

INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

Frederico Fernandes
CEO





Porto.

:: City Main Figures.



237 591

Population
(2011)

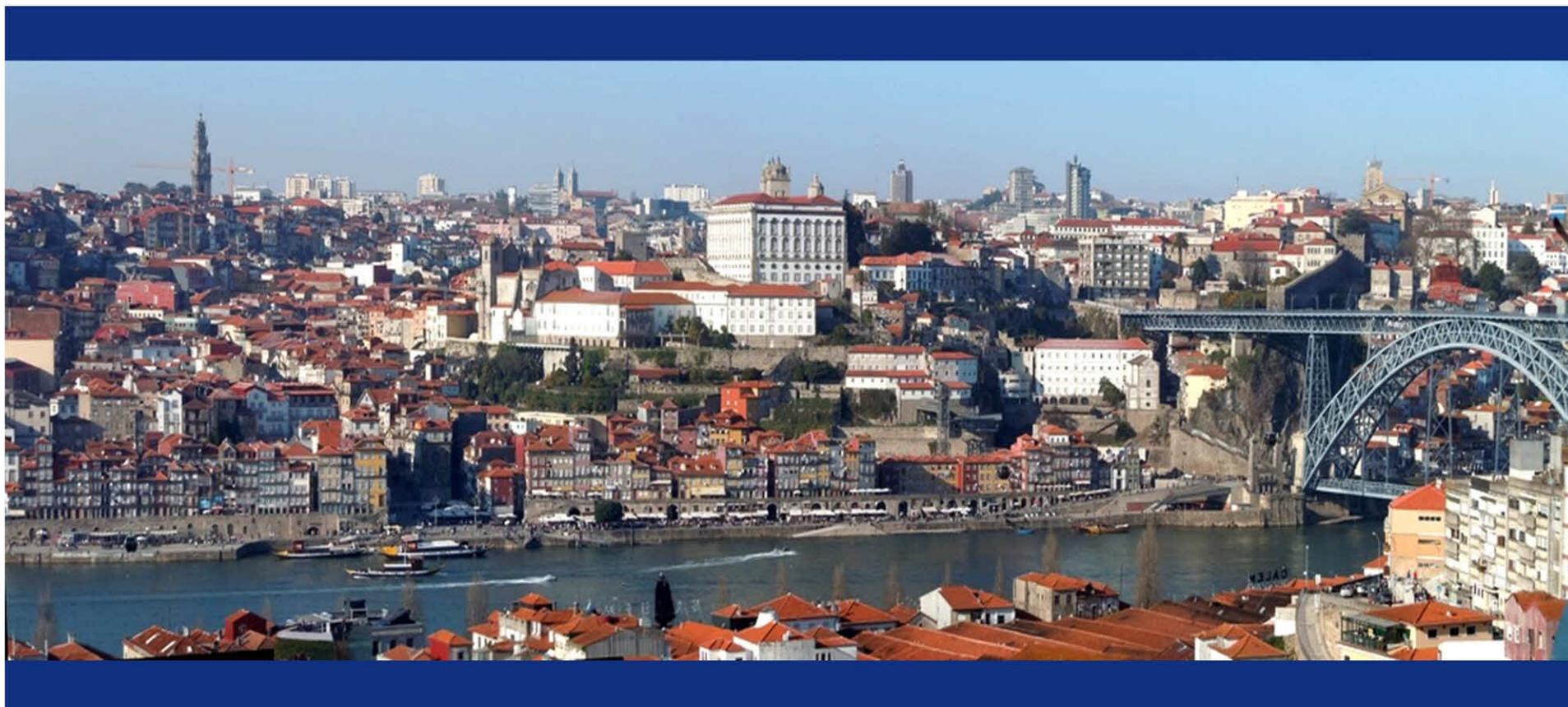
- **2nd Biggest City in Portugal**
- **41,42 km²**
- **The historic Centre is listed as UNESCO World Heritage**
- **One of the oldest in Europe**
- **Best European Destination in 2012, 2014 and 2017**



INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

Porto.

:: A City Shaped by Water.



Águas do Porto.

:: Mission, Vision and Values.



Mission

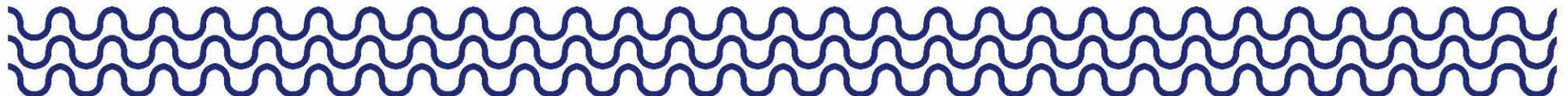
Ensuring a complete and effective management of urban water cycle, creating economic and social value, client-focused, developing good environmental and management practices, and internal motivation.

Vision

Be a benchmark company with international recognition in the management of urban water cycle.

Values

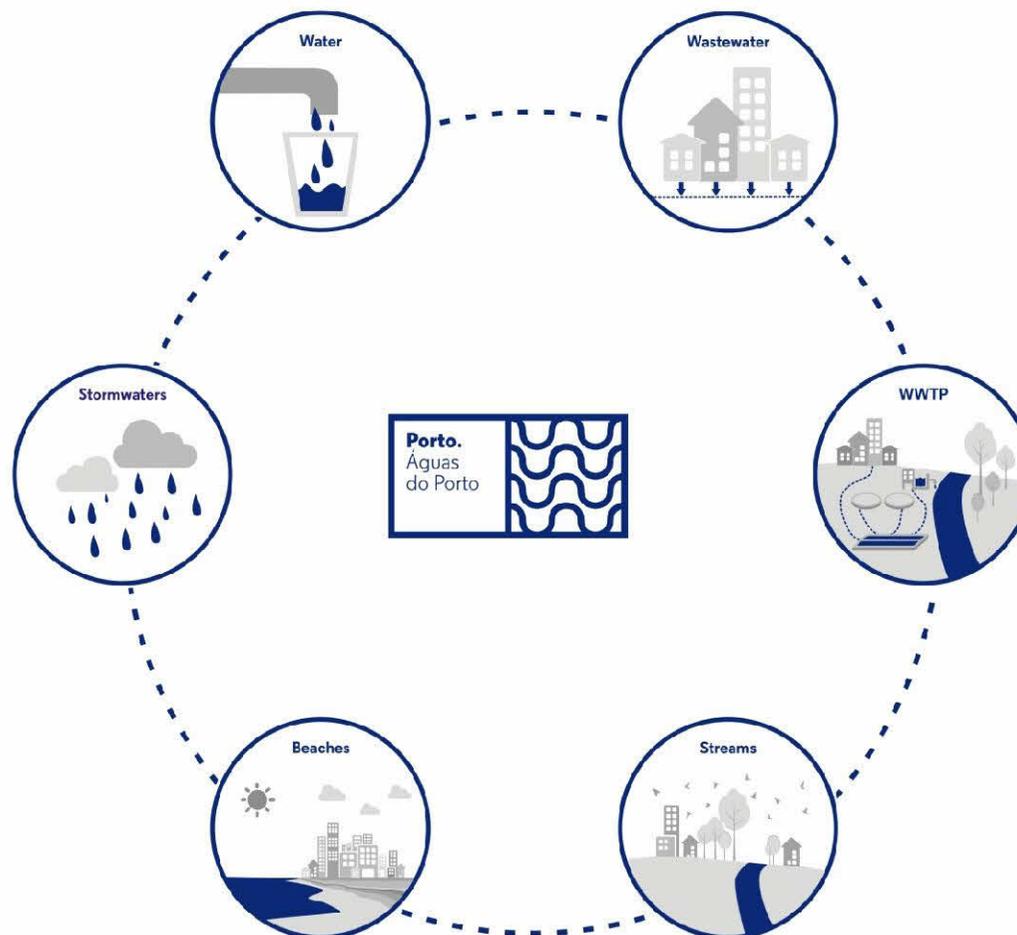
- _ Sense of public service
- _ Fairness
- _ Sustainability
- _ Transparency
- _ Confidence
- _ Innovation
- _ Excellence



Águas do Porto.



:: Integrated and Sustainable Management of Urban Water Cycle.





Águas do Porto.

:: Main Figures 2016.



153.821

Customers



15,6€

Average Bill for
a standard family



458

Number of
employees



99,7%

Excellent Water
Quality



14,9 M€

EBITDA



18,6%

Non revenue
water



799 km

Adductors and
Distribution
Pipelines



555 km

Sewers



2

WWTP
(tertiary
treatment)



