EIA APPENDIX B

Author
Anitha Jacobsson
Phone
+46 10 505 12 04
Mobile phone
+46 70 520 40 14
E-mail
anitha.jacobsson@afconsult.com

Date
2018-11-05
Project-ID
750412

SCA Obbola AB

Environmental Impact Assessment (EIA) for environmental permit in accordance to Swedish Environmental Code

ÅF-Infrastructure AB

Author
Anitha Jacobsson

Reviewed by
Caroline Grotell

ÅF-Infrastructure AB, Address: Frösundaleden 2E, Stockholm SE-169 99 Sweden
Phone +46 10 505 00 00, Based in Stockholm, www.afconsult.com
Org.no. 556185-2103, VAT nr SE556185210301

Non technical summary

Background

The Environmental Impact Assessment (EIA) has been prepared by ÅF on behalf of SCA Obbola AB (hereafter SCA Obbola / the company). The EIA is the foundation for the application for an environmental permit for continued and extended operations at the facility in Obbola, Umeå municipality.

SCA Obbola manufactures unbleached paper, kraftliner and Eurocraft, which is used for the manufacture of corrugated cardboard and is then used as a surface layer. Kraft liner is mainly made from fresh fiber and a higher blend of recycled fiber is used in the manufacture of Eurokraft. The products are suitable for quality demanding applications such as food, heavy goods and products with a long shelf life. Constant product development is required to provide the right strength properties, especially when using recycled fiber.

Nearly 80% of the production is exported to other countries. The main market is Western Europe, mainly the Nordic countries, England and Germany.

For the SCA Obbola business, a permit currently applies according to the Swedish Environmental Code, which was granted by the then Environmental Court at Umeå District Court through subdivision 2009-12-04, case M 2145-08. The permit allows an annual production of 500,000 tonnes of liner. According to the permit conditions, production may be based on a maximum of 300,000 tonnes of sulphate pulp and a maximum of 300,000 tonnes of recycled fiber pulp per annum.

A new paper liner machine will provide a production capacity that exceeds the currently licensed liner production, 500,000 tonnes / year.

Investments in the pulp mill in recent years in the form of recovery boiler, evaporation plant, causticizing plant, green liquor handling and digestery etc. has created the prospect for producing up to 850,000 tonnes of liner per year through the installation of a new paper machine and a new recycled fiber plant. At maximum production on the paper machine, an increased sulphate pulp production will also be required, so measures will need to be implemented in the pulp mill.

Public consultation

According to the Swedish Environmental Code, consultations have been held in the form of a meeting with the County Administrative Board in Västerbotten County, the Environment and Health Protection Office in Umeå Municipality and the Swedish Work Environment Authority.

Also the Swedish Agency for Marine and Water Management, The Swedish Civil Contingencies Agency (MSB), the Swedish Maritime Administration, the Swedish Transport Agency, the Fire Department in Umeå Municipality, the Swedish Public Health Agency, the Swedish Transport Administration, the Swedish Coast Guard, the Swedish Post and Telecom Authority (PTS), the Fire Department Västerbotten, the Swedish Chemical Agency, the Swedish Civil Aviation Authority (LFV), Geological survey of Sweden (SGU), The Legal, Financial and Administrative Services Agency (Kammarkollegiet), Swedish Armed Forces, the Swedish mapping, cadastral and land registration authority (Lantmäteriet), the Swedish National Heritage Board, The Swedish Geotechnical Institute (SGI) and Västerbotten Museum have been invited for consultation.

Consultations have also taken place with the public and relevant organizations.

Statements have been received from the County Administrative Board, the Swedish Maritime Administration, the Public Health Agency, the Swedish Armed Forces, the Swedish Civil Aviation Authority (LFV) and the Västerbotten Museum. The Swedish Agency for Marine and Water Management and SGU have refrained from commenting. The Swedish Environmental Protection Agency has not submitted any statements in regards to this issue.

Limitations and alternatives

Limitation

This EIA describes the environmental impacts that may occur in the external environment as a result of the activities proposed by the applicant in the environmental permit application.

Applied for business or business activity is referring to the business activities described in detail in the technical description and briefly in the present EIA, see section 7.

Geographical delimitations have also been made. The consequences as a result of licensed and applied activities have been investigated and described partly for the immediate area itself, and partly from a larger geographical perspective, for a so-called area of influence, i.e. the area that may be affected by the business.

