about the nuclear power plant operations than people living farther away. Among other things, the power plant is considered as having negative impacts on the landscape and recreational use of water bodies. Risks related to nuclear power plant operations may be of concern farther away. The resident survey indicated a negative attitude to the reception of waste generated elsewhere in Finland. On the other hand, potential positive impacts on the region's employment and demographics were also raised.

The extension of operations is estimated to have a large and significant impact on the Finnish energy market and security of supply. This estimate is based on the increased demand for emissions-free electricity available regardless of weather conditions. In 2020, the output from the Loviisa nuclear power plant was 7.8 TWh, whilst the overall demand for electricity in Finland totalled 80.9 TWh.

The impacts on the regional economy have been estimated to be high and positive in the Loviisa sub-region, moderately positive in the Eastern Uusimaa and Kymenlaakso regions, and slightly positive on the level of the whole of Finland. The impact is based on, for example, the power plant's direct impacts on employment and the multiplicative effects of maintenance investments and procurement during operations.

Radioactive waste and its management

Extending the operation of the power plant will increase the accumulation of spent nuclear fuel and the overall volume of low- and intermediate-level waste. Nevertheless, the impacts of extended operation on waste management have been assessed to be minor and negative. This result is based on the number of fuel bundles expected to increase by approximately 3,700 if operations are extended by another 20 years or so. Approximately 600 m^3 of low-level waste and 2,400 m^3 of intermediate-level waste would be accumulated. The management of low and intermediate-level waste will continue in the same way

as under the currently valid operating licences. The disposal of accumulated spent nuclear fuel will be handled in accordance with the existing plans of Posiva Oy.

The main modification resulting from extended plant operations would be to increase the storage capacity for spent nuclear fuel by expanding the storage facility or by placing nuclear fuel in the storage facility's pools more densely. The cooling for spent nuclear fuel in the storage facility is not expected to increase significantly, despite the increasing amount of fuel, as the thermal output of the fuel is constantly decreasing during storage. However, it is possible to increase the cooling capacity if necessary.

Severe reactor accident, other incidents and accidents

Although a reactor accident is highly unlikely, were such an accident to take place, it would have exceptionally wide and long-term impacts. The report contains modelling of an accident in which 100 TBq Cs-137 nuclides and other radionuclides in the same proportion are released into the atmosphere.

Such a case would most likely not cause direct radiation impacts on humans, but the area within a five-kilometre radius would have to be evacuated or people would be required to seek shelter indoors. The impact of emergency measures has not been taken into account in the estimated doses. At the local and regional level, the use of soil, water bodies and foodstuffs may be restricted due to radioactive fallout. Such an accident and its management would also have very significant impacts on the national level. Long-term impacts would affect the population's material and mental wellbeing, for example. A reactor accident of the kind modelled in the report would not lead to immediate impacts caused by radiation doses outside Finland.

In addition to a severe reactor accident, the report examines less severe incidents, which may cause radioactive release, as well as conventional emergency situations and accidents. Preparedness for climate change has been taken into account in the assessments.

Significant environmental impact of decommissioning (VE0, VE0+)

The decommissioning of the power plant is carried out in several phases. After the preparatory phase, which takes about three years, the radioactive structures of the power plant units are dismantled and the resulting radioactive waste is disposed in the LILW repository. The required waste management functions will be made independent of the rest. Their independent use will last for 20–35 years, after which they will be dismantled.

Environmental impacts will result from the impacts of operations coming to an end, as well as from the direct impacts of decommissioning. The most significant environmental impacts are related to the ending of the thermal load that the cooling water discharged from the power plant has on the sea. There would be negative impacts on the climate and the energy market, at least if the power plant were to be decommissioned straight after the current operating licence period. The direct significant negative impacts of decommissioning include the effects from traffic and noise and the decommissioning waste generated when the facilities are dismantled.

According to the company's estimates, handling decommissioning according to the greenfield principle will have fewer long-term adverse environmental impacts on nature, the

landscape and the comfort of living compared to the brownfield principle. However, decommissioning based on the greenfield principle will have more adverse impacts during dismantling.

If the power plant's operations are not extended beyond the current operating licence periods, the units will be decommissioned in 2030–2040. If the operations are extended, the plant units will be decommissioned in 2050–2060.

Surface waters

Decommissioning would have a moderately positive impact on Hästholmsfjärden and a minor positive impact or negligible impact on the other nearby sea areas. Decommissioning will mean an end to the thermal load from cooling water, returning the temperature and stratification of the sea area back to normal and bringing an end to the negative impacts on water quality, phytoplankton, aquatic flora and benthic fauna. The positive impacts are surrounded by some uncertainty regarding the oxygenation conditions of deep basins. As stated in the assessment report, the rate of recovery is difficult to predict.

Fish and fishing

In the case of decommissioning, the thermal load from cooling water will end, enabling fish and fishing to recover and begin to resemble the conditions in the surrounding sea areas. In lake Lappomträsket, potential deregulation would enable the current dam structure to be replaced with a submerged weir, thus opening a migration route for fish. On the other hand, deregulation and the discontinuation of the lake's oxygenation might have a negative impact on fish. The assessment involves uncertainties in this respect. The impact is assessed to be moderately positive on fish and minor and positive on fishing.

Greenhouse gas emissions and climate change

The climate impacts of decommissioning after the current period of use have been assessed to be moderately negative. The assessment is based on the need to replace the electricity production in Loviisa with other forms of production, the emissions of which depend on the method of production. Alternative production methods are discussed at a general level. Decommissioning also generates greenhouse gas emissions due to increased traffic, for example, but these emissions are negligible compared to the emissions from electricity production.

People's living conditions and comfort, community structure, tangible property

The project owner has assessed the project's impacts on people's living conditions and comfort, as well as on the energy market, security of supply and regional economy. During demolition, decommissioning is expected to have moderately negative impacts on people's living conditions and comfort due to, for example, increased noise, vibration and traffic. In the long term, however, the impacts are expected to be minor and positive following the potential recovery of the water bodies and landscaping. The resident survey indicated a negative attitude to the reception of waste generated elsewhere in Finland.

The decommissioning has been estimated to have highly significant negative impacts on the Finnish energy market and security of supply. The electricity produced at the nuclear

power plant should be replaced with new production, in addition to which the number of north-south transmission connections should be increased.

The positive impact of decommissioning on the regional economy has been assessed to be large in the Loviisa sub-regional unit. In Eastern Uusimaa, Kymenlaakso and at the level of all of Finland, the impact on the economy is minor and positive. This impact results from, for example, an increase in the demand for material recycling and dismantling services. However, the economic impacts generated during operations will come to an end, and this has not been taken into account in the assessment.

Landscape and cultural environment

The impacts of decommissioning on the landscape and cultural environment depend on whether the deregulated buildings are left in place or whether they are dismantled. If the buildings are not fully dismantled, the impact is minor and positive. The dismantling of high buildings will also mitigate landscape impacts in dismantling carried out on the basis of the brownfield principle. Dismantling based on the greenfield principle will leave the area as close as possible to its natural state, which will eliminate all long-term landscape impacts. In this case, the impact is assessed to be moderately positive. Before the buildings are dismantled, a historic building survey must be carried out on the area's building stock.

Traffic

Traffic will increase especially during the dismantling work related to decommissioning, and these impacts are assessed to be moderately negative. The flow of traffic may temporarily and locally deteriorate on Atomitie and Saaristotie roads, and increased traffic volumes will increase the safety risks.

Noise

Noise disturbance may be felt especially during the dismantling phase. If the plant is decommissioned according to the greenfield principle, noise will be caused especially by conventional dismantling work. The occasional concrete crushing will make the loudest noise, which may be carried to the holiday homes on the nearby islands and the mainland. According to the assessment, the impact of noise disturbance is minor and negative. It is important to reduce disturbance from noise, for example, by timing the noisiest work appropriately.

Radioactive waste and its management

The dismantling phase of decommissioning is expected to generate 3,300 m^3 of activated waste and 19,000 m^3 of contaminated waste. An estimated 700 m^3 of maintenance waste and other waste packaged in barrels, as well as 2,260 m^3 of solidified liquid waste will be generated. According to the project owner's assessment, the impacts of decommissioning on waste and waste treatment are minor and negative.

The Ministry of Economic Affairs and Employment notes that dismantling the power plant generates a considerable amount of radioactive waste. The disposal of radioactive waste calls for a considerable expansion of the LILW repository. The contamination level

of soil materials must also be assessed and dealt with during the dismantling, and the proper treatment of conventional waste must be ensured.

