

**ENVIRONMENTAL IMPACT ASSESSMENT NORTH VIDZEME
SOLID WASTE MANAGEMENT PROJECT****(NON-TECHNICAL SUMMARY)****1. General**

- 1.1. The following is a brief non-technical summary of the proposal to implement a comprehensive solid waste management system in the North Vidzeme region, whereas the main emphasis is devoted to the construction of a new solid waste landfill site for the efficient disposal of solid waste produced in the region. At present about 189,900 m³ of solid waste are produced in the region annually and is disposed at 75 different sites. None of the present sites are operated in accordance with current environmental regulations or accepted practices, and pollution and contamination occurs. Geo Consultants Ltd. and Estonian, Latvian and Lithuanian Environment Ltd., Latvia has carried out an Environmental Impact Assessment of four sites offered for a location of a new landfill. This has been in accordance with the requirements stated by EU Directive 97/011 on the construction of landfill sites and Latvian "Law on Environmental Impact Assessment". The purpose was to evaluate and compare all offered locations, and to determine the most suitable one, where negative impacts on the environment will be minimal.

2. The Proposal

- 2.1. It was proposed to construct a solid waste landfill site at Varnas in the Koceni Municipality or at Daibe in the Stalbe Municipality. An Environmental Impact Assessment and Feasibility Study (prepared by Carl Bro International a/s in association with Geo Consultants Ltd., Latvia) of the proposed project was undertaken in 1998. Studies examined a number of possible alternatives including a "zero alternative", and the analysis concluded that the construction of a landfill at Varnas is the best solution.

The proposed landfill site will occupy an area of 18.2 ha but the actual landfill will only occupy 12.2 ha of that total area. The remainder of the area will be occupied by surrounding embankments, administrative buildings, access roads, site drainage, etc. Information on waste production in the region is provided in the report, and it is calculated that the site will provide a capacity in excess of 1.2 million tonnes of municipal solid waste over the next 25 years and will serve the needs of the whole North Vidzeme region.

The EIA State Bureau provided a statement that two sites are suitable for a new landfill location: Varnas in the Koceni Municipality and Daibe in the Stalbe Municipality. Based on this statement decision was made, and the site Daibe was chosen for a new landfill location.

The facility will include:

- Upgrading and extending existing 6.5 km long access road from the Riga – Valmiera Road to the site. Supplementary, a 0.4 km long new access road has to be constructed;
- Construction of a waste receiving area and facilities including weigh bridge;
- Construction of the first phase disposal site including impermeable lining and leachate collection system;
- Staff building and technical building for storage and maintenance of equipment;
- Site Drainage and fencing/protective nets;
- Leachate collection and treatment system.

There is an existing solid waste collection system in operation in the North Vidzeme region including 23 municipal enterprises and 1 small private entity. Collection vehicles are old, and have to be replaced. Therefore, the project proposes to establish a new inter-municipal enterprise for the creation of a new unified waste collection system throughout the region, using the new collection vehicles and containers and increasing the number of vehicles in the future as the need increases. The new organisation “ZAAO” was founded in late autumn 1998. It has received new Volvo vehicles (6 units) and containers (about 13,500 pieces) and started the waste collection in the region of North Vidzeme and later the additional districts.

- 2.2. The project will be implemented within the framework of the National Municipal Solid Waste Management Strategy proved by the Cabinet of Ministers of the Republic of Latvia on 30 June 1998. The Strategy describes the plans for improvement of Municipal Solid Waste Management in Latvia, and consists of plans for legislative, organisational, technical and financial measures to be taken.

The Strategy sets up the following sequence of priorities:

- Prevention of waste production;
- Reduction of the amounts of waste produced and of the harmfulness of waste;
- Recovery, as far as possible, of waste produced, followed by re-use or recycling as secondary raw material;
- Use of waste, not suitable for re-use or recycling, as source of energy (Waste-To-Energy);
- Safe disposal of waste not suitable for re-use or recycling nor for energy recovery, as well as the incineration ashes from the Waste-To-Energy processes.

