



EBS MANNHEIM²

Stadtentwässerung



EBS MANNHEIM —

WASTWATER
DEPARTMENT
CITY OF MANNHEIM

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KEY DATES

Foundation	1997-01-01
Employees	250
Fixed assets	352 Mio. €
Investment	10,6 Mio. €
Quality and Environmental Management System Certified according to EN ISO 9001 / EN ISO 14001 since 2003-01	
Operator of critical infrastructure	according to BSI law

KEY DATES

Sewage treatment plant	725.000 population equivalents (design size) approx. 90.000 m ³ flow of wastewater per day
Sewage system	832 km (without house connection sewers) combined discharge 39 pumping stations 32 lifting equipments
Rain-/storm water treatment	8 overflow basins 8 storm water retention tanks 12 storage capacities of sewer 2 rainwater infiltration facilities
Retention volume in total	approx. 170.000 m ³

LOCATIONS AND EMPLOYEES

Wastewater treatment

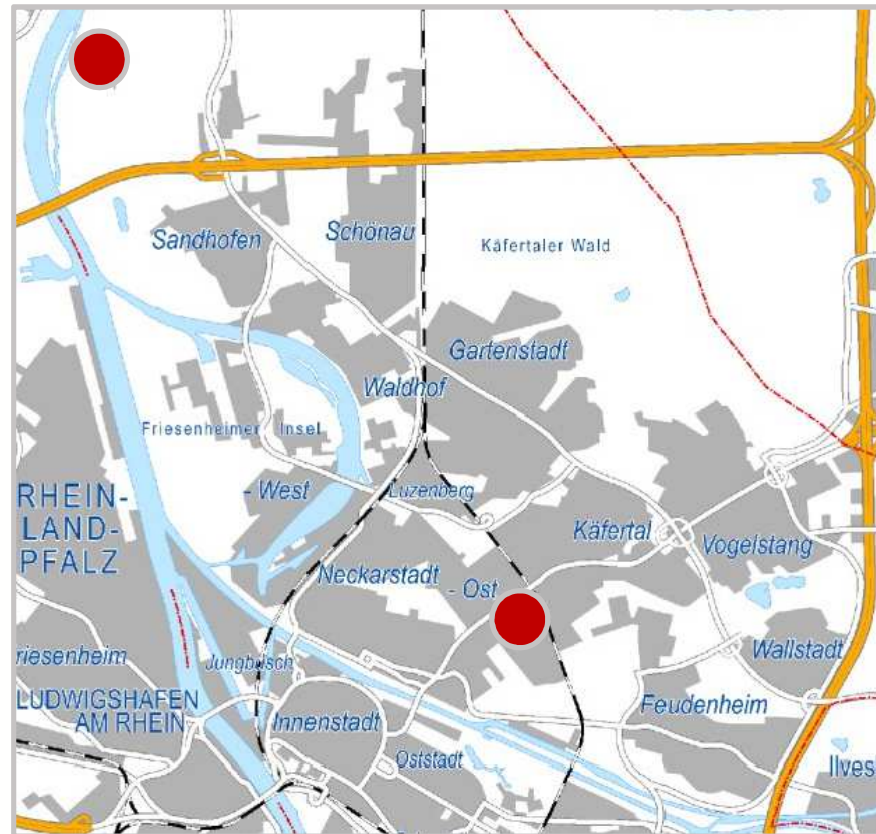
154 employees

Karl-Imhoff-Straße 50
