METSÄ FIBRE OY

ÄÄNEKOSKI BIOPRODUCT MILL
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Karttakuvat:

Maanmittauslaitos (MML)

Suomen ympäristökeskus (SYKE)

SISÄLLYS

SUMMARY

Background and objective

Metsä Fibre is looking into the construction of a bioproduct mill with a capacity of 1,300,000 tonnes of pulp at its integrated unit in Äänekoski. The bioproduct mill would process the pulp mill's side streams and leftovers into new bioproducts and raw materials.

Demand for softwood pulp is expected to remain stable in the future. In Finland, it is possible to fell an additional six million solid cubic metres of pulpwood for the production of softwood pulp, still keeping the operations sustainable. The bioproduct mill project would replace the current pulp mill, enable the manufacture of new bioproducts in the area, and allow new players to get involved.

The project seeks to meet energy and material efficiency requirements, to achieve renewable energy targets, and to reduce carbon dioxide emissions.

The party responsible for the project is seeking the information required to make a final decision on its investment by spring 2015. Construction of the bioproduct mill would last about two years. The mill would then start up late in 2017.

Alternatives to be assessed

The new mill would be located in Äänekoski, within the existing mill complex, whose facilities include a pulp mill, a paperboard mill, a power plant, and other industrial plants. Building within the existing mill complex is a good option with regard to environmental impact. Äänekoski is ideally situated for, among other things, wood transportation. The existing mill's technical and financial lifecycle would end in the early 2020s. No other locations have been examined for the aforementioned reasons.

- Alternative VE1 is the bioproduct mill concept. In terms of tonnage, the most significant product for VE1 is kraft pulp, which is made from both softwood and hardwood: production would stand at about 1.3 million tonnes per year. Tall oil, turpentine, bark, sawdust, and sulphuric acid would be also produced. The pulp mill's processes would include extracting lignin from the waste liquors generated.

  In addition to the pulp mill, the mill complex would include a product gas plant, in which biomass generated as by-products is processed into product gas, and a digestion plant to process the sludge from the wastewater treatment plant. The bioproduct mill would not use any fossil fuels whatsoever.

- Alternative VE2 is simply a pulp mill with a capacity of 1.3 million tonnes of softwood and hardwood pulp. The mill would be able to use fossil fuels in its lime kiln and as a backup fuel in its recovery boiler. In addition to bioenergy, the mill would also produce other by-products that could be sold: turpentine, tall oil, bark, and sawdust.

- The control alternative, VE0, is not to actualise the project. The existing pulp mill in Äänekoski would continue its operations to the end of its life, that is, to about 2020. Current pulp production stands at about 500,000 tonnes per year.

when planning traffic arrangements. An analysis of the required traffic arrangements is currently ongoing in cooperation with the Town of Äänekoski.

Compared to the noise generated by the operations of the existing pulp mill, the noise impact will increase during construction. Noise will be generated by increased traffic, as well as by construction and earthworks on the mill site. The noise impact will extend to at least the closest residential buildings. Construction work will be carried out during the day on weekdays.

Emissions from increased traffic and dust emissions from earthworks will have an impact on air quality. The waste generated by demolition and construction work will be recycled as effectively as possible. Contaminated soil will be appropriately treated. Any impact on land use will be only temporary. Noise and clouding of water caused by the construction may be considered a disturbance in the local landscape.

The project will not carry out any construction in areas that are protected or designated as sites of natural value. Birdlife and other wildlife in the industrial area and its vicinity have already adapted to the disturbance caused by existing operations and no significant impact is expected from the construction.

When it comes to impact on humans, an extremely favourable effect on employment is forecast during the construction phase. Traffic and noise may cause unfavourable impacts.

The impact during construction would be of similar magnitude for both alternatives VE1 and VE2.

Impact during operation

Impact on bodies of water

Due to the significantly larger size of the new mill, there will be some increase in the amount of wastewater channelled into bodies of water.

