

THE DEVELOPMENT PLAN REGARDING THE PUBLIC WATER SUPPLY AND SEWERAGE SYSTEM IN THE RÄPINA RURAL MUNICIPALITY

S U M M A R Y

1. General objectives of the sub-contract

The public contracting authority of the development plan to be compiled is the Räpina Rural Municipality Government and the development plan shall be devised for the years 2003-2015. The current initial task has been compiled proceeding from the primary vision of the public contracting authority and if required, necessary amendments may be made in the compilation development plan upon the propositions by and the agreement between the public contracting authority and that of the consultant.

The development plan shall characterise the region's ground water, the resources of the ground water and relevant quality in various layers. The quality of ground water has to be re-assessed according to the new quality requirements of drinking water resources.

The development plan has to include the inventory and the mapping of the point source pollution in the region and the sequence of their liquidation, depending on the level of their protection. It is necessary to determine the excessively wet areas remaining in the territory of the rural municipality town, settlements and villages or the regions where the drainage of surface or rain and melt waters is hindered and can cause hazards for the environment (drinking water wells, water bodies, etc.) and to indicate the solutions for the draining of the above-mentioned areas.

The development plan primarily observes the settlement units in the rural municipality and the Võõpsu village – the places with already existent public water supply and sewerage system. Regarding other settlements, relevant decisions shall be adopted during the course of the compilation of the development plan.

2. Major characteristic features of the company MAA ja VESI, Ltd., the winner of the tender.

MAA ja VESI, Ltd. is a small private company, located in Tallinn, 10616 Mustamäe tee 33, Reg. Code 10033667. The company has staff of 9 water management engineers and 6-7 assistants. The company has skills and experiences in environment investigations and regional planning, water engineering and amelioration, peat production development, *etc.* The company has licences for listed activities, and several contacts in foreign countries.

3. Räpina- the small town and parish on the lakeshore area of Lämmijärv /Teploe ozero.

The Räpina parish (with central town Räpina) , with 266 km² is located in Põlva County and situated on the western coast of Lake Lämmijärv. There are approximately 6000 inhabitants in the parish, a half of them in the Räpina town. From 2003 the parish and Räpina town had the joint management and the joint budget. The people are dealing with fishery, agricultural activities and forestry. The unemployment rate is one of the highest in Estonia. Essential industrial enterprises are missing, except of the small paper mill in

Räpina. The budget for fiscal year 2003 in Räpina parish was 39,8 million Estonian crowns.

4. Organisation of water supply and sewerage systems in Räpina parish.

Water supply and sewage water treatment are predominantly privatized in Estonia. The private company Revekor, Ltd. is responsible for those activities in Räpina parish. The company has 38 employees, three of them are dealing with water supply and sewerage systems. The efficiency of the company has been quite low, it has worked for many years without profit. 2003 was the first year, with planned profit of 108 thousands crowns.

There are some other small enterprises dealing with the water supply and sewerage systems. The Ruusa Service is dealing with those activities in Ruusa village.

5. Sources for drinking and potable water supply. Geological conditions.

Devonian aquifer, Tartu groundwater storage, with depth of 90 ... 50 m is the main drinking water source in Räpina parish. The groundwater yield of this storage is 3 ... 8 l per second.

The main surface water bodies are Lake Lämmijärv and Võhandu River. Water quality of those water bodies is moderate, sometimes good. The flood begins in Võhandu River usually at the end of March or at the beginning of April, low water period is usually from July to September.

6. Characterization of water supply and sewer systems in Räpina town.

The center of the parish, Räpina town is most important object for public water supply and sewerage. Approximately 1200 inhabitants or a little bit more than one third of the total number of inhabitants are connected with public water supply and sewerage system. The average water use has been 204 m³/d during last 5-6 years. Water demand has decreased from 64 568 m³/y in 1999 to 47 492 m³/y in 2002. The estimated water use per people is 170 l/d, the realistic use does not exceed 100-130 l/d.

The water supply is based on 10 bored wells, the average depth of them is 140-150 m. The grouting is foreseen for four bored wells, two bored wells are privatized and one is used for process water. The main water quality problem is too high content of iron, with 3-7 mg/l, which means that water chemical purification is needed.

The sewerage is mainly a gravity system. The biological wastewater treatment plant (OXYD-180) is located in the South-East of the town. For secondary treatment there are four biological ponds. The system is constructed in 1960-1980 and partially restored in 2002. The purification efficiency is not satisfactory in winter because people are using very few hot water. The result of this phenomenon is too cold wastewater for normal biological purification process, and the high waste concentrations of wastewater, entering the purification plant. The construction of the new wastewater treatment plant is necessary to guarantee the needed quality of effluents.

