

EIA REPORT SUMMARY

This report has been drawn up to present potential environmental impacts from the planned investment at the site of Stora Enso Poland (paper factory) in Ostrołęka, Poland. As far as the media supply is concerned, the Investor - StoraEnso Poland - is considering the option of construction a combined heat and power plant. The new installation shall be connected to the external power supply system and power distribution shall be modified.

The purpose of the study is to identify the elements of the environment, zones and objects under protection, and cultural goods within the planned investment, as well as to determine potential impacts from the investment on particular elements of the environment, cultural goods and the landscape, to devise actions that will minimize the impacts with the accuracy stipulated according to the advancement of the design works.

The report, consistent with the provisions of Art.52 of the Environmental Protection Law, has been prepared by the team consisting of the experts listed by the Mazowiecki, Śląski and Pomorski Voivode, on the bases of materials, data, arrangements and visits made at the site.

The legal grounds for the study made by WS Atkins in the Investor's and Purchase Order No POP2007/I06105-002 dated April 3rd 2007.

Description of the planned investment

Stora Enso Poland intends to carry out an investment at the site of its production plant (paper and pulp mill) located at 21 I Armii Wojska Polskiego 21 Street in Ostrołęka, in the eastern part of the town, at the distance of 3 km from the centre.

The decision on the investment was undertaken by the Company as a part of its mission statement and business strategy, to expand the Company's potential in recycling paper (RCP) paper and cardboard, pursuant, among other factors, to the binding legal requirements (EPL- Environmental Protection Law, Waste Law, Law on Entrepreneurs' Obligations concerning the management of some waste, fees on products and disposal, laws on packages and disposed packages).

An essential factor on the decision to undertake the investment was the structure of energy which is currently disadvantageous to Stora Enso and the need of further

development of the Company.

The decision concerning the construction of technologically combined facilities was undertaken upon detailed financial analysis, including the economic, technical, technological, ecological as well as social issues.

In the design capacity of the new power plant the possible new paper machine investment has been taken into account.

Economic, technical and technological issues:

- In the nearest future the production of paper packages (corrugated board) may constitute one of the most dynamically expanding industrial sectors;
- The need of reducing the energy-intensity of the existing machine fleet;
- Power-supply self sufficiency- becoming independent from the power supplies from EEO (Energia Elektrownie Ostrołęka)- Ostrołęka Power Plants Complex;
- Necessity of compliance with BAT requirements;
- Improvement of the logistics of production.

Ecological reasons:

- Renewable energy source- biomass used as fuel for the manufacturing process;
- Reduction of noise emissions by means of acoustic screens and other noise-reduction equipment;
- Reduced consumption of water and more efficient water management;
- Improved odor nuisance management;
- Improvement of the logistics- organization of transport to and from the Facility.

Social issues:

- The creation of new jobs
- Better utilization of the human resources available at Stora Enso, who are professionally experienced and possess the know-how as far as paper production is concerned
- Base for the future development of the Ostrołęka mill and continuation of the long term operation of the mill

The planned investment, starting with 2010 shall entail the start-up of a system of technologically connected installations, including new 110kV electricity connection, heat generation plant with total thermal capacity of 165 MW_{th}, 37MW_e

steam turbine and 7MW_e steam turbine connected to the existing recovery boiler.

Installations:

➤ **Heat and power generation plant – cogeneration of heat and electric energy**

The plant shall be operated to secure the thermal demand for the process technology, on the base of the co-generation of thermal and electric energy from biomass and coal. . In the long run some 60% of the mill's energy consumption will be generated by biomass and 40% by coal.

It shall consist of CFB (circulation fluidized bed) boiler, three auxiliary oil-fired boilers (optional) that may be started up when the prime boiler is turned off, and two steam turbines. One of which- with smaller capacity of 7 MW shall be supplied from the recovery boiler that is an integral part of the pulp production process.

The annual heat generation of CFB and existing recovery boilers is about 1 080 GWh/year. Total electricity consumption of the mill is about 240GWh/year and the own electricity generation after the investment is about 170 GWh/year.

