

Environmental Report 2013

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AS Tallinna Vesi in brief

- AS Tallinna Vesi is the largest water utility company in Estonia, providing drinking water and wastewater disposal services to approximately 1/3 of Estonia's population.
- The Company provides water and wastewater disposal services to over 22,000 customers and approximately 430,000 end consumers in Tallinn and its surrounding areas.
- The Company has the exclusive right to provide water and sewerage services in the Tallinn service area until the year 2025.
- A Services Agreement with 97 quality levels of service has been concluded between the City of Tallinn and the Company for providing the services.
- The Company has two treatment plants: Ülemiste Water Treatment Plant (WTP) and Paljassaare Wastewater Treatment Plant (WWTP).
- Water has been treated at Ülemiste since 1927. A new water treatment plant was built in 1979.
- The Water Treatment Plant produces an average of 60,000 m³ of water per day.
- Almost 90% of drinking water is produced from surface water. Lake Ülemiste is the main source of drinking water for the residents of Tallinn and, therefore, the lake is not a public water body. 10% of the consumers use regional ground water.
- Average water consumption in 2013 was 93 litres per inhabitant (94 liters in 2012).
- Paljassaare Wastewater Treatment Plant started operating in 1980.
- In 2013 the Wastewater Treatment Plant treated on an average 123,350 m³/day.
- The Company has laboratories for water, microbiology and wastewater, which together conducted a total of 140,000 analyses in 2013 (81,000 chemical and 11,000 microbiological analyses from drinking water and 48,000 chemical analyses from wastewater).
- The public water supply system comprises almost 1,111 km of water networks, 17 water pumping stations and 64 ground water borehole pumping stations with a total of 93 boreholes throughout the entire service area.
- The public sewerage system comprises 1,093 km of wastewater networks, 443 km of storm water networks and 174 sewerage pumping stations across the service area (except unowned pipes).
- AS Tallinna Vesi founded its 100% owned subsidiary Watercom in 2010 to diversify the services offered and pursue business development and growth.
- As at the end of 2013, a total of 311 employees worked for the Company and its subsidiary under employment contract entered into for an unspecified term.
- The Company's shares are listed on the main list of Tallinn Stock Exchange.

OPERATIONAL SITES

- Head office, customer service, support services and OÜ Watercom are located in Ädala 10, Tallinn.
- Ülemiste water treatment plant, water and microbiological laboratory are located in Järvevana road 3, Tallinn.
- Paljassaare wastewater treatment plant, composting fields and wastewater laboratory are located in Paljassaare põik 14, Tallinn.
- Sludge composting and experimental site is located in Liikva village, Harju county.
- The catchment area ca 1,800 square kilometres is located in Harju and Järva counties.

MISSION

We create a better life with pure water!

VISION

Everyone wants to be our customer, employee and partner, because we are the leading water services company in the Baltic's.

OUR VALUES

- Commitment We work with passion, doing the maximum to achieve the objectives.
- Customer focus Our actions help our customers and colleagues to find solutions.
- Teamwork We all form one team who knows that our success depends on me and my colleague's contribution.
- Creativity We have the courage and the energy to seek new opportunities and achieve better solutions.
- Proactivity We act today for a better tomorrow.

COMMITMENT

We work with passion, doing the maximum to achieve the objectives.

PROACTIVITY

Act today for a better tomorrow.

CUSTOMER FOCUS Our actions help our customers and colleagues to find solutions.

TEAMWORK

We all form one team whose success depends on me and my colleague's contribution.

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CREATIVITY

We have the courage and the energy to seek for new opportunities and achieve better solutions.

Chairman's statement

In 2013, the challenge we set for ourselves was to continue to deliver improvements from the "best in Baltics" standards we were already achieving. I am very proud to state that in most areas we have managed to improve our performance levels still further. This is due to efforts of our people and teams who have once again delivered an excellent standard of service across the entire water and wastewater value chain.

Operations performance – best ever water quality

It is imperative that we meet or exceed the levels of services in the contract we signed with the City of Tallinn in 2001. This services contract requires us to maintain a high standard of service to our customers across a range of over 90 levels of service, ensuring that we deliver a service to our customers, that is second to none.



Ian John Plenderleith, Chairman of the Management

We are especially proud of our water quality compliance. In 2013 we achieved our best ever standards for water quality, with 99.7% of all samples being compliant with EU standards. To put this into context, during the year we took 2,965 samples at the customers' tap, and of these only 9 did not meet the required standards.

This high quality product and service has been recognised by our customers. From the results of our 2013 customer satisfaction survey 75% of respondents said they regularly drank tap water, compared with only 48% in 2011. Thanks to the quality of our product and the quality of our communications, more and more of our customers trust the quality of the service we are providing.

Excellent customer service – one of Europe's best performing utilities for service performance

This year we achieved a customer satisfaction rating of 79, as measured by the TR*M index. Whilst this is down on last year's record high of 85 it is still significantly above the average for European Utilities and is very close to the top 10% for all European manufacturing companies. This is an excellent outcome and is a good reflection of the hard work we have done to improve all aspects of our service.

In addition to the improvements in the quality of our water and wastewater, we continue to reduce the customer risks related to potential flooding and pollution by making preventative improvements in the performance of our networks. For example in 2013 the number of sewer blockages decreased by 20% compared to the average of the last four years. The level of leakages is decreasing year-on-year due to our investments and preventative actions. In the water network, compared to the period prior to privatisation in 2001 we are saving approximately 13,000 m³ of treated drinking water a day. Finally we have supplemented this improving operational performance with improved customer communications, in 2013 97% of all clients were informed prior to an interruption to supply.

Our people and teams

The key to any company's success are the people. Our teams have worked "hard and smart" in order to deliver the highest levels of service to our customers. I would very much like to thank all of our people for their dedication and flexibility during the year.

A committed, capable and motivated workforce is central to delivering our objectives and we remain fully focused on maintaining high levels of employee development and engagement. We are always looking to develop our people and teams. In 2013 we commenced work a programme of activities to enable our managers to collaborate more effectively and develop themselves personally.

We strive to continuously improve our safety culture. The safety and well-being of our employees is paramount and we believe that everybody in AS Tallinna Vesi, both collectively and individually, has a part to play in maintaining a safe working environment. In 2013, our health and safety performance stood comparison with the performance of the best in class, and we will remain vigilant in our efforts to achieve the same very high standards in the future.

Responsible company

We acknowledge that by providing a service compliant with all requirements, we influence the quality of life of the citizens of Tallinn, neighbouring municipalities as well as the wider environment in and around the Baltic Sea. This means that our management practices take into account the impact we have on our living environment, and our associations with different stakeholder interests. Our responsibility to all our stakeholder groups, including the environment is a key reason for our ongoing business improvement.

Not only do we aim to do the right things for our stakeholders, we also want to manage our business in the right way by operating to the highest standards of corporate governance. In 2013, we were awarded the Best Investor Relations of all the companies on the NASDAQ OMX Exchanges in all three Baltic Countries. This is the first time an Estonian company has won this award, which is a great honour for ourselves and Estonia. I would like to take this opportunity to thank the NASDAQ OMX in Tallinn and the bank analysts who have worked with us to help improve the quality of our interactions with the investment community.

Still attractive for shareholders

We believe our operational and financial performance still makes us an attractive investment for current and future shareholders. We will continue to work hard in our court dispute to ensure that the privatisation contract is respected. Beyond this we will continue to invest in our people and systems to ensure we are well placed to grow across the region if and when the opportunity arises.

For the 2013 financial year our total revenues increased slightly by 0.3% year on year to 53.1 million euros, mainly due to an increase in non-regulated revenues from our subsidiary business Watercom OÜ. However our earnings per share (EPS) reduced by 12% year on year to 1.00 euro per share primarily due to the finishing of the sewerage extension programme that caused a significant reduction in the profit from government grants.

In June 2013 we paid a dividend of 0.87 cents per share, an increase of 3.6% year on year. This is in accordance with our dividend policy, which is to increase dividends by a minimum of Consumer Price Index (CPI) each year. We are committed to delivering this dividend policy across the lifetime of the contract, while making further improvements for our customers and the environment.

Given the lack of progress in our court cases, and the lack of transparent regulatory practice, the outlook for the company remains very uncertain. The Estonian authorities have been unwilling to enter into any meaningful discussions over the privatisation contracts, therefore it appears that the company will be engaged in a long court process that could last a number of years. This ongoing dispute and the unstable regulatory environment severely limit our growth opportunities. As such our primary focus in 2014 will be to improve performance and efficiency in our main services area in Tallinn. We are committed to retain our place as the leading water and wastewater company in the Baltic region, and we fully understand that we can only keep this position by not resting on past performance and achievements.

Finally, I would like to thank my colleagues in AS Tallinna Vesi and Watercom OÜ, and all our suppliers and business partners for all their expertise, energy and support in serving our customers during the past year. It is because of all your efforts that we are able to report a level of operating and service performance that is second to none. I look forward to our continuing success in the year ahead.

Company's objectives

COMPANY'S GENERAL OBJECTIVES 2013

CUSTOMER SERVICE	12 months	Objective in 2013	Status
Customer satisfaction with service in the results of external services – TRI*M (<i>Measuring, Managing and Monitoring</i>) index is 10% higher than European manufacturing companies (%)	78	68	+
Customer satisfaction of ASTV problem solving in the results of internal services to be higher than 3.2 points out of 4 (Points)	3.42	>3.2	+
The number of written customer complaints is less than 135 (i.e. reduction of 10%)	118	<135	+
To reduce the number of responses with a ranking of 1 on questions asked during the Customer Satisfaction Survey to be less than 7.5 (%)	6	<7.5	+
OPERATIONAL PERFORMANCE	12 months	Objective in 2013	Status
0 non-compliances resulting from LoS (except WS7A), environmental and health requirements, as well as legislation	1	0	-
Reduced no of customer contacts related to water quality 10% - max 215	252	215	3 7 3
Reduced no of customer contacts related to floodings/blockages 9% - max 1500	1405	1500	+
Reduced no of customer contacts related to water interruptions and pressure 10% - max 3000	3288	3000	-
PEOPLE	12 months	Objective in 2013	Status
Employee recommendation index ≥3.6 (Points)	3.4	≥3.6	-
Employee Opinion Survey results is 10 points above the Estonian average (Points)	66	73	-
0 work accidents that the Employer is liable for	0	0	+
No of days of short term sickness 1200	609	<1200	+

"+" - achieved "-" - not achieved

COMPANY'S ENVIRONMENTAL OBJECTIVES 2014

Objective in 2014
0 non-compliance (except for LoS WS7)
0 non-compliance
Objective in 2014
<580,000 m ³
<1.46 ha/per year
<1.7 ha/per year
<21.8 ha/per year
<0.7 ha/per year
Objective in 2014
>2 campaigns
nal >1 project
>2000 children
>2 projects
ble manner CSR index >88.1%

Company's structure



Quality and environmental policy

The new environmental and community policy and also quality policy approved by the Company's Executive Team expresses the Company's principles in organising activities related to corporate social responsibility and environment.

Environmental and community policy

We are the largest water company in Estonia. Our activity influences nearly one third of Estonia's population. We acknowledge that by providing service compliant with all requirements, we influence the quality of life of the citizens of Tallinn, neighbouring municipalities as well as the Baltic Sea natural habitat and its surrounding areas. Therefore we take into account the impact we have on surrounding living environment, and association with the different stakeholder interests.

- We act responsibly we take into consideration our impact on the natural habitat, health and quality of life of the residents as well as interests of different stakeholders.
- We fulfil all legal requirements, but we are dedicated to doing more than required.
- We value the natural environment we operate in and therefore use natural resources sparingly and continuously seek ways for a more sustainable consumption. In order to help shaping an environmentally conscious way of thinking in our community, we encourage and support others accordingly.
- We wish to give our contribution to those who need more help and attention in the community to experience the joy of success.
- We strive to be a good neighbour in the community by supporting and encouraging activities related with environmental awareness and healthy life style.

Quality policy

We aim to ensure that our customers have drinking water with a very high quality and to discharge wastewater and storm water in an environmentally wise manner.

- We continuously improve the quality-, environment-, occupational health and safety performance of our products, activities and services.
- Management is based on the principle of continuous improvement throughout the business.
- We do more than required by the legal acts and we follow the best practices.
- We are a good partner for our customers. We are not afraid to give promises and take responsibility when we fail to keep our promises.
- We believe that it is only by involving our various stakeholders and through open and honest dialogue that we can strive for continuous development to improve our services, quality and work organisation.
- We believe that behind every successful company there are inspired and competent employees. Therefore, we consider very important to support and acknowledge, and involve them in our activities and decision making processes.
- We provide our stakeholders with relevant and timely information.

Our customers

We provide water supply and sewerage services to more than 22,000 contractual customers and 430,000 end users in Tallinn and its surrounding areas.

Our wish is to provide an uninterrupted and high quality service to our customers. Therefore, we continued to make our best efforts in 2013 to maintain the very good quality of drinking water and to further improve the services' reliability. The main focus was on enhancing customer awareness and quality of resolving customer contacts in order to reduce the customers' need for repeated contacts.



Customer satisfaction survey results indicate that feedback on our services continues to be very positive. However, continuous reinforcement of the emotional side of our customer relations is still a challenge to us. Regardless of the excellent results (in comparison with customer satisfaction in the European utility and production sector) we will try to maintain the high level achieved and continue to improve customer service also in 2014.

Customer feedback

At the end of 2013, an independent market research company TNS Emor once again carried out a survey among our customers and end users in order to analyse their satisfaction with services provided by the Company. A total of 900 customers and end users were surveyed to map changes in our customer relations' strength and factors influencing it as well as to receive feedback on our activities' success.

Satisfaction was measured on the basis of the TRI*M (Measuring, Managing and Monitoring) method developed by the research company to characterise the strength of customer relationships and to allow comparison with other companies. This model focuses on three elements:

• TRI*M index, which measures the strength of customer relationships and comprises further four elements – general satisfaction, recommendation, repeated use and usefulness/necessity of services or products;

- TRI*M typology of customer relationships, describing the satisfaction and loyalty of customers;
- TRI*M grid analysis to highlight the strengths and weaknesses of a company.

The databases of Global TRI*M Centre serve as the source for international comparisons by collecting the results of all customer surveys carried out by various service providers using the TRI*M methodology. The global database contains feedback from almost 8 million customers to their partners.

Survey results show that the average satisfaction indicator among customers and end users in 2013 is 79 points on a scale of 100. The average result has dropped by 6 points compared with the last year. Regardless of that, our customer relationships continue to be strong in all segments, being at a uniform high level of 75-82 points in the TRI*M index.



Compared to other utility companies in Europe, our Company's customer relationships can continually be considered to be very good, standing out with considerably higher ratings than average in terms of customer satisfaction. It is obvious that the strength of customer relationships is also influenced by the necessity of the service provided by the Company.



The year 2013 saw a continuous positive trend in terms of consuming tap water for drinking – within the last four years, the percentage of tap water drinkers has increased from half of all end users to ³/₄. Our campaign "Ask for tap water" which has been carried out for several years now has definitely played an important role here. It was also the most noticed media message among all customer segments. The improving trend of tap water drinking is definitely related to the improvement of water quality and taste as well.

Concerning the service, an important win is progress in solving commercial customers' problems. The percentage of commercial customers who have turned to us with complaints during the year has decreased and their ratings of solution's appropriateness and operating process have increased. Private customers have had slightly more problems compared with the last year, mainly in relation to connections to water supply and sewerage system.

