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Introduction of the Budapest Central WWTP project

The largest ever environmental investment in Hungary will be implemented in the Northern part of Csepel, with a budget of 400 million EUR: due to the Central WWTP 92% of the waste water produced in Budapest will be discharged after treatment to the Danube. The objectives are not only related to environmental protection or ecology, but the project will also solve a complete set of problems: the pebble layers as a drinking water base of Budapest in Csepel Island and the national heritage Danube bank will be protected from pollution. The present situation, that the effect of the pollution by Budapest can be experienced in a distance of several hundreds of kilometres from Budapest, will finally be ended.

At present, only 34 % of the waste water production of Budapest is discharged to the Danube after treatment. Thus for the complete, 100% biological treatment substantial investment is necessary. The catchment area of the WWTP in Csepel will cover more than half of the population of Budapest. It will treat 350 000 m³ waste water per day: this will exceed the present overall capacity of other modernised operating facilities in Budapest. Almost half of the districts of Budapest will be served by the CWWTP; the waste water from the City (Belváros), districts inside of Nagykörút, Kőbánya and from almost the total area of Buda. The extension of the collector system and the construction of three large pumping stations are also part of the project.

About 60-70% of the project will be covered by the European Union, the remaining part will be co-financed by Budapest and the Hungarian Government.

To prepare the project, technical assistance is being provided and the feasibility study, the financial and economic analysis, the environmental impact assessment has been prepared, the Cohesion Fund Application Form has been completed.

Following the approval of the Application Form the tendering phase can start, and after the public procurement procedure the works will commence.

The project includes the following elements:

- Waste water treatment plant and related public utilities, flood protection, discharge into the streamline
- Modernisation and capacity extension of pumping stations (Albertfalva, Kelenföld, Ferencváros)
- Construction of river crossings (Duna, Ráckevei-Soroksári Duna)
- Buda Danube Main Collector and supporting structure construction
- Composting plant
- Csepel road construction

Works	Construction and operation of facilities
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Locations of the project	Central part of Budapest and Csepel Island
Objectives	Collection of waste water from central parts of Buda and Pest. Transfer of waste water to the WWTP, treatment according to effluent standards before discharging to the Danube.
Capacity	<p>Sewer system with pipelines, main collector and four pumping stations:</p> <p>Total average water flow: 12 500 m³/h 300 000 m³/day</p> <p>Total max. water flow: 37.500 m³/h 900 000 m³/day</p> <p>WWTP:</p> <p>Design capacity in PE (population equivalent) 1.450.000 PE</p> <p>Composting plant:</p> <p>Sludge 115.150 m³/year 315 m³/day</p> <p>Csepel road: 3,8 km 2x2 lanes</p>
Construction period, expected lifetime of facilities	<p>Start of works 2005</p> <p>Completion of sewer network and main collector 2007/2008</p> <p>Completion of WWTP 2008/2009</p> <p>Useful lifetime ~ 20 years</p>

Technical description of the project

Budapest Central Waste Water Treatment Plant (BCWWTP)

The planned WWTP will be located at the Western part of the Northern point of Csepel Island, at a useful area of 29 hectares.

The location of the WWTP is one of the most highlighted areas in Budapest from development aspect – it is large, not built-in area in a preferred location. The co-ordination of the planned measure started in 1999, in order to harmonize the ideas for the future park, the marina, and the inhabited and public areas. The local government of Csepel has initiated the

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modification of the municipal plans to make the Eastern part of the island point ready for construction.

Waste water quantity, WWTP capacity:

Budapest Central Waste Water Treatment Plant

<i>Waste water flow</i> <i>(total of Zsigmond Square, Vas Gereben Street, Albertfalva, Ferencváros, Kelenföld pumping stations)</i>		
Max. daily waste water flow for mechanical treatment	900 000	m ³ /d
Max. daily waste water flow for biological treatment	350 000	m ³ /d
Average daily waste water flow	300 000	m ³ /d
Maximum storm water flow	20 588	m ³ /h
Population equivalent	1 450 000	

The BCWWTP will receive three types of waste water:

1. Household
2. Storm water
3. Industrial

In the WWTP the waste water will be treated mechanically, chemically and biologically. According to the recommended sludge treatment procedure, the sludge coming from the WWTP will be hygienised (heated to 70 °C), digested/stabilised (at 55 °C) and finally it will be dehydrated until 28% dry content is achieved. During the anaerob digestion process biogas will be cumulated, which is a valuable fuel rich in methane, and will be utilised for the production of heat and electricity in gas engines.

