



VÄXJÖ COURT  
Land and Environment  
Court

## JUDGEMENT

03/09/2013

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Växjö

### APPLICANT

Tekniska Verken i Linköping AB, 556004-9727

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### THE CASE

Application for a permit for existing and extended activities at the Gärstad plant in Linköping municipality, Östergötland County

Catchment area: 67

N: 6477254 E: 538463

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### JUDGEMENT

#### Permit

The Land and Environment Court grants Tekniska Verken i Linköping AB a permit for environmentally hazardous activities in accordance with the Environmental Code at the Gärstad plant on the property Rystads-Gärstad 12:4, Linköping municipality, to construct a new incineration plant (Boiler 5) and subsequently, in the whole Gärstad plant, to annually incinerate:

- a maximum of 600,000 tonnes of waste (total capacity) and within the framework of this amount to incinerate 70,000 tonnes of hazardous waste, 10,000 tonnes of animal waste and other waste or products of animal origin, and 10,000 tonnes of sewage sludge,

- fuels of the type listed in Ch. 17 Sections 1, 2, 3, 4, and 6 in the Ordinance (2013:253) on the incineration of waste without quantity limits.

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**Conditions**

In addition to conditions in the Ordinance (2013:252) on large-scale incineration plants, the Ordinance (2013:253) on waste incineration and the Ordinance (1998:801) on self-regulation of the operator, the following conditions apply.

1. Operations, including measures for reducing emissions to water and air and other disruptions from operations, shall be conducted in overall conformity with what the applicant has stated or undertaken in the case, unless otherwise specified in this judgement.
2. Only such non-hazardous waste that is not exempted in accordance with Appendix B2 to the EIA may be incinerated. Only hazardous waste listed in Appendix B3 to the EIA may be incinerated. After approval by the supervisory authority, other types of waste than those set out in Appendices B2 and B3 may also be incinerated.
3. The quantity of hazardous waste incinerated may amount to a maximum of 70,000 tonnes per year. The following quantities in different categories may be incinerated.

<b>Hazardous waste in the following chapter, as in App. 4 of the waste ordinance</b>	<b>Permitted incinerated quantity per year</b>
3, 7, 19 and 20 together	70,000 tonnes in total
5, 12, 13 and 16 together	20,000 tonnes in total
Other chapters with waste codes covered by the application	10,000 tonnes in total

4. Only sewage sludge from the waste water treatment plant Nykvarn may be received for incineration, provided that the sludge cannot or may not be otherwise used.
5. There must be documented, appropriate procedures to ensure that waste fuels received, other than in exceptional cases, do not contain waste types other than those covered by the permit.
6. The content of contaminants in hazardous waste to be incinerated may not exceed the following levels, with the exception of metal pieces larger than 4 mm. Quantities are specified in mg/kg.

PAH (if coal tar)	100,000
PAH (other combustion)	50,000

arsenic	12,000
copper	8,500
chrome	12,500
lead	700
vanadium	100
nickel	2000

7. Hazardous waste containing more than 1 % of organic halogen compounds, expressed as chlorine, may not be incinerated.
8. The calorific value of the hazardous waste must be between 5 and 50 MJ/kg. Exceptions from the lower calorific value may be made when mixing in oil contaminated sludge from the plants. The admixture of hazardous waste, as a daily average value, may not exceed 50 % by weight of wood that is hazardous waste and 25 % by weight for other hazardous waste fractions.
9. For operation and emissions of air pollutants from each production unit, what is prescribed for a waste incineration plant in the Ordinance (2013:253) on the incineration of waste will apply, subject to condition 10.
10. The following limit values shall apply instead of those specified in Section 64 in the ordinance on incineration of waste.

Cadmium and thallium	0.02 mg/Nm <sup>3</sup> *
Mercury	0.03 mg/Nm <sup>3</sup> *
Antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium	0.25 mg/Nm <sup>3</sup> *
11. Measurements of the emissions to air of hydrogen chloride and hydrogen fluoride from Boiler 5 must be carried out at least every three months for the boiler's first twelve months of operation and at least twice a year after that. Measurements of the emissions to air of hydrogen chloride and hydrogen fluoride from other boilers must be carried out at least twice per year.
12. The emission of nitrogen oxides, measured as NO<sub>2</sub>, may have a maximum average value of 50 mg/MJ per year as a total for all production units at the Gärstad plant.

13. Emissions of nitrous oxide (N<sub>2</sub>O) may, as a total for all production units at the Gärstad plant, have a maximum average value per year of 15 mg/MJ.
14. Emissions of sulphur dioxide from all boilers in total may have a maximum annual average of 30 mg/Nm<sup>3</sup>\*
15. Emissions of ammonia (NH<sub>3</sub>) may, as a total for all production units at the Gärstad plant, have a maximum average value per year of 5 mg/MJ.
16. The total annual emissions of ammoniacal nitrogen (NH<sub>4</sub>-N) in outgoing water after the purification of flue gas condensate may not exceed 5.6 g/tonne of incinerated waste. The total annual emissions of ammoniacal nitrogen (NH<sub>4</sub>-N) in the outgoing water after the purification of flue gas condensate may, as a monthly average value, not exceed 18 mg/l (measured as 90-percentile over one calendar year).
17. The pollutant content of outgoing water after the purification of flue gas condensate may not exceed the following levels as monthly averages. A limit value is satisfied if at least ten of the monthly averages during a calendar year do not exceed this value. In addition, the pH must always be within the range of 6 to 11.

Total suspended solids	15	mg/l
Mercury and mercury compounds expressed as mercury (Hg)	5	µg/l
Cadmium and cadmium compounds expressed as cadmium (Cd)	2.5	µg/l
Thallium and thallium compounds expressed as thallium (Tl)	5	µg/l
Arsenic and arsenic compounds expressed as arsenic (As)	20	µg/l
Lead and lead compounds expressed as lead (Pb)	15	µg/l
Chromium and chromium compounds expressed as chromium (Cr)	30	µg/l
Copper and copper compounds expressed as copper (Cu)	20	µg/l
Nickel and nickel compounds expressed as nickel (Ni)	20	µg/l
Zinc and zinc compounds expressed as zinc (Zn)	100	µg/l

18. The quantity of dioxins and furans (the sum of individual dioxins and furans in accordance with to Section 54 of the Ordinance (2013:253) on the incineration of waste) in outgoing

water after purification of flue gas condensate may not exceed 0.1 mg/l. The limit may be exceeded under the provision in Section 101 in the ordinance on the incineration of waste.

19. There must be written procedures to limit the risk of contamination of rainwater by spillage of materials and other sources.
20. Noise from operations, including noise from machinery, must be limited so that it does not generate higher equivalent noise levels outdoors near houses than the following:
  - 50 dB (A) weekdays, Monday to Friday, (07:00 -18:00)
  - 40 dB (A) night-time, (22:00 - 07:00)
  - 45 dB (A) at other times

Operations which can typically generate instantaneous noise levels above 55 dB (A) may not be carried out at night-time (22:00 -07:00).

