

## PVK in 2019

### EXPECTED DEVELOPMENTS IN 2020

PVK will continue to supply wholesome drinking water and drain and treat sewage for Prague residents. We will cooperate on the projects of the City of Prague, thereby helping the capital's sustainable management.

In 2020 we will also manage the extended trial operation of the New Water Line, specifically until September 2021.

As of 27 December 2019, PVK accepted, and included in assets intended for operation, the main pumping station at the CWWTP, which is instrumental in the pumping of the wastewater inflow into the CWWTP and its distribution between the new and old water lines. The Company will also continue the trial operation of the pumping station until September 2021.

We will cooperate with Pražská vodohospodářská společnost a.s. (PVS) on a number of capital projects; refurbishments in the Podolí Waterworks will continue as regards filtration on granulated activated carbon, distribution of control air to filter valves, and additions to the water treatment equipment, and other refurbishments intended primarily for improving the drinking water quality, with completion planned so that at the end of 2020 the routine operation of the Podolí water treatment plant can be started, including drinking water supply to the distribution network.

Part of PVK's long-term strategy in cooperation with PVS is projects such as SWiM, reductions in water losses, water management optimisation, and treated water use. Some other projects include operating records of assets, and the GIS and TIS systems.

We will also continue with projects that leverage the effects of water elements in the centre of the city, such as misting, i.e. reducing air temperature, the installation of public drinking fountains, and the expansion of biodiversity in our premises.

With a view to improving customer services, we will take steps to put into operation an opinion portal that will help to digitalise communications, and hence accelerate, simplify, and facilitate communication for customers when they need to obtain various opinions related to future construction. This will constitute another step towards completing the digitalisation of communication with customers, following up on the already operated opinion portal via which information and documents on operated networks are transmitted.

### SNAPSHOT

#### BACKGROUND:

Pražské vodovody a kanalizace, a public company limited by shares (PVK), is the legal successor of the state-owned enterprises Pražské vodárny and Pražská kanalizace a vodní toky to the extent specified in the privatisation proposal.

#### SHAREHOLDER:

Veolia Central & Eastern Europe s.a.	51%
Pražská vodohospodářská společnost a.s.	49%

**COMPANY NAME:**

Pražské vodovody a kanalizace, a.s.

**INCORPORATED:**

1 April 1998

**SHARE CAPITAL:**

CZK 483,288,000

**LEGAL FORM:**

Public limited company (*akciová společnost*)

**COMPANY NUMBER:**

25656635

**REGISTERED OFFICE:**

Ke Kablu 971/1, Hostivař, 102 00 Praha 10

The Company has no organisational units outside the Czech Republic.

The Company holds no treasury shares.

## FROM HISTORY

People have always had to be supplied with water. Initially, hand pumping from water wells and water delivery on foot or on carts were the supply methods; the 12th century saw the construction of the first waterworks; it was intended for the Strahov Monastery; the 14th century saw the construction of the first water supply line for Prague Castle, and that century can therefore be regarded as the dawn of water supply to the population from public water supply lines.

Sewage drains started to be built much later. The first vaulted sewers were built in the 17th century. The modern history of sewerage schemes and sewage treatment in Prague started in 1906 when a sewage treatment plant to which an interceptor sewer had been connected was approved for use. At the end of 1910, the sewerage network was 145 km long.

The modern era of the Prague water management industry began by the construction of the Káraný waterworks in 1914; 1929 saw the construction of the first part of the Podolí waterworks, which was completed in the 1960s; in 1972, the construction of the Želivka water treatment plant was completed.

## 90 YEARS OF THE PODOLÍ WATERWORKS

In 2019, we remembered the 90th anniversary of the commissioning of the Podolí waterworks, a remarkable feat of architecture designed by Professor Antonín Engel, an urban planner and architect active between the two world wars. The final appearance of the plant we can see today was acquired in the 1990s when it was extensively refurbished. After the floods in 2002, its operation was terminated and the plant has been serving as a backup source.

## SIGNIFICANT EVENTS BETWEEN THE BALANCE SHEET DAY AND THE PREPARATION OF THE FINANCIAL STATEMENTS

### **General situation around the development of COVID-19**

On 11 March 2020, the World Health Organization declared the spread of the coronavirus infection to be a pandemic and on 12 March 2020 the Czech Government declared a state of emergency in the Czech Republic for the 30 subsequent days. Responding to the potentially serious risk to public health, which COVID-19 constitutes, Czech state administration authorities adopted a number of measures to check the spreading of the pandemic. Among other things, cross-border movement of people was limited, entry of the country was limited for foreign nationals, and some industries were closed down on a temporary basis until further notice depending on the current situation. The measures mainly concerned airlines and railways, which interrupted international passenger transport, and schools, universities, restaurants, cinemas, theatres, museums, and sport facilities were shut down; retail shops were also closed, with the exception of groceries, convenience stores, and pharmacies (exceptions were subsequently changed from time to time). Some companies in the Czech Republic pared down or suspended their business activities and ordered their employees to stay at home. With certain exceptions, the Government decided to prohibit free movement of people in the Czech Republic from 16 March 2020 on a temporary basis (until 24 March 2020). Apart from certain exceptions, this ban on free movement was then extended by an extraordinary measure of the Ministry of Health until 1 April 2020. The safety measures have been continuously evolving in the light of the spread of and fight against the contagion in the Czech Republic.

### **The following are some of the subsequent broader economic impacts of these developments:**

- Disruption in business and economic activities in the Czech Republic, and its subsequent impact on the lower and higher levels of the supplier chains.
- Significant disruption of business activities in certain industries both in the Czech Republic and on the markets that heavily depend on international supplier chains as well as on the part of export companies that depend on external markets. The affected industries include, primarily, commerce and transport, travel and tourism, the entertainment industry, manufacture, construction, retail, insurance, education, and the financial sector.
- Significant drop in demand for goods and services that do not cater to the essential needs.
- An increasing economic uncertainty, which is reflected in more volatile asset prices and exchange rates.

Over time, the Czech Government seeks to be responsive, declaring measures intended to partly offset the negative impacts of the COVID-19 pandemic on the Czech market. The various ministries present the proposals for such measures, and the cabinet or, as applicable, Czech Parliament try to pass them in a summary procedure. For example, the Ministry of Finance proposed the 'liberation packages', and the Ministry of Labour and Social Affairs a programme to support employment in the wake of the COVID-19 pandemic.

These packages include, for example, measures such as deferred payment of the advances towards corporate income tax and personal income tax for June, the implementation of the final stage of EET (electronic recording of receipts) deferred for the duration of the state of emergency and the following three months, the application of the 2020 tax loss in taxable income for 2019 and 2018 through additional retroactive tax returns, contributions to employers for the payment of wages, etc.

The extraordinary measures and the various schemes for underpinning the economy are currently very dynamic and evolve continuously.

### **Impact of the current situation on the Company and expected development**

PVK operates in the water industry, the products of which are indispensable goods for consumers. On the basis of the information available in the public domain as at the date on which these financial

statements were approved for publication, the management assessed a number of critical but realistic scenarios for the potential evolution of the pandemic and its potential impact on PVK and the economic environment in which it operates, including the measures already put in place by the Czech Government and the governments of other countries in which the Company's trade partners are based.

The Company's annual financial statements and ratios as at 31 December 2019, which are part of this document, clearly show the Company as an economic entity whose financial situation is sound and stable. The Company does not use any bank or non-bank loans for its activities.

**The Company's management has assessed the following operating risks that may have an adverse impact on the Company:**

- The long-standing lack of employees and, primarily, lack of the key field personnel.
- The disrupted supply of the key materials and goods required for the Company's operation.
- The impacts of the adopted measures and the expected economic recession in the Czech Republic, which would significantly reduce customers' consumption and cause a significant plunge in the Company's receipts from water and sewage rates and a drop in its receipts for services provided to external entities in 2020 compared with 2019.

**With a view to mitigating the risks entailed in the potentially adverse scenarios the Company's management began implementing specific measures, including, without limitation, as follows:**

- Under the CEO's directive on company management in crisis situations, the Company progressively declared an alert and then a state of readiness, and started preparations for possibly declaring a state of crisis.
- All employees have been trained in stringent preventive measures, both protective and hygienic.
- Provision of personal protective equipment and disinfectants.
- More intensive cleaning and sanitary measures.
- Measures were put in place in personnel management to minimise contact between employees, including the introduction of work from home on the principle of staff taking regular turns wherever feasible. This measure concerns a major part of the office workers.
- Strategic and field personnel, who carry out the Company's core activities, have been divided into several mutually independent groups so that in the case that the illness is found in one group the other groups are able to continue in the Company's strategic activities.
- Measures were put in place to minimise employees' contact with outside persons; for example, the customer centre was closed and the contactless forms of communication were boosted, personal meetings with suppliers were significantly reduced, water meter reading was reduced, and the replacement of water meters and certain other services entailing personal contact with customers were interrupted.
- Arrangements for the logistics and monitoring of strategic supplies, and maintaining them at a level sufficient to carry out the core activities for at least three months in the case of sudden

problems with supply and suppliers. The Company has also introduced regular monitoring of the suppliers of strategic supplies from the perspective of their ability to ensure continuous supply.

- The employees are now obliged to report cases where they observe symptoms of the disease in themselves or in persons with whom the employee was in personal contact; this includes the imposition of quarantine on these employees.
- The Company has introduced measures to mitigate the impacts of this emergency on its results.

Despite all the measures adopted the Company's management expect an impact on its results in 2020. In this situation it is very difficult to estimate these impacts because they depend very much on the duration of the state of emergency in the Czech Republic and the related governmental measures that are currently being extended, and also on the rate to which the Prague population, including the Company's employees, has acquired herd immunity to the infection.

**In any case, the heaviest impact on the Company's results will be caused by the plunge in the receipts from water and sewage rates, where the following factors are strongly felt, mainly in the Prague area:**

- Halted tourism, including the cancellation of major social and cultural events;
- Closure of public catering facilities, shops with non-essential goods, most service operations, etc.;
- Closed or reduced operation of public institutions such as schools, museums, exhibition premises, various authorities, etc.;
- Production in manufacturing companies reduced or stopped;
- Employees commuting to Prague and, on the other hand, Prague residents travelling outside the capital in their time of leisure has been reduced significantly; care for family members, work from home.

Our current estimate of the decline in consumption throughout the state of emergency is no more than 10% and the Company's management expect that due to the importance of water as an essential life sustaining commodity, this impact should not become significantly heavier should the state of emergency be extended again; however, the management also add that it may take several months or even years to return back to the original situation once the state of emergency is lifted.

The other expected impacts include a slight drop in other sales and a slight increase in costs due to the costs of the measures related to COVID-19, but this impact will be incomparably smaller than the plunge in the receipts from water and sewage rates. Another expected impact is the temporary gap in cash flow due to the temporary inability of some customers to pay, in particular, to pay advances.

In order to fill the above gaps in receipts the Company is introducing extensive austerity measures that primarily include deferrals of planned repairs and planned capital expenditure and projects, reduction in some services, and also savings in payroll costs. At the same time, the Company has sufficient uncommitted funds for filling the temporary gap in cash flow.

The opinion of the Company's management is that the above factors support, despite the current emergency, the claim that the Company will have sufficient funds to be able to continue its activities

for at least 12 months from the date of the financial statements. The management have concluded that the broad range of the possible implications that were assessed when making this judgment does not result in any significant uncertainty in relation to the events or circumstances that could materially challenge the Company's capacity as a going concern.