68307 Mannheim

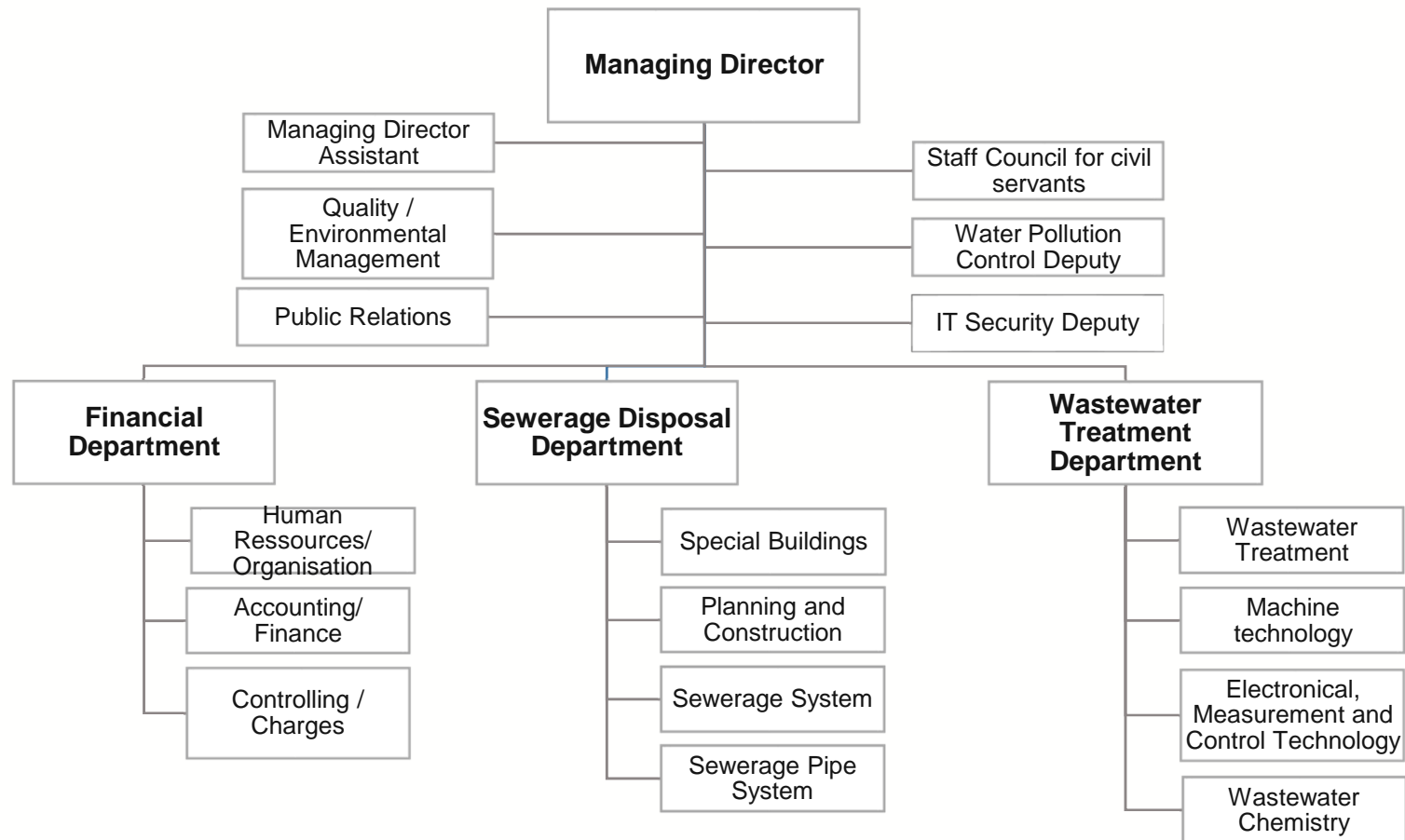
Sewerage disposal and administration

96 employees

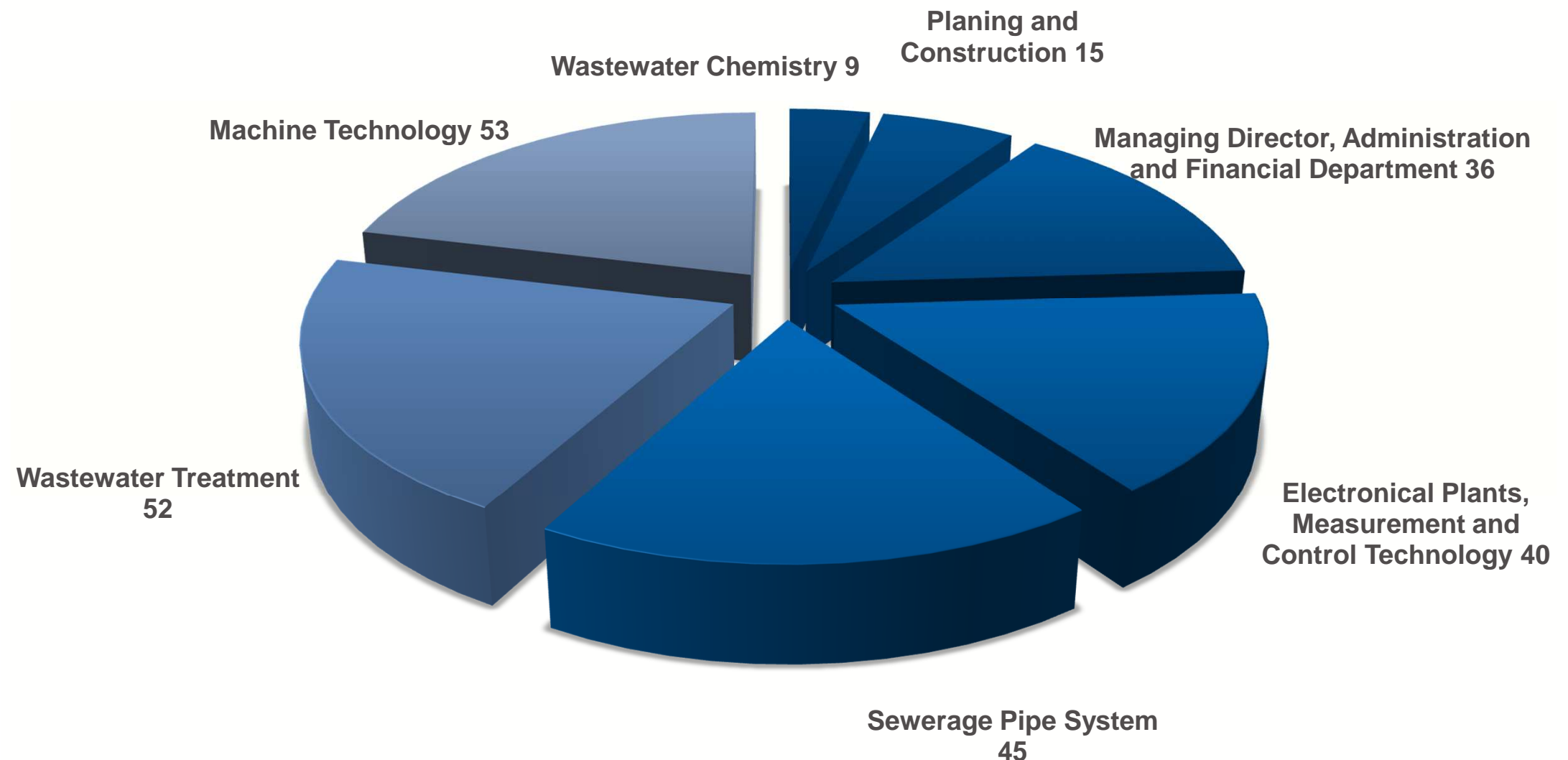
Käfertaler Straße 265
68167 Mannheim



ORGANISATION



DISTRIBUTION OF STAFF



Total number of employees: 250

WASTEWATER CHARGES AND EXPENSES

Sewage fees

Per cubic metre of delivered drinking water 1,61 € (since 2019-01-01)

Rain water fees

Per square metre and year of drained surface 0,83 € (since 2019-01-01)