Severe reactor accident, other incidents and accidents

The nuclear power plant's risk level will drop considerably when it is decommissioned. However, the risks related to the treatment, storage and transport of spent nuclear fuel and other radioactive substances will continue until all the waste has been disposed. Dismantling also involves risks of radiation exposure. In addition, decommissioning involves risks of conventional accidents. The Radiation and Nuclear Safety Authority (hereinafter also "STUK") assesses and subsequently supervises the safety of decommissioning when a company applies for a licence for the decommissioning of a nuclear facility.

Statements on the application

The Radiation and Nuclear Safety Authority, Advisory Committee on Nuclear Safety, the Ministry of the Environment, the Ministry of the Interior, the Ministry of Social Affairs and Health, the Ministry of Defence, the Ownership Steering Department of the Prime Minister's Office, the Regional State Administrative Agency for Southern Finland, the Centre for Economic Development, Transport and the Environment for Uusimaa, the Finnish Safety and Chemicals Agency Tukes, the City of Loviisa, the Municipality of Lapinjärvi, the City of Porvoo, the Regional Council of Uusimaa, Fingrid Oyj, the Eastern Uusimaa Rescue Department, VTT Technical Research Centre of Finland Ltd (hereinafter "VTT"), Geological Survey of Finland, Federation of Finnish Technology Industries, Federation of Finnish Enterprises, Finnish Association for Nature Conservation, Natur och Miljö r.f. and STTK ry have issued statements on the application.

Pursuant to section 41 of the Administrative Procedure Act (434/2003), the pendency of the case has been announced by means of public notices on the electronic notice boards of the City of Loviisa and its surrounding municipalities, as well as in the newspapers Helsingin Sanomat, Hufvudstadsbladet, Itäväylä, Kymen Sanomat, Loviisan Sanomat, Nya Östis, Uusimaa and Östra Nyland.

1. Statements required by the Nuclear Energy Act and Nuclear Energy Decree or the otherwise required by the Ministry of Economic Affairs and Employment

In its statement, the *Radiation and Nuclear Safety Authority* (STUK) states that the design bases for the systems, structures and components of the Loviisa 1 and Loviisa 2 nuclear power plant units were mainly set during the 1970s. The goal has been to continuously improve safety during the operation of the nuclear facility. Fortum has modernised the Loviisa 1 and Loviisa 2 nuclear power plant units to a significant extent and, during the operational history of the power plant, carried out extensive modifications to the systems, structures and components of the nuclear facilities to improve safety.

Safety improvement measures should continue to the implemented also during the upcoming operating licence period. Based on the documentation submitted to STUK, Fortum is committed to continuing its work to improve safety at the nuclear facility during the upcoming operating licence period. On the basis of its own periodic safety review,

Fortum has, as part of the operating licence application, presented to STUK action plans for the identified improvement targets for ensuring the safe operation of the Loviisa 1 and Loviisa 2 nuclear power plant units during the new operating licence period so that sufficient information on the status of the nuclear facilities can be obtained for the timely execution of the necessary measures to ensure safety.

During the new operating licence period, the operations and the adequacy of the measures will be assessed continuously and as a whole in the periodic safety review carried out at least every ten years, as required by the Nuclear Energy Act. STUK considers the plans to be adequate to ensure the safe operation of the nuclear facilities. STUK has approved the summary of the periodic safety review and the action plan for the development of safety at the nuclear facility, which Fortum has updated for the new operating licence.

The detailed safety requirements concerning the implementation of safety standards in compliance with the Nuclear Energy Act are specified in the Regulatory Guides on Nuclear Safety (YVL) published by STUK. The YVL Guides were last revised in 2018–2021. During that period, STUK has comprehensively assessed how the Loviisa 1 and Loviisa 2 nuclear power plant units meet the requirements of the revised YVL Guides and made decisions on how the requirements shall to applied and the extent to which safety needs to be further improved.

No significant needs for technical modifications were identified in connection with the aforementioned decisions as the most relevant ones of the matters required in the new YVL Guides had already been implemented or were in the process of being implemented. Fortum has appropriate procedures in place for developing the probabilistic risk analysis (PRA) and utilising its results. Fortum has kept the PRA for the Loviisa power plant up-to-date and developed the related analyses. The PRA covers all the power plant's operating facilities and relevant event sequences influencing safety.

Loviisa 1 and Loviisa 2 nuclear power plant units currently have their own unit-specific PRA models. In addition, spent fuel storage facilities KPA1 and KPA2 have a separate PRA model. During the current operating licence period, the PRA has been used to systematically identify and eliminate risk factors. The core damage frequency (CDF) and large release frequency (LRF) have been declining due to plant improvements and model refinements. Based on the PRA carried out in 2022, the design of the Loviisa 1 and Loviisa 2 nuclear power plant units meets the quantitative criteria for core damage frequency laid down in Guide YVL A.7, however, it does not meet the quantitative criteria for large release frequency. STUK finds it important that Fortum continues to implement measures to mitigate risks at the nuclear facility and to develop the PRA documentation and traceability of analysis.

Assessing the earthquake resistance of the Loviisa power plant is still ongoing, and Fortum will update the seismic PRA in 2023. The updated PRA will provide more detailed information on the risk of seismic events to the power plant, which Fortum will use as a basis for taking the necessary measures to improve earthquake safety. Fortum's application to extend the operating licence so that the operating lifetime of 30 years, which was originally used as basis in the design of the nuclear facilities, will be extended to 73 years for the Loviisa 1 nuclear power plant unit, is essentially based on the ageing management of the nuclear facility's systems, components and structures.

Fortum's objective is to keep the systems, structures and components of the Loviisa 1 and Loviisa 2 nuclear power plant units up-to-date and in good condition in terms of both safety and production capacity. Fortum has an ageing management programme that includes functions, tasks and responsibilities for monitoring the operability of the nuclear facility's systems, structures and components important to safety, and for identifying the measures needed during the operating licence period applied for. Early identification of a system/structure/component important to safety and the related ageing mechanisms enables long-term forecasts and planning of the significant renovation and maintenance work required.

STUK estimates that the ageing management of the Loviisa 1 and Loviisa 2 nuclear power plant units has been appropriately organised. In addition to maintenance, ageing management includes systematic modernisation to improve safety at the nuclear facility and the operability, reliability and performance of systems and components, as well as to ensure the availability of product support and spare parts for equipment suppliers. As a rule, major modifications to the plant units are carried out in long-term projects of further modernisation.

Extensive modification work has continued during the current operating licence period. The current geopolitical environment has caused concern about the availability of certain spare parts and nuclear fuel. Fortum has initiated measures relating to, for example, ensuring the availability of spare parts for the reactor and the turbine controls, as well as concluded a contract for the design and supply of a new fuel type with another fuel supplier, Westinghouse. A system/structure/component important to safety shall meet the requirements on which the design is based throughout their lifetime up until the decommissioning.

According to STUK, it is known that the safe lifetime of certain systems, structures and components may end before the end of the operating licence applied for. For this reason, Fortum needs to provide further clarification and potentially implement some improvement measures, and also prepare an overall plan of action that covers the systems/structures/components important to safety and contains measures for maintaining the operability of the system/structure/component until the end of the operating licence period proposed by Fortum. In its decision on Fortum's action plan, STUK has required that the company submit the aforementioned action plan before the operations are extended beyond the end date of the current operating licence.

According to section 7e of the Nuclear Energy Act, the overall safety of a nuclear facility shall be assessed at least every 10 years. Fortum has submitted the periodic safety review related to the power plant's new operating licence to STUK in late 2020. In view of the foregoing, the next periodic safety review shall be submitted to STUK by the end of 2030.

If the analysis results indicate lower safety margins than expected or that the operations do not comply with the regulations, measures may be taken by STUK to exercise regulatory control on the safe use of nuclear energy pursuant to the provisions of the Nuclear Energy Act and Decree. In its safety assessment, STUK has stated that the licence holder and the executive team and other personnel at the Loviisa power plant ensure that safety takes priority in all operations. The licence holder has a sufficient number of competent

personnel available, whose performance of safety-critical processes meets the quality requirements set.

Ensuring that a sufficient number of competent personnel and the necessary professional expertise and technical knowledge is at the nuclear facility's disposal remains important, especially in view of the operating and maintenance needs of the ageing nuclear facility. STUK has addressed the aforementioned matters in its own periodic safety review and will monitor the situation and the impact of the development measures as part of its continuous supervision.