## **GOVERNING BODIES OF THE COMPANY AS AT 31 DECEMBER 2019**

### *PVK Board of Directors*

Philippe Guitard, Chairman  
Petr Mrkos, Vice-Chairman  
Martin Bernard  
Miluše Poláková  
Eva Kučerová  
Pavel Válek  
Mark Rieder

### *PVK Supervisory Board*

Martin Velík, Chairman  
Petr Kratochvíl, Vice-Chairman  
Jiří Pelák  
Marcela Dvořáková  
Rostislav Čáp  
Marek Dřevo  
Alena Březinová  
Jaroslav Dostál  
Miloš Šimon

### *Company management*

Petr Mrkos, CEO  
Petr Slezák, Deputy CEO, Chief Personnel Officer  
Pavel Novotný, CFO and Sales Director  
Petr Kocourek, Chief Operating Officer  
Petr Sýkora, Chief Technical Officer  
Marcela Dvořáková, Chief Communications and Marketing Officer

## **KEY FIGURES**

The Company's turnover: CZK 7.783 billion

Profit: CZK 548,693,000

Number of employees: 1,123

Water supplied to the water supply network: 97,190,000 m<sup>3</sup>

Total wastewater treated: 111,362,000 m<sup>3</sup>

Length of the water supply network operated, including supply pipes: 4,415 km

Length of the sewerage network operated, including drain pipes: 4,720 km

Number of people supplied: 1.317 million in Prague and 208,000 in the Central Bohemian Region

Water losses: 12.5%

Number of contract customers: 92,286

## MAJOR PROJECTS IN 2019

### **SWiM Mobile put into operation**

SWiM (Smart Water integrated Management), i.e. our method for managing and controlling water services, was expanded. The new generation, SWiM Mobile, digitalises the field activities and all workers can use the integrated information. Job specifications are transmitted directly to the field workers' tablets and smart phones. Each of them therefore knows his tasks and the central control room can plan and manage everything effectively. The system can monitor the condition of the water infrastructure in the field, it can connect to fire and health services or to the military, and is interconnected with the centre from which Prague is managed.

### **Water losses the lowest ever**

The Company is continuously and successfully reducing losses in the water supply network. In 2019, water losses were the lowest ever, only 12.5%. The continuous monitoring of the water supply network, the ongoing evaluation of losses in the supply zones, and regular diagnostics in the water supply network: all of these help to keep water losses at low levels.

### **We have met the objectives of the Enough of Plastics project**

In early 2019, PVK joined a Ministry of the Environment campaign called *Dost bylo plastu* (Enough of Plastics), the purpose of which was to eliminate the production of, primarily, disposable plastic packaging. We have put in place a new drinking regimen, equipped workplaces with soda bars, and eliminated disposable plastic cups from events for the public and internal events. PVK has significantly reduced its environmental footprint.

### **We have installed misting in Prague**

Cooperating with Pražská vodohospodářská společnost a.s. (PVS), we have installed ten misting devices, designed as drinking straws, in the centre of Prague. This move marked the launch of the misting project that responds to the climate changes in Prague, which are felt in the rising average daily temperature, the city's heat island effect, and heat waves. Its purpose is to operate the misting devices to mitigate the negative health effects on Prague residents and visitors.

### **We have expanded water supply in substitute packaging**

The packaged water project was extended to 20 municipal districts; it almost doubled in 2019.

### **We use biogas treated to CNG**

We are preparing a project for using the sludge gas produced at the CWWTP. It involves biogas treatment to natural gas quality, specifically CNG. Under this programme, PVK has started to use 16 vehicles driving on CNG, which has the lowest greenhouse gas emissions. The project combines water and waste management issues with energy and transport. Using treated sludge gas as a motor fuel is an example of a unique recycling and energy recovery scheme.

### **Smart Metering**

We drew up, and consulted with the asset manager, Pražská vodohospodářská společnost a.s., the strategy for Smart Metering implementation in Prague for the period 2019 - 2025, and have

successfully pursued it since. Related to the intensive implementation of Smart Metering, we have digitalised the process of the circulation of billing water meters through an electronic installation sheet.

## **EDITORIAL BY THE CHAIRMAN OF THE BOARD OF DIRECTORS**

Despite the spring 2020 developments related to the epidemic of the COVID-19 infection, the year 2019 vindicated the path of cooperation with the City of Prague on which we had set out. As a minority shareholder, Pražská vodohospodářská společnost a.s. (PVS) has fully proven its qualities and capabilities. The cooperation within the Board of Directors and the Supervisory Board works excellently and the minority shareholder's representatives do not only carry out their supervisory role very well but are also qualified partners in the process of strategic decision-making in the Company. Our appreciation of this partnership with Prague is also borne out by our complete fulfilment of all the obligations under the shareholders agreement. The City of Prague will receive one half of the profit generated in 2019.

The large number of joint projects that took off in 2019 testifies to the close cooperation with the minority shareholder, PVS, at the technical level. These mainly include those addressing the fundamental issues in the preparation of strategic investments, cooperation in recording water management assets, and the interconnection between the information systems of the manager and the operator of water management assets.

Our Company continues to be a very active innovator. In addition to our participation in many different grant-funded and research projects under the umbrella of renowned institutions and universities, we continue in the development of the SWiM® system; in 2019, it was successfully extended to include a fully mobile version under the brand SWiM Mobile®. The new system has made available a range of functionalities to the field personnel, thereby bringing a major change to the way we work. I believe that our customers will also benefit from these technological innovations as the quality of our services improves. For our customers, we have opened a new customer portal and the modern MojeVoda (MyWater) application that provides clear access to all customer and billing information and significantly improves the availability of advanced technology functions.

We also achieved excellent operating results in 2019. We reduced the drinking water losses to a record 12.5%. This value becomes visibly outstanding mainly in comparison with losses before 2000, when they were over 40%. An important milestone was the date 27 December 2019 when the trial operation of the New Water Line (NWL), during which our Company operated the NWL for a consortium of contractors, was completed at the CWWTP. The NWL meets all the required parameters thanks to our specialists' great efforts. Our Company then won the tendering procedure for the provision of NWL operation services for PVS for a subsequent period of time.

We continue to place a great emphasis on occupational health and safety. The OHS Week is a well established tradition at PVK and we are continuously raising safety at work standards. At present, when companies are vying for employees, our Company is also doing its best to provide its employees with conditions that will help it to stay in the group of attractive and stable employers.

I would like to extend thanks to all PVK employees for their excellent work. I believe that the coming year will bring prosperity and stability, and not only to our Company.

Philippe Guitard, Chairman of the Board of Directors



## OUR SERVICES

Pražské vodovody a kanalizace, a.s. (PVK) provides comprehensive water management services, reliable supply of high-quality drinking water, and draining and treatment of wastewater for the City of Prague and the municipality of Radonice. In addition to this core business the Company also offers a number of other services related to its core business, such as laboratory analyses, network diagnostics, water meter replacement, including remote reading thereof (smart metering), services downstream of water meters, and many other services for private individuals, housing cooperatives, municipalities, and industrial companies.

The water networks and all water facilities operated by Pražské vodovody a kanalizace are largely owned by the City of Prague. These assets are managed by the city's Pražská vodohospodářská společnost a.s. (PVS), which is responsible for investments. Since 20 September 2018, PVS has been a shareholder of PVK; PVS holds 49% of PVK's shares. Pražské vodovody a kanalizace is the operator of the water infrastructure and pays the city a rent for using the infrastructure. Since 2002, when Veolia bought into PVK, PVK has paid more than CZK 32 billion in rent. 51% of PVK shares are held by Veolia, a company that supplies water, heat and electricity and operates in waste processing and reuse in the Czech Republic and elsewhere in the world. It provides its subsidiaries with know-how in the design, rollout and operation of water infrastructure, with which it has more than 150 years of experience.

PVK holds internationally recognised certificates for its integrated management system under ČSN EN ISO 9001, ČSN EN ISO 14001, ČSN OHSAS 18001 and ČSN EN ISO 50001. The integrated management system was implemented throughout PVK in 2006 when the Company received a certificate for its quality management system and OHS management system. In the following years, the requirements of environmental management and energy management systems were gradually implemented in the integrated system. The Company has successfully passed a recertification of all its management systems. The Company holds a Diamond Certificate from CQS, which commits it to continuously improve in all certified areas of its business. The Company is now implementing the requirements of the anti-corruption management system under ISO 37001 with a view to obtaining the certificate in 2020.

PVK adheres to the basic values, which include customer focus, responsibility, solidarity, respect, and innovation.

### Drinking water supply and distribution

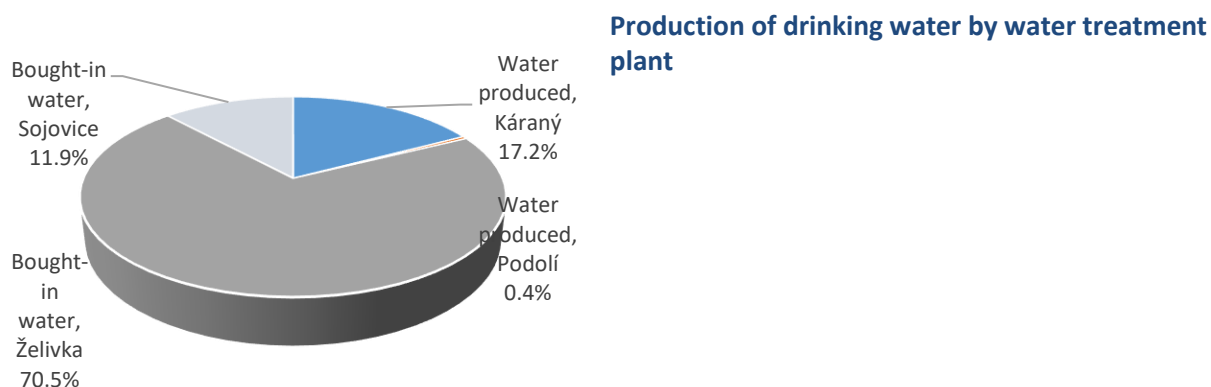
PVK supplies drinking water to 1.317 million Prague residents and delivers water for another 208,000 people in the Central Bohemian Region. It operates the water infrastructure in Prague and in Radonice.

The Company supplies drinking water from the water treatment plants the Company operates in Káraný and in Podolí. The Company also supplies drinking water purchased from the water treatment plants in Želivka and Sojovice, known as "bought-in water". The Podolí treatment plant is a standby source for contingencies, and in 2019 it helped to supply drinking water in summer when Želivka's output was limited due to the planned capital projects. The central control room continuously controls water distribution from the various water treatment plants.

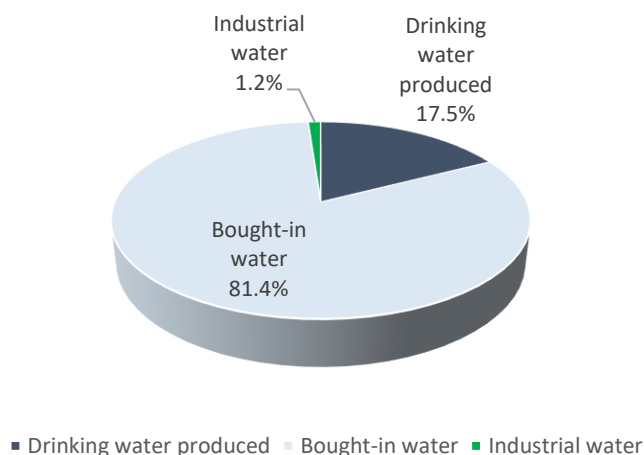
### Water supplied to the water supply network in 2019

	Indicator	Quantity in m <sup>3</sup>
Drinking water	Drinking water produced by PVK	19,707,789
	Water bought in from the Želivka and Sojovice plants	91,922,580
	<b>Total drinking water</b>	<b>111,630,369</b>
	Water transferred (drinking water supplied into a public water supply network managed by another entity)	<b>15,739,387</b>
Industrial water	Water produced – industrial water mains	1,299,094
Drinking + industrial	Drinking water and industrial water produced by PVK	21,006,883
	<b>Water for sale supplied to the network</b>	<b>97,190,076</b>

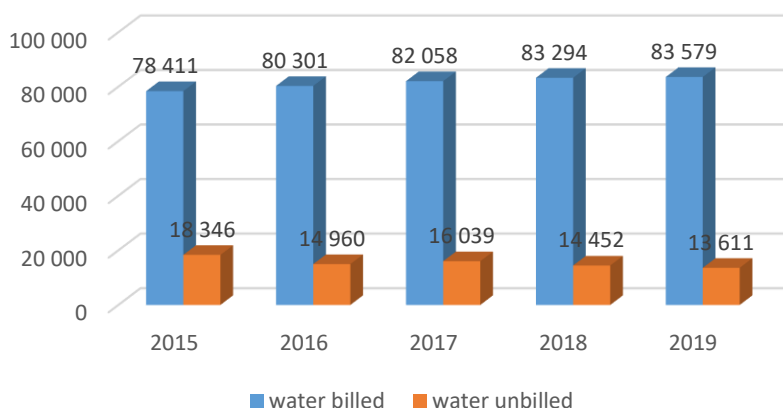
In 2019, PVK delivered 97,190,000 m<sup>3</sup> of water to the water supply network, 0.6% less than in the previous year. Average per capita water consumption was 114 litres per day in 2019. Although the total quantity of water supplied to the water supply network is decreasing, the percentage of billed water is increasing.



