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Priority Environmental Infrastructure for Development

Republic of Serbia
Ministry of Environmental Protection

„Priority Environmental Infrastructure for Development“ (PEID/SIDA) for

SITE VISIT/INFORMATION MEETING 28.1.2022

“Construction of Municipal Wastewater Treatment and Collection System in Nis”

Publication reference NEAR/BEG/2021/EA-OP/0122

Project implemented by:
eptisa
Dubljanska 8, Belgrade, Serbia, Tel: +381 11 2400 277

Wastewater in Niš

This Project, candidated by MEP for IPA 2018, is considered as bigest environmental protection infrastructure project in Serbia.

Feasibility study (FS) was prepared by EISP/SIDA in 2016 and updated in 2018.

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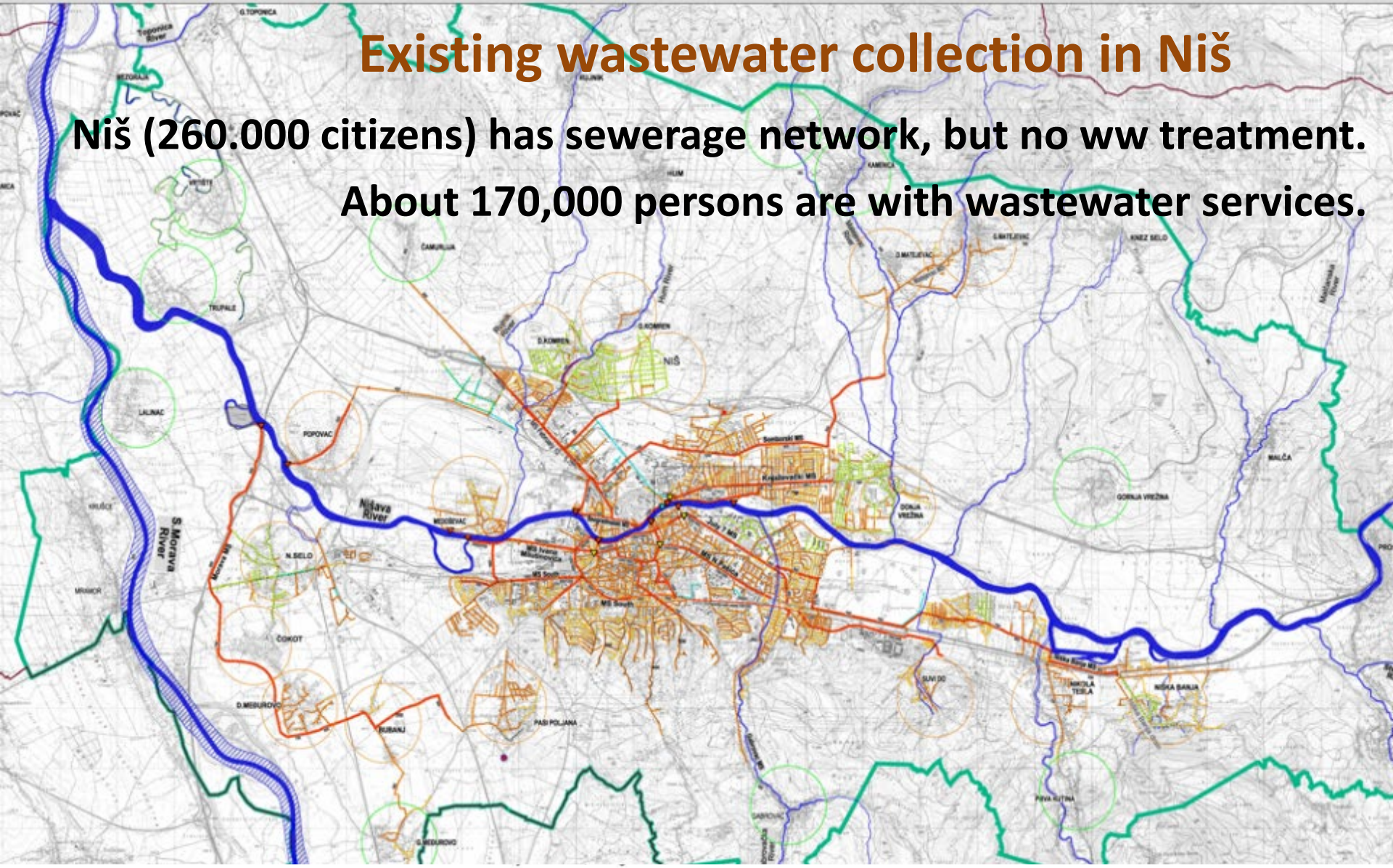
Existing wastewater collection in Niš

Niš (260.000 citizens) has sewerage network, but no ww treatment.