In order to implement the strategy, the following course of action is proposed:

- Provision of the legal basis required for introducing of a new household waste management system (the Law “On waste management”, regulations on the dumpsites installation, operation and closure, regulations on licensing of companies dealing with waste management, etc.);
- Clear determination of institutional and administrative responsibilities and duties in the waste management field.

The "500-" programme was introduced to implement the actions required by the National Strategy.

3. Site Selection

- 3.1. At the inception stage eight locations were proposed for consideration as possible sites for the location of the landfill. These were in the Cesis District (2), Limbazi District (1), Valka District (1) and Valmiera District (4). Preliminary evaluation was based on considerations of access, topography, existing land use, presence of protected areas and suitability of geological conditions. This study identified the sites at Bale (Kauguri Municipality), Slazdi and Varnas (Koceni Municipality), all sites in the Valmiera District and Daibe (Stalbe Municipality) in the Cesis District as the most suitable ones and detailed evaluation of each of them was carried out. This evaluation included:
- Detailed assessment of the environmental impact at each site;
 - Careful analysis of social and economic factors;
 - Detailed economic evaluation of the establishment costs at each site.

The results of this analysis concluded that the sites Varnas and Daibe are the most appropriate. However, both sites had serious constraints– rather negative attitude of local inhabitants in Varnas, and high construction costs (especially related to access road) in Daibe. Finally, the negative attitude in Varnas was transformed into serious protests by the inhabitants of the Koceni Municipality. Therefore, the construction of a landfill site at Daibe was recommended as the only solution for the implementation of the North Vidzeme Solid Waste Management Project.

- 3.2. The impacts on geology and hydrogeology are discussed in the EIA Report, and the conclusion is that the conditions on the three sites (excluding Bale) are similar. The permeability of the existing materials covering the sites are of the order of 1×10^{-9} m/s but this geological barrier will be reinforced by the provision of an artificial HDPE membrane liner 1.5 mm to 2 mm thick and a leachate collection and treatment system involving a granular drainage layer and drainage pipes to convey the leachate to a storage lagoon on site. The provision of a leachate treatment facility at the landfill site is considered as a very high priority, and the detailed design of new sanitary landfill "Daibe" has been completed in September 2000.

The need to maintain the flow conditions of existing streams and drainage ditches in the area surrounding the site is also addressed, and especially to the north-east, where discharge of the treated leachate is planned. A ground water sampling and monitoring system was partly installed in January 2000 in order to determine background concentrations, and will be completed after construction works in order to provide continuous monitoring of the water quality in the area. The impacts on ground water and surface water are discussed in the Final EIA-Report. Surface water will be drained into the Ziedene River that is only 12 km long (basin area is 42 km²) and has an annual discharge of 13 million cubic metres. The expected leachate amount can reach 100 m³/day, and very high requirements on the quality of treated water are foreseen due to this fact.

3.3. Impacts on air quality

The impacts are the odour from waste as it is being spread and compacted and the odour from biogas produced during decomposition. It is proposed to mitigate odour from waste by spreading and compacting in relatively small areas and covering the compacted waste with inert material as soon as it is practical in order to minimise exposure to the atmosphere.

The production of biogas in the decomposing landfill has been examined to some extent, details are provided in the calculations made by Carl Bro International. It is calculated that the landfill gas generation will be significant: 15-20 Mm³/year will be generated when the landfill has reached full capacity after 20 years, fading to less than 5 Mm³/year after the landfill is closed. It is assumed that the methane content in the biogas can be about 50%. Therefore, it was concluded that biogas utilisation has to be provided at the new landfill.

The noise and vibration impacts are also detailed in the EIA Report. It concludes that the impacts will be minimal provided that the plant and machinery operating on the site is very small and the site is more than 500 m away from the nearest residences. It also proposes to place a cluster of trees to reduce noise impact.