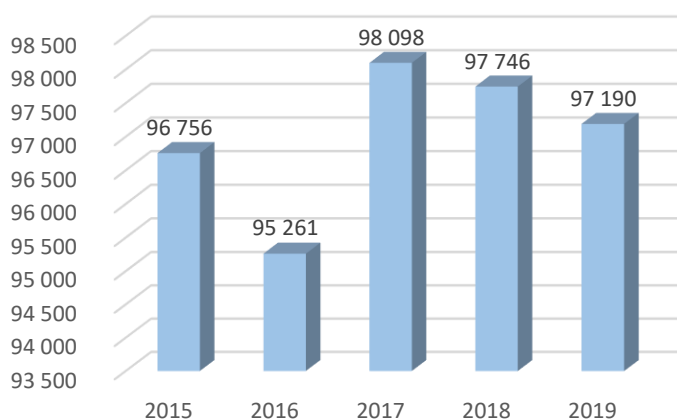
### Percentages of produced water, bought-in water and industrial water



### Water billed and unbilled between 2015 and 2019 (in thousands of m<sup>3</sup>)



#### Water supplied to the water supply network between 2015 and 2019 (in thousands of m<sup>3</sup>)

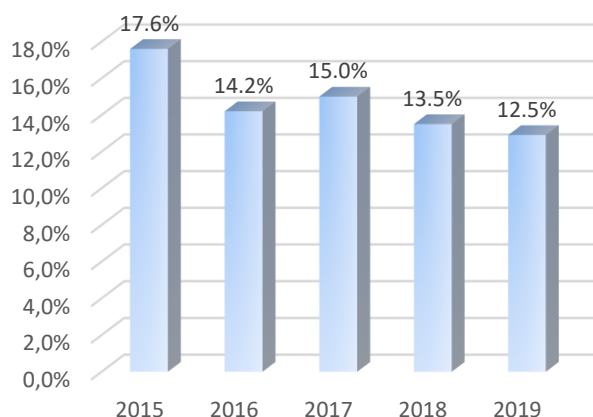


#### WATER LOSSES

In 2019, the Company was successful again in reducing water losses, specifically to 12.5%. These modest losses can be put down to the continuous water supply network monitoring, including ongoing evaluations of water losses in supply zones, and regular water system diagnostics. In 2019, PVK employees examined 2,786 km of the water supply network, discovering 315 hidden water leaks, which are essential for reducing water losses. The Company's information system called Leak Monitor, which helps to identify on time water leakages from online sensors in the water supply network, contributes to water loss reductions. The Enigma 3m monitoring system for detecting and locating hidden leaks in real time also helps to reduce losses. Both of these systems are implemented in the SWiM system in the central control room.

The fault analysis suggests that hidden leaks averaged 1.5 l/s.

#### Water losses (%) between 2015 and 2019



Length of water supply networks	3,545 km
Length of supply pipes	870 km
Number of supply pipes	115,716
Number of water meters	113,848
Number of reservoirs	67
Volume of reservoirs	753,494 m <sup>3</sup>
Number of pumping stations	51

## WATER METERS

The number of water meters that measure the consumption of the drinking water supplied is rising every year. At the end of 2019, 113,848 water meters were installed in Prague and Radonice, of which 308 in Radonice. In 2019, 20,172 water meters were replaced, mostly because the period of the validity of their verification had expired. Of those, 18,354 water meters without remote reading and 1,818 main billing water meters with remote reading were replaced. In addition, 418 subsidiary billing water meters with remote reading were installed. At customers' requests, PVK carried out 1,032 official tests of water meters (down by 15.6% on 2018) and 95 on-the-spot official tests (down by 17.9% on 2018). PVK outsourced the repair and verification of 11,673 water meters to external suppliers.

In 2019, remote readings were taken from 80,244 water meters, which was 23% more than the year before. In the case of remote readings, data is transmitted directly to end users via the internet. Readings are taken online and the data is stored on a server and immediately presented in the web environment accessible at [veolia.www.cem2.unimonitor.eu](http://veolia.www.cem2.unimonitor.eu) or in the [Veolia CEM mobile application](#). Remote radio-transmitted readings offer greater user convenience and lower costs per reading, as well as the possibility of monitoring water consumption online and promptly detecting malfunctioning meters; they also guarantee reliable and accurate measurement. In remote readings, PVK works with Pražská teplárenská, a.s., Pražská plynárenská, a.s., and PRE měření, a.s.

## Number of remote water meters between 2015 and 2018



## WATER SUPPLY NETWORK INCIDENTS

In 2019, the Company handled 5,029 water supply network incidents, down by 3.4% on the preceding year. The average water supply interruption time per incident decreased to 8 hours and 58 minutes.

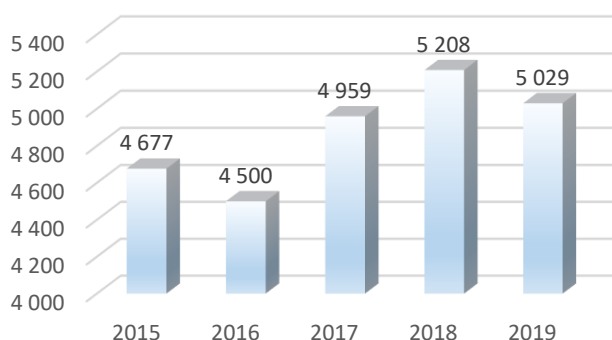
Of the total number of incidents, 74, i.e. only 1.5%, were category 1 incidents, where more than 1,000 inhabitants or health or other important facilities are left without a water supply. There were 142 category 2 incidents (2.8% of the total number) and 4,813 category 3 incidents (95.7%).

The leading cause of the incidents was corrosion (75%), followed by land movement (20.3%) triggered, for example, by frost. These two causes were responsible for over 95% of the cases. The remaining less than 5% of the incidents were caused by third-party intervention, material defects, freezing, and other causes.

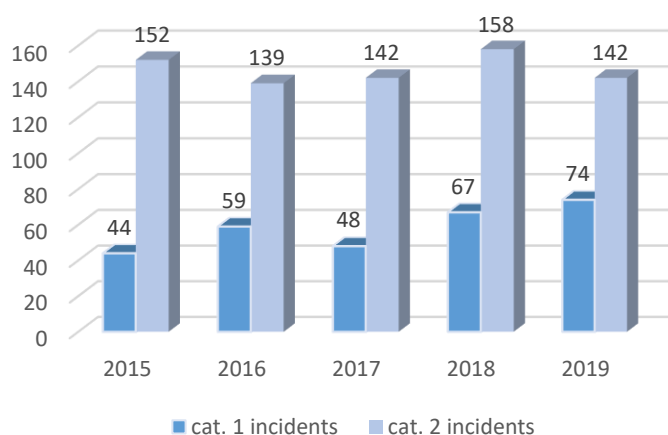
In 2019, the number of incidents on 500 to 1,000 mm pipes increased; handling incidents on larger pipes is challenging in technical terms and also time consuming.

It is Company policy to provide maximum information on each incident while minimising the impact on the consumer. Incidents are reported online on the PVK website. This information clarifies whether drinking water supplies are affected at a particular site, where water wagons have been deployed, whether water (including packaged water in bags) has been distributed for emergency supply, and the estimated time it will take to complete the repair and restore normal water supply. All this information is also available via Google Maps. Prague residents who have registered with the text message service also receive news about outages and incidents on their mobile devices.

## Number of water supply network incidents repaired between 2015 and 2019



### Category 1 and 2 incidents between 2015 and 2019



### WASTEWATER COLLECTION AND TREATMENT

Total length of the sewerage network	3,718 km
Length of drainage pipes	1,002 km
Number of drainage pipes	123,868
Number of pumping stations	331
Number of wastewater treatment facilities	The Central WWTP + 20 branch WWTPs

**In 2019, 1.297 million inhabitants were connected to the sewerage system in Prague.**

The combined sewerage system in place in the central part of Prague drains sewage, together with rainwater, to the Central Wastewater Treatment Plant (CWWTP) and, since 19 September 2018, also to the New Water Line (NWL). The outskirts of Prague are served by separate sewer networks that drain wastewater and rainwater separately.

In 2019, PVK also operated 20 branch wastewater treatment plants (BWWTPs) in addition to the CWWTP and the NWL: Březiněves, Horní Počernice - Čertousy, Dolní Chabry, Holyně, Kbely, Koloděje, Kolovraty, Klánovice, Královice, Lochkov, Miškovice, Nebušice, Nedvězí, Sobín, Svěpravice, Uhřetěves - Dubeč, Újezd nad Lesy, Újezd u Průhonic, Vínohrad and Zbraslav.

In 2019, PVK treated 111,362,000 m<sup>3</sup> of wastewater, which was 4.3% more than in the preceding year. Of the total volume of wastewater, 53.9% was treated at the NWL, 39.4% at the old water line of the CWWTP, and 6.8% at the BWWTP.

In 2019, most of the activities at the CWWTP were related to the trial operation of the New Water Line (NWL). Its "live phase" was running, and the NWL already had to meet the target parameters of the treated wastewater at the point of discharge into the Vltava. When the NWL was put into operation the overall stream of wastewater inflow had to be split, and this required major modifications on the old water line at the CWWTP. The aerating of the aeration tanks, the running of the sedimentation and secondary sedimentation tanks, and the dosing of chemicals into the treatment process had to be optimised. The lower load combined with the modifications has improved the quality of the discharged water, in particular as regards nitrogen compounds. The NWL contractor delivered the NWL to the employer and owner, the City of Prague, for use as of 27 December 2019. PVK won the tendering procedures on public contracts for operation and manning,

the services of laboratories and technologists, and the supply of electricity and supply of drinking water, and it will also be responsible for the extended trial operation of the NWL until September 2021. PVK will provide these services to Pražská vodohospodářská společnost a.s., which will play the role of the NWL operator throughout the period of the extended trial operation.

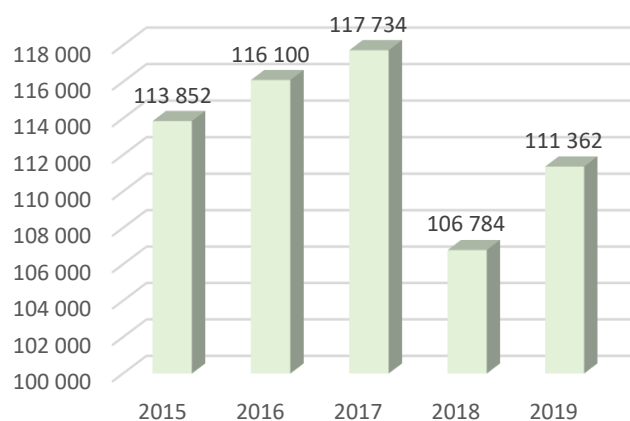
In 2019, the treatment of Prague wastewater at the CWWTP resulted in the separation of 3,465 tonnes of grit (gravel and sand) and 3,334 tonnes of screenings overall; the total yearly production of dewatered stabilised sludge was 85,457 tonnes. The Company's own generation of electrical energy, cogenerated with heat from sludge gas at the CWWTP, was the highest ever in 2019: 36,532 MWh, of which 7,437 MWh was surplus electricity produced in excess of its own demand. This surplus "green" electricity was exported from the CWWTP to the public electricity distribution network for consumption. For illustration, the electricity so distributed would meet approximately 3,000 Prague households' average annual electricity demand.

As at 27 December 2019, PVK accepted, and included in assets intended for operation, the main pumping station at the CWWTP, which is instrumental in the pumping of the inflowing wastewater into the CWWTP and its distribution between the new and old water lines. The Company will also continue the trial operation of the station until September 2021.