In summary of the documentation submitted to STUK with the application, the inspections of matters and documents in relation to periodic safety reviews and the results of continuous supervision, STUK states that Fortum has ensured safety at the Loviisa 1 and Loviisa 2 nuclear power plant units in accordance with the current regulations. Fortum has proposed measures to further improve safety at the Loviisa 1 and Loviisa 2 nuclear power plant units during the new operating licence period. Based on STUK's assessment, Fortum has the qualifications, procedures, competence and resources needed to continue the safe operation of the nuclear facility.

Based on the above information, STUK sees no obstacles to granting the operating licence applied for. However, STUK does state that ensuring the safe use of the nuclear facility during the new operating period will require that Fortum introduces the necessary procedures for ageing management, as well as ensures and improves safety at the nuclear facility by taking the measures specified in the application documents and Fortum's periodic safety review. Any further need to assure and improve safety at the nuclear facility shall be continuously assessed on the basis of advances in science, research findings and operating experience.

In the summary of its statement on Fortum's application for an operating licence aiming to extend the operation of the Loviisa nuclear power plant until the end of 2050, the *Advisory Committee on Nuclear Safety* states the following: The Radiation and Nuclear Safety Authority (STUK) has comprehensively and expertly assessed the safety and security as well as emergency arrangements and nuclear safeguards of the Loviisa power plant.

Furthermore, the Advisory Committee on Nuclear Safety finds that the results of STUK's safety assessment are acceptable, taking into account the further measures defined in the periodic safety reviews carried out by Fortum and STUK. The Advisory Committee also states on the basis of the submitted documents that the Advisory Committee sees no obstacles to granting the licence for the extended operation of the Loviisa power plant applied for.

The Ministry of the Environment is in favour of granting the operating licences applied for the Loviisa nuclear power plant units and the disposal facility for low- and intermediate-level waste in the Loviisa nuclear power plant area. The Loviisa power plant plays a significant role in the production of emission-free electricity and in securing the supply of energy in Finland.

Efforts should be made to further reduce the environmental damage caused by the thermal load of the power plant's cooling waters. Special attention should be paid to ageing management when extending the power plant's operating lifetime. Preparedness to procure

fresh nuclear fuel for the power plant through alternative fuel suppliers is recommended. Environmental and human rights considerations should also be taken into account in the procurement of fuels.

The *Ministry of the Interior's* statement regarding the matter notes that it has no particular comment to make.

The *Ministry of Social Affairs and Health* notes in its statement that, on 30 September 2021, it has issued a statement on Fortum's environmental impact assessment report, which Fortum was required to draw up as a prerequisite for the licence applications for extended operations that are now being circulated for comments. The following is a comment from the Ministry's statement: "The Ministry of Social Affairs and Health is pleased that both option VE1 (to apply for an extension of operations) and option VE0+ (to decommission the Loviisa nuclear power plant units) presented in the report are, in accordance with the recommendations of the National Cooperation Group on Nuclear Waste Management issued in 2019, in favour of allowing the use of the LILW repository located in the Loviisa nuclear power plant area for the disposal of radioactive waste generated by industry, hospitals, universities and research institutes. The management of low- and intermediate-level waste is the responsibility of the administrative branch of the Ministry of Social Affairs and Health.

The Ministry of Social Affairs and Health's opinion on both licence applications for extended operations is favourable, provided that the Radiation and Nuclear Safety Authority (STUK) issues a positive safety assessment on both licence applications. The Ministry finds it positive that Fortum is ready to provide services on market terms for the handling, storage and disposal of radioactive waste referred to in the Radiation Act.

According to the *Ministry of Defence*, Fortum's applications have been thoroughly prepared and can be used as basis for concluding that the level of nuclear safety and security arrangements at the Loviisa power plant is high. With regard to security arrangements, this view is also supported by the safety assessment of the Loviisa power plant carried out in November 2021 by an independent expert group consisting of security authorities, in which the Ministry of Defence also participated as a representative of the Advisory Committee on Security for the nuclear sector appointed by the Ministry of Economic Affairs and Employment.

The Ministry of Defence considers the Loviisa power plant to be important for the security of supply, Finland's energy self-sufficiency and emission-free electricity production in Finland. The operating licence application states that the power plant only uses nuclear fuel supplied by the Russian TVEL Fuel Company (TVEL) and that Fortum will procure nuclear fuel from TVEL until the end of the current operating licence. The Ministry of Defence finds it important that security of supply aspects are also taken into account in the procurement of nuclear fuel.

In addition, the Ministry of Defence draws attention to the fact that, in the future, more attention should be paid to the cyber security of nuclear power plants as well as to their preparedness for hostile state activity. The Ministry of Defence is in favour of granting the operating licences applied for and supports the approval of the operating licence applications for the Loviisa nuclear power plant.

According to the statement of the *Ownership Steering Department of the Prime Minister's Office*, Fortum has invested approximately EUR 325 million in the Loviisa power plant over the past five years. Fortum has estimated that the investments related to extending the operations and life to 2050 will total roughly one billion euros, which means investing tens of millions of euros per year, assuming that the investments are distributed evenly.

According to Fortum's most recently published financial results information, Fortum has updated its investment outlook for 2022. At present, the company expects its investments in continuous operations, excluding acquisitions, to amount to approximately EUR 550 million in 2022. In the opinion of the Government Ownership Steering Department and based on currently known facts, Fortum's ability to generate results and cash flow from continuous operations is sufficient to operate the Loviisa nuclear power plant and to make the necessary investments.

Fortum's significant short-term uncertainty was related to the September negotiations on the stabilisation package for Uniper. On 19 December 2022, Fortum announced that Fortum, the German State and Uniper have signed agreements on the final terms of Uniper's stabilisation package. Uniper's Extraordinary General Meeting took decisions on the stabilisation package. As a result, the German State acquired all of Fortum's shares in Uniper and Uniper repaid the EUR 4 billion shareholder loan granted by Fortum. From the EUR 4 billion guarantee granted by Fortum, EUR 3 billion will be released by the end of 2022 and the remaining EUR 1 billion by the end of Q2/2023. The necessary official approvals have been obtained for the final implementation of the stabilisation package.

Fortum Group's equity at the end of Q3/22 was EUR 6,543 million. At the end of September 2022, the net debt (adjusted for Uniper receivables) to comparable EBITDA ratio of continuous operations was 0.8, i.e., below the target level (less than 2). This means that also from the point of view of indebtedness and based on currently known facts, Fortum has the financial resources needed to carry out the operation of the Loviisa nuclear power plant and to finance the necessary investments.

Preparedness for the cost of nuclear waste management and the decommissioning of nuclear facilities is ensured through the National Nuclear Waste Management Fund. Pursuant to the Finnish Nuclear Energy Act, Fortum has a financial provision obligation that it must meet in full by making payments to the National Waste Management Fund. The authorities will decide Fortum's Fund target for the year in connection with determining the amount of the company's fund contribution under the financial provision obligation on 22 December 2022. Fortum has paid and will pay fund contributions to the National Nuclear Waste Management Fund in accordance with these decisions.

The basic services, legal protection and permits division of the *Regional State Administrative Agency for Southern Finland* has no objection to the approval of the operating licence application from the perspective of environmental health. The Agency would also find it useful to describe alternative methods for the procurement of nuclear fuel in the operating licence application.

In its statement, the *Centre for Economic Development, Transport and the Environment (ELY Centre) for Uusimaa* notes how, already in its opinion on the EIA report, it particularly emphasised the adverse effects on the state of waters and the achievement of the objectives set for the management of water resources and marine environments in Finland.

The aim of the Act on the Organisation of River Basin Management and the Marine Strategy (1299/2004) is to secure and maintain at least 'good' ecological status of surface waters and groundwater by 2027. The ecological status of the Klobbfjärden water body has been classified as bad in all three cycles of river basin management planning. In the further plans for the power plant, special attention should be paid to measures that improve the ecological status. The project measures should avoid causing further deterioration of the ecological status by affecting any of the biological quality elements.

The ELY Centre for Uusimaa appreciates Fortum's plans to further explore the possibilities of making the power plant's cooling water cooler, as continued thermal load on the Klobbfjärden water body is likely to slow down the achievement of 'good' ecological status for the water body. It is also important to investigate the impact of warm cooling water and ways of mitigating its adverse effects.

The River Basin Management Plan for 2022–2027 for the Uusimaa region includes a proposal for the planning and implementation of rehabilitation measures for the Klobbfjärden water body. Achieving the objectives set for river basin management in the Klobbfjärden water body requires a wide range of measures to reduce the load from the catchment area. The most significant of these are the measures to reduce the nutrient load of agriculture in the catchment area of Taasianjoki river. Most of the field parcels in this area are well suited for, e.g. the use of gypsum treatment, which is an effective means to reduce nutrient loading on water bodies. The ELY Centre for Uusimaa considers it important for Fortum to participate in the planning and implementation of these measures and in monitoring their impact in cooperation with other actors in the region.

