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Slovenské Elektrárne, a.s.
Nuclear Power Plant Mochovce VVER 4 × 440 MW 3rd construction
Rel. 08508370478/R670

Intent pursuant to Act No. 24/2006 Coll.

Rev. 0

December 2008

INDEX

A. INTRODUCTION

Slovenské Elektrárne a.s. ("SE") has entrusted Golder (Europe) EEIG ("Golder") to undertake the preparation of Intent pursuant to Act No. 24/2006 Coll. for the proposed activity named "Nuclear Power Plant Mochovce VVER 4 × 440MW 3rd construction".

Golder has carried out the present Intent also using some data available from the previous environmental impact studies performed for the authorization phases of Mochovce NPP and from updated environmental and social analysis carried out for finishing units 3 and 4.

The location of Mochove NPP is reported in **Figure 1.1**.

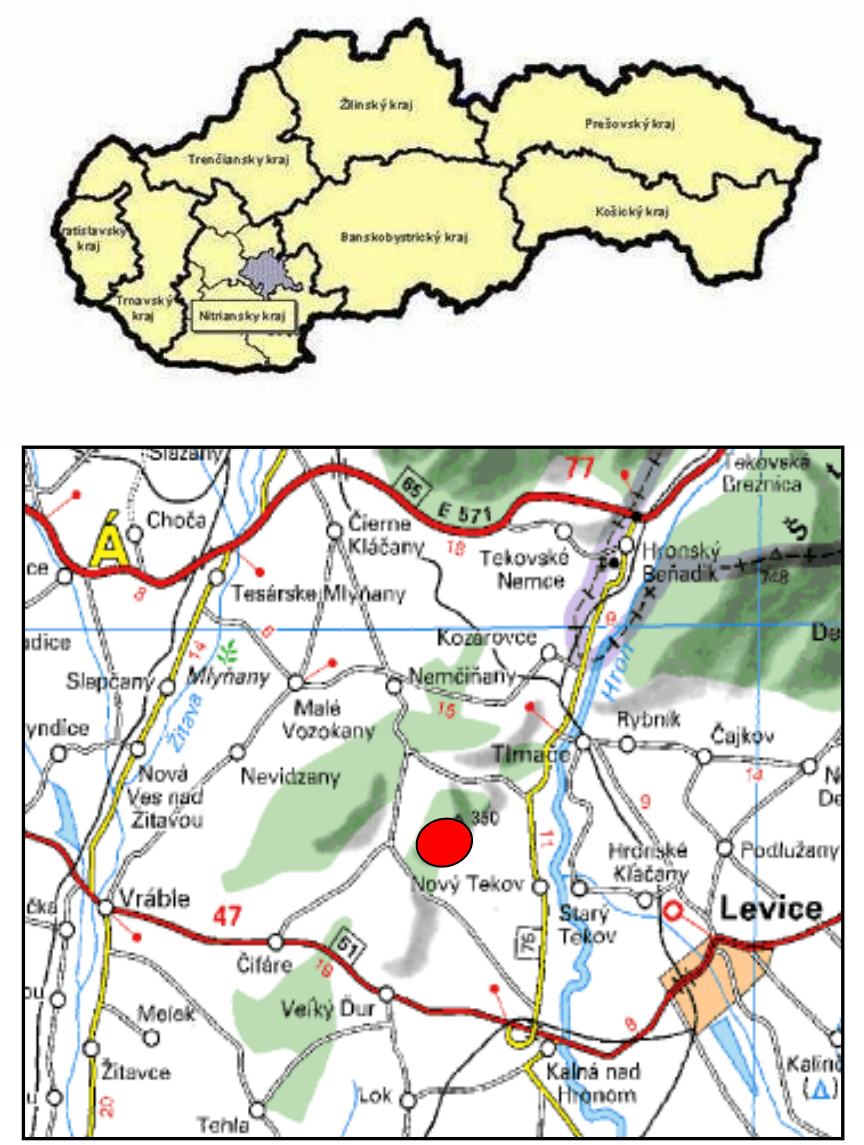

Figure 1.1 – General location of the site

B. INTENT STRUCTURE

The present Intent has been elaborated according to the Slovak legal provisions of the Act No. 24/2006 Coll. and the structure of the Intent strictly follows the requirements of Act No. 24/2006 Coll., Annex 9 and consists of the following parts:

I. Basic data on proponent;

II. Basic data on proposed activity;

III. Basic information on current environmental conditions in the concerned area;

IV. Data on anticipated impacts of the proposed activity on the environment, including health, and on potential mitigation measures;

V. Comparison of alternatives of the proposed activity and selection of an optimum alternative;

VI. Maps and other pictorial documentation;

VII. Additional information about the Intent;

VIII. Place and date of intent preparation;

IX. Confirmation of data correctness.

The Intent has been undertaken considering the following official documents:

1. Preliminary Safety Assessment Report of Mochovce NPP, elaborated by Energoprojekt Praha (June 1984). This chapter takes into account the operation of four Units;
2. Preliminary Safety Assessment Report of NPP Mochovce, elaborated by Energoprojekt Praha (March 1986);
3. Safety Upgrade and Completion of Units 1 and 2 of the Mochovce Nuclear Power Plant: Environmental Impact Assessment“, elaborated by AEA Technology (November 1994);
4. Environmental study of Unit 3 and 4 of NPP Mochovce elaborated by VUJE Tranava a.s. (November 2004);

The studies elaborated by Energoprojekt Praha in 1984 and 1986 were carried out in order to get the required authorization for the siting and construction of Mochovce NPP, Units 1 and 2 and Units 3 and 4.

The study elaborated by AEA Technology in 1994 was carried out in connection with a submission by the Slovak national power utility Slovenský energetický podnik (SEP) for financial support to facilitate the upgrading and completion of Units 1 and 2 of the Mochovce NPP.

Environmental study by VUJE Trnava a.s. from 2004 was elaborated on a voluntary basis only for internal use.

I BASIC DATA ON PROPONENT

I.1 Name

Slovenské elektrárne, a.s. Bratislava
NPP Mochovce, Units 3 and 4

I.2 Identification number

ICO - 35829052

I.3 Seat

935 39 Mochovce

I.4 Authorized representative

Mr. Giancarlo Aquilanti, Project Director SE, a.s.MO34,
Units 3 and 4 Mochovce NPP, závod, 935 39 Mochovce,
phone number: +421 36 637 8607,08

I.5 Contact person

Mgr. Jozef Belaň, Permits and Licensing Department Manager,
Units 3 and 4 Mochovce NPP, závod, 935 39 Mochovce,
phone number: +421 36 637 8152

II BASIC DATA ON PROPOSED ACTIVITY

II.1 Name of project

Nuclear power plant Mochovce VVER 4 × 440MW, 3rd construction

II.2 Aim

The aim of the project is to commission and operate Units 3 and 4 of Mochovce NPP, already authorized for their completion, in order to produce the required base load electric energy that is needed to cover the significant gap between demand and supply of electric energy on the Slovak network.

II.3 User

Slovenské elektrárne, a.s. Bratislava

NPP Mochovce, Units 3 and 4

II.4 Character of proposed activity

The proposed activity is the continuation of a project of construction of Units 3 and 4 of NPP Mochovce, which has been already planned and for which relevant building authorities have already issued construction permits.

The character of the proposed activity consists of two nuclear units aimed at producing electric energy.

II. 5. Location of the proposed activity

Units 3 and 4 of Mochovce NPP are located in Central Europe in the southeastern region of Slovakia on the western boundary of the district of Levice, close to the operating EMO1, 2 NPP. The MO34 site lies on the southwestern edge of the Kozmálovské vŕšky (hills) in the Hronskej pahorkatina (uplands). The elevation of the terrain is between 200 and 250 meters above sea level. The coordinates of the center of the Mochovce NPP protection zone are:

longitude 18° 27′ 35′′

latitude 48° 15′ 35′′

From the point of view of the terrestrial and administrative arrangement of Slovakia the MO34 site lies in the eastern part of the Nitra region in the

northwestern corner of the district of Levice, close to the boundary with the Zlaté Moravce region, i.e. approx. 12 km from the municipality of Levice, which is the largest town in a 20 km radius of the NPP. Other municipalities are Tlmače which is 7 km away, Zlaté Moravce 14 km away, Nitra 27 km away and the outskirts of Slovakia's capital city of Bratislava are approx. 90 km to the west of MO34 i.e. 120 km by public roads. Budapest and Vienna are the closest cities with over 1 million inhabitants in a 200 km radius of MO34. The outskirts of Budapest are approx. 85 km to the southeast of MO34 and the outskirts of Vienna are about 145 km to the southwest. Other large agglomerations with more than 1 million inhabitants are Varšava to the north, Záhreb to the south, Kyjev to the east, and Prague to the west.

Slovakia shares its borders with five other countries: Hungary, Austria, the Czech Republic, Poland and the Ukraine. The approximate distance of the MO34 site from the individual state borders is included in the following table:

Country	Distance from MO34 to state border
Hungary	37 km
Austria	110 km
Czech Republic	85 km
Poland	130 km
Ukraine	270 km

Table II.1 - Distance from MO34 to individual state borders

The closest state boundary is the border with Hungary. The Ipeľ River forms a natural boundary with Hungary in a 50 km radius of the site with the exception of the boundary between the municipalities of Šahy and Ipeľský Sokolec. The closest NPP is in Jaslovské Bohunice which lies approx. 64 km from MO34.

Land parcel numbers are included in table II.2.

Code and name of district	402 Levice
Code and name of municipality **Name and number of cadastral territory** **Parcel number**	502 413 – Mochovce, 838 152 – Mochovce, Nový Tekov, Number of parcels can be found in archive of proponent

Table II.2 - Identification of the area of interest

Cadastral map and a diagram of the site are included in Annex 1.1.

II.6 General overview of the location of the proposed activity

General overview of the location of the proposed activity in a scale of 1:50,000 is included in Annex 2.1.

II.7 Time scheduling for starting and completing the construction and operation of the proposed activity

Construction works for MO34 started in 1986 with the laying of the foundations of the main buildings (reactor building, longitudinal electrical building, basement of transformers, cooling towers, vent stack) and continued up to 1992. In 1992 construction works were suspended due to insufficient funds. At that time the civil parts were up to 70 % complete and the machinery parts up to 30 % complete. The basic technological equipment like the reactor vessel, the steam generators, the pressurizer, the safety systems and the main parts of the turbines were delivered to the site and partially installed.

From 1992 to 2000 maintenance and conservation of suspended equipment and components and of the civil structures were carried out by the original main suppliers and constructors. From 2000 to-date the preservation and protection works have been performed on the basis of programs following technical guidelines of the IAEA and approved by the Nuclear Regulator Authority (ÚJD) of the Slovak Republic.

The assumed time schedule for the start and completion of the construction work and operation of the proposed activities is as follows:

Beginning of construction:	1986
End of construction:	February 2012 (Unit 3) – July 2012 (Unit 4)
Beginning of operations:	November 2012 (Unit 3) – June 2013 (Unit 4)
End of operations:	November 2052 (Unit 3) – June 2053 (Unit 4)

II.8 Brief description of the technical and technological solution

Primary circuit

The primary circuit of each unit is formed by the reactor and six coolant loops (see Figure II.1); each loop consists of a hot leg with an isolation valve, a steam generator and a cold leg with a reactor main circulation pump and an isolation valve. The reactor main pumps circulate pressurized water for removing heat from the reactor core. The pressurizer establishes and maintains the reactor coolant system pressure within the operational conditions and allows compensation for reactor coolant volume changes during operation. Steam generators are the interface between the nuclear system (primary) and the steam system (secondary). Each steam generator is a tubular evaporator of horizontal design.

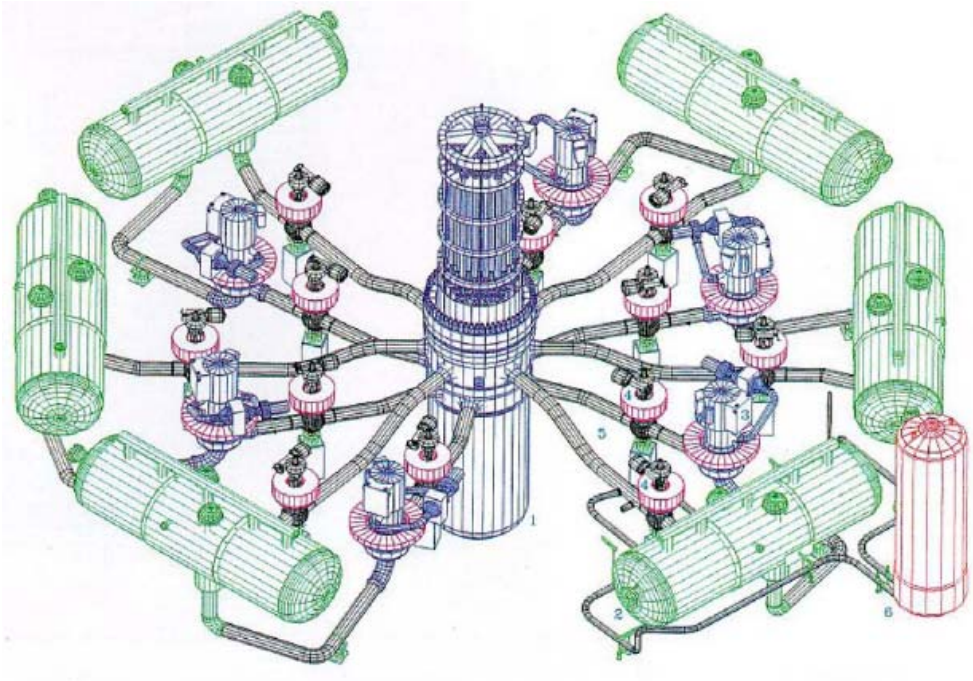

Figure II. 1 - Primary circuit

The fuel assemblies are placed in the reactor pressure vessel where chemically treated water (coolant) runs through channels of the fuel assemblies and removes the heat generated by the fission reaction. The water exits the reactor at the temperature of about 295°C (temperature increase through the reactor is

about 28°C). The fuel used is uranium dioxide (UO_2). Nuclear units operate in campaigns and periodically the reactor is shut down for refueling.