100%

Fulfillment of
discharge criteria



660 km

Storm water
infrastructure



66 km

Watercourses
+ 9 km
Douro River



8

Number of
Blue Flag
Beaches



32.253

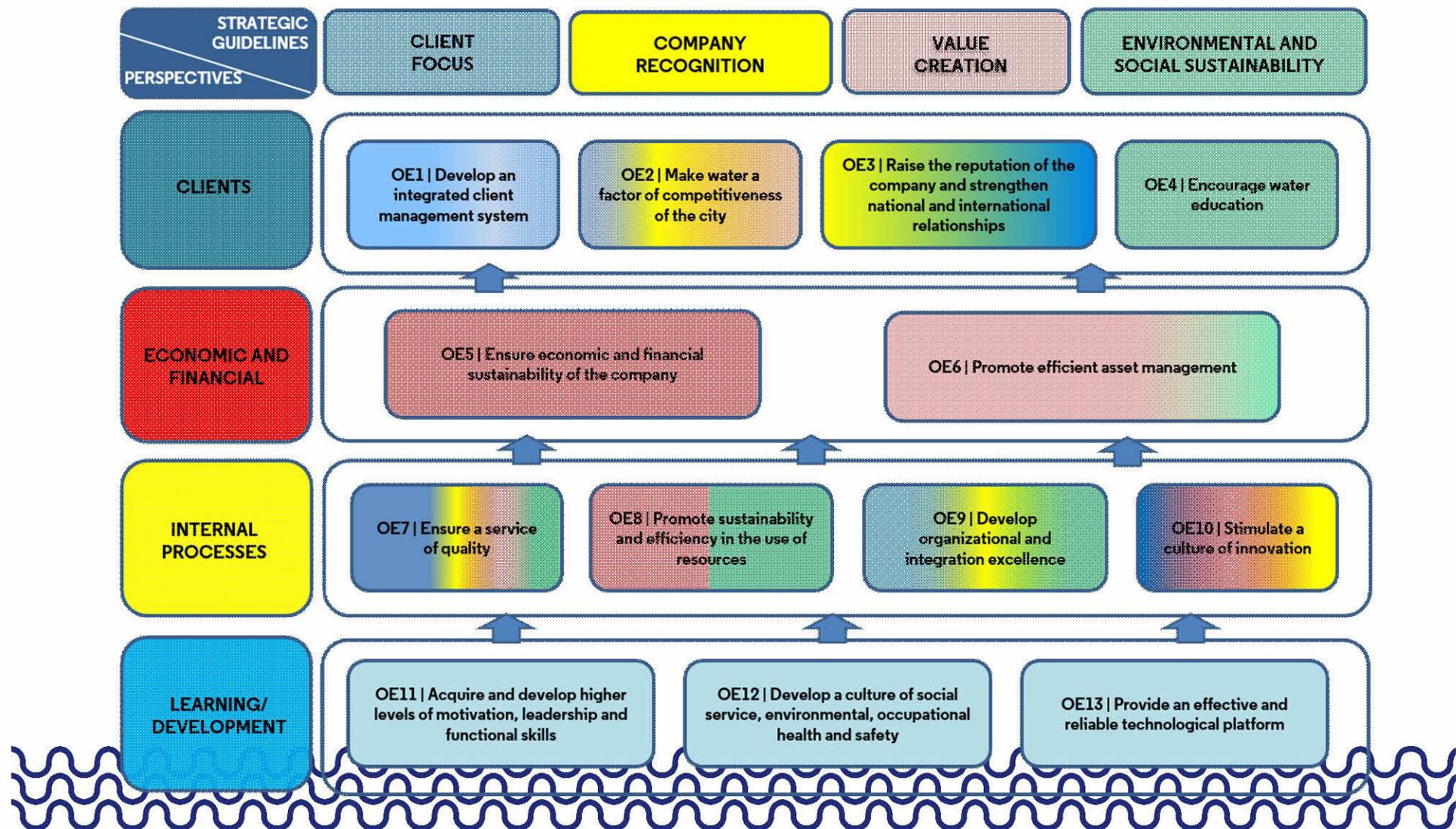
Number of
Visitors at Water
House





Águas do Porto.

:: Strategic Map.

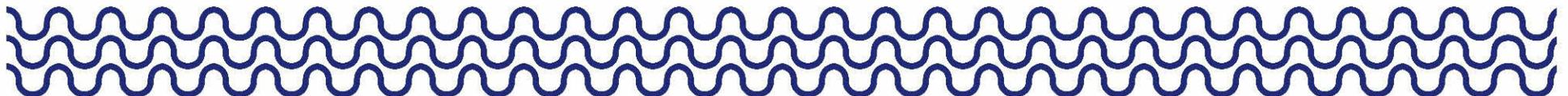


Águas do Porto.

:: Principles of Management.



- » **Clients focus** increasing consumption of drinking water;
- » Creating **shareholder value** without increasing tariffs;
- » Full management of the **urban water cycle**;
- » New techniques and **management skills**, with a clear commitment to **new technologies** (reduce support functions without decrease the number of hours/worker on the street);
- » Creation of **clear cost and revenue centre**, including the responsibilities that currently have no direct revenues (delegated management contract + rate or tariff);
- » Strong **commitment to planning activity**;
- » Definition of a **strategic plan** and **management control** mechanism.



Águas do Porto.

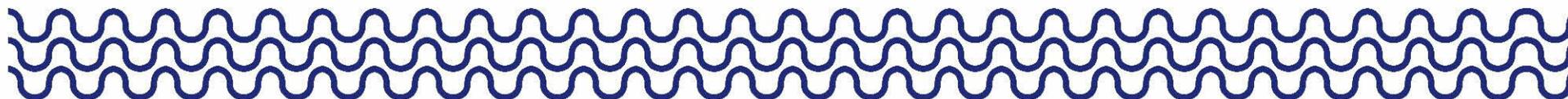
:: Main Projects.



» **Porto Water Cycle Strategic Management Plan:** Definition of strategic and programmatic guidelines for integrated and comprehensive management of the urban water cycle in the period 2015-2030.

» **Water Security Plan:** Implementation of an assessment and risk management methodology, as well as good operation practices of water distribution system;

» **Asset Management Plan:** Developing a strategy for maintenance and rehabilitation of water supply, sanitation and stormwater infrastructures, in the perspective of strategic, tactical and operational planning;

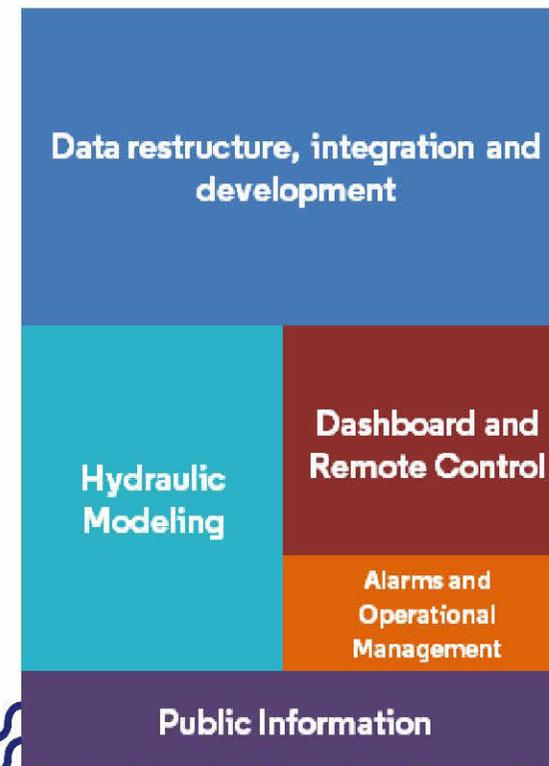
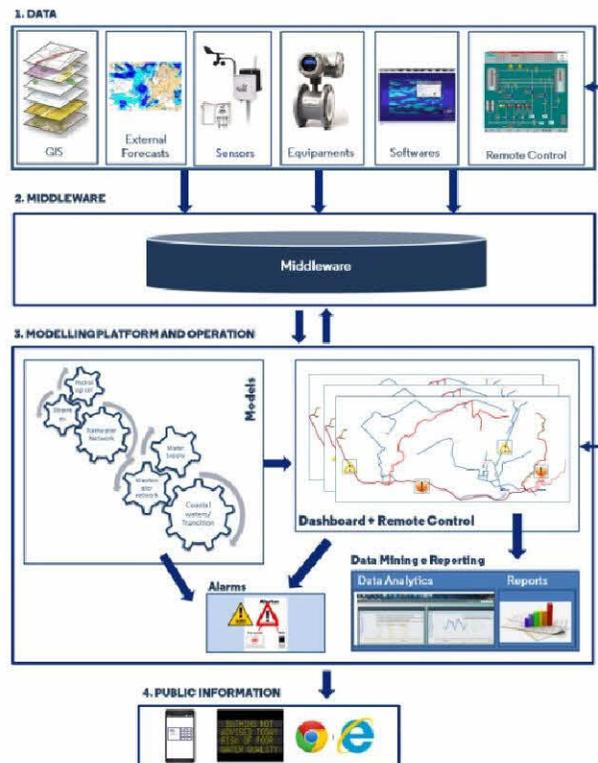


Águas do Porto.

:: Technological Platform of Porto Urban Water Cycle.



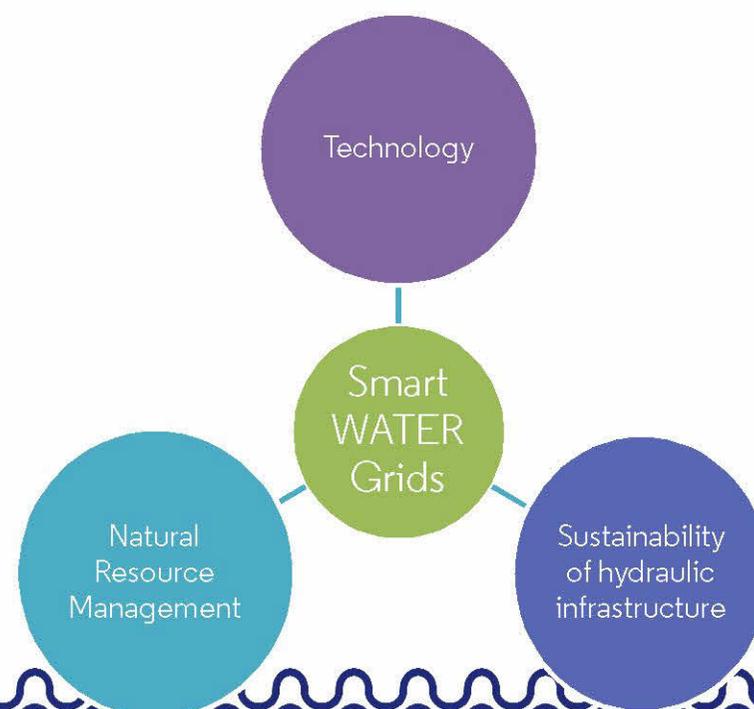
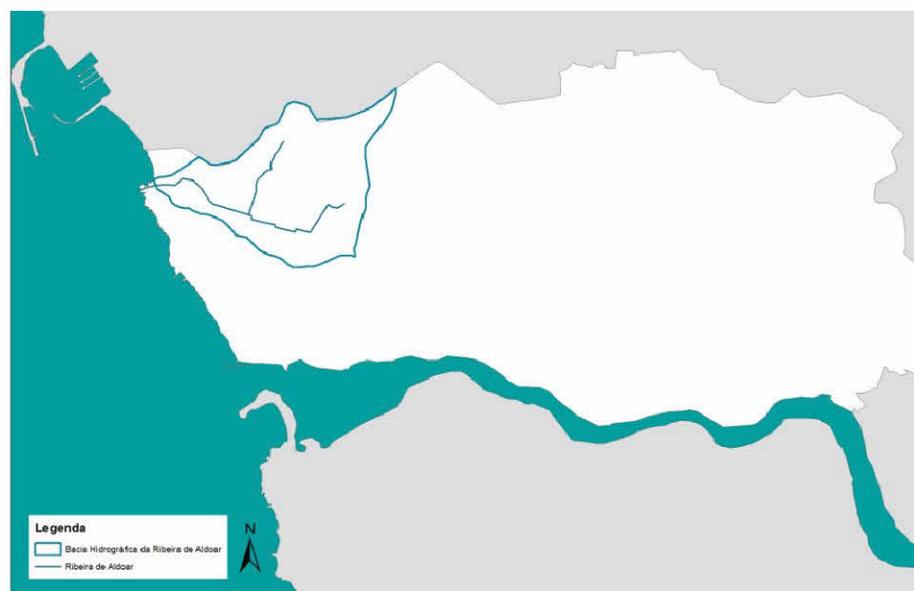
» Consists on a Platform that allows monitoring and control system of Águas do Porto networks (water supply, drainage of domestic wastewater and storm water, rivers/streams and beaches) and remote information in real time, based on measured data (sensors, remote sensing) and modelled data.