The total thermal capacity of CFB and recovery boilers is 250 MW_{th} shall include the following equipment:

- CFB boiler with the thermal power of 168 MW_{th}, new back pressure steam turbine with the capacity of 37MW_e, fuel conveying system for biomass and coal, and high efficiency bag house filter for dust removal from the flue gases as well as emissions monitoring system,
- Existing recovery boiler and new back pressure steam turbine of 7MW_e
- 3 auxiliary oil-fired boilers, each with the thermal power of 28.4 MW (option)

The advantages of the CFB boiler with the circulation bed determine the fact that, apart from hard coal and biomass, the CFB shall also burn some production waste and recover the energy contained therein or to neutralize the waste in question. Such construction of the boiler and its additional equipment (high efficiency dust removal system and emissions monitoring system) in accordance with the plans and the combined fuel and waste incineration shall meet strict requirements stipulated in the Environmental Minister's Regulation dated Dec 20th 2005 concerning emission standards from installations (Journal of the Laws of the Polish Republic No 260, Entry

2181).

➤ **Connection of the 110 kV cable to the National Power Supply Grid**

The existing paper production machine requires about 25 MW (the mean value) / 30 MW of electric power as daily peak consumption. As the existing power distribution system that serves the Company does not provide for any reserves and voltage levels are as low as 6kV and 15KV, the entire mill will be modified to use external supply system with the voltage of 110 kV. Electricity transfers though 110kV net is more efficient and therefore cheaper compared to lower voltage level and furthermore the green electricity trade takes place only in 110kV net.

➤ **Control, supervision and monitoring systems**

As the installations that are subject of the investment process are technologically related (integrated paper factory) the optimization of the process control is a very important issue. Such condition shall be fulfilled by the MES – Manufacturing Execution system which includes the following modules and subsystems:

- production management (in consideration of the process ratios stipulate din technological and work stand instruction manuals)
- Distribution Control System and Machines Control System supervising the process control and the operation of all equipment
- Energy Management System for monitoring the technical condition and performance of the power plant..

It should be emphasized that Stora Enso operates in consistence with the Integrated Management System entailing the procedures of environmental management, quality management and occupational health and safety management, holding the following certificates:

- ✓ Quality Management – in consistence with ISO 9001: 2000
- ✓ Environmental Management – in consistence wit ISO 14001:1996
- ✓ Occupational Health and Safety – in consistence with OHSAS 18001:1999 specifications.

The requirements of the existing systems shall be maintained and extended to cover the new investment.

The investment, as far as the core equipment is concerned (the new paper machine and fibre recovery plant) and all accessory facilities (heat and power generation

plant- integrated generation of energy, technical improvement and extension of the effluent treatment plant) fulfil the applicable BAT requirements.

It is assumed that the planned activities shall involve the following ecological effects:

- Generation of “green energy” by incineration of remarkable amount of biomass and production rejects
- Generation of “red energy” in efficient cogeneration
- Reduction of unitary water consumption and its more efficient use;
- Logistical improvement- optimization of transport to and from the Company;

Description of the environment within and in the vicinity of the planned investment

The site of the investment is situated on the left side of the water lagoon terrace , flat but slightly inclined in the north direction, towards the Narew River, about 97 m above sea level.

The valley of the Narew River is 210 km long (from the Biebrza estuary to the mouth with the Bug) and its width varies from 15. to 7 km. The valley is asymmetrical in the neighbourhood of Ostrołęka- the left bank constitutes a part of the Łomża Indelta (318.67) with numerous old river beds, whereas the right bank is the sandy terrace of the Kurpowska Plain (318.65) with single drainages.

The subsoil of the site of the investment consists of Quaternary formations (Holocene, Pleistocene). Deeper underground, about 200 m below the land surface, there is a roof of Tertiary deposits and Cretaceous formations.

The close to surface layer consists of the Holocene deposits of the fluvial accumulation- sands, alluvia and local peat. The land surface is covered with levees and embankments- anthropogenic deposits.

The geological conditions should be assessed as advantageous for the foundations of the planned facilities.

Underground waters

The underground water surface within the planned investment range is at the depth of 2 m, the hydraulic slopes increasing in the edge zone of the upper terrace.

The water bearing level is divided into two parts, the deeper one has the roof of about 12 m below the land surface. The lower part includes several wells of potable

and process water.