Table II.3 summarizes the main technical parameters of the primary circuit.

Reactor Thermal Power	1.375 MW
Total coolant flow rate	43,500 m^3/h
Mean outlet reactor temperature	295 °C
Mean inlet reactor temperature	267 °C
Mean heat-up in the core	28 °C
Pressure in the primary circuit	12.36 MPa
N° of main coolant pumps	6
N° of SG's	6
N° of main isolating valves	12

Table II.3 - Main parameters of primary circuit

Secondary circuit

The steam generated by the six steam generators is piped through 6 high pressure steam lines outside the reactor building to the turbine hall. The turbine hall is shared by all four units. For each unit the hall houses two Steam Turbine Generator sets. Each steam turbine is composed of one high-pressure section and two low-pressure sections. The exhausted steam condenses in the main condensers (two per each turbine, i.e. one for each low pressure section), which are cooled by the circulating cooling water system. The condensate (feed water) is then reheated and sent back to the steam generators.

The following table summarizes the main technical parameters of the secondary circuit.

N° of Steam Turbine Generator sets for each unit	2
Pressure of SG	4.74 MPa
Saturation temperature	260°C
Pressure at the inlet of HP turbine	4.4 MPa
Steam flow rate at inlet of each turbine-generator	420 kg/s
N° of cooling towers for two units	4
Circulating cooling water flow from cooling towers for each unit	74,200 m^3/h
N° of Low Pressure Heaters for each steam turbine	5
N° of Feedwater tanks (deaerators) for each steam turbine	1 (2)
N° of High Pressure Heaters for each steam turbine	2
N° of Feedwater pumps for each unit	4 + 1 standby
Unit gross output power (at rated reactor thermal power)	535 MW
Unit net output power	500 MW

Table II.4 - Main parameters of secondary circuit

II.9 Reason for selecting the given location

Mochovce NPP was designed and its construction has been launched and realized as a four-unit NPP with common civil structures and technological components to be shared by all the four units. That means that the site of Mochovce NPP has been conceived to host four units and all the environmental evaluations (which were necessary to obtain the siting and construction permits) have been carried out always taking into account the likely impacts and the needs of four units.

From the point of view of water needs, waste production, atmospheric releases and liquid discharges, electric grid, land use, infrastructures, roads, railway and all the external services, the Mochovce site is fully capable of bearing Units 3 and 4.

Moreover, due to the advanced stage of completion of Units 3 and 4, Mochovce site represents a one off opportunity to cover in a short time the significant gap between demand and supply of electric energy on the Slovak network

II.10 Total cost (estimated)

As of October the 14th 2008, the overall Project cost is 2.774.848.782 €.

The main breakdown (in €) is as follows:

- Nuclear Island 1.255.048.782 €
- Conventional Island 1.028.000.000 €
- Balance of Plant 361.800.000 €
- Main Instrumentation and control 130.000.000 €

II.11 Affected communities

From the siting and location point of view, Mochovce NPP belongs to the administration municipalities of Novy Tekov and Kalná nad Hronom. (complex of civil structures lies in cadastral lands of Nový Tekov and Mochovce municipality, that was cancelled due to the construction of Mochovce NPP and Mochovce administration was transferred under the municipality of Kalná nad Hronom).

There will be minor impacts on villages located nearby Mochovce NPP (on the border of the protection zone 3 km from the centre of the power plant) by activities related to commissioning and operation which will lead to a slight increase in discharge into atmosphere and hydrosphere above the current discharge levels. These villages are considered as being affected villages because their cadastral areas are in direct contact with the power plant.

Affected villages are as follows:

- in the district of Levice:	Nový Tekov (Marušová), Starý Tekov, Kalná nad Hronom, Veľký Ďur, Lipník (Tlmače) a Malé Kozmálovce,
- in the district of Zlaté Moravce:	Nemčiňany,
- in the district of Nitra:	Čifáre.

II.12 Affected autonomous regions

The autonomous region of Nitra is affected by the proposed activities.

II.13 Affected authorities

- Ministry of Environment of the Slovak Republic, Department of EIA, Hanulova 5/D Dubravka, 841 00 Bratislava
- Ministry of Environment of the Slovak republic, Department of Nature and Landscape Protection, Nám. Ľ. Štúra 1, 812 35 Bratislava
- Ministry of Environment of the Slovak republic, Department of Water and Energy Resources, Nám. Ľ. Štúra 1, 812 35 Bratislava
- Ministry of Construction and Regional Development of the Slovak Republic, Department of inspection and construction administration, Prievoznická 2/B, 825 25 Bratislava 26
- The autonomous region of Nitra, Department of regional development, Štefánikova trieda 69, 949 01 Nitra
- Regional Office of Environment in Nitra, Department of environment, Janka Kráľa 124. 949 01 Nitra
- District office Levice, Department of Crisis Management, Ludovíta Štúra 53, 934 03 Levice
- Regional office of Public Health in Nitra, Štefánikova 58, 949 63 Nitra
- Regional office of fire and rescue corps in Nitra Dolnočermánska 64 94911 Nitra
- District office of fire and rescue corps Levice, Požiarnická No. 7, 943 01 Levice.

II.14 Permitting authorities

Nuclear Regulatory Authority of the Slovak Republic (NRA SR)

II.15 Ministry

Ministry of Economy of SR, Mierová 19, 827 15 Bratislava 212

II.16 Required permits for proposed activity based on specific legislation.

Operation of nuclear installation MO34 will be possible only based on authorisation for commissioning and operation issued by NRA SR in accordance with section § 4 point 1, letter d) of the Act No. 541/2004 Coll. on peaceful use of nuclear energy as amended and supplemented by some other acts.

II.17 Assessment of cross-border impacts of proposed activity

The results of the radiation impact assessment show that cross border impacts of the project are not likely. Due to the extremely low values of discharge of radionuclides from EMO12, the discharge from MO34 ventilation stack into atmosphere is not likely to exceed the existing limits. The calculation of radiation load to the public beyond the state boundaries shows that there are no appreciable cross-border impacts.

III BASIC INFORMATION ON CURRENT ENVIRONMENTAL CONDITIONS IN THE CONCERNED AREA

The concerned area of the project includes the following regions (Figure III.1) that can reasonably be expected to be directly or indirectly affected by the project, or which may be relevant to the assessment of cumulative effects and the effects from future operation of the facility:

- *Site Study Area*: this area, centred on the plant site with a radius of about 3 km, includes facilities, buildings and infrastructure at the Mochovce site, including the licensed buffer zones (Protection zone) for the site on the land. This zone, where it is forbidden to reside permanently, has been set by Decree of Region Health Officer No. H-IV-2370/79 from 15.10.1979;
- *Local Study Area*: this area is defined as that area existing outside the site study area boundary, where there is a potential for impacts in the unlikely event of abnormal operating conditions. The Local Study Area generally corresponds with the 10 km emergency planning zone (centred on the Mochovce site), as identified by Emergency Measures;
- *Regional Study Area*: this area is defined as that conservative area within which there is the potential for cumulative and social-economic effects and it approximately corresponds with a 50 km radius area around the site, limited to National borders. The size and configuration of the applied study areas varies by environmental component. Each is described, including the rationale for its determination, in the appropriate subsections.

Even if some of environmental effects of the project, including malfunctions or accidents and some cumulative environmental effects, are likely to involve the Local Study Area or the Regional Study Area, the main additional environmental effects that may occur during operational phase are likely to be observed within the Site Study Area (Protection zone).

Figure III.1 -Site Study Area (3 km), Local Study (10 km) and Area Regional Study Area (50 km)

1 CHARACTERISTICS OF NATURAL ENVIRONMENT, INCLUDING PROTECTED AREAS

1.1 Atmospheric environment

The information about the meteorological conditions in the locality of the nuclear power plant have been processed according to IAEA documents, which determine requirements, conditions, and procedures for the fulfilment of safety criteria.

Data on meteorological observations and measurements have been used from the Mochovce locality, from meteorological stations of the SHMÚ in the time from 1981 to date.

1.1.1 General meteorological characteristics

The climate in Slovakia is influenced predominantly by its position in Central Europe, by the topography of the Western Carpathian Mountains and the Alps and by the prevailing westerly zonal atmospheric circulation. The south-west and south part of the country belongs to the moderate C climate region with mild winters (according to Köppen) and the remaining part to moderate (boreal) D climate region with colder winters (January mean temperature T < -3 °C).

The area of Mochovce NPP is situated on the south-western border of the Štiavnica hills The meteorological station Mochovce is operated by the SHMÚ and is equipped and located according to the recommendations of the World Hydro-meteorological Organization. The meteorological station in Mochovce (whose geographical coordinates are: φ = 48° 17 ′ 22″ N, λ = 18° 27′ 22″E, H = 261 m above sea level) has been active since 1 April 1980 (has had 4 location changes, from 206 m to 261 m above sea level). Surveys have been performed at the current location since 6th June 1991. (Mochovce, crossroads, φ = 48°17 ′22″ N, λ = 18°27′22″ E, H = 261 m above sea level, height of the manometer vessel is 269.66 m).

Temperature conditions

The period 1981÷1996 has been characterized in the majority of the territory of Slovakia by high summer air temperatures, especially in the years 1992 (the average air temperature in Mochovce in August was 24.9 °C) and 1994 (average temperature for July 23.1 °C) and by decrease of the amount of precipitation. This trend in the temperature regime continued also after the year

1996. The average annual air temperature in Mochovce (1981÷1996) was 9.3 °C (Ref. Table III.1.).

Year	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	Year
1999	-1.0	-0.6	6.4	11.5	15.4	18.0	20.7	18.6	18.3	9.6	3.0	-0.8	9.9
2000	-3.0	2.2	4.5	13.3	17.1	20.0	18.4	22.0	14.8	13.0	7.9	1.8	11.0
2001	0.2	1.9	5.7	9.7	16.8	16.8	20.5	21.2	13.1	12.5	2.5	-5.7	9.6
2002	-1.4	3.9	6.7	10.2	17.2	19.3	21.9	20.2	14.2	8.7	7.1	-1.3	10.6

(Source: climatic yearbook SHÚM 1999-2002)

Table III.1 - Monthly temperature values from the Mochovce station for the period 1999-2002 (ºC)

Humidity conditions

The relative humidity of the air is an indicator of the climate which varies with air temperature, the cloudy cover and precipitation. The annual variation of the relative air humidity is approximately opposite to that of the air temperature and reaches its characteristic maximum in December (87%) and minimum in April (65%). The average annual relative air humidity in Mochovce (1981÷1996) is 75%.

The volume of water vapour in the air depends on the evaporation, atmospheric circulatory exchange of gaseous materials and their temperature-humidity properties. The water vapour pressure, similarly to the air temperature, reaches its minimum in January (4.9 hPa) and maximum in July (15.3 hPa). The average annual pressure of the water vapour is 9.6 hPa.

Atmospheric precipitations and snow

The average annual precipitation in Mochovce (1981÷1996) was 575 mm. The highest average precipitation was in May (71 mm) and the lowest in February (31 mm). The maximum recorded monthly precipitation was 186.7 mm in June 1999 and the minimum, without precipitation, in February 1998. The highest daily precipitation of 93.0 mm was recorded on 25 August 1994. The average number of days per year with precipitation ≥ 0.1 mm was 136.0 and with precipitation ≥ 1.0 mm, 87.1. The average number of days with frozen precipitation (e.g. snow, snow + rain) was 41 days. The average number of days per year with a blanket of snow is 43.8 and the depth is 40 cm.

Year	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	Year
1994	48.2	6.0	19.9	93.6	76.7	56.1	14.1	161.6	77.6	96.4	33.9	24.5	708.6
1995	45.3	45.3	50.5	81.7	87.6	114.0	14.5	67.9	65.3	1.2	34.4	48.7	656.4
1996	45.0	28.3	15.5	88.7	115.6	63.8	69.9	86.2	62.2	26.9	45.5	32.6	680.2
1997	20.1	25.8	8.8	45.7	49.2	64.5	109.1	16.9	12.9	49.8	117.8	18.1	538.7
1998	17.7	0.0	12.3	72.5	44.2	33.7	50.8	38.7	134.6	95.0	37.1	22.8	559.4
1999	13.2	46.9	29.4	56.8	32.3	186.7	141.7	37.4	4.1	37.8	49.9	48.1	684.3
2000	36.0	27.9	84.9	57.0	23.7	9.3	59.0	9.7	48.9	25.5	92.4	49.5	523.8
2001	49.8	21.7	48.7	27.6	60.4	15.0	61.7	83.1	122.0	12.5	40.7	25.7	568.9
2002	18.6	39.5	22.9	43.8	103.5	62.3	48.2	89.3	54.5	70.9	46.9	45.3	645.7
2003	46.8	8.2	0.8	20.8	28.0	17.3	97.0	29.2	20.4	71.4	31.1	24.0	395.0
2004	62.1	43.4	50.8	89.0	89.0	118.9	23.1	52.5	43.4	44.3	52.5	39,6	708.6
	402.8	293.0	344.5	677.2	710.2	741.6	689.1	672.5	645.9	531.7	582.2	378.9	6669.6

(Source: climatic yearbook SHÚM 1994-2004)

Table III.2 - Monthly rainfall from the Mochovce station for the period 1994-2004 (mm)

Sunshine and cloudy weather

Cloudy weather influences the amount of sunshine and, on the other hand, the sun's radiation influences the air temperature and humidity. The average annual duration of sunshine (in 1981÷1996) was 1954.4 hours with the largest values in the summer months (July 280.6 hours) and the smallest in winter (December 54.2 hours). The average number of days without sunshine is 67.2. The beginning of winter is the period with the cloudiest weather (December 73%) and the end of the summer with the least (August 45%). The average annual cloudy weather is 58%, while the yearly average number of clear days is 50.5 and of cloudy days is 106.3.