The specified limits must be verified by on-site measurements and calculations. Equivalent values shall be calculated for the time periods specified above. In the event of different operations occurring, the equivalent sound level shall be determined for each such permit. Checks must be made as soon as there have been changes in operations which are expected to result in total noise emissions increasing by more than 1 dB (A), and at least at each periodic inspection or when requested by the supervisory authority.

21. Fuel oil must be stored in an embankment, where the bank can hold the entire amount to be stored. Taps and filling points must either be inside the embankment area or made safe in some other way to prevent discharge into the surrounding area. The embankment, including any lead-throughs for pipes etc., shall be constructed of materials that are not permeable to oil.
22. Chemical products and hazardous waste produced in operations must be kept well-marked and handled in such a way that pollution of ground and water is not a risk. Indoor storage of liquids must be in areas with impermeable floors. Any floor drains must be fitted with devices to prevent any leakage from discharging into drains. Outdoor storage shall be on asphalt surfaces. Liquids must also be stored in an embanked area under a roof, or in other ways that provide

- equivalent protection. The embankment shall be designed to hold at least the largest container and 10% of the remaining stored volume. Embankments and any pipes etc. must be made of materials impermeable to the products stored therein. If necessary, the storage facility shall be equipped with fenders.
23. Should technically unavoidable stoppages, disruptions or faults to cleaning or measuring equipment occur with the result that emission limits to air and water are exceeded, the incineration of waste in the plant may under no circumstances continue for more than 4 consecutive hours. Total operations under such conditions may not exceed 60 hours per year. If several incineration lines are connected to the same equipment for flue gas cleaning, a limit of 60 hours of operation applies to the total time for all these lines. After the supply of waste has ceased, the company must observe that provided in Sections 18-20 in the Ordinance (2013:252) on large-scale incineration plants.
24. The company shall annually investigate and document the possibilities of reducing environmental impact from external transportation that the company performs itself or purchases. The study shall include, among other things, transport modes, transport distances, load levels, driving methods and fuel types.
25. Only those ashes stated in the application (wood bottom ash, coal bottom ash, bottom slag) may be used as construction material for the expansion of the Gärstad plant. Ashes must be placed at least 50 cm above the highest groundwater level and covered with asphalt or equivalent seal. Ashes may not be used within 50 metres of a ground water source. Transport and handling of ashes should be carried out in such a way that minimal disruptions, such as dust, occur.
26. Programs used for checks must specify measurement methods, measurement frequency and evaluation method.
27. The company shall keep the boards of Kallestad Distorp drainage company, 822002-6226, and Gärstad Åby Kallerstad Mörtlösa Torvinge drainage company, 822002-5111, informed about the environmental conditions in Mörtlösadiket.

28. If operations cease, wholly or partly, the company shall file a plan for the disposal of stored chemical products and hazardous waste and the treatment of any pollutants that operations may have given rise to.

\*Nm<sup>3</sup> means a temperature of 273°K, a pressure of 101.3 kPa and 11% oxygen (O<sub>2</sub>), dry gas.

### **Delegated issues**

The Land and Environment Court, pursuant to Chapter 22 Section 25 in the Environmental Code, allows the supervisory authority to impose conditions on

- approval of new waste fuels according to condition 2
- post-treatment
- handling of animal waste
- odours, litter and dust
- handling of ashes and other waste from operations
- monitoring, inspection and controls

### **Environmental Impact Assessment (EIA)**

The Land and Environment Court approves the EIA.

### **Date of starting up**

The new boiler (Boiler 5) must be started up at the latest by the end of 2020.

### **Provision of previous permit**

When the permit as in this judgement has gained legal force, as far as it concerns existing operations in the application it will replace the permit issued by the Land and Environment Court on 24 April 2008 in case no. M 796-07.

### **Implementation**

The permit may be implemented even if the judgement has not gained legal force.

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**PREVIOUS DECISION**

The Gärstad plant was built at the beginning of the 1980s under a permit pursuant to the Environment Protection Act issued by the National Licensing Board for Environment Protection. The current permit was granted pursuant to the Environmental Code by the Environmental Court through a judgement of 24 April 2008 in case no. M 796-07. The permit was for all operations at the Gärstad plant. In accordance with the permit, the company was allowed to annually incinerate 420,000 tonnes of waste (total capacity) and, within the framework of this amount, to incinerate max. 50,000 tonnes of hazardous waste, max. 10,000 tonnes of animal waste and other waste or products of animal origin and 10,000 tonnes of sewage sludge (until the end of 2012), as well as fuels of the types listed in Section 4 paragraphs 1 to 4 in the Ordinance (202:1060) on waste incineration and other solid fuels of biological origins without quantity limits.

A number of conditions were issued for the permit. The conditions for ammonia emissions were issued after a trial period in the Land and Environment Court's judgement of 20 December 2011 in case no. M 3405-11.

**APPLICATION****Petitions**

Tekniska verken i Linköping AB (the company) requests permission to construct a new incineration plant at the Gärstad plant (Boiler 5) and subsequently annually incinerate:

- a maximum of 600,000 tonnes of waste (total capacity) and within the framework of this amount to incinerate max. 70,000 tonnes of hazardous waste, 10,000 tonnes of animal waste and other waste or products of animal origin, and 10,000 tonnes of sewage sludge,
- fuels of the type listed in Ch. 17 Sections 1, 2, 3, 4, and 6 in the Ordinance (2013:253) on the incineration of waste without quantity limits.



The company requests

- that the date for starting up the new boiler be determined as the end of 2020,
- an implementation permit, and
- that the EIA be approved.

### **Proposal for conditions**

For operations, in addition to what follows from the Ordinance (2011:927) on waste, the Ordinance (2002:1060) on waste incineration, the Ordinance (1998:801) on operator self-monitoring and the Swedish Environmental Protection Agency regulations 2002:28, the following conditions shall apply:

1. Operations, including measures for reducing emissions to water and air and other disruptions from operations, shall be conducted in overall conformity with what the applicant has stated or undertaken in the case, unless otherwise specified in this judgement. Minor changes to operations that are not deemed to result in increased disturbance to the surroundings may be undertaken after consent by the County Administrative Board.
2. Only such non-hazardous waste that is not exempted in accordance with Appendix B2 to the EIA may be incinerated. Only such hazardous waste listed in Appendix B3 to the EIA may be incinerated. After approval by the supervisory authority, other types of waste than those set out in Appendices B2 and B3 may also be incinerated.
3. The quantity of hazardous waste incinerated may amount to 70,000 tonnes per year. The following quantities in different categories may be incinerated:

<b>Hazardous waste in the following chapter, as in App 4 of the waste ordinance</b>	<b>Permitted incinerated quantity per year</b>
3, 7, 19 and 20 together	70,000 tonnes in total
5, 12, 13 and 16 together	20,000 tonnes in total
Other chapters with waste codes covered by the application	10,000 tonnes in total

4. There must be documented, appropriate procedures to ensure that waste fuels received, other than in exceptional cases, do not contain waste types other than those covered by the permit.