Zero alternatives

In an EIA the requested business must be compared with a zero alternative, i.e. what the environmental impact is expected to be, directly and indirectly, if the requested business is not realized. The zero alternative in this EIA is defined as the current licensed activity.

Alternative location

Alternative localization for additional operations has not been investigated in detail, as additional processes are clearly linked to existing production on this particular site. An alternative location is therefore considered an impossible option. The current location is also considered to meet both environmental, production and operational technical requirements.

Alternative design

Alternative methods for liner production are not relevant, but when selecting additional processes and purification equipment for the applied business, the company will investigate alternative designs, especially with regard to protective measures for emissions to water and air. In the technical description, a comparison with BAT is also reported.

Location

The plant is located on the eastern Obbola island, in connection with the Obbola village, in Umeå municipality, Västerbotten county, see figure below.

MS2011/02634

Figure *Illustration of SCA Obbola's location and surrounding areas.*

Protected areas

The closest nature reserve is the Ume River delta, which is a Natura 2000 area, that is located about 9 km southeast of Umeå town and in its southernmost part located about 2 km north of the production facilities, see figure below. The delta is divided into two quarters; Österfjärden and Västerfjärden. Previously, the Ume River delta was comprised solely of a smaller nature reserve covering the island of Stora Tuvan and its surroundings.

The area has a very rich and varied plant and animal life thanks to the constant natural changes brought about by land elevation and sedimentation processes.

The delta is most well-known for its value as a resting place for moving wetland birds, which comes from the northern Swedish mountain range. The delta also serves as a breeding ground for birds.

The delta area is also designated as a so-called Ramsar area, i.e. protection of wetlands under the Ramsar Convention on Wetlands of International Importance.

Strömbäck-Kont is another of Umeå municipality's own nature reserves as well as a Natura 2000 area. It is located on the mainland west of the island of Obbola and has traces of inland ice and a rich flora (Protected Nature, 2018).