Air pressure

The movement of air in the atmosphere results from uneven distribution of the air pressure on the earth surface. The average annual air pressure is 989.6 hPa. The absolute maximum of air pressure has reached 1017.1 hPa and the minimum was 947.1 hPa. The highest monthly average air pressure is in January (992.8 hPa), the lowest is in April (986.4 hPa).

Wind conditions

The average annual wind speed is 2.8 m/s, with average speed peaks from the directions E (3.7 m/s) and NW (3.4 m/s). The higher average annual frequencies are registered for the directions NW (22.5%) and SE (21.4%). The

maximum wind speed in this region is up to 35 m/s (mainly from the direction NW), hurricanes and tornados do not occur in this locality.

According to the Czechoslovak State Standard ČSN 730035 modification d-9/1982 – Supplement VI, the locality of Mochovce belongs to the III wind area.

Year	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
1994	2.9	3.5	3.1	3.4	2.5	2.8	2.1	2.2	2.7	3.5	3.6	2.9
1995	3.8	3.2	3.1	3.4	2.9	2.5	2.1	2.1	2.9	2.3	3.4	3.6
1996	3.9	4.2	3.7	3.3	3.1	2.6	2.5	2.4	3.0	3.4	4.1	2.9
1997	2.5	3.1	2.7	3.6	3.7	3.1	2.8	2.4	2.8	2.5	4.6	4.0
1998	3.6	3.3	3.1	4.5	3.1	2.7	3.0	2.3	3.6	3.3	2.7	3.1
1999	3.0	3.2	3.8	3.1	2.9	3.2	2.8	2.3	3.5	4.4	3.6	4.0
2000	3.1	3.3	3.8	4.5	2.8	2.8	3.3	2.6	3.2	4.2	5.9	3.4
2001	4.8	4.0	4.5	3.5	3.2	3.1	3.4	3.1	3.5	3.1	3.0	2.5
2002	2.2	3.2	3.5	3.7	3.8	3.1	3.3	3.2	2.5	3.6	4.7	3.5
2003	2.8	3.2	2.8	3.9	3.2	2.4	2.7	2.4	3.1	3.7	5.1	5.1
2004	3.5	3.8	3.8	4.0	4.2	2.3	2.8	3.0	3.0	4.6	4.6	3.6

(Source: Climatic Observation Yearbook SHMU 1994-2004, SHMÚ Bratislava).

Table III. 3 - Average wind velocity from the Mochovce station for the period 1994-2004 (m/s)

Year	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
1994	72	15	84	34	121	158	75	18	29	12	13	4	40	47	193	92	88
1995	54	6	66	37	108	160	89	16	30	10	21	13	24	64	182	99	116
1996	73	21	90	34	156	156	89	25	24	11	23	11	21	60	173	94	37
1997	60	18	70	46	117	138	80	11	18	15	21	15	25	69	243	127	21
1998	31	12	52	36	113	155	69	23	21	24	30	23	39	82	239	80	66
1999	21	17	67	37	100	177	94	27	23	13	15	15	24	66	231	98	71
2000	19	11	33	39	79	214	127	21	27	28	22	17	17	67	224	98	53
2001	33	16	49	47	68	186	98	24	29	12	19	15	30	60	233	124	57
2002	31	16	98	58	117	178	78	23	25	21	22	10	16	59	194	86	63
2003	42	15	63	64	63	199	94	25	18	13	21	11	19	47	204	133	64
2004	32	17	38	47	46	207	104	22	20	16	21	22	32	73	220	144	37

(Source: Climatic Observation Yearbook SHMU 1994-2004, SHMÚ Bratislava)

Table III.4 - Wind direction from the Mochovce station as a percentage for the period 1994-2004 (%)

Year	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1994	2.7	1.7	2.2	2.3	4.2	4.8	2.8	3.4	3.1	2.5	2.1	2.5	2.0	2.2	3.1	2.7
1995	2.7	1.7	2.3	2.2	4.4	4.9	3.3	2.9	2.9	1.9	2.8	1.6	1.9	2.8	2.8	3.6
1996	2.4	1.8	2.4	1.9	5.1	5.1	3.1	3.2	2.4	3.2	1.8	1.9	1.7	2.5	2.8	3.1
1997	2.4	1.6	1.8	1.9	4.9	4.4	Š.2	4.0	2.8	2.6	2.9	2.2	1.7	2.4	3.2	3.4
1998	2.4	1.4	1.8	2.4	4.6	4.7	3.8	3.3	2.6	3.0	3.3	2.1	2.0	3.2	3.1	3.4
1999	2.1	1.5	2.3	2.5	4.4	5.6	3.6	4.1	2.8	2.8	2.7	2.2	2.3	2.9	2.9	3.4
2000	2.1	1.6	2.2	2.2	3.5	6.2	3.6	3.4	4.0	3.6	2.7	2.1	2.2	2.8	3.3	3.2
2001	2.2	1.8	2.1	2.4	4.4	5.6	3.8	3.8	3.6	3.0	2.6	2.5	1.9	2.8	3.4	3.6
2002	2.1	2.3	2.3	2.5	4.7	5.4	3.6	3.6	3.6	3.2	2.6	1.6	1.8	2.7	3.3	3.1
2003	2.9	1.9	1.9	2.2	3.5	5.8	3.8	3.8	3.2	3.2	2.8	2.3	2.2	2.6	3.4	3.2
2004	2.1	2.1	2.1	2.6	3.2	5.8	4.2	4.2	3.5	2.5	2.7	2.5	1.9	2.5	3.4	3.0

(Source: Climatic Observation Yearbook SHMU 1995-2004)

Table III.5 - Average monthly wind velocity from the Mochovce station for the period 1994-2004 (m/s)

Stability of the atmosphere

The vertical stability of the atmosphere is an important parameter for the evaluation of the dispersion of pollutants into the atmosphere. Usually, the stability for the purposes of dispersion studies is defined in categories. The Pasquill-Uhlig method was used to evaluate the stability categories in Mochovce during the period 1981÷1996.

The calculated probabilities of occurrence of the individual categories show that the stability category in Mochovce is:

- F, very stable, in winter time (December, January and February);
- D, neutral, in spring time (March, April and May) and autumn time (October and November);
- C, slightly unstable, in summer time (June, July, August and September).

1.2 Hydrology and groundwater

The Hron River is a receptor of wastewater from the Mochovce NPP, which is supplied to the watercourse by a pipeline. Other receptors of wastewater and runoff from the RAW facility are Čifársky pond and Telinsky stream.

Profile	Qa [$m^3 \cdot s^{-1}$]	qa [$l \cdot s^{-1} \cdot km^{-2}$]
Banks	49.97	13.08
V. Kozmálovce	51.58	12.84
River mouth	55.20	10.10

(Source: Hydrological Yearbook SHMU)

Table III.6 -Inflow & outflow of Hron

An overview of hydrology and groundwater condition is presented below. The components are described in terms of:

- surface water drainage;
- groundwater recharge and flow;
- aquatic biota; and
- level of contamination of surface water and groundwater.

1.2.1 Drainage basins and watercourses of the studied area

Mochovce NPP is situated in Podunajská pahorkatina (upland) at the south-western border of Štiavnické vrchy (hills) at the upper part of Telinský stream. The base level of power plant is set to 242.30 m above sea level.

The zone of Mochovce NPP belongs partly (western part) to the catchment area of the River Nitra, and partly (eastern part) to the catchment area of the River Hron. The Teliský brook (Telinský potok), which flows through the territory of the protection zone of Mochovce Nuclear Power Plant, belongs to the catchment area of the River Žitava.

Monitoring data of flow rates on Telinský stream at the Vráble station are available from the year 1992. No significant peak value of flow rates appear within this period.

More important floods in the catchment area of the River Hron had occurred according to historical sources in March 1784, in August 1813, in August 1847, in May 1853, in May 1899. The most frequent occurrence of flood situations is within the spring period (February - April). The largest floods in

Brehy occurred in October 1974, December 1976, February 1977 and March 1981.

The water reservoirs in the area were constructed in the 20th century as a source for irrigation and to the balance the flow in dry periods. The use of the reservoirs for breeding of fish and for recreational purposes is marginal. Only the ponds around Levice are used primarily for fishing.

1.2.2 Aquatic biota

A range of fish is found naturally in the basins of the Hron and Nitra rivers. These include chub (Leuciscus cephalus), the chondrostome (Chondrostoma nasus), barbel (Barbus barbus) and bleak (Alburnoides bipunctatus). Carp (Cyprinus carpio) are bred intensively in lakes south of Levice and at Čifáre.

1.2.3 Groundwater

Hydrogeological conditions of the area of interest depend on the geological-tectonic formation, morphological and climatic conditions of the Hronskej pahorkatina (upland) and Hronskej niva (floodplain).

The alluvial sediments of the Quaternary, with their good porosity, contain the most productive aquifers. The thickness of the gravels and sands in the alluvial valley of the river Hron to the south of Slovenská Brána reaches 20 m.

There is relatively little knowledge of the hydrogeological conditions to the north, west and east of the NPP. In the surroundings of the NPP investigation work has taken place in the past but mostly with the aim of determining the geological engineering characteristics. From the hydrogeological point of view the territory of the Hron uplands can be described on the basis of investigation work performed in the framework of the construction of the RAW repository, which lies to the NW of the NPP and the construction of its monitoring system. This work can be used to describe the hydrogeological conditions as described below.

Water in the quaternary layers does not form a continuous aquifer. It is however not possible to eliminate atmospheric rainfall accumulating in periods of increased rainfall mainly where the loamy surface covers clayey underlying rock. Taking into consideration the low permeability of the quaternary loams and the morphology of the terrain, most of the rainfall runs off by surface drainage and accumulates on the surface in terrain depressions.

From the point of view of the impact of the NPP on its surroundings the main significance is placed on the groundwater in the Neocene sediment. In the area of interest there are Sarmatian sediments of semi-permeable and impermeable layers – aquifers, semi-aquifer and aquitards. Lenticular development of aquifers, frequently crossing aquicludes and several fissures create a hydraulic barrier, which either limits the inflow of groundwater or on the contrary permits it. The main aquifer is called aquifer H which is a layer of fine grained to silty Sarmatian sandstone. In the underlying rock of aquifer H there are two more aquifers named P1 and P2. These systems have an unconfined groundwater level and the piezometric level is higher than aquifer H.

The groundwater flow direction in the given location was determined prior to the construction of the above-mentioned resources. The groundwater flow direction is in conformity with the direction of the Hron valley. The hydraulic situation at the site is probably influenced by changes in the level of the Hron and the pumping of water resources. Therefore these hydroisohypses have been considered as one of the possible situations.

1.2.4 Groundwater protection zones

Regulation 29/2005 of the Slovak Republic establishes the procedures for defining water resource protection zones, water protection measures and technical modifications to water supply resource protection zones. Pursuant to the Regulation 29/2005 there are 2 important classes of protection zone.

According to article 2 paragraph 1 of the Regulation the 1st class protection zone is defined as:

- a groundwater resource zone established for the protection of the territory against negative influences or threats to the water resources in its immediate surroundings and for the protection of abstraction equipment against damage.
- the boundary is established around the object (borehole, well, spring) at a distance of at least 10 m. The boundary is suitably expanded at the site to take into account equipment connected with the abstraction and the supply of water to the consumers.

According to article 3 paragraph 1 of the Regulation the 2nd class protection zone is defined as:

- a groundwater resource zone established for the protection of the volume, quality and health safety of the groundwater in parts of its infiltration area or over the whole of the groundwater catchment area;

- for water resources in inter-granular rock environments it is established on the basis of an expert assessment of the terrain, in particular on the cleaning, absorption and elimination abilities of similar cover and rock environments;
- 2nd class protection zones lie within a radius of 5 km from the source.

Protection zones of groundwater of 1st class are frequently around water sources in almost all the localities.

Protection zones of groundwater of 2nd class are located:

- in the alluvial valley of the Hron within the line connecting Levice, Podluzany, Cajkov, Tlmace, Novy Tekov, EMO, Kalna nad Hronom and Levice;
- west of the locality of Jur nad Hronom;
- south of the locality of Zlate Moravce in the foothills of Pohronsky Inovec;
- around Čierne Kľačany, from Kolinansky hill up to Zoborske hills.

According to the information given by the environmental department in Levice the water resource at Nový Tekov is currently not used. According to the information from the water utilities company ZsVAK (South Slovakia water and sewerage) in Levice and ZsVAK in Nitra all of the water resource protection zones remain valid in their original measurements for strategic reasons.

In the wider surroundings of the NPP (up to 40 km) there are the following mineral and thermal springs and geothermal wells.

- Mineral springs: Santovka;
- Thermal springs: Margita and Ilona;
- Geothermal wells (boreholes): Podhajska well is widely used; Horny Ohaj and Pohranice wells are not used at present.

1.3 Fauna and flora

The existing terrestrial environment is described in terms of the following subcomponents:

- Vegetation community and species;
- Wildlife habitat;
- Natural and protective areas.

1.3.1 Original community of the area

The original community of the area is represented by the oak-hornbeam Carpathian forest.

From the banks of the River Hron up to the top of Pohronsky Inovec and Stiavnicky Hills, there are:

- riparian woodland willow-poplar (sectors Velke Kozmalovce - Kalnica and Vysne nad Hronom - Jur nad Hronom);
- lower riparian woodland (floodplains of Hrona and other streams in the lower parts);
- oak-hornbeam forest of Pannonia (in the lines of Devicany – Drzenice - Nova Dedina – Podluzany - Male Kozmalovce – Čiféare – Vrable – Babindol - Velky Lapas);
- Carpathian oak-hornbeam forest (in the vicinity of the riparian woodland),
- oak forest (on the higher parts of the summit to the north of the following communities);
- oak xerothermophilous forest pontic-pannonian (hills on the south of Vrbovec brook);
- beech florid forest of foothills (under Pohronsky Inovec and SW part of Stiavnicke Hills);
- beech florid forest (top parts of Pohronsky Inovec hills and NE part of the territory of Devicany).

With the exception of the last two communities with beech forest, all the other communities are characterized by exceptional richness of species.

There are several thousand (3-4) animal species and several hundreds of species of plants.