There is a severe anxiety regarding the odour originating from the plant. This has resulted in a recommendation according to which those structures of the WWTP in which there is a risk of production of stinking gases (e.g. hydrogen-sulfid and other organic materials containing sulphur), will be covered. (E.g. the inflow of waste water, all treatment facilities, and the sludge treatment equipment.)

The noisy equipment, especially compressors providing air for the biological treatment and the dehydration equipment will be placed in noise insulated buildings in order to minimise the noise in the environment.

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Pumping stations

At present four large, and several small pumping stations discharge the waste water to the Danube. The capacity of the large pumping stations (with the exception of the one at Zsigmond Square) will be extended to the necessary level. By changing their function, they will forward the waste water to the Central WWTP.

River crossing under the Danube

The water collected at Buda will be forwarded from the Kelenföld pumping station to the WWTP under the Danube in double pressure pipes with a diameter of 2xDN 1.400 mm.

Buda Danube Main Collector

At present the household and industrial waste water of the major part of Buda are discharged without treatment to the Danube at 16 locations of the Danube embankment, including several pumping stations and 7 free outlets. The inflow is usually directed in the streamline of the Danube, but there are some direct outlet from the embankment. In the latter ones, the water flow in case of storm is substantially increased. The future main collector will be a 6.8 km long, gravitation pipeline with its diameter increasing to the Southern direction, and it will collect the waste water which now flows into the Danube and transport it to the BCWWTP. The construction of the Buda Danube Main Collector mainly will be implemented by the widening of the Lower Bank, in the widened lane without utilities and traffic.

Composting plant

The planned treatment will consist of the mixing of the sludge with supplementary materials, and subsequent composting (biothermic neutralisation). The final product can be used for the covering of solid waste disposal sites, soil conditioning, recultivation of construction areas. The compost will be used for the recultivation of sites beside the agricultural markets, and of some abandoned mines (elg. Tatabánya) in the vicinity of Budapest.

The sludge treatment is planned outside of the plant, in a new, state-of-the-art composting plant on the site of the existing environmental enterprise of Budapest (Cséri telep, District XVIII.)

The composting technology has been recommended by the designers in closed facilities to eliminate the harmful effects on the environment.

The new plant will be located in District XVIII, at an area of 54,5 hectares.

The neighbouring „Bivalyrét” has been purchased by Budapest from the district local government in the framework of a Co-operation Agreement for single recultivation. The area is about 30 hectares.

This kind of use of sludge is in compliance of the sustainability directive of the European Union.

Csepel Main Road

The construction of the main road in Csepel is an indispensable part of the WWTP works, but it is not part of the Cohesion Fund project from financial aspects.

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The most burning problem of the traffic in Csepel is the North-South Budapest traffic rolling through the centre of Csepel. The works and sludge transport traffic, and its air pollution and noise impact makes necessary the construction of a by-pass main road. The 2x2 lanes road will be built on a new area – crossing industrial sites – and will include several junctions.

Areas involved in the project

Catchment area the Budapest Central WWTP:

- Central-Pest catchment area: whole territory of districts V., VI., VI., VIII., IX., majority of district X., smaller parts of districts XIII., XIV., XVIII., XIX. and XX.
The central pumping station of Pest is the pumping station in Ferencváros.
- Buda catchment area: whole territory of districts I., XII., majority of districts II and XI. And smaller parts of districts III. and XXII.
In Buda 3 pumping station are operational: Zsigmond Square, Albertfalva and Kelenföld).
 - Composting plant in District XVIII.

Implementation phases

The implementation of the Budapest Central WWTP has 3 phases:

1. Preparation
2. Design, licensing, public procurement
3. Construction works, operation

The preparatory phase has started in 2002 and the construction is expected to be completed in 2009.

The detailed schedule of the project is attached.

The Budapest Assembly has approved the measure document of the Central (Csepel) Waste Water Treatment Plant and related facilities in December 1999, according to which the Employer is the Lord Mayor's Office, and the employer's tasks are carried out by the Utilities Department.

ENVIRODUNA Investment Preparation Ltd. – in the propriety of the Budapest Local Government - was established on 1 February 2002, and is entrusted by the management of the project.