Águas do Porto.

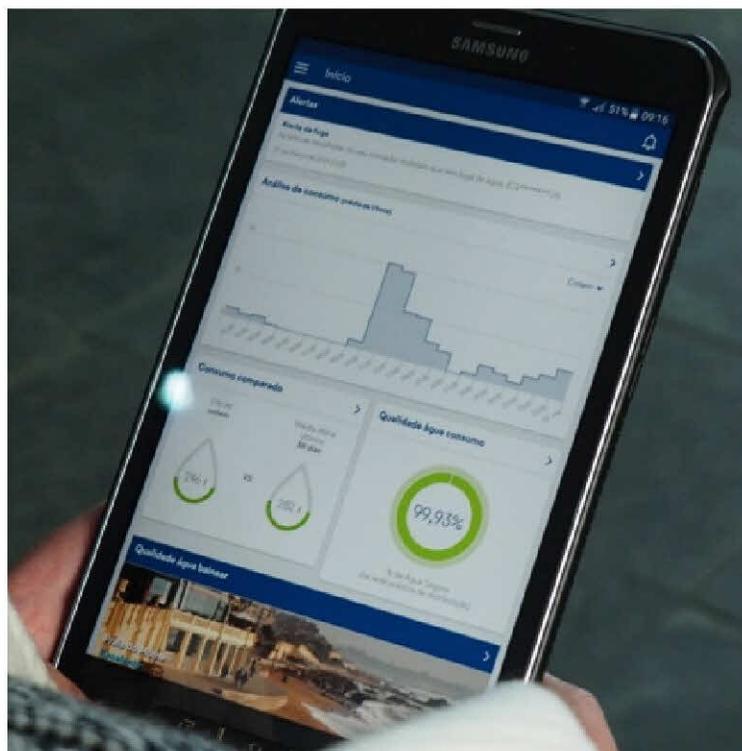
:: Aldoar Smart Water Grid.

» Monitoring in real time (through sensors, flow and quality meters) the entire watershed of Aldoar Stream, in order to ensure the Blue Flag Award to the Castelo do Queijo bathing area. The quality of its bathing waters is affected by the water quality of Aldoar Stream, as well as by other streams and/or polluted storm water collectors from the neighboring municipality.



Águas do Porto.

:: App Mobile. “Feel your Water”.

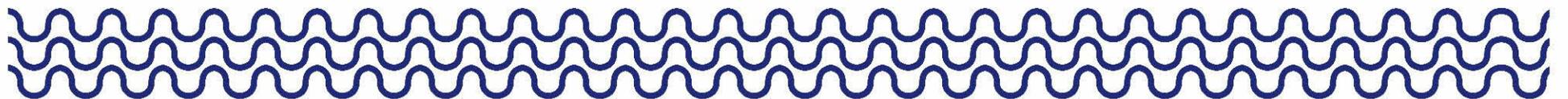


» Águas do Porto App is an intuitive tool that alerts the customer of the occurrence of a water leakage, but also allows a real time knowledge of the evolution of the consumption profile.

» Functionalities:

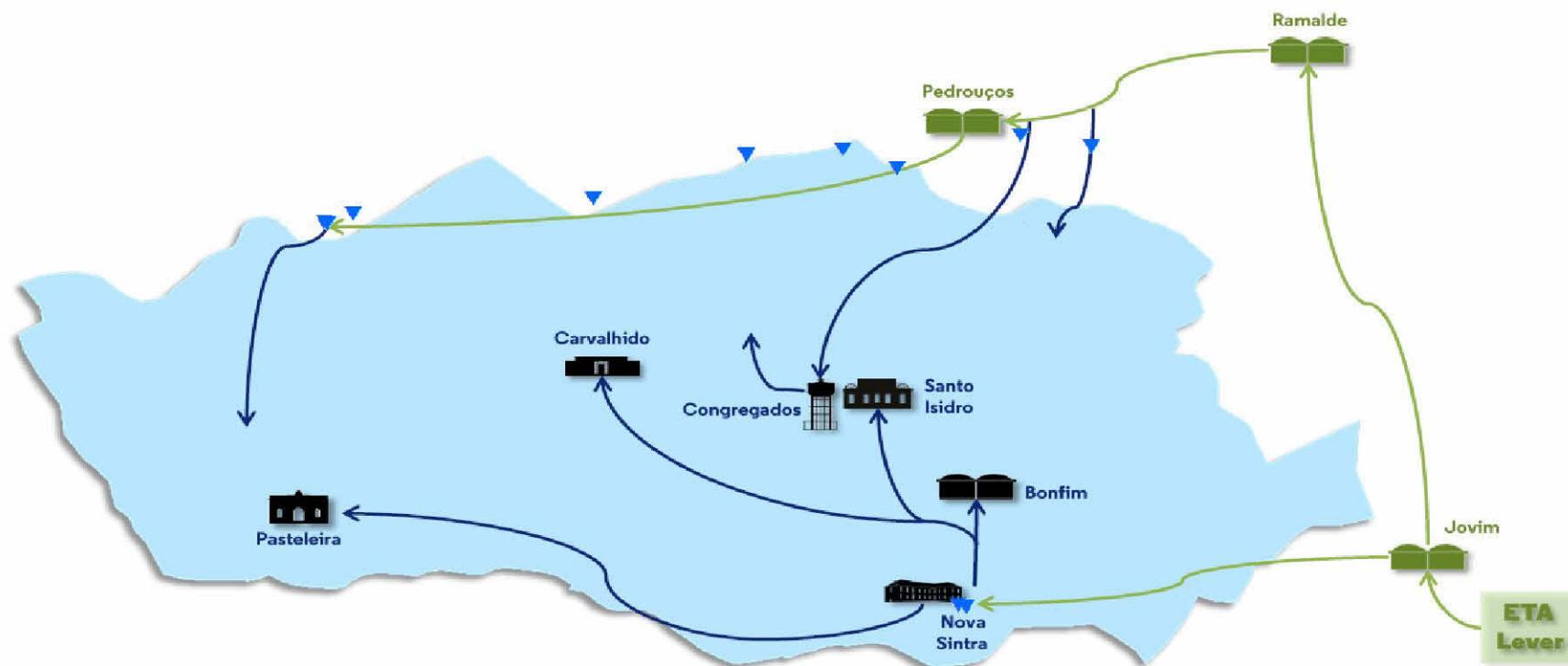
- _ Evolution and analysis of consumption
- _ Warnings about water leakages
- _ Comparison of consumption
- _ Tips for reducing water consumption
- _ Notifications and Notices
- _ Quality of drinking water
- _ Quality of bathing water
- _ Communication of water meters readings





Águas do Porto.

:: Water Supply System.



Legenda:

-  Reservatórios municipais – Águas do Porto, EM
-  Reservatórios multimunicipais – Águas do Norte, SA
-  Conduitas adutoras – Águas do Porto, EM
-  Conduitas adutoras – Águas do Norte, SA
-  Pontos de Entrega da Água





Águas do Porto.

:: Water. Main Figures.