The reasons for the enormous richness of species of the riparian and oak forest include the richness of the nutrients in the soil, relatively high humidity, the crowns of the trees not preventing the penetration of sunshine, and also the stability of the basic ecological conditions for the existence of organisms (light, temperature, humidity, air circulation, relations between species).

The original communities of the area were characterized by:

- closed cycles of development (including phases of origin, growth, ripeness, withering and decomposition) and the considerable length of time of cycles (150-600 years);
- casual changing of phases within the community (after the phase of ripeness could come the phase of origin or the phase of decomposition);
- complexity of the nutrient pyramids including the top predators (e.g. wolf, lynx);
- presence of large hoofed animals (e.g. elk, bison, etc.) with considerable influence on the existing community due to the habits of biting of branches, peeling of bark, crushing of young trees, wallowing in mud, etc.

Approximately 5-8% of the studied area is covered by wetlands. Several types of communities are present: from the deep and moving waters of the rivers Hron and Zitava up to the reed growths of the blocked stream branches.

The streams created several types of communities, some of them unstable and simple, and some stable, complicated and rich in species, like the riparian woodlands. The impact of the waters was dynamic, with the same passage being a sterile eroded bank and at other times a riparian forest in the phase of ripeness.

The bigger streams gradually filled their valleys with sediment and created relatively large alluvial terrains in which they meandered. The plain of the Hron was 8 km wide under Slovenska Brana, while the Zitava valley reached up to 3 km at Vrabel.

Transverse barriers were not present, so no obstacles were found by those particular species of fishes that go up the rivers to reproduce. Before the construction of the Zelezna Vrata dam on the Danube, great sturgeons appeared in the river Hron.

On the other hand there were no steppe communities.

1.3.2 Protected, rare and threatened species

Several species in the area are actually in "red books" or on the lists contained in the annexes of Slovak Act No. 543/2002 Coll. on the protection of nature and landscape.

Their survival is dependent on the existence of appropriate places for nutrition, shelter and conditions for reproduction.

Good examples of positive development of nature protection are the reappearance of the imperial eagle or the brown bear.

The return of the imperial eagle to the Hron basin and the successful reproduction resulted from protective actions as well as from the better conditions for the survival of the species. The brown bear can be seen in the forests near the village of Devicany near the NE limits of the area.

Other cases of the occurrence of rare and protected animals can be mentioned, e.g. lynx, savage cat, otter, lesser spotted eagle, eagle-owl, grass-snake, etc.

The concerned area and its surroundings can be mapped by the following gene pool locations:

- Chríb (190 m a.s.l., cadastral territory of Kozárovce) – andesite island outcropping from the Holocene drift of the Hron, former meadow,
- Kusá hora (274 m a.s.l., cadastral territory of Rybník nad Hronom) – remains of xero-thermophilic oak on the left bank of the Hron in the area of Slovenska brána,
- Skala (239 m a.s.l., cadastral territory of Kozárovce) – the gene pools are located in the upper part and the craggy hills above the railway track,
- Veľká Vápenná – Starý vrch (240-280 m a.s.l., cadastral territory of Nový Tekov) – vineyards, mowed orchards and thermophilic oak, amount of traditional fruit trees (mulberry, service tree, quince),
- Martinec (203 m a.s.l., cadastral territory of Mochovce, Nemčiňany, Nevidzany, Malé Vozokany, Červený hrádok) – wet meadows by Podegarsky stream on the northern boundary of the forest coppice of Kozí chrbát,
- Klčovisko (260 m a.s.l., cadastral territory of Mochovce) – small areas of forest steppe vegetation in areas of sub-xerophylic oak, outcropping bedrock ,
- Dobrica (320 m a.s.l., cadastral territory of Mochovce) – rock steppe and forest steppe on the eastern slope to the right of a stone quarry. Of value are the abandoned orchards and vineyards overgrown with black oak.

- Andesite cliff above Čifárska reservoir with forest steppe communities,
- Willow-poplar coppice in the alluvium of the Podegarsky and Rohožnicky streams.

1.3.3 Protected, rare and threatened communities

Secondary communities and communities with habitats strictly linked to the characteristics of the area (xeroterms) mainly constitute the protected, rare and threatened communities.

Both types of communities are included in the protected regions pursuant to Slovak Act No. 543/2002 Coll. on the protection of nature and landscape.

Wetland communities

The Sikenica stream is not regulated (up to Krskany). It has natural growths on the banks and its water is not contaminated. The presence of otters is the evidence of the outstanding quality of the stream.

The River Zitava is not regulated, with the exception of the section of Zlate Moravce up to Horny Ohaj. The water quality is worse than in the Sikenica, but even the Zitava has natural bank growth. Otters are also present.

Forest communities

The most developed forest communities are protected according to the Slovak Act No. 543/2002 Coll. on the protection of nature and landscape. The exception is represented by NR Krivin.

Steppe communities

Steppe communities are in part under regional protection. The community arose as a result of the agricultural activity of low intensity (extensive pasture, meadows with poor yield etc.). This activity is no longer profitable and therefore the owners of the land have since left. This is an issue throughout Europe.

Significant migration corridors

In the river Hron and its immediate surroundings are 2nd grade migration corridors.

Important animal migration corridors in the concerned area and its wider surroundings:

- aquatic supra-regional bio-corridor: Hron and adjacent waterside coppice,
- terrestrial supra-regional bio-corridor: Gbelce – Patianska cerina – Zudrok – Včelár,
- proposed regional bio-corridor: Patianska cerina – Čifársky háj – Kozí chrbát – Rohožnická hôrka – Slance,
- proposed regional bio-corridor: Patianska cerina – Podkamenie – Veľká Vápenná – Skala – Štiavnické vrchy,
- proposed local bio-corridor: Čifársky háj – Kozí chrbát,
- proposed local bio-corridor: Plešovica – Zadný vrch – Rohožnícka hôrka,
- proposed local bio-corridor: Klčovisko – Bôbové,
- proposed local bio-corridor: Čifársky háj – Podkamenie.

1.3.4 Protected areas based on legislation and protection zones

Protected areas are regulated by Act No. 543/2003 Coll. on the protection of nature and landscapes.

The selection of ecologically precious segments of landscape under protection was a strong philosophy of the political system in Czechoslovakia up to 1989. This land can be characterized as economically unusable and is among the protected land. Examples are Krivina or Horsianskej Doliny.

Other important areas of protection are characterized by the presence of intensive agricultural activities (CHA Levice pond, Golianov pond, – fish raising), or by the presence of protection structure (PR Zitava floodplain).

Protected regions

- The Štiavnicke vrchy Hills

A protected region located in the forested part of the Stiavnicke vrchy Hills from the banks of the river Hron (territory of Rybnik, Psiare and Hronsky Benadik) towards the northeast. A 2nd grade regional protection has been defined here pursuant to Article 13 of the Act. The area is covered mostly by oak forests (and partly also by protecting forests) of half-natural composition on the Tertiary magmatic rocks. There is also penetration of trees of false acacia. The northern

limits of area are formed by beech forests. Several specimens of lynx have been documented and bears have been spotted in the northern part.

- The protected region Ponitrie

The protected region Ponitrie includes Zoborske vrchy Hills and Tribec Mountains. It only reaches the studied area in the territory of Jelenec, Ladice and Velcice. A 2nd grade regional protection has been defined here pursuant to Article 13 of the Act.

The area is formed by oak forests.

Protected areas

Within the studied area the protected areas are:

- Ponds of Levice;
- Historic parks.

Nature reserves

Within the studied area the nature reserves areas are:

- NR Krivin;
- NR Kusa hora;
- NR Sandorky;
- NR Zitavsky luh.

National nature reserves

Within the studied area the national nature reserves areas are:

- NNR Horsianska Dolina;
- NNR Patianska Cerina.

1.4 Geology and seismicity

The components are described in terms of:

- geological and structural setting;
- seismic activity;
- soil quality.

All potentially significant geological environmental interactions associated with the Project are likely limited to the Site Study area, except for the Seismic activity which involves a regional area.

The site lies in the Western Carpathians. From the point of view of block formation the Mochovce site is located in the Danube megablock, which is delimitated by deep faults and by the Peripienin lineament at NW, by Vepor-Ráb lineament at SE and by the deep Přerov – Štiavnica fault at NE. The SW boundary is represented by the Danube valley, which follows the fault structure in the NW-SE direction. It is possible to find parallel faults as continuation of the basic fault structure of the Czech Massive in the NW-SE direction of the structure.

Inside this megablock there is a range of tectonic structures. The ones of a lower range are principally parallel to the main limitations.

The NPP lies in a partial structure, Turovce – Levice horst on the western side where there are faults in a NNE-SSW direction (Šuran fault). The area is a part of the Danubian basin, which occurred in the Pliocene by a decrease in the crystalline complex of the intermediate mass on the annexation of the surrounding older inter mountain or intermediate mass of the basin, distributed along the mobile belt of the Central Western Carpathians and the intermediate mass.

The foundations can be dated from the upper Tortonian but the decisive period of its occurrence is the Pliocene. Creation of the basin was accompanied by strong consolidation and final volcanisms, in particular in the area of important deep faults in the underlying rock. The underlying rock is partly made up of Low Carpathian Crystalline complex, partly Kohút unit and tartan series with granitoide intrusions, in particular Variscan. Anticlinoria fatro-tatra crystalline complex is presented in the north. Filling of the depression is made up of a Mesozoic envelope, which occurs in the SW. In the central parts (Komjat depression) Hron sycnlinorium is the underlying rock.

Younger filling of the basin is made up mainly by Pliocene sediments, then Sarmatian and Tortonian with strong volcanic admixtures. Mottled and lutaceous series made up of clays and calcific clays with sand to sandstones or gravel and agglomerate layers are prevailing. The thickness of the sediment is mostly in the order of hundreds of meters. The total thickness can exceed

1,000 m. The formation has a block style, in Pliocene sycnlinorium, subjected to strong subsidence in central parts. The significance of the tectonics is low in the Pliocene. The block formation distinguished by horst structures occurring above the buried continuation of the core of the mountain range. Older groups have a more complicated formation but less known.

Data on the types of sediments in the concerned area represents boundary values from drill cores and is included in the following table:

Sediment	Natural moisture [% W]	Measured weight [g·cm^{-3}]	Total permeability [% n]	Effective permeability [%]
Clayey sandy loams, highly plastic (quaternary)	10.6-43.9	2.66-2.76	32.2-55.3	19.0
Clay, sandy clay, highly plastic (neogenic)	8.3-45.4	2.61-2.79	36.5-56.7	13.9
Fine to medium grained sand, clayey (neogenic)	8.6-35.9	2.62-2.70	44.0-50.7	44.0

(Source: EQUIS Bratislava, RNDr. Šujan)

Table III.7 - Data on sediment type in the concerned area

From the point of view of workability the soil can be classified pursuant to Art. 64 STN 73 3050 “Ground work”. General provision into Class 3 to 7 workability.

1.4.1 Geological and structural setting

The area in the surroundings of Mochovce NPP presents different geological and geomorphological features.

- Basement of Neogene Formation:
  A thrust nappe forms the majority of the Neogene basement.
- Neogene:
  The area is characterised by sediments related to the different environments of deposition, particularly marine facies (deep and shallow sea) and continental facies (freshwater lake and tropical forest).
- Quaternary:
  Thickness of fluvial deposits is up to 20 m. The Quaternary sediments in upland areas are represented by loess loam of polygene origin to loess of about 10 m thick and dominantly of Wurm age. Proluvial sediments with thickness about 10 m are found in areas of Rybnik, Cajkov and Nova Dedina.

- Engineering geological settings of rocks:
  Engineering geological classification of these soils is silty soil and loess.
- Geomorphological features:
  Wind erosion: the risk of wind erosion occurs only in area of Tekovske Luzany;

  Landslides and slope deformation: the areas surrounding Pohranice, Tesarske Mlynany and Dolny Pial are endangered by landsliding and slope deformation.

  Formation of erosion gullies: The areas surrounding Hostie, Žikava, Chrášťany, Velky Lapáš, Podlužany, Nova Dedina, Bátovce and Hontianske Vrbice are endangered by intensive formation of erosion gullies.

  Swelling and shrinking of soil: Risk of swelling and shrinking of soil exists only in the belt of land between Velky Dur and Melek.

  Hydrocompaction of loess: The areas in the surroundings of Tesarske Mlynany, Cernik and Lok are endangered by hydrocompaction of loess (sudden collapse due to the increase of moisture and pressure in foundations).
- Resource geology
  Lignite deposit: Lignite deposits are located nearby Zlate Moravce in the villages of Obyce and Beladice.

  Gas: Accumulation of gas is known in the village of Golianovo.

  Limestone: Limestone deposit for production of aggregates is located in Pohranice.

  Travertine: Travertine used as ornamental stone is quarried in site located South of Levice.

  Clay: Clay deposits for brick production are located in Tesárske Mlyňany, Zlaté Moravce and Levice.

  Volcanic rocks: Andesite and basalt are quarried in Obyce, Hronsky Beňadik and Rybník.

  Pyroclastic rocks: Deposits of tuffs and other pyroclastic rocks are located in Brhlovce and in Male Kozmalovce.

1.4.2 Geomorphologic conditions

The area in the surroundings of Mochovce NPP presents different topographical and geomorphologic characteristics.

The basic topographical structures are as follows:

- Alluvial plains of the Rivers Hron and Zitava;
- Terraces on the right bank of the River Hron;
- Uplands of Zitava, Hron and Ipel;
- Connecting areas between Rybnik and Nova Dedina and between Čifáre and Olichov villages;
- Hills of the southern part of Stiavnica and top part of Velky Inovec and Kozmálovce;
- Hills in the area of Pohronský Inovec surrounding Krivaj and northern part of Stiavnica.

The basic geomorphologic types are as follows:

- Alluvial plain along the rivers Hron and Zitava;
- Undulating plain on the right bank terrace of the river Hron;
- Low uplands in Zitava, Hron and Ipel meadows;
- Top of uplands in hills of Kozmalovce;
- Non-karst plains in the southern part of Stiavnica hills;
- Hilly area in northern part of Stiavnica and Pohronsky Inovec.