CUSTOMER SATISFACTION WITH DIFFERENT ASPECTS OF SERVICES IN 2012-2013

On a scale of 5	Commercia	customers	Private c	ustomers
Un a scale of 5	2012	2013	2012	2013
Taste of water	4.0	3.9	4.1	4.0
Odour of water	4.1	4.0	4.2	4.1
Clarity of water	4.1	4.1	4.1	4.1
Stable water pressure	3.9	4.0	4.0	3.9
Low number of emergencies and interruptions	4.1	4.1	4.2	4.1
Price/quality relationship	3.1	3.2	3.2	3.2
Accuracy and clarity of invoices	4.5	4.4	4.3	4.2
Customer Information line	4.0	4.0	4.1	3.9
Communication by e-mail	4.2	4.1	4.1	4.1
Self-service	4.1	4.0	4.0	4.0

Although we have outperformed the promises made to private customers in resolving customer issues, fixing the problems in the manner most suitable for them still continues to be of utmost importance for our customers. In this regard, ratings remained at the level of 2012. Ratings on price and quality have also remained at the last year's level. We realise that the price continues to be an important topic for all customer segments and bringing that into focus might change customer relations considerably.

Development of customer service

In spite of high level of customers' satisfaction with our services and products, we still strive to continuously develop our customer service with the help of feedback from customers. It is important for us to continue focusing, above all, on issues related to problem solving. Taking into account the results of the annual feedback survey, we carried out various activities in 2013 to improve customer relations.

- We renewed the system of Our Promises uniquely used in Estonia, according to which we automatically pay compensation to the customer when we are not able to comply with our internal service standards. In order to show our continuous dedication to further improve our service provision, we have added such activities to Our Promises' list which most influence the customers' everyday life.
- As a result of improved inter-departmental cooperation, in more than 90% of the cases the customers who had turned to us via phone knew when the Company was going to take actions for solving the problems raised by them.
- In cooperation with several restaurants, we continued with the campaign "Ask for tap water" and it was the third year to carry out the campaign "Tap water = drinking water" in order to raise consumers' awareness about the very good quality of tap water.
- In order to reduce inconveniences experienced by residents due to interruptions to water supply, we notified most of our customers of emergency water interruptions at least one hour in advance.
- We asked for feedback from our customers on a monthly basis. This provides us with immediate feedback on the last month's customer requests and allows us to react instantly if a customer is not satisfied or has questions. In 2013, our customers' rating on our work was 3.42 points on a scale of 4.
- We have redesigned our self-service so that it would be more comfortable to use for customers. As of now, all customers can comfortably fill in the application form in self-service and send it to us immediately.
- At the end of 2013 we moved over to a new geographical information system which enables us to inform customers in a more operative manner than before.

Environmental management system

Our Company's environmental activity is in compliance with the requirements of the international environmental management standard ISO 14001 and EU Eco Management and Audit Scheme (EMAS) Regulation.

The environmental management system forms a part of the Company's management system as we strive to make the links between the Company and the environment part of our strategy and to take them into account in our everyday management. The objective is to avoid or at least minimise environmental pollution via integrating the environmental management system elements into our daily activities. All these measures enable us to achieve good results in our environmental activities and carry out a systematic control over the performance thereof.

The basis for the environmental management system is the identification of both negative and positive significant environmental aspects and impacts which form the basis for determining the Company's environmental objectives and tasks for improving performance. Significant environmental aspects are such activities which, in contact with the surrounding environment, most influence the nature, quality of services, co-operation between stakeholders, health and life quality of the residents, and our business performance.

An overview of the significant environmental aspects of our Company, their environmental impact, the accompanying environmental objectives and tasks as well as progress against the objectives is presented in the next chapters of this Environmental Report.

Management of the environmental system has been established in accordance with the Company's structure. The main responsibility for ensuring and improving the functioning of the environmental management system lies with the senior management and the heads of structural units. Unit managers involve their employees in setting and fulfilling environmental objectives and tasks. We measure, monitor and assess the indicators of our environmental activities at least once a quarter, on the basis of which we annually compile an environmental report available for the public.





SIGNIFICANT ENVIRONMENTAL ASPECTS IMPACTS Certified environmental managements system Contribute to the implementation of environmental improvement activities 2013 OBJECTIVES AND TASKS 2013 OBJECTIVES AND TASKS To ensure compliance with regulatory requirements (except LoS WS7A), and requirements of the Services Agreement To ensure the awareness of sub-contractors about significant environment related aspects of the Company +

Compliance of the activities with environmental requirements

Environmental legislation

The minimum requirement of environmental management system is compliance with environmental legislation. All improvements to the environmental management system must also be in accordance with the requirements and restrictions set out in applicable legislation. To a large extent our Company's environmental activities are regulated by requirements arising from EU as well as national and local government legislation.

At the EU level this means compliance with the EU Water Framework Directive (2000/60/EC). At the national level, compliance with the Water Act, Public Water Supply and Sewerage Act, Waste Act, Chemicals Act, Ambient Air Protection Act and subordinate acts based on these acts shall be ensured. At the local level we are obliged to comply with different rules and requirements both in Tallinn and its surrounding municipalities.

Amendments to the requirements and legislation are being constantly monitored and managers responsible for the implementation of the required changes are notified thereof each month.

In co-operation with the Estonian Water Works Association, we continue to participate in the approvals of the new draft acts concerning water economy and environment by submitting our opinions and making amendment proposals with regard to the draft legislation under discussion. Together with the Estonian Water Works Association we have participated in the working groups for developing legislation related to water economy and environment and expressed our opinions with regard to draft legislation directly to the relevant ministries (e.g. Ministry of Environment, Ministry of Justice, Ministry of Economic Affairs and Communications).

In 2013 we did active preparation work with regard to the following important draft legislations: amendment draft of the Public Water Supply and Sewerage Act and draft Metrology Act and also the Ministry of Environment Decrees "Requirements for the use of wastewater sludge in agriculture, greening and recultivation" and "Sampling methods" related to wastewater treatment.

Environmental permits

We act in accordance with the conditions set out in the environmental permits issued to the Company and observe the precepts set out by authorities. The main licensing authority for us is the Environmental Board's Harju-Järva-Rapla regional department, who has issued the following environmental permits to us:

- 4 water extraction permits (details on page 30);
- 2 waste permits (details on page 52);
- 2 ambient air pollution permits (details on page 60).

In 2013, we performed in conformity with all of the conditions set forth in applicable environmental permits. The matters related to the environmental permits, e.g. their extension, have been resolved in cooperation with the Environmental Inspectorate and Harju County Environmental Services.

Due to the Accession Treaty concluded between the EU and Estonia and compliance with the requirements of the Directive 98/83/EC regulating water quality, § 13¹ of the Water Act will become invalid since the beginning of 2014. Therefore, we have already started co-operation with Harku Municipality Government and Northern Service of the Health Board in order to ensure the compliance of drinking water with quality requirements in Harku small town area and to complete the process of transferring the area to drinking water supply from Ülemiste water treatment plant. In 2013, we constructed the connecting network and in 2014, works will be started for the construction of booster pumping station which allows us to provide our customers with drinking water compliant to all quality requirements. The process of transfer from groundwater to surface water is planned be completed by July 2014 at the latest. Additional information is available on the Health Board's homepage www.terviseamet.ee.

Requirements of the Services Agreement

In 12 January 2001 we concluded a tripartite Services Agreement with the City of Tallinn and investors, which, among other things, obliges us to comply with 97 Levels of Service. This makes us the most regulated water undertaking in Estonia. Our activities and levels of services are assessed once a year by an impartial inspection body – Supervisory Foundation for the Water Companies in Tallinn – to whom the Company annually, i.e. by the end of the first quarter, submits a report on compliance with the levels of service.

95 levels of service out of 97 set out in the Services Agreement were met in 2013. Two noncompliances which were related to interruption to water supply occurred in July (item WS7 of the Services Agreement). In one occasion, 9 properties were left without water supply for 17 hours due to construction works in Soo street (WS7A). In the other occasion, customers of three properties were not notified of planned interruption to water supply due to data error (WS7B).

Continuous improvement of the services' quality and achievement of better results than required are still our main objectives. Regardless of the two levels of service where we were not able to achieve a 100% compliance in 2013, we still outperformed the agreed objectives with regard to several other levels of service.

Requirements to contractual partners

As strict requirements apply to our activities, we consider very important that also our suppliers and contractors meet both environmental and work environment requirements. We have established several criteria in our procedures which enable us to make sure that our partners follow the requirements. Bidders for construction works must confirm that they comply with occupational safety and environmental protection requirements at our construction sites. Our specialists as well as the supervision staff of the Company's subsidiary OÜ Watercom monitor the suppliers'/contractors' activities with regard to health and safety and environment at sites.



In order to improve the awareness of suppliers, opening meetings were carried out for construction and reconstruction sites in 2013 (except for the constructions of individual connection points) by our subsidiary OÜ Watercom. The aim of the opening meetings was to additionally introduce to the contractors the Company's objectives, contractual requirements, construction norms and the quality, environment and occupational health and safety requirements applicable to the Company before the commencement of the construction works.

Management system control and audits

In 2013 several authorities monitored the compliance of our Company's activities, incl. environmental activities, with the requirements. The Crisis Management Office of the Rescue Board's Northern Rescue Centre made an onsite inspection for ensuring chemical safety and the Health Board carried out a regular check as usual.

In addition to supervisory authorities, the Company's compliance with environmental legislation and Services Agreement requirements as well as with intra-Company requirements were also monitored in internal and external audits.

As a result of internal audits carried out in 2013 our internal auditors put forward a total of 8 nonconformities and 23 proposals, which formed a good source of management system improvement ideas for the managers.

In spring 2013, an interim audit was carried out in the Company by accredited certifier Det Norske Veritas in order to evaluate the compliance of the management system with the requirements of ISO 9001, ISO 14001, OHSAS 18001 standards and with the Regulation (EC) No 1221/2009 (EMAS).

During the external audit no non-conformities to the requirements of ISO and OHSAS standards were discovered. The fact that we have achieved a considerable increase of awareness in terms of reporting of "almost accidents" (nearmisses) was highlighted by auditors as a remarkable achievement. While in 2012 nearmisses were reported 5 times in total, in 2013 they had been reported already 16 times during the first three months of the year.

One minor non-compliance was fixed during the certification of EMAS report, which was eliminated in an operative manner. As a result of external audit Det Norske Veritas confirmed the compliance of the management system and EMAS report with the abovementioned requirements.

Company's ecological footprint

In the estimation of Estonian Fund for Nature (hereinafter referred to as EFN), the ecological footprint method is currently one of the best methods, more and more widely used in the world, which enables to evaluate the environmental impact of the activities of companies and states in a complex manner.

The basis for the calculation of ecological footprint is land as a limited resource, which people use for satisfying their needs. The surface of the globe is divided into categories:

- Bioproductive land (arable land, pasture and woodland);
- Bioproductive sea (main territory for fishing);
- Energy land (land required for energy production and distribution systems);
- Built land (buildings, roads, etc.);
- Biodiversity (unspoilt nature);
- Other land (rocks, deserts, etc.).

Ecological footprint is a measure of human demand for the use of natural resources for their activities. Ecological footprint assesses the use of space accompanying the lifecycle of a product or service and can be measured in hectares per year (hereinafter ha per year). The Ecological Footprint Index demonstrates how much water and productive land is occupied for producing, using and absorbing materials to be consumed.

In the calculation of a company's ecological footprint, two simple facts are taken as the basis:

- It is possible to monitor and detect the majority of the resources which the company consumes and several additional outputs;
- It is possible to measure the majority of the resources and waste flows in terms of biologically
 productive area which is required for producing these resources and for disposing and neutralising
 waste.*

Ecological footprint factor** is a conversion unit which helps to equalise the measured source data so that the result would be easily understandable and comparable.

Environmental impact measured on the basis of the ecological footprint method

Our ecological footprint method takes account of 11 different components, for the calculation of which there is a respective factor which corresponds to the products and services used or produced in the Company's activity (details on page 59).

Components have respectively been divided between five fields (water, waste, electricity, heating, transport). In order to get a better comparison, the ecological footprint per one employee has been pointed out separately. It must be emphasised that it is fair to compare the ecological footprints per person of various companies only in case the companies provide similar products or services and the ecological footprint has been calculated for the same indicators.

*The load of the states to the ecosystems from "Ecological Footprint of Nations", 1997, page 32 **Ecological footprint factors were taken from the book by Chambers et al "Sharing Nature's Interest", 2000, available in the library of EFN.

Treatment processes

Water treatment processes

1. Surface water is gathered to Lake Ülemiste and directed to Water Treatment Plant.

2. Raw water passes through screens and microfilters, which remove algae and plankton from the water.

3. Water is led into reservoirs, where a mixture of ozone in air is injected into the water to oxidize organic substances.

4. A water treatment chemical coagulant is added to clarify the water.

5. During the clarification phase particulate matter, chemical flocks and precipitates are removed from the water.

6. Water passes through filters. In summer, dependent on the quality of raw water coming into the plant, activated carbon may be added in order to remove any remaining particles and to improve the taste of the drinking water.

7. Chlorine is added to the water for disinfection purposes.

8. The water is directed to drinking water reservoirs, from which it is pumped to the city water network in accordance with demand.

Wastewater treatment processes

1. Wastewater collected through the sewerage network is directed into the Main Pumping Station. Storm water is also collected into the combined sewerage system and directed to the Main Pumping Station.

2. Storm water collected in the areas of separate sewerage network is led to the storm water outlets through a separate storm water network.

3. In the mechanical treatment stage, the wastewater is screened to remove larger solids and the grit removal tanks remove grit and sand from the wastewater.

4. Smaller solid particles are removed in the primary sedimentation basins, formed sludge is removed from the process.

5. Coagulant is added to the wastewater for the chemical treatment of phosphorus.

6. For biological treatment, wastewater is conducted to the aeration tanks, where the vital activity of various bacteria helps to remove nitrogen and biologically decomposing substances from wastewater. To ensure a living environment suitable for the bacteria and to make their work more efficient, air and additional carbon in the form of methanol are injected.

7. Activated sludge that has formed in aeration tanks is settled in the secondary sedimentation basins.

8. Additional volume of nitrogen and biodegradable pollutants are removed from wastewater in biofilter as a result of the vital processes of the bacteria. Additional carbon in the form of methanol is added to increase the efficiency of the work of the bacteria.

9. Treated wastewater i.e. effluent is pumped via a deep sea outlet into the sea.

10. Sludge removed during the different phases of the treatment process is pumped to the sludge treatment plant.

11. Sludge is digested and stabilised in anaerobic digesters where bacteria make the organic matter decompose.

12. The biogas created in the course of anaerobic sludge digestion is used for the technological process and heating in the plant.

13. The stabilised sludge is dried and mixed with peat.

14. The outcome – sludge mixture with high nutrient content - is used in cultivation.

Drinking water quality

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMPACTS			
Opportunity to connect the water network	Maintaining and improving the quality of life and the status of the environ			
Compliance with drinking water requirements	Retaining and improving quality of life			
Non-compliant drinking water in Maardu area	Danger to population's health			
	2013 OBJECTIVES AND TASKS			
Reduced no of cust	comer contacts related to water quality 10% - max 215 -			
To carry out at least 1 campa	ign about tap water for population jointly with external partners +			

Drinking water quality is required to comply with the Decree No 82 of 31 July 2001 "Quality and Control Requirements and Analysis Methods for Drinking Water" issued by the Minister of Social Affairs (hereinafter referred to as the Decree No 82) originating from the Estonian Water Act and the European Union Drinking Water Directive 98/83/EC.