5. The content of contaminants in hazardous waste to be incinerated may not exceed the following levels, with the exception of metal pieces larger than 4 mm. Quantities are specified in mg/kg.

PAH (if coal tar)	100,000
PAH (other combustion)	50,000
arsenic	12,000
copper	8,500
chrome	12,500
lead	700
vanadium	100
nickel	2000

6. Hazardous waste containing more than 1 % of organic halogen compounds, expressed as chlorine, may not be incinerated.
7. The calorific value of the hazardous waste must be between 2 and 50 MJ/kg. The admixture of hazardous waste, as a daily average value, may not exceed 50 % by weight for wood that is hazardous waste, and 25 % by weight for other hazardous waste fractions.
8. For operations and emissions of air pollutants from each production unit, what is prescribed for a waste incineration plant in the Ordinance (2013:253) on the incineration of waste shall apply.
9. Emissions of nitrogen oxide, measured as NO<sub>2</sub>, may have a maximum average value of 50 mg/MJ per year as a total for all production units at the Gärstad plant.
10. Emissions of nitrous oxide (N<sub>2</sub>O) may have a maximum average value of 15 mg/MJ per year as a total for all production units at the Gärstad plant. Control of emissions shall take place by measurement once per year. The measurement shall include a continuous run-up time and holding time phase. In the event of excess, the condition is considered to be met if measures are taken and re-measurement within three months shows that the limit is complied with.

11. Emissions of ammonia (NH<sub>3</sub>) may, as a total for all production units at the Gärstad plant, have a maximum average value per year of 5 mg/MJ.
12. Emissions of mercury (Hg) in flue gases, both in the gaseous phase and particle-bound, must not exceed 0.03 mg/Nm<sup>3</sup>\* as an average over at least 30 minutes and at most eight hours. Control of emissions shall take place by measurement once per year. The measurement shall include a continuous run-up time and holding time phase. In the event of excess, the condition is considered to be met if measures are taken and re-measurement within three months shows that the limit value is complied with.
13. Total emission of cadmium (Cd) and thallium (Tl) in flue gases, both in the gaseous phase and particle-bound, may not exceed 0.03 mg/Nm<sup>3</sup>\* as an average over at least 30 minutes and at most eight hours. Control of emissions shall take place by measurement once per year. The measurement shall include a continuous run-up time and holding time phase. In the event of excess, the condition is considered to be met if measures are taken and re-measurement within three months shows that the limit value is complied with.
14. Total annual emissions of ammoniacal nitrogen (NH<sub>4</sub>-N) in outgoing water after the purification of flue gas condensate shall not exceed 5.6 g/tonnes of incinerated waste. The total annual emissions of ammoniacal nitrogen (NH<sub>4</sub>-N) in the outgoing water after the purification of flue gas condensate may, as a monthly average value, not exceed 20 mg/l (measured as 90-percentile over one calendar year).
15. The pollutant content of outgoing flue gas condensate from Boilers 1-3 and Boiler 4 must not exceed the following levels.

Parameter	Value
copper	70 µg/l
lead	50 µg/l
cadmium	5 µg/l
nickel	70 µg/l
zinc	700 µg/l
chrome	70 µg/l
arsenic	60 µg/l

mercury	5 µg/l
thallium	30 µg/l
total: dioxins and furans	0.3 mg/l
susp.	15 mg/l

16. The pollutant content of outgoing flue gas condensate from Boiler 5 must not exceed the following levels.

Parameter	value
copper	50 µg/l
lead	50 µg/l
cadmium	5 µg/l
nickel	50 µg/l
zinc	300 µg/l
chrome	50 µg/l
arsenic	10 µg/l
mercury	5 µg/l
thallium	30 µg/l
total: dioxins and furans	0.3 mg/l
susp.	15 mg/l

17. There must be written procedures to limit the risk of contamination of rainwater by spillage of materials and other sources.
18. Noise from operations, including noise from machinery, must be limited so that it does not generate higher equivalent noise levels outdoors near houses than
- 50 dB (A) weekdays, Monday to Friday, (07:00 -18:00)
  - 40 dB (A) night-time, (22:00 - 07:00)
  - 45 dB (A) at other times

Operations which generally give rise to instantaneous noise levels above 55 dB (A) may not be carried out at night-time (22:00 - 07:00).

The specified limits must be verified by on-site measurements and calculations. Equivalent values shall be calculated for the time periods

specified above. Checks must be made as soon as there have been changes in activities which may lead to increased noise levels.

19. Fuel oil must be stored in an embankment, where the bank can hold the entire amount that is stored. Taps and filling points are to be included in the embankment area or discharge into the environment shall be prevented in other ways. The embankment, including any pipes etc., shall be constructed of materials that are not permeable to oil.
20. Chemical products and hazardous waste produced in operations must be kept well-marked and handled in such a way that pollution of ground and water is not a risk. Indoor storage of liquid substances must be in areas with impermeable floors. Any floor drains must be fitted with devices to prevent any leakage from discharging into drains. Outdoor storage must be on asphalt surfaces. Liquids must also be stored in an embanked area under a roof, or in other ways that provide equivalent protection. The embankment shall be designed to hold at least the contents of the largest container and 10% of the remaining stored volume. Embankments and any pipes etc. shall be made of materials impermeable to the products stored therein. If necessary, the storage facility shall be equipped with fenders.
21. Should technically unavoidable stoppages, disruptions or faults to cleaning or measuring equipment occur with the result that emission limits to air and water are exceeded, the incineration of waste in the plant may under no circumstances continue for longer than 4 consecutive hours. Total operations under such conditions may not exceed 60 hours per year. If several incineration lines are connected to the same equipment for flue gas cleaning, a limit of 60 hours of operation applies to the total time for all these lines. After the supply of waste has ceased, the company must observe that provided in Sections 18-20 in the Ordinance (2013:252) on large-scale incineration plants.
22. There must be control programs that specify measurement methods, measurement frequency and evaluation method.

23. The company shall keep the boards of Kallestad Distorp drainage company, 822002-6226, and Gärstad Åby Kallerstad Mörtlösa Torvinge drainage company, 822002-5111, informed about the environmental conditions in Mörtlösadiket.
24. If operations cease, wholly or partly, the company shall file a plan for the disposal of stored chemical products and hazardous waste and the treatment of any pollutants that operations may have given rise to.
25. Ashes may be used as a construction material for the expansion of the Gärstad plant. Only those ashes stated in the application (wood bottom ash, coal bottom ash, bottom slag) may be used as construction material. The ashes must be placed at least 50 cm above the highest groundwater level and covered with asphalt or an equivalent seal. Ashes may not be used within 50 meters of a ground water source. Transport and handling of ashes should be carried out in such a way that minimal disturbance, such as dust, occurs.
26. Emissions of sulphur dioxide from all boilers in total may have a maximum annual average of 30 mg/Nm<sup>3</sup>\* at 11 % O<sub>2</sub>.

