MVM PAKS II. ZRT.

ERECTION OF NEW POWER PLANT UNITS AT THE PAKS SITE

ENVIRONMENTAL IMPACT STUDY

SUBMISSION OF MISSING INFORMATION

based on the order with the reference number of BAG/2435-3/2015

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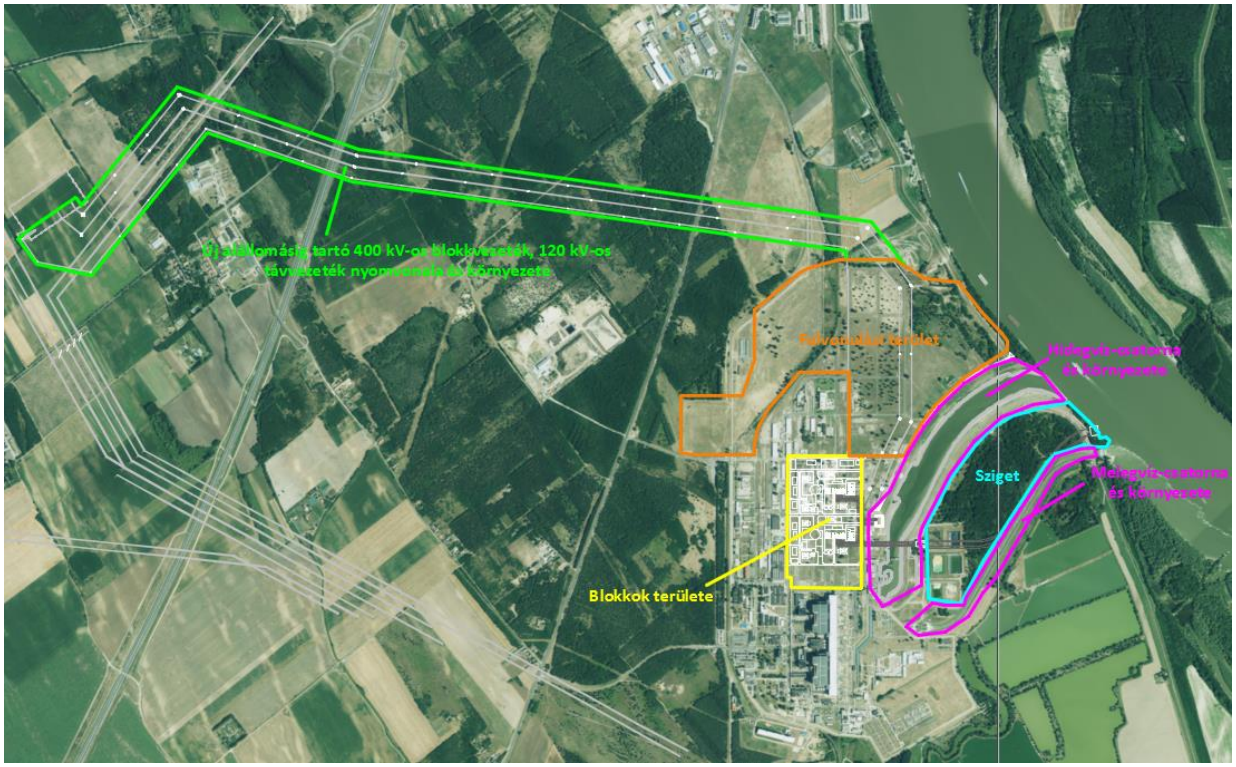
1. Statements concerning the forest as an environmental element in the Environmental Impact Study

Chapter 18 of the Environmental Impact Study (hereinafter referred to as: EIS) contains the detailed analysing and evaluating statements concerning wildlife, ecosystem and as part of the latter, the forest as an environmental element, discussing in details the baseline state of the forests on the area under investigation and the impact of the establishment and operation of the project.

Chapter 18.3 of the EIS contains the baseline characterisation and assessment of the flora in a 3 km radius environment of the Paks Nuclear Power Plant based on sample level biomonitoring tests in the year of 2012 and 2013, Chapter 18.4 sets out in details the impacts and impact areas of establishment, and Chapter 18.5 the impacts and impact areas of operation. Chapter 18.7, in turn contains a Natura 2000 impact assessment of the area occupied by a facility designed to the Danube banks, the energy dissipation device to be constructed at the Danube inlet point of the hot water channel on the Tolna-Danube (HUDD20023) Natura 2000 site, covering also the estimates on the tree stands of the part of the proposed riverside facilities concerning the Natura 2000 site.