About 170,000 persons are with wastewater services.



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...City of Niš wants to preserve environment

Objective of the Project is protection of environment from communal wastewaters and wastewaters from water treatment plant Mediana by construction of main collectors and wastewater treatments.

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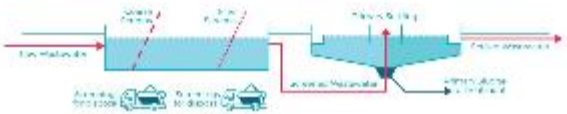
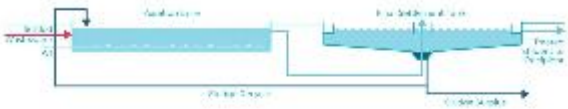
City of Niš, MEP and SIDA presented the Project in the preparation phase

SVRHA
prečišćavanja otpadnih voda

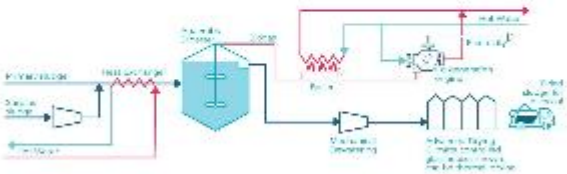
PRIMARY TREATMENT



SECONDARY TREATMENT



SLUDGE TREATMENT



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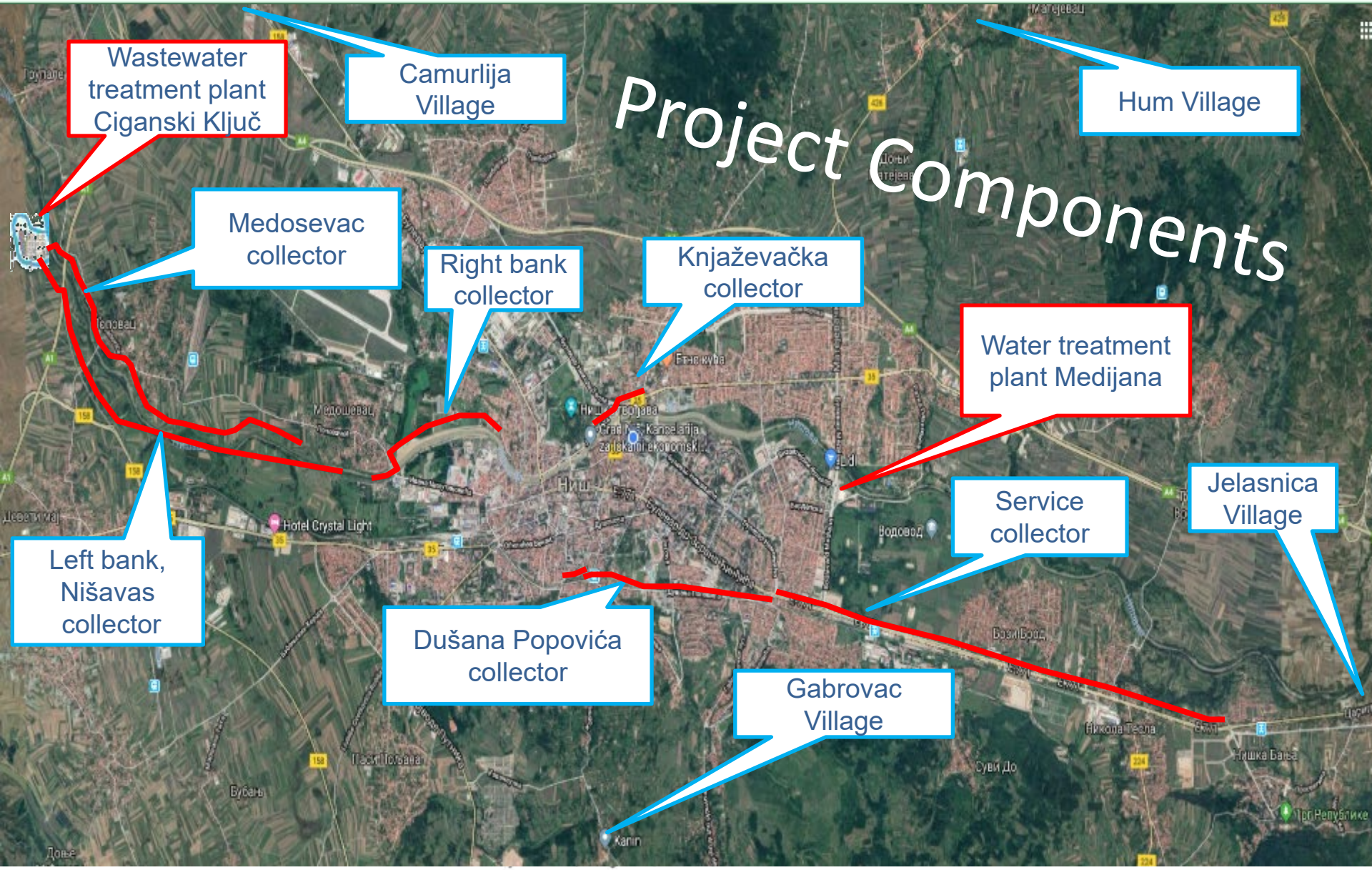