Income (Wastewater Charges) 59,8 Mio. €

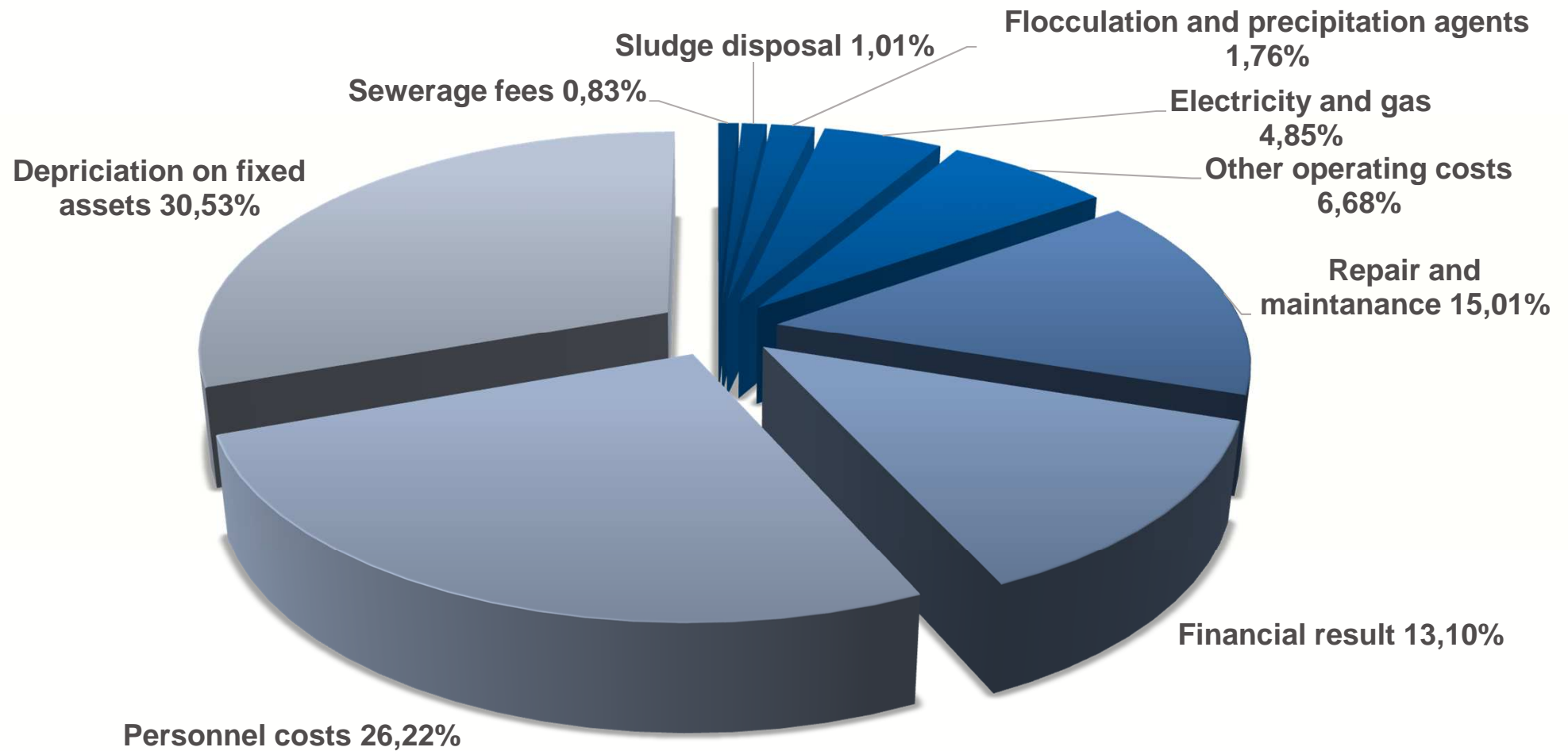
Material costs 16,7 Mio. €

Personnel costs 16,3 Mio. €

Depreciations 18,9 Mio. €

Financial result 8,1 Mio. €

EXPENSE DISTRIBUTION



SEWERAGE DISPOSAL

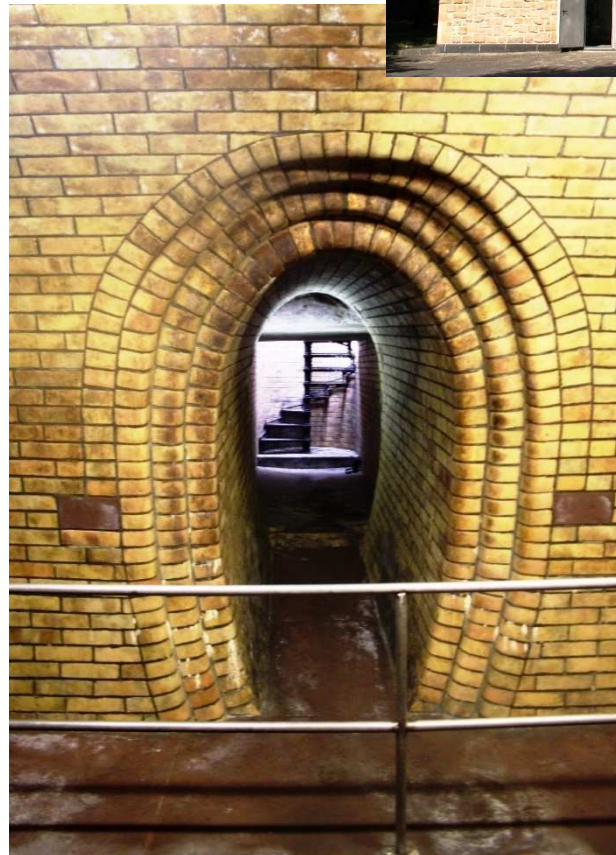
Sewerage system length
833 km under the responsibility of EBS
Mannheim