Customer satisfaction survey indicates the drinking water quality being one of the factors most affecting customer satisfaction. An increase in the number of people drinking tap water continued as a positive trend also in 2013 – in the last four years the proportion of those drinking tap water has grown from half of the end-users to three quarters. The growing trend of drinking tap water is definitely based also on the improvement of tap water quality and taste, although those have not gone through huge changes over a year, still the ratings given by the end-users have constantly been improving year-on-year.

The water quality is monitored following the Drinking Water Quality Monitoring Programme approved by the Health Board. The Programme for the years 2013-2015 determines the sampling spots, sampling frequency as well as the parameters to be analysed. Samples are taken both from the raw water (Lake Ülemiste and the catchment area thereof and ground water) treatment process, bore-wells and customers' taps.

Conditions for using ground water have been determined in the water extraction permits HA0132 (L.VV/323855), TL0687 (L.VV/322982), HA0382 (L.VV/320972) and HA1106 (L.VV/320980) issued to the Company. Although the usage of ground water is limited by water extraction permits, it is possible to cover the ground water demand and still have sufficient reserves to partially replace some of the supply by ground water in case there should be any problems with regard to the drinking water supplied from Ülemiste Water Treatment Plant.

Drinking water quality analyses are carried out by the Company's water and microbiology laboratory, which is one of the largest water laboratories in Estonia. The quality of the analyses is guaranteed by both the qualified samplers and laboratories accredited by the quality management system (EVS-EN ISO/EC 17025 standard) using modern equipment and employing professional staff. In 2013, our water and microbiology laboratory performed a total of 92,000 analyses.

Treated water quality at Ülemiste Water Treatment Plant

Almost 90% of our consumers are supplied with drinking water produced out of surface water. Although Lake Ülemiste is the main drinking water source in Tallinn and Maardu, the natural catchment area of the lake itself is small. To provide sufficient water source, an extensive water catchment system has been established. The quality of surface water is mostly affected by the weather and geographical location of the catchment area. Thus, the entire water catchment system is affecting the quality of surface water. Our main challenges are caused by the weather – floodings and changes in the raw water due to long winter periods.

In 2013, the treated water quality at Ülemiste Water Treatment Plant was compliant with the requirements of the Decree No 82 issued by the Ministry of Social Affairs, as set out in the table on page 22.

Surface water quality

The water quality in surface water sources is monitored in line with the programme established based on the conditions of the water extraction permit. In 2013, the quality of raw water in the treatment system complied with the class A2 requirements of the European Council Directive 75/440/EC.

To ensure compliance, the raw water quality indicators are analysed once a day at the intake to the treatment system. The raw water pollution indicators, such as total phosphorus and total nitrogen, are analysed once a week. Furthermore, an in-depth analysis of raw water is carried out once a month in accordance with the Drinking Water Quality Monitoring Program.

Based on the results of the analyses we assess the changes and processes in the catchment area and decide upon the supplementation of the water stock in the lake.

PERMANGANATE OXYGEN DEMAND IN RAW WATER 2009 - 2013, O, mg/l

	2009	2010	2011	2012	2013
COD _{MN}	10.2	9.7	9.4	10.1	10.1

In 2013, the permanganate oxygen demand was on the same level with the previous year. However, the water colour parameters were slightly lower.

RAW WATER COLOUR 2009-2013, Pt mg/l

	2009	2010		2012	2013
Colour	53	54	56	46	43

Still, the 2013 parameters do not fully reflect the actual situation. In the beginning of the year, the majority of parameters were significantly higher than in the end of the year. This caused differences in the costs of chemicals in water treatment. For example the raw water colour was 53 Pt mg/l in the first half of the year, whilst the same indicator was 33 Pt mg/l in the second half of the year. The permanganate oxygen demand was $11.0 O_2 mg/l$ and $9.1 O_2 mg/l$. This was caused by a dry summer with low precipitation avoiding the flush of nutrients from the soil into water bodies and the quality of surface water improved in the entire water catchment system.

As regards the water quality, the level of manganese has increased compared with the previous year. This is related to the fact that the Lake Ülemiste was covered with ice during a longer period than usual. However, the level of residual aluminium has decreased significantly, which is also related to changes in the quality of raw water. This is related to the massive bloom of a specific species of plankton.

DRINKING WATER QUALITY IN ÜLEMISTE WATER TREATMENT PLANT 2009-2013

B	11	and the second	Average results				Decree no 82
Parameter	Unit	2009	2010	2011	2012	2013	EU directive 98/83/EC
Odour	points	1	1	1	1	1	Acceptable to consumer
Taste	points	1	1	1	1	1	Acceptable to consumer
Turbidity	NTÜ	0.11	0.12	0.11	0.12	0.11	1
Colour	Pt mg/l	3	2	3	<3	<3	Acceptable to consumer
Dry residue	mg/l	280	263	258	256	261	
рН		7.33	7.31	7.3	7.30	7.26	6.5-9.5
Conductivity	µS/cm	435	373	366	366	373	2,500
Alkalinity	mg-ekv/l	2.8	2.76	2.83	2.79	2.93	
Total hardness	mg-ekv/l	4.14	3.95	3.87	3.86	3.96	
Temporary hardness	mg-ekv/l	2.8	2.76	2.83	2.79	2.93	
Permanent hardness	mg-ekv/l	1.35	1.2	1.07	1.09	1.02	
Permanganate index (COD _{Mn})	0 ₂ mg/l	3.3	3.0	3.0	3.2	3.1	5.0
Total organic carbon (TOC)	mg/l	6.0	6.0	5.9	6.2	5.8	Without unusual changes
Free CO ₂	mg/l	16	16	16	16	18	
Carbonates CO ₃ ²⁻	mg/l	0	0	0	0	0	
Bicarbonates HCO _{3.}	mg/l	171	168	171	170	180	
Chlorides Cl ⁻	mg/l	26.8	26	25.1	26	26	250
Sulphates SO4	mg/l	34	28	25	26	23	250
Orthophosphates PO ₄ ³⁻	mg/l	<0.01	<0.01	<0.02	<0.02	<0.02	
Fluoride F ⁻	mg/l	0.07	0.08	0.09	0.1	0.09	1.5
Nitrates NO3 ⁻	mg/l	2.7	1.9	2.9	3.1	2.6	50
Ammonium NH ₄ +	mg/l	0.003	0.005	<0.006	<0.006	<0.006	0.50
Calcium Ca	mg/l	68.2	65	65.7	67	66.4	
Magnesium Mg	mg/l	7.8	7.15	7.3	6.6	6.9	
Total iron Fe	µg/l	<10	<10	<10	<10	<10	200
Manganese Mn	µg/l	6.7	12.5	13.2	5.3	12.2	50
Aluminium Al*	µg/l	95	108	101	110	79	200
Sodium Na	mg/l	6.8	6.1	6.6	6.3	6.1	200
Potassium K	mg/l	2.8	2.7	2.8	2.7	2.6	
Chromium Cr	µg/l	0.56	0.62	0.65	0.59	0.67	50
Copper Cu	µg/l	0.33	0.42	0.4	0.52	0.58	2,000
Mercury Hg	µg/l	<0.05	<0.05	<0.1	<0.1	<0.1	1
Lead Pb	µg/l	0.02	0.01	<0.02	<0.02	0.02	10
Selenium Se	µg/l	<0.4	<0.4	<0.7	<0.7	<0.7	10
Zinc Zn	µg/l	0.18	0.3	0.51	0.43	0.55	
Acrylic Amide	µg/l	0.016	0.016	0,014	0.015	0.015	0.10
Chloroform	µg/l	21	25	24	26	24	
ТНМ	µg/l	26	30	29	29	29	100
Enterococh	CFU/ 100ml	0	0	0	0	0	0
No of colony forming units at 22°C	CFU/ ml	0	0	0	0	0	Without unusual changes
Coliform bacteria	CFU/ 100ml	0	0	0	0	0	0
Escherichia coli	CFU/ 100ml	0	0	0	0	0	0
Clostridium perfringens	CFU/ 100ml	0	0	0	0	0	0

* Residual aluminium has been calculated as per the results of in-depth analysis using ICP/MS method

Ülemiste sanitary protection zone

Lake Ülemiste is the drinking water source for more than 400,000 people living in Tallinn and its nearest surroundings. To protect the water body providing drinking water, Ülemiste sanitary protection zone was formed in line with the Water Act § 36 (1). Pursuant to this act, protection shall be provided to the area (where stricter than usual environmental requirements and consequent limitations apply) of water bodies, which are used for supplying drinking water, and the surrounding sanitary protection areas.



Lake Ülemiste

The sanitary protection zone shall include the lake, the water catchment facilities thereof, the bank reinforcement facilities and the area surrounding the lake, which must be kept in its natural condition. The sanitary protection zone is marked and protected with a fence. Under the Water Act, entry into the sanitary protection zone is permitted only for persons performing duties related to environmental supervision and health protection, servicing of water catchment facilities and forest maintenance, mowing of grass plants and water monitoring.

During the later years, human- and development activities, construction of motorways and airport activity have become more intensive in the areas surrounding the lake and this has caused the environmental risks on a drinking water source to increase.

As Ülemiste Water Treatment Plant does not have an alternative raw water supply source today, we deem it extremely important to ensure natural balance around the lake. Free public access to the drinking water reservoir may increase the risk of polluting the water source and deteriorate water quality.

Efficiency of the water treatment process

Ülemiste Water Treatment Plant treats water by a treatment scheme often used world-wide. We use ozone in the treatment process to improve the quality, odour, colour and taste of water and this has enabled to reduce the volume of chlorine by approximately 10 times over a decade. Drinking water must be safe and must not contain any pathogens. Therefore we add small amounts of chlorine in the drinking water, which is completely safe for human health, but at the same time an extremely effective measure to protect water against bacteria on its way through the network up to the customer taps.

Depending on the surface water quality of Lake Ülemiste, the law determines the physicochemical treatment of surface water to ensure the quality of drinking water – prechlorination, coagulation, sedimentation, filtering and disinfection.

In 2013, the filter material was replaced in four filters to make the water treatment process more efficient. One of the filters went through a thorough maintenance.



Ozonators in Ülemiste WTP

Filter nozzles were cleaned, new supporting layers were formed and the filter was filled with new sand and anthracite. To improve the reliability of the water treatment plant we invested into the repair works on clarifiers and replaced the adsorbent in one of the air preparation lines in the ozone building.

Ground water quality

Approximately 10% of consumers in Tallinn are supplied with water produced from the Cambrian-Vendi and Cambrian-Ordovician aquifers. Ground water is also supplied in the districts of Nõmme, Laagri, Merivälja, Pirita, Tiskre, Harku Rural Municipality, Saue City as well as Muuga and Kallavere settlements in Maardu City.

According to the EU Water Framework Directive (2000/60/EC), the qualitative or chemical condition of ground water is regarded to be good if the concentration of pollutants does not indicate an inflow of salty water or other water nor does it exceed the respective quality standards.

In 2013, the quality of drinking water at the borehole pumping stations complied with the requirements of the Decree No 82 of the Minister of Social Affairs as demonstrated in the table on page 27. There were no cases of ground water pollution or potential pollution demanding the notification of the City of Tallinn and the Health Board.

We monitor all of the quality parameters established in the water extraction permits and the drinking water quality monitoring programme and if needed the ground water goes through a treatment process. We monitor the quality of treated ground water (concentration of iron, manganese and ammonium) in 20 ground water pumping stations on a monthly basis. The new pressure filters installed in the pumping stations to remove excess iron and manganese have ensured a good quality drinking water.

In order to assess the health impacts of drinking water, the Company analyses the organoleptic features and also microbiological and chemical quality parameters. The analyses on ground water include determination of the content of such substances as mercury, antimony, arsenic, cadmium, uranium, chrome and other metals deemed hazardous to the water environment by the Water Act. Water samples indicate that the treatment of ground water has resulted in an improvement of the organoleptic features and stability index of water, reduction in the ammonium, iron and manganese content and an increase in the oxygen content.

Ground water in Northern Estonia (Cambrian-Vendi aquifer) contains natural radionuclides. The natural radioactivity of Estonian ground water has been thoroughly studied by the Geological Survey of Estonia as well as the Estonian Radiation Centre. To assess the health impacts of radioactivity, the Radiation Centre together with the Health Board carried out a health risk assessment in Tallinn's ground water areas (incl. Nõmme, Maardu, Saue, Tiskre, Pillado, Pirita, Merivälja, Pärnamäe) in 2010. Based on the results of the risk assessment, any health damage of accidental nature resulting from the content of radionuclides in the water is unlikely. Additional information on this topic is available on our webpage www.tallinnavesi.ee or on the Health Board's webpage www.terviseamet.ee.

Ground water treatment

Ground water used for producing drinking water usually belongs to the quality class I-III. Ground water from Ordovician-Cambrian aquifer usually belongs to the quality class I and does not need any treatment. However, ground water from Cambrian-Vendi aquifer in the quality class II or III and serving as the main drinking water source requires treatment. The main reason is a natural excess content of iron, manganese or ammonium resulting in higher turbidity of water than usual.

In order to supply compliant drinking water, we treat ground water by using filtration and aeration to remove excess iron, manganese or ammonium from the water. Filtration uses pressure filters installed in the bore-well pumping stations. Pressure filters are used to aerate and filter raw ground water. The Water Act foresees the preservation of ground water as similar to its natural conditions as possible, therefore, no chemicals are used. The samples taken after the ground water treatment process indicate a significant decrease in turbidity as well as in the content of iron, manganese and ammonium, an improvement of colour and stability index and an increase in oxygen content.

Also, mixing of ground water from two different aquifers is used to improve drinking water quality before pumping it into the network. Above all, this helps to reduce the level of natural radioactivity in drinking water. The Company's monitoring data is used in national ground water monitoring when evaluating the condition of ground water quality in the region of Tallinn.

In 2011, the gradual transfer of water supply for Maardu City to the water supply coming from Ülemiste Water Treatment Plant was started aimed at improving the water quality in Maardu. Water supply in Maardu City was fully transferred to surface water supply by 2013 and by now Lake Ülemiste supplies drinking water also to the population in Maardu. All bore-wells in Maardu are currently in reserve and there is practically no consumption of ground water. The bore-well pumping stations switch on only in case the pressure of drinking water from Ülemiste is insufficient. 99.31% of the water samples taken from Maardu in 2013 were compliant with the requirements.