In its statement, the *Eastern Uusimaa Emergency Services Department* states that the operator has in its application comprehensively described the arrangements for ensuring safety at the Loviisa nuclear power plant and assessed the fulfilment of the emergency arrangements in accordance with the Radiation and Nuclear Safety Authority's Regulation (STUK Y/2/2018, 10.12.2018). The Emergency Services Department has no comments with regard to the above-mentioned matters.

According to the operating licence application, the safety, security and emergency arrangements for the disposal facility will be integrated into the functions of the nuclear power plant. The modifications arising from the disposal facility and the safety requirements during construction must be taken into account in regular cooperation between the Emergency Services Department and Fortum. Sites undergoing modifications are supervised in accordance with the Emergency Services Department's supervision plan. Any modifications affecting preparedness and rescue operations shall be updated in the applicable sections of the external emergency plan for the site. The Eastern Uusimaa Emergency Services Department sees no obstacles to the approval of the operating licence applications.

The Finnish Safety and Chemicals Agency Tukes considers there to be no obstacles to granting the operating licences from the perspective of chemical safety legislation (Act 390/2005, Decree 685/2015). The Loviisa power plant is obliged to provide a safety report as a large-scale chemical facility carrying out industrial handling and storage of hazardous chemicals under the chemical safety legislation (Act 390/2005, Decree 685/2015). The Finnish Safety and Chemicals Agency Tukes has granted a chemical safety permit to the power plant for indefinite duration.

Tukes supervises the power plant's operations through regularly performed periodic inspections. Based on the inspections, the operations meet the requirements set in the chemical safety legislation. The Loviisa power plant's obligation to provide a safety report is based on the use of hydrazine, which is classified as a toxic and environmentally hazardous substance. Other process chemicals used in large quantities at the power plant include ammonia solution, boric acid, caustic soda, nitric acid and sulphuric acid.

2. Statements from the municipality of the plant site and the neighbouring municipalities

In its statement, the *City of Loviisa* states that Fortum assessed the extension of the Loviisa nuclear power plant's operations and the option of decommissioning in 2020–2022 in an environmental impact assessment, in which the city representatives also participated. Significant investments have been made in the facility, no obstacles were found for the extension of operations, and the extension was deemed a safe and economically viable option.

The City of Loviisa sees no obstacles to extending the operation of the power plant and states that a) no obstacles or new adverse effects were identified in the EIA, b) the power plant plays a significant role in Finland's electricity production on a national level, and c) the economic impact for the region is positive and it is cost-effective for the whole country to utilise the existing infrastructure and continue to produce electricity where it is already being produced. Extending the operations will also have a strong positive impact on the Finnish energy market and security of supply, as well as on climate change mitigation.

The city of Loviisa's statement also notes that the City of Loviisa does not have other zoning needs or plans for the area, nor does it see any zoning or land use problems arising from the extension of operations.

The municipality of Lapinjärvi has no comments on the application for an operating licence.

The Environmental Health division of the City of Porvoo considers there to be no obstacles to granting an operating licence for energy production to the nuclear power plants and for the disposal facility for low- and intermediate-level waste.

The environmental impact of the operation of the nuclear facility is likely to be minor when the reasoned conclusion issues by the competent authority of the EIA procedure is included in the licence decision on the project. Nonetheless, special attention should be paid to safety aspects taking into account the long extension to the operating licence proposed in the application.

With regard to preparedness, attention is drawn to the fact that during an emergency situation the nuclear power plant must provide instructions on protective measures for primary food production at a sufficiently early stage: sufficient time must be reserved for the practical implementation of the protective measures. In a radiation situation, the successful protection of primary production products significantly reduces the long-term exposure of the population to radioactive substances through food.

3. Other statements

According to the statement by the *Regional Council of Uusimaa*, the environmental impact assessment procedure for the project and the related EIA report completed in 2021 have examined the extended operation of the nuclear power plant and the continuation of the disposal of the plant's nuclear waste after the current operating licences for the power plant units expire in 2027 and 2030.

The EIA procedure and the statement of the competent authority did not present any evidence that would prevent the granting of the operating licences applied for. The Regional Council of Uusimaa finds that the extended operation of the Loviisa nuclear power plant supports the achievement of Finland's goal of carbon neutrality by 2035, as well as the goal of carbon neutrality set for the Uusimaa region. The continuation of production at the Loviisa nuclear power plant is highly significant in the production of emission-free electricity and sustainable energy supply. The Regional Council of Uusimaa is in favour of extending the operating licences in accordance with the applications.

In its statement, *Fingrid Oyj* states that it is responsible for the technical functionality, reliability and development of the Finnish electricity system in accordance with the Electricity Market Act. In the ongoing energy transition, electricity production is rapidly becoming climate neutral. An increasing share of production is located in the northernmost part of Finland and especially in the northern parts of the west coast. Our country's electricity consumption is concentrated in southern Finland, with roughly 60% of electricity being consumed south of Tampere.

As a result of this development, more north-south transmission capacity is constantly needed and significantly more money needs to be invested in the main grid. To meet these needs, Fingrid is building the main grid and preparing to strengthen it significantly with new transmission lines and other technical solutions.

In Fingrid's opinion, extending the operation of the Loviisa power plant to 2050 is very important for the Finnish electricity system. The option to decommission the power plant presented in the EIA also assessed the pressure to invest in Finland's south-north transmission capacity, which would make it more difficult to ensure that the preconditions are in place for maintaining a single bidding area for electricity trading in Finland. Extending the operation of the power plant is also highly recommended for the reliability of the electricity system. While in operation, the power plant supports the electricity system and improves the adequacy of electricity supply especially in winter.

VTT Technical Research Centre of Finland's statement notes that the electricity produced by the Loviisa power plant is highly important to the achievement of Finland's climate goals and energy self-sufficiency, so extending the operation of the facility beyond the

power plant units' current operating licence period is well justified. Based on the safety assessments completed and the statistics on operations, the facilities are safe and reliable, and their impact on the environment is comprehensively monitored. When it comes to responsibility for the entire life cycle of nuclear power, on an international scale, Fortum and the other licence holders of Finnish nuclear facilities are exemplary operators.

The licence holders are prepared for the future decommissioning of their nuclear power plants by regularly updating the decommissioning plans for their facilities. Preparations for the management of spent nuclear fuel generated by the Loviisa and Olkiluoto nuclear power plants are already at an advanced stage as the commissioning of Posiva Oy's encapsulation plant and disposal facility approaches. From a financial perspective, preparedness for the cost of nuclear waste management in Finland has been thoroughly ensured through the National Nuclear Waste Management Fund. In addition, VTT Technical Research Centre of Finland will give its detailed opinion on the issues concerning the LILW repository.

In summary, VTT states that strong grounds exist for granting both licences applied for by Fortum on the basis of climate goals, energy self-sufficiency, and the national programme for the waste management of radioactive waste.

In its statement, *Geological Survey of Finland GTK* states that continuing the use of nuclear energy is a sensible option in terms of carbon-neutral energy production. Fortum's licence applications have been carefully prepared, and no geology-related issues were raised that would prevent the continuation of use. GTK is in favour of extending the operation of the power plant and the disposal facility for low- and intermediate-level waste, as proposed in the operating licence applications.

According to the *Federation of Finnish Technology Industries*, the Loviisa nuclear power plant has been producing electricity safely and efficiently for over 40 years, and the facility has been operated in compliance with an uncompromising safety culture, high quality standards, and the principle of continuous improvement. Over the years, the power plant units have been modernised, safety has been improved and the units' life has been extended. In recent years, the power plant has undergone, for instance, extensive automation renewals and modernisation of ageing systems and equipment. The utilisation factors of the power plant units have been continuously about 90 per cent, which is a top result by international comparison.

Finland's goal is to achieve carbon neutrality by 2035, and that calls for large-scale emission-free electricity production, such as nuclear power. Electric cars are increasing their presence in society and heat pump applications in heating, industry is investing in electrical processes, and an abundance of emission-free electricity is also needed by the hydrogen economy. The failure of Fennovoima Oy's Hanhikivi 1 project means that electricity production needs to continue at the Loviisa power plant long into the future.

Due to the aforementioned, the Federation of Finnish Technology Industries is in favour of extending the operating licences for the Loviisa nuclear power plant units until 2050.