\*Nm<sup>3</sup> means a temperature of 273°K, a pressure of 101.3 kPa and 11% oxygen (O<sub>2</sub>), dry gas.

### **Additional conditions**

Pursuant to Section 44 of the Ordinance (2013:253) on the incineration of waste, the company proposes the following conditions regarding the measurement of emissions of hydrogen chloride and hydrogen fluoride:

Measurements of the emissions to air of hydrogen chloride and hydrogen fluoride from Boiler 5 must be carried out at least every three months for the boiler's first twelve months in operation and at least twice a year after that. Measurements of the emissions to air of hydrogen chloride and hydrogen fluoride from other boilers must be carried out at least twice per year.

### **Delegated issues**

The Land and Environment Court, pursuant to Chapter 22 Section 25 in the Environmental Code, allows the supervisory authority to impose conditions on

- the approval of new waste fuels according to condition 2

- post-treatment
- handling of animal waste
- odours, litter and dust
- handling of ashes and other waste from operations
- monitoring, inspection and controls

### **APPLICATION**

The company intends to expand the Gärstad plant with one additional incineration line in the form of a waste-fired district-heating power plant. The main objectives are, among others, to enable a reduction in the combustion of fossil fuels in the district heating system, to improve the reliability of supply, and in the long term to enable the decommissioning of the district-heating power plant in central Linköping.

Through the new district-heating power plant, the capacity for incineration of waste will increase to 600,000 tonnes per year.

This application relates to current operations and the new district-heating power plant (Boiler 5) and increased capacity for the incineration of waste. The company therefore requests a completely new permit for the Gärstad plant, including the changes stated in this application.

### **Current plant**

At Gärstad plant there are currently four boilers for the incineration of waste and other solid fuels, one gas and steam turbine plant, and one district heating cooler for the excess heat produced in electricity generation during times of the year with lower heating requirements. The boilers 1, 2 and 3 have power ratings of 18 MW, 30 MW and 30 MW respectively (useful steam power ratings). The three boilers are located in the same building, and all are of the moving inclined grate type. Boiler 4, which was put in operation in October 2005, has a steam power rating of 68 MW. It is located in a separate building and is also of the moving inclined grate type.

In boilers 1-3, urea is injected directly into the combustion chamber to limit the formation of nitrogen oxides. Active carbon and lime are added to the flue gas to prevent the emission of heavy metals,

sulphur, hydrochloric acid and dioxins, and are then purified in a barrier filter for each boiler. The flue gases are subsequently purified in two wet purification steps for the further removal of sulphur; the first using a flue gas scrubber and condensation, the second using additional flue gas cooling. Finally, the three boilers are equipped with a common dioxin filter.

In Boiler 4, urea is directly injected into the combustion chamber to limit the formation of nitrogen oxides. Flue gas treatment takes place first in a dry system using four parallel barrier filters. Activated carbon and lime are added before the filters. Then follows a three-stage flue gas scrubber. In the first stage, ammonia, mercury, heavy metals and hydrochloric acid are separated at a low pH. In the second stage, sulphur is separated at a neutral pH. In the third stage, heat recovery takes place.

In all the boilers a condensate forms, which must be treated before it is discharged into the receiving body of water. The condensate treatment is shared for Boilers 1-3, but takes place separately for Boiler 4. It is, however, essentially the same process in the two purification plants. Purification is carried out in different stages, namely neutralisation, sedimentation, precipitation, flocculation, and filtration and carbon filtering. In the condensate purification for Boiler 4 there is also an ammonia removal stage, where ammonia is separated and returned to the boiler. Discharge takes place into Mörtlösadiket, which flows past the Gärstad plant and into the Roxen.

#### **Planned Boiler 5**

Boiler 5 will be similar in many respects to Boiler 4, but will have a steam power rating of 80 MW. The company made thorough deliberations in the choice of combustion technology and finally decided to equip the boiler with a moving inclined grate and flue gas condensation. The boiler will be equipped with auxiliary burners for light oil. The boiler will thus be designed essentially in the same way as boiler 4.

Boiler 5 will be located just to the east of Boiler 4 in a similar building.



Flue gas purification

Since Boiler 5 will be operated with damp fuels, the boiler will be equipped with flue gas condensation. It thus needs to be provided with purification equipment to reduce emissions to air as well as water. No decision has yet been taken on the design of the flue gas purification system. Among the methods that could be used are the following:

*Carbon monoxide and hydrocarbons.* The formation of these pollutants is limited by combustion measures (temperature, time, turbulence and sufficient oxygen), which also combat the formation of dioxins and dust.

*Nitrogen oxides (NO<sub>x</sub>).* NO<sub>x</sub> are limited during combustion by avoiding extreme temperatures and large excesses of air. This is normally not sufficient, and modern combustion plants are thus usually equipped with NO<sub>x</sub> purification in the form of SNCR (injection of ammonia into the combustion chamber).

*Dust.* For dust separation, the company intends to use bag filters. Bag filters are the most common types in plants where waste is incinerated, and have other functions than just the separation of dust.

*Sulphur dioxide and hydrochloric acid.* When incinerating waste, the acidic substances sulphur dioxide and hydrochloric acid are formed from sulphur and chlorine, which are present in varying concentrations in waste. Separation can take place either through the dry or semi-dry processing of flue gases with an alkaline absorbent, through wet absorption in a flue gas scrubber, or by a combination of these methods. Dry and semi-dry purification normally use slaked lime as an absorbent. There is not judged to be any significant difference in effect between these options.

In the case of semi-dry purification, the lime is moistened prior to being blown into the flue gas, which increases its reactivity. This utilises lime better, and thus reduces both lime consumption and residues from flue gas purification. Semi-dry purification is a more complex and expensive method than dry purification.

In wet purification, acidic components are captured in water in some type of flue gas scrubber. This is done in two steps: one acid, which captures hydrochloric acid and one neutral, which captures sulphur dioxide. During absorption the scrubber water becomes acidified and needs to be neutralised before it can be discharged into the receiving body of water. Sodium hydroxide is normally used for neutralisation, but there are also technologies that use lime. If sulphur dioxide is captured using lime, plaster is obtained as a by-product, which requires a special system for its handling. Another technology for the capture of sulphur dioxide is scrubbing with hydrogen peroxide solution. This gives pure sulphuric acid that can be injected into the boiler, which reduces corrosion and deposits.

*Heavy metals and dioxins.* Heavy metals and dioxins are present mainly in solid form and are therefore mainly bound to dust particles. They are thus separated, together with other dust, in the dust purification process. Some gaseous pollutants, including dioxins and mercury, have a high affinity for activated carbon. Through the addition of activated carbon before a bag filter, efficient purification of these pollutants is obtained in a similar fashion to the separation of sulphur dioxide and hydrochloric acid by lime.