The highest concentrations of wastewater will be found in the immediate vicinity of the discharge point to a distance of about 100 metres. For example, the maximum total phosphor impact in Lake Vatia would be 5 mg/m^3 (actual figure 2.9 mg/m^3 in 2013) and 2.9 mg/m^3 in Lake Leppävesi (1.7 mg/m^3 in 2012). In Vaajakoski and the northern part of Lake Päijänne, the estimated change in solid concentrations would be about 0.05 g/m^3 (0.05 mg/l), the total phosphor 0.3 mg/m^3 (0.3 µg/l), and the total nitrogen 5 mg/m^3 (5 µg/l). Changes in oxygen consumption are minimal farther away from the mill.

In Lake Leppävesi, close to the northern part of Lake Päijänne, solid concentrations have been close to 1 mg/l, and phosphor concentrations about 15 µg/l. In 2013, industrial and residential phosphor loading in the northern part of Lake Päijänne stood at 38 kg/d and nitrogen at 2,500 kg/d. The Äänekoski plants accounted for 53% of the phosphor and 9.6% (240 kg/d) of the nitrogen.

The volume of cooling water required by the new mill will be many times that required by the existing mill and power plant.

significant impact will extend to Lake Vatia. It is estimated that any early thawing effect would be limited to a few days.

Ice coverage to the south of the discharge point located on the Teräväniemi peninsula beside Lake Kuhnamo is expected to weaken by about 50%, and thawed areas could form during a mild winter. Weakened ice would probably also be found in the area between the discharge point and the Ala-Keitele canal.

The mill complex is already surrounded by industry, and recreational use of the area is in accordance with that. Weakened ice may impair opportunities for winter fishing in the vicinity of wastewater and cooling water discharge points. No impact is expected on the recreational use of waterways heading southwards. The project is not expected to significantly lower the usage rate of bodies of water.

There is no difference in the impacts of alternatives VE1 and VE2 on bodies of water.

The overall impact of a joint wastewater treatment plant has been assessed. If wastewater from Suolahti and the town of Äänekoski were channelled to the new mill's treatment plant, nitrous nutrients could be more effectively removed, while phosphor loading would remain at roughly current levels. The algae in the Äänekoski–Vaajakoski waterway are phosphorus-limited, so nitrogen removal would have practically no effect on eutrophication levels.

Impact on air quality and climate

In 2013, odorous sulphur compounds caused an air quality index value of 'very bad' on a total of four days and 'bad' on 20 days. Sulphur dioxide and nitrogen dioxide concentrations were below both limit and reference values.

The impact on air quality has been estimated using the upper limits for emissions in accordance with the best available technique (BAT), and emission volumes indicate the maximum effect. Emissions from actual operations will probably be significantly lower.

Modelling shows that normal operations at the new mill will have a minimal impact on air quality and, if the new mill is constructed, not a single limit or reference value for pollution will be exceeded. Sulphur dioxide and nitrogen dioxide limits intended to protect vegetation and ecosystems will also not be exceeded. When compared to reference values, the new mill's operations will not cause any odour nuisance. A new, tall chimney will reduce the concentrations caused by air emissions in the surroundings.

TRS and SO_2 concentrations caused by a disturbance at the new mill would, depending on the weather, reach a maximum of about 70 per cent of reference values, and the highest concentrations would form in the vicinity of the mill (to a radius of about three kilometres from the source of the emissions). In such a situation, the odour threshold for TRS concentrations (0.7 µg/m^3) may be momentarily exceeded over an extensive area, up to more than fifteen kilometres from the source of the emissions. The area affected by odour – its extent, range and direction, and the strength of the odour – will depend on the weather conditions. In calm weather (a stable inversion), strong odours will primarily be experienced locally, in the vicinity of the source of emissions, while windy weather could cause weaker odours to be experienced farther from the source.

Waste will be appropriately treated and its treatment and final disposal is not expected to have any significant impact on the environment. The amount of waste generated will be minimised and its recycling rate will be continually improved.

The majority of the existing mill complex lies within the industrial zone, where there is no natural environment or natural vegetation. Siberian flying squirrels have been spotted in the vicinity of the project area.

The Central Finland Bird Club has designated Kuhnamo in Central Finland as a MAALI area – a nationally valuable bird area The closest Natura 2000 area is Lake Vatia's Saraavesi, which is located on the lower course of the Äänekoski rapids about seven kilometres to the south-east of the project area. The nearest conservation areas are located four kilometres away.