GROUND WATER QUALITY IN PUMPING STATIONS 2009 - 2013

D	11-14			Average results			Decree no 82
Parameter	Unit	2009	2010	2011	2012	2013	EU directive 98/83/EC
Odour	points	1.12	1	1	1	1	Acceptable to consumer
Taste	points	1	1	1	1	1	Acceptable to consumer
Temperature	°C	7.75	8.4	8.9	8.8	8.8	
Colour	mg Pt/l	4.17	3.6	4	<4	<3	Acceptable to consumer
Turbidity	NTU	0.45	0.5	0.48	0.38	0.39	Acceptable to consumer
Dissolved O ₂	mg/l	6.5	5.4	5.4	5.8	6.0	
рН		7.99	8	8.05	7.95	7.97	6.5 - 9.5
Conductivity	μS/cm	594	518	493	493	489	2,500
Permanganate index (COD _{Mn})*	0 ₂ mg/l	0.75	0.7	0.66	0.69	0.73	5
Total organic carbon	mg/l	0.72	0.7	0.75	0.73	0.76	Without unusual changes
Alkalinity	mg-ekv/l	2.54	2.49	2.52	2.60	2.49	
Total hardness	mg-ekv/l	3.57	3.4	3.23	3.29	3.23	
Temporary hardness	mg-ekv/l	2.52	2.5	2.49	2.56	2.47	
Permanent hardness	mg-ekv/l	1.05	0.9	0.75	0.73	0.76	
Free CO ₂	mg/l	3.39	3.5	3	3.8	3	
Total iron Fe	µg/l**	0.055	0.05	0.056	0.05	44	200
Fluoride F	mg/l	0.61	0.59	0.61	0.59	0.59	1.5
Manganese Mn	µg/l**	0.0169	0.014	0.014	0.012	14	50
Ammonium NH ₄ +	mg/l	0.127	0.135	0.124	0.125	0.126	0.5
Nitrites NO ₂₋	mg/l	0.011	0.022	0.013	0.010	0.014	0.5
Nitrates NO ₃₋	mg/l	0.788	0.75	0.8	<1	<1	50
Stability index	20210-04960	0.14	0.09	0.22	0.1	0.11	
Sulphides S ₂₋	mg/l	0.0045	0.005	0.004	<0.004	0.004	
Dry residue	mg/l	346	312	304	313	320	
Calcium Ca	mg/l	50	47	45	46	45	
Magnesium Mg	mg/l	11	12	12.1	12.2	13	
Sodium Na	mg/l	47.4	41	43,3	43	44	200
Potassium K	mg/l	7.12	6.8	6.88	6.8	6.76	
Sulphates SO42-	mg/l	18.5	20	18,4	19	20	250
Bicarbonates HCO3	mg/l	154.9	152	153.5	158	152	250
Chlorides Cl ⁻	mg/l	89	83	82,8	83	85	250
Boron B	mg/l	0.1558	0.17	0.176	0.16	0.156	1
Aluminium Al	µg/l	2.843	1.03	0.91	1.4	1.52	200
Arsenic As	µg/l	0.106	0.11	<0.1	0.11	<0.1	10
Cadmium Cd	µg/l	0.01	0.02	0.01	<0.02	<0.02	5
Chromium Cr	µg/l	0.50	0.45	0.50	0.52	0.48	50
Copper Cu	mg/l	0.0067	0.0056	0.0033	0.0036	0.005	2
Mercury Hg	µg/l	<0.05	<0.05	0.06	<0.1	<0.1	1
Nickel Ni	µg/l	2.1	1.24	1	1.5	3.24	20
Lead Pb	µg/l	0.325	0.23	0.14	0.20	0.30	10
Antimony Sb	µg/l	0.01	0.02	0.02	0.01	<0.01	5
Selenium Se	µg/l	<0.4	0.58	0.51	<0.7	<0.7	10
Enterococci	CFU/ 100ml	0	0	0	0	0	0
No of colony forming units at 22°C	CFU/ ml	12	9	6	3	4	Without unusual changes
Coliform bacteria	CFU/ 100ml	0	0	0	0	0	0
Escherichia coli	CFU/ 100ml	0	0	0	0	0	0
			1000 PY				e-760.5

* Minister of Social Affairs decree No 82 does not establish a requirement to determine COD in drinking water, provided that total organic carbon has been determined. The listed indicator has been determined in the drinking water sources and the content of that does not change after going through filters. ** Until 31.12.2012 calculated to unit mg/l. Since 01.01.2013 the new unit is µg/l.

Drinking water quality in the network and customer premises

Tap water in the capital city is of a good quality and it is safe to drink it. In terms of quality the year 2013 was not different from the previous periods. During the year, the Company took samples twice a month at the sampling points agreed with the Northern Department of the Health Board.

The best ever result, where 99.70% of all water samples complied with the standards, means that in 2013 we detected non-compliances only in 9 samples of the total of 2,965 samples taken from customer taps. The non-compliances were mainly related to higher iron and turbidity parameters caused by the conditions of the water network. We immediately reacted to all non-compliances.

99.31% of the 144 water samples taken in Maardu in 2013 complied with the standards. Before the connection with the Tallinn water network, the quality compliance of drinking water in Maardu was only 33%.



Maintenance and investments related to the water network

We are constantly performing maintenance and renovation works on the network to retain and improve the drinking water quality. We regularly clean and flush the water network to guarantee high drinking water quality for the consumers. During the cleaning process the sediment build-up is removed from the network serving as one of the important methods improving water quality in distribution networks. In 2013, air-scouring was carried out on 140km of water network.

CLEANED WATER NETWORK 2009-2013

	2009	2010	2011	2012	2013
Cleaned water Network, km	232	165	151	143	140

Investments in replacing old water pipes and network extensions have facilitated an improvement in water quality in customer premises and a more efficient usage of water resources. 5.3km of water pipes were renovated and 0.1km of new water pipes were constructed in 2013 providing an opportunity to connect to the public water supply network for 2 properties. We have completed the network extension programme as agreed with the City of Tallinn and required in the wastewater collection directive of the European Union. The network extension programme significantly

contributed to the quality of life of Tallinners and after the delivery of the programme the connection opportunity for the water and/or sewerage network was provided to approximately 3,500 households.

WATER NETWORK RECONSTRUCTION 2009-2013

	2009	2010	2011	2012	2013
Reconstruction, km	23.8	16.7	5.1	5.2	5.3

WATER NETWORK EXTENSIONS AND CONNECTION OPPORTUNITIES 2009-2013

	2009	2010	2011		2013
Network extensions, km	5.5	6.2	0.003	0.9	0.1
Number of new customers given access to water network	80	126	1	13	2

Usage of water resource

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMPACTS					
Interruptions to water supply	Decrease in the quality of life					
Metered and provided drinking water	Overview of the consumption of water resources					
Local floodings due to blockages and technical failures	Decrease in the quality of life and property damage					
	2013 OBJECTIVES AND TASKS					
To use water resources sparingly and to reduce the e	To use water resources sparingly and to reduce the ecological footprint of own use water per employee in comparison with the last year +					
Reduced no of customer contac	ts related to water interruptions and pressure 10% - max 3000 -					

Water extraction

Our activities in using water resources are regulated by the Water Act and its implementing provisions. As a water company we must hold a valid water extraction permit with a term and pay a fee for the water resource used. The water extraction permit involves certain obligations and restrictions (e.g. the permit sets out the allowed water extraction volume (m³), keeping the account of water, metering ground water level, requirements of sampling standards, monitoring and analyses, also the allowed limit values of pollutants in effluent, requirements for monitoring the pollutants and the measures reducing the impact of water extraction).

All requirements established in the water extraction permits were met in 2013. The water extraction fee water is paid for the amount of water taken into Ülemiste Water Treatment Plant and for water pumped from ground water aquifers. In 2013, the water extraction fee amounted to 4.62% of the costs of the sold products/services.

Permit	Valid until	Description of special use of water
No L.W/323855	31.10.2018	Saue City public water and sewerage service area. Extraction of ground water from boreholes, over 5 m³/day. Collection of wastewater and directing wastewater to Paljassaare Wastewater Treatment Plant owned by AS Tallinna Vesi.
No L.VV/322982	31.03.2018	Tallinn public water supply and sewerage system main operating area, Tallinn surface water catchment system facilities area in Harju and Järva Counties. Regulating surface water resources in water bodies of Ülemiste-Pirita-Jägala surface water system, water extraction from Lake Ülemiste, extracting ground water from Ordivician-Cambrian and Cambrian-Vendi aquifers through Tallinn public water supply and sewerage system boreholes, for discharging biologically treated effluent through a deep-sea outlet pipe into Tallinn Bay and for discharging mechanically treated storm water into the sea, Mustjõe Stream and Pääsküla Wetland.
No L.VV/320972	06.11.2016	Harju County. Harku Municipality (includes Tiskre). Extraction of ground water from borehole, over 5 m ³ /day. Discharge and treatment of sewage and storm water from customers and discharge of wastewater to the receiving body of water.
No L.VV/320980	31.10.2016	Maardu City public water supply and sewerage system operating area. Extraction of industrial and drinking water from Cambrian-Vendi aquifers at the expense of 40 ground water deposits of Harju County in order to supply water to the institutions, enterprises and inhabitants of Maardu City, Kallavere and Muuga area. All Kallavere and Maardu public sewerage system is discharge to Tallinn public sewerage system.

VALID WATER PERMITS OF AS TALLINNA VESI

Usage of surface water resources

To increase the water volume we have built a water catchment system, which consists on hydropoints constructed on rivers and of water reservoirs as well as the channels connecting those. Our water catchment system mainly comprises Harju sub-basin and the river basins of Soodla, Jägala and Pirita Rivers with the total area of ca 1,800 km². The most important water reservoir is Lake Ülemiste with a net volume of 15.8 million m³ on a normal headwater level. Additional water reserves for dry periods have been accumulated to Paunküla water reservoir on the headwaters of the Pirita River (9.9 million m³) and to Soodla water reservoir on the Soodla River (7.4 million m³).

The volume of water resources in Tallinn's surface water catchment system primarily depends on the annual amount of precipitation. In a year of average rainfall, approximately 50% of the possible water resources in the system are used up. Constant information on the flows enables us to use the water resource in the most efficient manner. To regulate the water resources in an optimum and accurate manner we have established water metering points at all hydropoints enabling us to meter both the flows conducted to the channels and the sanitary flows in the rivers. We perform metering regularly as per the requirements of the water extraction permit.

QI of 2013 was characterised by unsteady weather conditions and ice that stayed on the reservoirs for a long time. QII saw high water levels. The beginning of summer was rainy and cool, which did not favour the flora to grow and even in the end of QII, the channel beds were clean of flora. Consequently, the total runoff of rivers of QII of 2013 was 10% higher than the long-term average. However, the QIII experienced warmer and drier than usual weather. The water levels that had already dropped stayed low and similar to the water levels the flows were very small in the watercourses of the entire catchment area. The runoff of rivers in QIII of 2013 was 50% higher than the long-term average. Warm and arid weather continued in QIV resulting in further decrease in the water levels of the reservoirs and flows in the rivers. Only in the end of October, when precipitation helped to restore the flows in the rivers, filling the reservoirs became possible.

Pursuant to the water extraction permit L.VV/322982 (valid 01.04.2013-31.03.2018) the Company is allowed to extract 47.60 million m³ of surface water per year from Lake Ülemiste. The actual surface water use in 2013 was 22.20 million m³.

USAGE OF SURFACE WATER FROM LAKE ÜLEMISTE AND COMPLIANCE WITH SPECIAL USE OF WATER PERMIT NR L.VV/322982, million m³

	2009	2010	2011		2013
million/m ³	21.17	21.98	21.57	21.75	22.20

Maximum volume permitted 47.6 million m³/year

In 2013, the Company used 455,646 m³ of water for its own purposes, which creates an ecological footprint of 36.5 ha/y. Ecological footprint is not calculated for water production, because those numbers are included in the end-users' ecological footprint.

Usage of ground water resources

For the constant inspection of ground water resources in Tallinn and other operated areas, the Company carries out regular measurements of ground water levels. All bore-wells of the Company currently in use are equipped with automatic hydrostatic pressure sensors which enable to measure the static and dynamic level of ground water. The results of measuring the water levels in bore-wells indicate an increase in pressure level in the used aquifers, thus, the recovery of ground water resources.

The Company met all requirements established in the water extraction permits in 2013.

	2009	2010	2011	2012	2013
Actual usage by Tallinn	2,552,685	2,461,524	2,229,612	2,161,789	2,151,950
Incl from Cambrian-Vendi aquifer	2,186,521	2,042,743	1,803,412	1,748,057	1,776,252
Maximum volume permitted	6,676,945	6,676,945	6,676,945	6,676,945	7,150,696**
Actual usage by Saue	202,621	222,473	213,701	210,655	205,233
Incl from Cambrian-Vendi aquifer	146,184	165,110	187,074	155,639	171,227
Maximum volume permitted	474,500	474,500	474,500	474,500	511,000**
Actual usage by Tiskre*	41,733	43,513	45,471	-	-
Maximum volume permitted	65,700	65,700	65,700/71,800**	-	-
Actual usage by Harku *	703	0	12,697	57,187	58,309
Incl from Ordovician-Cambrian aquifer			10,308	8,492	5,424
Incl from Cambrian-Vendi aquifer					52,885***
Maximum volume permitted	51,100	51,100	51,100/66,320**	138,120/ 141,120**	141,120
Actual usage by Maardu City	766,505	714,454	618,751	35,997	1,538
Maximum volume permitted	1,383,350	1,383,350	1,383,350/1,382,400**	1,382,400	1,382,400

USAGE OF GROUND WATER AND COMPLIANCE WITH WATER PERMITS (L.VV/322982, L.VV/323855, L.VV/320972, L.VV/320980), m³

*Since 25.10.2011 Tiskre area has been addressed in the permit of water for Harku Rural Municipality (L.VV/320972).

On 25.09.2012, an increase in the allowed water extraction volume by 3,000 m³ was applied for. Thus, 141,120 m³ became the maximum volume permitted.

** The maximum volume permitted by the new permits (L.VV/322982, L.VV/320985 L.VV/320980 and L.VV/320972).

*** The actual volume from Cambrium-Vendi aquifer by new permit L.VV/320972.

Leakages and interruptions to water supply

One of the most important aspects of water usage is the reduction of water losses in the network. The level of leakages has increased to some extent compared to the last year due to bursts on pipes, however, we have prepared and implemented action plans to reduce the level of leakages.

The Service Agreement applied in the Tallinn service area sets us the commitment to reduce the level of leakages to 26%, but despite unfavourable weather conditions we achieved 16.98% as the level of leakages in 2013, which is an excellent performance. About ten years ago the level of leakages exceeded 32%, which means saving over 13 thousand m³ of water a day. Such a reduction in the level of leakages has been facilitated by our consistent efforts to use the water resource sustainably and with lower losses.

LEAKAGE LEVEL 2009-2013, %

	2009	2010			2013
Leakage level	17.51	21.39	17.73	15.86	16.98

Detecting and eliminating the leakages as fast as possible contributes hugely to the reduction in the level of leakages. Our specialists have special equipment for finding leakages and along with zoning the network and remote reading devices it allows us to detect the leakages faster. The daily operations are also supported by the geographical information system upgraded in the end of 2013.

In order to mitigate the inconveniences resulting from an interruption to the service, in 96.9% of the events we notified the customers in advance of unplanned interruptions, i.e. outperformed the 90% target set on ourselves. Despite that the number of customer contacts related to water interruptions was high due to the construction works ongoing in Tallinn City centre and Nõmme area. The average time of eliminating an interruption to supply was 1.3 days in 2013.