Botanical characterisation and impact assessment of the project area and its close surrounding have been accomplished separately for the following sites.

- Paks II units
- Paks II erection area
- Cold and hot water channel and surroundings
- Area concerned by the investment project between the cold and hot water channel (Island)
- Unit line leading up to the new substation at 400 kV voltage level and the 120 kV transmission line including their surroundings



Új alállomásig tartó 400 kV-os blokkvezeték és a 120 kV-os távvezeték nyomvonala és környezete – Unit line leading up to the new substation at 400 kV voltage level and the 120 kV transmission line including their surroundings
Felvonulási terület – Erection area
Hidegvíz-csatorna és környezete – Cold water channel and surroundings
Melegvíz-csatorna és környezete – Hot water channel and surroundings
Sziget – Island
Blokkok területe – Area of Units

Figure 1-1: The area affected directly by the investment project and the areas assessed as part of the Environmental Impact Study

Chapter 7.3 of the EIS shows with the establishment and operation of the 400 kV voltage level unit line and the 120 kV transmission line which was the impact area of the impact assessment.

2. Areas expected to be affected by land use

The electronic annex to the EIS contained the list of forested areas affected by the route of the 400 kV voltage level unit line and the 120 kV transmission line.

Topographical number	Zoning	Settlement	400 kV unit line and 120 kV transmission line	
			construction	operation
050/2	Ev	Paks	+	+
050/4	Ev	Paks	+	
050/13	Ev	Paks	+	+
050/15	Ev	Paks	+	+
050/16	Ev	Paks	+	+
050/20	Ev	Paks	+	+
0278/1	Eg	Paks	+	+
0278/3	Eg	Paks	+	+
0312/3	Eg	Paks	+	+
0318	Ev	Paks	+	+
0319	Ev	Paks	+	+
0320/1	Ev	Paks	+	+
0322	Eg	Paks	+	+
0324	Eg	Paks	+	+
0326/2	Ev	Paks	+	
0329/1	Ev	Paks	+	+
0329/2	Ev	Paks	+	+
0331	Ev	Paks	+	+
0345/2	Ev	Paks	+	+
0352/3	Eg	Paks	+	+
0352/6	Eg	Paks	+	+
0356/1	Eg	Paks	+	+
0356/2	Eg	Paks	+	+
0356/3	Eg	Paks	+	+
0356/5	Eg, Ev	Paks	+	+
0359/2	Eg	Paks	+	+
0359/3	Eg	Paks	+	+
0359/5	Eg	Paks	+	+
0361	Eg	Paks	+	+
0367/6	Eg	Paks	+	
0367/7	Eg	Paks	+	
0367/8	Eg	Paks	+	
0367/11	Eg	Paks	+	+
0367/12	Eg	Paks	+	+
0367/14	Eg	Paks	+	+
0367/17	Eg	Paks	+	+
0367/19	Eg	Paks	+	+
0367/21	Eg	Paks	+	

Explanation:

Ev – Forested areas with protective functions (protected and protective)
Eg – Forested areas with economic functions

Table 2-1: The topographical list and categorisation of forested areas affected by the route of the 400 kV voltage level unit line and the 120 kV transmission line

3. Can there be any changes expected in the water regime of the forest soils in the surrounding areas due to water extraction operations?

WATER EXTRACTION FROM THE DANUBE DURING OPERATION

It was presented in details in Chapters 5.3.1 and 6.6 of the EIS that cooling water extraction will take place at the bank of the existing cold water channel, using the new embayment water extraction works situated approximately 150 m to the north from the existing water extraction plant. The pumping station of the new water extraction works providing the cooling water supply for the new nuclear power plant units will deliver cooling water from here to the condensers of the new power plant units through a pipeline.