Surface waters

The main surface stream (watercourse) within the planned investment site and the local basis of the drainage system is the Narew River, constituting the right tributary of the Vistula. The Rozyga and Omulew are the right tributaries of the Narew situated in the vicinity of Ostrołęka. The left one is the Czeczotka watercourse running along the southern border of the site.

On the right bank of the Narew, there is a sedimentation tank of ash and water emulsion from the nearby power generation plant. Its square area is 1.5 km² and it is periodically partly filled with water.

The main pollution sources in the Narew Basin, the condition of the purity of water

The Narew Basin is industrially undeveloped and its nature is typically farming lands and forests.

The main pollution sources for the Narew are the following:

- Bielsk Podlaski town with the dairy which discharges effluents through the Biała and Orłanka Rivers;
- Łapy town with its electro-mechanical company and sugar factory;
- Treatment plant in Bokiny;
- Communal and industrial sewerage from Białystok discharged to the Biała River and Supraśl;
- The town of Łomża with its dairy and other small plants;
- The town of Ostrołęka with its paper and cellulose production plant, dairy and meat processing plants;
- The town of Pułtusk.

The general assessment of the quality of the water in the Narew River is class IV - poor quality. In the last two years no improvements of the purity of the water has been observed.

It should be stated that the surface waters in the discussed area, for all cross-sections on the Narew, are classified as class IV (unsatisfactory) due to pollution, biogenic indicators and general chemical indicators (ChZt, total organic carbon, water colour) and other specific pollutants such as selenium and iron.

The quality of the discussed waters does not comply with the requirements set forth for surface waters used for potable water supplies- pursuant to the Ordinance issued by the Environmental Minister on Nov 27th 2002 (BZT5, ChZT-Cr, total organic

carbon, selenium) and the water from the rivers must be treated before being directed to the potable water supply system.

Soil

In the neighbourhood of the investment site the dominating types of soil are fading brown, leached soils formed from sands and glacial tills, according to the lithology of the Quaternary formations. At the investment site and in its nearest vicinity the soils have undergone substantial anthropogenic transformations and are not used as arable land.

Climatic and air conditions

Ostrołęka belongs to the climatic region of the Mazurian Lake District (typical for northern lake lands). The climatic conditions are clearly influenced by the continental factors, are, indirectly from the Baltic Sea, which is manifested by increased amplitude of the air temperature in the eastern direction and relatively short summer time, winter shorter than in the east and frequent overcast and rainfalls.

The climate prevailing in the town of Ostrołęka is specific for urban and industrial centres. The urban impacts (due to differentiated degrees of town settlements and development, percentage of artificial surfaces, increased terrain roughness) entail the disruption of the thermal balance, changes in the humidity conditions and in the anemology. Especially, in the eastern district of the town, the operation of industrial plants emitting considerable quantities of dust and gases exerts an impact on increased number of condensation nucleuses and rainfalls. The mean annual temperature in the town is about 7.8^{oo} C and total annual rainfalls 541-550 mm.

Present condition of air pollution

The sources of air pollution include:

- as far as stack emissions are concerned:
 1. energy generation sources (combustion of fuels to generate electric and heat energy) at Ostrołęcka EEO Power Plants and coal fired residential boilers, the pollutants from the fuel combustion are mainly dusts and gases (SO₂, CO, NO_x) emitted by the EEO Power Plants and industrial and communal sources of heat;
 2. technological sources (emissions from process technologies) located at the plants in the eastern district of Ostrołęka, including: Stora-Enso, District Dairy and Milk Processing Factory, Meat Processing Plants OSTROŁĘKA SA,

XELLA(d.YTONG), the pollutants are lime dust, sulphur hydrogen, dimethyl disulphide, methyl mercaptan and odorous gases contributing to odour nuisance in the town;

- as far as low emissions are concerned:
 - transport and transportation networks (the traffic load from transit through the town centre has significantly increased); it is estimated that about 25 – 30 % of CO, NO₂ and hydrocarbons emissions are caused by the means of transport.

Natural areas and protected sites

Stora Enso is located in the industrialized part of Ostrołęka I the direct vicinity of riverside sites that are subject of protection within the framework of NATURA 2000. the sites north from the Plant constitute the area planned for protection NATURA 2000the Lower Narew Valley PLB 140014, whereas to the north western direction there is NATURA 2000 the Omulwia River Valley and Płodownica PLB 140005.