*Ammonia.* Ammonia in the flue gas is a by-product of NO<sub>x</sub> reduction and SNCR, in which a surplus must be added to obtain the desired reduction. Ammonia is highly water-soluble, especially at low pH, which means that near-total separation is obtained by an acidic scrubber step.

#### Condensate water purification

The company has not taken a decision regarding the design of the condensate water purification process. The following methods may be used.

Condensate water can be purified from metals and suspended solids by neutralisation, precipitation, flocculation and sedimentation. Neutralisation in itself gives a powerful cleaning effect. The following steps are intended to capture both the fine particles of metal hydroxides formed by neutralisation and the rest of the metals that are still present in solution. Mercury is bound by the addition of a

sulphide binding chemical, since mercury sulphide is a stable compound which can be separated together with other metal compounds once it is formed. After metal purification, the pH is further increased so that ammonia ions becomes free ammonia, which then is driven off in a stripper column where steam or air mixes with the flow containing ammonia and converts the ammonia into a gas. The ammonia is then returned to the boiler for destruction.

Purification using membrane technology has become more common in recent years and is judged to have roughly the same effect as the above purification methods.

## **Fuel**

### Types of fuel

The fuel for the plant will mainly consist of various kinds of waste fuel from the same type of waste as at present. The total incineration capacity will increase from 420,000 tonnes to 600,000 tonnes per year with the new boiler. The total quantity of hazardous waste is intended to increase from 50,000 tonnes to 70,000 tonnes per year. Lists of the waste that the company would like to have included in the permit are stated in Appendices 2 and 3 to the EIA.

The hazardous waste will not contain higher levels of organic halogen compounds than 1 % expressed as chlorine. The calorific value of the hazardous waste is judged to be between 2 and 50 MJ/kg. The admixture of hazardous waste will not exceed 25 % by weight of the added waste on average per month. The company does not believe it will be required to incinerate waste with a high content of heavy metals. The company wishes to reduce the lower limit for the calorific value of hazardous waste since it wants to be able to treat oily waste, such as sludge from the company's Rengård plant at the Gärstad waste plant. In addition to oil, the sludge may contain so much water, rock and gravel that its net calorific value is less than 5 MJ/kg. Incineration is still considered to be the best method of treating sludge, however.

The company intends to introduce such practices as set out in Section 8 of the Ordinance on waste incineration. These procedures will be included in the company's self-regulation program.

Work is in progress to revise the European list of waste products. This may lead to changes in the classification of non-hazardous waste and hazardous waste and the company considers it is necessary to have some margins to meet these changing rules. By reason of these possible future changes, the company considers that the supervisory authority should be delegated the power to allow changes that are justified due to changes in classification. The question of incinerating new types of waste, both non-hazardous and hazardous, may also arise and the supervisory authority should be able to allow such changes.

The company is also applying for a continued permit to incinerate up to 10,000 tonnes of sewage sludge per year. Digested sludge may be incinerated under the current permit, but the permit has a limited duration in this respect. The company considers that the incineration of digested sludge should be included in the permit in the future, since it has been demonstrated in trials that the use of digested sludge as an additive has positive effects in the boiler through its ability to reduce corrosion damage when certain fuels are burned.

The company also wishes to continue incinerating 10,000 tonnes of animal waste and other wastes or products of animal origin annually.

#### Fuel handling

Waste is transported by lorry to the Gärstad plant, where it is weighed on arrival. Spot checks are carried out in which the load is compared with delivery requirements. In addition to spot checks on arrival at the weighbridge in the Gärstad Waste Plant, the company's personnel pay visits to customers' reloading facilities. Hazardous waste is handled in accordance with specific procedures and a working group makes a thorough assessment of the waste before incineration.

Through the procedures that the company applies, it considers that the provisions in Sections 7 and 8 in the Ordinance on the incineration of waste are met.

## Chemicals

The chemicals used at the Gärstad plant are mainly light fuel oil and process chemicals for flue gas purification, including ammonia solution.

The consumption of process chemicals used in flue gas purification will increase when the level of incineration is raised. How much greater the consumption of chemicals will be depends on the quality of the fuel being used, its composition and pollutant content, but also on the design and operation of the purification equipment. At the Gärstad plant we work continuously with maintenance, optimisation and review of purification equipment and the associated consumption of chemicals.

## Transport

In 2009 the Gärstad plant and Gärstad waste facility together received approximately 75,000 trucks into the area, which corresponds to approximately 290 trucks every weekday. This traffic flow consists entirely of heavy goods vehicles.

Increased combustion will mean more fuel transport to the Gärstad plant. At the same time, fuel consumption at the district-heating power plant – and thus the transport of fuels from the Gärstad plant to this facility – will decrease. In total, then, the new boiler is not expected to lead to any major changes with regard to transport to/from the Gärstad area.

## Emissions

### Emissions to air

Emissions to air from the Gärstad plant will increase mainly in proportion to the increased combustion.

Parameter	2020 <u>without</u> expansion of Gärstad plant	2020 <u>with</u> expansion of Gärstad plant	Difference
NOx, tonnes	211	324	+112
S, tonnes	15	16	+1
HCl, tonnes	4	6	+2
Dust, tonnes	4	6	+2

At the same time, more combustion at Gärstad will lead to lower production at other combustion plants in the district heating system. Total emissions from the district heating system production plants will thus be reduced, except for HCl, which will increase slightly. In addition, the emission of fossil carbon dioxide will be reduced.

Parameter	2020 <u>without</u> expansion of Gärstad plant	2020 <u>with</u> expansion of Gärstad plant	Difference
NOx, tonnes	496	472	-24
S, tonnes	138	56	-82
HCl, tonnes	7	8	+1
Dust, tonnes	31	19	-12
Fossil CO <sub>2</sub> , tonnes	273,200	249,400	-23,900

Spread calculations performed show that all environmental quality standards and environmental objectives are met. This is true even when taking into account other sources than Gärstad plant's emissions to the surrounding air, both for the zero option and for the planned extension. Estimated quantities in the air do not reach the level of any evaluation threshold according to Appendix 1 of the air quality ordinance.

Regarding the contribution to deposits, it is noted that even in the most affected area in the site's immediate surroundings, sulphur deposits from the Gärstad plant are significantly less than background deposits.

To prevent the spread of bad odours, an under-pressure can be created in the waste bunker to control the outflow of air. Ventilation from the bunker by Boiler 4 has been planned in this manner and a corresponding solution is also planned for Boiler 5. In this way, odours will be avoided in the surrounding area.

The company is applying for continuous measurements of HF and HCl to be replaced by periodic measurements, since all parts of the plants will be equipped with wet purification steps, ensuring that there are no infringements of limits.

### Emissions to air

The Gärstad plant emissions to water are primarily through the discharge of water from flue gas condensation, so-called condensate. Currently, 120,000 m<sup>3</sup> of condensate are produced. The discharge from Boiler 5 is expected to be 50,000 m<sup>3</sup>/year, which gives 170,000 m<sup>3</sup> in total from the entire Gärstad plant.