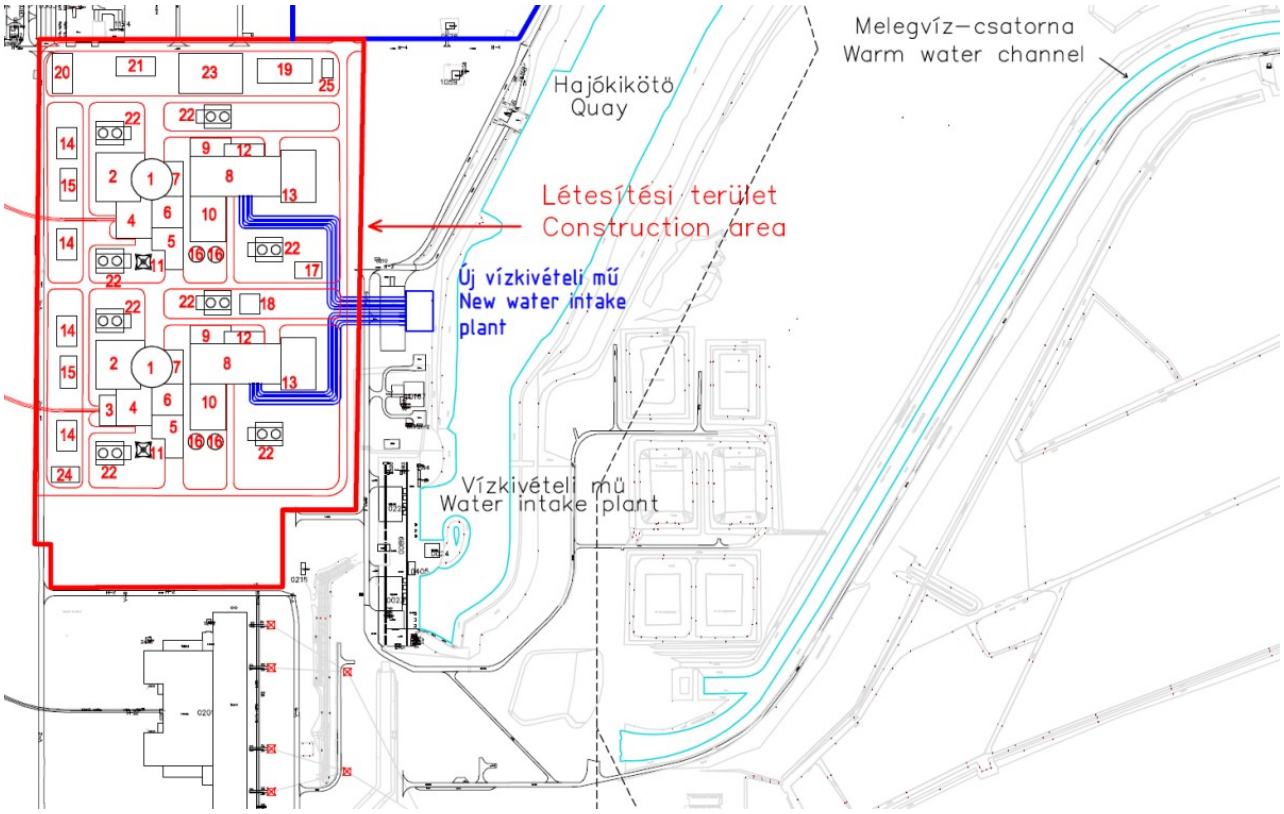


Figure 3-1: Cooling water supply from the embayment, water extraction from the existing cold water channel – layout map

Hot water discharge via the existing energy dissipation device and the northern branch from the hot water channel

Return of the water warmed up in the condensers into the Danube will take place through the existing hot water channel and the new channel branch from the hot water channel to the north.