Ostrołęka region is a part of the strip often labelled as “Poland’s Green Lungs”.

North from Ostrołęka, there is Kurpiowska Primeval Forest, which is a vast area of forest complexes, with the preponderance of coniferous trees and mixed coniferous forests, where the combination of pines, spruces and pines intertwines with oaks, hornbeams, birches and aspens.

Protected landscape areas

The following areas of protected landscape are situated in the vicinity of Ostrołęka and the planned investment:

- Kurpiowska Plain and the Lower Narew Valley;
- Łomżyński Natural Scenic Area of the Lower Narew Valleys and their buffer zones and the reserves:
 - Olsy Płoszyckie
 - Czrny Kąt
 - Kanistan
 - Karaska Moors

Altogether, within the boundaries of Ostrołęka Provost, there are 159 listed nature monuments, including 91 common (English) oaks, and 7 nature monuments within the boundaries of Ostrołęka Municipality.

Land use and management

The site of the planned investment is currently owned by Stora Enso, and, from the

1960s of the legal predecessors of the present owner.

As mentioned before, the Company is located in the north-eastern part of the town and is regulated under the Amendments to the general local spatial development plan for the town of Ostrołęka for the structural units of B1 I, B1 II, B3 II (the northern part)- WOJCIECHOWICE section approved by the Resolution No 105/XVI/2003 by the Municipal Council on Dec 3rd 2003.

The following manners of the use of land have been stipulated in the plan:

- in the north-eastern part there is Ostrołęka Power Plants Complex with power blocks, high voltage substation and other equipment of infrastructure;
- in the eastern part there are low detached houses settlements and the building of the outpatients' clinic, and next, at the distance of 150 m east waste landfill and barren lands;
- in the southern part, along Armi Wojska Polskiego Street there is the main exit road from Ostrołęka to the east with very intensive traffic load, including heavy vehicles;
- in the vicinity of the south-western edge, there is a big petrol station;
- in the west the Czeczotka River runs through, behind which there is a strip of barren and green lands;
- the northern boundary is Sowinskiego Street, with five farm houses, and, at the further distance of 300 m the Narew River.

Cultural heritage sites

The objects of historic importance listed as heritage protection are situated in the central part of the town, in the south-eastern direction, covering the distance from 1 to 3 km:

- the Old Town urban complex,
- Holy Mary's Visitation Parish Church
- Roma Catholic Graveyard and the Chapel
- Bema Fort earthen fortifications at the opposite bank of the Narew River
- The Townhall, Provost's House, Bem's house
- house at Głowackiego Street
- House at Kościuszki Street
- St. Joseph's hospital
- Parsonage at Szwedzka Street.

The following listed objects are situated in the nearest distance from the planned

investment:

- Russian Orthodox Church (currently St. Adalbert's Catholic Church) at No 2 I Armii WP Street
- Parsonage at No 2 I Armii WP Street,
- Military barracks at No 5 I Armii WP Street,
- Military barracks at No 6 I Armii WP Street,
- Military barracks at No 21 I Armii WP Street,
- Military barracks at No 23 I Armii WP Street,
- Military barracks at No 32 I Armii WP Street,
- Military barracks at No 42 I Armii WP Street,
- Military barracks at No 45 I Armii WP Street,
- Military barracks at No 15 Legionowa Street,
- Wooden manor house at No 26 Łomżyńska Street

Acoustic climate

For the sites where detached houses are situated, marked in the local town development plan as WOJCIECHOWICE zone the limit noise emissions are as follows:

- LAeq D = 50 dB – the equivalent noise level A during the most disadvantageous 8 hours of daily work from 6.00 a.m. to 22.00 p.m.;
- LAeq N = 40 dB – the equivalent noise level A during the most disadvantageous 1 hour of the night time from 22.00 p.m. to 6.00 a.m.

For the remaining sites of detached housing settlements and optional crafts services, farm houses, residential and service facilities the following limit levels are obligatory:

- LAeq D = 55 dB – the equivalent noise level A during the most disadvantageous 8 hours of daily work from 6.00 a.m. to 22.00 p.m.
- LAeq N = 45 dB – the equivalent noise level A during the most disadvantageous 1 hour of the night time from 22.00 p.m. to 6.00 a.m.