46,304 m³

Daily volume of
water delivered



799 Km

Adductors and
Distribution
Pipelines



1

Active Pumping
Station



51

N.º District
Meter Areas



6

Water Tanks



125,450 m³

Water Storage
Capacity



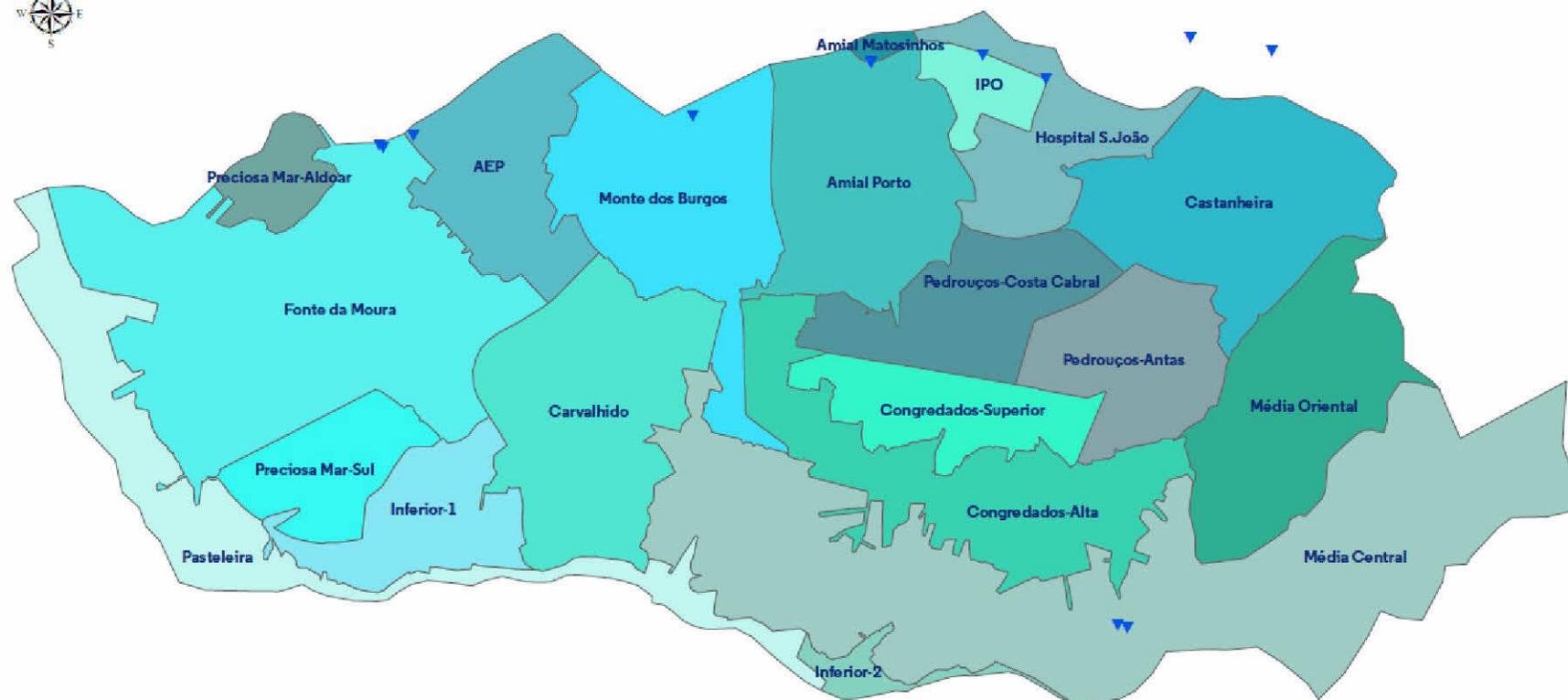
67,597

Service
Connections



Águas do Porto.

:: Main District Meter Areas.



Águas do Porto.

:: District Meter Sub-Areas.

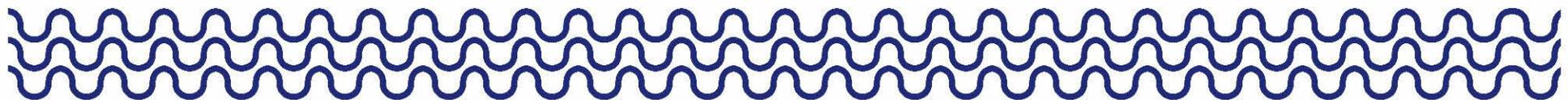
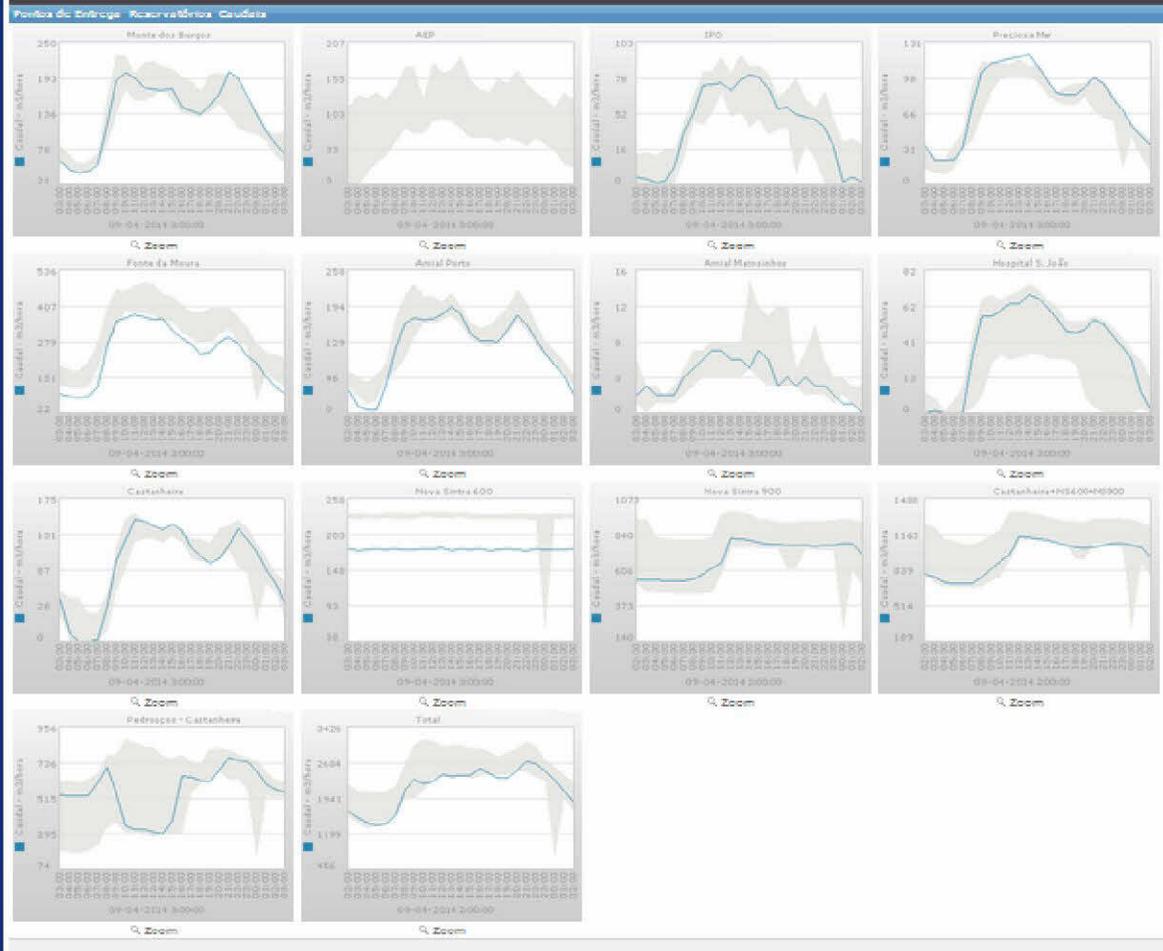


Águas do Porto.

:: Real Time Flow Monitoring.

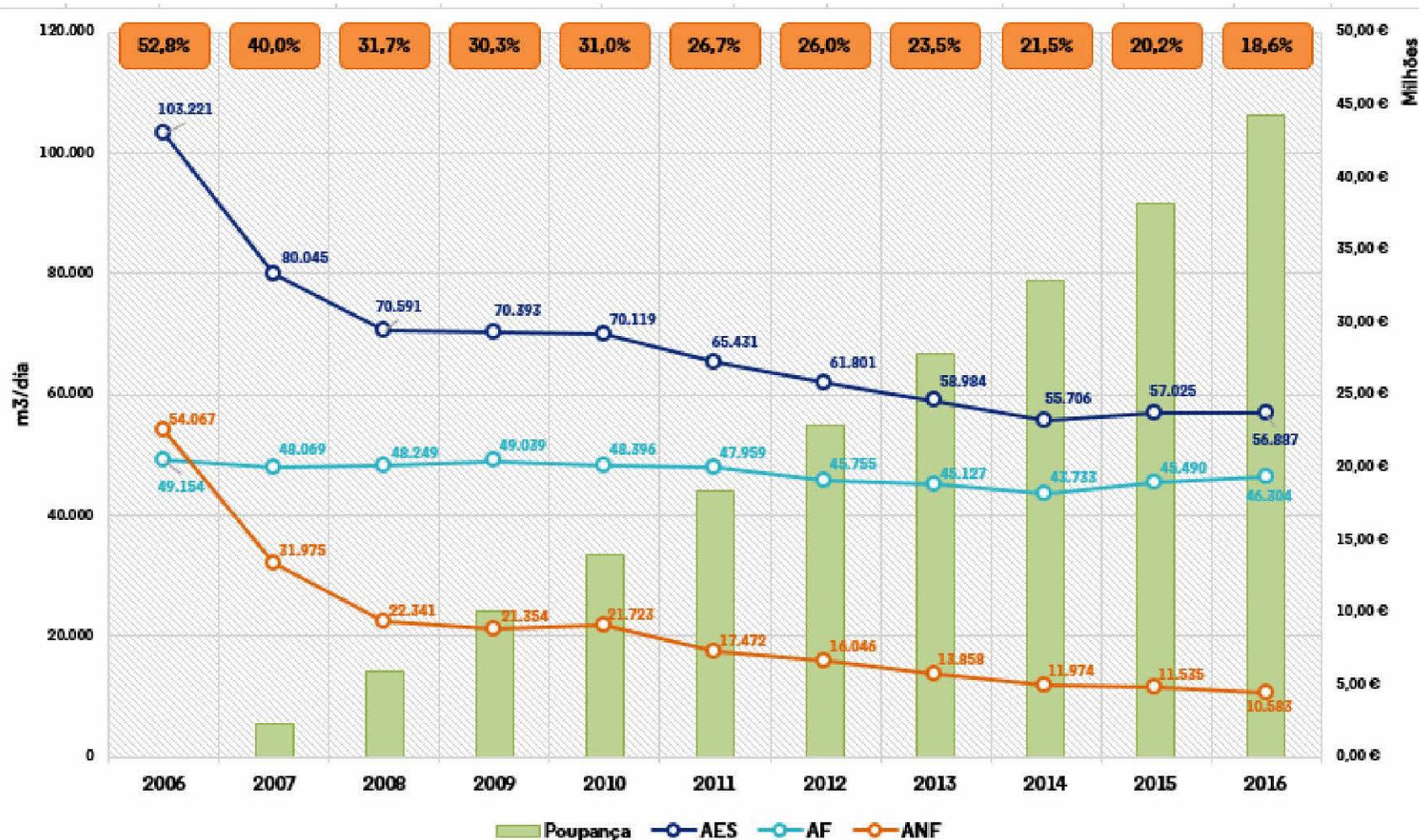


Delivering Points



Águas do Porto.

