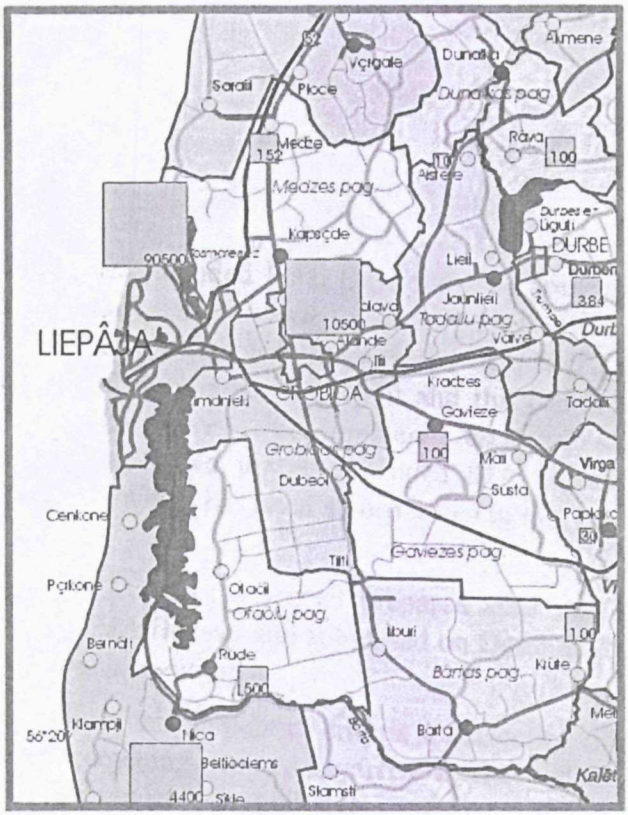
2001/LV/16/P/PE/005

LIEPAJA CITY COUNCIL



FEASIBILITY STUDY, PRELIMINARY DESIGN AND ENVIRONMENTAL ASSESSMENT OF SUSTAINABLE SOLID WASTE MANAGEMENT FOR LIEPAJA CITY AND LIEPAJA REGION

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

AMENDED DECEMBER 7, 1999
AND FEBRUARY 7, 2000

SWECO

Geo Consultants

SWECO INTERNATIONAL in association with GEO CONSULTANTS

Stockholm, February 2000

Project No. 1150335

Final Environmental Impact Asessment Report

Summary

Background

The current report is the Amended Final Environmental Impact Assessment Report of the Study *"Feasibility Study, Preliminary Design and Environmental Assessment of Sustainable Solid Waste Management for Liepaja City and Liepaja Region"*. The Final report was submitted on September 05, 1999 and the Client and the World Bank have provided comments to the report. The comments, especially with regard to the financial aspects, have been incorporated in this amended EIA report. Further comments were received in January 2000, which has been incorporated in this second amended report.

An addendum to the EIA report has been prepared after receipt of comments from the Client and the MEPRD EIA Bureau and submitted on October 25, 1999. The MEPRD EIA Bureau has approved this addendum.

The EIA was initiated by establishment of criteria for selection of a site for a regional waste treatment plant and a screening process to arrive at the two sites in Skede and Grobina subject to this EIA. The report is compiled in accordance with requirements stated in ToR issued by the World Bank, and later amended by the ToR given by the Ministry of Environmental Protection and Regional Development (MEPRD).

The Project

Currently, the municipal solid waste is disposed at about 25 disposal sites in the region. Most of them are small and receive less than 10,000 m^3 of waste per year. The largest disposal site is the Skede site in Liepaja, which receives about 80% of the total regional waste. Most sites are poorly located due to their geology and high water table, and none of the sites has an effective natural barrier or artificial lining to protect the groundwater against leachate pollution. The Skede site has been used since the 1960ies and the leakage of untreated leachate and run-off water has caused evident groundwater contamination and serious pollution of the nearby Lake Tosmare.

General Data about the Region

The Liepaja Region covers an area of 3,653 km^2, with 147,890 inhabitants. 112,898 inhabitants (76,3%) of the Liepaja District population live in towns and 34,992 (23,7%) in rural areas. There are 6 towns in Liepaja District: Liepaja, Aizpute, Durbe, Grobina, Pavilosta, and Priekule. The number of rural municipalities (so called pagasts) is 25.