Potential impacts from the investment

As far as air protection is concerned:

The only element of the venture that may exert an essential impact on the level of the emissions to the air in the course of the operation is the boiler house of Power Plant – a source of gases and dust emissions from the incineration of fuels and biomass.

The results of model calculations of the dispersion of the substance in the air are far

below the required emission standards. Thus, the impact from the installation on the air quality shall be insubstantial and shall not pose any objections against the implementation of the investment.

As far as waste management is concerned:

The following stages of impacts are taken into consideration:

1. Waste generation

- The construction stage
- The operational stage
- The liquidation stage

2. Waste recovery

- R3 process technology - recycling or regeneration of organic substances which are not used as solvents;
- R1 process technology – use of fuels or other sources of energy generation.

R1 process technology involves the waste classified as biomass in accordance with the definition stipulated in § 16. Point 7c of the Ordinance issued by the environmental Minister concerning the emission standards / Journal of the Laws of the Polish Republic No 2005.260.2181/:

c) ... “vegetable fibrous waste from the process of primary production of pulp mass and paper production of recovered fibre, provided that such waste is incinerated at their generation source and the heat energy recovered”.

The investment stage:

At the present stage of the investment procedure, as far as waste management at the site preparation phase is concerned, the following issues should be considered:

- waste generated in the course of construction and building works;
- separation and adjustment of places (work stands) for the collection of particular types of waste and the recovered building materials as well as waste classified as secondary raw materials suitable for reuse;
- selective waste collection at suitably arranged and equipped places in view of their types, properties and options of further utilization or neutralization;
- analysis of the waste management services market and signing contracts with selected disposal companies in accordance with the regulations in force and prospected demand.

The activities involve in the implementation of the investment based on proper functional and organizational solutions, obedience of the principles of waste management, safety regulations and manners of handling hazardous waste, as stipulated in the permit conditions should not pose threats to the life and health of the inhabitants and the environment.

The operational stage

At the stage of the operation of the installation some types of hazardous waste should be considered: hydraulic oils, engine oils, gear oils and lubricants, other oils and liquids used as electro-insulators, packages containing residuals of hazardous substances or contaminated by such substances, sorbing agents, filtering materials, used up equipment, laboratory chemicals and analytical chemicals, batteries, lead batteries and waste from heating oil tanks.

As far as the category of waste other than dangerous is concerned, the following types should be considered from existing machinery and new power plant: mechanically excreted rejects from the recovered paper and cardboard treatment, reject from paper and cardboard separation for recycling, reject fibre, fibre sludge, sediments from effluent treatment facilities, reject from textile fibre processing, mixture of volatile ashes and solid waste from lime methods of sulphur removal from exhaust gases / dry and semi-dry methods of sulphur removal from fumes and combustion in the fluid bed/, waste from the storage and preparation of fuels, reject from water treatment, packages.

Waste recovery

The substances generated from the processes run in the integrated paper plant and designed for reuse in the production of process steam for paper manufacturing are: bark, fibrous waste sediments from effluents treatment, including waste fibre, rejects from processing the recovered paper that constitutes the feed to the boiler. Detailed list of the substances generated in the course of the operation of the integrated paper factory and their quantities have been compiled in Table 28, Chapter 42.6.3.

If the venture is not undertaken, the quantity of the generated waste shall be equivalent with the quantities so far generated in the current operation of the plant and already functioning process technologies /as accepted in the integrated permit/. Furthermore, it is predicted that the absence of the Company's own heat generation plant supplied by biomass and by-products shall lead to more detrimental effects

caused by the accumulation of the generated waste in the environment.

Also, if the investment involving the construction of the new boiler is not undertaken, the Company shall fail to fulfil one of the most principle assumptions of waste management policy, which is the neutralization of waste at source and the reduction of its quantity.

Noise protection

Noise at the construction stage

According to the information provided by the Investor, the noise of the highest acoustic power shall be emitted from April to June 2008. It is at that time that the operation of 20 pile-driving machines is scheduled, each with the acoustic level of A 126 dB. The total acoustic power of the noise sources working during the day has been designated as 140 dB, whereas at night as 139 dB.

The use of such noisy machines would lead to exceeding the limit emission levels at night time in terms of the existing housing settlements by over 20 dB.