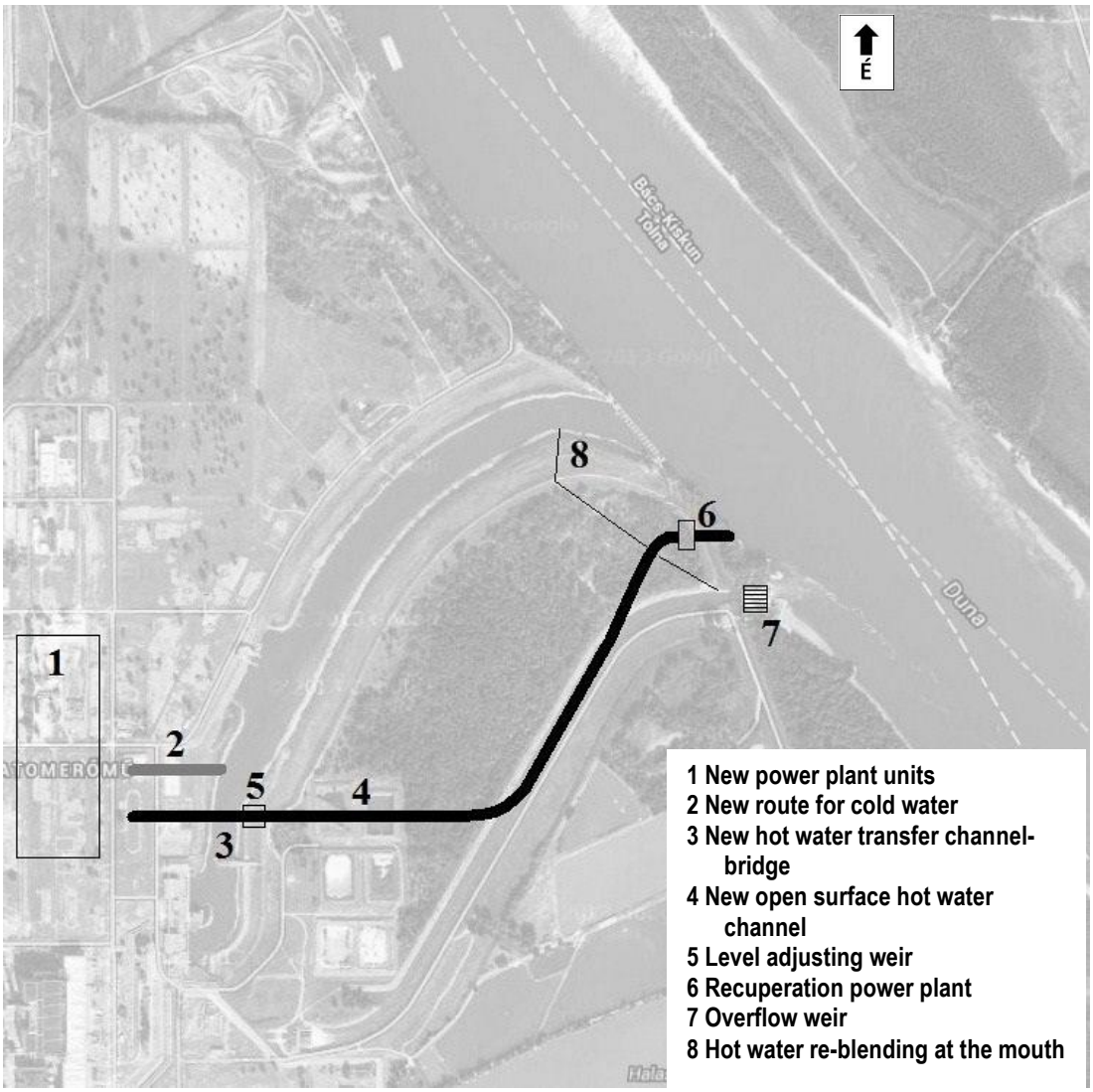


Figure 3-2: Hot water return using the existing hot water channel including a new structure improving mixing at the discharge site – layout map

As a result of the water extraction operations the depression value upstream and downstream of the water intake place is minimal, and can only be seen on the short section situated between the site of extraction and the discharge point. Having regard to the fact that the water regime on the Danube may cause a 10 metres fluctuation of the water levels just as well, compared to this the extraction of Danube water from the cold water channel and its return into the Danube cause merely a negligible change in the water regime of the soil under the gallery forests of the forested areas in the Danube floodway.

In Chapters 12.3.1.4.; 12.3.2.4.; 12.3.4.4 of the EIS no changes in the ecological status was demonstrated by the analysis investigating macrophytes and extended to the woody species on the riverside zones in the upstream and downstream section of the Danube. It can be concluded from the assessment of the average abundance values in the macrophyte communities on the Danube sampling sections and the subsequent cluster analysis that the hot water discharge and in conjunction with this the water regime of the soil has no significant impact on the macrophyte stands, including tree stands along the riverside zone.