Existing waste management system

Currently waste management services are provided for 101,747 people (68.8 % of total), and 6 municipal enterprises, 4 private companies and 3 housing estates carry out the services. Municipal councils provide waste management services in 15 municipalities.

114,759 m^3 of solid waste was generated in the Region in 1998 and have been disposed at 27 landfills. The largest of them – Skede – received 90,500 m^3 of waste or 78.9% of waste generated within the Region.

Waste sorting is only practised on a pilot scale and unorganised sorting of metal scrap takes place due to unlimited recycling possibilities in the metallurgical plant "Liepajas metalurgs" located in Liepaja City.

The region has no sanitary landfills, and surface water and groundwater contamination occurs. The highest contamination is found in surroundings of the existing Skede landfill.

Operational costs were about 282 thousand Latvian lats (Ls) in 1998, and the average tariff for waste disposal was 0.25 Ls/month per capita and 0.31 Ls/month per capita in Liepaja City.

Legal framework

Latvia has started to develop legal acts on waste management rather recently. The Law "On Municipal waste" was passed in Saeima (Parliament of Latvia) in October 15th, 1998. Regulations supplementing and specifying the law started to be passed to the Saeima in 1999. Therefore, it is necessary to develop legal acts governing waste management.

According the Law "On Self-government" municipalities are responsible for waste management in their administrative area. The "polluter pays" principle is to a large extent introduced in the waste management field, and nature resources tax (0.25 Ls/m^3) is paid for waste disposal (the Law "On Nature Resources Tax").

Forecast on Future Waste Production

A forecast on waste generation is provided for years 2000-2020, and it envisages that about 4.3 million m^3 of waste will be produced. Taking into consideration that modern compacting vehicles will be used for waste collection and transportation, and further compaction at the waste treatment site, about 1.64 million m^3 of will be disposed.

Characterisation of proposed waste disposal sites

After area screening for a new waste treatment plant location, the Liepaja city council decided to initiate an EIA on the two sites: Skede (north of Liepaja city, where the existing landfill is situated) and "Poligons" (the former military area, in Grobina pagasts).

The geological, hydrogeological and hydrological conditions, biological diversity, landscapes and land value, historical environment and cultural heritage values have been investigated, and possible impact on water and air quality, landscape, human health, etc. have been assessed.

The statement was as follows,

- for the "Skede site ": exclusive criteria exist (biological diversity, and closeness of densely populated area),
- for the "Grobina site " – no exclusive criteria, although several problems: concerning land owner attitude, location of access road and problems related to cultural heritage.

Due to problems with the land ownership at the first investigated Grobina site, the Client allocated a new, municipally owned area about 300 m east of the original site. Supplementary investigations were carried out mainly to verify the geological and hydrogeological conditions. The available land is about 27 hectares and comprises mainly former agricultural lands and forest in the north-west. Five boreholes have been drilled and the groundwater level and quality checked. The details of the investigations have been presented in the Addendum to the Final EIA Report.

The additional survey shows that the natural conditions at the new Grobina site are equally good as the original site.

The preliminary design at the new site has been adjusted from the earlier site to comply with the requirement of a minimum distance of 500 m to the nearest farmhouse, Vilteri. Moreover, the design includes a forested protection zone to protect from eventual disturbances generated by the future waste treatment facility.

Therefore, the Grobina sites are recommended for a new waste treatment plant location from nature conditions, social and human health aspects.

Remediation

The existing dumping sites shall be remediated and subsequently closed. Only the site in Grobina or Skede would remain open to be enlarged as part of the remediation so that it can serve as the regional waste treatment and disposal site.

Technical and operational improvements

To establish a modern solid waste management system to meet international waste treatment and sanitary landfill standards. It will include establishment of a sorting area for separation of recyclable materials and separate areas for storing of separated material as well as household hazardous waste, which would be transported to another site.