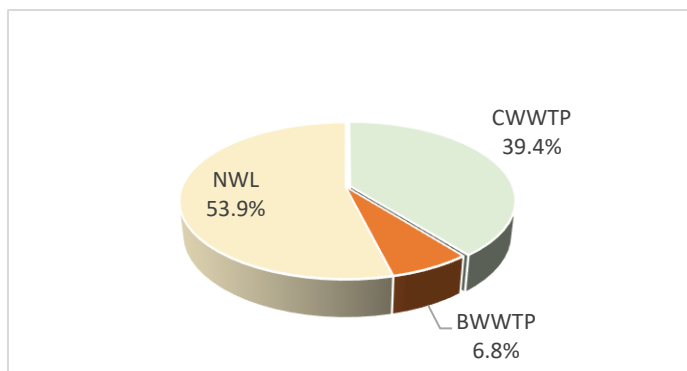
#### Quantity of wastewater treated in 2019 (m<sup>3</sup>)

	m <sup>3</sup>
CWWTP – old water line	43,835,942
NWL	59,976,619
Total CWWTP	103,812,561
BWWTP	7,549,873
TOTAL	111,362,434

#### Total quantity of wastewater treated between 2015 and 2019 (thousands of m<sup>3</sup>)



#### Share of wastewater treated in 2019



## INCIDENTS IN THE SEWERAGE NETWORK

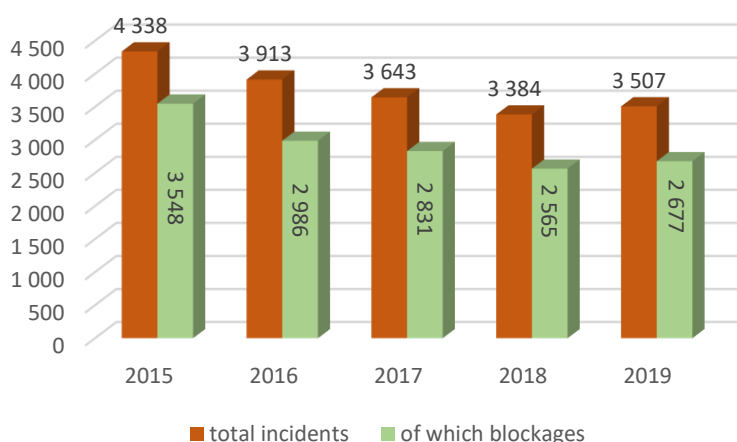
In 2019, PVK employees addressed 3,507 incidents overall in the sewerage network, including those on manhole covers, and blockages, which was up by 123, i.e. 3.6% on the preceding year. Incidents on drainage pipes accounted for 48.3% of incidents, taking the single largest share of them, followed by incidents on sewers, 32.2%.

The most common sewerage network incidents, in terms of the type of damage, involved blockages and sediment, accounting for 76.3%, or 2,677, of the incidents. Other causes of incidents included missing or damaged manhole covers, damaged restoration liners, destruction, deformations, damaged masonry, etc.

### Number of sewerage network incidents by type of facility in 2019

Type of facility	Number of incidents	%
Sewers	1,130	32.2
Drainage pipes	1,692	48.3
Shafts, chambers, reservoirs, spillways	556	15.8
Other	129	3.7
Total	3,507	100.0

### Sewerage network incidents between 2015 and 2019, showing the share of blockages

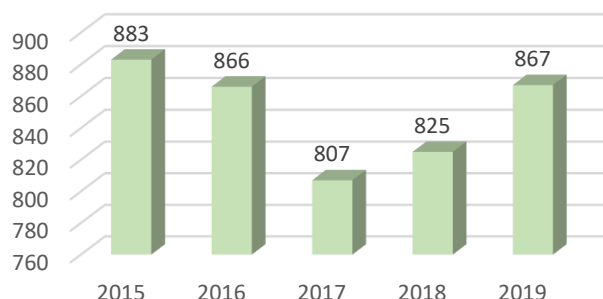


## EQUIPMENT BREAKDOWNS



PVK tackled 867 equipment breakdowns in total in 2019, i.e. 42 or 5.1% more than in the preceding year.

#### Number of equipment breakdowns between 2015 and 2019



#### SEWERAGE NETWORK SURVEYS

Under the operating agreement between PVK and PVS, the Company conducts preventive surveys of the sewerage networks, using camera inspection systems for sewers that cannot be entered physically and visual inspections on foot in tunnels.

In 2019, we surveyed 117 km of sewers and inspected 3,684 access shafts and other installations in the sewerage network. We detected 34 incidents in the sewerage system during our inspections. To repair the defects detected in the sewerage system, we drew up 101 defect repair proposals and submitted them for inclusion in the repair and investment plan. In addition to these systematic surveys the Company also surveys sewers exposed to high velocities of the waters drained, and also conducts additional surveys on the occasion of repair of tramlines and road surfaces, etc. We smoke-tested 23.6 km of sewers.

In 2019, PVK renovated two camera inspection systems. We upgraded one camera vehicle to include equipment that can repair damaged sewage pipes using local Quick-Lock sleeves.

#### WATER QUALITY

PVK's accredited laboratories carry out regular checks of drinking water and wastewater quality. The accreditation covers the entire range of the laboratories' activities: sampling and analysis of drinking, hot, packaged, surface, raw, ground and waste water, water from intermediary process stages (inter-stage water) and sludge, and bathing water, including waste sampling and analyses of process chemicals used in water treatment and purification. In 2019, the laboratory was accredited under the amended ČSN EN ISO/IEC 17025:2018 standard.

#### Drinking water

**Drinking water throughout Prague is safe. In respect of its physical, chemical, microbiological and biological properties, it complies fully with Czech and European standards. The quality has been systematically checked throughout the production and distribution of drinking water, all the way to the consumer's tap.**

Drinking water quality is regularly monitored in accordance with Implementing Decree No 252/2004 laying down requirements for drinking and hot water and the scope and frequency of drinking water

checks, as amended. EU drinking water requirements are satisfied in this respect. Water quality is also checked after incidents, repairs, and any other interventions with the water supply networks. Drinking water quality monitoring complies with Implementing Decree 252/2004 and also relies on the assessment of risks in drinking water supply. Screening analyses of other risky pollutants to confirm that drinking water is free of other extraneous matter are carried out on a regular basis. Along the entire route of water distribution, the Company monitors the values of trihalomethanes, which are products of water chlorination. Their values are deep below the set hygienic limit and are at the level of the European mean of this indicator.

Under the Drinking Water Quality Monitoring Programme, in 2019 the distribution network was checked at delivery points to the distribution system, along the distribution routes, in each of the water reservoirs, and also directly at consumers. In terms of drinking water distribution, a problematic parameter is iron content and the related water colour and turbidity. In 2019, 0.77% of the distribution network samples failed to comply with the Programme in terms of iron, which implies an improvement compared with 2018. Responding to these unsatisfactory results the water supply networks are subjected to purging and documents for their regular renovation are submitted.

In cooperation with the water treatment plants, in 2019 a total of 8,672 samples were taken from the drinking water supplied into the Prague water supply network. 324 samples were taken for post-incident water quality checks. In those samples, 9,391 parameters were determined, 99.6% of which complied with the Implementing Decree's drinking water requirements. Scheduled repairs were followed by taking 401 samples. In those samples, 8,761 parameters were determined, 99.3% of which were found to be compliant.

The use of alternative microbiological methods for determining drinking water contamination has proved its worth in laboratory practice; laboratories are also testing additional new, modern options for determining water contamination, which help to obtain information about water quality faster than the conventional cultivation techniques. These new methods accelerate the feasibility of starting remedial measures when restoring the water mains into operation after incidents.

There is a requirement to introduce new methods for water quality checking and additional new parameters of water are required to be determined, and our laboratories are therefore undergoing extensive refurbishments so that water quality checks can be continuously improved using modern instrumentation. The laboratory employs the Labsystém software for processing the results of water quality checks; in 2019, migration to a new 7.0 version took place. Among other things, this has also made possible its interconnection with the Helios Green software, which is also used for incident management. The result is more effective processing of drinking water quality data and more effective process control of the operations related to drinking water distribution after incidents and planned repairs, and the Company also started a process intended to optimise and digitalise the activities related to the control of drinking water distribution equipment.

## **Wastewater**

The PVK laboratory regularly monitors wastewater quality throughout the wastewater drainage and treatment process. Wastewater samples taken from the CWWTP and its process equipment, including sludge and sewage sludge gas, and wastewater samples from BWWTPs, industrial producers, the sewerage network, and the discharge points operated by PVK were analysed. Liquid waste delivered to the CWWTP and BWWTPs by outside entities was also checked. The monitoring scheme also covers the recently commissioned New Water Line, which is regularly sampled for checking the quality and efficiency of the treatment process. The range and frequency of checks comply with all the applicable legislation on wastewater. The main reason for checking wastewater

quality is to ensure compliance with the prescribed limits for wastewater discharge to prevent contaminated wastewater from being discharged and, in turn, environmental damage.

In response to the rising number of wastewater samples, the wastewater laboratory uses new automatic instruments having the capacity to process large numbers of samples, thereby accelerating the water quality monitoring process. The laboratory was therefore able to accommodate the increase in the number of samples caused by the commissioning of the New Water Line at the CWWTP.

In 2019, 28,400 samples were processed in the PVK wastewater laboratory, i.e. 31% more of the determined parameters than in 2018.

In 2019, the Company again extended the online monitoring of wastewater quality at the closing sites of interceptor sewers E and F.

## **OTHER SERVICES**

### **Cooperation with ČEZ, Elektrárna Počeradý, and Energotrans**

In 2019, PVK, together with its partner companies Martia, a.s., and Česká voda – Czech Water, a.s. (CVCW), registered another successful year of providing maintenance and repair of water and sludge equipment in conventional power stations. In 2019, servicing was provided at Mělník (including Energotrans, a.s.), Počeradý (coal-fired units and a combined cycle unit), Tušimice, Pruněřov and Ledvice. All the activities were carried out without affecting the operation and to the satisfaction of the customers, i.e. ČEZ, a.s., Elektrárna Počeradý, a.s., and Energotrans, a.s.

In 2019, PVK's turnover from all of the above sites amounted to CZK 51.1 million. Combined with the other contracts in excess of everyday maintenance, PVK achieved a total turnover of CZK 77 million. The most important contract was the repair of inflow lines to the Tušimice power station, valued CZK 21.4 million.

### **Official water flow measurements and monitoring of precipitation in the catchment**

In urbanised catchment hydrology and hydraulics, PVK provides the services of official measurements and assessments of the serviceability of water flow measurement systems; other services comprise the measurement of hydraulic variables in the sewerage and water supply networks, precipitation measurements and mathematical modelling in order to draw up documentation such as general drainage plans, general water supply plans and precipitation-runoff studies, measurement of hydraulic variables on hydraulic paths of sewage treatment plants, water treatment plants and pumping stations, and review of facilities and assessment of their hydraulic functions. In 2019, the largest number of measurements over the past few years was carried out and concerned a number of projects, including the detailed stage of the Prague general water drainage plan, the refurbishment and completion of the sewerage system in Brno, water draining in Přelouč, Prostějov, etc.

### **Drinking water supplied in substitute packaging**

2019 was a favourable year for the Packaged Water project. The number of the Prague boroughs involved almost doubled. The project now includes 20 Prague municipal districts. Praha 5, Praha 8, Praha 22, Praha 7, Praha 21, Praha 18, Praha 19 and Praha 17 joined the project in 2019.

Used as supplementary supply, packaged water helped on the occasion of 76 incidents, including planned outages, and so 36,900 two-litre bags full of wholesome drinking water reached the customers affected by interruptions in drinking water supply.

### **Technological supervision**

In 2019, PVK's water engineers were responsible for supervision or guidance and the running of water management agendas at the CWWTP, the branch WWTPs operated by PVK, and 68 wastewater treatment plants owned by 1. SČV. They also started cooperation with Pivovar Krušovice (a brewery), consisting in the provision of technological supervision.

The first full year of the New Water Line operation at the CWWTP also required a proactive approach. The key issue was removal of nitrogen contamination through combining the periodical aeration of and site- and time-specific distribution of methanol dosing into each of the denitrification tanks. Thanks to the cooperation of all those involved, the NWL met all the prescribed limits on the quality of treated wastewater.