Chapter 14.4 of the EIS shows modelling results of geological media and underground water bodies in the Danube valley downstream of the Paks site on which basis it can be concluded that Paks II will not result any substantial temperature rise in the groundwater system even in the event of a conservative estimate. Based on them it can be stated that the extraction of water will have no influence on the water regime of the gallery forest belt in the riverside zone of the floodway.

DEWATERING OF WORK PITS DURING CONSTRUCTION

In Chapter 13 of the EIS the geological medium and the underground water bodies found at the site and within the next proximity of the site. During the erection of the new power plant a large volume of underground water will be removed and discharged into the Danube in order to drain the work pit excavated for the purposes of laying the foundations. A detailed analysis of this was presented in Chapter 13.5. The impact of draining the foundation work pits was defined with the average value of the annual water level fluctuations observed in all monitoring wells situated at the site (~3.12 m = 3 m). The impact area ranges up to the line of 3 metres groundwater table subsidence (marked with red contours). Based on the modelling findings it can be clearly seen that the impact area is restricted to a range within the site, no impacts are seen beyond the property boundaries since no groundwater table sinking occurs beyond those boundaries, therefore the operation will have no impact on the groundwater regime or on the micro-climate, and hence, their joint impact can not be interpreted, either.

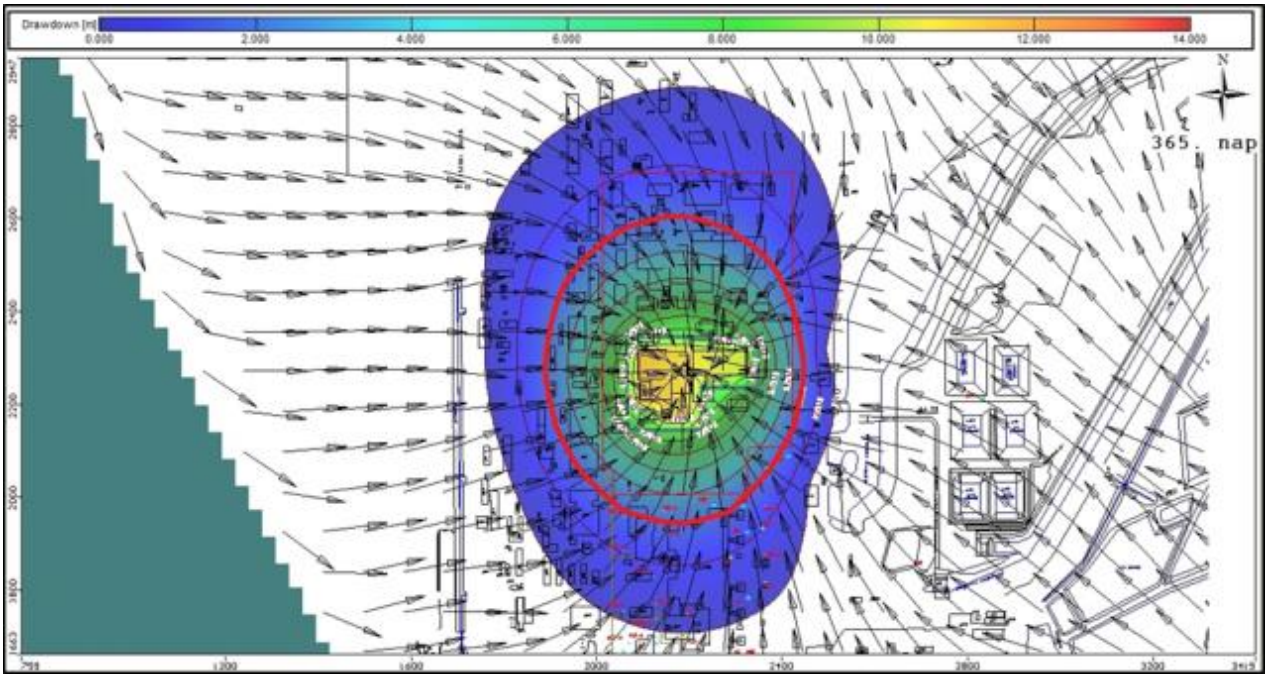


Figure 3-3: Impact area of dewatering in the first work pit

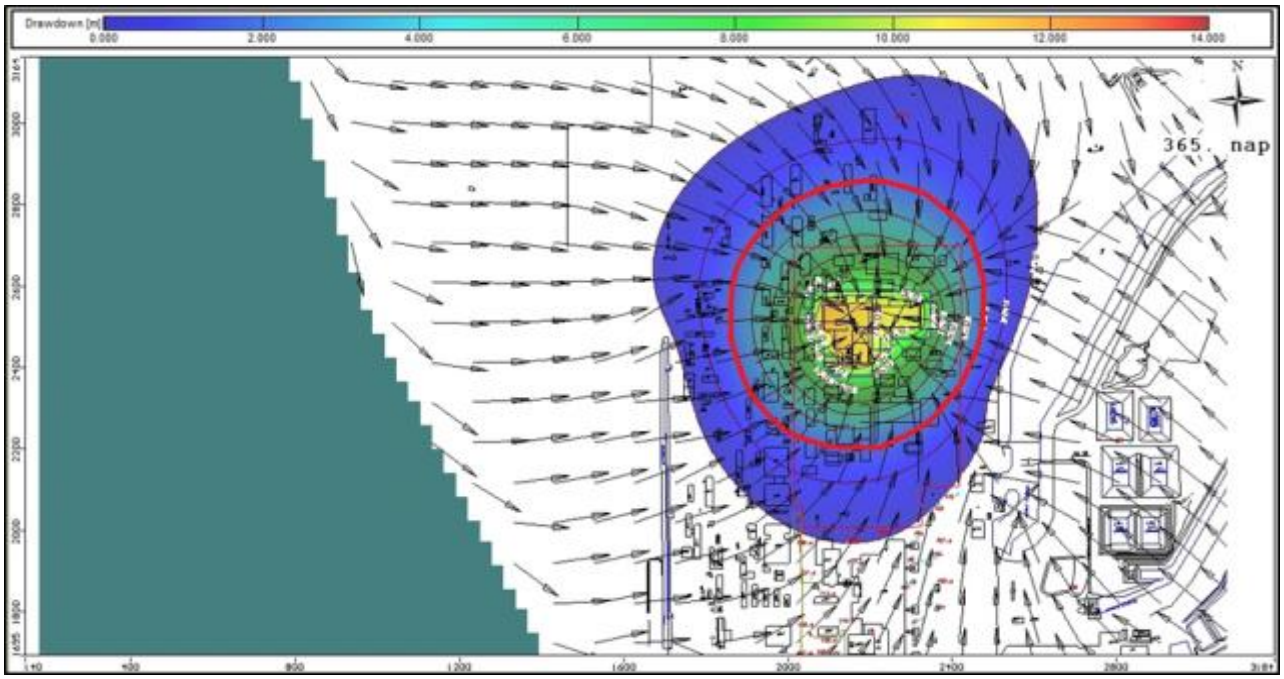


Figure 3-4: Impact area of dewatering in the second work pit

4. How the micro-climate is about to change?

Chapter 10 of the EIS presented the climatic description of the Paks site and a 30 km radius surrounding in details. Chapter 10.3 deals with the micro-climate of the environment around the proposed site and Chapter 10.4 explains climatic models.

The National Meteorological Service (OMSZ) carried out characterisation of the environment around the proposed site by analysing the data from four measuring stations, Paks station operated since 1979, and three additional temporary measurement stations installed under the Lévai Project measured between 1 April 2012 and 30 November. The formerly presented 1981-2010 average benchmark values were first compared to the findings of Paks station measured in the period from April 2012 to March 2013, then the data measured at Paks and the four stations installed in the surrounding in the period from April 2012 to November 2013 were analysed and compared. It can be demonstrated from these tests that to which extent the study period was different from the average conditions and whether or not any significant meteorological difference can be demonstrated in the surrounding of the Paks Nuclear Power Plant.