AVERAGE TIME FOR ELIMINATING LEAKAGES 2009-2013, in days

	2009	2010			2013
Average time of eliminating leakages	1.3	1.5	0.97	0.83	1.3

In case of interruptions to water supply we provide a temporary water supply with the water tanks. Small water tanks (1m³) can be delivered to an emergency site by a regular car and enable to offer temporary water supply to customers fast. In addition we use five large water tanks (5m³) and a truck carrying a water tank. In case house connections are closed, if necessary, temporary water connections to water metering points are constructed and temporary water supply is ensured with an air-water pressure tank. In 2013, we invested in a new insulated water tank to ensure a temporary water supply for customers faster and in a more flexible manner also in a cold winter period. This insulated water tank arrived in the beginning of 2014.



Insulated water tank



Small water tank

Metering of water

The water meters we use are of high quality and comply with the European standard EN14154 as well as the accuracy requirements thereof. The expert studies and calibration of water meters is performed by the national Central Office of Metrology, AS Metrosert.

In total over 22,363 water meters have been installed to customers' connection points, facilitating to achieve a more accurate accounting for the usage of water resources.

Thanks to the use of C-class water meters since 2005, the number of expert analyses ordered by customers for verifying the accuracy of the water meters has decreased. The number of expert analyses has stayed stable over the last two years.

NUMBER OF WATER METERS EXPERT ANALYSES 2009-2013

	2009	2010	2011		2013
Expert analyses	487	308	235	146	146

Pursuant to the Metrology Act we have the obligation to replace the water meters every two years. In 2013, we replaced the total of 11,064 water meters based on a programme developed for that purpose. In 2014 we shall continue our work to make sure that all our customers have water meters calibrated on time.

Collection of wastewater

SIGNIFICANT ENVIRONMENTAL ASPECTS	ІМРАСТЅ					
Extensive floods	Pollution of the ground and sea water, danger to population 's health, decrease in life quality, damage to the assets of the population					
Opportunity to connect to the public wastewater network	Maintaining and improving the quality of life and the status of the environment					
	2013 OBJECTIVES AND TASKS					
Reduced no of customer contacts related to floodings/blockages 9% - min. 1500 +						
To ensure compliance at all outlets +						

To ensure an uninterrupted collection and discharge of wastewater, we preventively flush the wastewater network as well as reconstruct and extend the sewerage and storm water network.

Cleaning and maintenance of the wastewater network

Our attention continues to be on the risks related to potential floodings and pollution. The number of blockages is an indicator reflecting the condition of the wastewater network. Blockages are mainly caused by the sediments build-up in the wastewater network. Water consumption has constantly been decreasing over the recent years resulting in the reduction of flow volumes and flow speeds. This in turn increases the risk of blockages. Additionally, continuous extension of sewerage network is affecting the total number of blockages.

In 2013, the customers had slightly more problems with blockages on the network and the wastewater discharge service than earlier, but year-on-year the number of those problems is decreasing. This has been the result of numerous preventive actions such as raising the efficiency of pressure washing.

NUMBER OF BLOCKAGES 2009-2013			
	2009	2010	2011
Number of blockages	1,089	1,152	982

For flushing a pipe, first, a flow speed is generated with high pressure carrying sediment into the nearest cesspool. Sediment is then collected to pressure washing trucks and transported to Paljassaare wastewater treatment plant. Pressure washing is performed by our subsidiary OÜ Watercom using a recycling system on the trucks, which enables to use the water required for flushing repeatedly.

749

789

WASTEWATER NETWORK FLUSHED 2009-2013, km

	2009	2010	2011	2012	2013
Pressure washing on sewerage systems	180	147	195	182	208

Reconstruction and extension of the wastewater network

Investments in the replacement of worn out wastewater network and in the construction of new network contribute to the consistent improvement of the quality of environmentally friendly service.

In 2013, the Company renovated 5.4km of the existing wastewater network and built 0.1km of new wastewater network creating connection opportunities with the public wastewater network for two additional properties. As per the agreement with the City of Tallinn and pursuant to the European Union wastewater collection directive, we have completed the public water supply and wastewater network extension programme and did not build so many wastewater network any more. Thus, we did not build any storm water new network in 2013. The network extension programme significantly contributed to the improvement of the quality of life of Tallinners and provided approximately 3,500 households with the water and/or wastewater connection.

WASTEWATER AND STORM WATER NETWORK RECONSTRUCTION 2009-2013, km

	2009	2010	2011	2012	2013
Reconstructions	5.5	5.7	5.7	5.9	5.4

WASTEWATER AND STORM WATER NETWORK EXTENSIONS 2009-2013

	2009				2013
Sewerage network extensions, km	42.8	41	0.09	1.2	0.1
Storm water network extensions, km	8.2	14.6	2.3	1.6	0
Properties with connection opportunity	1,423	1,176	25	19	2

Monitoring overpollution caused by customers

In order to ensure acceptable concentrations of pollution in the wastewater reaching the Paljassaare wastewater treatment plant, we regularly monitor the wastewater discharged in Tallinn and Maardu and in the surrounding areas and check the compliance with legal requirements. Information on the average pollution indicators of major industries is also regularly submitted to the Environmental Board's Harju-Järva-Rapla regional department.

In 2013, our Wastewater Inspectorate performed 604 inspections to identify inspection wells, to check local treatment facilities and boundary drawings. 1,421 wastewater samples, incl. 510 monitoring samples, were taken for determining the wastewater pollution load at sites. Over-pollution instances were identified and over-pollution fees were applied on 404 occasions. The amount of occasions has increased slightly during the last years.

Storm water outlets

In 2013, our Wastewater Inspectorate monitored 25 storm water outlets pursuant to the requirements set forth in the water extraction permits no L.VV/322982 and L.VV/320980, the largest storm water outlets being the Lasnamäe, Harku and Mustoja outlets. Four storm water outlets (Olevi, Kaare, Raba and Vabaduse streets) have been equipped with local treatment facilities such as sand and oil traps, which we regularly maintain and clean in order to avoid possible environment pollution. All requirements set forth in the water extraction permit were met in 2013.

A total of 4.17 million m³ of storm water was discharged to the environment through the outlets in 2013. This was approximately half of the amount of previous year. The reason was again a low volume of precipitation during the reported period. The average level of precipitation in Tallinn was 936.2mm per area unit in 2012, in 2013 this figure was 586.5mm. Consequently the concentration of pollutants in storm water was a lot lower and the laboratory analyses indicated a considerably lower volume of suspended solids on the outlets.

Despite the pollutants in storm water no pollution tax was applied to the Company. The concentration level of pollutants specified in the Environmental Tax Act was not exceeded.

STORM WATER VOLUME 2009-2013, million m³

	2009		2011	2012	2013
Storm water volume	5.47	5.70	6.00	7.40	4.17

POLLUTANTS FROM THE MAIN OUTLETS 2009-2013, in tons

	2009	2010	2011	2012	2013
Suspended solids	90.9	110.6	114.5	143.4	69.8
Oil products	3.4	0.4	0.5	0.5	0.5

Wastewater treatment

SIGNIFICANT ENVIRONMENTAL ASPECTS	ІМРАСТЅ		
Wastewater compliant with the requirements discharged into the sea	Retaining the condition of sea water		
Wastewater non-compliant with the requirements discharged into the sea	Deterioration of the condition of sea water		
Flooding of wastewater collection area	Deterioration of human environment and sea water, pollution of the ground		
2013 OBJECTIV	VES AND TASKS		
To ensure compliance of waste water pollution parameters with reg	ulatory requirements and requirements of the Services Agreement +		
Nr of customer contacts related to	floodings/blockages are min 1500 +		

Using environmentally friendly and modern technologies at Paljassaare Wastewater Treatment Plant we treat the wastewater collected in Tallinn and nearest surrounding areas. Each year we remove more pollution from wastewater in order to ensure the compliance with the environmental standards and a clean Baltic Sea and Gulf of Finland.

45.02 million m³ of wastewater was treated at Paljassaare Wastewater Treatment Plant in 2013, which was 21% less than last year. This was above all caused by favourable weather conditions due to dry summer and low volume of precipitation.

TREATED WASTEWATER VOLUME 2009-2013, million m³

	2009	2010	2011	2012	2013
Treated wastewater volume	46.17	45.92	50.81	56.98	45.02

The quality of effluent discharged to the sea is set by the legal acts and the water extraction permit no L.VV/322982. The concentration of pollutants in wastewater arriving to the treatment plant and in the effluent leaving the plant are monitored to assess the efficiency of the treatment process and the quality of effluent. In 2013, the wastewater laboratory carried out 48,000 analyses at different treatment stages in the plant.

The important pollution parameters for us are the following:

- **BOD**₇ (biological oxygen demand shows the amount of oxygen required for the defined biological decomposition of organic matter in the course of 7 days);
- **COD**_{cr} (chemical oxygen demand is a measure of the decomposition of organic matter, measured as the consumption of oxygen in chemical oxidation of all organic matter in water);
- **SS** (suspended solids shows the volume of solid matter in water which is caught in a filter with a defined mesh size);
- N_{total} and P_{total} (total phosphorus and total nitrogen are elements contained in nutrient salts, which increase the growth of plankton in water. If the content of nutrient salts is too high, the growth can be so strong that oxygen is used up and a shortage of oxygen arises);
- **Oil products** (show the amount of light (e.g. petroleum) and heavy (e.g. heavy fuel oil) oil products).

Due to lower flows, the load of pollutants entering the Paljassaare Wastewater Treatment Plant were lower compared to the previous year: BOD₇ decreased by 4.8%, COD_{cr} decreased by 0.6%, total

nitrogen and total phosphorus by 9% and 5% respectively and suspended solids by 8%. The level of pollutants discharged with effluent has also decreased: BOD₇ dropped by 12%, COD_{cr} by 15%, total nitrogen and total phosphorus by 7% and 55% respectively and suspended solids, which decreased by ca 36% due to the extension of retention time of wastewater.



Paljassaare Wastewater Treatment Plant is already today achieving a high quality of effluent. We continue to be committed to maintaining the high standards and outperforming the norms established for the effluent discharged to the Baltic Sea. In the reporting year, the operation in all stages of the treatment process was continuously improved and equipment upgraded as planned, e.g. whilst renewing the aeration system also the mixers in activated sludge process were replaced.

Thanks to the very good operating work, efficient dosing of chemicals and a new treatment stage (biofilter) the Company achieved full compliance of effluent leaving the wastewater treatment plant with all regulatory requirements in all four quarters.

Pursuant to the change of law, since 2013, our main challenge has been achieving the new maximum allowed level of total phosphorus (0.50 mg/l). Despite a relatively stable annual average, the phosphorus concentration in the incoming wastewater fluctuates quite a lot throughout a year. To manage the treatment process better, we plan to reconstruct the coagulant dosing point in 2014.

As a result of the investments made in the Paljassaare Wastewater Treatment Plant, Tallinn does not belong to the pain pollution cities - HELCOM hotspots list. HELCOM organises international cooperation on the basis of the Convention on the protection of the Marine Environment of the Baltic Sea area against all pollution sources and to restore as well as to protect its ecological balance. In 2013, the treatment results were in compliance with the HELCOM and legal requirements.



New treatment stage - Biofilter



AVERAGE POLLUTION INDICATORS IN TREATED WASTEWATER 2009-2013 COMPARED TO REGULATORY REQUIREMENTS AND THE RESULTS OF HSY*, mg/l

* Until 2009, the results were compared to those of Helsingin Vesi 0y, which since 01.01.2010 operates under the HSY ** In line with the applicable legal acts, the compliance of total nitrogen has not been analysed at the wastewater temperature below 12°C. *** Until 2012, the max requirement value of P_{tetial} was 1 mg/l. Since 2013, in line with the Water Act § 24 (2), the Regulation No 99 stipulates the new limit value of 0,5mg/l for P_{tetial}













WASTEWATER TREATMENT PLANT TREATMENT EFFICIENCY 2009-2013, IN PERCENTAGE TERMS, COMPARED TO THE REGULATORY REQUIREMENTS, ESTONIA'S AVERAGE RESULTS* AND THE RESULTS OF HSY, %

* In 2009 Estonia's average calculation is based on the data from the five largest water companies in Estonia. In 2013 Estonia's average calculation is based on the data from the fourteen water companies in Estonia.

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Wastewater outlets to the sea

Despite the compliance of effluent quality in normal conditions, in 2013 we experienced difficulties in managing the high amounts of sand and grit in the mechanical treatment stage during hydraulic peaks. This has caused us to lead untreated wastewater directly to the sea during the reporting year in considerably higher volumes than previous years.

2013 had a relatively low volume of precipitation, however, some showers occurred, when we were bound to open the emergency outlets in the Wastewater Treatment Plant to avoid major damages. A total of 195,774 m³ of wastewater diluted by storm water (dilution ¼) was conducted to the sea.

Some single showers also caused a number of extraordinary cases, where the incoming grit and sand caused a blockage and an overload in the mechanical treatment stage. To avoid the flooding of equipment and a full stoppage of the plant we did not have any other choice for restoring the normal treatment process than to open the emergency bypass and lead a total of 183,900 m³ of wastewater diluted by storm water to the environment.

Those are extremely extraordinary and rarely occurring events. Such challenges have helped to detect the bottlenecks of the wastewater treatment processes and created a necessity to review the operating instructions for the mechanical treatment stage. To mitigate such environmental risks we have introduced some analysing measures to start reconstructing and/or redesigning the mechanical treatment process as needed.

Throughout the year 2013, 200,117 m³ of highly diluted wastewater, which underwent mechanical treatment, was discharged to the sea through the deep-sea outlet due to the shock loads, which exceeded the biological treatment capacity.

We have declared all of the events in the wastewater treatment in 2013 and paid the higher pollution tax as required by the legal acts.

WASTEWATER TREATMENT PLANT OVERFLOWS 2009 - 2013, m³/year

	2009	2010	2011		2013
Untreated wastewater discharged to the sea	0	0	107,510	136,962	379,674
Partly treated wastewater discharged to the sea	64,181	173,941	23,604	185,922	200,117

Environmental charges

As a water company we are required to act in line with the environmental permits and pay pollution tax with the aim to avoid and reduce the potential damage caused by pollutants or waste discharged to the environment.

The calculation of pollution tax is established in the water extraction permit and the Environmental Charges Act and is applied to the pollutants contained in the effluent and storm water at the particular outlets. Both the receiving water coefficient of the specific outlet as well as compliance with the pollutant limit value in effluent are taken into account in pollution charge calculations.

In 2013, the Company paid 1.87 million euros of pollution tax, which is more than 1 million euros compared to the last year.

Handling of chemicals

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMPACTS		
Drinking water compliant with requirements	Retaining and improving life quality		
Wastewater compliant with the requirements discharged into the se	Retaining the condition of sea water		
	2013 OBJECTIVES AND TASKS		
0 non-compliances resulting from LoS (exc	ept WS7A), environmental and health requirements, as well as legislation -		
To reduce the risk of accidents occurring as a result of chemical usage +			

The Company uses approximately 450 hazardous and less hazardous chemicals in its operating activities. With regard to the health and wellbeing of our employees we deem a safe handling of chemicals at the work site extremely important.

By applying and following the safety rules we have minimised the likelihood of accidents involving highly poisonous chemicals.

Large amounts chemicals and more hazardous chemicals are used at the Company's treatment plants. The amounts of chemicals used at the treatment plants predominantly depend on the volume and characteristics of the water reaching the plants, which, in turn, depend on weather conditions in the case of surface water and on the level of pollution in the case of wastewater.

In 2013, the Company used a total of approximately 6,300 tons of different chemicals. In 2012, this figure was approximately 5,800 tons.