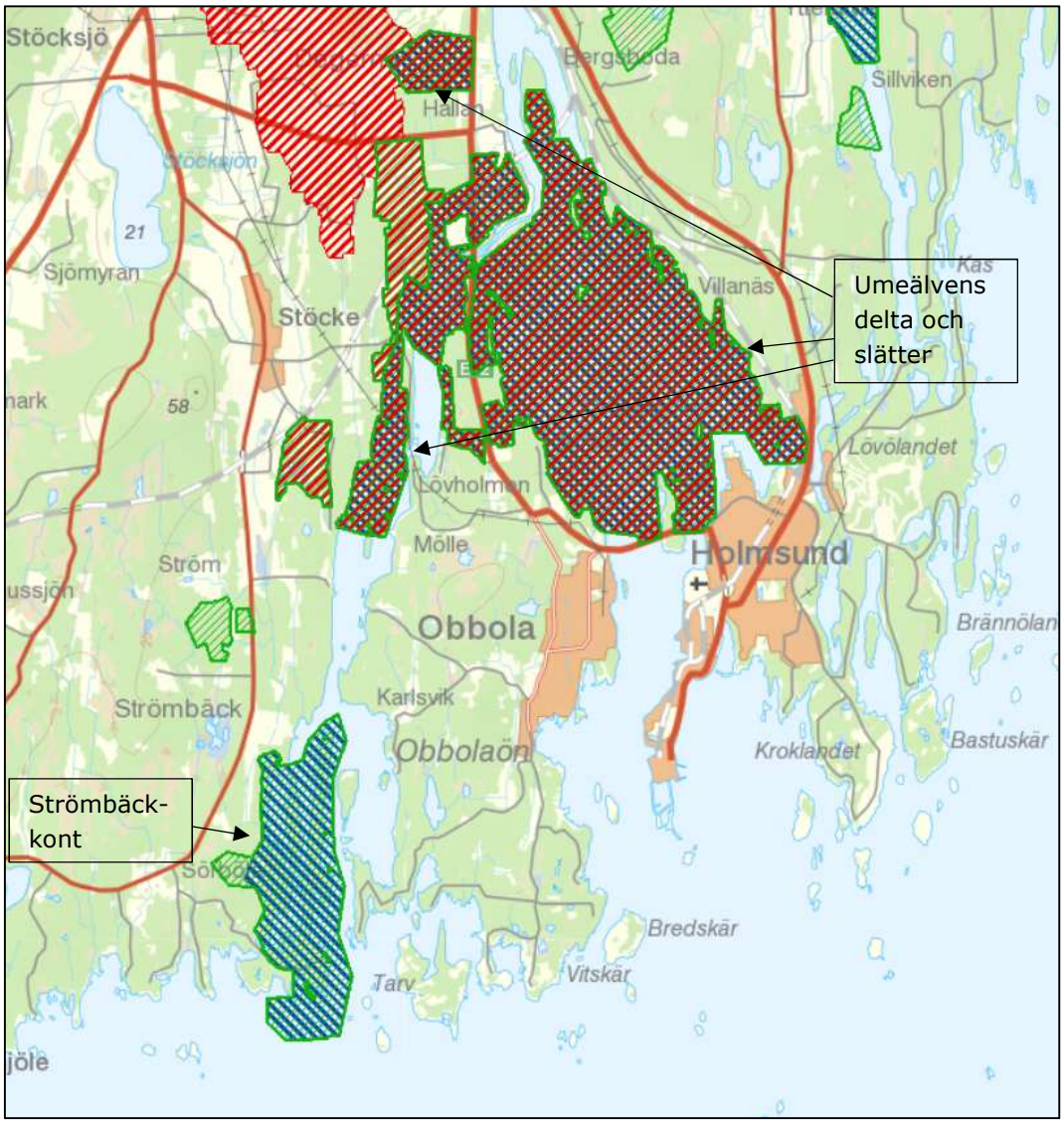

Figure *Display of the nature reserves and Natura 2000 sites that are adjacent Obbola Island (Protected Nature, 2018).*

The archipelago areas outside Umeå / Holmsund are designated as national interest areas for professional fishing, mainly because of important catch areas for whitefish and salmon fishing.

No area of national interest for outdoor life can be found in the immediate area of the facility.

The Ume River delta is the area of national interest for nature conservation that is located closest to the facility. What makes the delta a national interest is its geology, reeds, vegetation-rich water, deciduous forest and fauna.

Across the Österfjärden from the facility in Obbola lies a cultural environment of national interest, Västerbacken Holmsund, which was originally Baggböle Sawmill's loading site.

Based on the consequences described in this EIA, the requested business is not deemed to cause disturbance of significance to any of the protected areas specified above.

Current permitted activity (zero alternative)

The final product manufactured at the plant is liner, which consists of its own unbleached sulfate pulp and recycled fiber pulp. Liner is then used in the manufacture of corrugated cardboard where it forms the smooth surface layer. At the mill there is a paper machine which according to current planning will be replaced with a new one.

The production facilities consist of wood handling, sulphate pulp line and associated units for chemical recycling, recycled fiber plant and paper machine. In addition, there are common functions in the form of units for energy production, water treatment plant and service departments and offices. The figure below shows a process overview.

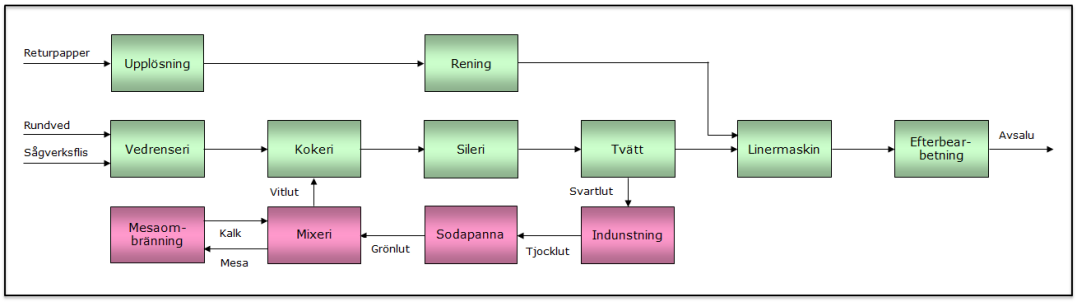

Figure Process overview.

For steam production the solid fuel boiler and a smaller oil boiler are used in addition to the recovery boiler.

The flue gases from the boiler, the blast furnaces and the solid fuel boiler and the oil boiler are cleaned in an electric filter.

In order to limit emissions to water there are internal process sewage systems and a common wastewater treatment plant.

In the industrial area there is also a port facility that is currently used by the company for the transport of heating oil and the export of turpentine.

Planned changes to the business activites

As previously mentioned, SCA Obbola will apply for a permit according to the Swedish Environmental Code for an increased production of liner to 850,000 tonnes per year. This will also require that the conditions limiting pulp production allow a sulfate pulp production of a maximum of about 600,000 tonnes / year and a maximum return fiber pulp production of about 400,000 tonnes / year.