Niš Project components

PEID/SIDA prepared from 2017 until 2021 all technical and tender documents for all priority investments indentified in FS :

N1 - WWTP with basic sludge processing – 286,000 PE

- access road to WWTP

N2 - Additional sludge drying to 50 %DS

N3 - Main sewers to WWTP – 6.7km

N4 - Rehabilitation of main inner city sewers – 14.1km

N5 - Extension of networks to villages – 20.2km

N6 - Backwash water treatment plant for Mediana WTP

WWTP Ciganski ključ

SUBJECT OF TENDER

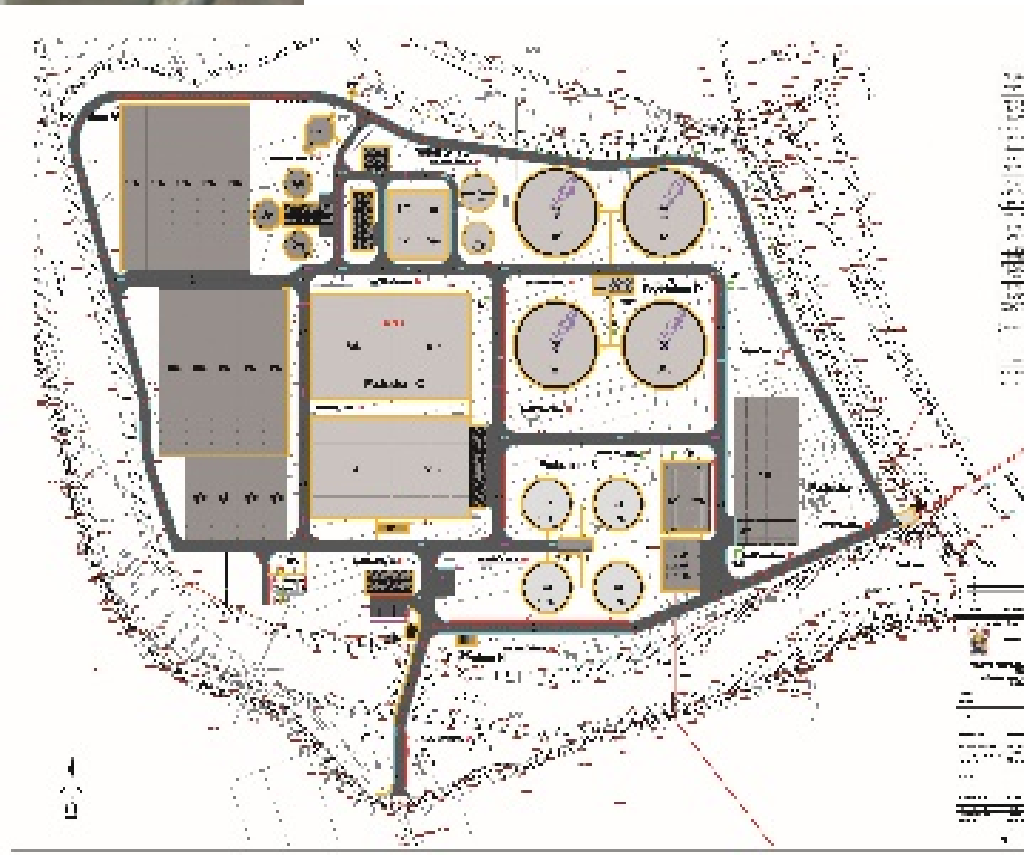
- Wastewater treatment plant (WWTP) for wastewaters collected by the public sewerage system