The technological supervision over the change of the hygienisation method at the Jesenice I water reservoir (Želivská provozní, a.s.) was also an innovative project. In early 2019, the injection of gaseous chlorine was replaced with that of sodium hypochlorite, which is produced on the application site by brine electrolysis (Chlorinsitu III equipment; four units, each with an output of 2.5 kg Cl<sub>2</sub>/hr). It is the same equipment as that used at the Flora water reservoir and pumping station since 2015, which has made it possible for us to replicate the Flora experience in Jesenice, but on a larger scale.

### **Flood control measures and exercises**

PVK helps to protect Prague against floods. In cooperation with Česká voda – Czech Water, a.s., PVK carries out maintenance on mobile pumps and tests at pumping points.

Annual preventive checks of all 11 gensets were carried out. All mobile pumping sets were subjected to regular technical inspections at a technical inspection station.

Every year, the Mayor of Prague supervises testing exercises in flood control measures. September 2019 saw the WATER 2019 exercise around Hergetova cihelna and on Kosárkovo nábřeží and between the Barrandov and Jirásek bridges on both banks of the Vltava. PVK staged a demonstration at two pumping points, the mobile pumping stations at Hergetova cihelna and Branická.

The autumn of 2019 saw a military exercise called THE GUARD at the Klíčov water reservoir in Praha 9. The purpose was to check the collaboration between PVK and the Czech Army's forces in the guarding of structures important for the country's defence.

### **Laboratory services**

In 2019, the PVK laboratory took and analysed samples for external customers, totalling CZK 30 million. Major external services include water quality checks for Želivská provozní, a.s., and Vodárna Káraný a.s., which supply water to the distribution system operated by PVK, and also expanded cooperation with Pražská vodohospodářská společnost a.s. in respect of the disinfection and commissioning of new water supply lines, and also cooperation in locating contamination in the sewerage network. The NWL quality control, provided as part of the trial operation, also constitutes a major share and in 2019 PVK won a contract for its accredited laboratory's activities during the extended trial operation of the NWL for another 21 months.

### **Downstream of the Water Meter Services**

The Downstream of the Water Meter Services project continued successfully in 2019. It was started in 2011 and PVK cooperates with AAA Záchránná technická služba in this project. As part of this

project, we carried out 1,600 repairs on the internal water supply and sewage draining plumbing at our customers and fixed 40 incidents involving domestic distribution systems.

#### **Pest control**

Every year, PVK runs a rodent control campaign in its sewerage network from April to October. In 2019, 13,525 sewer entry points in Prague were treated, entailing the use of 13,525 kg of rodent control bait. Besides this across-the-board disinfection in the Prague sewerage network, we carried out disinfection at 49 facilities and disinsection at 43 facilities for our external customers.

#### **Hydrant standpipe rentals**

Customers rent two different-sized hydrant standpipes from PVK to pump water from hydrants. In 2019, 282 small DN 20 standpipes and 213 large DN 40-65 standpipes were rented.

#### **Sewerage network servicing**

PVK provides sewerage network services to customers. In 2019, PVK emptied sumps and disposed of the waste in 466 cases, emptied grease traps and disposed of the waste in 401 cases, and built 268 new sewer access points.

#### **Domestic wastewater treatment plants**

For customers who are unable to connect to the sewerage network, PVK staff successfully continued to supply and service domestic wastewater treatment plants. In 2019 they sold, serviced or checked eight domestic wastewater treatment plants.

### **CUSTOMERS**

PVK promotes customer relationships based on a strategy of long-term partnership, transparency, and ethical conduct. PVK seeks to be a stable, reliable and trustworthy partner that listens to its customers' needs and requirements and carries out their expectations in practice. This is why PVK continuously develops and improves its customer service and enhances the convenience of services. It offers modern and convenient communication channels to its contract customers.

Since 2003, our customer services have been certified under the ČSN EN ISO 9001 standard. Since 2006, our customer services have been certified as part of the certification for the integrated company management system. Thus, PVK's annual re-audits testify to its highly professional, utmost-possible customer care.

Between 3 September and 1 October 2019, the Company ran its traditional **satisfaction survey**. The poll was conducted for PVK over the telephone by IBRS – International Business and Research Services s.r.o., an independent research agency. The survey showed that satisfaction with PVK's services increased compared with 2018.

In all, 93% respondents said they were happy with the services offered by PVK, 2% more than in 2018. 98% of respondents are satisfied with the professionalism of the Company's frontline employees, 3% more than in 2018. Some 96% of respondents are happy with the continuity of drinking water supply; 92% are happy with the quality of the water supplied, again 2% more than in 2018. The research involved the participation of 800 customers from Prague, comprising a mix of single-family building owners, multi-family residential building managers, housing cooperatives, industrial customers, and corporates.

#### **Contract customers and billing**

PVK provides services to **92,286 customers**, supplying them with drinking water and draining and treating their wastewater contractually. Contract customers include individual customers (67,733), multi-family residential buildings and cooperatives (16,590), and corporates (other, 7,963). As certain customers may have more than one contract in place, PVK recorded 115,288 contracts at the end of 2019.

In 2019, PVK continued to enter into new contracts with customers as required by the amendment to the Act on Water Supply and Sewage Draining (Act No 275/2013). Under the amended law, all customers must have a new contract in place by 1 January 2024. Almost two-thirds of the customers have entered into a new contract with PVK. In 2020, PVK will approach the remaining customers and invite them to enter into a new contract.

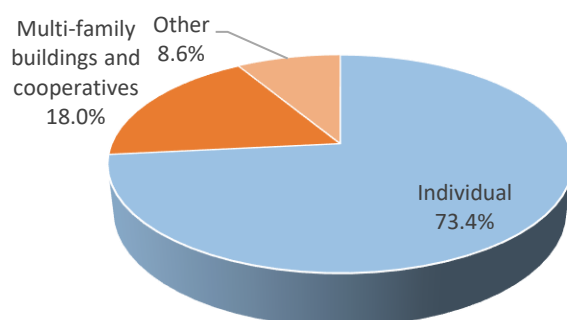
The amended law works in favour of the customers; their contracts do not only include the key information but also the important parameters and limits so that they can demand the meeting thereof under their contract.

More than 49,000 customers had their **bills e-mailed** to them in 2019. PVK also offered to send them tax documents via e-mail. This means that legal entities, after paying an advance, receive a tax document in advance, so they have problem-free VAT check reports. These customers were also able to make **online payments** via their VISA or MasterCard or, alternatively, a payment button, i.e. a link to internet banking with a pre-filled order. Contract customers who opt for the payment button simply select the bank where they have their online account. Since January 2016, the following financial institutions have been involved in this project: Česká spořitelna, a.s., Komerční banka, a.s., Raiffeisen Bank a.s., mBank S.A., Era, and Československá obchodní banka, a.s.

Customers also paid their bills via the **terminals of Sazka sázková kancelář, a.s.** On the bill, they find a barcode, and the terminal can read the payment information contained in the code and issue a receipt confirming the customer's cash payment. In 2019, customers could also use the QR code placed on the bill. They do not have to fill in a postal money order or any other documents; the Sazka terminal operators only scan the code, which contains all the important payment details.

The far-reaching terminal network (at newsagents, petrol stations, convenience stores, etc.) and extended opening hours allow customers to pay their bill as it suits them. A uniform fee of CZK 15 is charged for this service regardless of the amount paid. In 2019, over CZK 42 million was paid in water and sewage rates via Sazka terminals.

PVK prints the QR code on all its billing documents and customers can therefore use the code for cashless payment. This involves a special QR payment code for banking applications on smart phones. Even customers who do not own a smart phone with a banking application can use the QR code. The option is available to clients of Česká spořitelna, a.s. Customers who bank with this savings bank can use all ATMs of Česká spořitelna, a.s. for paying using the QR code. In 2019, customers made 7,929 payments using the QR code.



## CONTACT CENTRES

### The call centre

In 2019, PVK's customer service line handled 90,300 customer calls with a 91.4% service level. Enquiries tended to centre on drinking water supply. Customer service line operators also respond to customers' emails. In 2019, they handled 47,846 customer emails and sent 17,197 text messages. Besides handling customers' calls and emails, operators also help to promote service provision, register customers for the SMS INFO service, and offer email billing, insurance to cover emergency situations, and the activation of the customer portal, the *Moje voda* mobile application and other services.

The PVK call centre's organisation is in the hands of Solutions & Services, a.s. (the provider of ICT services within Veolia Group). In addition to its call centre management, Solutions & Services, a.s. has also taken over the reins of billing and debt recovery.

	2015	2016	2017	2018	2019
Number of handled calls	95,674	93,252	91,967	91,543	90,300
Service level	93.8%	93.4%	93.7%	95.1%	91.4%
Number of customer emails handled	37,625	44,573	43,458	40,873	47,846

### Customer service centre

The customer service centre in Dykova Street, in Prague's Vinohrady district, had 20,742 visiting customers who arrived to sort out everything to do with their contractual relationships (conclusion of and amendments to contracts, information about bills, etc.). There were 1,445 less of them than in 2018. Another 4,120 customers visited the centre to tackle their technical requirements, including technical documents.

At the customer service centre, customers can pay water and sewage bills and for water analyses, hydrants, etc., over the counter. Approximately CZK 34.25 million was received there.

### Customer portal and *Moje Voda* mobile application

In May 2017, PVK offered its customers a new, clear and user-friendly customer portal, and also a new mobile application for all customers and consumers. Via the portal or app, they can arrange certain requirements online, including changes in the payment settings, amendments to contracts, making online payments for water supply and sewage draining, and reporting water meter self-readings as at the required billing date. Customers also have an online overview of bills and water consumption, including the history. The option of making online payments via the portal or app is a highly superior service in the water industry. In 2019, 2,746 payments were made and CZK 13.55 million was paid via the portal.



In 2019 the portal was linked with Smart Metering, and the users therefore see their smart readings and their current water consumption on the portal and are able to set up alarms (temperature near the water meter, high consumption, and night-time consumption) that warn them of high water consumption such as a dripping tap or flowing toilet.

The mobile app is geared not only towards contract customers, but also towards consumers, and is available for download to Android and iOS user interfaces.

#### **Home assistance and refunds in case of water leaks for contract customers**

Beginning in 2015, PVK has arranged insurance cover for emergencies related to water leakages downstream of the water meter for its contract customers. The service is provided by UNITED ASSISTANCE, a.s., and is provided free of charge to the customers.

The assistance service is on hand round the clock. The assistance service crew visit the customer in case of an emergency and carry out two hours' technical work. Clients do not pay for the vehicle operation and the necessary work.

A PVK customer is entitled to make use of three such assistance services per supply point free of charge every year. Customers can call the assistance service at 212 812 212.

**In 2019, 2,974 PVK customers called this line, of whom over 530 because of a refund or assistance. On the whole, 294 assistance interventions were carried out and fully paid for by UNITED ASSISTANCE, a.s. The most frequent causes of emergencies included a ruptured rising pipe or a pipe right downstream of the water meter.**

Assistance services also include refunds for water leaks. This is partial compensation for any outlay on water supply caused by a water leak stemming from a demonstrable emergency, provided that the customer's share of the water leak is 10 m<sup>3</sup>, which is the minimum limit for refunds; the maximum water leak refund limit is CZK 15,000 per supply point per year.

#### **SMS INFO**

To date, 36,915 PVK customers have signed up for the SMS INFO service to receive text messages about incidents, water supply outages, the estimated downtime, etc. As such, registered customers receive, free of charge, important information about water via text messages transmitted to their handsets. In 2019, 23,570 text messages about incidents and outages were sent to the registered customers. A total of 929,724 text messages have been sent since the service was launched.

Number of contract customers	92,286
Number of customer contracts	115,288
Number of customers registered for SMS INFO	36,915
Number of calls answered by the contact centre	90,300
Number of justified complaints and claims	313

In 2019, PVK received and handled 269 complaints, but only 25% of them, i.e. 69, were justified. There were 677 claims, of which 36% (244) were upheld.