1.4.3 Soil conditions

Soil types in the area are as follows:

- Soil of non-carbonate alluvial plain sediments in a narrow strip along the recent river Hron;
- Black soil of non-carbonate alluvial plains in two isolated sites on the left margin of the alluvial plain of the river Hron, between Tlmace and Hronské Kľačany and between Levice and Jur nad Hronom, and in the alluvial plain of the river Zitava between Vrable and the southern border of the area;
- Degraded black soil on loess in the right bank terrace of the river Hron from Male Kozmalovce to the southern border of the area and in the alluvial plain of Kadan Brook in Golianovo village;
- Gley soil of non-carbonate alluvial plain sediments in the alluvial plain of the river Zitava, between Obyce and Vrable, and in the alluvial plain of the river Sikenica below Krškany village;

- Brown soil on loess in the uplands along Zitava, Hron and Ipel (only east from Levice);
- Gley brown soil on loess and on polygenetic soil at the foot of the hills of Stiavnica, between Rybnik and Nova Dedina and Devicany, along the edge of the Hron uplands, between Besi and Volkovce, between Velky Lapas and Pohranice, and along the left bank of the river Sikenica, from Batovce to the south;
- Illimerized soil on loess loam of low thickness covering Tertiary sediments in the area of Velký Dur-Melek, Kozi and Kozmalovce hills;
- Illimerized brown soil on loess loam in the area of Lipnik-Tekovské Nemce and Devicany- Batovce;
- Saturated brown medium heavy soil covering weathered material composed of volcanic rocks in the hills of Pohronsky Inovec and Stiavnica.

Value of soil within the area is as follows:

- High value soil is present along the right bank terrace of the river Hron;
- Highly productive soil is found in the alluvial plain of the river Zitava, in the southern half of the Zitava upland, along the western and eastern margins of the upland of Hron and along the western margin of the Ipel uplands ;
- Productive soil is present in the northern half of the Zitava upland, along the edge of the upland of Hron and on the remaining part of the upland of Ipel;
- Good value forest soil characterises the Pohronsky Inovec and Stiavnica hills.

Vulnerability of soil to erosion is as follows:

- Not vulnerable in the alluvial plains of the rivers Hron and Zitava;
- Low vulnerability along the eastern and western margin of the uplands of Hron, in Pohronsky Inovec and Stiavnica hills;
- Medium vulnerability along the edge of the upland of the Stiavnica hills, in the southern and northern margins of the Zitava upland and in the Stiavnica hills,
- High vulnerability between Pozba and Velky Dur in the uplands along Hron, in the Zitava region between Pana and Velky Lapas up to Topolcianky and along the eastern margin of the upland up to Vrable and along both banks of the river Sikenice in the Ipel uplands.

Soil is polluted on the leeward (eastern) margin of the villages Levice, Tlmace and Zlate Moravce by basic emissions (soot). The extent of the pollution is around several tens of hectares.

A relatively narrow belt of soil along the roads Nitra - Nova Bana, Nitra - Levice and Kalna nad Hronom – Zeliezovce is polluted by lead. As regards the NPP site, considering that non-industrial areas are kept as garden or asphalted roads, soil and rock pollution in the area is negligible.

1.4.4 Seismic activity

Seismic activity in Slovakia is documented in a catalogue of earthquakes compiled by Labák and Brouček (1996) which contains information on more than 650 macroseismic earthquakes from the last 500 years. There has been constant seismic activity in Slovakia even though over the past 100 years there have been no strong earthquakes. It is assumed that this situation will continue in the future.

The following hotspot zones have been identified: Pernek - Modra, Dobrá Voda, Trenčín - Žilina, Komárno and Stredne Slovensko, Spiš and the hills of Slánské. All these zones have had earthquakes of intensity greater or equal to 7° EMS[(1)]-98.

From the study of seismic history it follows that near Levice there are hotspots that have shown earthquakes with epicentre intensity seldom equal to or greater than 3° MSK[(2)]--64. In the other hotspots identified in the area of interest most of the observed phenomena did not exceed 6° MSK-64 (source GPI SAS).

From the observation of the map of seismic areas it can be assumed that the monitored area lies in a zone characterized by an intensity of 6° - 7° MSK-64. There have been no records of higher intensity earthquakes at the site or in its surroundings but strong earthquakes at Komarno should be recorded. Using a very conservative approach recommended by IAEA (IAEA 50-SG-S1)[(3)] the greatest recorded earthquake in history could be 6.5° MSK-64.

Macroseismic intensity in the area can be assumed as 7° MSK-64 and this intensity in Central European conditions correlates to an acceleration of 0.1 g.

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(1) European Macroseismic Scale
(2) Medvegyev-Sponhauer-Karnik Scale
(3) Guidelines on Earthquakes and Associated Topics in Relation to Nuclear Power Plant Siting

1.4.5 The probability calculation of seismic risk at the Mochovce NPP

The probability calculation of seismic risk at the Mochovce NPP was made pursuant to the document IAEA 50-SG-S1, Rev.1, (1991).

The calculation is based on the following steps:

- compilation of database;
- compilation of seismo-tectonic model;
- specification of amplification for selected characteristics of ground movement;
- calculation of the probability.

There are two significant seismic zones close to Mochovce NPP: Komárno (8° EMS-98) and Central Slovakia (8°-9° MSK-64).

In the wider region (radius 150 km) around Mochovce NPP 8 seismic zones have been identified, none of which are in the nearer region (radius 5 km). The hitherto minimal occurrence of macroseismic activity indicates diffuse seismic activity. Fractures with no evidence of an end to their tectonic activity were identified as source zones of seismicity in the nearer region of Kozmálovce, Tekov, Tlmače and Kozárovce.

In the probability calculation of seismic risk attenuation relationships are functions of the characteristics of individual source zones and of ground movement in the area of interest. Due to the fact that direct measurements do not exist, analogue values were used for the probability calculation.

The probability of seismic risk, calculated with the software SEISRISK III, was evaluated for the 16, 50 and 84 percentiles and for average values of horizontal absolute acceleration and horizontal pseudo-absolute acceleration, for 475 and 10,000 years return periods: 475 years return period is used in standard STN 730036 Seismic load of building constructions at the level SL 1 in IAEA (1991), while the 10,000 years return period reflects level SL 2 in IAEA (1991).

The calculated UHS (uniform hazard spectrum) for a 10,000 years return period shows higher values compared to a deterministic spectrum PGA for wave motions of 0.3 seconds period. For wave motions of 0.3 to 2 seconds period the calculated UHS shows lower values compared with deterministic spectrum acceleration.

Analysis of seismic activity in the abovementioned structures was made by J. Hok, A. Nagy, M. Suhaj and J. Hefty in the work "*Analysis of the potential geological fractures in the close surroundings of Mochovce NPP from the point of view of possible activity*", EQUIS November 2006.

For the evaluation of the probability of seismic risk the mapping work was re-evaluated and new geophysical measurements were performed (resistance probes and magnetometers), as well as geodetic GPS measurements.

No phenomena of tectonic displacement of the quaternary sediments were detected. The boundary of potential quaternary activity can be considered as the southern boundary of neovulcanite on the line Tlmače-Rybník.

The Holocene period can be described as a quiet tectonic period over the whole area around the NPP.

Monitoring of seismic activity in Mochovce NPP and its surroundings is performed (since 1996, with fixed connection of 7 stations since 1998) in conformity with Safety Guidelines 50-SG-S1, Rev.1, (1991) *Earthquakes and Associated Topics in Relation to Nuclear Power Plant Siting*: these guidelines require a seismic database of regional and local data to be compiled for evaluation of the seismic risk at the site.

A regional network is made up by the GPI SAS monitoring stations, Modra, Šrobárová and Vyhně. The seismic network of Mochovce NPP allows the detection and localization of earthquakes of Local (Richter) Magnitude ML>1. The monitoring network was gradually modified between 2002 and 2005.

Between 1 December 1996 and 31 December 2006 there were 2,465,165 phenomena identified from the Mochovce NPP network, of which 12,060 (0.49%) were seismic phenomena. From these there were:

- 4,631 regional seismic phenomena (38.4%);
- 17 local (0.14%);
- 7,412 blasting (61.46%).

Between 2000 and 2006 there were 17 regional earthquakes within 50 km of which three were ML 3.4 (23 September 2004), ML 1 (Štůrovo) and ML 1.4 (Komárno), the others were below ML 1 (which is, in principle, below the detectable level). Earthquakes registered between 1950 and 1995 by the GPI SAS network are mainly from Levice with a calculated ML 3.8 from 1991.

Larger historical earthquakes all occurred elsewhere in Slovakia:

- Central Slovakia (1443): Kremnica, Slovenská Lupča;
- South Slovakia (1783): Komárno;
- North-west Slovakia (1858): Žilina;
- Western Carpathians (1906): Dobrá Voda.

Each of these earthquakes is connected with a seismogenic structure in the upper part of the Earth's crust. The depth of the foci is typically about 10–20 km.

A large number of reflection-seismic profiles were chosen and measured when investigating the geological conditions for selecting and preparing the site of the Mochovce nuclear power plant. Subsequently, the seismicity of the area was examined further in connection with the siting and construction of the regional radioactive waste repository, close to the power plant. This analysis included:

- analysis of maximum observed macroseismic effects;
- statistical estimation of known macroseismic fields in central Europe;
- construction of a map of maximum expected macroseismic effects;
- general seismostatistical calculation of seismic hazard, using the McGuire approach; and,
- estimation of seismic hazard including local changes in damping from macroseismic effects.

The seismic hazard at the site of the former Mochovce village, estimated on this geological and seismological basis is characterized by a maximum intensity of 6° – 6.5° MSK-64, with a return period of once in 10,000 years. Although this reflects a generally low risk relative to other regions of central and eastern Europe, due to the regional geological structure, the location of the plant itself on a hillside outcrop of the andesite formation above the village serves to diminish further the local intensity associated with any given earthquake event. Microzoning suggests that the equivalent calculation for seismic risk on the dense volcanic rocks beneath the site of the nuclear power plant is 1° MSK-64 less than that on the sedimentary strata beneath the village.

According to IAEA Safety Standards, two levels of ground motion hazard should be evaluated for each plant sited in a seismic area. Both hazard levels should generate a design basis earthquake corresponding to seismic level 1 and seismic level 2, following the procedures outlined by IAEA Safety Standards and according to the target probability levels defined for the plant design.

It is generally accepted that seismic level 2 corresponds to a level with a probability of being exceeded in the range 1×10^{-3} to 1×10^{-4} (mean values) or 1×10^{-4} to 1×10^{-5} (median) and seismic level 1 corresponds to a level with a probability of being exceeded of 1×10^{-2} (mean value) per reactor per year.

In the plant design seismic level 2 is associated with the most stringent safety requirements, while seismic level 1 corresponds to a less severe, more probable earthquake level that normally has different safety implications. Regardless of the exposure to seismic hazard, a seismic level 2 design basis earthquake should be adopted for every nuclear power plant for the design of safety classified items.

The annual probability of exceedence of seismic level 2 recommended is 10^{-4}/y for the mean peak ground acceleration.

Seismic ground motion for Mochovce NPP is based on site specific *Probabilistic Seismic Hazard Analysis* reviewed by IAEA in 2003. The mean PGA corresponding to seismic level 2 (1×10^{-4}/year exceedence frequency) corresponds to 0.143 g. Conservatively, the mean seismic level 2 PGA was selected as 0.15 g.

2 LANDSCAPE, STABILITY, PROTECTION, SCENERY

2.1 Territorial system of ecological stability

The terrestrial system of ecological stability (TSES) legally categorizes the evaluation of the state of the landscape (in particular their biotic formation). The basic TSES documents are the General supraregional TSES for Slovakia (1992), regional TSES documentation for the former Slovak districts (1993-1995) and the National Ecological Network of Slovakia (1996).

The territorial system of environmental stability (TSES) is embedded in Act 543/2003 Coll. on nature and landscape protection.

A large territorial unit plan for the Nitra region was approved in a governmental decree of the Slovak Republic issued in 1998, as a regional TSES (Annex 2.2.).

The following significant regional bio-centres were defined: Stiavnicke vrchy, NPR Horsianska dolina and the oak tree forests including NPR Patianska cerina. Regionally significant bio-corridors include the Hron, Podluzianka and Sikenica.

Recently local TSES projects were conducted within the framework of the land planning documentation conducted for some of the cities situated in this area. These include suggestions for the measures needed to be taken to maintain and increase the ecological qualities of major TSES elements.

These cities and towns are: Pohranice, Ladice, Dolne Obdokovce, Velky Lapas, Maly Lapas, Vrable, Zlate Moravce, Topolcianky, Tesarske Mlynany, Kozarovce, Rybnik, Cajkov, Nova Dedina, Zemberovce, Brhlovce, Levice, Hronske Kosihy, Hronske Klacany, Novy Tekov, Maly Cetin, Cechynce, Travnica, Bardonovo, Podhajska, and Horna Sec.

2.2 Land use

This study concerns the completion of two units of the existing power plant of Mochovce and the activities for the completion will not require additional land use.

Landscape

The landscape around the Mochovce site comprises the boundary of Podunajsky lowlands and southern slope of the Pohronsky Inovca and Štiavnický hills. The dominant natural phenomenon is Slovenská brána, made up of the foothills of the Pohronskej pahorkatiny and southwestern slope of Štiavnický hill, through which runs the River Hron. The immediate surroundings are made of the Veľké Kozmálovce reservoir which serves as a water catchment for utility water for Mochovce NPP. The character of the whole location was influenced by the construction of SE-EMO 4x440 MW during which parts of the relief of Kozmálovskej vyšky were altered.

3 POPULATION, ITS ACTIVITIES, INFRASTRUCTURE, CULTURAL/HISTORICAL VALUES OF THE AREA

3.1 Population and its activities

Data about the number of the residents on 31 December 2005 have been provided by the Statistical Institute of the SR.

The area within 50 km of Mochovce NPP is part of 17 districts. The 17 districts belong to four regions: Nitra, Banská Bystrica, Trenčín and Trnava.