CAPACITY 286.000 PE

PROCESS

- Primary and Secondary treatment with tertiary treatment in phase II
- Conventional activated sludge treatment
- Anaerobic digestion of sludge
- Solar drying of digested sludge prior to disposal at landfill

Area of Ciganski ključ and WWTP



WWTP Ciganski ključ – process lines

WASTEWATER TREATMENT LINE

- preliminary treatment
- primary treatment
- secondary / biological treatment with nutrient removal in Phase II
- UV disinfection of part of treated effluent and re-use as technical and firefighting

SLUDGE LINE

- sludge thickening
- anaerobic digestion
- dewatering of stabilized sludge
- solar drying of dewatered sludge to 50% DS content

WWTP Ciganski ključ - phasing

- construction is in two phase:

- Phase I – bio-aeration comprises organic pollution reduction.

- Phase II - treatment line upgraded to tertiary treatment, comprising process units for nutrients (N and P) biological removal.

- Construction in phase II includes additional tanks - anaerobic for biological Phosphorus removal and anoxic for denitrification process.

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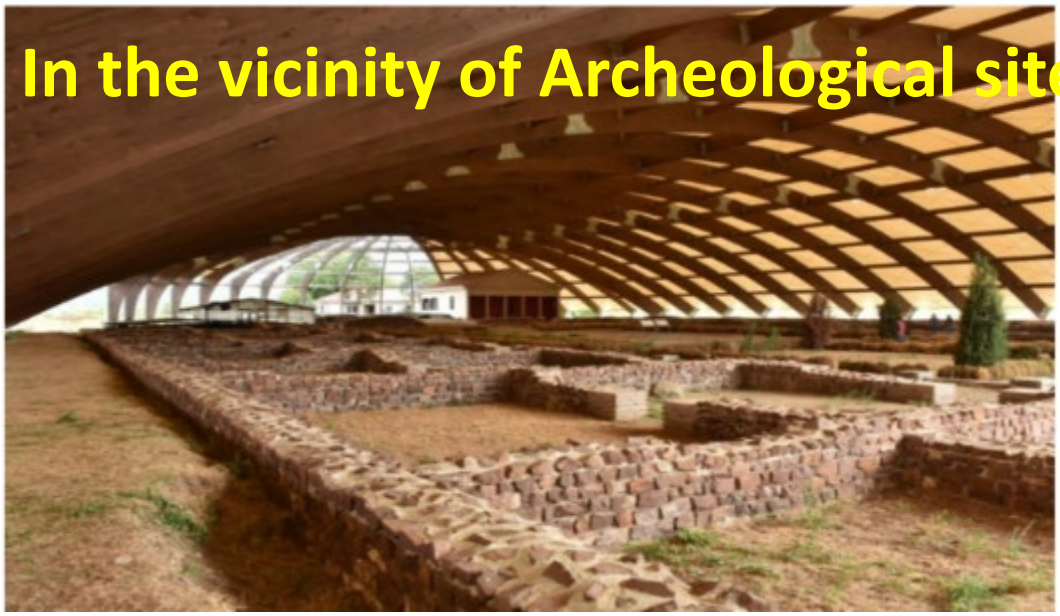
Access road to WWTP Ciganski ključ



Mediana Backwash Water Treatment – subject of tender

- Treatment of filter backwash water and sludge from tube settlers at WTP Mediana.

- Construction of a process line for wastewater treatment is planned at the WTP Mediana location, on the left bank of the river Nišava.

WWTP Mediana - source of wastewaters

- Seven captured karst springs provide sufficient water quantity for Niš during most of the year.

- In case of increased needs for drinking water, it is replaced by surface water from the river Nišava, which is treated at the WTP Mediana.

- Waste streams generated during the process of preparation of drinking water at WTP Mediana, sludge from tube sedimentation tanks and water from filter backwashing, are combined and currently discharged into river Nišava without prior treatment.