The purified condensate is discharged in a closed pipe into Mörtlösadiket and from there to Stångån. The distance from the discharge point by the Gärstad plant to the river Stångån is approximately 2 km. The ditch drains into Stångån 500 meters upstream of the Stångån outlet into lake Roxen, and approximately 2.5 km downstream is the municipal waste water treatment plant, Nykvarn.

The operations requested will mean an overall improvement in the Stångån river in terms of the emissions of metals. This means that the expansion of the Gärstad plant does not in any significant way reduce the chances of achieving environmental quality standards or of causing a deterioration in the status rating of the waters in question due to emissions of metals.

Regarding the emissions of ammoniacal nitrogen, the company suggests more stringent conditions since the emissions limiting measures that the company has taken in the existing plant have given better effects than expected and measures with an equivalent effect will be made for Boiler 5.

### **Noise**

The noise investigation performed shows that existing values for noise can be met even after the expansion of the Gärstad plant. The investigation also shows that the new buildings will have a positive impact on sound levels at certain places.

### **Residues**

During combustion, ashes occur in the form of slag (bottom ash) and flue gas purification residues (fly ash and flue gas purification chemicals).

Flue gas purification residues are hazardous waste and must not be deposited in the Gärstad plant due to their high chloride content. The ashes are exported to Norway, where they are currently used as landfill in a disused limestone quarry on the island of Langöya.

The slag is sorted and magnetic and non-magnetic metals are separated and sent for recycling. Metal pieces over 4 mm in size can be sorted out in this process. The sorted and quality-assured slag gravel is then used as a replacement for natural materials in the construction of roads and parking spaces.

### **Implementation order**

The company requests an implementation order as soon as possible in order to get started with the work on the new boiler.

### **OPINIONS RECEIVED etc.**

The County Administrative Board in Östergötland County expresses the following.

#### **General**

The County Administrative Board approves the application for a new permit on condition that the company can ensure that mercury emissions to water from the Gärstad plant will not lead to a deterioration in the chemical status of the receiving body of water.

The County Administrative Board also approves the company's request for exemption from the requirement of continuous measurement of hydrogen chloride and hydrogen fluoride, the implementation order and the approval of the EIA.

#### **Fuels**

As stated in the application, to a large extent the new boiler will be run on imported waste. In some respects, it is probably an energy-efficient solution for other countries' waste problems but it is difficult to see that it is the best solution in the long-term to transport waste from the whole of Europe to a plant such as Gärstad that is so close to an urban area. The risks of increased environmental loads and the concentration of pollutants at and around the site in the case of extensive



importation of waste should not be underestimated. The County Administrative Board considers that deliveries of waste fuels should be a priority for the local region in the first instance, rather than importation from other countries.

The County Administrative Board accepts the company's proposal for conditions governing the use of waste fuels, conditions 2-7. Regarding condition 7, however, the current lower limit for the energy content of the fuel should be retained.

Hazardous types of waste with low energy content are not generally included in the current permit, since that type of waste should be incinerated mainly in plants with the overall objective of destroying waste. The County Administrative Board, however, is able to approve exceptions for the admixture and combustion of oil-contaminated sludge from the company's other plants. The County Administrative Board proposes that condition 7 be formulated as follows:

7. The calorific value of the hazardous waste must be between 5 and 50 MJ/kg.

Exceptions from the lower calorific value may be made when mixing in oil contaminated sludge from the company's own plants. The admixture of hazardous waste, as a daily average value, may not exceed 50 % by weight of wood that is hazardous waste and 25 % by weight for other hazardous-waste fractions.

The company requests to incinerate up to 10,000 tonnes of sewage sludge annually. The current permit has a limited duration in this respect. The spreading of sewage sludge on arable land should be carried out in the first instance, but the County Administrative Board accepts that the company be given a permit to temporarily receive sewage sludge from the waste water treatment plant in Nykvarn for incineration, if there are situations where the sludge cannot or may not be otherwise used. This should be regulated by a condition.

Sludge from the Nykvarn waste water treatment plant may be received temporarily for incineration, provided that situations arise where the sludge cannot or may not be otherwise used.

### **Emissions to air**

In the applicable judgement from 2008 it is stated in condition 8 that "For operations and emissions of air pollutants from each production unit, what is provided for a waste incineration plant by the Swedish Environmental Protection Agency's regulations

(2002:28) regarding waste incineration, with appendices”. In the judgement there was no tightening of the minimum requirements, but a separate condition 9 for emissions of nitrogen oxides was stated, as well as condition 12 for mercury and 13 for cadmium and thallium. In addition, conditions 10 and 11 were stated for emissions of nitrous oxide and ammonia respectively, substances that are not regulated in the ordinance.

Results from the spread calculations performed show that total quantities from the plant with the planned expansion and background levels for substances with environmental quality standards and environment objectives were below the existing requirements and objectives levels. The County Administrative Board considers that these are sufficient for several of the parameters regulated in the general requirements, but concerning metals there are reasons for having more stringent conditions. Among the metals there are both substances to be phased out and substances whose risks must be minimised; substances which are covered by the Riksdag’s environmental objective, “Non-toxic environment”. The aim, both at the national and local level, is that the use of these substances in the long term should be discontinued or take place in a more secure manner than at present. One way to promote development towards lower emissions is to tighten up the conditions so that they more clearly relate to what is feasible with available technology.

The County Administrative Board accepts the company’s proposal for conditions regarding nitrogen oxides and sulphur dioxide.

The County Administrative Board proposes a condition for mercury emissions by changing the level of mercury permitted in NFS 2002:28 Appendix 5, section c) from 50 to 30  $\mu\text{g}/\text{Nm}^3$  at 11%  $\text{O}_2$ .

The County Administrative Board proposes a condition for cadmium and thallium emissions by changing the levels permitted in NFS 2002:28 Appendix 5, section c) from 50 to 30  $\mu\text{g}/\text{Nm}^3$  at 11%  $\text{O}_2$ .

The County Administrative Board proposes a condition for emissions of Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V by changing the levels permitted for Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V in NFS 2002:28 App. 5, section c) from 500 to 250  $\mu\text{g}/\text{Nm}^3$  at 11%  $\text{O}_2$ .

The County Administrative Board cannot accept the company's reformulated conditions for nitrous oxide. The highest average value from Boilers 1-3 was 11.3 mg/MJ in 2012 followed by descending annual values; the corresponding figure for Boiler 4 was 4.9 mg/MJ followed by descending annual values. The total emissions in 2010 were 7 mg/MJ, and the corresponding figures for both 2011 and 2012 were 5 mg/MJ. Emissions from the new boiler are assumed to be at the level of emissions from Boiler 4, which means that overall emissions can be further reduced. The County Administrative Board considers that the current condition shall remain with the level as a limit.

The County Administrative Board accepts the company's proposal for conditions relating to ammonia.

### **Discharge to water**

If a permit is granted for a new boiler, mercury emissions from the Gärstad plant will increase. However, the company expects that a corresponding reduction of mercury emissions will be made from the district-heating power plant. The County Administrative Board considers that there is a need for a clearer commitment if that is indeed the case.