#### **Website**



The PVK website ([www.pvk.cz](http://www.pvk.cz)) has been one of the Company's main information channels. On average, it attracts about 55,000 visitors per month. The website has been optimised for the whole gamut of various devices (mobiles, notebooks, tablets, etc.), enabling customers to find the information they need anywhere, any time. News on incidents and water supply shutdowns generates some of the highest traffic. The people of Prague can find all the important information about water supply disruptions online here. In the "water incidents" section, they can find out about the incident site, the implications for water supply, the availability of substitute water sources and the estimated repair completion time. All of this, along with scheduled shutdowns, is also shown on Google Maps. This is the go-to place for Prague residents who need to know exactly where they can find emergency drinking water supplies. Another subject that is frequently looked up is the quality of water supply. In addition to complete monthly summaries of all water quality parameters, PVK's website offers overviews of certain indicators in supply zones. People can therefore find their street in the map and find the water hardness, the iron, nitrate and chlorine content in the water, and the water pH for this location. Customers can also use the website for making appointments at the customer service centre concerning contract and technical matters.

Those seeking information about the existence of utility networks can submit their request electronically. This service simplifies communication between the person making the request and PVK employees and shortens the time it takes to provide information on the existence of networks. The online request can be found on the PVK website. A person sending a request is emailed an automatically processed document, including a map plotting out the utility networks.

## RESPONSIBILITY

**Pražské vodovody a kanalizace seeks to maintain good relationships with all its suppliers, shareholders and customers. Being a stable and responsible company, it creates superior working conditions for its employees, which help to channel the largest possible amounts of energy and talent into achieving the shared corporate objectives and customer satisfaction. The Company's strategy incorporates adherence to an anti-corruption code of ethics, a code of conduct for managers, an environment and OHS code, PVK's internal standards, and the requirements arising from certification and related standards for quality, OHS, and energy and environmental management.**

An open social dialogue and cooperation with the trade unions and the team as a whole are essential factors for PVK. Collaboration and respect between Company management and the trade unions, relying on long-term cooperation with the Trade Union of Woodworking Industries and Forest and Water Management in the negotiation of the higher-level collective agreement applied for the Veolia CZ group, is crowned by the conclusion of a collective agreement every year.

### Human resources

At the end of 2019, 1,123 employees worked for PVK. The average full-time equivalent number of employees (FTE) in 2019 was 1,107. During the year, a total of 87 employees left and 145 joined. Turnover therefore stood at 7.9%, which is 0.7% less than in 2018.

The number of employees rose again, this time by 58 year-on-year. This increase was prompted, in particular, by developments associated with the rollout of new technology and services. Of the total number of employees, 826 were men (74%) and 297 were women (26%). The Company employed 17 part-timers (1.5%), 85 temporary staff (7.6%), 16 persons with disabilities (1.4%), and 65 pensionable staff (6.3%).

260 employees (23%) are degree holders; this constitutes a significant increase by 26 employees who are degree holders; 446 employees have secondary education (40%). The average employee age was 46, the same as in the previous year.

Despite an inflation of around 3%, average wages went up by 6% in 2019, which exceeds the long-term commitment to raise real wages, which therefore amount to 130% of the average wage in the Czech Republic.

Compared with the previous years, overtime work increased to 32,422 hours worked. This implies an average of 29 hours' overtime per employee per year.

### Employee benefits

In 2019, the Company spent **CZK 35 million, i.e. 4% of total personnel costs**, on social expenditure for employees (tax allowable and non-allowable). Of this amount, CZK 1.5 million was spent on the trade union organisation's activities, CZK 1.8 million was spent on sport and cultural events, and CZK 0.8 million on personal and professional milestones and anniversaries.

CZK 0.1 million was spent on social assistance and CZK 0.8 million on housing loans for employees.

**Personal pension plans and life assurance** are an important part of employee benefits and are used by 80% of employees. The employer's average monthly contribution to these policies amounted to CZK 1,400, with the Company contributing **almost CZK 13.5 million** in total.

The employees could utilise a number of other benefits such as **contributions to meals** (the meals card), a more advantageous employee rate for mobile phones for family members, etc.

Employees enjoy **extended** holiday leave **of up to six weeks**.

### Employee training

One of the Company's priorities is improving the skills and training of its employees. We have long focused on improving the skills and training our employees. A systematic approach to education brings a number of advantages and enhances employees' motivation and stability.

PVK's training costs totalled **CZK 9 million**. The largest share, 80%, of these expenses was spent on increasing professional qualifications, 15% was spent on mandatory training and training of special professions and 5% on improving employees' language proficiency.

Training for employees of PVK and the other companies in the Veolia Group in the Czech Republic is mainly provided by the Group's own company, **Institut environmentálních služeb, a.s.** (IES), with its broad-ranging courses and training programmes, many of which are accredited by the Ministry of Education.

## OCCUPATIONAL SAFETY

Occupational safety stands as one of the strategic elements established internationally for the entire Veolia Group, including PVK. The Company is committed to providing even better protection against occupational risks to its employees and improving safety at work. OHS ground rules contained in the Labour Code, applicable legislation and technical OHS standards are also conveyed by the internal Code of Occupational Safety. Above and beyond their mandatory training, all employees take a hands-on **first-aid course** once every two years.

Since January 2007, the Company has held an occupational health and safety management system certificate; in November 2019, the Company successfully retained all certificates for its integrated management system, including ČSN OHSAS 18001:2008, as part of its regular audit.

**Long-term OHS targets are to drive down accidents at work to a minimum and eliminate fatalities altogether.**

The Company seeks to reduce the number of occupational accidents through prevention. In 2019, it **registered seven minor occupational accidents.**

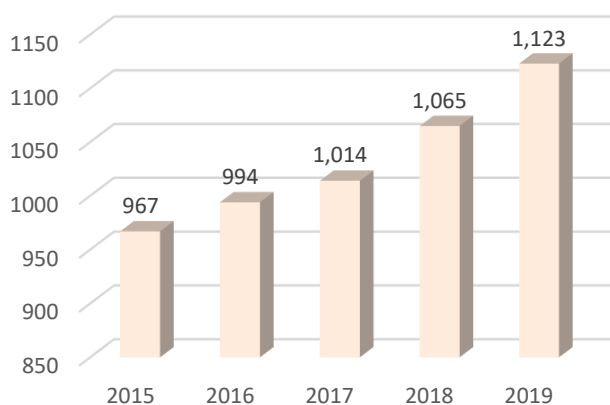
Every year in September, PVK joins the International Health and Safety at Work Week. In 2019, the slogan of the event was *Observing is Caring*, i.e. focus on safe behaviour and conduct.

#### Occupational medicine services

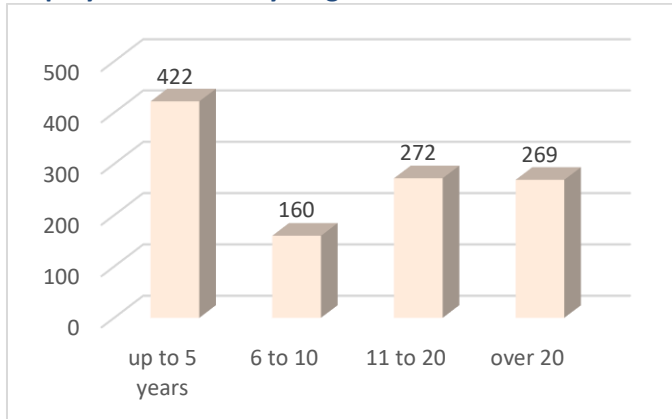
In 2019, the **staff sickness rate was maintained at a low level of 2.7%**. This was helped by the fact that PVK arranges for employees to undergo periodic medical examinations beyond the scope of mandatory checks. In cooperation with SALUBRA s.r.o., medical examinations were arranged for employees, including the vaccinations set out in the collective agreement and other statutory examinations. On the Hostivař premises, a general practitioner provides medical services to employees and their family members. Regular medical surveillance of workplaces and work performance was arranged to identify and assess the risk factors.

As part of preventive occupational medicine care, each employee received Benu pharmacy vouchers worth CZK 1,500 for health promoting products, in particular, vitamins and vitamin supplements, and vaccinations.

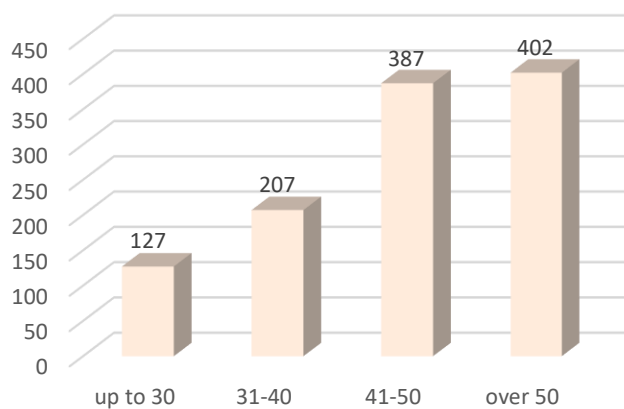
#### Number of employees by year



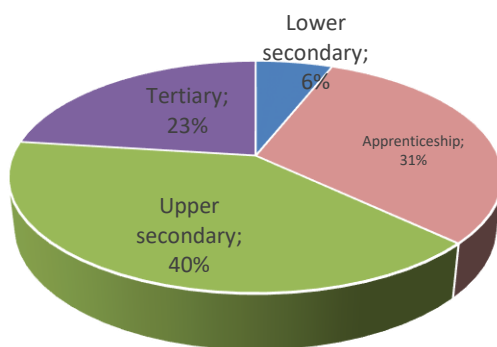
### Employee structure by length of service



### Employee structure by age



### Employment structure by level of education



## INTERNAL COMMUNICATIONS

As regards internal communications the Company also uses, besides meetings, additional communication tools such as intranet, emails, in-house magazines, posters and internal training programmes, thanks to which employees receive sufficient information necessary for their work. Various informal meetings such as social and sport events offer opportunities for feedback and informal discussions help to boost teamwork.

A popular communication channel is the **Pévékáčko in-house magazine**, which appears five times a year and carries information on projects and also interesting events in the Company's life. In 2019, the new shareholder, Pražská vodohospodářská společnost, also received space in the magazine. The **Naše Veolia** and **Planeta** magazines regularly report on the latest news within the Veolia Group.

The intranet, which is regularly updated, provides all operating, technical, financial and other data and reports to the employees.

**Social gatherings and sport events** have a long tradition at PVK and hundreds of employees attend them. These include the Sport Games, the Water 50 event, a badminton tournament, Káranský vodovodník, sport games for the elderly, etc. Several times a year, social gatherings, trips for employees and events for their children are organised; examples include a trip to southern Moravia, the St Nicolas children's event, and a Christmas meeting.

PVK employees also join **corporate volunteering** on days when the management allows them to spend their working time on helping people in need or the environment. In 2019, they joined the traditional events such as the Clean Up Czechia event and the Jizera Clean River event around Káraný.

## CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL PROTECTION

Preserving the position of a leading supplier of water services in the Czech Republic requires much more than doing our job well. An integral part of our work is keeping step with and anticipating the never ending evolution of the social and natural environment. We guide the public towards environmental protection through our own awareness-raising and educational programmes.

PVK's operation is associated with the environment by its very nature. We do not only want to use natural resources now but also want to preserve them for the coming generations. We therefore seek to be as considerate to nature as possible and environmental protection is high on our list of priorities in our sustainable development strategy.

A major contribution to environmental protection is, primarily, our core business, wastewater treatment, but PVK's other activities are also geared towards the environment, including its promotion of tap water and effort to reduce waste and mitigate the impact of the carbon footprint; we also focus on awareness-raising and education of chiefly the young generation. The biodiversity project represents our commitment to biodiversity promotion and recovery and draws the public's attention to care for the environment as an inseparable part of sustainable development.

In 2019, we supported a number of projects organised by the Municipality of Prague or the various Prague municipal districts. The events that PVK joined as a partner included, for example, the traditional Primátorky (Mayoralty) regatta, a water festival held in Praha 7, the *Water and Civilisation* exhibition at Kampa, the *Leafing through the Century* exhibition in Vrtbovská zahrada, the *Totality* educational project on the 30th anniversary of the Velvet Revolution, the Architecture Day, and a number of others.