Year of sewerage system construction
Since 1876

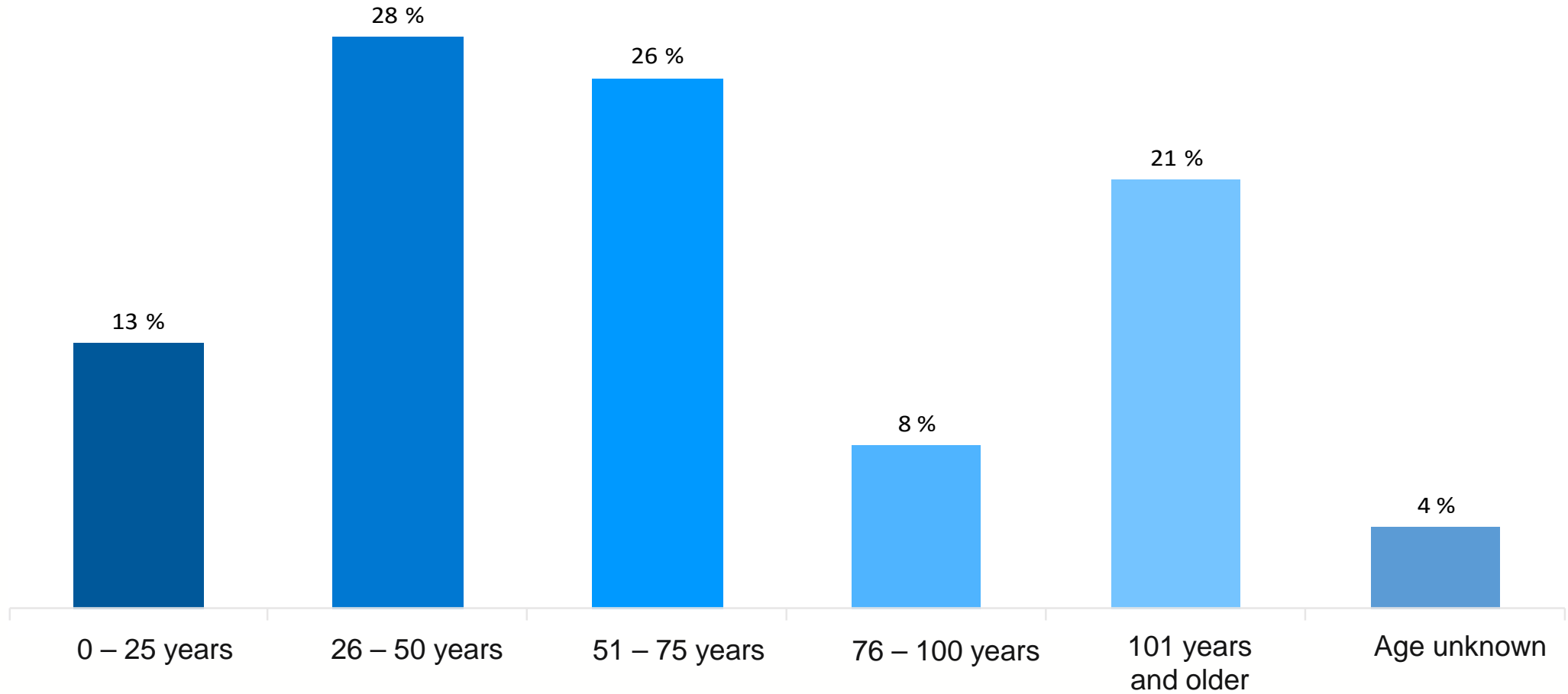
Sewer section 300 – 5.200 mm

Canalized area approx. 7.100 ha

Connection to sewerage system
99,9 %



AGE STRUCTURE OF SEWERS



SEWERAGE SYSTEM INSPECTION

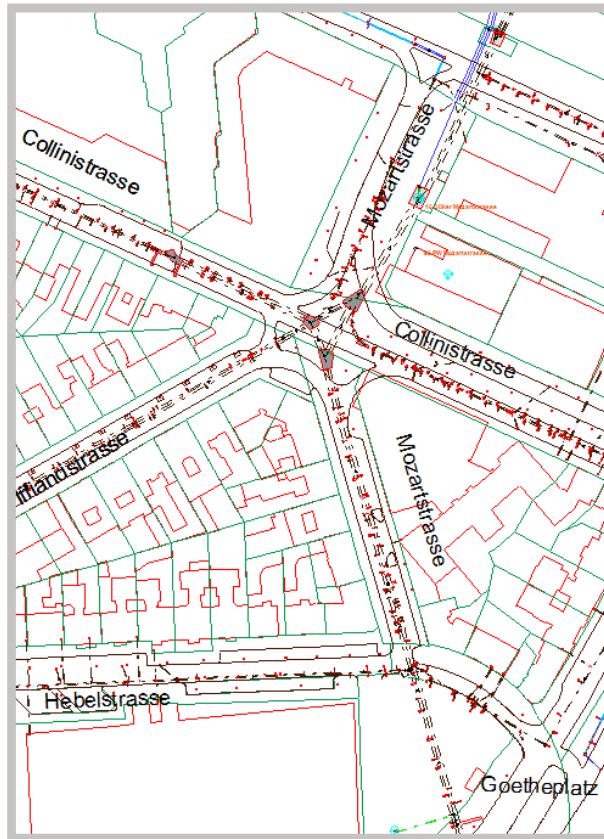
Digital based on TV examination (since 1986)	93,8 %
Analog based on walking through	6,2 %
Examination in total	100,0 %



SEWER DATABASE

Administration of the sewer inventory data for the whole urban area

- Survey data (channel geometry and topography)
- Data from the TV-Inspection – Gathering of the sewer conditions
- Gathering of the house connections (noozles)
- Special buildings
- Hydraulic performance of the sewer system
- Indirect discharge data
- Data of the plants



RENOVATION AND CONSTRUCTION OF SEWER

Length in total of

repaired sewer:

approx. 5,8 km

renovated sewer:

approx. 22,5 km

renewed sewer:

approx. 1,53 km



WASTEWATER TREATMENT PLANT

Operation

- 1973 Wastewater treatment plant
- 1986 Filtration
- 1999 New biological plant
- 2016 Fourth treatment stage (removal of pharmaceuticals, etc.)

