Report on the situation in the environmental impact assessment of the waste-to-energy plant

Turun Seudun Jätehuolto Ltd (TSJ) wants to find out how the waste-to-energy production in its operating area could be continued the environmental permit of the Oriketo waste incineration plant having been expired. The report concerning this issue has been compiled in accordance with the regional waste management plan of Southern and Western Finland and the objectives of the waste policy adopted by the municipalities in the Turku region.

The principal aim is to find the best feasible solution from the point of view of technology and economy to develop waste-to-energy production in the Turku region. The Topinoja area in Turku and Palovuori in Raisio have been chosen as the alternative locations for the new waste-to-energy power plant.

The project to be assessed in the environmental impact assessment procedure covers the utilisation of waste-derived fuel to power a waste power plant. This enables making use of the energy contained in the municipal solid waste produced in the Turku region also in the long run.

The waste-to-energy plant will be fuelled by the source-separated, non-recyclable municipal solid waste from private households and services, and possibly also by the solid waste produced in commerce and industry. The total amount of this waste amounts to some 150 000 tonne annually. Small amounts of special waste classified as hazardous waste produced in the health care system would also be used as fuel. The municipal solid waste used as energy would be collected from the operating area of the Turun Seudun Jätehuolto Ltd, from elsewhere in Southwest Finland, and possibly also from more remote areas.

Illustrations of the plant alternatives - Raisio Palovuori (above) and Topinoja (below).

Environmental impact assessment (EIA)

The task in hand consists of assessing the environmental impacts in ways and to the accuracy imposed by the Act and Decree on EIA Procedure.

Technical specifications of the new power plant
Fuel capacity 150 000 t/a
Electric power output c. 15 MW
Heat power output c. 35 MW
Total efficiency 85 - 90 %
Average annual operating time 8 000 h
Average annual electricity output n. 100 GWh
Average annual heat energy output c. 280 GWh

EIA procedure consists of:

- defining the project alternatives to be assessed
- describing the prevailing state of the environment to be assessed
- assessing the impacts to be expected
- comparing the chosen alternatives to the state of affairs when no project is realised
- determining the possible mitigating measures of harmful impacts
- presenting a proposal for monitoring the project induced impacts
- keeping contact with the residents and the interest groups in the sphere of influence of the project

The new waste-to-energy power plant has to zero alternatives and two optional locations:

- Alt. 0a: No new waste power plant will be built. Instead, the energy utilization of the municipal solid waste produced in the area of Turun Seudun Jätehuolto Ltd will continue in Oriketo at the present capacity (50 000 tonne annually) and the exceeding amount of the waste will be processed somewhere else.
- Alt. 0b: No new waste power plant will be built. The municipal solid waste produced in the area of Turun Seudun Jätehuolto Ltd will be transported to be processed somewhere else to produce energy, or it will be processed elsewhere as required by permits.
- Alt. 1: A new waste-to-energy power plant with the capacity of 150 000 t. annually will be located in connection with the Topinoja municipal solid waste management site.
- Alt. 2: A new waste-to-energy power plant with the capacity of 150 000 t. annually will be located in Palovuori in Raisio.

Besides assessing the alternative locations, also two optional incineration processes will be assessed as regards the two optional projects:

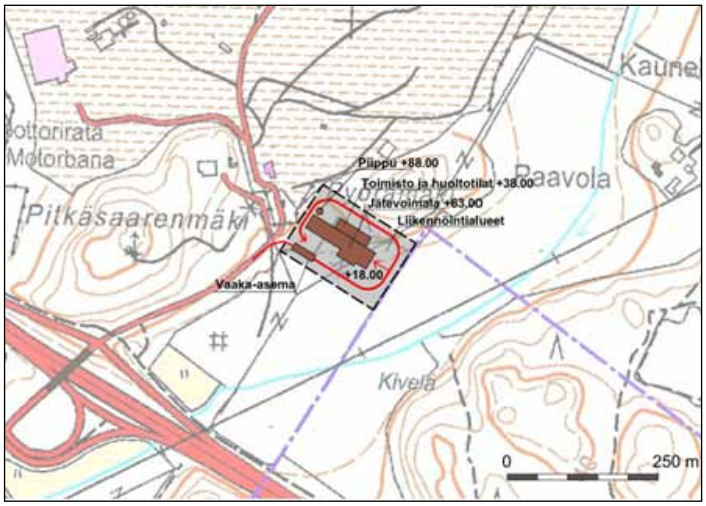
1) traditional fixed bed combustion, and
2) fluidized bed combustion of the waste.

The flue gas and waste water purification methods as well as other technical solutions are basically identical in all location and incineration process alternatives.

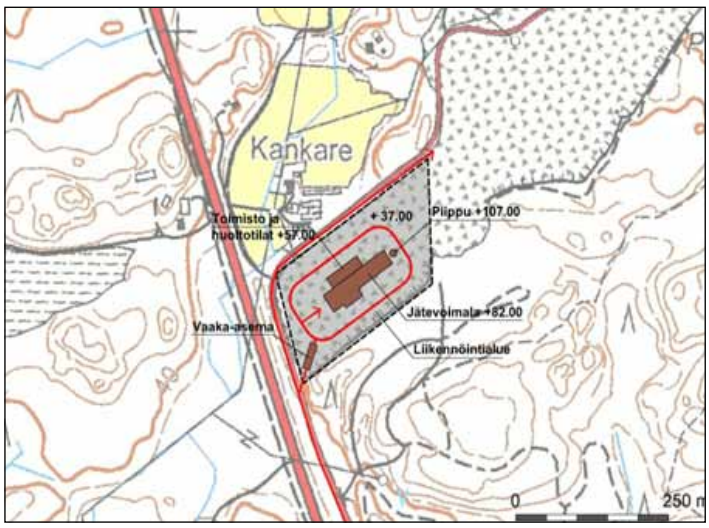
The prevailing state of the impact assessment