Installation of energy cells and a landfill gas collection system

Energy cells are planned for enhanced degradation of easily biodegradable waste and accelerated production of landfill gas, containing about 50% methane. The landfill gas is

ed to be utilised for energy production. The resulting greenhouse gas emission ions are planned to be sold to PCF, the Prototype Carbon Fund, under an emission ion agreement.

llation of a power generator

nergy conversion unit of about 1 MW_e capacity and running on landfill gas would be lled and connected to the power grid. The power would be sold to Latvenergo under a er purchase agreement to be negotiated as part of the project. The excess heat would ly be utilised for heating of the leachate and the premises within the waste treatment it.

provements of the collection and transport system

ew containers and vehicles for collection and transport of the waste to the regional waste eatment and disposal plant are planned to be procured within the project. There would eat least one waste collection point in each pagast.

Socio-economic aspects

The attitude of both local governments towards a new waste treatment plant in their area is positive. The attitude of people living in the surroundings of the prospective sites is basically negative. Therefore, public awareness campaigns should be provided in order to motivate the inhabitants to be engaged in the solid waste source separation, recycling and treatment.

The local government where a new waste treatment plant will be located would undoubtedly benefit. It can be expected that value of natural resources received by the municipality will increase from about 6.9 thousand Ls to 13.4 thousand Ls from year 2000 to year 2020. All municipalities, especially the rural ones, should carefully consider the possibility for their people to pay for the waste services, i.e. the affordability has to be considered in all pagasts.

Sequence of the project implementation and material

The logical sequence of the construction works, implementation schedules and legal acts governing the quality of material and potential environmental impacts during construction works have been analysed.

Activities during the operation of the waste treatment plant

Local guidelines regulating the landfill management are required. Factors that have to be incorporated in developing operating schedules are analysed.

The number of employees at the waste treatment plant for the operation of the site varies from 13 to17, depending on the selected alternative.

Security and safety measures are considered as well as general content of the required monitoring of the environmental impacts.

Environmental impacts and benefits

The actual and potential environmental impacts as well as the proposed mitigating measures have been expressed in the EIA report. These are briefly summarised below.

Impact on surface water

The current impact at Skede is considered to be significant. If the project is implemented at Skede this impact will be reduced by the proposed mitigating measures. The poor drainage conditions at Skede will require careful design and construction of a new drainage system. In Grobina surface water contamination does not occur today and is cheaper to control at the future plant.

Impact on groundwater

The current impact on the superficial groundwater in Skede is significant and less pronounced in Grobina. The ongoing contamination should be halted in order to prevent the deeper aquifers to be affected. The proposed measures to reduce the leachate generation will have little effect on the current pollution, which would require lowering of the groundwater table by pumping and treatment of the contaminated water together with the leachate. The proposed measures at Sked are necessary in order to avoid contamination of deeper aquifers.

Measures to control groundwater pollution are less expensive to implement in Grobina, since the current contamination is restricted and the proposed area mainly covered by a low permeability till. Both sites would benefit from the proposed remedial actions.

Impacts on air

The current practise of disposal in the region generates landfill gas, dust and odour. Dust and odour are mitigated by proper covering of the waste, which also is a prerequisite for collection of the landfill gas. The project will, if an energy cell and landfill gas system is implemented, reduce the impact on the atmosphere substantially. The proposed utilisation of gas at Skede (with sludge addition) is estimated at 4.0 million m^3 in year 2002 and 6.6 million m^3 in year 2020. This is equivalent to about 54 000 and 89 000 tonnes of CO_2 if the methane content is 50% and the methane is considered to be 21 times more potent than CO_2. That is equivalent to about 14 800 tonnes C in year 2002 and 24 500 tonnes C in year 2020. If the methane is burned for power generation an estimated 1 900 tonnes C and 3 200 tonnes is released to the atmosphere as CO_2 in year 2002 and year 2020 and the net reduction would then be about 12 900 tonnes C in year 2002 and 21 300 in year 2020. If about 6,7 GWh is generated as electricity in 2002 and 11 GWh in 2020 and the carbon intensity is 276 tonnes C per GWh the fuel switching benefit would be about 1 900 tonnes C

and 3000 tonnes C respectively for the years 2002 and 2020. Thus, the potential carbon emission reduction in year 2002 would be about 14 800 tonnes C in year 2002 and 24 000 tonnes C in year 2020. The reduction at Grobina would be of the same magnitude in year 2020, but less than 9 000 tonnes C in the initial phase. The reduction of the greenhouse gas in considered being the major environmental benefit of the proposed technical solution.