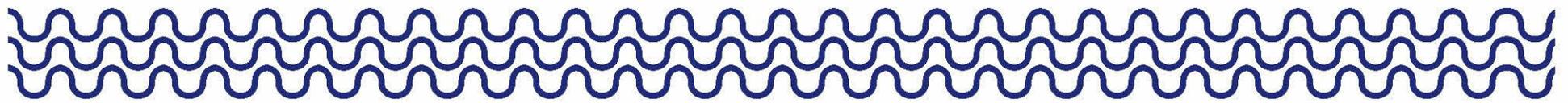
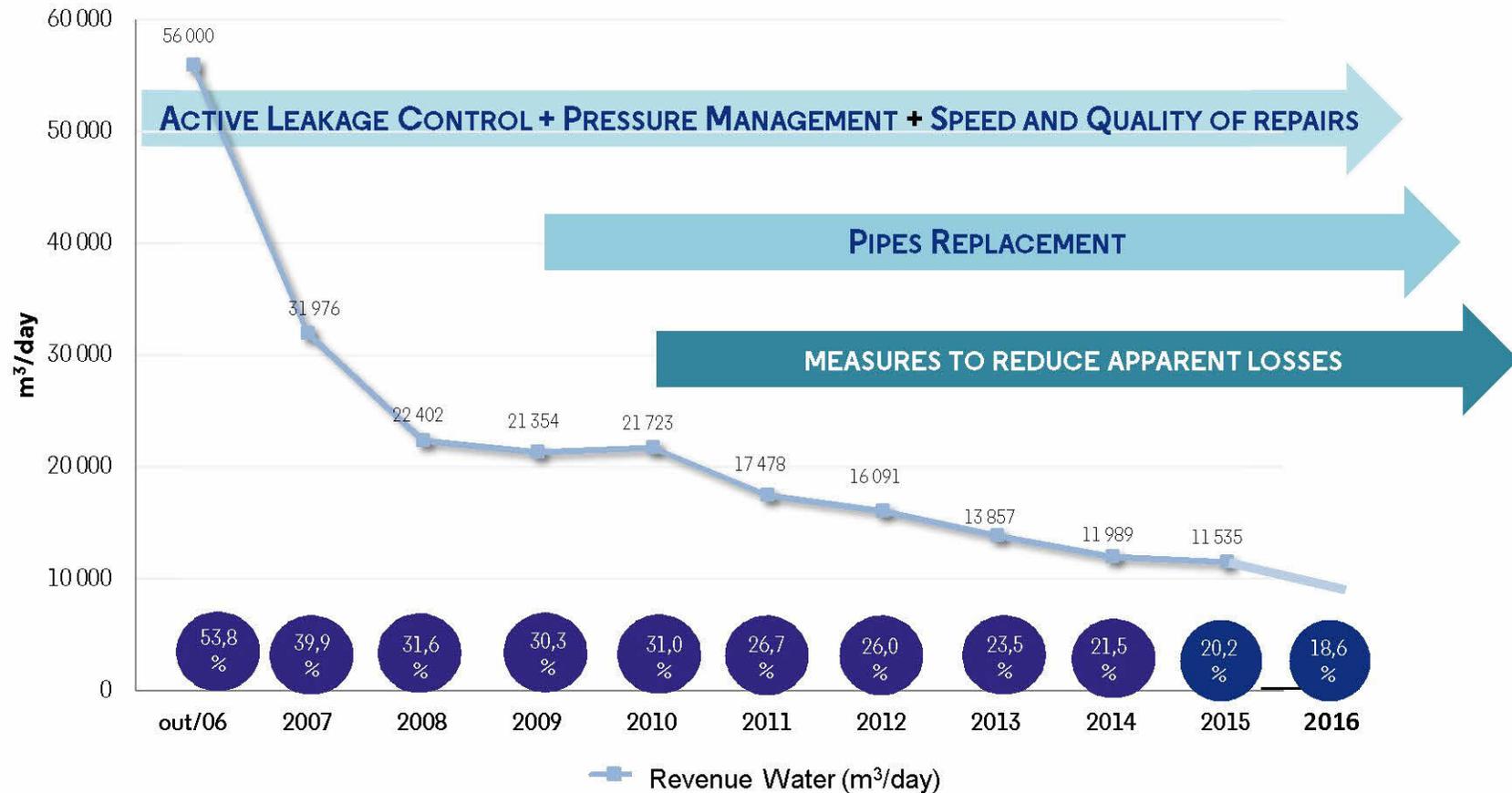
:: Reduction of Non Revenue Water.





Águas do Porto.

:: Reduction of Non Revenue Water.

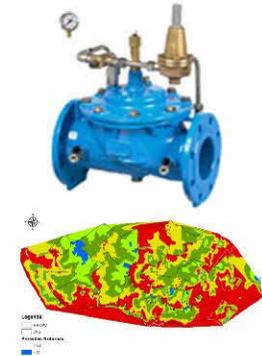


Águas do Porto.

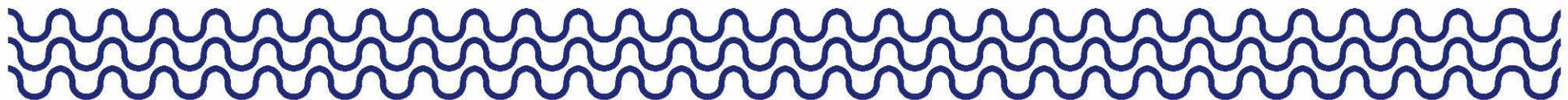
:: Measures to Reduce Real and Apparent Losses.



Real Losses



Apparent Losses

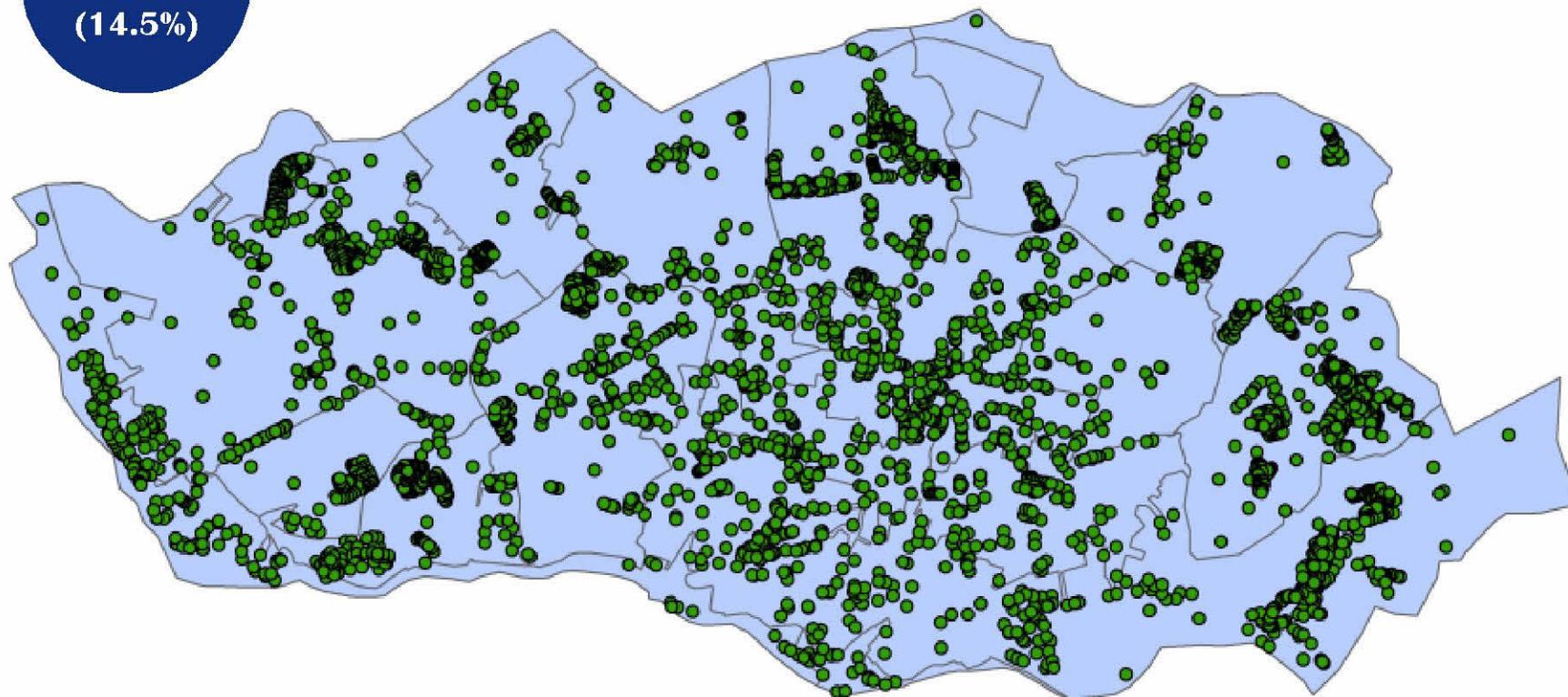


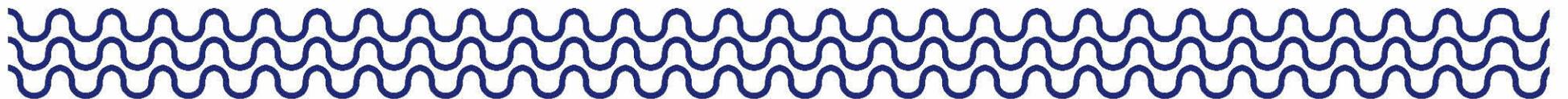


Águas do Porto.