In its statement, the *Finnish Association for Nature Conservation* finds that the applications for operating licences should be rejected and returned to the drafting phase. According to the Association, information and surveys that could serve as material for making

reliable assessments on the safety of the project have not been published in connection with the licence applications and the EIA. The public do not have sufficient information at their disposal to assess the matter, and probably neither do even the Government or Ministry of Economic Affairs and Employment.

In the opinion of the Finnish Association for Nature Conservation, the licencing and EIA processes are by nature closed processes, for which proper information is not provided to the public though they are a necessary part of the consultation. This means that the processes are seriously corrupted, closed conversations between STUK and the applicant. The system is based on the assumption that the authority and the company have absolute knowledge and competence in the matter at hand. This is a very dangerous assumption that has been disproved in connection with known nuclear accidents in various countries. Having small inner circles in control of nuclear power is not an appropriate safety culture.

According to the Finnish Association for Nature Conservation, from a legal perspective, the process goes very blatantly against the Aarhus Environmental Convention and its right of access to information, as well as similar EU principles. The procedures may also be considered to violate the constitutional rights of citizens, and to conflict with the official duties of the authorities.

No one has a real understanding of the long-term effects of nuclear waste or the environmental and health impacts of the emissions generated by a nuclear power plant, not even STUK, and apparently the agency has no interest in them either.

Consideration of an extension to the operating licence of a nuclear power plant should also include a more detailed examination of the risks related to the ageing and wear and tear of the power plant, the lack of spare parts, outdated security systems, Russia's aggression, war and terror, and extreme weather events attributed to climate change.

As an example of outdated security systems, the Finnish Association for Nature Conservation mentions that newer power plants are required to withstand the force from a crash of a wide-body aircraft. The comparison and management of this risk should be presented in relation to a modern power plant. Loviisa has also experienced a situation in which the sea level was caused to rise to a level that was harmful or hazardous to the power plant. Linked to the EIA is an accident assessment developed in Austria, which has also been presented internationally, for a same category power plant as Loviisa. A report on how to prevent such an accident and how to ensure preparedness for similar accidents is missing from the reports.

The Finnish Association for Nature Conservation also states that nuclear power plants have become instruments of war in Ukraine; Russia's State Atomic Energy Corporation Rosatom has participated in the seizure of nuclear power plants in the neighbouring country. A Russian-made nuclear power plant is therefore a particularly risky target. Former Russian President Dmitry Medvedev recently raised a veiled threat of an attack against the nuclear power plants of EU Member States. The functionality and safety of the energy system should also be assessed for a situation in which the nuclear power plants cannot be operated due to, for example, war or Russia's actions as a state sponsor of terrorism.

Natur och Miljö r.f. states in its statement that the operating lifetime originally envisaged for the Loviisa power plant units is 50 years. Fortum's application seeks to artificially extend the lifetime of VVER reactors made in the Soviet Union by 23 and 20 years, until 2050.

Fortum's application increases the risk of a nuclear accident. Such an accident would have fatal consequences for the Finnish flora and fauna. According to the OECD and the IAEA, the average lifespan of a reactor made in the 1970s is 40 years. The VVER reactors in Loviisa are not suitable for an operating lifetime of 70 years.

German independent Öko Institut e.V. has warned against extending the lifespan of nuclear reactors in many of its reports. In the opinion of Öko Institut, it is risky not to care about the original life cycle analyses for the components and structures of a nuclear power plant with a limited operating lifetime. There are also limits to how many components and parts can be replaced with new ones, and there are also risks to operating a facility that combines old and new technologies.

Fortum's application raises similar security policy risks that have materialised in Russia's war of aggression in Ukraine. The critical situation at the Zaporizhzhia nuclear power plant in Ukraine shows that no nuclear power plant can be safe in an armed conflict.

Fortum uses resources with its high-risk life extension investment in such a way that they cannot be used to build renewable energy. The plans are artificial respiration to the nuclear power plant and time away from using energy technology that is designed to combat climate change. Measured by profitability, it would be preferable to invest in renewable energy rather than in nuclear energy. The calculations made by the IAEA in the report 'Projected Costs of generating electricity' show that investments in solar and wind energy are more profitable in the European energy market than investments in nuclear energy.

The statement of the *Federation of Finnish Enterprises* is in favour of extending the operating licences in accordance with the applications. The emission-free electricity that the power plant produces reliably and in any type of weather accounts for more than ten per cent of Finland's total annual electricity production. That is highly significant for electricity production and the security of energy supply. Phasing out eight terawatt hours of zero-emission energy a year would not be in line with the carbon neutrality target of 2035 either.

In addition, extensive safety and efficiency reforms and a utilisation rate of more than 90% speak in favour of extending the operating licence. The operation of the power plant is also under the regular supervision of Tukes, and it has a valid chemical safety permit granted by Tukes. Further efforts should be made to reduce, where possible, the thermal load on the sea from the cooling water discharged by the power plant.

STTK ry is in favour of extending the operating licences of the Loviisa nuclear power plant in accordance with the applications. Securing future operations at the facility is important from the perspective of improving Finland's energy self-sufficiency and achieving the national goal of carbon neutrality by 2035.

Applicant's explanation

At the request of the Ministry of Economic Affairs and Employment, the applicant has submitted two responses to the statements on the licence application, paying attention to the topics raised in the statements.

In its response of 30 October 2022, the applicant states that, regarding the procurement of nuclear fuel, some statements considered it important that security of supply considerations and alternative ways of procuring nuclear fuel are taken into account in the power plant's nuclear fuel procurement. The statements also noted that environmental and human rights considerations should also be taken into account in the procurement of fuel.

Fortum procures fuel for the Loviisa power plant from the Russian fuel company TVEL. The contract is valid for the duration of the current operating licences, i.e. until 2027 and 2030. In March 2022, Fortum submitted an application for an extension of the operating licence for the Loviisa power plant until 2050, and at the same time, a competitive tendering process was launched for the procurement of fuel.

In one of the statements, attention was drawn to the fact that, in the future, more attention should be paid to the cyber security of nuclear power plants and their preparedness for hostile state activity. Comments were also made about the possibility of hostile state activity.

Fortum states that information and cyber security are comprehensively taken into account in the operations of the Loviisa nuclear power plant. Information and cyber security are part of the security arrangements of the Loviisa power plant, which are carried out in compliance with the existing legislation and the regulations and requirements set by the Radiation and Nuclear Safety Authority. The plant's security arrangements cover administrative, organisational, technical and functional measures and arrangements to prevent unlawful or other action aimed at endangering nuclear and radiation safety. The Loviisa power plant develops its security arrangements continuously whilst taking into account any changes to the threat scenarios, etc. The security arrangements are maintained and developed in close cooperation with various security authorities.

Several statements commented that special attention should be paid to ageing management if the operating lifetime of the facility is extended. Fortum points out that the ageing management of the Loviisa power plant has been duly taken into account throughout the operation of the power plant. Properly implemented ageing management and maintenance are prerequisites for ensuring the safe, reliable and profitable operation of the nuclear power plant.

Aiming to create a good safety culture, Fortum is committed to continuously improving safety at the nuclear power plant for as long as it remains operational. An important part of continuous improvement is the periodic safety review, which is an extensive self-assessment of the nuclear facility's organisation and technology. Its content is determined by the applicable international and national recommendations and policies, as well as the regulations and requirements issued by STUK. Fortum conducts periodic safety reviews on the Loviisa 1 and Loviisa 2 nuclear power plant units and the disposal facility in accordance with the current legislation on nuclear safety. The most recent periodic safety review was carried out in connection with the operating licence application.

In its response, Fortum states that the investments to be made in extended operations and lifetime extension are estimated to amount to EUR one billion by 2050.

One of the statements has considered what kind of activities will be carried out at the plant site between 2050 and 2090. Fortum notes that a licence for the use of the power plant for energy production has been applied for until 2050, and for the phases that come after production use until 2090 (decommissioning will require a separate licence). The licence application documents propose an outlined schedule for the phases that come after the production use of the power plant. These include the decommissioning of the power plant as well as the intermediate storage of spent nuclear fuel and the related support functions.

Spent nuclear fuel is stored at the plant site until it is transported for encapsulation and disposal to Posiva Oy's disposal facility complex in Olkiluoto, Eurajoki. After all the spent nuclear fuel has been transported away from the plant site, it is time to decommission the systems, structures and components that remain operational, carry out the disposal of radioactive waste, and seal the disposal facility. This has been estimated to take place as early as in the 2070s, however, considering all the uncertainties of making schedules for the future, the operating licence period applied for lasts until 2090. This is discussed in more detail in the application documents.