Flow of wastewater at dry weather

Conditions per day: approx. 87.000 m³

725.000 population equivalents (design size), approx. 50% from the industry



ENVIROMENTAL PERFORMANCE

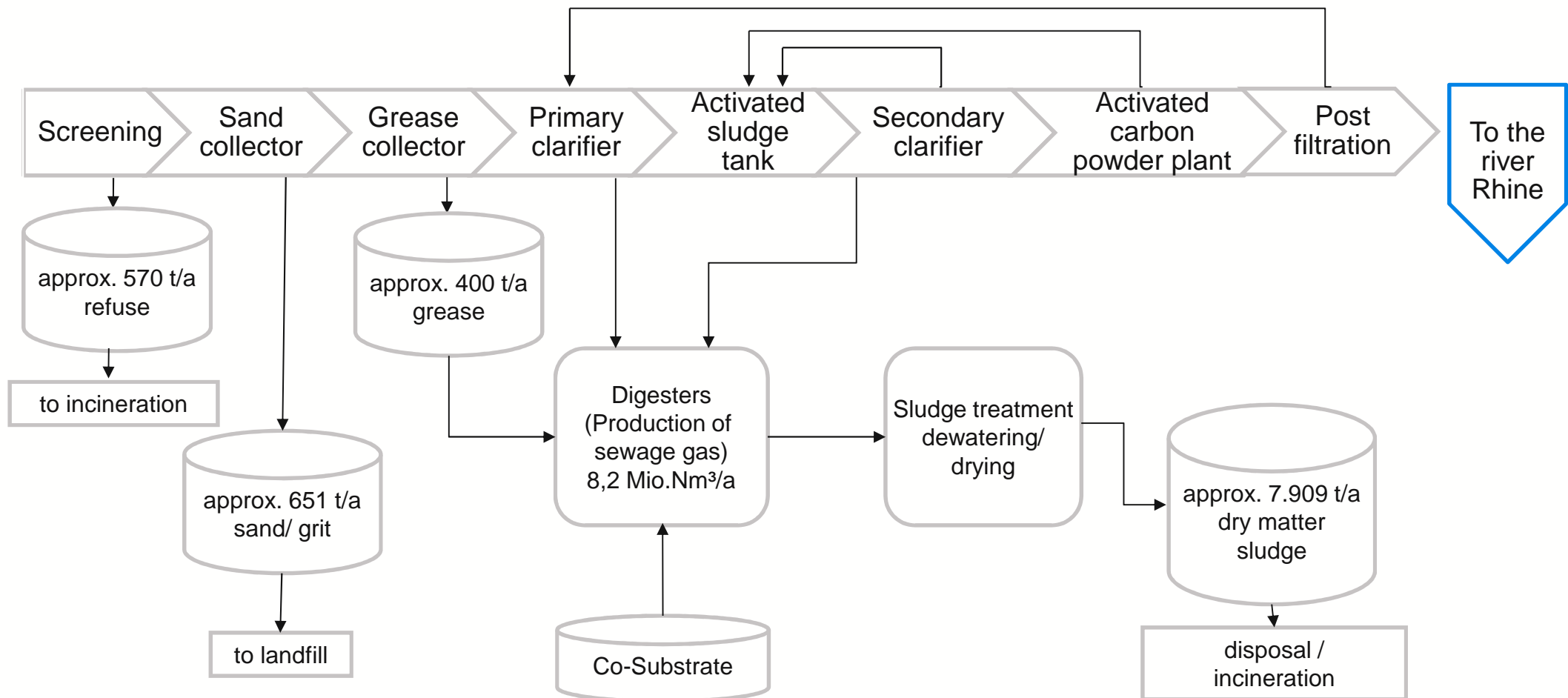
		Raw waste water mg/l	Treated waste water mg/l	Efficiency level %
Chemical oxygen demand	COD	806	16	98,0
Organic carbon in total	TOC	275	5,7	97,9
Nitrogen in total	N _{tot}	62	4,7	92,4
Phosphor in total	P _{tot}	8,49	0,09	98,9

In the DWA performance comparison, the EBS regularly holds the Top spot among the 896 wastewater treatment plants in Baden-Württemberg.



MATERIAL BALANCE

Raw water: approx. 31,7 Mio. m³ flow of wastewater per year (approx. 87.000 m³ flow of wastewater per day)