The County Administrative Board also considers that the new boiler should be subject to the corresponding condition 15 and that no separate condition is necessary. The County Administrative Board proposes a condition for the emissions of metals, total dioxins/furans and suspended substances as follows.

- The content of pollutants in the outgoing water from the purification of flue gas condensates may not exceed the following levels. In addition, the pH must always be within the range 6-11. Measurement and compliance checks shall be carried out in accordance with the Swedish Environmental Protection Agency's regulations (2002:28) on waste incineration, with appendices.

Total suspended solids	10 <sup>1</sup> 15 <sup>1</sup>	mg/l
Mercury and mercury compounds expressed as mercury (Hg)	5	µg/l
Cadmium and cadmium compounds expressed as cadmium (Cd)	2.5	µg/l

Thallium and thallium compounds expressed	5	µg/l
Arsenic and arsenic compounds expressed as arsenic (As)	20	µg/l
Lead and lead compounds expressed as (Pb)	15	µg/l
Chromium and chromium compounds expressed as	30	µg/l
Copper and copper compounds expressed as copper (Cu)	20	µg/l
Nickel and nickel compounds, expressed as nickel (Ni)	20	µg/l
Zink and zinc compounds expressed as zinc (Zn)	100	µg/l
Dioxins and furans (the sum of individual dioxins and furans acc. to NFS 2002:28 App. 1)	0.1	mg/l

1) 95 % of the measured values shall be at most 10 mg/l and 100 % should be at most 15 mg/l

Emissions of ammoniacal nitrogen from Boilers 1-3 have decreased sharply after the introduction and fine-tuning of the new purification equipment. Levels from Boiler 4 over the last three years have only exceeded 6 mg/l on very few occasions. The levels from Boiler 5 are expected to be the same, which means that overall emissions will decrease further. There is therefore reason to tighten the condition so that it clearly relates to what is feasible with available technology.

There is an urgent need to minimise emissions of ammonia to Stångån river, since the current permitted operations together risk creating dangerously high ammonia levels in the receiving body of water. Emissions from the Gärstad plant cannot on their own give rise to critical ammonia levels (>1 mg/l) in Stångån river, even during long periods of zero flow in the river. The largest source of emissions by far is the waste-water purification plant, whose discharge is upstream of the discharge point for the Gärstad plant. The County Administrative Board accepts the company's proposal for the condition concerning emissions of ammonia but considers that the level must not exceed 15 mg/l.

#### Noise

The County Administrative Board considers that the last paragraph in the current conditions – instantaneous sound – is clearer than the company's proposal and should therefore be retained. The company's proposal that describes

how conditions shall be monitored can be added. In addition, it should be stated that the sound level 45 dB (A) also includes Saturdays.

### **Miscellaneous**

The County Administrative Board accepts the company's proposal for the condition relating to chemicals.

The County Administrative Board considers that the current condition 18 should continue to apply but that the year in the last sentence can be removed. The County Administrative Board considers that the current conditions 21, 22, 23 and 24 should continue to have the same wording.

With regard to the company's proposed condition 21, the County Administrative Board wonders if it is possible with the construction that the company proposes in the last sentence.

The Land and Environment Appeal Court, in its judgement of 16/11/2006, clarified that in the case of co-incineration the rules in NFS 2002:28 shall apply, even when waste is temporarily not being incinerated (case no. M 7766-05).

The County Administrative Board can accept the company's proposal for conditions concerning the use of wood bottom ash, coal bottom ash and bottom slag.

The Building and Environment Board of Linköping municipality submits the following:

1. Emissions of metals, ammoniacal nitrogen and other pollutants in flue gas condensates in the river Stångån must be further reduced in the long term pursuant to the water directive and the master plan for the city of Linköping concerning the aquatic environment in the river Stångån. It is therefore of great importance that the best available technology be installed.
2. The waste that is permitted to be incinerated at the plant must be adapted to the purification equipment that the plant is equipped with and there should be suitable procedures for the introduction of new types of waste.
3. The best available technology must be used for the categories of waste that will be incinerated in the plant.
4. The supervisory authority could be delegated to approve other types of hazardous waste for incineration than those in Appendix B3 of the EIA.

In response, the company essentially argues the following:

The company is not able to control the waste market in the way the County Administrative Board proposes. The company is carrying out proactive work to disseminate knowledge aimed at the disposal of waste closer to its source, in cases where this is appropriate. A condition in this matter should not be stipulated, however.

The company accepts the County Administrative Board's proposal to reformulate condition 7, as well as a new condition for the reception and incineration of sewage sludge.

The company accepts the County Administrative Board's proposal for the reformulation of conditions 10 (nitrous oxide), 12 (mercury) and 13 (cadmium) as well as a new condition relating to the emission of other metals/trace elements.

Concerning the emission of mercury into water, it cannot be excluded that the Gärstad plant and the district-heating power plant may need to be operated in the future in such a way that an increase in total emissions is inevitable. The company can therefore not provide a guarantee of the kind called for by the County Administrative Board. In the company's opinion, there are no formal conditions for the Land and Environmental Court to order such a limitation, since it would involve a plant which is not subject to examination by the Court.

If total mercury emissions were to increase significantly in the future, however, it would be possible for the County Administrative Board to bring an action under Chapter 24 Section 5 of the Environmental Code.

The company can accept the lower levels proposed by the County Administrative Board with regard to the emission of metals. The condition should be formulated differently with regard to the way in which the condition will be verified, however.

Under NFS 2002:28, verification shall be made by the analysis of samples taken during at least one 24-hour period each month. The company has selected continuous controls in the form of

analyses of monthly joint samples. The limits should thus be expressed as monthly average values.

It should also be stated that the condition is fulfilled if at least ten of the monthly average values during a calendar year meet the prescribed limits. This addition is necessary, since the analysis of one month's overall samples is not obtained until the next month, which means that an event causing increased emissions may involve two months' values being exceeded before the company is aware of the event and can take the necessary measures. The addition is also in accordance with the practice of the Land and Environment Superior Court (refer to its judgement of 15 May 2012, case no. M 5077-11).

In the event that the Land and Environmental Court should find that a condition with monthly average values as in the above proposal should not be prescribed, the company maintains its proposal as stated in the application.

The company also accepts the County Administrative Board's proposal concerning dioxins and furans, as well as pH, including the structure of conditions. With respect to suspended substances, the company has the following viewpoint:

The emission values reported by the company are monthly average values and cannot be used as a basis for the limits that are now being proposed as conditions (daily average values). In addition, the company considers that there are no environmental reasons for tightening up the limit values. Suspended substances are also difficult to measure in saline water of the type represented by flue gas condensate. Finally, measured levels are well above the value proposed by the County Administrative Board. The company therefore retains the limit proposed in the application, 15 mg/l. This limit, just as the limits for metals, should be expressed as a monthly average value and it should also be stated that the condition is satisfied if at least ten monthly average values per calendar year are under the prescribed limit.