:: Automatic Reading Meters.

≈ 22,000
ARM
(14.5%)





Águas do Porto.

:: Water Quality. Main Figures.



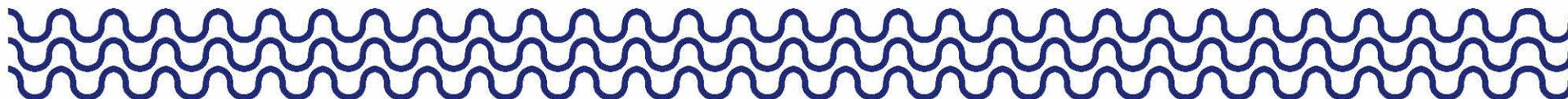
99.77%

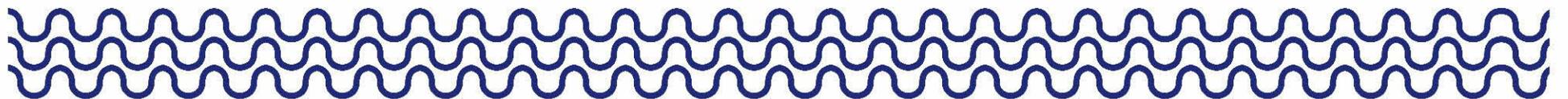
**Excellent Water
Quality**



42,425

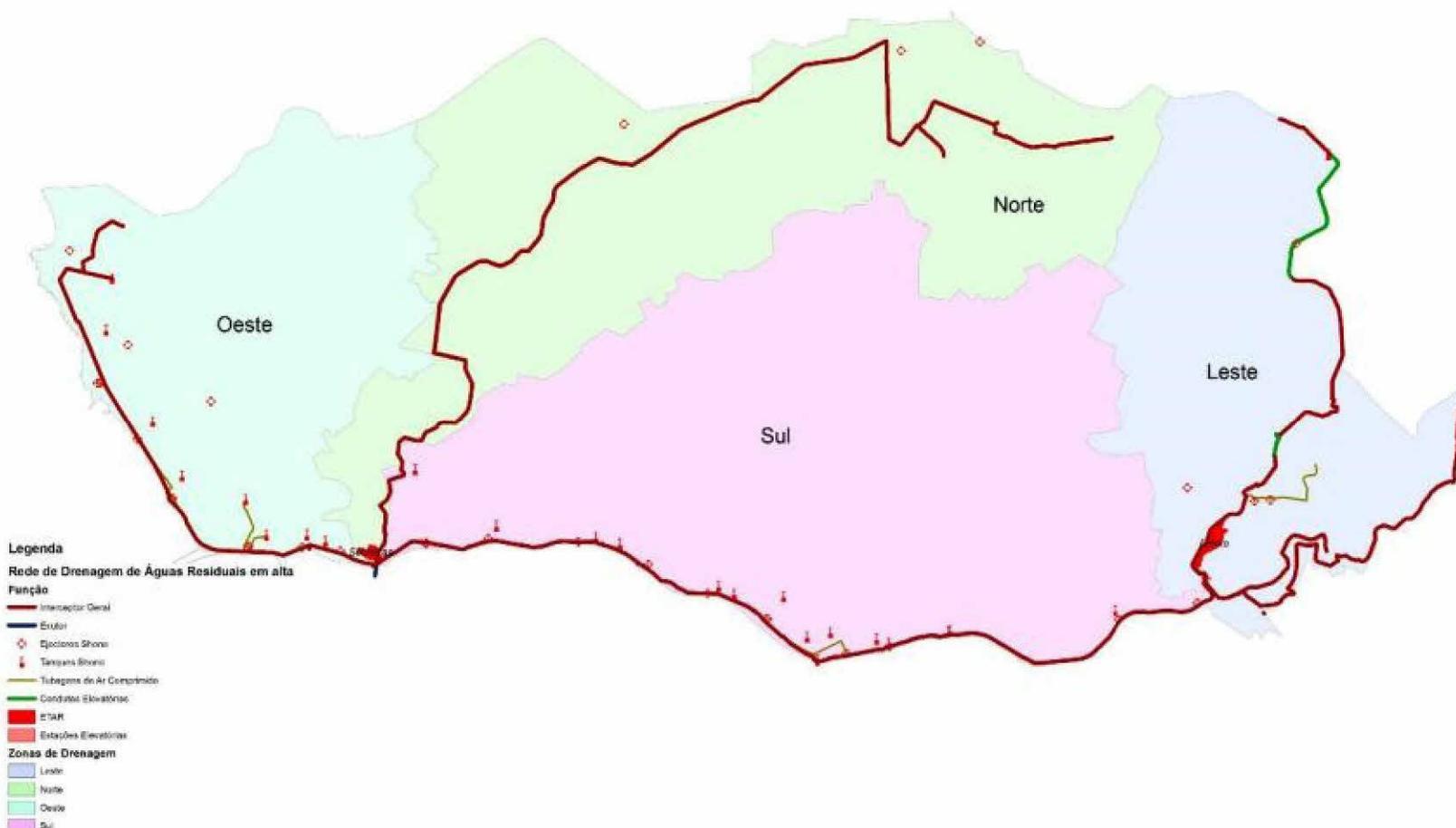
**N.º Analysis Carried
Out**





Águas do Porto.

:: Wastewater System.



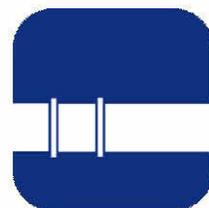
Águas do Porto.

:: Wastewater. Main Figures.



52,000

Service
Connections



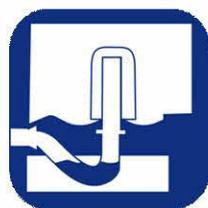
555 km

Sewers



2

WWTP



17

Shöne Tank



27

Ejectors



9

Pumping Station



Águas do Porto.

:: Conclusion of Sewage System.

Porto.
Águas
do Porto



Legenda

Prédios não ligados

Disponibilidade de Ligação

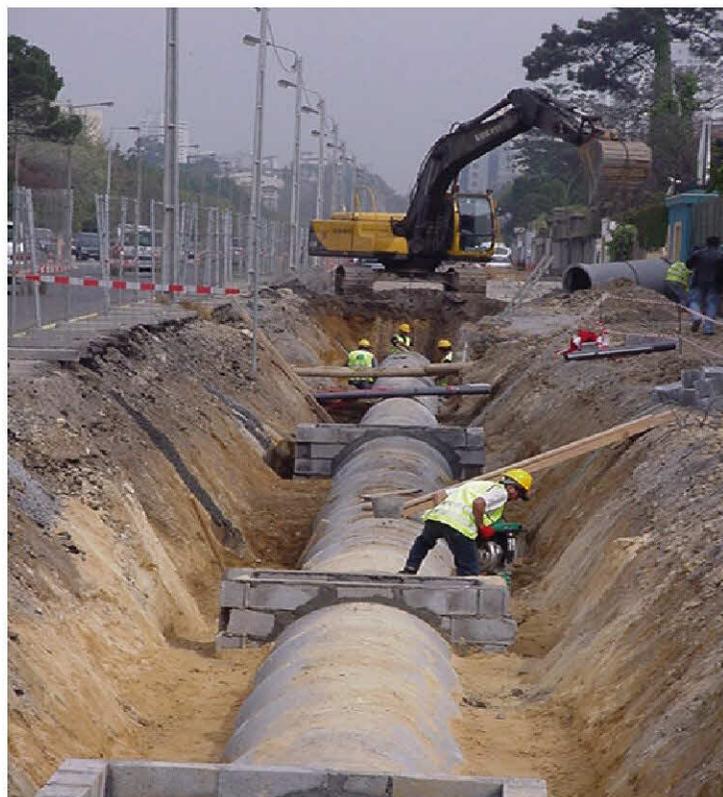
- Colector ARD c/ramal e CRL
- Colector ARD c/ramal em ponta
- Colector ARD
- Colector ARD s/ligação ou fora de serviço
- Colector AP
- Nenhuma - (sem qualquer infraestrutura)

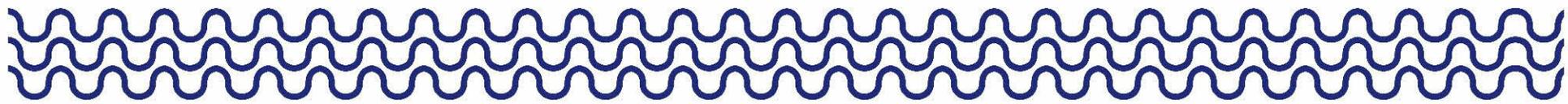


INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

Águas do Porto.

:: Conclusion of Sewage System.





Águas do Porto.

:: Wastewater Treatment. Main Figures.



57,956 m³

Treated water by
day



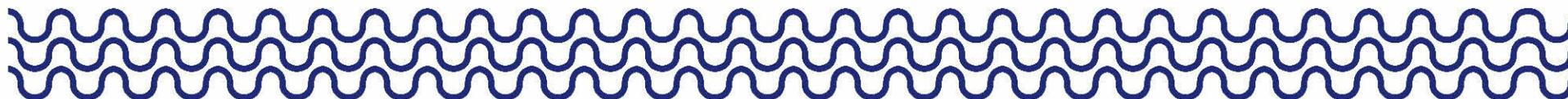
100%

Fulfillment of
discharge criteria



2

WWTP



Águas do Porto.

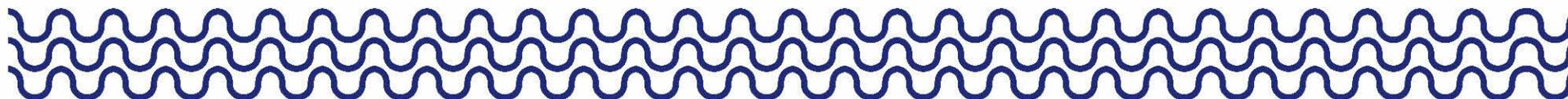
:: Wastewater Treatment Plants. Tertiary Treatment.