The planned, more substantial, capacity-building measures are summarized below:

- New recycled fiber line
- New fiber handling in the sulphate pulp line
- New paper machine
- Upgraded evaporation and connecting system

- New recovery boiler
- New blast furnace
- New solid fuel boiler
- Extended biotreatment

Environmental impact

Management of natural resources

Bark and wood residues as well as chips from the wood handling are used for energy production together with external biofuel.

The majority of the water demand in the various process steps consists of circulated water or filtrate from subsequent steps (the countercurrent principle when washing the pulp). In and between the various process steps, the pulp is diluted and dewatered to the desired concentrations.

The pulp mill has an extensive system for the recovery of cooking chemicals and for the production of new cooking liquid. Close to 99% of the used cooking chemicals is recycled.

The additive chemicals in the paper mill have a high retention (fixing) to produced liner. One of the conditions for high retention is the extensive reuse of process water in the paper mill. Thus, this reuse also minimizes the use of chemicals.

Steam production takes place mainly with internal fuels, mainly black liquor and bark, as well as external biofuels. The biofuel proportion amounts to 87% at the zero alternative and increases to 98% at the applied activity.

For the applied business activity, all steam produced from the soda boiler and bark boiler passes through one or more backpressure turbines, possibly equipped with condenser turbine, which means increased own electricity production on site.

Port operations

SCA Obbola's port facility consists of a quay, cast in concrete, with a length of about 70 m long and 6 m wide.

At the zero alternative, two vessels per year are estimated to call the oil port and three vessels per year are applied for.

Transports

Transport volumes are expected to increase by close to double in the applied production compared to the zero alternative. SCA Obbola's share of truck passages on the roads in the immediate area will increase compared to the zero alternative. The number of vessels calling at their own oil port will also double.

The vehicle park used for transport is modern. In procurement, requirements are set in accordance with the forest industry's sustainability policy and sustainability criteria for road transport.

Emissions to air from process and from transport

Emissions to air in the form of nitrogen oxides, sulfur dioxide, dust and reduced sulfur compounds, from the process of the applied level of activity, will almost double

compared with the zero alternative. In terms of fossil CO_2, emissions will be more than halved.

The results of dispersion calculations in terms of nitrogen dioxide, sulfur dioxide and particles, which include emissions from both the process and transport, including background levels, show that both the environmental quality standards and the environmental quality objectives are contained by a margin.

Emissions of nitrogen oxides in the applied for business account for about 15% of emissions in the county. The company's contribution to eutrophication and acidification through the emission of nitrogen oxides is considered not insignificant, but is not expected to result in the critical load limit for coniferous forests being exceeded in the impact area.

Emissions of sulfur dioxide in the applied operations make up about 3% of the emissions in the county and the operation's contribution to acidification through the emission of sulfur oxides is estimated to be minor.

The emission of dust in the applied operations constitutes about 6% of the emissions in the county. The company's contribution to the dust deposit in the immediate area is considered to be minor.

The availability of the odor destruction system for strong and weak odor gases is high (98-99%), so odor complaints are very rare.

Fossil carbon dioxide emissions will decrease by 75% for the applied business activities compared with the zero alternative. The business's fossil carbon dioxide emissions, when applied for, constitute about 2% of the county's total emissions.

Emissions to water

The emission level of COD increases by a little more than twice as a result of the increase in production. The oxygen content has been classified as high status, thus the increase in production is not considered to lead to deterioration of oxygen conditions in the recipient or for bottom fauna.

For nutrients, the increase in the applied production case is not as high compared to the current situation, as in the case of COD. The nitrogen contribution is a small incease compared to Umeälv's contribution. The contribution of phosphorus from SCA Obbola increases by some percentages compared to today's situation. However, the emissions of nutrients are not expected to affect the current status of nutrients and biological quality factors.

Emissions of suspended substances (SÄ) in the applied business activity constitute the same order of magnitude, or even lower, compared to previous emission levels, and the quality factor is not considered to deteriorate lighting conditions.

The emission of most metals from SCA Obbola constitutes and is expected to constitute a continued marginal contribution to the applied production level compared to Umeälv. The applied production is not considered to lead to deterioration of specific pollutants for ecological status or exceeding limit values for chemical surface water status.