The mill's operations will not cause any direct impact on surrounding vegetation or wildlife. The operations of the mill may result in, for example, traffic noise disturbances in surrounding areas. These are not expected to be significant, as the area is already in industrial use.

Considering the proximity of a bird area of national value, preventative measures should be taken to avoid any industrial oil and chemical spills in particular. According to the assessment, sulphur dioxide and nitrogen oxide limits for the protection of vegetation and ecosystems will not be exceeded when the mill is operational.

Due to the distance involved, no direct impact on local Natura-protected habitats or other nearby conservation sites is expected during either the construction or operation of the mill.

The impact of the new power line on the natural environment is also expected to be minimal, as there is already a heavily man-made environment along the route, i.e. it is primarily agricultural or forestry land. The project is not expected to have a significant impact on conservation areas, nor on endangered or protected species.

There are no substantial differences between the environmental loading or expected impact of alternatives VE1 and VE2. The environmental impact of alternative VE0 would, for the time being, be the same as those of the existing mill.

Impact on soil, bedrock and groundwater

The soil in the project area currently exhibits hydrocarbon concentrations that exceed threshold values. Contaminated areas will be removed before construction of the new mill. The mill complex is not located in, or in the immediate vicinity of, a classified groundwater area.

During normal operations, the bioproduct mill will not cause any discernible impact on the soil and bedrock in the project area.

Impact on human health, living conditions and comfort

The project (alternatives VE1 and VE2) supports Äänekoski's industrially focused business structure by generating new opportunities, particularly through indirect effects. Once production begins, the new mill's impact on employment is estimated at over 2,500 new jobs throughout the value chain in Finland (currently 1,000). Implementing the project may have the favourable effect of creating an image of Äänekoski as a vibrant industrial town.

bodies of water. Road and street development is necessary to ensure good traffic flow and improved road safety. The potential impact on bodies of water during the construction phase can be minimised through the proper planning and execution of hydraulic engineering. The mill's wastewater is not expected to have an impact on the physico-chemical classification of Lake Kuhnamo or its lower waterways, or on the biological classification of their organisms. The impacts on bodies of water during operation are considered acceptable.

The most significant positive impacts of the project would be support for the area's industrially focused business structure, through indirect effects in particular, and thereby its favourable effect on human living conditions, such as income. Another favourable consequence may be new traffic connections and improved traffic arrangements in the area. The project would promote the growth of the bioeconomy in Finland.

Both of the project's implementation alternatives are considered to be viable.

Information and participation

Residents and other stakeholders may participate in the project's EIA procedure by presenting their views to the contact authority (the Centre for Economic Development, Transport and the Environment for Central Finland) and to the consultant or party responsible for the project.

A team has been appointed to monitor the EIA procedure, and its aim is to promote the flow and exchange of information between the party responsible for the project, the authorities, and other stakeholders. The following were invited to be members of the monitoring team: the party responsible for the project, the Centre for Economic Development, Transport and the Environment for Central Finland, the environmental authorities of the town of Äänekoski and the municipality of Laukaa, the regional water management cooperation group for Central Finland, the Central Finland Fire and Rescue Department, the Finnish Association for Nature Conservation (Central Finland chapter), the Regional Council of Central Finland, Central Finland's Fishery Centre, the Kuusa Village Association, Vihreä Väylä ry, Äänekosken Yrittäjät, Ääneseudun Kehitys Oy, Äänekosken Energia, Äänevoima, Specialty Minerals Nordic, CP Kelco, Metsä Board, and representatives from the Finnish Forest Centre.

An open briefing and debate concerning the environmental impact assessment procedure was organised for the general public in Äänekoski. The assessment procedure was presented and members of the public had the opportunity to give their opinions on the environmental impact assessment. Another briefing and debate will be organised in Äänekoski on 1 September after the completion of the environmental impact assessment report.

A residents' survey was conducted while the EIA report was being drawn up, and was supplemented by interviews with residents and representatives from the town of Äänekoski and Central Finland's Fishery Centre. The survey was announced at a public event, in newspapers, and with leaflets distributed to all households in the town (about