Mediana Backwash Water Treatment

- Design raw water flow – 600l/s

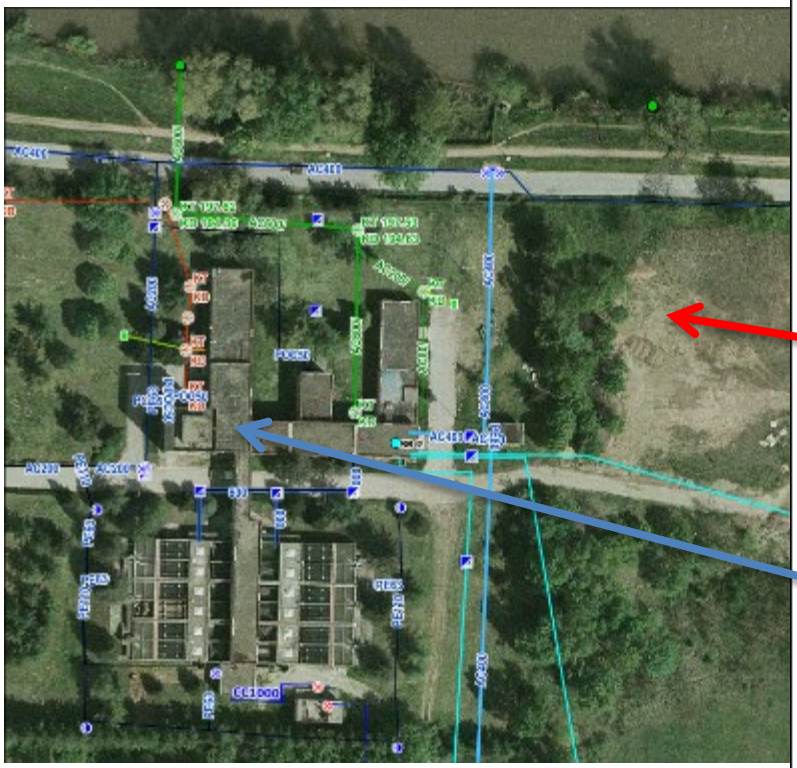
- Treatment of settled sludge and backwash water

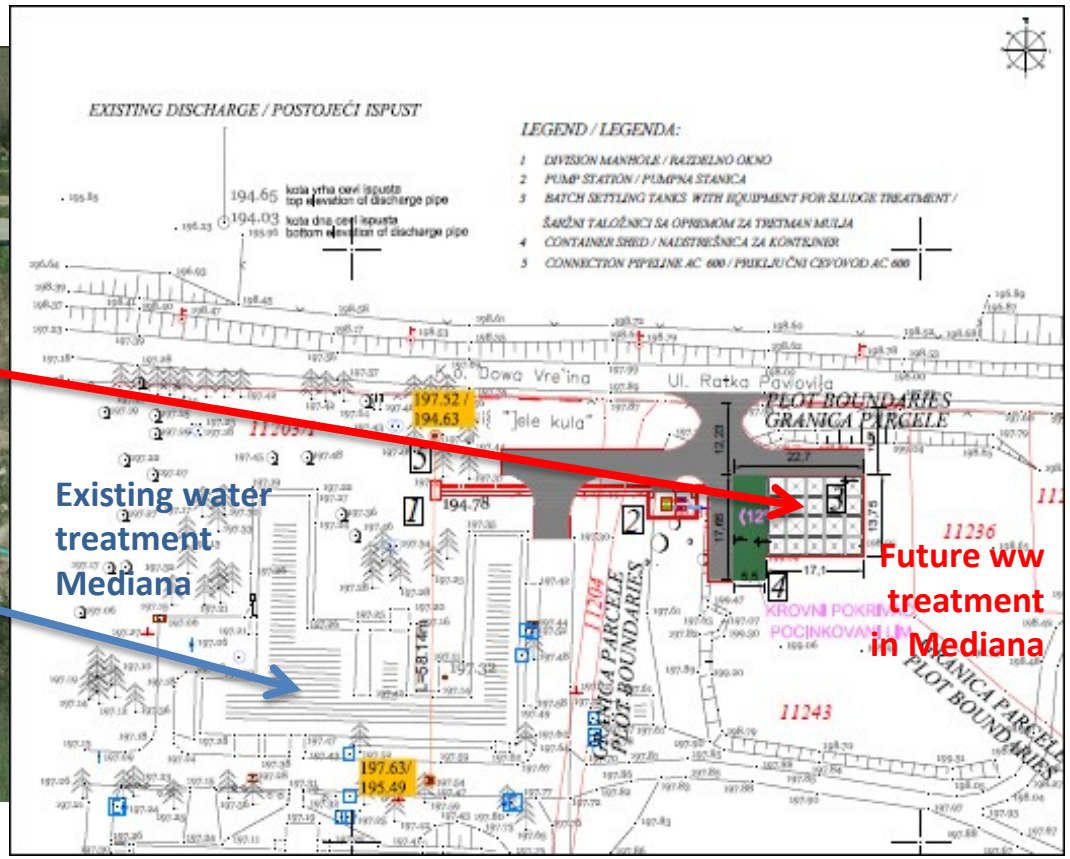
- Design sludge flow – 10 m^3/d per settling tank

- Design sludge flow – 177 m^3/d per filter tank

- Processes include chemical dosing, settlement, sludge thickening and dewatering

Area of WWTP Mediana within water plant Mediana





Wastewater Collection System Upgrade

- 4 main collectors (14km) and two minor sewers (2km); diameters 400mm – 1800mm
- Networks in 4 villages (total lenght 29km) : diameters 300-400mm
- 2 siphons under Nišava river
- 3 pumping stations

Collectors on the left bank of river Nišava

- Leftbank collector – DN 1800 mm, 4.750 m.