Water treatment chemicals

• Chlorine

Ülemiste Water Treatment Plant treats surface water into drinking water and the process uses chlorine as a disinfecting chemical. The most common disinfectant in use is chlorine, which is effective and has a long-term effect in the water distribution network. Chlorine has a strong oxydising effect and is extremely poisonous for aquatic life. The Company has been classified as a category B Company with risk of a major accident in Estonia due to the large amounts of chlorine stored at the plant and used in the water treatment process.

As a chemical, chlorine causes irritation and has a corrosive effect. A gas heavier than air is poisonous for inhalation, suffocates, irritates the eyes, skin and respiratory organs. Chlorine damages tissues, has an irritating effect on mucous membranes, causes dry cough, cold and sometimes vomiting. High concentrations produce chest pain, tears and coordination disorders.

By applying the necessary safety measures we have minimized the likelihood of chlorine accidents. In 2013, we prepared a new updated chlorine risk analysis. Furthermore, we are regularly organising the necessary trainings for our staff and perform continuous cooperation with the rescue services (e.g. joint trainings) to be prepared to take immediate actions and minimize the consequences of a major accident.

Ozone

Due to the replacement of water prechlorination by ozonation in order to prepare the water for the next treatment stage the usage of chlorine has considerably decreased over the past decade. Ozone is a good and quick oxydiser and effectively breaks down organic matter in raw water. Ozone is produced locally in the Company and only in amounts needed. Thanks to the closed process and no stock being kept, the environmental risk is minimum.

• Coagulants and polymers

Significant amounts of coagulants and polymers in liquid form are added in the treatment process to remove the particular matter (e.g. suspended solids and organic substance) from water.

Usage of water treatment chemicals

Irrespective of the very different characteristics of raw water and changeable weather conditions, the usage of chemicals has remained relatively stable during the last years. An intense blooming of plankton in Lake Ülemiste lasted almost throughout the year 2013 and considerably deteriorated the raw water quality, which in turn caused heavy load on the treatment plant to remove plankton and organic substance. Therefore we used more chemicals than usually.





AVERAGE USAGE OF WATER TREATMENT CHEMICALS PER UNIT OF PRODUCTION 2009-2013, g/m³

Wastewater treatment chemicals

• Methanol

We use methanol at Paljassaare Wastewater Treatment Plant to increase the nitrogen removal efficiency of the bacteria participating in the biological treatment process. Due to the methanol used in the wastewater treatment, the Company has been classified as one of the most hazardous companies in Estonia on the basis of the legislation related to chemicals.

• Coagulants and polymers

Significant amounts of coagulants and polymers are used in the wastewater treatment process. Coagulants are used for the chemical processing of wastewater to remove phosphorus. Polymers are used to change the qualities of sludge by accelerating the dewatering process.

Usage of wastewater treatment chemicals

Due to the change in the limit value set on total phosphorus in the legal acts, it was mainly the cost of coagulant that grew in 2013. As the total phosphorus is mostly chemically removed in the wastewater treatment process, higher coagulant volumes were used in 2013 to achieve the required output.

The volumes of polymer and coagulant used have increased compared to 2012. Due to the lower volume of precipitation also the wastewater flows were lower in 2013, which in turn caused higher concentrations in the pollution parameters of incoming wastewater. It means a longer retention time of wastewater in the process and higher amounts of chemicals required.



* In 2013 adjusted the polymer result of 2012. Right nr is 54,7 tons.



AVERAGE USAGE OF WASTEWATER TREATMENT CHEMICALS PER UNIT OF PRODUCTION 2009-2013, g/m³

Ensuring the safety of chemicals

By applying the security and safety rules of handling of chemicals we have minimised the likelihood of accidents involving highly poisonous chemicals.

The necessary conditions for the storage and use of all chemicals have been created, also the information on the chemicals safety data sheets, the legal requirements and the safety instructions are followed. Absorbents and personal protective equipment are also available at the chemicals' handling sites. The sites for handling hazardous chemicals are equipped with automated alarm and degassing system for the early detection and liquidation of possible leakages. Chemicals' safety data sheets are available in the Company on hard copy, but also electronically in our Document Management System.

The Company has established procedures and crisis plans for ensuring the training of employees and the liquidation of emergencies. Provided that the right security and safety requirements are followed, the likelihood of emergencies with chemicals (chlorine, methanol, biogas) with serious consequences to human health and the environment is low. During the trainings organised each year we repeat all technologies used in the water and wastewater treatment plants, potential risks, locations and usages of chemicals.

A follow-up training on chemicals' safety was organised in 2013 for the staff. The training organised in the Water Treatment Plant was most of all aimed at the cooperation between the Rescue Department and our staff in the event of a chlorine accident. The alarm systems were checked and tested, also the sound systems were tuned and tested. A new and updated chlorine risk analysis was also developed.



Chemicals handling training in 2013

There were no reported accidents with chemicals in 2013, which could have caused damage to people or the environment.

Waste management

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMPACTS		
Recycling sludge into compost	Reducing and recycling of waste, improving the qualities of the ground and natural environment		
Wastes Deterioration of human environment and pollution of the g			
20	13 OBJECTIVES AND TASKS		
To recycle all 2	012 sludge and sell at least 95% compos +		
To reduce the ecological footpri	nt of waste per employee in comparison with the last year +		
25% of excavation works have been performed applying closed method +			
Reduction of hard copy invoices to 28% +			

The majority of the Company's waste is produced in the wastewater treatment process and in the Customer Operations Department. A total of 43,135 tons of waste was produced in the Company. Thanks to the decision to change the choice of construction methods the total volume of waste has reduced by approximately 20,000 tons compared of the previous year although the amount of construction work was on the same level.

The majority of waste is non-hazardous waste. Mixed municipal waste created an ecological footprint of 392.7 ha/y in 2013. Compared to the previous year, the mixed municipal waste has remained on the same level.



Waste from wastewater treatment

The large share of non-hazardous waste is sludge, which is a by-product of the wastewater treatment process. Other treatment processes also produce a significant amount of waste such as waste from screens, asphalt waste and grit from sand traps. All sludge is recycled and sold to customers or used as planting soil at different construction sites. We give our best to find ways of additional treatment of other waste produced in wastewater treatment and reduction of waste going to the landfill.

In 2013, 29 856 tons of sludge were removed in the course of wastewater treatment process, 27 220 tons of which were transported to Paljassaare composting fields and 5045 tons to Liikva composting fields. There, sludge and peat are mixed into sludge mixture which is planned to be sold to the customers as soil usable in landscaping and horticulture or to be used at various construction sites in

2014-2015. The remaining 591 tons of sludge were transported to the residual sludge store in Paljassaare wastewater treatment plant.

Excavation waste

Excavated soil and stones from the networks maintenance and repair works form the bulk of the waste produced. After the amendment to the Tallinn City Excavation Works Regulation in 2010, which set an obligation on the performers of excavation works to carry out asphalt reinstatement works in a larger volume, we have been actively searching for opportunities of planning the excavation works better.

Due to the increase in the volume of excavation waste in 2012, we decided on the Management Board level in 2013 to change our choice of construction methods. Now we are performing the reconstruction of network using the so-called no-dig method. No-dig method enables to carry the works out faster and it reduces the inconveniences caused by traffic jams during the road works. Furthermore, the no-dig method reduces the load on environment during network construction, because less soil is excavated and there is no need to store the waste and refill the ground later. Thanks to the new method we reduced the excavation, stone and asphalt waste by over 60% in 2013.

Sorted office waste

In 2013, the Company continued to separate paper and cardboards as well as packages from mixed municipal waste, in order to allow further recycling and reuse of paper and packages and save natural resources.

To reduce the amount of paper used, we increased the proportion of electronic bills sent to customers, improved self-service, transferred to the new electronic document management system and made double-sided printing automatic, where possible. In 2013, wastepaper and cardboards created an ecological footprint of 10.8 ha per year.

Hazardous waste

Due to its damaging effect, hazardous waste may pose risks to human health, property or environment. The share of hazardous waste produced by the Company in the total waste is always small and has remained stable over the recent years.

The largest category of hazardous waste is used oil and oil waste resulting from the maintenance works on machinery and equipment. In 2013, the vehicles were taken for the regular maintenance to the car service companies and no hazardous waste was produced on our territory.

Type of waste	2009				2013
Mixed municipal waste	145	171	112	96	97
Paper and cardboard	13	14	14	4	4
Packages	4.7	4.7	4.5	0.7	0.7
Biodegradable waste	5.2	5.4	5.3	4.4	5
Waste from screens	337	303	596	920	984
Wastewater sludge	31,087	33,885	28,763	20,437	27,220*
Sandtraps grid	975	716	509	141	422
Excavated stones and soil	9,569	11,750	12,417	39,183	13,341
Asphalt waste	947	1 790	1 161	2 305	869
Mixed building waste	43	18	30	103	47
Concrete and bricks	29	40	38	243	53
Metal scrap	0.5	26.7	23.6	47	14
Hazardous waste	4	3,5	2,1	3	0
Other waste	1	250.2*	115.7	32	79
TOTAL	43,159	48,977	43,791	63,518	43,135

* Includes 248 tons of mineral snowcleaning waste

**Wastewater sludge transported to Paljassaare composting field

Reuse of sludge

The main part of recycled waste was wastewater sludge. Raw sludge removed during the technological treatment process is digested for at least 15 days in a digester at the temperature of 37°C. Digested sludge gets dried by a centripress until the dry matter content of 30%. To produce planting soil, the process continues by mixing dewatered sludge with peat at the rate of 2:1. Thereafter the sludge mixture is prepared on Paljassaare and Liikva composting fields by mixing it at least three times per annum, after which the planting soil is ready.

We analyse the mixed sludge against the requirements established in the Decree No 78 of 30.12.2002 by the Minister of Environment four times per annum. All of the analyses' results on the treated sludge and the established maximum allowed values are available on our homepage www.tallinnavesi.ee.

The share of reused waste in the non-hazardous waste is similar to the previous years - approximately 90%, if we take into account the reuse of wastewater sludge and the waste handed over to our partners.

Research of sludge reusage possibilities

Sludge reuse has been under close attention. Despite numerous researches this subject is still topical, because large quantities of sludge have not been reused. The most extensive area for using sludge is agriculture, also green areas. Less sludge is used in afforestation.

The environmental studies collectively indicate that by following the requirements, the use of sludge is safe to human health and environment. Pursuant to the Estonian Waste Act, sludge belongs to the category of non-hazardous waste. The treated sludge can be used in agriculture, green areas and recultivation without holding a waste permit provided that the respective decree issued by the Minister of Environment is complied with.

Waste permits

Two waste permits have been issued to the Company with regard to the stabilised waste, waste from municipal waste and biodegradable waste. All terms and conditions of waste permits were met in 2013.

VALID WASTE PERMITS OF AS TALLINNA VESI

Permits	Valid until	Description of waste permit
Waste permit No L.JÄ/317241	09.09.2014	Issued for recycling stabilised waste in Paljassaare regarding part of stabilised waste, domestic wastewater sludge and biodegradable waste.
Waste permit No L.JÄ/317829	30.12.2014	Issued for recycling stabilised waste and for transporting waste to Liikva as well as for recycling biodegradable waste

By the end of 2012, a total of 22 233 tons of sludge mixture from the previous years' production had remained in stock on Paljassaare composting field. During 2013, 24 905 tons of this amount were sold to the customers and, in the same period, extra 27 220 tons of sludge from production were deposited onto the field. By the end of 2013, 240 548 tons of sludge mixture had remained in stock on Paljassaare composting field.

COMPLIANCE WITH PALJASSAARE WASTE PERMIT L. JÄ. HA-317241, in tons

Time of warts	Permitted	Actual						
Type of waste	Fermitted	2009	2010	2011	2012	2013		
Domestic wastewater treatment sludge	450,000	31,087	30,986	34,968	26,928	29,856		
Stabilised waste	45,000	16,784	20,480	28,960	24,764	24,548		
Biodegradable waste	10,000	0	0	0	0	0		

By the end of 2012, 12 488 tons of sludge mixture had remained on Liikva composting field. During 2013, a total of 12 009 tons of soil from there was sold to the customers and extra 5 045 tons of sludge from the process were transported to the field during the reporting period. By the end of 2013, a total of 5 524 tons of sludge mixture had remained in stock on Liikva composting field.

COMPLIANCE WITH PALJASSAARE WASTE PERMIT L.JÄ.HA-317241, in tons

	Permitted -			Actual			
Type or waste		2009	2010	2011	2012	2013	
Stabilised waste	15,000	14,303	10,506	6,008	4,210	5,524	
Biodegradable waste	3,000	0	0	0	0	0	

Energy consumption

SIGNIFICANT ENVIRONMENTAL ASPECTS	ІМРАСТЅ			
Biogas produced and consumed	Reduction in the consumption of fossil fuels			
Electricity and thermal energy consumed	Contributing to the pollution of the environment due to the production of electricity, decrease in natural resources			
Fuel and oil leaks	Cause the pollution of the soil			
2013 OBJE	ECTIVES AND TASKS			
To reduce the ecological footprint of heat e	nergy per employee in comparison with the last year +			
Usage of natural gas will be b	elow the average of the last five years +			
Reconstruction of heating system in the WTP in orde	er to reduce the heating costs compared to the previous year +			
To reduce the ecological footprint of electr	icity per employee in comparison with the last year +			
To carry out reactive	e electricity project in WWTP +			
To reduce the ecological footprint of trans	port per employee in comparison with the last year -			
Making part of	driving cars to joint use -			
To present a report about technical and economic analysis on the potential use of electrical and hybrid car(s) by 2014, accompanied by the information on environmental impacts -				

Electricity consumption

The majority of electricity is used for running the core processes of the Company – in the Water and Wastewater Treatment Plants, and in the Networks to operate pumping stations.

In 2013, the total consumption of electricity by the Company has decreased, mostly due to updating the technological process of wastewater treatment and starting with new electricity projects (e.g. the delivery of the reactive energy project in the Wastewater Treatment Plant), which we intend to continue also in 2014.

Unit	2009	2010	2011	2012	2013
Water Treatment	10,372	10,657	10,382	10,325	9,705
Wastewater Treatment	19,646	19,750	21,721	25,195	22,336
Incl electricity from biogas	730	1,966	765	0	0
Networks pumping stations	5,965	6,433	6,324	7,104	6,355
Maardu	384	693	719	558	483
Other	886	866	800	993	830
TOTAL	37,253	38,399	39,946	44,175	39,709

ELECTRICITY CONSUMPTION 2009-2013, MWh

Ecological footprint is calculated in the Company only with regard to the volume of electricity purchased from Eesti Energia in ha per year per MWh. In 2013, our ecological footprint was 6,393.1 ha/y and in 2012 it was 7,112.13 ha per year. The use of biogas is accounted as the green energy and there is no specific calculation factor for ecological footprint.

In the water treatment process, electricity is mostly used for pumping water in the various stages of the treatment process and to the water network. Significant part of electricity is also used for producing ozone. Although the use of surface water has increased (to the level of 22.20 million m³ in 2013, the electricity consumption has remained relatively stable year-on-year.



Electricity consumption in the wastewater treatment process is to a large degree impacted by the weather. Electricity consumption has reduced in the Wastewater Treatment Plant due to the decreased volume of precipitation, but because of a longer retention time of wastewater in the treatment process the consumption per unit has grown.