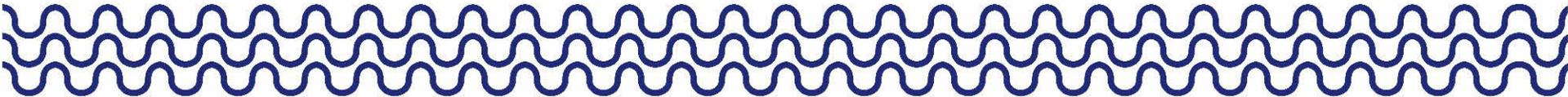


Freixo WWTP



Sobreiras WWTP

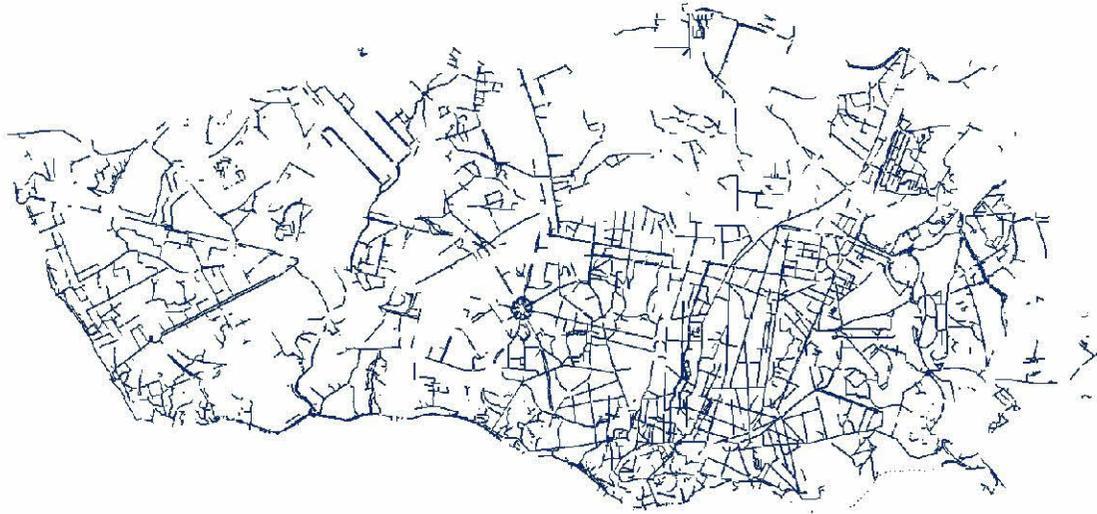




INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

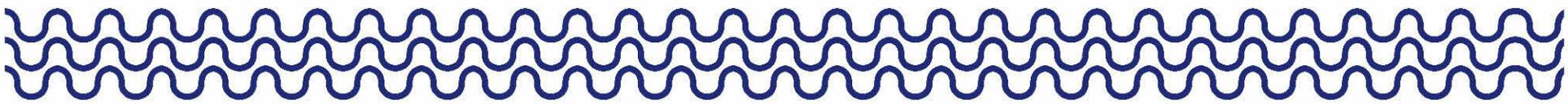
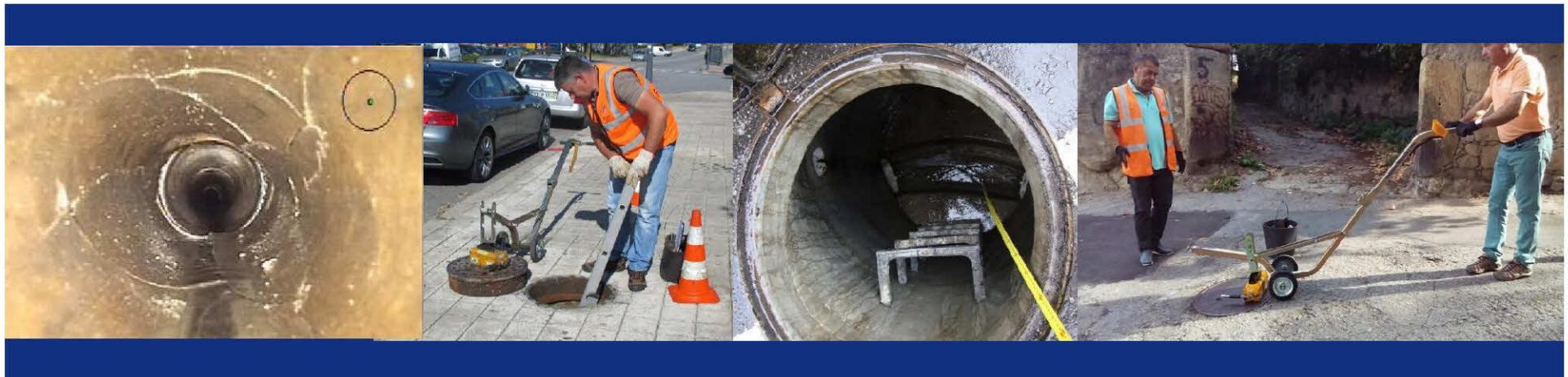
Águas do Porto.

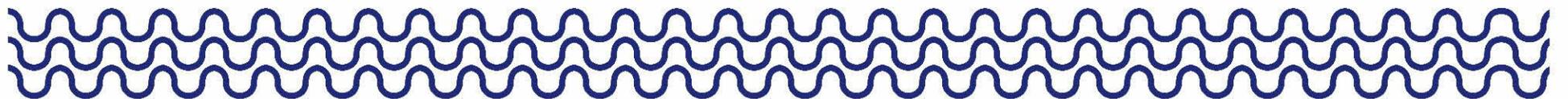
:: Network Recognition.



660 km

**Stormwater
infrastructure**

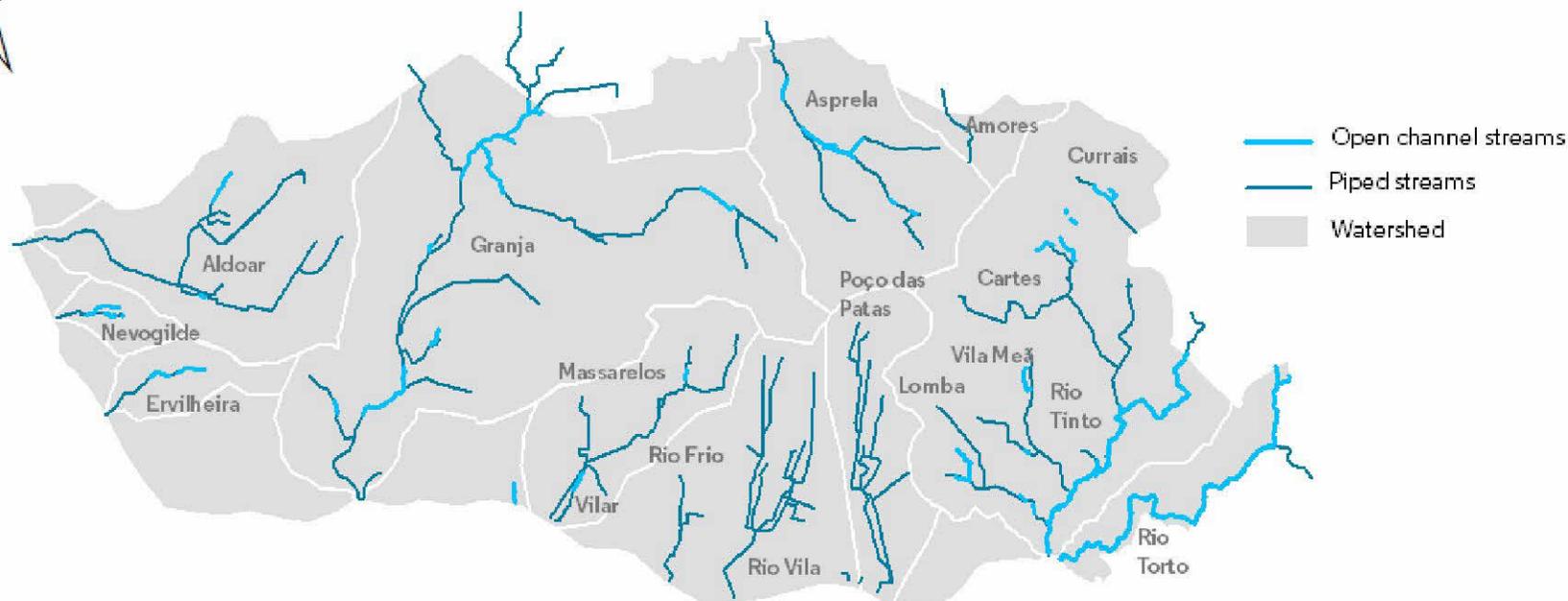






Águas do Porto.

:: Streams. Main Figures.



66 km
Watercourses
+ 9 km
Douro River



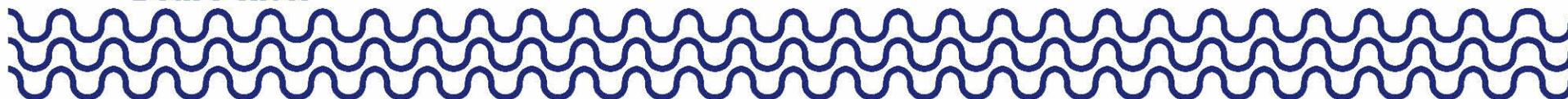
75%
Piped streams



4
Rivers



12
Streams



Águas do Porto.

:: Pillars of Streams Project.