Locations of the measuring stations assessed

- Paks station, to the west from the southern entrance of the power plant in a distance of approximately 300 metres
- Paks, Boat House, to the north-east from the southern entrance of the power plant in a distance of approximately 1 km on the right bank of the Danube
- Paks, Gesztenyés Street, to the north-northwest from the southern entrance of the power plant in a distance of approximately 4 km in the western outskirts of Paks
- Uszód, Baráka Water Works, to the south-east from the southern entrance of the power plant in a distance of approximately 5 km on the left bank of the Danube

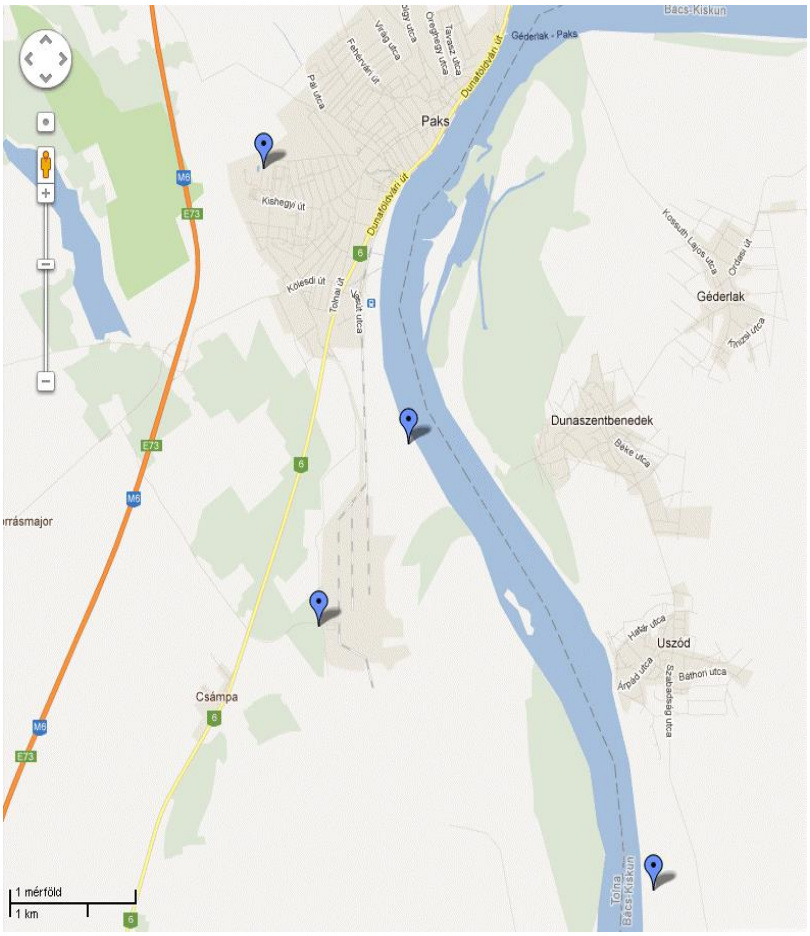


Figure 4-1: Locations of the meteorological measuring poles

The usual measuring and data collecting procedures were used for the three installed stations to ensure comparability of the data obtained.

The following meteorological parameters were measured during the measuring sessions.

- Atmospheric pressure
- Wind speed
- Wind direction
- Air temperature
- Air humidity

Comparison of measurements at Paks station with multiple years average

In a similar manner like in the nation-wide conditions, it was seen that the period under investigation proved to be hotter than the average values in the period between 1981 and 2010 (except two months). Humidity parameters reflected dryness of the air space in the first half of the period and a more humid air from mid-Autumn. Studying wind speed levels it can be seen that with the exception of January all months featured averages below the standard average, but in January and in March a lot more stormy days were recorded than ordinary.

Comparison of data from the four stations

Due to the closeness of the stations to each other most meteorological parameters reflected similar values, any major differences were observed in the wind conditions only. As to the extremes of the minimum and maximum temperature levels, both the highest monthly maximum temperature levels and the lowest monthly minimum temperature levels could be recorded in Paks station most, in other words this station showed the largest monthly temperature fluctuations in the period under investigation. Sea level air pressure and humidity parameters were very similar in all four stations. However, when the wind conditions were analysed, differences can be seen in both wind speeds and wind directions. Paks station proved to be the least windy station and was characterised by lower average wind speed values and more windless hours than the other three stations. As to the average wind speeds and windless hours, Uszód station proved to be the windiest but the highest maximum gales were recorded at Paks Boat House for most of the time.

Climate models

According to the general conclusions of the climatic models a warmer and dryer air climate can be expected the effect of which will be felt in the micro-climate as well, but this is connected not so much with the construction works and later on with operation, much rather with the expected global changes of the climate.