Therefore, it is necessary to use machines the total acoustic power of which shall not be more than 128 dB and to use them only at day time. This is corresponding to 20 machines that emit the noise of the acoustic power A equal to 115 dB each.

Noise protection – recommendations

- It is recommended to acquire the legal title to the strip of land between the Plant and the River.
- The Plant should be designed in such a way that the detached houses are provided with acoustic screens at the opposite side of I Armii WP Street.
- The buildings should have curtain walls with medium insulation $RW \geq 28$ dB, the mean level of internal noise should be limited to 85 dB, especially as far as the south-eastern walls are concerned.
- Noisy building works should be performed only at daytime. The limit total acoustic power A of simultaneously working machine should be 126 dB.

Underground waters protection

The planned investment does not exert direct impacts on the underground waters, as the estimated increase in underground water consumption is negligible.

Alternative water intake for Stora Enso:

It should be emphasised that in view of the impacts on NATURA 2000 protection zones, a preferred alternative should not be involved in the construction of a new water intake from the Narew River – thus, the intake should be situated in the vicinity of the existing intake utilized by EEO or the contract extended to cover the use of the existing intake. As an alternative solution, only theoretical in view of the absence of industrial references, the Plant could be supplied from barrage intakes catching surface waters at the Plant's site, and the water circulation systems should be closed.

Surface waters protection:

The processing of recovered paper and paper production are water-intensive. However, the consumption of water may be reduced by the application of closed circulation systems and rational water management.

The new installations shall consume water for the following purposes:

- The heat generation plant – for cooling and steam preparation;
- For sanitary purposes
- For fire fighting system

The water supplied from the surface waters intakes for the purposes of paper processing, paper machine, recovered paper store and finished paper store should be collected in a tank with the capacity of 2500 m³ located at the site. About 1800 m³ are planned to suffice a buffer for the fire protection system. The remaining quantity shall constitute a buffer for production needs.

The water supplied from the intakes shall be treated in the treatment plant and next pumped to the existing and newly designed installations.

The protection of animated nature and natural landscape qualities

In view of the scale of the venture and its location within the boundaries of the zone that for the last few years has been used for industrial purposes, the new investment shall not essentially disrupt the landscape qualities. It is planned in the zone already occupied by operating plants and facilities, including the heat generation plant, which have already become a landmark of the landscape. The newly designed installations shall not clash with the existing buildings. Also, no essential changes will have to be made in the work mode (introduction of the shift system), thus, the demand for lighting shall not also be essentially increased.

To reduce any potential negative impacts from the new investment on the natural landscape the following measures should be undertaken:

- The noise emissions should be lowered and limit noise levels outside the boundaries of the Plant should be observed.
- Closed circulation systems of water should be used within the production lines and the effluents disposed to the River only after the treatment in compliance with applicable standards.
- The water intake installation should be constructed to secure the least possible intervention in the environment.
- At the stage of obtaining the water permit it is recommended that the EIA be conducted for the direct and indirect effects on the changes in the hydrological conditions and the functioning of the new installation on The Lower Narew River Valley, which is subject of NATURA 2000 protection framework (PLB 140014).
- The run of the new power supply line should be as short as possible, to omit the residential zones and protected zones. To minimize the intervention in the natural environment and the ensuing social conflicts, the new power line may run along the existing transportation routes. A construction of the underground power supply line is also an option that is worth considering.

Electromagnetic radiation

In the absence of the actual detailed characteristics of the exact location and technical solutions used in the newly designed power supply line, the estimation of the electromagnetic fields emissions shall have to be taken into account at the design stage.

When the exact location and the technical parameters of the equipment are known, an analysis focused on identifying the receptors sensitive to the changes in the electromagnetic radiation that exist in the vicinity of the investment should be made.

CONCLUSIONS AND RECOMMENDATIONS

Noise protection

By means of the technical and organizational solutions (curtain walls in the buildings with mean insulation of $R_w \geq 28$ dB, the average level of the internal noise should not exceed 85 dB; the residential zone of detached houses should be equipped with the acoustic screens at the opposite side of I Armii WP and the total noise emissions from particular installations should be below the limit values.