The company agrees that the purification equipment installed for reducing emissions of ammoniacal nitrogen has worked very well. However, the equipment was

installed relatively recently and the available results are not sufficiently comprehensive to justify the more stringent proposal of the County Administrative Board. For this reason, and since it was only a year ago that the value proposed by the company, 20 mg/l, was established by the Land and Environmental Court, the company maintains its proposal. The condition should, at the level proposed, relate to ammoniacal nitrogen and not ammonia.

The wording proposed by the company for instantaneous sound is consistent with the practice of the Land and Environment Superior Court (refer to its judgement of 28 February 2012 in case no. M 197-10). The company maintains its proposal in this part. The proposal regarding equivalent noise level on Saturdays is accepted.

The company accepts that the current condition regarding transport remains.

All the necessary equipment required to incinerate the waste for which the company is requesting a permit, including purification technology, already exists at the Gärstad plant. This equipment complies with the requirement for best technology in Chapter 2 Section 3 of the Environmental Code to the extent that is reasonable under Chapter 2, Section 7. Additional types of waste, in so far as condition 2 is applied, will be adapted to the said equipment. Alternatively, any necessary changes to the equipment will be carried out. There can be no other grounds for requiring “best technology” for the waste.

Important aspects for determining whether a certain type of waste can be incinerated at the Gärstad plant are calorific value, surface/volume ratio, gasification tendency, ash content, structure and content of nitrogen, sulphur, chlorine and metals in the material.

When a new type of waste is introduced, the first action is to make an assessment of whether it is substantially different from ordinary waste, based on above aspects. If the new type of waste is judged to have such large differences in characteristics that the process or emissions are affected, a decision will be taken to refrain from receiving the material. If the differences are expected to be small, a test combustion will be carried out with increased environmental monitoring, documented to ensure that the requirements for combustion are met.



Based on the results of the trial combustion and increased environmental monitoring, a decision will be taken on whether the Gärstad plant will receive the material at all, and in which case what measures need to be taken in order to achieve good operations in all parts of the process.

### **COURT FINDINGS**

The case has been settled without main proceedings under Chapter 22 Section 16 Second paragraph of the Environmental Code.

#### **Environmental Impact Assessment (EIA)**

The Land and Environment Court considers that the EIA drawn up in the case meets the requirements of such a description according to the provisions of Chapter 6 of the Environmental Code and shall therefore be approved.

#### **Admissibility**

The Land and Environment Court considers that operations, including the future Boiler 5, can be run with such protective measures and other precautions that there is not a risk of substantial inconvenience arising. The Land and Environment Court considers that there are no other obstacles to the requested permit on the basis of the general rules of consideration in Chapter 2, the rules on economising in Chapter 3 and Chapter 4, or the provisions in the Environmental Code in general. A permit for the activities applied for shall therefore be granted.

#### **General requirements**

For the operations in question, the appropriate parts of the following apply: the Ordinance (2011:927) on waste, the Ordinance (2013:252) on large-scale incineration plants, the Ordinance (2013:253) on waste incineration and the Ordinance (1998:901) on self-regulation of the operator.

In a previous examination the company has undertaken to comply with the general requirements for a so-called waste incineration plant, despite the fact that the plant is by definition to be regarded as a so-called co-incineration plant. This undertaking has been confirmed in this case through the company's proposal no. 8.

Pursuant to Section 44 of the Ordinance (2013:253) on the incineration of waste, a permit condition may be applied which means that continuous measurement of hydrogen chloride or hydrogen fluoride levels is not required as long as emissions can, under no circumstances, exceed the limits stipulated in the ordinance. The Land and Environment Court considers that conditions are such that a permit may be granted in accordance with the company's request.

### **Conditions**

A so-called general condition should be prescribed, according to practice. Changes made to operations are regulated in Section 4 of the Ordinance (2013:251) on environmental examination, so the proposed addition by the company should not be prescribed.

According to Chapter 22 Section 25b of the Environmental Code, a judgement which includes a permit for running operations for the incineration of waste must always contain a list of the quantities of the different categories of hazardous waste which may be incinerated.

The term "category" refers to the previous definition of waste in Chapter 15 Section 1 of the Environmental Code, clarified in Appendix 1 of the now repealed Ordinance on waste (2001:1063). The present definition of waste is not linked to this concept, nor does it appear in the new Ordinance on waste (2011:927). The Land and Environment Court considers that the company's proposal for condition 3 is sufficient for control measures.

The County Administrative Board has stated that deliveries of waste fuels should be a priority for the local region in the first instance, rather than importation from other countries. The company has replied that it spreads knowledge about the aim of waste being treated closer to its source when appropriate. The Land and Environment Court finds that the present conditions regarding transport are sufficient for the control of this matter.

The company has accepted the County Administrative Board's views on incineration of sewage sludge. A condition to this effect should be prescribed.

Regarding emissions to air, conditions should be laid down in accordance with the parties' common understanding. The County Administrative Board has, however, raised doubts about the compatibility of condition 21 as proposed by the company with the judgement of 16/11/2006 in case no. 7766-05 by the Land and Environment Superior Court. The company has maintained its proposal and submitted it to the court to determine the issue. The Land and Environment Court finds that, since condition 21 as proposed by the company governs so-called damage situations, the case put forward by the County Administrative Board does not constitute a reason for not approving the company's request in this part. Since no other circumstances contradict this, the Court accepts the company's proposal.

Concerning the discharge of metals into water, conditions should be prescribed with limits at the levels proposed by the County Administrative Board, which have been accepted by the company. The condition should, however, be formulated as proposed by the company, taking into account that the sampling is carried out continuously. It is not possible within the framework of this examination to order limits on mercury emissions for plants other than those which are the subject of this application.

With respect to pH and emissions of dioxins and furans, conditions should be laid down in accordance with the parties' common understanding.

In the case of suspended substances, the Land and Environment Court does not find reason to tighten the limit compared with the company's request (15 mg/l).

The limit for emissions of ammoniacal nitrogen could be made more stringent than the company's request with regard to the well-functioning purification equipment, as well as the risk of negative impact in the river Stångån.

Conditions relating to noise should generally be prescribed in the way proposed by the company.

### **Miscellaneous**

The date of starting up should be fixed in accordance with the company's request. The application also includes existing operations and may in this part be deemed to constitute a

voluntary hearing. It should therefore be ordered that the permit just issued replaces the previous permit.

The Land and Environment Court accepts the reasons put forward by the company regarding the request for implementation.

**HOW TO APPEAL**, see appendix (D V425)

An appeal, if so desired, must be lodged no later than 24 September 2013.

Carl-Göran Heden

Bertil Varenius

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The following participated in the Court's judgement: court judge Carl-Göran Heden, technical advisor Bertil Varenius, special members Lars Wennerstål and Anders Wetterling.



*I certify that this is a true and accurate translation of the original Swedish document of thirty-six (36) pages.*  
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