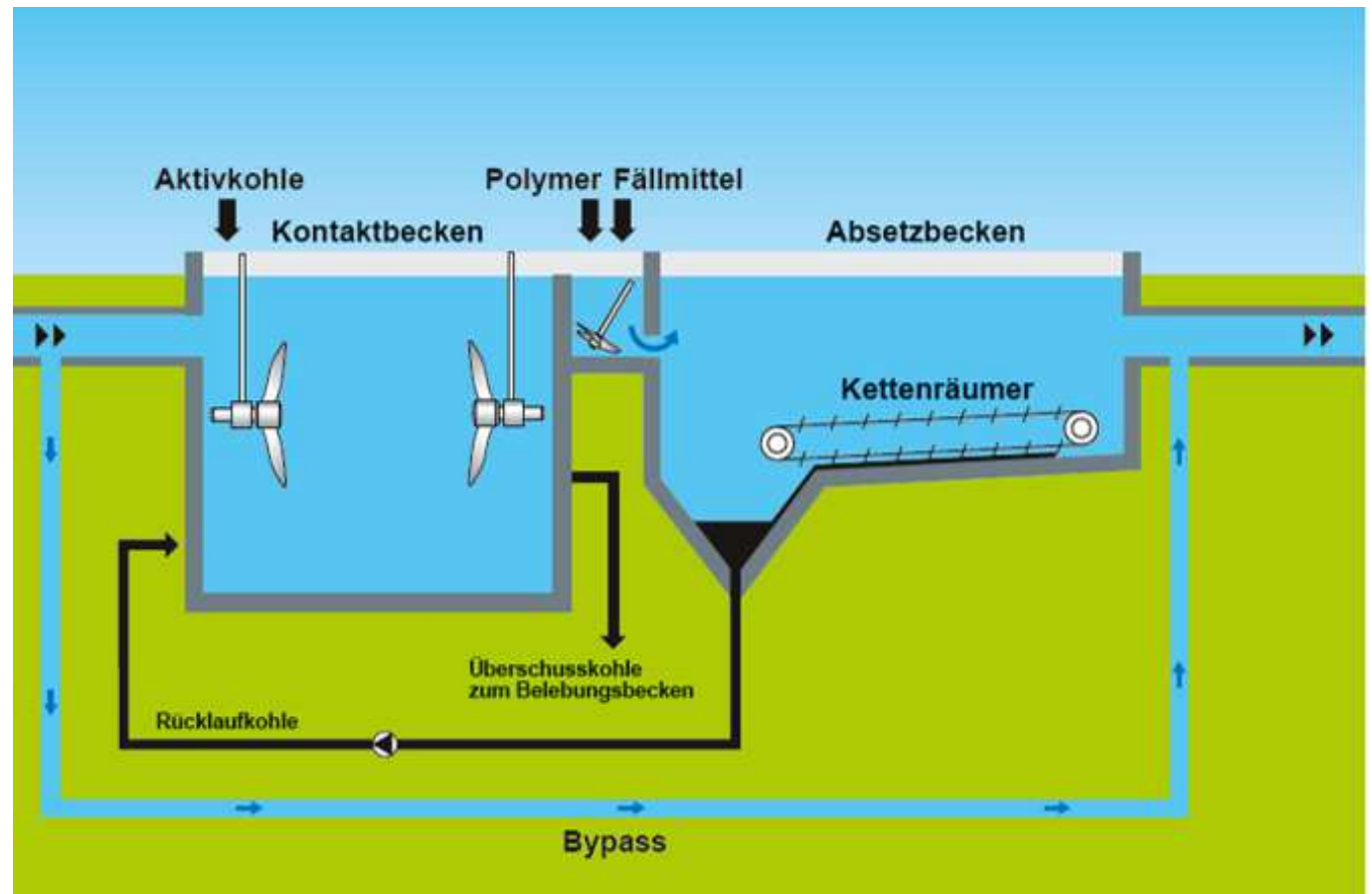
ACTIVATED CARBON PLANT

Micropollutants are being removed from wastewater by dosing powdered activated carbon.

Micropollutants consist of residues from pharmaceuticals, X-ray contrast media, chemicals from industries and households, aromatic substances, etc.

5 parallel tanks

Maximum flow 2000 l/s, 85% of the annual wastewater flow are being treated



RENEWABLE ENERGIES

Sludge treatment at the digesters

since 1973 Digesters

since 1996 Drying



To generate electricity and heat :

→ Co-generation plant

To generate heat :

→ Sludge drying

Photovoltaic and Waterpower

since 2007



To generate electricity:

→ Solarpanel on top of the filtration plant

→ Water wheel at the outlet to the Rhine

Supply of Co-Substrates

since 2012



To generate additional gas:

→ Co-Substrates will be supplying at the digesters in addition

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