In their statements, the environmental authorities draw attention to the status of water bodies and the achievement of the river basin management plan's objectives. In the opinion of the environmental authorities, further plans for the power plant should pay special attention to measures to improve the status of water bodies, and the project measures should avoid causing further deterioration of the ecological status by affecting any of the biological quality elements. They also find it important for Fortum to participate in the planning and implementation of measures to improve the ecological status of the Klobbfjärden water body and in monitoring the measures' impact in cooperation with other actors in the region. The statements also call for efforts to be made to further reduce the environmental damage caused by the thermal load from the power plant's cooling waters.

Fortum states that the company contributes to the achievement of the targets for the ecological status of water bodies set by law. Fortum can participate in the planning of measures to improve the status of water bodies together with the ELY Centre and the City of Loviisa. In the longer term, Fortum aims to further deepen its knowledge of the Loviisa power plant's impact on the ecological status of the Klobbfjärden water body. The assessments may be related to the status of the benthic fauna and sediment of the sea area near the Loviisa power plant, for example, so that sufficient and representative background material will be available for the classification.

The applicant supplements the information provided in its second response of 27 January 2023 related to fresh fuel as follows: On 22 November 2022, Fortum announced that it has concluded a contract with Westinghouse Electric Company for the design, licensing and supply of a new fuel type to the Loviisa power plant. The new fuel type is based on the fuel supplied by British Nuclear Fuel Limited to the Loviisa power plant at the beginning of the millennium, which was used in parallel with the fuel supplied by the Russian

fuel company TVEL in the early 2000s. The introduction of the new fuel is a multi-year project for which official approvals will be required.

The addition of a new, parallel fuel supplier will diversify our fuel strategy, improve the security of supply, and ensure reliable electricity production at the Loviisa power plant also in the future.

The fuel supply contract with the Russian fuel company TVEL is valid until the end of the current operating licences, until 2027 and 2030. The contract with Westinghouse Electric Company supports Fortum's goals of enhancing the security of energy supply, and the operating experience gained from the fuel supplied will create the prerequisites for successful competitive fuel tendering in the future.

Based on the statement by the Ownership Steering Department of the Prime Minister's Office, Fortum concludes that the release of the EUR 3 billion guarantee by the end of 2022 mentioned in the statement has been completed and, moreover, the release of EUR 1 billion by the end of Q2/2023 is still valid.

RESOLUTION

By virtue of the Nuclear Energy Act of 11 December 1987 (990/1987) and the Nuclear Energy Decree of 12 February 1988 (161/1988), the Government has decided to grant Fortum Power and Heat Oy the licence referred to in section 20 of the Nuclear Energy Act

1. to operate the nuclear power plant units Loviisa 1 and Loviisa 2 located in the 12th district of the City of Loviisa on the island of Hästholmen, each with a nominal thermal power of 1,500 MW, for production of energy until 31 December 2050.

2. to operate the nuclear power plant units Loviisa 1 and Loviisa 2 located in the 12th district of the City of Loviisa on the island of Hästholmen in the manner required to prepare for the decommissioning of the nuclear power plant units until 31 December 2055.

3. to operate the buildings and storage facilities belonging to the plant units, with any necessary expansions thereto, required for the management of nuclear fuel and nuclear waste, until 31 December 2090.

Terms of the licence

1. By virtue of the licence granted by this Decision, the licence holder may possess, produce, handle, use and store nuclear waste, other radioactive waste, nuclear materials and nuclear use items as follows:

1.1 The licensee may possess, produce, handle and store a maximum of 12,800 bundles of spent nuclear fuel generated in the operation of the Loviisa nuclear power plant.

1.2 The licensee may possess, produce, handle and store low- and intermediate-level waste generated in connection with or as a result of the operation of the Loviisa nuclear power plant and decommissioned radiation sources a maximum of 10,000 m^3.

1.3 The licensee may possess, handle and store a maximum of 2,000 m^3 of low- and intermediate-level waste generated elsewhere in Finland and of radioactive waste with an activity concentration equivalent to above mentioned and for which the licensee or the State of Finland has a waste management obligation pursuant to the Nuclear Energy Act or the Radiation Act. However, mere handling of a waste batch without storing it long term will not require a transfer of the waste management obligation.

1.4 The nuclear facility may possess, handle, use and store fresh nuclear fuel needed in the operation of the power plant, in the quantity required for the extended operations, for which an import licence has been granted pursuant to the Nuclear Energy Act. Fortum shall submit to the Ministry of Economic Affairs and Employment by 31 December 2023 at the latest an account of how it will arrange the procurement of fresh fuel in the future.

1.5 The licensee may possess, handle, use and store nuclear use items already in the plant site, and possess, produce, handle, use and store other nuclear use items, provided that an import licence pursuant to the Nuclear Energy Act has been granted for any nuclear use items subject to an import licence.

2. The licensee shall submit for the approval of the Ministry of Economic Affairs and Employment, in accordance with section 7g of the Nuclear Energy Act, a plan for the decommissioning of the Loviisa nuclear power plant, on a regular basis at least every six years during the operation pursuant to the operating licence, and within three years of the end of energy production, unless by then the licensee has submitted to the Government an application for a new licence for the Loviisa nuclear power plant units according to the life cycle of the power plant, as required by the Nuclear Energy Act. When the energy production has ended, a plan for the decommissioning of the buildings and storage facilities necessary for the management of nuclear fuel and nuclear waste shall be submitted for approval to the Ministry of Economic Affairs and Employment for the first time by the end of 2060 at the latest, and on a regular basis after that during the operation pursuant to the operating licence, at least every 10 years.

Grounds for the decision

The following is stated regarding the fulfilment of the conditions laid down in section 20 of the Nuclear Energy Act:

1) the nuclear facility and its operation meet the safety requirements laid down in this Act, and appropriate account has been taken of the safety of workers and the population, and environmental protection;

The Radiation and Nuclear Safety Authority (STUK) states that Fortum has ensured safety at the Loviisa 1 and Loviisa 2 nuclear power plant units in accordance with the current regulations. Fortum has proposed measures to further improve safety at the Loviisa 1 and Loviisa 2 nuclear power plant units during the new operating licence period. Based on STUK's assessment, Fortum has the qualifications, procedures, competence and resources needed to continue the safe operation of the nuclear facility.

In accordance with section 25 of the Nuclear Energy Act, STUK proposes to Fortum that development work in the following focus areas be continued in the next operating licence period; implementation of measures to improve safety, development of probabilistic risk analysis, and ageing management. STUK also proposes that the deadline for submitting the report on the next periodic safety review to STUK shall be by the end of 2030.

The basic services, legal protection and permits division of the Regional State Administrative Agency for Southern Finland considers there to be no obstacles to the approval of the operating licence application from the environmental health perspective.

An up-to-date reasoned conclusion issued by the Ministry of Economic Affairs and Employment as the competent authority pursuant to the EIA Act has been included in this decision in accordance with section 26 of the EIA Act, and Fortum must follow the guidelines of the reasoned conclusion. According to the reasoned conclusion, the project options reviewed in the EIA report do not have any significant harmful environmental impact which would be unacceptable, or which could not be prevented or mitigated to an acceptable level. In its application for an operating licence, the applicant states that it is acting in accordance with the conditions of the licence, continuously seeking to reduce the impact of operations on the environment by using the best practices and technologies where possible. According to the statement of the Uusimaa ELY Centre, special attention must be paid in the further plans for the power plant to measures to improve the ecological status of the water body where cooling water is discharged from the power plant.

Taking into account the statements made, the Government considers that the nuclear facilities belonging to the Loviisa power plant and their operation meet the requirements set out in section 20(1)(1) of the Nuclear Energy Act. The safety of the population is discussed below in connection with the discussions on section 6 of the Nuclear Energy Act.

2) the methods available to the applicant for arranging nuclear waste management, including disposal of nuclear waste and decommissioning of the facility, are sufficient and appropriate;

Fortum Power and Heat Oy has arranged the nuclear waste management of the Loviisa power plant in such a way that the company itself takes care of the interim storage of spent nuclear fuel at the power plant site. The company takes care of the planning and implementation of the disposal of spent nuclear fuel through Posiva Oy, a company founded in 1995 which Fortum owns together with Teollisuuden Voima Oyj. Posiva Oy has submitted an operating licence application for the encapsulation and disposal of spent nuclear

fuel to the Government in 2021. The Government will decide on Posiva's application separately at a later date.