The Company is also a major partner for the Water House on the Želivka; Prague schools visit the facility in large numbers and PVK uses it as a venue for its educational events.

### Education

In 2019, the **educational project for pupils of primary schools** continued successfully. Lectures on the water management process, combined with water experiments at the Prague Water Museum or

at schools, meet with a favourable response mainly on the part of the teachers, similarly as tours of the wastewater treatment plant in Horní Počernice - Čertousy. More than 100 school teams attend these lectures every year.

For 20 years, Klub vodních strážců (Water Guards Club), intended for children aged 6 to 15, has been enlightening children on issues concerning water and water management process, the same as the regularly updated website for children at [www.vodnistrazci.cz](http://www.vodnistrazci.cz).

The Company also **focuses its educational activities on the general public**. It organises awareness-raising campaigns in the printed press and on radio and television; their purpose is to improve information about PVK and its products, but we also seek to influence our customers' behaviour through campaigns such as What Shouldn't Go to Sewers and for drinking tap water and on its quality, etc. We also organise events in which the public participates directly; for example, PVK has opened a laboratory for customers where they can have samples of well water tested free of charge. The Horní Počernice – Čertousy WWTP is opened for the public on a regular basis. Every year, there is enormous interest in visiting the sewerage under the Old Town Hall, known as the Foreigners' Entrance. Almost 500 athletes participated in the third Káranský vodovodník, a sports and benefit event in Káraný when participants can visit the Káraný water treatment plant.

The public is also aware of the **Fresh Tap Water? Just Ask!** project, which promotes tap water drinking in restaurants, thereby helping to reduce plastics waste.

### Prague Water Museum

The public can learn something about the history of water management when they visit the **Prague Water Museum in the Podolí Waterworks**. Every year, the museum's collections are extended to include new collectible items; 2019 saw, among other things, the challenging transport and installation of a pumping machine driven by a water wheel, manufactured by J. Gatter, Kuřivody, in 1902.

An Open Day is held in the spring on the occasion of the World Water Day; the Museum also opened to the public as part of the Prague Towers and Spires event and the Architecture Days.

The Museum attracted 12,211 visitors in 2019, 677 more than in 2018. Demand for guided tours, not only on the part of schools but also various institutions, companies and civic associations, both Czech and foreign, such as those from Norway, Germany, China and South Korea, is increasing. In 2019, the Museum was again involved in experiential travel, attracting 616 visitors to the Museum and the Podolí Waterworks.

### Conservation of biodiversity at PVK complexes

PVK has developed a biodiversity project aimed at bringing nature back to cities. Water management facilities in Prague include almost one million square metres of green areas scattered throughout the city, which require a special level of security; this, however, also allows a special way of managing them. Unlike the city's parks, for example haymaking can be adjusted to butterfly hatching, or it can be postponed due to drought. In the past few years PVK has installed insect hotels and nest boxes at more than 20 points on its water management sites in Prague. In cooperation with the Czech Union for Nature Conservation it soft landscaped the area above the Flora water reservoir and it also sowed a flowery meadow at the Ovčín water reservoir; additional water management sites are being prepared for sowing flower meadows with a variety of species. The Company has carried out measures on the Káraný site to enhance biodiversity; for example, it has set up permanent biomass stockpiles and built stone walls and mounted a nest box for kestrel. Flowery meadows have also been sown on some other sites: in Prosek, Modřany Sever II, Zelená Liška, and Kvestorská. In 2019, the biodiversity modifications concerned the Ovčín, Libeň Island and Hrdlořezy premises, where we

installed new nest boxes and heaped piles of rock, which provide shelter to animals, and also planted new bushes and trees.

### **Enough of Plastics**

In early 2019, PVK joined a Ministry of the Environment campaign called *Dost bylo plastu* (Enough of Plastics), the purpose of which is to eliminate the production of, primarily, single-use plastic packaging. Our Company's commitment was to provide for the drinking regimen at PVK other than using PET bottles, serve carafes with tap water during meetings, adjust coffee machines to the use of people's own cups, sort all waste consistently, use all office supplies including paper responsibly, expand awareness, and prevent wasting. The new drinking regimen was put in place during the year. We have equipped almost 40 workplaces with high-quality dispensers of tap water, soda bars. At events for the public and internal events, we replaced single-use plastic cups with deposit-refund cups; we focused on environmental promotional items, and also used tap water at the Company's sport events. We have achieved the project objectives, and so have significantly reduced PVK's environmental footprint.

### **Misting**

We also respond to the climate change in Prague, which can be felt in the rising average daily temperature, the city's heat island effect, and the heat waves there. All these symptoms have negative health effects on Prague residents and visitors. To mitigate these negative impacts PVK and PVS have launched a misting project, i.e. outdoor misting installations designed in the form of straws for drinking, the principle of which is the artificial production of very small water droplets that can evaporate before they fall down on any surface, which helps to cool down the air. In the pilot project we installed the "straws" at ten points in the centre of Prague in 2019.

We also use a portable misting device located right on a water wagon to reduce temperature during events in summer.

### **Sludge gas use and upgrade to CNG**

Together with PVS, we are intensively preparing a project for the alternative use of sludge gas at the CWWTP. The project details the options for using the sludge gas, biogas, produced in the treatment line. It is produced in closed digestion tanks, collected, and currently used for combined heat and power generation in cogeneration units, and for separate heat production in boilers.

Upgrading this gas to biomethane (biogas upgraded to a methane content of at least 95%, which is the quality of gas in the gas network or the quality of CNG) and its further use is a highly effective method of energy recovery, because it combines water and waste management issues with energy and transport issues in a unique way. It is another step on Prague's path to an environmentally responsible city, thereby complementing some other projects for renewable energy sources.

### **Waste production**

In 2019, PVK produced 186,000 tonnes of waste. 49% of this amount was made up of sludge from the treatment of municipal wastewater; approximately 46% was construction site spoil produced in repair and incidents in the Prague water supply network, and only about 0.01% was hazardous waste. The share of hazardous waste at the Company has long been negligible.

PVK is very particular about environmentally-friendly waste disposal and cooperates, as much as possible, with entities that prefer waste recovery to waste disposal.

Construction site waste, coming from repairs of incidents in the Prague water supply network, is transferred to our contract partners for reuse, for example, in the production of recycled materials for construction, which are used in the construction industry or in the gradual remediation of the



areas affected by gravel-sand quarrying. In 2019, construction site waste totalled 86,000 tonnes and the cooperating entities processed 92% of that amount in their recycling installations, while 8% was used for landscape remediation.

Sludge from municipal wastewater treatment is applied to farmland while meeting all the principles and requirements of the applicable legislation. Sanitised sludge is a resource rich in organic matter, basic nutrients, and trace elements for the exhausted soil in the Czech Republic, helping to improve its fertility. For the cooperating farming businesses, sludge fills the gap left by the lower output of farm fertilisers from animal production; the farming businesses also have lower requirements for artificial fertilisers.

In 2019, PVK cooperated with 31 farm businesses in three Regions (Prague, the Central Bohemian region, and the Ústecký Region) and 9 Districts (Louny, Litoměřice, Mělník, Kladno, Beroun, Prague-East, Prague-West, Nymburk, and Kolín) and several composting businesses. Wastewater treatment plants produced 90,800 tonnes of sludge. Farm businesses used around 89% of this amount, while 11% was used by composting businesses (Prague-East, Kutná Hora).

### **Waste processing**

PVK is not only a producer of waste, but also operates a facility to process selected types of biodegradable waste (BDW). It offers the city and businesses a transparent service where their waste is handled and passed on for reuse, thereby contributing to the circular economy. In 2019, CWWTP processed some 13,500 tonnes; compared with the preceding year, this is a significant increase, which is attributable to the lifting of the restrictive limit on BDW processing and returning to the normal operating condition of the CWWTP. Of this amount, CWWTP received some 7,000 tonnes of liquid grease waste, which therefore did not reach the Prague sewerage network in which it would have caused problems.

PVK's unblocking service also sends its own crews to collect this type of waste from the grease traps of restaurants and other catering facilities. In 2019, this mobile collection brought PVK about 765 tonnes of grease waste from 145 partners.

### **Carbon footprint**

Carbon footprint is a metric measure that shows the environmental impacts produced by the Company's activities, in particular as regards the climate change. PVK has been evaluating the impacts of its activities through the carbon footprint for almost ten years.

In drinking water production and distribution, the consumption of electrical energy and chemicals has the heaviest influence on the carbon footprint. In wastewater draining and treatment, the production of waste, in particular sewage plant sludge is the most important factor. Thus, the carbon footprint measures the quantity of the greenhouse gases that match the company's operation; it is expressed in CO<sub>2</sub> equivalent. The produced electrical energy and heat then reduce the overall carbon footprint.

In 2019, direct and indirect greenhouse gas emissions related to drinking water production and distribution totalled **22,000 t CO<sub>2</sub> eq.** The chart clearly shows that PVK is successful in maintaining its production of greenhouse gases continuously at a low level, despite the fact that 2019 was marked by a varying quality of water at sources and the intermediary process stages.

Among Veolia Group subsidiaries, PVK has one of the lowest levels of greenhouse gas production related to the quantity of water distributed through the network.



The CWWTP has the heaviest impacts as regards greenhouse gas production. September 2018 saw the beginning of the trial operation of the New Water Line, which features the latest equipment to treat approximately one half of the wastewater flowing into the whole treatment plant. It is quite natural that the completely new operation was reflected in the consumption of energy and chemicals and in overall sludge production. And so the current operation cannot be compared with the previous years in terms of greenhouse gas production either.

The New Water Line of the CWWTP has been designed as fully covered and with chemical and biological treatment of the process air released from the treatment plant into the ambient air; in terms of direct emissions, it is therefore very thrifty. However, the increased removal of inflowing contamination and the generally challenging nature of the structure, given its unusual siting within the centre of the city and on a limited area, are also associated with higher consumption of electrical energy and chemicals, which influence indirect greenhouse gas emissions the most. It will only be possible to carry out a comprehensive evaluation of the carbon footprint in the new and old water lines once the operation has settled in the routine mode.

#### **Total direct and indirect greenhouse gas emissions (power and heat) in drinking water production and distribution (t CO<sub>2</sub> eq)**



#### **COOPERATION WITH THE VEOLIA FOUNDATION**

**Pražské vodovody a kanalizace has been working with the Veolia Foundation since it was established. Every year, PVK contributes financially to projects organised in Prague and intended for PVK employees. The Veolia Foundation's most notable programmes include:**

##### **MiNiGrants**

PVK employees were able to join Veolia Foundation's grant programme for the 12th time; the programme helps them to receive funds in support of their volunteering in their spare time.

In 2019, CZK 750,000 was distributed to PVK employees for 29 volunteer projects such as support for foster care, voluntary firemen, disabled people to improve the quality of their life or help them to engage in sports, awareness-raising in environmental protection, a project for reducing single-use plastics, and the revitalisation of a fishpond.

### Keep Smiling

Under the Keep Smiling – Active for Life programme, geared towards improving the quality of life for elderly citizens, the Veolia Foundation used PVK funds to support six projects of Prague-based non-profit organisations.

These included the already traditional Seniors Sports Games, organised for ten years for people who want to engage in physical exercise, in four age categories from 60+. The Stáří s aktivní tváří – JEDEME VEN! (Old Age with an Active Face – We Go Out!) project focuses on the 80+ category. Another project was the Seniors Write Wikipedia educational programme, the objective of which is to involve senior citizens in the writing of Wikipedia, thereby creating a platform on which course participants can convey their knowledge to the younger generations.

### Water for Africa

Water for Africa is a project that helps to build and repair water resources in Ethiopia.

In 2019, people who wanted to help could buy crystal glass water carafes with wooden lids, light glass bottles, or funny socks with a meerkat design. In this tenth year of the project, the beneficial sale raised CZK 924,000. The Veolia Foundation handed over the symbolical cheque to Člověk v tísni, o.p.s. The funds will be used for improving access to safe drinking water and sanitation. This specifically involves the repair of water sources and their protection against contamination, the rollout of a water supply network, and the training of water authorities' staff in Oromia, Ethiopia.