Consumption of heat energy

The majority of heat energy is used for running the core processes, also for heating the operationsand office buildings.

Heat energy is purchased from AS Eesti Gaas and AS Tallinna Küte. To some extent the use of heat energy is compensated by the heat energy produced out of biogas in the Wastewater Treatment Plant.

In 2013, all the heat used in the Wastewater Treatment Plant was produced out of biogas. In the Water Treatment Plant the reconstruction of heating systems contributed to reduction in heat energy consumption. Due to the premises having been rented in Maardu, we are not consuming any heat energy there.

CONSUMPTION OF HEAT ENERGY 2009-2013, MWh

Unit	2009	2010	2011		2013
Water Treatment	4,264	5,618	4,358	4800	4,111
Wastewater Treatment	6,515	8,176	6,634	10,467	7,310
Incl electricity from biogas	5,033	4,506	5134	10,467	7,310
Networks pumping stations	957	1,257	1,176	1,213	1,049
Maardu	67	38	0	0	0
TOTAL	11,803	15,089	12,168	16,480	12,470

Good weather conditions have caused the cost of heat energy to decrease in 2013. The ecological footprint of the Company in relation to the heat energy is calculated on natural gas. In 2013, all of the heat used in the Wastewater Treatment Plant was produced out of biogas and therefore the ecological footprint related to the heat energy was 0 ha/y, it was 386 ha/y in the Water Treatment Plant and 99 ha/y in the territory of Ädala office. The total ecological footprint related to the heat energy produced out of natural gas was 485 ha/y in 2013 and 565.2 ha/y in 2012.

Use of energy

Green energy

An excellent opportunity for reducing environment damage is the use of green energy. For the Company this means above all maximum usage of biogas produced as a result of sludge digestion in other work processes in wastewater treatment.

Since 2013 we have established controls over the entire use of electrical energy by investing in smaller saving projects (e.g. in the reconstruction of external lights in the Water Treatment Plant) and in 2014 we will prepare for the in-depth analysis on the energy consumption of technological processes as a result of which we will be able to replace technology and equipment by the devices which use much less energy.

• Biogas reusage

Over recent winters the production of biogas has been hindered by wastewater collected from the streets, which has mixed with snow cleaning chemicals and causes disruptions in the digesters' process. Also in 2013, digesters were operated by using an operating tactics implemented in 2008, which helped to keep the biogas production at the same level as in the previous years.

In 2013, a total of 1,675,428 m³ of biogas was produced in the digesters of Paljassaare Wastewater Treatment Plant. Biogas is directed to the boiler house in the Wastewater Treatment Plant for heat production. In 2013, 70% (1,166,162 m³) of biogas was used for heat production and part of the biogas was burned.





* In the second half of 2011, an emergency breakdown of gas engine occurred and it was not used anymore in 2012.

• Opportunities for producing hydro energy

The operating hydropower plants in the Company's hydropoints of Soodla and Kaunissaare are involved in the production of green energy. The maximum capacities of these hydropower plants are ca 260 kW and 170 kW respectively. Those hydropower plants do not belong to the Company, however, cooperation contracts have been concluded with the owners (OÜ Kaunissaare Hüdroelektrijaam and OÜ Uus Energia) for the Company to actively participate in operating the plants and to create the best possible conditions for the use of hydro energy.

Fuel consumption

The Company together with its subsidiary has 126 vehicles for carrying out different operating tasks, 67 of the vehicles use petrol for fuel. The biggest group of vehicles is passenger cars and operating vehicles, including minivans and team vans. A smaller group of vehicles includes special purpose vehicles such as tractors, loaders, excavators and trucks.

	2009		2011		2013
PETROL	126 286	85 735	66 418	71 030	104 051
Incl. Tallinna Vesi					71 095
Incl. Watercom					32 956
DIESEL	201 351	170 365	140 331	132 284	264 327
Incl. Tallinna Vesi					135 738
Incl. Watercom					128 589
TOTAL FUEL	327 637	256 100	206 410	203 314	368 378
Incl. Tallinna Vesi					206 833
Incl. Watercom					161 545
TOTAL NUMBER OF VEHICLES	137	124	98	95	126
TOTAL NUMBER OF VEHICLES Incl. Tallinna Vesi	137	124	98	95	126 <i>9</i> 5
TOTAL NUMBER OF VEHICLES Incl. Tallinna Vesi Incl. Watercom	137	124	98	95	126 95 31

FUEL CONSUMPTION 2009-2013, in litres

The Executive Team approved the Company's transport policy in the beginning of 2013. The policy is designed to increase the efficiency of car use, reduce the costs of using transport and establish the general rules for the purchase and renewal of car pool over the entire company. Therefore we have also kept a closer look at the fuel consumption of the subsidiary. We continuously try to keep the fuel consumption under control through the fuel limits set on the car users and GPS-tracking devices. In 2013, we transferred part of the cars to a shared use so that smaller departments would be able to use those cars to fulfil their tasks.

We started compiling the report analysis on the use of electrical- and hybrid car(s) along with the technical and economic analysis and environmental impacts. This included two away-days on electrical cars in 2013 with test drives for our staff. Due to the work load higher than expected we are continuing with this analysis also in 2014.

Transport

The Company does not keep a separate record on the mileage covered, but this can be calculated per vehicle type, taking into account the average fuel consumption. In 2012, the mileage of vehicle transport was 2.92 million km and in 2013 the respective figure was 2.97 million km. All transport



kilometres have been calculated in line with the calculation method for people transport, because we do not have sufficient data to calculate the exact mileage for the transport of goods. In 2012, vehicle transport created an ecological footprint of 174.9 ha per year and in 2013 it was 178.4 ha per year.

In 2012, the bus service was used for transporting people on 3 occasions and altogether a distance of 712 km was covered the related ecological footprint being 0.021 ha per year. In 2013, the bus service was used on 4 occasions, in total covering a distance of 1,442 km, thus creating an ecological footprint of 0.04 ha per year.

In addition to the business trips we also offered different international training opportunities for our employees in 2013. We mainly use plane transportation for that, also ships to a small extent. In 2013, the Company's employees used plane transport only for short-distance flights (i.e. below 5,000 km), totalling 211,080 km, creating an ecological footprint of 19 ha per year.

The 2013 ship transport mileage remained the same, creating an ecological footprint of 0.002 ha per year.

Summarised table of the Company's ecological footprint

The environmental impact of 11 different aspects was measured on the basis of ecological footprint method. The Company has the greatest impact on the environment through the use of electricity, followed by the use of heat energy and waste. The use of electricity and heat energy are in a close and inevitable connection with the Company's core activity and with the expansion of the activities also the ecological footprint inevitably increases. Efficient and sustainable use of electricity and heat energy are being one of the priorities in 2014.

Aspects that serve as the basis for calculating the ecological footprint		Consumption/production (rounded)	Ecological footprint per employee (ha per year per employee)	Ecological footprint (ha per year)
Water (m²)				
	2013	455,646	0.1	36.5
1. Water consumed	2012	564,338	0.14	45.15
Waste (t)				
2. Pecuried paper	2013	4.4	0,04	10.8
	2012	4.06	0.032	9.95
3 Recycled metal	2013	13.6	0.1	14.9
5. Netycleu metal	2012	47	0.17	51.7
(Concrete (to a Landfill)	2013	53.2	0.02	5.3
4. Concrete (to a tanditit)	2012	242.7	0.08	24.28
5. Mixed municipal waste (to a landfill)	2013	97.3	1.3	392.7
	2012	96.1	1.24	388.04
Electricity (MWh)				
6. Electricity from oil shale	2013	39,708.6	21.8	6,393.1
	2012	44,174.7	22.65	7,112.13
Heat energy (MWh)				
7 Heat energy produced from natural das	2013	5,160	1.7	485.0
7. Heat energy produced non-natural gas	2012	6,012.8	1.8	565.2
Transport for people (km)				
8 By car	2013	2,973,248	0.6	178.4
	2012	2,915,003.5	0.557	174.9
9 By plane	2013	211,080	0.1	19.0
J. Dy plant	2012	146,287.0	0.04	13.2
10 Bybus	2013	1,442	0.0001	0.04
10. By 545	2012	711.90	0.0001	0.02
11 By shin	2013	176	0.00001	0.002
··· - I II II	2012	176.4	0.00001	0.002
TOTAL	2013		25.6	7,535.8
101AL:	2012		27.1	8,523.3

SUMMARISED TABLE OF THE COMPANY'S ECOLOGICAL FOOTPRINT

Air emission

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMP	ACTS		
Emission of exhausts	Pollutin	ng the air		
	2013 OBJECTIVES AND TASKS			
To ensure compliance with the requirements of the environmental permits +				

In order to reduce ambient air pollution, the Company focuses on limiting the amount of pollutants emitted from Ülemiste and Paljassaare boiler houses, particularly the pollutants of primary importance, such as nitrogen dioxide, carbon monoxide and volatile organic compounds as well as CO₂ greenhouse gas emissions. Also the emissions of ozone produced for drinking water treatment are regulated. Since 2011 a new ambient air pollution permit (L.ÕV/319438) is applied in the Water Treatment Plant and it also includes a special pollution permit related to ozone.

VALID AIR POLLUTION PERMITS OF AS TALLINNA VESI

Permit	Valid until	Description of ambient air pollution permit
Pollution permit No LÕV.HA 48701	termless	Valid for Paljassaare Wastewater Treatment Plant pollution sources – the chimney of the boiler house, exhaust pipes, the chimney of the combined heat plant. Establishes the list of pollutants emitted into ambient air and the annual permitted emission amounts thereof.
Pollution permit No L.ÕV/319438	termless	Valid for Ülemiste Water Treatment Plant pollution sources – the chimney of the boiler house, ozonisation, diesel generator. Establishes the list of pollutants emitted into ambient air and the annual permitted emission amounts thereof.

The Company pays a pollution charge for pollutants emitted into ambient air. In 2013, we complied with all requirements set by the ambient air pollution permits and paid a charge, which formed 0.5% of the total pollution charge paid.

Pollutant	2009		2010		2011				2013	
	Allowed	Actual								
Nitrogen dioxide	2.4	1.4	2.4	1.5	1.954	1.3	1.954	1.236	1.954	1.11
Carbon monoxide	1.9	1.3	1.9	1.4	1.846	1.19	1.846	1.127	1.846	0.98
Volatile organic compounds	0.17	0.09	0.17	0.1	0.125	0.08	0.125	0.077	0.125	0.07
Carbon dioxide	1,691	1,145	1,691	1,271	1,688	1,081	1,688	1,021	1,688	880
Sulphur dioxide	0.01	0	0.01	0.007	0	0	0	0.001*	0	0.001*
Total solid particles	0.05	0.003	0.05	0.003	0.004	0.004	0.004	0.004	0.004	0.004

AMBIENT AIR POLLUTION FROM WATER TREATMENT PLANT POLLUTION SOURCES 2009 - 2013, in tons

* Sulphur dioxide emissions into ambient air were below the threshold.

Considerable reduction in nitrogen dioxide and carbon oxide in the Wastewater Treatment Plant was caused by the emergency breakdown of gas engine.

AMBIENT AIR POLLUTION FROM WASTEWATER TREATMENT PLANT POLLUTION SOURCES 2009- 2013, in tons

Pollutant	20	2009 2010		10 2011		2012		2013		
	Allowed	Actual	Allowed	Actual	Allowed	Actual	Allowed	Actual	Allowed	Actual
Nitrogen dioxide	29.8	10.6	29.8	23.5	29.8	11	29.8	2.86*	29.8	2.25
Carbon monoxide	210	62.3	210	161.9	210	64.9	210	2.64	210	2.25
Volatile organic compounds	14	4.2	14	10.8	14	5	14	0.18**	14	0.15
Carbon dioxide	4,440	3,229	4,440	4,135	4,440	3,298	4,440	2,392	4,440	2,039
Sulphur dioxide	17.8	16.9	17.8	16.9	17.8	17.4	17.8	17.78	17.8	16.99

* Specified data in 2013. Right nr is 2.86 tons. ** Specified data in 2013. Right nr is 0.18 tons.

Environmental performance

In addition to the data on ecological footprint and as set out by the requirements of EMAS III, the Company outlines below its main indicators of the environmental performance regarding energy efficiency, material efficiency, water, waste, biological diversity and emissions. 3 elements have been presented for each main indicator:

- Figure A, which stands for the total annual input/impact in the respective area.
- Figure B, which stands for the total gross sale revenue of the organisation in millions of euros.
- Figure R, which stands for the ratio A/B.

Main indicators of environmental performance		Consumption (rounded) i .e. annual input (figure A)	Annual output of the Company (figure B)	Ratio R (A/B)
Energy Efficiency				
Electricity (MWh)	and the second second			
	2013	39,709	53.1	748
Electric power produced from oil shale	2012	44,175	52.9	835.1
	2013	0	53.1	0
Electric power produced from biogas	2012	0	52.9	0
Heat (MWh)				
	2013	5,160	53.1	97
Heat produced from natural gas	2012	6,013	52.9	113.7
	2013	7,310	53.1	138
Thermal energy produced from blogas	2012	10,467	52.9	197.9
Material Efficiency				
Handling of chemicals (t)				
Total chemicals	2013	6300	53.1	119
	2012	5,819.8	52.9	110.0
t fan did alstanda a	2013	56	53.1	1
Liquia chiorine	2012	51	52.9	0.97
Consulant	2013	4,154	53.1	78
coagutant	2012	3,327	52.9	62.9
Dalumar	2013	57	53.1	1
Polymer	2012	56.4	52,9	1.1
0	2013	188	53.1	4
	2012	198	52.9	3.74
Mathanal	2013	1,830	53.1	34
Methanot	2012	2,122	52.9	40.11
Water (th m³)				
C. francisco	2013	22,201	53.1	418
Surface water	2012	21,750	52.9	411.15
Complementary of the second	2013	2,417	53.1	46
Ground water	2012	2,465.6	52.9	46.61
F40	2013	45,022	53.1	848
Effluent	2012	56,982	52.9	1077.16

ENVIRONMENTAL PERFORMANCE

Waste (t)				
Mixed municipal waste	2013	97	53.1	2
Mixed municipal waste	2012	96	52.9	1.8
Populad paper and cardboard	2013	4	53.1	0.1
	2012	4	52.9	0.08
Recycled nackages	2013	0.7	53.1	0.01
	2012	0.7	52.9	0.01
Recycled biodegradable waste	2013	5	53.1	0.01
	2012	4	52.9	0.08
Waste from screens	2013	984	53.1	19
	2012	920	52.9	17.4
Recycled sludge	2013	29,856	53.1	562
	2012	20,437	52.9	386.3
Sandtraps grid	2013	422	53.1	8
	2012	141	52.9	2.7
Recycled excavated stones and soil	2013	13,341	53.1	251
	2012	39,183	52.9	740.7
Asphalt waste	2013	2 205	53.1	18
	2012	2,305	52.9	43.0
Mixed building waste	2013	47	53.1	0.9
Concrete and bricks	2012	103	52.9	1.9
	2013	2/3	52.9	46
	2013	14	53.1	4.3
Recycled metal	2012	47	52.9	0.9
Ref. 14	2013	0	53.1	0
Hazardous waste	2012	3	52.9	0.06
27	2013	97	53.1	2
Other	2012	32	52.9	0.6
Biological diversity (m²)				
London Indonesia Latit	2013	462,000	53.1	8,701
Land use, land carrying buildings	2012	461,922	52.9	8,731.98
Emissions (t)				
Nitzagan diaxida	2013	3	53.1	0.1
Nicogen cloxide	2012	4	52.9	0.07
Carbon monovide	2013	3	53.1	0.1
	2012	3.8	52.9	0.07
Volatile organic compounds	2013	0.2	53.1	0.004
	2012	0.3	52.9	0.005
Carbon dioxide	2013	2,919	53.1	55
	2012	3,413	52.9	64.52
Sulphur dioxide	2013	0.001	53.1	0
	2012	0.001	52.9	0
Total solid particles	2013	0.004	53.1	0
	2012	0.004	52.9	0
Hydrogen sulphide	2013	16.99	53.1	0.3
nyurogen sulpinue	2012	17.78	52.9	0.34

Our employees

2013 OBJECTIVES AND TASKS	
To raise environmental awareness of employees+	
To carry out at least 1 campaign / event for employees +	

Our employees are definitely one of the most important drivers of the Company. Therefore we consider it extremely important to involve employees in the decision-making process, inform them regularly and treat them equally. We use numerous channels for that, such as the meetings of management team members with the staff and the internal newsletter published once a quarter. In addition to the notification of the staff, we deem the involvement of people in the best possible manner very important. We also continue to be committed to transparency in communicating both internally and externally. To ensure clarity, transparency and involvement, we make changes in the organisation of our work if needed.