- Collector Dušan Popović – rehabilitation of existing collector DN 700/1050 mm, 1.229 m and DN 900/1350 mm, 708 m.

- Service collector with PS – DN 500-800 mm, 5.925 m.

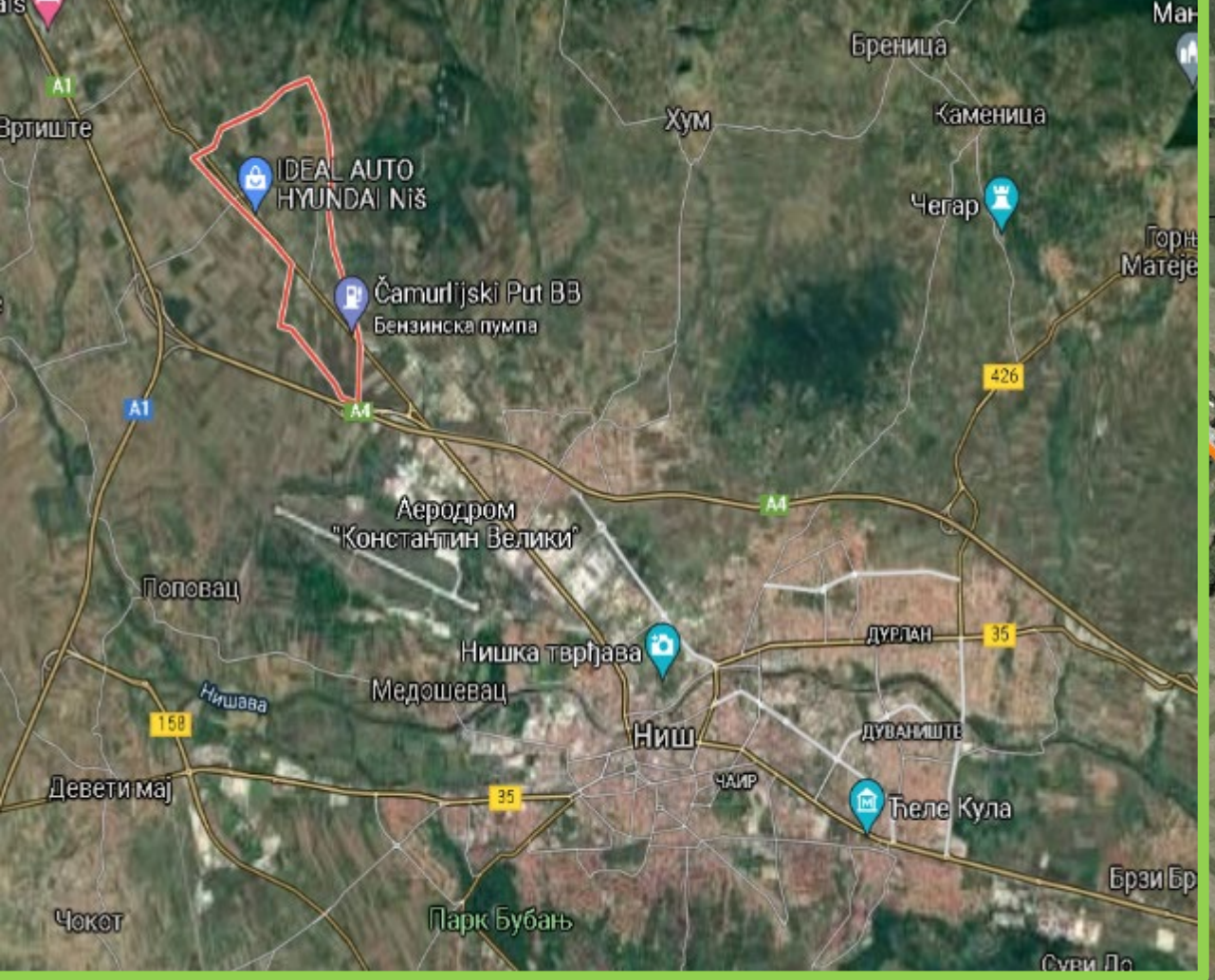
- Knjaževac collector - overflow DN 1000 mm, 17 m, collector DN 600 mm, 188m, and overflow DN 1000 mm, 60 m.