Fortum Power and Heat Oy has also taken upon itself to handle the management of low- and intermediate-level waste at the plant site, including their disposal, as well as the planning of the decommissioning of the nuclear power plant. The company has a valid operating licence for the disposal facility for low- and intermediate-level waste, which has been granted separately from this decision.

In accordance with this decision, the company may possess, produce, handle and store a maximum of 12,800 bundles of spent nuclear fuel generated by the operation of the Loviisa nuclear power plant, and a maximum of 10,000 m^3 of low- and intermediate-level nuclear waste, generated in connection with or as a result of the operation of the Loviisa nuclear power plant, and decommissioned radiation sources . The small amounts of low- and intermediate-level waste generated in Olkiluoto during the encapsulation of spent nuclear fuel generated by the Loviisa power plant can also be considered to have been generated as a result of the operation of the Loviisa nuclear power plant, even if the place where the waste originated is actually outside the plant site.

The above-mentioned amounts are slightly higher than the amounts of waste that the company anticipates to be generated in connection with or as a result of the operation of the power plant. According to the company, the increased margin for fuel takes into account, among other things, possible changes to the way that the fuel is loaded, modifications to the nuclear fuel design, and increases to the number of protective elements (if any). Correspondingly, for low- and intermediate-level waste, the margin takes into account, among other things, the increase in the amount of waste caused by any necessary plant modifications, or the need to return the waste from the disposal facility for low- and intermediate-level waste to the power plant for further treatment. The increased margin is acceptable considering how long the licence will be valid for.

In addition, the licensee may possess, handle and store a maximum of 2,000 m^3 of low- and intermediate-level waste originating from elsewhere in Finland and of radioactive waste with an activity concentration equivalent to above mentioned and for which the licensee or the State of Finland has a waste management obligation under the Nuclear Energy Act or the Radiation Act. However, mere handling of a waste batch without storing it long term will not require a transfer of the waste management obligation.

According to section 9 of the Nuclear Energy Act, a licence holder whose operations generate or have generated nuclear waste (party with a waste management obligation) shall be responsible for all nuclear waste management measures and their appropriate preparation, as well as for their costs (waste management obligation). A corresponding operator's waste management obligation is also imposed in the Radiation Act.

It is the Government's opinion that it is important for the overall good of society that the national programme for nuclear waste management and the management of other radioactive waste are implemented in a safe and appropriate manner. In practice, the challenging aspect with regard to the national programme has been that some individual waste batches do not fall within the scope of the licence holder's current licence conditions. Within the scope of licence condition 1.3, the licence holder has the opportunity, at its discretion, to

agree on business transactions related to the national programme for the management of nuclear waste and other radioactive waste management carried out in Finland. Any other licence procedures governed by the Nuclear Energy Act or the Radiation Act must be taken into account when carrying out such transactions.

With regard to the handling and storage of waste that originated elsewhere than in the Loviisa nuclear power plant area, the requirement is that the waste management obligation will be or has been transferred to the licence holder or to the State of Finland. The purpose of transferring the waste management obligation is to ensure that the appropriate waste management measures will be taken right up until the disposal of the waste or release from supervision. However, waste batches can be handled at the Loviisa nuclear power plant without transferring the waste management obligation. Handling the waste batches may include placing them in intermediate storage; however, transferring the waste management obligation is not required for intermediate storage of less than 10 years. The State of Finland shall always bear ultimate responsibility for waste that has been disposed of in a disposal facility.

According to licence condition 2, the company shall submit for the approval of the Ministry of Economic Affairs and Employment a plan for the decommissioning of the Loviisa nuclear power plant in accordance with section 7g of the Nuclear Energy Act. An update to the plan shall be submitted for approval on a regular basis during the operation pursuant to the operating licence at the intervals specified in section 7g.

In addition, an update to the plan shall be submitted within three years of the end of energy production, unless by then the licence holder has submitted to the Government an application for a new licence for the Loviisa 1 and Loviisa 2 nuclear power plant units according to the life cycle of the power plant, as required by the Nuclear Energy Act. The licence application may also concern the Loviisa nuclear power plant more widely, rather than covering only the above-mentioned power plant units.

After the end of energy production, the decommissioning plans for the nuclear power plant units and other nuclear facilities located in the plant site will be separated and subject to approval by various authorities. A plan for the decommissioning of the buildings and storage facilities necessary for the management of nuclear fuel and nuclear waste shall be submitted for approval to the Ministry of Economic Affairs and Employment for the first time by the end of 2060.

The plan may be required to be submitted earlier if energy production ends significantly before the end of 2050. After that, the updated plan shall be submitted for approval on a regular basis during the operation pursuant to the operating licence, at least every 10 years. It is justified to schedule the updating of the plan so that it can be submitted to the authorities for approval at the same time as the periodic safety review referred to in section 7e of the Nuclear Energy Act.

In practice, this licence condition ensures that the company will submit the next licence application required by the Nuclear Energy Act to the Government well in advance, so that the authorities will have adequate time to assess the application before the expiry of the nuclear power plant units' operating licence. This licence condition also sets a longer

interval for submitting the plan for the decommissioning of the buildings and storage facilities necessary for the management of nuclear fuel and nuclear waste after the end of energy production.

In its statement, STUK has stated that the requirements set in section 20(1)(2) of the Nuclear Energy Act are met. STUK applies its own procedures to assess the adequacy of the capacity for the storage of spent nuclear fuel at the Loviisa nuclear power plant.

Based on the reports submitted to it, the Ministry of Economic Affairs and Employment has stated that Fortum has arranged a financial provision for the cost of nuclear waste management for the Loviisa nuclear power plant in accordance with chapter 7 of the Nuclear Energy Act.

In light of this, the Government states that the methods available to the applicant for arranging nuclear waste management, including the disposal of nuclear waste and the decommissioning of the nuclear facility, are sufficient and appropriate.

3) the applicant has sufficient expertise available and, in particular, the competence of the operating staff and the operating organisation of the nuclear facility are appropriate;

Based on STUK's statement and safety assessment, Fortum has the qualifications, procedures, competence and resources needed to continue safe operations.

In light of this, the Government states that the applicant has the necessary expertise at its disposal and that the operating organisation and the qualifications of the operating personnel of the Loviisa power plant are appropriate.

4) the applicant is otherwise considered to have the financial and other prerequisites to engage in operations safely and in accordance with Finland's international contractual obligations.

In the opinion of the Ownership Steering Department of the Prime Minister's Office and based on currently known facts, Fortum's ability to generate results and cash flow from continuous operations is sufficient to operate the Loviisa nuclear power plant and to make the necessary investments.

The obligations that need to be taken into account when considering the applications include those set in the following agreements:

- Agreement between the non-nuclear-weapon Member States of the European Union, the European Atomic Energy Community (Euratom) and the International Atomic Energy Agency (IAEA) in implementation of Article III (1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons (Finnish Treaty Series 55/1995)
- Convention on Nuclear Safety (Finnish Treaty Series 74/1996)
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Finnish Treaty Series 36/2001)

- the 1960 Convention on Third Party Liability in the Field of Nuclear Energy (the "Paris Convention") and its supplementary conventions and additional protocols.

According to STUK, the assessment it has carried out has not revealed any factors that would prevent performing the operation described in the application safely and in accordance with Finland's obligations based on international conventions and agreements.

Fortum has communicated the investment project related to the operating licences to the European Commission on 13 October 2022 in accordance with Article 41 of the Treaty establishing the European Atomic Energy Community (the "Euratom Treaty").

In light of this, the Government considers that the applicant has the financial and other means necessary for safe operation, as referred to in the application, in accordance with Finland's obligations based on international conventions and agreements.

The nuclear facility and the operation thereof otherwise fulfils the principles laid down in sections 5–7 of the Nuclear Energy Act

The Loviisa 1 and Loviisa 2 nuclear power plant units produce energy to cover almost 10% of Finland's electricity consumption. The electrification of society is proceeding at pace, and demand for electricity is expected to grow briskly again in the 2020s and 2030s after a long period of flat growth. Part of the increased demand is covered by wind power. The construction of new wind turbines and wind power capacity is booming in Finland. To ensure sufficient supply, however, stable and predictable energy sources, such as nuclear power, are also needed in the electricity system alongside weather-dependent energy sources. Extending the operation of the Loviisa power plant is justified from the perspective of securing the supply of electricity in Finland.

The Loviisa power plant contributes to lowering the price of electricity in Finland, which benefits households, business life and all other electricity users as well. Securing the supply of electricity and keeping the electricity prices reasonable are essential ways of protecting the competitiveness of industry. The prospect of electricity price stability and affordable prices long into the future will increase investors' interest in Finland.