### Let's Return Water to Nature

In cooperation with the Czech Union for Nature Conservation (ČSOP) the programme was launched in the autumn of 2018 and continued in 2019, when ČSOP was given more than CZK 450,000 for buying wetlands. The Let's Return Water to Nature project, which works on the principle of public fundraising, helps to revive the original purposes of valuable natural sites in the Czech Republic, mainly wetlands. Through this activity, the Foundation has expanded its long-standing cooperation with Czech nature conservationists.

## INNOVATION

**PVK has long focused on innovation and the development of new environmentally friendly technologies, thereby contributing to the capital city's sustainable development. PVK centres its activities on smart solutions, energy savings, digitalisation and automation, through which it improves its customer services and rationalises company management.**

### SWiM Mobile

SWiM integrates all areas of water management into a single whole. The new SWiM Mobile generation from 2019 digitalises field activities and helps all employees to use the integrated information. The system helps to monitor the condition of the water infrastructure in the field – the settings of the valve hubs and pumping stations, the condition of water reservoirs, the flows in the network at any given moment, and water consumption.

The employees identify installations using QR codes. In augmented reality, they have a complete overview of the location and condition of all installations in the area in questions. Job specifications are transmitted directly to the field workers' tablets and smart phones. Each of them therefore knows his tasks and the central control room can plan and manage everything effectively. SWiM Mobile automatically plans, monitors, and then evaluates equipment maintenance. The entire process is on-line and therefore significantly faster.

The system supports priority connection to fire and health services and to the military, and is interconnected with Prague's crisis management centre. The system now has a new section dedicated to OHS. Field workers receive information on water quality clearly, on the GIS basis. This helps, for example, to monitor changes in water quality at a certain place or in cases of water network repairs, or to find and use the nearest PVK vehicle.

### **Bypass can ensure regular water supply during repairs and outages**

Instead of interrupting water supply for thousands of customers, delivering substitute supply at a cost of tens of thousands of crowns, and emptying and flushing the water supply pipe, we use interim bypasses in the case of some incidents or outages, and the incident therefore has no impact on regular drinking water supply.

For these purposes we have specially adjusted stainless-steel hydrant standpipes and welded polyethylene connecting pipes. At present, we have two such bypass sets, which we can install in two hours from receiving the request. A reducing valve makes it possible for us to use the pressure zones with a higher pressure for supplying zones with a lower pressure, which has not been possible up to now.

### **Cooperation in grant-funded projects**

In 2019, PVK continued cooperating with partners in the academic and research sphere in grant-funded projects. We continued with five existing projects centred on the protection of drinking water sources in drought periods, on the reusability of 'grey water' from households, on the recycling of wastewater from municipal wastewater treatment plants, and on the optimisation of the sludge system. In 2019, two new projects were supported; they are dedicated to the hot issue of micropollutants in water and their objective is to design equipment serviceable in field conditions, with a view to effective reductions in the concentration of micropollutants in water.

An important aspect of grant-funded projects is testing the findings in practice. In 2019, we therefore operated models for testing the process of stabilised sludge post-aeration and the recycling of treated wastewater. The objective is to gather findings supporting the use of treated wastewater for purposes such as the watering of green urban areas or the cleaning of urban areas.

### **Refurbishment of water supply and sewerage installations**

PVK works with PVS in the refurbishment of water installations. In 2019, the refurbishment of 12 granulated active carbon filters was started in the **Podolí water treatment plant**. Coarse racks on the Veslařský Island and fine racks at the raw water pumping station were refurbished. The gas-fired boiler room and the transformers of the old machine room were retrofitted.

In the **Káraný water treatment plant**, the Benátky pumping station was retrofitted, the Zeleneč and Dřevčice intake equipment was retrofitted, and the old feeding pipeline was refurbished; it is one of the two backbone pipelines bringing all abstracted water from the spring area to the Káraný treatment plant. The new pipeline will be assembled from 1,200 mm socket pipes of ductile cast iron. A section of the route is located deep under the surface, and construction is therefore challenging.

Major modifications were also carried out on pumping stations and drinking water reservoirs.

In the structure housing the inlet into the Mazanka water reservoir, the small hydroelectric power station was completely overhauled, including the replacement of piping and the control valves for filling the tank from both the Ládví I and the Flora reservoirs. The outdoor lighting of the Vidoule pumping station and water tank area was completely refurbished, when the original sodium lamps were replaced with energy saving LED fixtures.

At the Hrdlořezy water reservoir, the ceiling structure was replaced and the walls, columns and bottom of the accumulation chamber were rehabilitated, and the civil parts of both of the valve chambers was refurbished completely, including the building of new safe access to the accumulation chambers. Subsequently the piping, valves and all electrical wiring were replaced.

At the Uhřetěves – Dubeč **BWWTP**, a new chemicals system was installed for coagulant dosing, and also a new station for feeding an external substrate was installed to improve the efficiency of the denitrification process. In 2019, the refurbishment of the Radiová sewage pumping station was completed; it was equipped with a pair of compact pumping stations featuring solid substance separation. At the Kbely BWWTP, exchangers were installed in air outlets from blowers; waste heat is used for service water heating there.

#### **Measuring wastewater at the main pumping station of the CWWTP**

By taking measurements at the outlet from the overflow of the main pumping station, PVK staff proved inaccuracies in the determination of the wastewater volume. For new measurements, they used three continuous flow meters placed in the outlet structure, thereby improving the accuracy of the wastewater measurements.

#### **Rain gauging**

In 2019, PVK cooperated with ČVUT Prague in the development of a system providing on-line data on rainfall intensity, focusing on the hydrology of urban agglomerations. The precipitation data is obtained from the attenuation of signals in mobile operators' telecom networks. This information features a high resolution in time and space. In the project, we envisage using some 500 microwave links in Prague from T-Mobile ČR's telecom network. We adjust the rainfall intensity data from these links by the available ground measurements from Prague's stationary rain gauging network, which has 25 rain gauging sites. The new system will measure the distribution of rainfall with a greater accuracy and greater resolution, which will help to improve the accuracy of the mathematical models of the sewerage network.

#### **Automatic removal of turbidity from water when sampling drinking water**

PVK has developed a device for the automatic blow down of the pipe when drinking water is sampled from a reservoir. The device automatically blows down the pipe and then sets the water flow value suitable for sampling. After sampling, the water inlet is closed. We operate the device via a mobile application that can remotely prepare the sampling point for sample taking well in advance, and so the operator does not waste time by waiting for the blow down. The device therefore helps to spare a large quantity of water that would have unnecessarily flowed into the drain in the original situation. We receive information about the quantity of consumed water through central energy management, and we measure the water flow by an electronic meter with wireless transmission of measured data.

#### **IT development**

Intensive development of IT used at PVK continued in 2019; the objectives include more effective data processing, making work easier for our employees, and optimising and accelerating processes in our Company. We seek solutions that will improve information provision to customers and simplify the meeting of their requirements. PVK continued and further extended its cooperation with Solutions and Services, a.s., which provides PVK with most information technology services. In 2019, migration to Windows 10 was completed. PVK's data network is being continuously optimised and reinforced due to the increasing quantities of the data transmitted and processed.

With a view to simplifying and rationalising mutual cooperation, a project was launched for the joint integration of PVK's and PVS's IT systems, primarily in respect of the technical information system, which is part of ERP in the Helios Green system.

Last year great attention was devoted to mobile technologies with a view to streamlining the working procedures through ensuring on-line availability of the required information for the key personnel directly in the field and the ability to respond immediately to various situations that can emerge. In this respect, the main project is SWiM Mobile, which further expands the functionalities of the SWiM operating control system. This solution includes several integrated modules: EMA (ERP mobile client through Helios Green), GEOM Smart (mobile GIS), TDC SCADA (viewing PVK's SCADA), SWiM Safely (for managing OHS risks), and First Aid (a Red Cross application).

We also focused on information system security. For data security, Security Information and Event Management was put into operation, and the Service Desk program was extended to include the category of security incidents and related solutions. We also launched a project to optimise the allocation, recording, and checking of access rights primarily to the central ERP system.

In addition to the above agendas, last year we continued to extend the functionalities of the central ERP in the Helios Green system (HeG). In this respect, a major project was integrating the energy control system into the HeG structures and its integration with the collection and subsequent evaluation of data, including planning. In personnel management, we completed a system for employee management, broadened the functionalities of the technical information system and, equally importantly, enhanced integration with the other systems (CIS, GIS, LABSYSTÉM, GIST Reporting, etc.).

In respect of the Customer Information System (CIS), we focused on implementing a system for remote reading of water meters (SMART Metering) and on the processing and evaluation of this data. At the same time, the customer account and mobile application were extended to include the option of on-line monitoring of water consumption, including warnings of unusual situations, which further enhances the information and communication comfort for customers.

A long-term IT project is the development of a central data warehouse and its reporting layer that helps to concentrate important data from all areas of the company's operation in a single place, including the interconnection of the data, and the generation of output reports for the purposes of company management at all levels. It also makes possible comprehensive automated reporting to the owners, the State, institutions, and other external entities.

## **INSTITUT ENVIROMENTÁLNÍCH SLUŽEB (IES)**

### **IES shareholder structure:**

Campus Veolia France	40%
Pražské vodovody a kanalizace, a.s.	30%
Veolia Energie Česká republika, a.s.	30%

### **IES highlights for 2019**

Sales: CZK 37.8 million

Number of employees: 12

Number of educational events held: 1,165

Number of training sessions: 7,787

Number of training hours: 195,791

Number of lessons (of 60 minutes each): 31,095

Number of participants in educational events: 17,352

Number of graduates of e-learning courses through IES eCampus: 25,646

**IES's very positive result in 2019 is attributable to its long-term and proven corporate strategy of sustainable development, regular preparation of new attractive projects, frequent innovations, its experienced team's commitment, close cooperation with customers, and consistent cost control. In 2019, sales increased by 6.55% compared with 2018, and profits were quadrupled.**

The number of training hours went up by almost 26%, the number of participants in educational events rose by 23%, and the number of training sessions increased by 25%. A total of 4,302 employees of Veolia companies in the Czech Republic and Slovakia and 5,463 non-Veolia employees participated in the courses that are mandatory under the law, which IES organised in 2019.

IES responded flexibly to the training needs of each company in the Veolia Group. For example, 241 PVK employees went through training in underground work and in work over open spaces without protection, and 101 PVK employees took a course required for improving drivers' professional competence under Act No 247/2000 as amended in Act No 374/2007. In 2019, basic and advanced training related to the implementation of Google Apps also continued, and was attended by a total of 47 employees.

Intensive utilisation of IES's eCampus educational portal continued in 2019, resulting in 25,646 people completing 93 different e-learning courses. At PVK, these included courses in OHS, Compliance, The Code of Ethics, GDPR – Personal Data Protection, The Basics of Hygiene, The Code of Conduct for Managers, Induction Training, Prevention of Cancer, The Anti-corruption Code of Ethics, Rational Diet, Introduction to Cybercrime, Training Concerning Professional Competence in Electrical Engineering, Drivers' Training and Always Safe, passed by 4,659 employees.

IES continued in the systematic training of Veolia Group staff members responsible for security, and organised a three-day course under the Veolia Security Academy long-term project in cooperation with Israeli experts; the course was attended by 29 specialists.

Since 2003, a project of practical training in first aid has been under way, with ten human lives saved thanks to this; it is also attended by PVK employees on a regular basis.

In May 2019 IES opened, for the needs of The Water Supply and Sewerage Association of the Czech Republic (SOVAK) and Veolia Group itself, another course of the innovated Water and Sewage Network Operator study programme. IES was also successful in arranging the continuation of a project running since 2007, a bachelor's course in water management at Moravská vysoká škola Olomouc [Moravian College Olomouc]. Ten students joined the first year of the Economics and Management programme.

In 2019, IES continued in the tradition of events as part of the International Women's Day and organised a one-day Spring Meeting of Lady Managers of Veolia Group. Ninety lady managers attended this interesting event packed with an extensive programme. IES also helped to organise several major international events such as VECTOR Training, an international event for financial managers, and Veolia Group's Social Dialogue Day.

Having signed the Memorandum of Cooperation between the City of Kladno, Středočeské vodárny, a.s., IES, and Veolia Česká republika, a.s., IES has joined the project for the construction of a new Veolia Campus in Kladno.