6.1. Planned activities and investments for project period (2003-2015)

- 680 additional connected people. 12,9 km pipeline for water supply; 13,2 km gravity sewer pipeline system and 0,5 pressure conduit system are needed for that purpose;
- construction of the new wastewater treatment plant;
- sludge removal from biological ponds.

The investments need for R pina town for project period is calculated as 35,313 millions EEK or 3 million USD's.

7. Water supply in small villages in R pina parish.

7. 1. Water supply in Ristipalo village.

There are 170 inhabitants in Ristipalo. 5 big houses in the village are all connected with public water supply. Water use is 30 m³/d. The timber producing private company Astel, Ltd. is responsible for water supply in village. This company is not interested to develop the water supply in future. There is another bored well, which belongs to municipality but it is not in use. It is necessary to restore that well, and take it into use.

Drinking water quality is bad in village Ristipalo. The content of iron is too high (2,2 mg/l), and the content of manganese (0,105 mg/l) also exceeds the normative – 0,05 mg/l.

There are 500m pipeline for water supply and 480 m gravity sewer pipeline for waste water. The pipelines are 50 years old, and need to be restored. Wastewater treatment is based on 2 bioponds, which are full of sediments, and do not have a normal efficiency any more.

The investments need for restoration is 1,915 millions EEK or approximately 150 000 USD.

7.2. Water supply in Leevaku village

Leevaku village is located 10 km from R pina on the banks of V handu River. There are 199 inhabitants at Leevaku. 80 of them are connected with public water supply system. The Ruusa Service Private Limited Company is responsible for water service in Leevaku. There are one bored well, pumping station and 700 m pipelines. The average water use is 6-7 m³/d or 2380 m³ per year.. The shortcomings in water supply are similar to those in R pina and Ristipalo. The iron content in drinking water is very high (4,5 mg/l), and it will be purified with Manganese Greensand filters, which are working with high efficiency. The iron content after treatment is 0,1 mg/l.

There are 2 bioponds for wastewater treatment. The efficiency of the treatment is low, and the system needs for renovation.

The investments need for restoration works is 3,328 millions EEK or 240 000 USD.

7.3. Water supply in Ruusa village.

Ruusa village is one of the essential villages and cultural centers in parish, with secondary school and the house of culture, public library and nursery school. There are 254 inhabitants in the village, 170 of those are connected to public water supply system. The average water use is 20m³/d or 7300 m³ per year.

The Ruusa Service Private Limited Company is responsible for water service in Ruusa village. There are one bored well, pumping station, water treatment plant and pipelines (2,1 km). The technical status of pipelines is bad, they are fulfilled with iron sediments, and the leakages are not rare.

There is the wastewater treatment plant with Bioclere B and 2 biological ponds for sewage water treatment. The gravity pipeline with 2,1 km was built in 1978, and needs for restoration.

The investments need for restoration works is 5,232 millions EEK or 425 000 USD.

7.4. Water supply in Linte village.

Linte village is located 10 km North from Rāpina. There are 302 inhabitants in Linte village, 180 of the are connected to public water supply. Water use is 25 m³/d or 9125 m³/y. The Ruusa Service Private Limited Company is responsible for water service in Linte village. Either the drinking water pipelines or sewerage system pipelines have the length of 1 km.

The wastewater treatment was planned by AQUA CONSULT BALTIC company and built in 1999. The treatment process is regulated automatically but there are big fluctuations in the treatment quality, and need to be updated.

The investments need for restoration works is 2,951 millions EEK or 225 000 USD.

8. Water supply in Võõpsu village.

Võõpsu village is located on the lakeshore of Lämmijärv, in the mouth of Võhandu River. Distance from Rāpina is 5 km.

There are 260 inhabitants in the village. The public water supply and sewerage systems are missing. Keeping in mind the location of the village very close to Lake Lämmijärv the creation of the public water supply, and sewerage system, respectively, is very important and the issue of high priority. That's the reason why the more detailed plans for drinking water supply and sewerage systems had been worked out by MAA ja VESI, Ltd. for Võõpsu village in frame of this pilot project.

The investments need for construction of the water supply and sewerage system is calculated as 10,083 millions EEK or 775 000 USD

There are 12 technical schemes and maps with pipelines, pumping stations, wastewater treatment plants and biological ponds in that project, both in digital and printed form.