Electricity-powered processes and technologies can be used to replace fossil fuels, which in turn will help curb climate change. The operation of nuclear power plants contributes to achieving the targets for reducing greenhouse gas emission set in the Climate Act and Finland's goal of becoming carbon neutral by 2035.

By virtue of the justifications mentioned earlier and below, the Government considers that the granting of operating licences is in line with the overall good of societyin accordance with section 5 of the Nuclear Energy Act.

The Radiation and Nuclear Safety Authority has stated that there have been no operation-related events during which safety at the power plant deteriorated significantly or significant amounts of radioactive substances were released into the environment. The radiation doses and radioactive substance releases incurred during operation have been below the established reference levels and dose limits.

Safety at the Loviisa 1 and Loviisa 2 nuclear power plant units has been extensively assessed on the basis of current requirements. During operation, numerous modifications and changes have been made to the power plant units to improve safety. The current development aspects concerning the operating documents and organisations of the Loviisa power plant have been stated in the Radiation and Nuclear Safety Authority's statement.

Therefore, the Government considers that the granting of operating licences to the Loviisa 1 and Loviisa 2 nuclear power plant units as well as to the buildings and storage facilities necessary for the management of nuclear fuel and nuclear waste does not conflict with the principle on the safe use of nuclear energy laid down in section 6 of the Nuclear Energy Act.

The Government further states that the Loviisa nuclear power plant and its nuclear waste management arrangements according to the Nuclear Energy Act meet the principles laid down in section 6a of the Nuclear Energy Act.

The Radiation and Nuclear Safety Authority (STUK) has stated that the security and emergency arrangements of the Loviisa nuclear power plant are adequate, that the safeguards necessary to prevent the proliferation of nuclear weapons have been appropriately arranged, and that the nuclear facility operator's liability for nuclear damage has been provided for in the prescribed manner. STUK carries out the measures required by section 20(2) as part of its normal supervision.

Based on the statements received, the Government considers that the Loviisa power plant's safety, security and emergency arrangements and other arrangements for limiting nuclear damage and securing the operation of the power plant by preventing unlawful activities are adequate.

Based on the above, the Government concludes that all the conditions for granting the operating licence have been met.

The period of validity of the licence

The Government considers that one of the prerequisites for the continuous improvement of the safety culture of the nuclear power plant is to obtain certainty about extending the operations. Since the statements given do not reveal any significant circumstance that would conflict with ensuring the safe operation of the nuclear power plant units, the Government considers that the operating licences may be granted for the length of licence applied for.

Replaced decisions

Upon becoming final, this decision shall replace the licence granted by the Government on 26 July 2007 (6/330/2006) to Fortum Power and Heat Oy to operate the Loviisa 1 and Loviisa 2 nuclear power plant units.

Entry into force and enforcement of the decision

The Government notes that, according to section 122(3)(3) of the Administrative Judicial Procedure Act (808/2019), a decision that is not final may be enforced if enforcement of the decision cannot be postponed due to a public interest.

The Government considers that enforcing the decision that is not final can be considered to be in the public interest. The safe and profitable operation of the power plant requires a predictable investment climate and sufficient certainty about the future. The extended operation of the nuclear facility will also support the security of supply of electricity production, as the nuclear facility produces energy to cover approximately 10% of Finland's electricity needs.

In its assessment of the matter, the Government has also taken into account the objectives of the national programme for the management of spent nuclear fuel and radioactive waste. In accordance with the objectives of the national programme, it is in the public interest to dispose the radioactive waste generated by VTT Technical Research Centre of Finland's FiR 1 research reactor and the research laboratory for radioactive materials (Otakaari 3) to the disposal facility located in the Loviisa nuclear power plant area. As a result of delayed enforcement, reception of these wastes at the Loviisa nuclear power plant area would at least be delayed and VTT Technical Research Centre of Finland would incur significant additional costs.

Taking into account the above, the Government considers that, due to a public interest, the decision that is not final can be enforced. The decision becomes final at the end of the appeal period, unless an appeal is lodged against the licence.

Appeals

Written appeals against this decision can be lodged with the Supreme Administrative Court. Any person to whom a decision is addressed or whose right, obligation or interest is directly affected by a decision may appeal against the decision. An appeal can be made on the basis of the decision being unlawful. The appeal document must be submitted to the registry of the Supreme Administrative Court within the time allowed for appeal. The appeal instructions are enclosed.

Fee

This decision is provided against a fee charged to the applicant in the amount of EUR 84,100, determined according to the Decree on Fees for Control of Nuclear Energy (1474/2001).

Helsinki, 16 February 2023

Mika Lintilä

Minister of Economic Affairs

Jorma Aurela

Chief Engineer

APPENDIX Instructions for appeal

DISTRIBUTION Fortum Power and Heat Oy
Radiation and Nuclear Safety Authority
Ministry of the Interior
Ministry of the Environment
Ministry of Social Affairs and Health
Ministry of Defence
Regional State Administrative Agency for Southern Finland
Centre for Economic Development, Transport and the Environment for Uusimaa
City of Kouvola
City of Loviisa
Municipality of Lapinjärvi
Municipality of Myrskylä
City of Porvoo
Municipality of Pyhtää

INSTRUCTIONS FOR APPEAL

Appellate authority

Written appeals against this decision can be lodged with the Supreme Administrative Court. An appeal can be made on the basis of the decision being unlawful. The appeal document must be addressed to the appellate authority and submitted to the registry of the Supreme Administrative Court within the time allowed for appeal.

Time allowed for appeal

Appeals must be submitted within 30 days of receiving notification of the decision. The date of receiving notification is not included in the time limit for appeal. If the deadline for appeal falls on a public holiday, Saturday, Independence Day, 1 May, Christmas Eve or Midsummer Eve, the time limit for appeal shall be extended to the following working day.

Ordinary service is carried out with a letter delivered to the addressee by post. The addressee is considered to have been informed of the matter on the seventh day after the sending of the letter, unless otherwise proven. In the case of standard electronic service, the addressee is considered to have been informed of the matter on the third day after the sending of the message, unless otherwise proven.

In the case of substituted service, the decision is considered to have been served on the third day after the date indicated on the certificate of service or acknowledgement of receipt. An authority is considered to have been informed of the matter on the date the letter arrives.

Contents of appeal

The appeal document must specify

- the appealed decision
- the appealed parts of the decision, the demanded amendments, and the grounds for the appeal
- the basis of the right of appeal if the decision appealed against is not directed at the appellant
- the name, municipality of residence and telephone number of the appellant
- the postal address and any other address to which documents relating to the proceedings may be sent.

Should the appellant's right to be heard be vested in a legal representative, an attorney or a licensed legal counsel, or the appeal have been drawn up by someone else, the appeal document must indicate said person's name and domicile.

The Administrative Court must be informed without delay of any changes of contact details during the pendency of the appeal.

Appendices to the appeal

The following must be attached to the appeal document:

- the appealed decision in the original or as a copy, accompanied with appeal instructions
- the certificate of service or other evidence of the beginning of the time allowed for appeal
- the documents provided in support of the appeal, unless they have already been delivered to the authority
- for an attorney, a power of attorney, unless the attorney is an attorney-at-law, a public legal aid attorney or a licensed legal counsel.

Submitting the appeal

The appeal may be delivered in person, by post as a pre-paid postal item, by means of electronic data transmission, or by means of an agent or courier. Sending the appeal document by post or electronically is at the sender's own risk.

The appeal must arrive at the appellate authority within the office hours before the end of the 30 days' time allowed for appeal. An electronic document must arrive at the Administrative Court so that it is available to the Court in a reception device or a data system for processing the message on the last day of the time allowed for appeal before 16.15.

The office hours of the Supreme Administrative Court are Monday to Friday from 8.00 to 16.15.

Appeals can also be filed via the e-service of administrative and special courts at https://asiointi2.oikeus.fi/hallintotuomioistuimet

Contact details for the Supreme Administrative Court:

Postal address: P.O. Box 180, FI-00131 Helsinki

Street address: Paasivuorenkatu 3, FI-00530 Helsinki

Switchboard: +358 29 56 40200
Fax: +358 29 56 40382

email: korkein.hallinto-oikeus@oikeus.fi

Court fee

Proceedings in the Supreme Administrative Court are subject to a court fee under the Act on Court Fees (1455/2015). The amount of the fee is EUR 530. The Act on Court Fees lays down separate provisions on cases where no fee is charged.