In 2013, we carried on insourcing services from OÜ Watercom, subsidiary of AS Tallinna Vesi, in order to increase the efficiency of the Company, raise the quality of service and improve supervision. The changes made in the Operations Division of the Company during the second half of the year enabled us to specify the areas of responsibility and to reorganise the work thereafter.

As of the end of 2013, the Company and its Subsidiary employed a total number of 311 employees under permanent employment contracts. Compared to the same period previous year this number has largely remained the same.

Although the commitment and satisfaction of the employees were higher compared to both Estonian and European average in industry and service sector in 2013, the employees' ratings where somewhat more critical than they were a year ago. We deem it important to take the feedback into account and in 2014 bring our attention to those areas, which our staff pointed out in the survey.



Development of employees

The development of employees continues to be one of the main priorities for the Company. Besides the traditional in-service training and development programmes we offered also international trainings for our staff in 2013.

The average age of the staff in the Company and the Subsidiary is high (47.3 and 40.9 years respectively) and in bigger operational units a considerable number of employees are over 50 years old. Therefore, it is of critical importance for the organisation to support the managers in coping with the change of staff expected to occur in the coming years. We aim to maintain the high level of operational and service performance at the same time.

From the staff development perspective we deem the sharing of knowledge and experience very important. There was a significant increase in in-house guidance and involvement of mentors (incl. outside of the Company). In 2013, a total of 23 employees changed their jobs within the Company. This means that the sharing of knowledge has been from one colleague to another or from mentor to mentee. There were 371 training days in total in 2013.

Occupational health and safety

Work environment performance of the Company is in compliance with the requirements of national legislation and international occupational health and safety management system standard OHSAS 18001.

Work environment management system is based on the assessment of risks in the work environment area and execution of activities aimed at preventing or reducing dangerous situations. Workplaces are under constant internal monitoring and internal as well as external audits of the management system are carried out.

In 2013, 3 occupational accidents occurred, all of which occurred at the fault of the employees themselves. None of the accidents had severe consequences (a dog bite, knee concussion and break of a thumb). In 2013, the number of lost working days increased from 13 to 55 compared to 2012. The causes of all occupational accidents were thoroughly analysed by the Work Environment Council and improvement actions were taken to prevent similar accidents from occurring again.



"Terve Tilgu" traffic sign in 2013

The Company is more and more focusing on the staff awareness. "Terve Tilgu" traffic sign is used to keep the information on avoiding the occupational accidents in the employees' mind. We focussed on the occupational safety subjects by publishing various articles on occupational safety in the internal newspaper, cartoons on safety (Napo) and other thematic information are shown on the TV set in a rest room. A so-called occupational health and safety corner was set up in the rest room, where people can find necessary information and pick up thematic leaflets and brochures etc. In 2013, we carried out two internal campaigns "Report the nearmisses!" and "Wear a helmet!" aimed at drawing an even stronger attention to the occupational safety at one's workplace.

Work environment policy

We aim to be recognised as a water company which delivers strong safety performance and provides a safe environment for customers and colleagues, by enabling a positive safety culture. Thus, we renewed our work environment policy in the end of 2013.

Safety is an inseparable part of our business. It is central to everything we do, and we absolutely do not compromise on it:

- We provide adequate control of the health and safety risks arising from our work activities.
- We consult with our employees on matters affecting their health and safety.
- We are committed to providing safe and healthy working conditions.
- We provide information, instruction and supervision for employees in order to ensure they use safe working practices.
- We are dedicated to ensuring all employees are competent to do their tasks, and provide them with adequate training.
- We ensure a crisis and emergency management system is in place to minimise the impact of such incidents.
- We proactively put into place processes and practices to prevent work accidents and illnesses.
- We provide our employees with benefits which support their wellbeing and encourage them to pursue a healthy lifestyle.
- We implement health and safety management system to ensure our employees work in safe and healthy work environment. It is in full compliance with legal requirements.
- We are dedicated to continuous improvement of company's performance in health and safety.

Work environment trainings

The implementation and results of work environment related actions are largely dependent on the awareness of employees. Therefore, much attention is paid to work environment training, information materials and other actions as well as channels to raise awareness of the issues related to work environment. In 2013, the following training events were carried out in the field of occupational safety:

- First-aid training and in-service training.
- Training and in-service training of Work Environment Council members and work environment representatives.
- Trainings for a person organising works on a construction site.
- Trainings on the work involving an open flame.
- Course for a supervisor of the use of heat gas devices and -pipes (gas installations) along with a competency examination.
- Trainings for a boiler house operator.
- Follow-up training on the usage of trench support.
- Several follow-up fire-, electrical- and chemicals' safety trainings.
- Chlorine safety training was carried out at the Water Treatment Plant focusing on the use of personal protection equipment in the event of a chlorine emergency.
- Oil cleaning training on the catchment area.
- Various evacuation trainings were carried out in the buildings.
- Occupational Safety Days were organised within the European Week of Occupational Health and Safety, during which in cooperation of the representatives of 3M the employees were spoken

about the helmets, ear protection equipment and protective glasses. The presentations also concerned the employees' rights and liabilities stemming from the Occupational Health and Safety Act and the Employment Contracts Act.

- Various trainings and information days organised for work environment specialists by the Labour Inspectorate.
- Various seminars and trainings organised by the European Agency for Safety and Health at Work and The Network of Health Promoting Workplaces.
- Occupational Health and Safety Treff 2013 event.

Continuous improvement in occupational safety

Similar to the previous years we are committed to the continuous improvement of work environment. Several supporting actions were carried out in 2013 at the treatment plants, water and sewerage networks, laboratories and offices:

- To assess and control the risk factors of work places we renewed the Company's work environment risk analysis (the departments' environmental, occupational safety, business and financial as well as activity risks are assessed based on a uniform methodology).
- All main and substitute members of the Work Environment Council carried out work environment internal audits and the detected deficiencies were fixed.
- We regularly carried out the observations, controls and maintenance of the fire safety installations of buildings and vehicles (e.g. fire extinguishers, fire doors, hoze systems).
- In addition to the legally required maintenance work we started a weekly check of the sensors and alarms of the automatic fire fighting system.
- In line with the Fire Safety Act we prepared the selfchecking and fire safety reports on the buildings and submitted those to the Rescue Board.
- Consistent measurements of lights and indoor climate were carried out in the departments.
- We installed traffic mirrors to the dangerous places of poor visibility in Ädala territory.
- We repaired the outdoor stairs at the treatment plants.
- We installed hands-free devices to all vehicles to make driving and talking via mobile safe.
- The ventilation systems were upgraded in the Water Treatment Plant and Laboratories.
- We provided the entrances of Chlorine Storage with the new mats to avoid slipping and replaced the hatches of filter chambers by the lighter and safer ones.
- We performed the regular maintenance of self-contained compressed-air-operated breathing apparatus and supplemented the safety signs for the manholes on the territory of the Water Treatment Plant.
- We prepared a new chlorine risk analysis.
- We are going to replace all office chairs in 2013 2015 to ensure an ergonomically correct and convenient seating position for the staff.
- We carried out consultations to the staff to improve the ergonomics of computer workstations together.



"Report the nearmisses!" campaign

Promoting occupational health

For the eighth year, the Company participated in the "Health Promoting Work Places" project aimed at developing a healthy work environment primarily by changing mindsets and increasing the mutual involvement of both employers and employees.

The Company organises various sports activities for its employees to promote a healthy lifestyle. Employees of the Company have the opportunity to use two gyms, as well as squash and ball courts, and also participate in a yoga class once a week. In cooperation with the Blood Donation Centre a joint Donor Day was organised and 15 employees of the Company participated. A canteen started to operate at the Wastewater Treatment Plant. Within in Heart Week which took place all over Estonia the Company organized various activities: office yoga and evening yoga classes; especially heart-healthy meals at the canteen; a photo competition promoting a healthy heart took place; we organised a bowling tournament; opportunity to measure blood pressure and weigh oneself. In addition to the activities organized within the Company, also other activities taking place in Tallinn were promoted within the Heart Week.



"Bank of Good Ideas" box

All employees continue to have the opportunity to present their ideas for improving the environment, quality and work environment to the "Bank of Good Ideas", where the ideas, which receive positive ratings will be delivered and their authors will be recognised.

Employees attend regular health checks, as foreseen by law, which provide the basis for adjustment of working conditions where necessary. In addition to the procedures foreseen by legislation, the Company provides influenza vaccinations to all interested employees and prophylactic massage according to the prescription of the occupational health doctor.

Our community

SIGNIFICANT ENVIRONMENTAL ASPECTS	IMPACTS					
Available environmental information for publicly	Raise environmental awareness, enhancing co-operation with stakeholders					
	2013 OBJECTIVES AND TASKS					
To raise environmental awarene	To raise environmental awareness through all of education and enhance scientific co-operation +					
Cooperate to have university students writing theses to loc	k at company's w@ww@sw processes and suggest applicable practical efficiency solutions +					
To implement the	Environmental Educational programme for schools +					
To raise engagement with environmental and eth	ical business projects in the community and support causes linking to our values +					
Be recognised as a flagship company for corporate social responsibility and promote doing business in an ethical and responsible way in the Baltics +						

We deem it important to be a good neighbour in the community, therefore we support and encourage our employees to actively participate in the community activities.

We understand the impact of our business on the surrounding environment and therefore deem it important that our activities engaged with the interests of different stakeholders. We give our best to do more than we are required and people expect from us in order to cast a positive impact both on the natural environment and on the quality of life of people.

Teamwork

- Also, in addition to their daily work our employees have an important responsibility to live our values through a voluntary participation in various community projects. Also, our employees appear on the photos of the Company's data carrying media.
- Together with the employees of Coca-Cola Hellenic and the Embassy of the United States of America we cleaned the Patarei Prison area within the cleaning up event "Let's do it" for the local community to be able to enjoy the scenic cultural park with interesting history. Over 100 volunteers participated to contribute.
- The Company's employees participated in the Estonian Food Bank's food collecting campaign "Notice an empty stomach", where approximately 20 employees were helping by forwarding the information and putting together food packages.
- In cooperation with the Estonian Forest Association we organised a joint forest planting training and cleaning up day.
- To support the children of large families at the risk of poverty, also our employees were disguised as the so-called "office rats" to participate in the charity event called Rat Race.



Cleaning event in 2013



Rat Race in 2013

Cooperation and attention

- We wish people to be able to enjoy more of the classical music and in 2013 we started cooperation with the Pille Lill Music Fund.
- We have supported the disabled people through the nursery "Õunake" and the Estonian Union
 of Sports for the Disabled and also the children in Ristiku Basic School. In spring 2013, we
 organised a meeting of Ristiku Basic School children with the Pille Lill Music Fund and before
 Christmas we invited our employees as well as the children of Õunake and Ristiku Basic School
 together with their families to a joint Christmas concert in Kaarli Church.
- In 2013 the Responsible Business Forum awarded the Company with the silver mark of sustainable business index. This index helps us to consistently analyse, how to act in a socially responsible manner and design a sustainable business model.
- In cooperation with the city district governments we gave planting soil for free to everybody, who were interested in it to make our city look more fresh and green.
- High quality drinking water was provided at numerous sports and health promotion events. We also provide water for the Flower Festival and ice skating rinks in winter.
- To avoid accidents which may be caused by stolen metal manhole covers we joined up with the Police and Border Guard Board, the owners of infrastructure and the collectors of scrap metal in the project of marking the metal. This cooperation is aimed at preventing and stopping the stealing of metal.
- We help to make one of the largest Estonian cultural events happen Dark Nights Film Festival. Last year the festival had a record number of visitors 77,500 people.



Silver quality mark in 2013 of sustainable business index

Improved awareness of consumers

- We continue contributing to environmental awareness of youth who would value environment. Our employees organise group conversations in kindergartens and schools – in 2013, over 2,000 children could increase their environmental knowledge.
- We organised water-related information days for primary school and nature studies' teachers where we introduced different options for the use of study materials for nature studies "Blue classroom" published in 2012. A total of almost 40 Tallinn's schoolteachers participated in the two-days seminar.
- We also keep on working hard to encourage the citisen's environmental thinking. We draw their attention to the very good quality of tap water with our campaign "Tap water is drinking water". We also continued our co-operation with restaurants in the form of campaign "Ask for tap water" so that the customers would have the courage and awareness to ask for tap water when they eat outside.
- Besides our main responsibilities production of drinking water and treatment of wastewater – our treatment plants also have an important role to play in increasing the population's awareness. Each year, we introduce the plants' work to more and more people – in 2013, a total of almost



Poster of tap water campaign in 2013

3,000 visitors took guided tours in the treatment plants.

- We carried out an essay contest "Role of phosphorus in the pollution of the Baltic Sea" among bachelor students of environmental technology, with a broader aim of investigating possibilities of implementing A²O technology biological phosphorus removal in Paljassaare wastewater treatment plant.
- We participated in "Back to school" project in order to raise young people's interest in sustainable development through open discussion. The aim was to teach children and through them also their parents to protect and value the nature more. We also participated in "Tours of Wisdom" project, in the framework of which we offered interesting combinations of guided tours and guest lessons. Almost 20 schools from all over Estonia took an interest in our treatment plants.
- The traditional doors open day in Ülemiste water treatment plant on 24th of August brought together over 300 people, in addition to sports enthusiasts, who were introduced with the plant's work. Visitors were offered delicious water cocktails made on site and there was also children's area where Pippi Longstocking and our mascot Tilgu introduced children with environmentally sustainable consumption through various playful activities.



Poster of essay contest in 2013

EMAS verification

DNV Certification Oy/Ab as an accredited verifier (FI-V-0002) has examined the environmental management system and the information given in the 2013 environmental report of Tallinna Vesi. It has been verified on the 8th of April 2014 that both the environmental management system and the environmental report (original report is in English) comply with the requirements of EU Council Regulation 1221/2009 of Eco Management and Audit Scheme EMAS. The environmental report is available on the website at <u>www.tallinnavesi.ee</u>. Next report will be published before the end of August 2015.