In Table III.8 the municipalities and the number of inhabitants are shown together with the ratios of the populations within 50 km of the Mochovce NPP.

Region	District	Number of municipalities		Number of inhabitants		Ratio of the population up to 50 km (%)
		up to 50 km	in the district	up to 50 km	in the district	
Banská Bystrica	Banská Štiavnica	15	15	16,945	16,945	100
	Krupina	28	36	19,938	22,693	88
	Veľký Krtíš	4	71	2,428	46,069	5
	Žarnovica	18	18	27,396	27,396	100
	Žiar nad Hronom	19	34	35,038	47,528	74
Nitra	Komárno	12	41	30,525	106,805	29
	Levice	88	88	118,678	118,678	100
	Nitra	57	57	163,953	163,953	100
	Nové Zámky	55	61	129,097	147,506	88
	Šaľa	13	13	53,889	53,889	100
	Topoľčany	48	53	72,158	73,661	98
	Zlaté Moravce	32	32	43,530	43,530	100
Trenčín	Bánovce nad Bebravou	11	43	4,874	38,681	13
	Partizánske	23	23	47,926	47,926	100
	Prievidza	12	52	19,093	139,061	14
Trnava	Galanta	7	35	11,806	94,903	12
	Hlohovec	11	24	7,954	45,428	18
Total		**453**	**696**	**805,228**	**1,189,269**	**68**

(Source: Statistical yearbook SR)

Table III.8 - Municipality and inhabitant distribution in the area of Mochovce NPP

In order to determine the parameters characterising the population distribution the area within 50 km of Mochovce NPP has been divided into the following 4 annular sectors:

- Sector 1: 0-5 km annulus;
- Sector 2: 5-10 km annulus;
- Sector 3: 10-20 km annulus;
- Sector 4: 20-50 km annulus.

The number of municipalities and inhabitants belonging to each of the four sectors are shown in Table III.9.

Sector	Number of municipalities	Number of inhabitants
Sector 1	4	2,156
Sector 2	22	23,721
Sector 3	70	112,521
Sector 4	366	666,704
TOTAL	**462**	**805,102**

(Source: Statistical yearbook SR)

Table III.9 - Number of municipalities and inhabitants in the annular sectors

In sector 4 there is also a part of the territory of the district of Zvolen which does not have any built-up areas, so the Zvolen district is not included in the list of districts within 50 km around the plant.

In the 50 km area the settlements with the largest number of inhabitants are Nitra (87,575 inhabitants), Nové Zámky (42,987 inhabitants), Levice (37,039 inhabitants), Topoľčany (29,444 inhabitants), Partizánske (25,338 inhabitants), Šaľa (24,904 inhabitants) and Žiar nad Hronom (20,290 inhabitants).

There are also 19 municipalities with the status of "town" within the 50 km zone. In Sector 1 there are no towns, in Sector 2 there is only one town (Tlmače), in Sector 3 there are 3 towns and in Sector 4-15 towns.

Manpower

The construction of MO34 will have an effect on employment rates with a manpower comprising of a wide range of specializations and qualifications (civil engineering, machine building, knowledge of mechanical installations, pipe production and assembly, electrical engineering, use of instruments, software specialists etc.) and levels of skill (from non-qualified to highly specialized personnel). This is significant for the economy of the area around the power plant and leads to a large number of local personnel being employed for the construction of the NPP; it will also be an opportunity to preserve and develop

professional qualifications at a local level which will be a benefit to the rapidly growing Slovak economy.

In addition, the positive influence of this new source of employment will be felt by the manpower from a wider area (which will be hired for specific activities i.e. skilled or specialized employees). As a result of the increase in the number of people employed and living in the surroundings of the NPP there will be an increase in related employment created as a result of the increase in purchase power of NPP personnel.

Due to the presence of the NPP all social and physical infrastructure already exists.

Regarding the local manpower, more than 3300 persons are supposed to be employed during the whole period of the work (i.e. from 2008 to 2013), from which a large number will come from towns and villages surrounding the NPP. The region has sufficient resources for the provision and accommodation of the required manpower.

The construction began in 2007 and will be completed by 2013. The total labour requirements in this period will be approx. 25.000.000 man hours.

Age structure of inhabitants in the assessed area

Age structure of inhabitants in the affected villages has a less favorable composition than the Slovak average. It has fewer inhabitants at a pre-productive age and a higher portion in a productive or post-productive age. Data from census of 2001 are given in table III.10.

Village	*Pre-productive age*	*%*	*Productive age*	*%*	*Post productive age*	*%*
Kalná nad Hronom	453	21.9	1257	60.6	361	17.3
Malé Kozmálovce	68	16.9	212	52.7	122	30.3
Nový Tekov	153	18.3	467	55.9	210	25.1
Starý Tekov	248	16.8	873	59.0	356	24.1
Tlmače (Lipník)	728	16.9	2884	67.1	647	15.0
Veľký Ďur	206	15.8	742	56.9	345	26.4
Čifáre	85	14.4	331	56.0	175	29.6
Nemčiňany	143	18.2	419	53.4	222	28.3
Total	2084	17.7	7185	61.02	2438	20.41

(Source: Statistical yearbook SR)

Table III.10 - Age structure of inhabitants in relevant villages (2001)

Economic activities of inhabitants

The economic activities in affected villages as well as in the wider surrounding of the Mochovce NPP are positively influenced by the construction and operation of the site but on the other hand there have been significant social changes in the last several decades. In this period there was significant restructuring in production and services and subsequent changes in economic activities of the inhabitant in the whole region. The following table shows composition of economical active inhabitants

Village	*inhabitants*	*Economical active inhabitants*			*Total of active inhabitants in %*
		Total	**Males**	**Females**	
Kalná nad Hronom	2,073	1,042	542	500	50.3
Malé Kozmálovce	402	160	94	66	39.8
Nový Tekov	835	376	200	176	45.0
Starý Tekov	1,479	708	397	212	47.9
Tlmače (Lipník)	4,305	2,386	1,238	1,148	55.4
Veľký Ďur	1,305	584	327	257	44.8
Čifáre	591	281	169	112	47.5
Nemčiňany	784	349	181	168	44.5
spolu	11,774	5,886	3148	2,639	49.99

(Source: Statistical yearbook SR)

Table III.11 - Composition of economical active inhabitants in affected villages (2001)

Transformation of the economy in the Levice region is characterized by a decrease in jobs and migration of inhabitants away from their villages, towns, district and region. Unemployment in 2001 was 23.31% and 16.97% in 2006. A lack of jobs in villages and towns results in migration of inhabitant to other villages and towns out of the district.

Industrial production

Most of the affected territory lies in the Levice district. Marginal parts of the affected territory are located in the districts of Nitra and Nové Zámky where industrial activity is negligible.

The most important industrial activity is Mochovce NPP itself, which plays a significant role in industrial production and services for Slovak industry. The town of Tlmače has a developed machinery industry. Other industrial centers are Levice and Vrable which are located 10-15 km from the Mochovce NPP. Smaller industrial operations are located in Kalná nad Hronom and Santovka. Very small production units are also located in other affected villages.

Construction activities are mainly concentrated in the completion of MO34. Building activities in smaller affected villages in the area are less extensive.

Agricultural activities

Agriculture is the most common activity in the affected territory. The area has a good potential for growing practically any crop. Most types of agricultural land exist: arable land, hop-yards, vineyards, gardens, orchards, and grassland. The area is characterized by a high percentage of arable land in comparison with other types. Grassland is mainly located at foot of hills (Štavnické hills) and other areas with lower productivity of soil, slopes and soil with high moisture, but they are also on mountain slopes and in narrow strips along rivers. Vineyards are located on sunny slopes and orchards on various slopes. Orchards are usually connected with village houses. The crops are usually represented by cereals, maize, sugar beets, and cereals used for livestock. The livestock consists mainly of cows, sheep and chickens. Irrigation systems are located in Želieznovice and Velké Kozmálovice.

Forest industry

The forest is part of Podunajska hills without grassland, Grass land of Podunajska hills and Stiavnické hills. Wood species are represented by oak, poplar, acacia, beech and other deciduous species. Deciduous trees take up % of the coppice. In addition, there are - pine, spruce and fir. Forest industry is predominately made up of mining activity, followed by growing activity and other forest industries. Part of the forest in the affected territory has a protective function, which is mainly focused to protection and utilization of the forest as a natural environment particularly valuable due to its authenticity (Patianska cerina and others). Recreational functions are mostly in the outer edges of the forests often where it is connected to orchard and vineyards. Forest industry in state forests is ensured by state owned forestry companies (Levice) and private forestry organizations. From the point of view of agricultural regionalization, the territory belongs to a breeding area of deer and other small game. There is also a genetic fund of fallow deer.

Services and civic amenities

Services and civic amenities in affected territory correspond to the size (inhabitants) and development trends. In communities of fewer than 500 inhabitants (Malé Kozmálovce) the range or services and civic amenities is limited by the number of users and their effectiveness. Other larger communities in the affected territory have wider range of services and civic amenities, including basic education, cultural and sporting needs. More developed amenities (education, health, culture, sport and recreational activities etc.) are available in Levice, Tlmače and Vráble, which are not far from the villages in the affected area.

Recreation and tourism

Recreation and tourism in the affected territory can be considered as medium developed. In the affected territory and its immediate surroundings are small water reservoirs which are used for agriculture. In the affected territory there are many cabins, vineyard cottages, gardens and vineyards used for tourist accommodation. Veľké Kozmálovce reservoir and the River Hron are used for water sports activities as well as Bagroviská and Ramená streams (Horná Seč). There are angling opportunities in rivers ponds and reservoirs. There is a horse rearing center in Nový Tekov (and also in Jura nad Hronom, Mýtné Ludany, outside the affected territory). Cycle tourism is not well developed depends on the development of rural tourism. There is a motocross track in the village of Rybník.

Other recreational and tourism opportunities can be found in the wider surroundings of the affected territory. Geothermal water can be found in the region e.g. in Levickej kryhe. This water is used in the thermal baths in Santovka, Margita and Ilona. Other potential sources of geothermal water are in Želiezovec.

3.2 Infrastructure

Transport and transport areas

Road transport: the main road communications in the territory affected by the proposed activities is the I/51 Vráble- Levice road running in an east-west direction and I/76 Hronský Benedik –Tlmače - Kalná nad Hronom – Želiezovce running north-south. Other roads include – 2nd Class road number 564 Tlmače-Levice, 2nd Class road number 580 Šurany- Kalná nad Hronom, 2nd Class road number 511 Nové Zámky – Tesárske Mlyňany. To the north of the affected territory there is the road I/55 Nitra Zlaté Moravce. The road network in the area is supplemented by local 3rd class roads.

The Mochovce NPP is connected to the 3rd class road Čierne Klačany – Nemčiňany – Mochovce – Čifáre, and the Mochovce – Kalná nad Hronom. In relation to the Mochovce NPP and the need to build an emergency escape route from Nový Tekov to Starý Tekov the Hron River may be bridged to connect to the I/76 and III/05156 roads.

Rail transport: Rail lines 150 Hronský Beňadik – Tlmače – Levice – Kalná nad Hronom - Šurany and 141 Zlaté Moravce – Levice run through the affected area. There is a railway branch line which runs from the SE-EMO site to the railway station in Kalná nad Hronom. Railway transport is insufficient taking into consideration the economic importance of the region. Its development is dependent on the construction of high-speed railway routes in Slovakia.

There are no other types of transport in the affected area. There is a small grass air field in the wider surroundings which is intended for agricultural and sports use (Levice).

Utility lines

One of the most important sources of electrical energy (the SR - JE EMO) lies in the heart of the affected territory and is made up of 2 units, each having an output of 440 MWe. On the boundary of the affected territory in Veľký Ďur and approx. 12 km to the SEE of the site are VHV and HV transformers which are connected to the Slovakian distribution grid with 400 kV, 220 kV and 110 kV links. These stations are of nationwide significance from the point of view of electrical energy.

In the close surroundings, additional sources of electricity which are connected to the distribution grid are the power plant in Bavlnárské závody with

an output of 8 MVA and the hydroelectric power plant Veľké Kozmálovce with a power output of 5.1 MVA.

A transit VVTL 1 x 1400 + 3 x DN 1200 gas pipeline runs towards Ipeľské Úľany-Semerovce-Santovka-St. Hrádok-Kalná nad Hronom and a VVTL international DN 700V gas pipeline runs towards Plášťoviec na Slatinu, Kršk any, Novú Dedinu and Tlmače.

3.3 Cultural and historical heritage

All the territories beyond the Danube River have represented a strategic crossing area among different cultures and people during the centuries.

Archaeological findings from the time of Junger Stone Age (2000 B.C.) have been documented at Tlmace town, while the Bronze Age and the Iron Age are documented in the territory of Slovenska brana. The excavation in 1902 of the Mammoth remains near Besa town still holds the place of the best preserved mammoth remains in Slovakia.

At the beginning of the 8th Century B.C., in the early Iron Age, Scitian people are documented in the Danubian valley among territories of Slovakia and Hungary, according to Herodotus.

Later, in the 1st Century B.C., the Danubian region is dominated by Celts, whose most important urban settlement was on the top of the hill of Bratislava (a Celtic coin dated 1st Century b.C. was found in the excavations of the old town).

At the end of the 2nd Century B.C. the Celtic kingdom was cancelled by the invasion of two different people: Dacians from south east and Germans from north.

The Danube River became the natural border of the Roman Empire, called "Limes Romanus", while the inhabitants of the regions beyond the river were barbarians. In the Ages of Traianus and of Marcus Aurelius famous battles took place in this area, documented in the embossment of the two imperial marble columns in Rome.

The 5th Century represents the end of the roman domination, as new ethnic migrations characterize this period.

Slavs arrival (from north east) marks the beginning of a new age of cultural domination, which has been going on up today. In the 7th Century a state formation of Slavs is documented as the Samo Empire, from the name of its leader, with an important urban settlement in Nitra.