Installation/ facility	Total level of acoustic power A
Outlets and machines in the paper machine hall at night time	102 dB
Heat generation plant and accessory equipment at night time	106 dB
Equipment for fuels reloading at night time	103 dB
Reloading and handling of bio-fuels at daytime	110 dB
Coal reloading equipment (only at daytime)	115 dB

Air protection

The results of the analyses of the pollutants dispersion in the air indicate that the limit values are maintained, with a considerable margin, as far as the limit hourly and mean annual concentrations are concerned in accordance with the Ordinance issued by the Environmental Minister on June 6th 2002 concerning the limit levels of some substances in the air, emergency levels of some substances and the margins of tolerance for the limit values of some substances (Journal of the Laws of the Polish Republic No 87, Entry 796) and the Ordinance dated Dec 5th 2002 concerning the reference values for some substances released to the air (Journal of the Laws of the Polish Republic No 1/ 2003, Entry 12).

Surface waters protection

The following issues should be considered at the design stage:

- Rain and snow water treatment equipment removing suspended solids and petroleum derivatives should be installed before the supply water inlets (sedimentation tanks, coalescence separators);
- As far as rain waters are concerned, *the parameters determined in the Ordinance issued by the Environmental Minister on July 24th 2006 specifying the conditions introducing effluents to the waters or soil in view of substances particularly hazardous to the water environment should be observed:*

Parameter	Unit	Highest limit value
Suspended matter	mg/dm ³	100
Petroleum derivative substances	mg/dm ³	15
Temperature	° C	35*)

- It should be considered whether it is possible to construct an alternative water intake (barrage system of close to river bank wells)
- It is essential to obtain the hydrological opinion at the pre-design stage , that will clearly determine the possibility of acquiring the required quantity of water for the Plant at the concurrent maintenance of undisrupted flow in the River

The following issue should be considered at the construction stage:

- The water supply and effluents disposal should be provided for the workers from the town by means of the existing Stora Enso's infrastructure;
- The construction site should be organized in view of reducing the possibility of rain waters contamination;
- The car transport should be organized in view of the minimization of the pollution of the surfaces drained to the Narew River .

In the course of the operation of the installations the applied technical solutions should secure the reduction of water intake and of the quantity of the disposed effluents, the parameters of which should comply with the binding legal standards.

The water and ground environment

The planned investment shall not pose any hazards to the water and ground conditions due to the construction of heating oil tanks that will supply the auxiliary boilers (option) of the power plant, with the total capacity of about 70 m³ will be fully protected for a leakage to the ground

The fields should be subject of monitoring for potential contamination of the water and ground environment. Piezometric holes should be made around the building where the tank is located.

The unloading of petroleum derivative substances requires special safety procedures stipulated in the Company's plan and subject of applicable approvals.

The protection of animated nature and natural landscape qualities

To minimize potential negative impacts of the new investment on the natural areas

the following measures should be undertaken:

- ✓ The noise emissions should be reduced.
- ✓ Closed circulation systems of water should be used within the production lines.
- ✓ In consideration of NATURA 2000 protection programme the preferred solution should intervene in the area in question as little as possible.
- ✓ The water intake installation should also be constructed in the optimal manner as far as the intervention into the natural environment under protection in question is concerned. Accordingly, all building works should not be performed in the hatching season(which is March- August).
- ✓ At the stage of the negotiation of the water permit, it is recommended that the EIA is conducted for the direct and indirect environmental effects in the hydrological conditions and the functioning of the new installation on The Lower Narew River Valley, which is subject of NATURA 2000 protection framework (PLB 140014).
- ✓ The run of the new power supply line should be as short as possible, to omit the residential zones and protected zones.

Waste management

The investment construction stage

The methods of the minimization of waste other than hazardous are the following:

- recovery and sorting of useful building materials;
- selective collection of building debris by type for reuse;
- successive disposal of recyclable building materials and waste and their removal from the construction site;
- collection of unpolluted soil mass and soil mass with debris (sorted out from vegetable earth/ humus) for reuse on the site of the investment.

The operational stage

The waste management after the start-up of the new installations shall be consistent for the existing and the newly constructed facilities.

Currently, Stora Enso follows the procedure of waste management, which determines the range of responsibilities and manners of handling waste at the Company's site. After the start-up of the new facilities, new procedures shall mainly concern the new plants and technologies.