Areas of Intervention

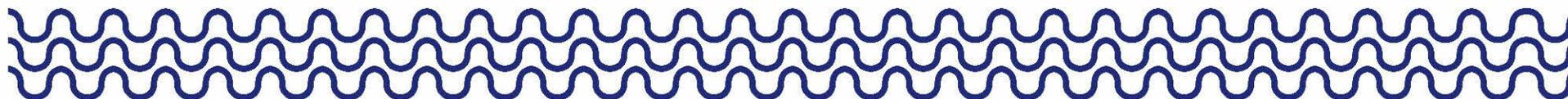


Cleaning-up

Daylighting



Rehabilitation



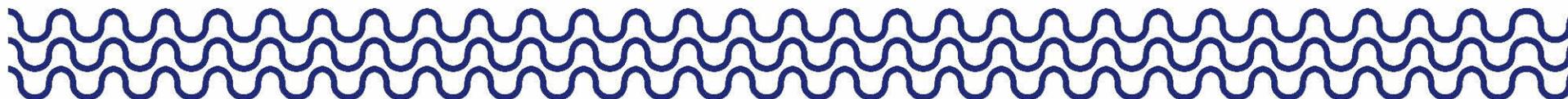
INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

Águas do Porto.

:: Daylighting.

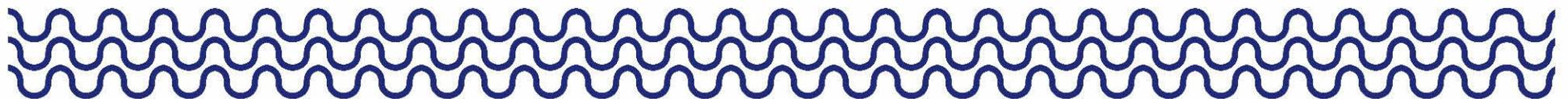


Public and Private Investment.



Águas do Porto.

:: Stream Bank Stabilization. Nature Based Solutions.



Águas do Porto.

:: Streams. Examples of Rehabilitation.



Viso



After



Before



After

Quinta do Rio

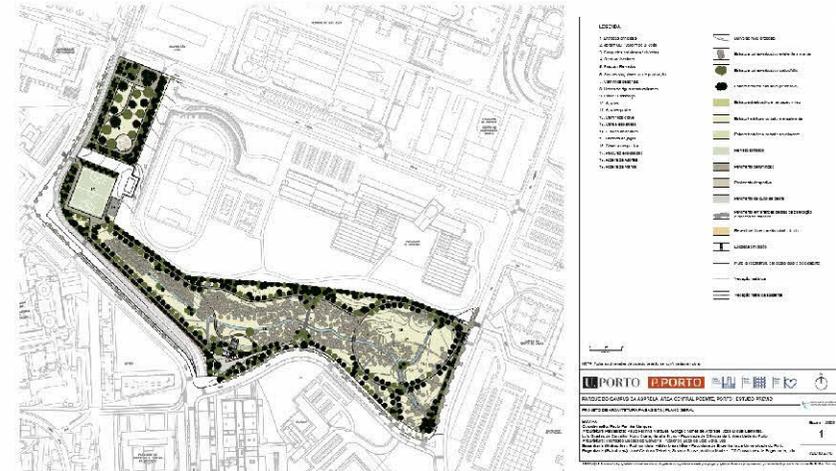


Águas do Porto.

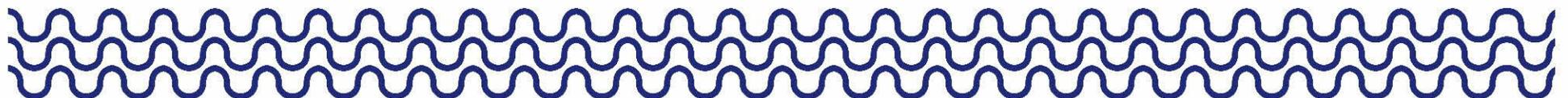
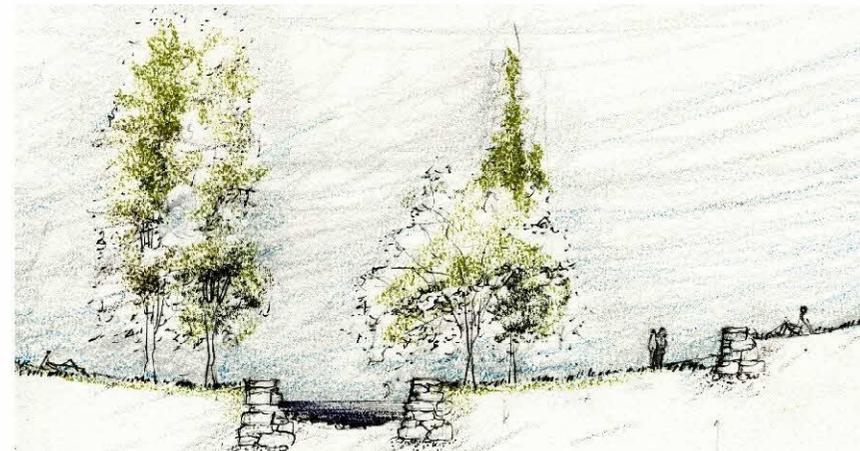
:: Streams. Future Projects of Rehabilitation.



Aldoar Stream



Asprela Stream



Águas do Porto.

:: Watercourses. Future Projects. Musealization of Vila River



— — —
**River route that will be visited
(downtown)**





Águas do Porto.

:: Beaches. Blue Flag.



3 km

**Length of
Coastline**



9

**Number of
Designed Beaches**



4

**Number of
Bathing Areas**



3

**Number of
Blue Flag Beaches**



Águas do Porto.

:: Evolution of Bathing Water Quality.



	Praia	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	CQ Castelo do Queijo	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
2	HL Homem do Leme	White	White	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
3	GONDARÉM Molhe	White	White	Green	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue
4		Gondarém	Red	Red	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue
5	FOZ Luz	White	White	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
6		Inglezes	White	White	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue
7		Ourigo	White	White	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue
8		Carneiro	White	White	White	White	Blue	Blue	Blue	Blue	Blue	Blue	Blue
9	Pastoras	White	White	White	White	White	White	White	Blue with X	Blue with X	Blue	Blue	Blue



Zona não classificada
Sem informação



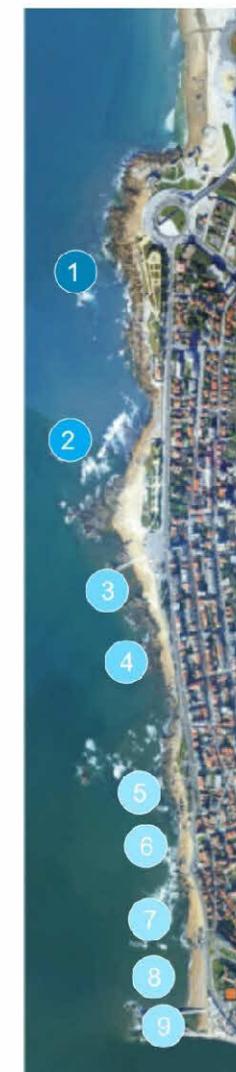
Praia interdita



Praia designada
pelo INAG



Bandeira Azul



Águas do Porto.

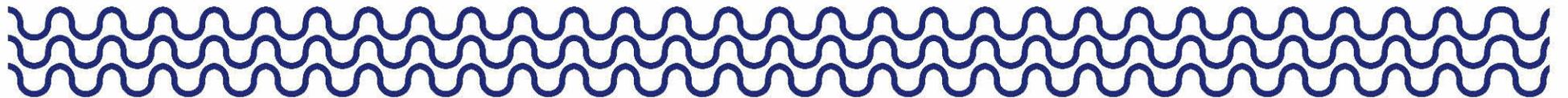
:: Beaches. Equipment.



Águas do Porto.

:: Beaches. Services.





INTEGRATED URBAN WATER CYCLE MANAGEMENT IN THE CITY OF PORTO

Águas do Porto.

:: Water House. City Park.



Águas do Porto.

:: Water House. Main Figures.



29,463

Annual
Number of Visitors



11

Average Daily
School Groups
Visits



13

Activities during
Bathing Season

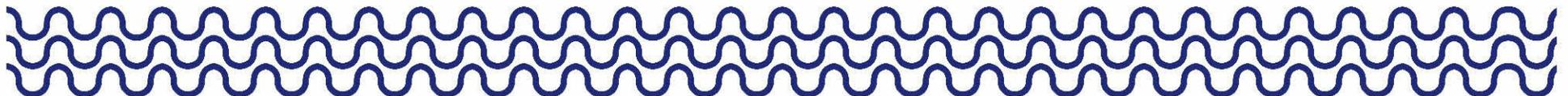


Águas do Porto.

:: Connecting the City to Water. Recommendations



- » A **single entity** to manage the **entire Urban Water Cycle** in a city;
- » Improve the **operational efficiency** at the water supply system (reducing the non revenue water) and the wastewater system (reducing energy consumption) to **finance the investments on other networks** (storm water, watercourses and beaches), **maintaining the tariffs**;
- » Develop **Water Sensitive Cities** putting water at the heart of our cities' biophysical, economic, and social wellbeing;
- » Application of the concept of **Water Sensitive Urban Design**, which is a new paradigm that corresponds to an innovative approach to the planning and design of urban environment;
- » Water resources of the cities are for its citizens and **public participation** is a key factor.





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WATER

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29 September 2017



24 to 29 September 2017



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	WATER & PEOPLE						
AM	WATER LAB EUROPE PORTO 2017 INNOVATION						 festival de água
	EIP Water Action Group	EIP CONFERENCE 2017 WATER	EIP CONFERENCE 2017 WATER	EIP CONFERENCE 2017 WATER SITE VISITS		MAYORS & WATER CONFERENCE 2017	
PM	WATER LAB EUROPE PORTO 2017 INNOVATION						
	EIP Water Action Group	EIP CONFERENCE 2017 WATER	EIP CONFERENCE 2017 WATER	EIP CONFERENCE 2017 WATER SITE VISITS		MAYORS & WATER CONFERENCE 2017	
	WELCOME DRINK PORTO		INNOVATION DINNER				

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THANK YOU