A characterization of outgoing, treated process wastewater from SCA Obbola was carried out in 2018. The toxicity was assessed as negligible or low and the risk considered minor for any impact in the recipient. The risk is judged to remain minor on the recipient following the applied production level, since high technical standard of both processes and purification it is planned for.

SCA Obbola's applied production level is therefore not considered to make it difficult to achieve the environmental quality standards for ecological status or chemical surface water status for the Österfjärden or Fjärdgrund area.

Risks to the aquatic environment from the use of chemicals

The assessment is that the use of chemicals at SCA Obbola is not expected to pose any risk to the aquatic environment in the applied operations.

The company has carried out a chemical biological characterization to study the possible effects of biologically treated process wastewater. Both acute and chronic toxicity were negligible or low and the risk of adverse effects in the recipient was assessed as low.

Waste

The company has well-documented waste management routines with systems for extensive source sorting of waste into different fractions. As far as possible, materials are taken for reuse, recycling and energy recovery to minimize the amount for landfilling, which will also apply to the applied business.

Green sludge, slag and ash are used as construction material within the company's landfill, which is being closed. The work is being done together with an external contractor and is scheduled to be completed by December 2020.

The applied business activity will result in the amount of waste to increase, but both in the zero alternative and in the applied operation, only about 2% of the resulting residual material and waste will be placed on municipal landfill.

Any hazardous waste is stored under cover.

Noise

Today, noise levels are estimated at 48 dB(A) at the nearest building. SCA Obbola's applied business operations will increase noise levels in excess of the current noise conditions of 50 dB(A) in the building, unless further noise mitigation measures are taken. This includes measures and costs that currently are difficult to assess, but may amount to approximately SEK 60 million compared to standard equipment.

Emissions to soil and groundwater

A status report was submitted to the regulator in October 2018.

In summary, the status reports state that the results from the environmental technical survey show that pollution levels are generally low, below the Swedish Environmental Protection Agency's general targeted values for MKM in the majority of cases. In individual cases, levels of organic matter have exceeded MKM. In addition to metals, levels of PCB-7, chlorophenols and DDT have also been found in soil layers. In the groundwater metals and organic substances (BTEX, PAH as well as fractionated aliphates and aromatics) has been found.

Risk and security

The purpose of the environmental risk analysis has been to identify potential accidents that could lead to damage to the environment in or around the business, as well as personal injury to mainly third parties. The focus has been where large quantities of chemicals or combustible materials or fuels are handled within the plant.

The operations are also covered by the lower level of requirements of the Seveso legislation, due to the amount of stored fuel oil and turpentine.

A number of recommendations have been identified during the work on the environmental risk analysis to further reduce the number of risks identified. The concluding summary of the risks identified for the applied business operations in mind is that it is low and acceptable, provided that the risk mitigation measures specified in the environmental risk analysis are taken into account. The possibility of suitable management of any fire extinguishing water that may occur at the existing plant is considered high.

Regarding the risk of legionella, the company has, in addition to following applicable regulations and the industry-wide work, commissioned the supplier of the biological treatment plant to monitor the legionella issue. The company will install cooling towers, but has clear requirements that the water passing through the cooling towers must not contain residues of bio sludge to reduce the risk of the emergence of legionnaires.

Environmental impact during the construction phase
Demolition and civil engineering works will last for about 3.5 years and can mainly cause noise and to some extent vibration. There is also a risk of spillage to soil and water from machinery and vehicles in connection with the work being done. Exact execution has not been established, but will be developed within the framework of ongoing planning and in collaboration with the external contractors.

Residents in the area, nearby business operators and supervisory authorities will be kept informed of ongoing work and planned work that may cause disruptions.

Regarding noise, there are specific guiding limits for construction works that will be adhered to.

Environmental and sustainability goals
The operations are certified according to management systems for work environment, external environment, energy and quality and are also FSC® and PEFC ™ certified. SCA Obbola works continuously with various energy efficiency measures and measures to reduce climate impact.

Most local, national and international environmental and sustainability goals are not adversely affected by SCA Obbola. However, there are some challenges in adapting the business completely to the goals. It is primarily the fulfillment of the goals in the assessment area "Construction and infrastructure" that are adversely affected by the business. This is largely due to the noise levels that are expected to occur. Noise-canceling measures are required to achieve the company's own goals in the area and not to adversely affect the goals of other community levels for a good built environment. The impact on meeting the targets for reduced acidification and eutrophication is on the borderline between negligible and negative.