Protective vegetation belts in the surroundings of the site will also mitigate noise, dust and odour from the future waste treatment plant. Dust, noise, odour and littering may also occur along the access roads. The proposed modern vehicles, upgrading of the access roads and establishment of vegetated protection belts will minimise these impacts. The location of the access road to Grobina has been assessed from economical and environmental viewpoint. The upgrading of the existing road has been proposed as the minimum requirement for an improved environment at neighbouring residential areas.

Impact on flora and fauna

The Skede site has a high protection value, which only to a limited extent can be mitigated by the project. The protection zone of the Tosmare Lake limits the future expansion of the area and several rare species are abundant at the proposed site. The classification in the EIA of the biodiversity value of the area and the closeness to the Skede summer garden colony has concluded the site to be unsuitable for development of a regional waste treatment plant. The Liepaja city Council will have the final decision on this issue. The Grobina surroundings have no such restrictions.

Impact on land-use and landscape

The land availability at Grobina must be clarified prior to implementation of the project and negotiations with the landowner are ongoing. The impact on the landscape is more pronounced in the sensitive landscape at Skede although the ongoing activities already has created a substantial impact. Fencing, covering of the waste and establishment of protection belts will prevent littering of the surroundings of both sites. The proposed mitigating measures will improve the situation if the project is properly implemented.

Cultural and historical values

At Grobina the number of interesting object is higher than at Skede, but careful planning for the implementation would enable these values to be protected at both sites. The relevant authorities would be given the opportunity to inspect the concerned areas.

Impact on human health

Skede has a larger population residing close to the landfill and the impacts will thus affect a larger number of people. The Skede population has also expressed a stronger concern than the people close to Grobina. If the proposed improvements of the sanitary conditions are implemented the opposition of the inhabitants would be reduced. Careful involvement of the affected inhabitant during the planning and implementation of the project is of utmost

importance at both sites. Mitigating measures include provision of clean drinking water, waste covering, upgrading of access road, protection belts, improved sanitary condition, vermin and rodent extinction etc. The occupational health aspects would need the same management plan irrespective of the site selection.

Closure and post-closure activities

Final shaping and cover of the landfill, preparation of new surface runoff ditches, control of landfill gas, relocation of leachate drains and ditches, leachate control and monitoring and environmental monitoring are considered.

Conclusions concerning site selection

The evaluation indicates exclusionary criteria at the Skede site. They are the following:

1. Site is not suitable from bio-diversity point of view, 15 rare species were found within the site and a wide range of valuable biotopes (7 endangered biotopes and 7 biotopes of European significance).
2. The distance to the summer cottage village is less than 500 m.

The result of the evaluation of the two sites is presented in the following table.

Criteria	Skede	Poligons
Environmental conditions (5 criteria)	**6**	**12**
Social and public health aspects (10 criteria)	**18**	**22**
Aspects of Economics (9 criteria)	**25**	**18**
TOTAL	**49**	**52**

The current study and data analysis indicates that:

1. The *Skede* site has at least two exclusionary criteria, which indicates that the Skede site is not suitable for a new regional solid waste treatment plant.
2. The *Poligons* site and the new site in Grobina pagasts is acceptable for the new waste treatment plant, since exclusionary criteria do not apply to the site or to the surroundings. Several issues at the site should be addressed for a successful implementation of the project (land ownership, location of access road, inhabitants' attitude, character of the cultural heritage studies etc.).
3. The local governments only can make the decision on the location of the new waste treatment plant, i.e. the Liepaja City Council and the Grobina Parish Council.

Thus, it is concluded that the potential environmental imact from the planned waste treatment plant is the least at the two protential sites in Grobina from a composite assessment of the environmental, social and public health as well as economic aspects.