Traffic

The impacts on traffic have been assessed based on the increase of the traffic volume due to the waste power plant. The power plant induced traffic comprises waste transport, the transport of slag and flue gas purification waste, and material deliveries. The volume of the heavy traffic is estimated to be some 95 vehicles daily. Besides, there will be the traffic caused by the employees working at the waste power plant. It is estimated to be some 30 vehicles daily. In both of the project alternatives (VE1 and VE2), the increase of the traffic volume will remain low when compared to the current traffic volume and the capacity of the road network. The new waste-to-energy power plant having been built, the share of heavy traffic in the area of the present waste incineration plant will decrease by some 60 vehicles per day.



Preliminary siting of the waste power plant in the project areas – the Topinoja alternative above, Raisio Palovuori below.



Air quality

The impacts on the air quality generated by the new waste-to-energy power plant have been assessed using emission modelling. The calculation model takes into account wind conditions, terrain formations, and ground surface classifications. The background concentrations in the area have been taken into account in the assessment. The assessment indicates that in both of the project alternatives (VE1 and VE2) the concentrations due to emissions will remain low in comparison to the air quality limit values set by the European Union, national air quality guide and limit values as well as by other reference values used. The

new waste-to-energy power plant having been built, the emissions caused by the present waste incineration plant in Oriketo will end, and the impacts will remain minor.

Soil, bedrock and ground waters

In both of the two areas, constructing the waste-to-energy power plant will require some rock excavation and earthwork. Basically there will be no emissions to soil or ground waters at the operating stage of the plant. As regards the two project alternatives (VE1 and VE2), the soil has already been worked and the ground water formation is scanty. Neither of the alternatives lies in an important ground water area.

Surface waters

It is possible that the surface waters from the project area will carry solid matter at the construction stage of the waste power plant. The waterways down from both of the location alternatives (VE1 and VE2) already contain abundant solid matter and constructing the power plant is not considered to have any special impact on the surface waters. The waste waters generated at the operating stage of the waste power plant will be led into a purification plant and the rainwater of the yards into the storm sewer or to the terrain. The quality of the rainwater in the yard area equals that of the rainwater in any ordinary trafficked areas.

Land use and landscape

In Topinoja constructing a waste power plant is in accordance with the planned land use, and the land use planning allows building a waste power plant. In the Topinoja area (VE1), changes in the close landscape will be moderate, while those in the distant landscape will remain minor. In the Palovuori area (VE2), the impact on the land use will be minor and the area would change so that its character would be more like that of constructed areas. Locating the waste power plant in Palovuori requires a change in land use plans and compiling a local detailed plan. In the Palovuori area, the waste power plant would have a minor impact on the close and distant landscapes.

Nature

There are no protected objects in the vicinity of the Topinoja area (VE1). Some of the Topinoja area still remains in its natural state, but no occurrences of threatened species have been found. The Palovuori project area (VE2) has been heavily worked and consequently has no natural values. The Kullanvuori rock area of national importance lies close to the Palovuori project area. No occurrences of flying squirrels have been found in the vicinity of the two project area alternatives.

Impacts on human health, living conditions and pleasantness of the environment

As regards assessing people´s living conditions and the experienced pleasantness of the area, the source material of the assessment consists of the information obtained in previous impact assessments, of the comments and opinions obtained in resident workshops as well as of the results of this inquiry, for instance.
Health impact assessments will be based on the emission and noise modellings made. The measured values will be compared to the valid guide values and other corresponding parameters. The health impact assessment will be conducted the results of all other assessments being available.

Noise

Assessing the noise impacts is presently underway. Noise impacts are assessed by modelling the noise generated by the power plant and the noise due to the traffic related to operating it. The results of the noise assessment will be made use of when assessing the nature values and impacts on human health, for instance.

Zero alternatives

In case no new waste-to-energy power plant be constructed, continuing the operations of the present waste incineration plant (Alternative VE0a) as well as the waste-to-energy production somewhere else (Alternative VE0b) have been considered as zero alternatives. The impacts generated by the Alternative VE0a correspond to the prevailing situation. The environmental permit of the plant will, however, expire in the year 2014. Continuing the operations requires renovating measures in the plant and applying for a new environmental permit.

In the Zero Alternative VE0b the operations of the present waste incineration plant will finish and the future of the area will depend on the future land uses. The present waste incineration plant is valuable as regards its architectural history and it forms an established part of the cultural landscape which will affect the future use of the area.

In both of the zero alternatives (VE0a and VE0b) the situation in Topinoja and Palovuori will mainly remain as it is today. The future land use will affect developing the areas. This implies that the Topinoja area will be developed as a waste management area and in Palovuori landscaping will be carried out some time in the future.

Project time table - what and when?

- The environmental impact assessment (EIA) will be conducted in 2012 and the environmental permit will be applied for in early 2013.
- Construction work will be started the required permits having been accepted.
- Efforts are made to start the construction of the waste-to-energy plant in 2015 and the plant is destined to be in operation in 2016–2017.

Additional information:

- www.tsj.fi /Jätevoimalan YVA
- http://projektit.ramboll.fi/YVA/TSJ/index.html

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