Nitra was the capital as well of the subsequent state formation, named the Great Moravian Empire, whose Prince Pribina, at the beginning of the 9th Century, dominated over a large territory corresponding to central and west Slovakia, Czech Republic and some regions of Poland, Hungary and Germany. He showed great wisdom as a statesman and did actually change the history of Slovakia, by allowing the first Christian church in Nitra to be consecrated. The witness to the Christianity of the Slavs is mentioned in a document dated 870 A.D. (Conversione Bagoariorum et Carantanorum) while the exact site of the first church in Nitra has not yet been located.

The 9th Century was also significant for the arrival in Slovakia of the two Byzantine missionaries Cyril and Methodius, who developed the first Slavic alphabet and translated the first liturgical texts into Old Slavonic.

In the 11th Century Slovakia was annexed to the rising Hungarian reign, whose King Stephen I was catholic and clearly involved with the politics of the Church of Rome. In this period several churches and monasteries were established in Slovakia, thanks to the presence of Benedictine Order who took up the organization of ecclesiastical life. The two oldest and most important monuments of this age were both related to this Order: the monastery of St Hyppolite on the slope of Zobor hill (Nitra), and the still existing monastery of Hronsky Benadik, first consecrated in 1075 and rebuilt in 14th Century in gothic style.

Terrible attacks by Avars and Tartars in the 13th Century forced the monasteries to be fortified, giving the region a new cultural landscape, improved by the presence of several castles on the top of the hills. Most of them are in ruins today, but still retain the importance of a defensive chain against external attacks, wanted by King Bela IV.

The Renaissance in Slovakia bloomed with the Hungarian King Mattia Corvino, who provided Bratislava with a famous University and patroned some of the most important artists of the 15th Century.

Between the beginning of the 16th and the end of the 17th Centuries the territory of Slovakia was crossed by two different, but equally strong problems for the Asburgo monarchy: Turkish invasions and Luther Reformation.

As a result of the religious wars, which deeply impressed the territory of Slovakia as well as all over Europe, the arrival of Jesuits is to be registered, called by the Asburgo in order to stop the Lutheran wave. Some of the most important historical landmarks in the region of Levice (church of the Archangel Michael; church of the Holy Cross; chapel of St Mary of the Sevenpains), Nitra (church of the Holy Trinity) and Zarnovica (chapel of the Holy Blood in Hronsky Benadik) date back to the 18th Century baroque period.

The history of Slovakia between 19th and 20th Century follows the events of the Austro-Hungarian monarchy and the contemporary rising of the Slavic nationalism.

No landmarks or monuments of relevant significance for this report are to be mentioned.

4 CURRENT ENVIRONMENTAL QUALITY, INCLUDING HEALTH

4.1 Monitoring of Radioactivity in the Environment

In accordance with the EMO/2/NA-052.01-02 Mochovce Environmental Radiation Monitoring Plan, the NPP controls its radiological impacts on the environment and on inhabitants. Monitoring activities are aimed at documenting that radiological impacts, i.e. exposure of inhabitants and concentration of isotopes from emissions are below the limits presented in the Annex No 3 to the Decree of the Government No 345/2006 on Basic Safety Requirements for Health Protection of Workers and population from Ionizing Radiation (and L&P laid down by UJD) and that the impacts are as low as reasonably achievable – ALARA principle.

Samples of air, soil, water, and food chain (feed, milk, agricultural products, etc.) in the area with the radius of 20 km around the plant are regularly measured and assessed by the SE ERML (Environmental Radiation Monitoring Laboratory, in Levice). All radioactive potential impacts of emissions and effluents to the atmosphere as well as to all hydrosphere components (surface water, potable water, continuous bottom sediments, etc.) on the power plant vicinity are monitored.

SE presents annually complete reports on Monitoring of Radioactivity in the SE – EMO Environment. In the reports analysis of data is based on the pre-operation (the section related to the statistic processing of results) and operation period from the past years. In fact, the measurements of samples were done even prior to commissioning of power plant so that to acquire referential values to be compared with values measured during operation and after the end of the plant's life-time.

Detailed results of the monitoring of the radioactivity in the environment are included in annex IV of the "Report on Monitoring of Radioactivity in the SE – EMO Environment (years 2005 and 2006)".

Monitoring results demonstrate that impacts of Units 1 and 2 during standard operation are close to zero in spite of a high sensitivity of the equipment applied. The way of operating the systems of gaseous and liquid emissions treatment and their permitting ensure the emissions maintained ALARA principle and demonstrate that the radiological impacts of the plant operation on the environment and on exposure of inhabitants were not only below the limits specified, but they were practically undetectable.

Tritium and ^{90}Sr values measured in surface waters (River Hron) comply with the Mochovce NPP project values and also with the legal requirements (the Decree of the government of SR No 296/2005, by which the indicators of permissible pollution level of surface waters – tritium - are set forth). Results from monitoring of the air, soils, agricultural products, from thermoluminiscent dosimeters or ionization chambers did not reveal impacts of Mochovce NPP operation on the background values of radionuclides in the Mochovce NPP environment (consisting of terrestrial radionuclides - ^{238}U, ^{232}Th, ^{40}K, ^{7}Be and anthropogenic radionuclides - ^{137}Cs, ^{134}Cs, ^{90}Sr produced during nuclear tests in the air and during the Chernobyl disaster).

In spite of these conclusions, some values exceed the values of investigation levels. Investigation levels equal to three sigma of the background level were calculated in the last two years and they could be affected by sampling conditions (particularly the meteorological ones) of these years significantly and also could be affected by the possibility of measuring devices factor in the increase of measured values. Preliminary conclusion of the investigation is that the exceedances are of a statistic nature and are not of any environmental consequence.

Around Mochovce NPP, 15 Stable Dosimetric Stations (SDS) are located and a station is present in the locality of RR RAW (Republic Radioactive Waste Repository in Mochovce – Managed by JAVYS). The stations take off aerosol particles permanently by their absorption in the filter. Moreover, they contain a polyethylene tank for fallout collection (wet and dry together) and there are located cartridges equipped with TLD (Thermoluminescent Dosimeters) at arms installed at the stations. The environmental radiation monitoring covers an area of about 15 km from the power plant.

There are 24 monitoring stations of TDS located in the vicinity of Mochovce NPP which monitor a dose rate of gamma radiation, volume activity of aerosols and radioactive iodine.

4.2 Air quality (not related with radioactivity)

Until 1999, measurements of regional air pollution and quality of rainfall waters were performed by the Meteorological Observatory of the Slovak Hydro-Meteorological Institute being a part of Slovak regional stations national network in evaluated zone of the Mochovce power plant. Between 2000 and 2002, there were performed no measurements in the Meteorological Observatory of the Slovak Hydro-Meteorological Institute.

The air quality of the region can be assessed on the basis of results of measurements performed at the regional station of the Slovak Hydro-Meteorological Institute in Topoľníky, which is located in plain landscape of the Danubian Lowland. Results measured at this station were comparable with results measured at the Mochovce station during previous years.

In 2002, measured concentrations of basic pollutants represented less than 20% of the critical level value (15 μg/Nm^3) for SO_2 as S and 31% of the critical level value (9 μg/Nm^3) for NO_2 as N, that are usually recommended for agricultural vegetables.

The average yearly levels of pollutants measured at the Topoľníky station did not exceed the permitted limit values according to the Decree of the Ministry of Environment No 705/2002 Coll.

Regional concentration level for sulphur dioxide in Topoľníky was 2.92 μg/Nm^3 SO_2 as S, which corresponds to 5.84 μg/Nm^3 SO_2. In accordance with the Decree No 705/2002 Coll., this value is lower than the Lower Limit for the vegetation limit value assessment. In other words, the air quality shall be assessed in the regime 3 under the Lower Limit of the pollution of 8 μg/Nm^3 SO_2.

Following the emission limits under the Lower Limit of the assessment can be considered as fixed, it is possible to replace the direct measurement in zones out of agglomerations by model calculations, expert estimations and indicative measurements.

There are more sources of basic pollutants emissions in the Mochovce NPP surroundings interest zone, that contribute to several actual as well as potential, either local or regional, problems (rainfall acidification, air quality decline, soil acidification etc.).

In the framework of the 79 districts of SR, the Levice district involving the essential part of the Mochovce NPP surroundings occupies the 43rd position for basic harmful substances production, the 33rd position for SO_2, the 43rd position for NO_2, the 33rd position for solid combustibles and the 38th position for CO production.

In terms of releases of non-radiological chemical substances, the Power Plant, as an NPP, is not a significant emitter of conventional air pollutants including NO_x, SO_x, CO_2 and particulate.

4.3 Noise and vibrations

Noise from the operation of the Mochovce NPP in the surroundings of the site is negligible. In addition, the closest settlement is approximately 3 km away, where the noise levels from Mochovce NPP are practically zero.

Noise measurements have not been made at the nearest residential receptor. However, noise measurements have been made at the external wall of the turbine hall, which is the largest single continuous source. Since the nearest residence is located at about 3 km from the turbine hall, noise from the plant cannot be perceived at such a distance.

An increase in the noise levels was determined only locally (inside the site boundaries) on individual machines and would have an influence only on the workers close to the machinery.

The operation of the NPP produces nearly no vibration. Due to the fact that approx. 70% of the construction work at MO34 has been completed, no significant levels of vibration during the final phase of the work are expected.

4.4 Light and electromagnetic fields

The Mochovce NPP site is entirely surrounded by a perimeter fence that restricts access to the site.

As per security and safety, including air traffic and terrorist attack, and security procedures the site is well equipped with light.

The additional amount of lighting related to the commissioning of Unit 3 and 4 is not significant compare to the total lighting of the site that is already present.

Taking into consideration the characteristics of the existing environment surrounding Mochovce NPP, the Project is predicted to not have an adverse effect on human community, biota and habitat.

4.5 Soil radioactivity

The construction and commissioning of Mochovce NPP had been, before the commissioning of the units 1 and 2, one of the most frequently discussed ecological problems in the Slovak Republic. Therefore, the Ministry of Environment of the Slovak Republic decided a program of measurements and of the pre-operational conditions of environment in terms of the natural and induced radioactivity in the area of Levice – Mochovce on the area of 480 km^2. The survey was supported by the fact that it was performed by URANPRES s.r.o. Spišská Nová Ves company, which had no direct relation to the construction of the nuclear power plant.

The concentrations of the natural radionuclides K, U and Th in the soil had been used to determine the background dose rate.

For the Slovak Republic the value of dose rate is 63 nGy/h; for the examined area the value of dose rate is a bit higher, 70.18 nGy/h, this is caused mainly by the relatively higher Th concentration.

The concentrations of radionuclides that can be found in the soil are comparable with natural background concentration for soil. The principal radionuclides detected in the Local Study Area are:

- ^{137}Cs, artificial;
- ^{40}K, natural;
- ^{238}U, natural;
- ^{232}Th, natural.

The presence of Cs, as reported in literature, is mainly due to anthropogenic activities such as nuclear tests and nuclear abnormal accidents (Chernobyl fall out).

The mass activity of principal radionuclides in soil, detected during pre-operation of Unit 1 and 2 of Mochovce NPP during the period 1995-1999, is shown in Table III.12.

Radionuclides	Mass Activity (Bq/kg)
^{137}Cs	0.2-4.0
^{40}K	450-600
^{238}U	20-35
^{232}Th	20-40

(Source: Slovenské elektrárne, a.s.)

Table III.12 - Principal radionuclides in soil detected during pre-operation of Unit 1 and 2 of Mochovce NPP during the period 1995-1999

Environmental component	*Most probable range of values*			
	∑β	^{40}K	^{137}Cs	^{90}Sr
Air				
aerosols (m·Bq·m^{-3})	0.7-2.7	-	0.03-0.5	-
atmospheric fallout (Bq·m^{-2}/month)	4-70	-	1.0-5.0	0.2-2.2
Soil				
arable soil (Bq·kg^{-1})	580-975	730-945	4-15	1-4,5
forest soil (Bq·kg^{-1})	500-1440	310-885	6-47	3-12
Surface water				
Hron (Bq·l^{-1})	0.1-0.3	0.07-0.2	(0.5-2).10^{-3}	(5-10).10^{-3}
Žitava (Bq·l^{-1})	0.1-0.5	0.03-0.5	(1-4).10^{-3}	(5-10).10^{-3}
Telinský stream (Bq·l^{-1})	0.2-0.7	0.15-0.6	(2-8).10^{-3}	(5-10).10^{-3}
Drinking water				
Municipal source (Bq·l^{-1})	0.1-0.5	0.05-0.4	(1-4).10^{-3}	(2-8).10^{-3}
Sediments	750-1 100	450-550	4-20	1-2
Dry weight (Bq·kg^{-1})				
Feedstuffs				
Straw (Bq·kg^{-1})	100-400	50-200	2-8	6-25
Dry clover (Bq·kg^{-1})	600-1000	500-900	1-4	3-15
Foodstuffs				
cereals – grain (Bq·kg^{-1})	50-200	40-150	0.2-0.8	0.1-0,5
meat– dry weight	200-400	150-350	0.5-1.5	0.2-0.6
milk – dry weight	300-600	300-550	0.5-1.5	0.2-0.6
milk – raw	35-70	35-65	0.06-0.18	0.02-0.07

(Source: VÚJE, 1981-1982)

Table III.13 - Values of background radioactivity in individual components environment at the Mochovce site, VÚJE, 1981-1982

Environmental component	*Most probable range of values*			
	^{7}Be	**^{137}Cs**	**^{90}Sr**	
Air				
aerosol (m·Bq·m^{-3})	2.6	0.006±0.002	-	
atmospheric fallout (B·m^{-2}/month)	-	1.1-3.3	-	
	^{3}H	**^{40}K**	**^{137}Cs**	**^{90}Sr**
Surface water				
Hron (Kalná n./H.) (Bq·l^{-1})	6.7±0.5	0.34±0.07	< 0.02	0.033±0.01
Žitava (Vráble) (Bq·l^{-1})	5.5±1.3	0.35±0.07	< 0.02	0.032±0.01
Telinský stream (Bq·l^{-1})	5.25±0.95	0.53±0.06	< 0.02	0.022±0.005
Drinking water				
Nový Tekov (Bq·l^{-1})	8.5±1	0.46±0.08	< 0.02	0.022±7.6
Krškany (Bq·l^{-1})	6.75±0.5	0.24±0.05	< 0.02	0.028±10
	^{137}Cs	**^{40}K**	**U-rad**	**Th-rad**
Sediments				
Dry weight (Kalná n./H.) (Bq·kg^{-1})	15.4-83.5	471-518	30.9-44.1	28.3-38.1
Feedstuffs				
Straw (Bq·kg^{-1})	1.4-7.0	540-580	< 1.0	0.5
Dry clover	0.6-0.9	780-1 210	< 1.0	0.5
Foodstuffs				
cereals – grain (Bq·kg^{-1})	< 0.1	106-183	< 0.5	0.3
milk – dry weight	0.33-3.56	366-482	< 0.9	0.3
vegetables	0.2-0.61	79-437	< 0.5	0.3
fruit – apples	0.12-0.31	33-51	< 0.2	0.1
fruit – grapes	< 0.1	66-121	< 0.2	0.1

(Source: Slovenské elektrárne, a.s. LRKO, 1992)

Tab.III.14 - Radioactivity present in individual environmental components

The impact of the Chernobyl accident can still be observed at the site where the radionuclide fallout was significant (e.g. the Vráble site). Values of ^{137}Cs and ^{134}Cs were measured in these localities in 1992, which correspond to the level of dose input of external radiation from terrestrial components at a height of 1 m above the terrain. In 2005, the contribution of radionuclide ^{134}Cs and ^{137}Cs gamma radiation to the total dose input (DI) from external radiation decreased. The value of DI measured in the ionization chamber 1 m above the terrain also decreased – Table III.15.