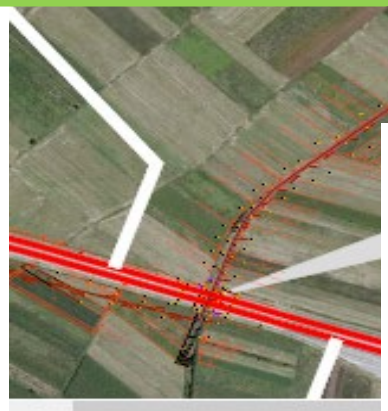
Collectors on the right bank of river Nišava

- Rightbank collector – DN 1500mm, 1.500m, with syphon under the river 600mm +2x1000mm, 140m.

- Medoševac collector with PS – DN 500mm, 3.267m.

- Medoševac pass under the river (towars WWTP) – DN 400 and 600mm, 112m.





sewerage network

DN 300 mm, 1.966 m

and collector

DN 400 and 500 mm, 4.266 m.

Sewerage for village Čamurlija

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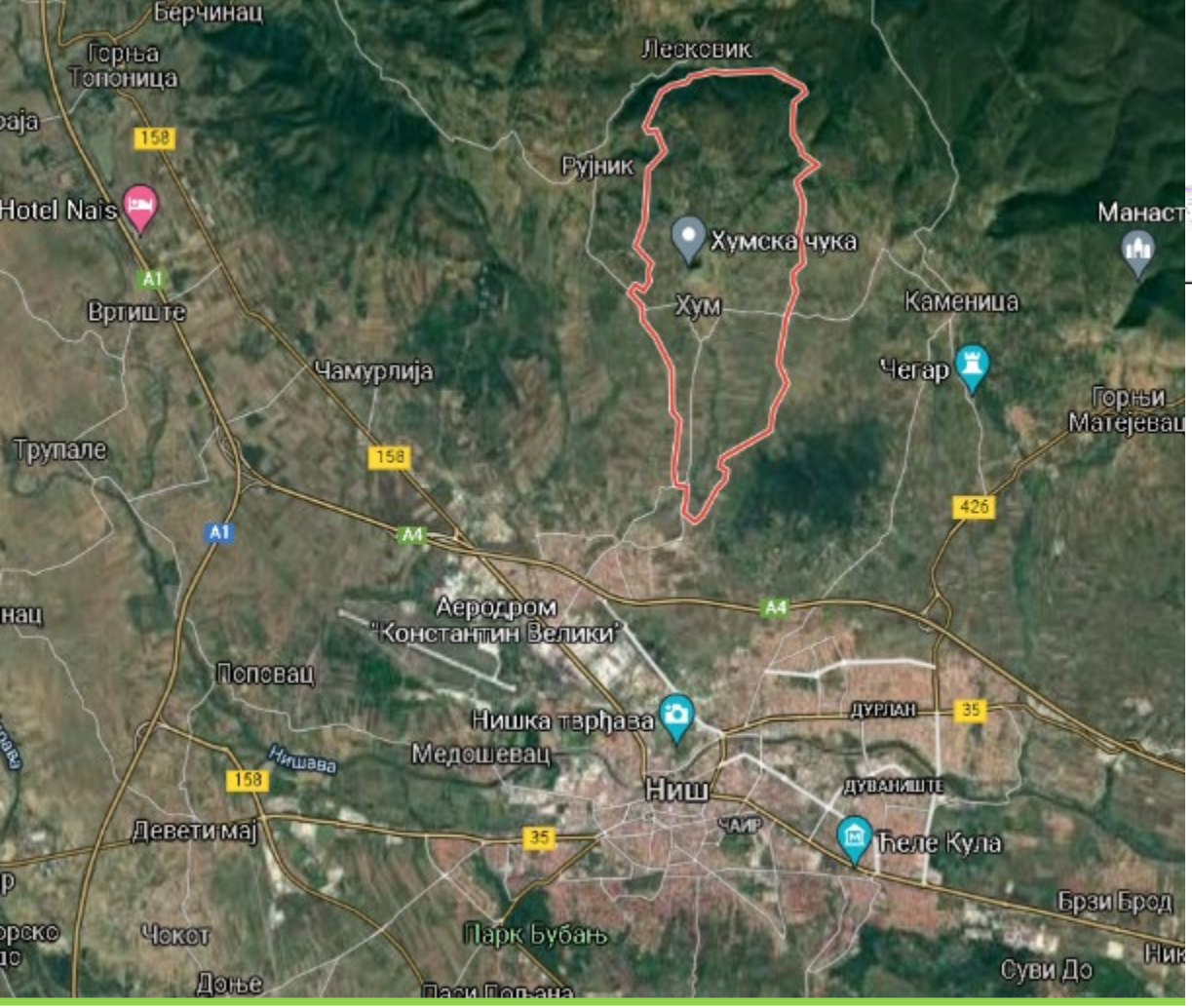
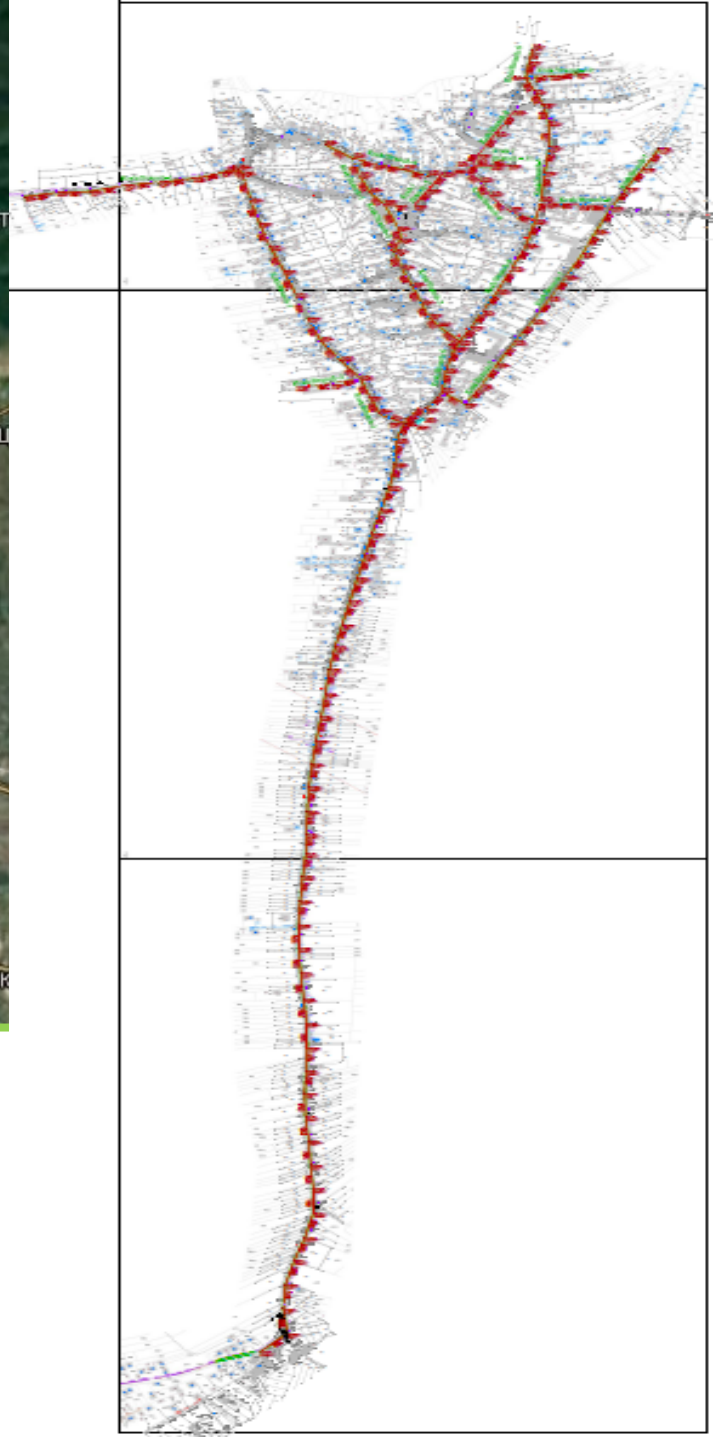
Sewerage for village Gabrovac

sewerage network

DN 300 mm, 3.572 m





Sewerage for village Hum

- sewerage network DN 300 mm, 3.408 m and collector DN 300 mm, 1.803 m.

Sewerage for village Jelašnica

sewerage network

DN 300 and 400 mm, 13.975 m

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