3.4. The impact on Flora and Fauna in the area of the proposed sites is presented in the EIA Report. The habitats and flora/fauna associated with each site are similar, due to their proximity to one another and similarity of the landscape. The identified flora/fauna impacts are:

- Possible pollution of existing streams by discharge from the landfill. This is also evaluated under the surface water / ground water evaluation. Mitigating measures are foreseen to prevent the pollution of surrounding waterways, including containment of leachate and drainage systems for surface water from the site;
- Spread of disease and contamination from the site by animals. This will be prevented by the provision of fencing and screening nets around the site to prevent access to the site from the surrounding area;
- The forestry activity within 1 km of the site shall be controlled to limit the growth of expansive species;
- Water quality must be monitored.

3.5. The impact of the proposed landfill on the land value and landscape characteristics of the sites is evaluated in detail in the EIA Report.

It is noted that the site Varnas is registered as drained agricultural lands, while the land at Daibe is not used for any productive purpose. Land proposed for the landfill at the Daibe site is owned by the Stalbe Municipality.

The Report emphasises the importance of maintaining the drainage and groundwater patterns in the region to maintain the overall landscape pattern. It is also noted that existing forests surrounding the preferred sites should be

maintained and that additional planting be undertaken on the exposed sites to mitigate negative visual impact.

3.6. Cultural Heritage

A number of archaeological objects have been recorded within a 3 km radius of the sites Slazdi and Bale. Almost no objects have been ascertained for the Daibe site, i.e. the closest one – the ancient burial places “Cesnieku senkapi” and “Garsu senkapi” are situated at a distance of more than 1.5 km.

An ancient burial and sacral place Zilaiskalns located at a distance of about 2.5 km was the reason that the site Slazdi was objected during the final public hearing, and it was excluded from the list of sites to be utilised for a new landfill location.

However, concerning the Daibe site, the Report concludes that the distance from the proposed landfill is such that no negative impacts will occur at the monument sites in the region.

3.7. Human Environment

It is noted that there are 2 dwelling houses with 8 permanent inhabitants within 1 km of the proposed site Daibe. There are no dwelling houses at Slazdi within 1 km, while a number of them is located in the vicinity of Varnas and Bale.

The identified impacts on human health and safety are the risk of diseases borne by birds, rats and other vermin normally attracted to landfill sites, insect infestation, and odours. These negative impacts will be mitigated by:

- Providing a 2.5m high fence to prevent access to the site;
- Deposited solid waste will be compacted and covered regularly to minimise exposure to the atmosphere;
- A procedure for control of vermin and insects will be implemented using approved methods and specialist companies;
- Surface and ground water quality will be monitored regularly;
- A forest barrier will be provided between the site and nearest houses and along the access road.

Public consultations were carried out to determine the attitude of the local community to the proposed landfill. The results of this survey are given in the EIA Report and show a greater proportion of the local population in favour of the site at “Daibe”, while they are completely negative to Varnas. It is also noted that the local parish council at Stalbe supports the proposed development whereas the Council at Koceni has a rather uncertain position.

4. Summary and Conclusion

The Environmental Impact Assessment findings and conclusions are given in the sections “Comparison of Alternative Sites” and “Summary on Proposed sites” of the EIA Report, and comparisons of the two proposed sites in terms of all criteria are assessed.

The Report identifies that three sites have similar scoring – Slazdi, Varnas and Daibe, while the site Bale is not suitable due to the proximity of a number of dwelling houses and the occurrence of quartz sand. The three first sites are quite similar in terms of potential impact on the natural environment. The Daibe site is preferred largely because it is more remote from housing areas so the social and human impacts are considerably smaller at the Slazdi and, especially, at the Varnas site.

The conclusion of the Report is that the proposed sites at Varnas and Daibe are the preferred options for the construction of the landfill. As mentioned above, the decision to construct the landfill at Daibe has already been made by shareholder meeting of ZAAO.