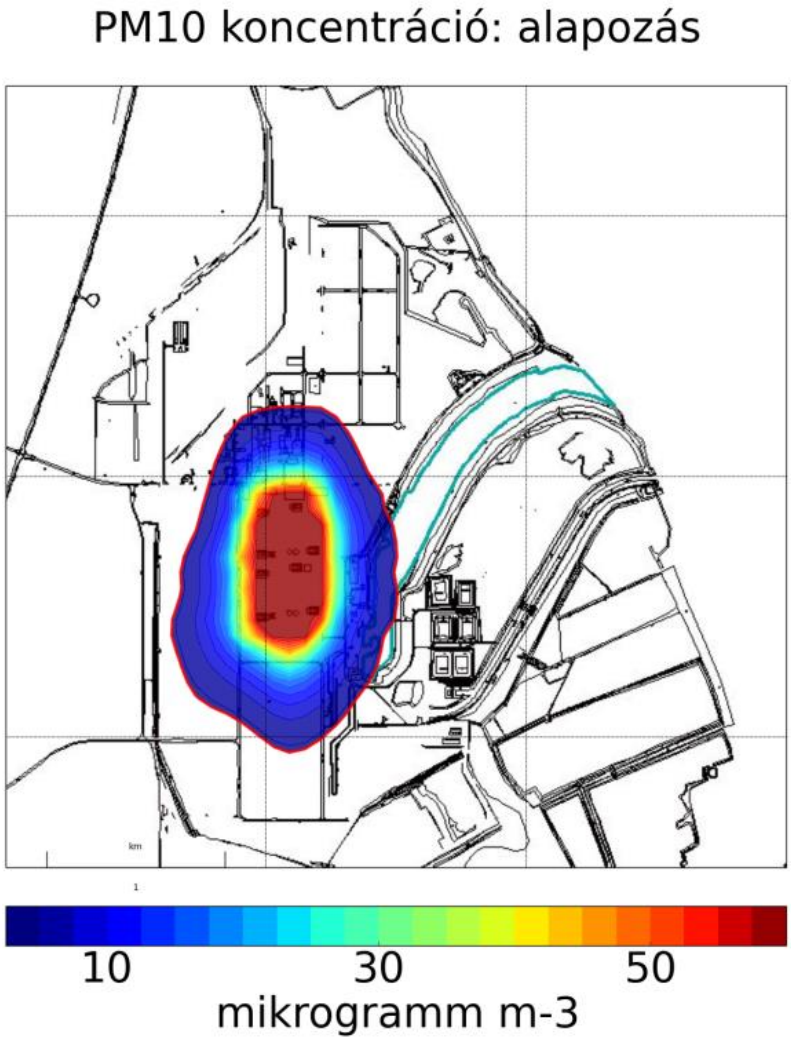
5. What kind of impacts these two conditions taken together can exert on the site factors and indirectly on the forest ecosystem?

Since based on the foregoing demonstrations it can not be expected that the investment project will have any significant impact on the water regime of the soils and on the micro-climate, no joint impact should be reckoned with, either.

6. What degree of settling flying dust is expected on surrounding planted and forested areas during the construction phase? What kind of physiological impacts may arise due to flying dust settling?

Chapter 16 Air of the EIS presented with detailed models how the air pollutants, including particulate matter and dust migrate. In this respect the largest loads are represented in the foundation period of the establishment phase, where the maximum expected PM_{10} concentration calculated on the basis of the contaminants emissions from earth works ranges up 190 µg/m^3, identified within the plant site. According to the modelling data no violation of the respective limits can be expected beyond the plant site.

The impact area is situated within the 1000 metres radius of the plant site. The boundary of the impact area is indicated on the figure below as a red line.



PM10 koncentráció: alapozás – PM10 concentration: preparation of foundation

Figure 6-1: PM_{10} impact area during the preparation of foundation period

Section 18.3.4 of the EIS demonstrates direct and indirect impact processes and impacts, and Section 18.4.4 the impact areas. Based on the modelling data of air pollution no physiological effects are expected by the particulate matter concentration (flying dust) developed at the protective forest belt or plants bordering the Paks site from the west on those plants.