Radionuclide	Activity		Dose input, [nGy/h]	
	year 1992	year 2005		year 1992
manmade	[Bq/m^2]			
^{134}Cs	620 ± 90	< 273	2,2 ± 0,3	< 0.3
^{137}Cs	8660 ± 170	5090 ± 280	11,5 ± 0,2	6.27 ± 0.35
natural	[Bq/kg]			
^{40}K	530 ± 10	583 ± 30	22,8 ± 0,6	24,3 ± 1,3
U-rad	33 ± 8 **(1)**	30 ± 2,6 **(1)**	14,4 ± 3,4 **(2)**	14,4 ± 0,7 **(2)**
Th-rad	34 ± 7 **(1)**	37 ± 6,4 **(1)**	22,1 ± 4,7 **(2)**	22,3 ± 0,9 **(2)**
DI calculated from spatial activity of measured RN			73,0 ± 5,0	67,57 ± 1,8
DI from cosmic radiation (3)			34 ± 3	
combined			107 ± 6	101,6 ± 3,5
Measurements from the ionization chamber together with cosmic radiation			101,0 ± 4,0	94 ± 4

(1) - activity of a single element of the decay chain,
(2) - dose input calculated from all elements of the decay chain
(3) - level of cosmic radiation set by the ionization chamber RSS 111 above the water level, recalculated for the Mochovce site (air pressure 724 Torr)

Table III.15 - Results of the terrain gamma spectrometry at Vráble (1992 and 2005 Source: SE a.s. LRKO)

4.6 Level of contamination of surface water and groundwater

Surface waters quality in the area is potentially affected by discharges of polluted or insufficiently cleaned municipal water, as well as by the washing of agrochemical substances from surrounding fields. Groundwater quality is mainly affected by the river Nitra. Among other things it contains chemical elements and compounds such as iron (Fe), manganese (Mn), mercury (Hg), ammonia (NH4)+X, chlorides and hydrogen sulphide (H_2S).

Groundwater influenced by the river Hron is potentially contaminated by iron, manganese, aluminium, ammonia and humic substances.

The groundwater in the neovulcanites and their surroundings is relatively clean.

Results of the monitoring of water discharged from the RAW facility to Telinsky stream in 2006 are included in the following tables.

Table III.16 shows a comparison of the qualitative indicators with the limit concentrations. The limit values of indicators in water discharged from surface water outflow which were set in the water authority's decision were not exceeded.

Indicator	Measured values		Permitted limit concentration
	min.	max.	
pH	7.8	8.1	-
Conductivity [µS/cm]	160	250	-
tritium [Bq/l]	0.81	1.63	4,690
^{60}Co [Bg/l]	0.013	0.026	5.6
^{137}Cs [Bg/l]	0.012	0.019	5.7
$^{239+240}$Pu [Bg/l]	<0.001	<0.008	0.139
^{90}Sr [Bg/l]	0.008	0.013	61.0
Total beta [Bq/l)]	0.11	0.33	-

(Source: Slovenské elektrárne, a.s.)

Table III.16 - Comparison of qualitative indicators with limits for water discharge from the RAW facility

Radionuclide	LaP [Bq]	Discharged activity [Bq]	LaP Filling [(%]
^{3}H	$1.88 \cdot 10^{10}$	$5.61 \cdot 10^{6}$	0.03
^{137}Cs	$2.28 \cdot 10^{7}$	$9.31 \cdot 10^{4}$	0.41
^{60}Co	$2.24 \cdot 10^{7}$	$1.05 \cdot 10^{5}$	0.47
^{90}Sr	$2.44 \cdot 10^{8}$	$6.40 \cdot 10^{4}$	0.03
^{239}Pu	$5.56 \cdot 10^{5}$	$1.16 \cdot 10^{4}$	2.10

(Source: Slovenské elektrárne, a.s.)

Tab.III.17 - Percentage valuation of total activity of individual radionuclides in water from surface outflow at the RAW facility to LaP

In groundwater, surface water and drainage water the activity of individual radionuclides ranges as follows:

^{3}H	< 2.2 [Bq/l]
total beta activity	< 1 [Bq/l]
^{137}Cs	< 0,026 [Bq/l]
^{60}Co	< 0,024 [Bq/l]
^{90}Sr	< 1 [Bq/l]
^{239}Pu	< 0,01 [Bq/l]

Ten soil samples were taken in conformity with HMG sample collection in 2006. The values of measured activity of radionuclides are included in the following table.

Radionuclide	Measured values	
	min. [Bq·kg^{-1}]	max. [Bq·kg^{-1}]
^{40}K	180	512
^{137}Cs	0.150	0.650
^{238}U	10.3	52.2
^{232}Th	14.7	44.3
$^{239,240}Pu$	0.190	0.260
^{241}Am	0.210	0.260
^{90}Sr	2.70	4.10

(Source: Slovenské elektrárne, a.s.)

Table III.18 - Range of values of measured activity of RN in soil samples at the RAW facility

4.7 Health status of inhabitants

The health status of inhabitant in affected small villages is not observed separately but is included in the statistical observations made in separate districts. The basic health status of the inhabitant can be assessed using the following criteria:

Average life span – in monitored districts (Levice, Nitra, Zlaté Moravce) where affected villages lie the average life span is 66-69 year for Males and 75-76.8 for Females.

Total mortality – the district of Levice, where 75 of the affected villages lie, is a region with the highest sickness and mortality in Slovakia. The number of newborns showed a decreasing tendency between 1999 and 2002 and was 8.02-9.19%. Mortality in the district was 12‰ between 1999 and 2002.

The most frequent cases of mortality are cardiovascular problems. Carcinogenetic mortality in 2002 was the highest in the region of Nitra. Other mortality is related to frequent gastritis and breathing diseases. The highest risk factors for workers in the region are noise, dust, chemical preparations and vibration exposition.

IV BASIC DATA ON ANTICIPATED IMPACTS OF THE PROPOSED ACTIVITY ON THE ENVIRONMENT, INCLUDING HEALTH, AND ON POTENTIAL MITIGATION MEASURES

1 REQUIREMENTS ON INPUTS (E.G. LAND REQUIRED, WATER CONSUMPTION, OTHER RAW-MATERIAL AND ENERGY RESOURCES, TRANSPORT AND OTHER INFRASTRUCTURES, REQUIREMENTS ON LABOUR, OTHER REQUIREMENTS)

1.1 Land requirements

Further development of the Mochovce NPP, Units 3 and 4, will not require additional land other than the one already authorized. Most of the civil works (70%) are completed and are currently not used. Once the MO34 is in operation, besides the dedicated structures and systems, it will use also the common structures and systems shared with EMO12.

1.2 Water consumption

1.2.1 Surface water

Water for the operation of Mochovce NPP is extracted from the water reservoir at Veľké Kozmálovce on the Hron River approximately 5 km from the site (Decision of the district authorities in Banská Bystrica, odd. No. 1094/2/177/405.1/93-M from 6.7.1993).

Suspended solids are removed from the extracted water, first through a coarse 3 to 5 cm slot at the inlet of the piping, and then refined, through a 16 mm slot at the entrance of the pumping station. This second set of slots is cleaned by an automatic device and the impurities are gathered into a 3.2 m^3 tank and periodically brought back to the dam. Consequently, clear water (deprived of suspended solids) is pumped from the pumping station to two reservoir tanks, each with a volume of 6.000 m^3 at the Mochovce NPP.

Water loss by evaporation from the cooling towers depends on water and air temperature and is in the range from 0.85 m^3/s to 1.33 m^3/s. A further part of the water in the amount from 0.18 m^3/s to 0.36 m^3/s is used as backup water discharged to the canal from the third circuit in order to maintain the required water quality (blow-down).

The volume of extracted surface water during the period 2000-2007 is reported in Table IV.1. This table includes data from the start of operation of unit 2 of the NPP (2000). The total amount of surface water extracted from the source at Veľké Kozmálovce is in conformity with the yearly limits permitted by the water authorities.

Year	Surface water extraction (m^3)	Production of electricity (MWh)	Specific water consumption (m^3/MWh)
2000	19,154,053	5,946,691	3,22
2001	16,788,751	5,391,342	3,11
2002	18,218,200	5,870,235	3,10
2003	19,286,611	6,238,525	3,09
2004	17,615,583	5,482,865	3,21
2005	19,313,417	6,239,944	3,09
2006	18,949,001	6,320,254	2,99
2007	19,994,286	6,828,737	2,93

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.1 – Volume of water extracted and consumption of surface water in relation to the production of electricity

A decrease in the quality of extracted water from the water reservoir leads to lower condensation in the cooling circuit and an increase in the actual consumption. On the basis of estimation it can be stated that the volume of sediment is approximately 50% of the retention volume of the reservoir.

When MO34 will be in operation the consumption of surface water shall double. Operation of all four units will require an average annual extraction equal to $Q_{average}$=1.5 m^3/s with a maximum extraction rate of Q_{max}=1,8 m^3/s.

The total annual consumption for 4 units is in conformity with the annual limits set by the water authorities i.e. 47,304,000 m^3 per year.

1.2.2 Groundwater extraction

Groundwater is extracted from two wells, HMG-1 and HMG-1/A, owned by SE in Červený Hrádok approximately 8 km away from Mochovce NPP. The

maximum permitted flow rate is 18 l/s for HMG-1 and 15 l/s for HMG-1/A. Groundwater is used for drinking water purposes. A reservoir of drinking water is also constituted by the aqueduct in Kalná nad Hronom.

Up to 2005 groundwater was mostly taken from the two wells in Červený Hrádok, and the remaining part from the aqueduct in Kalná nad Hronom (Tab. IV.2.).

In 2007, the volume of pumped groundwater from the source at Červený Hrádok was 83,478 m^3, being effectively supplied to Mochovce NPP. Drinking water from the water source in Kalná nad Hronom was supplied in the volume of 22,305 m^3. Supply of drinking water from the aqueduct was stopped in June 2005 due to a decision of the management of Mochovce NPP.

Currently the well at Červený Hrádok provides sufficient drinking water for the Mochovce NPP.

Year	Volume of drinking water consumption (m^3)				
	Well	Water supply	Total	No. of employees	Consumption per employee l/person×day
2000	380,570		380,570	2435	428
2001	311,393	48,723	360,116	2349	363
2002	303,950	32,677	336,627	2246	370
2003	311,020	39,601	350,621	1870	465
2004	353,940	47,167	401,107	1783	543
2005	178,760	22,305	201,065	1613	304
2006	96,183	0	96,183	1528	172
2007	83,478	0	83,478	1491	153

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.2 - Volume of drinking water consumed from various sources between 2000 and 2007

The volume of extracted groundwater had a decreasing trend from 2005 on. The reduction in the consumption of drinking water was related to the fitting of water meters at all consumption points whereby determining leaks in the distribution network which were repaired or replaced.

When MO34 will be in operation the consumption of drinking water will increase by approximately 25%. The permitted extraction from the well in Červený Hrádok will not be exceeded by this increase.

1.3 Other raw material and energy source

1.3.1 Chemicals

In EMO12, chemicals are used for operation and maintenance of the mechanical and other technological equipment (sealing material, lubricants, protective paints, cleaning agents etc.) and for operation and maintenance of buildings etc. The consumption of these materials ranges from several tens of kilograms to several hundred tons (e.g. material for reconstruction and maintenance of buildings etc.). Based on a qualified estimation the total consumption of material should range between 20 – 25 thousand tons per year.

Other raw materials needed for the operation and maintenance of EMO12 are either environmentally neutral materials (e.g. protective paints) or are categorized after use as being in the waste category O (paper, wood etc.). The second group is made up of various chemicals and oil products which are included in the following table.

The operation of Units 3 and 4 of Mochovce NPP is likely to require the same amount of chemicals of Units 1 and 2, and the consumptions for the whole plant will be lower than two times the consumptions for EMO12 due to the existence of common structures and systems.

Raw material	Consumption (t)	Raw material	Consumption (t)
Sulphur acid H_2SO_4	267	AKTIPHOS Stabilizer 665T	27
Sodium hydroxide NaOH	270	DILURIT GM AC, GM ACT	14
Activated hydrazine – Levoxine	42	DILURIT GM AC, GM Cat	29
Ferric sulphate $Fe_2(SO_4)_3$	1570	POF KOARET 3230	4
Lime hydrate $Ca(OH)_2$	2373	NALCO ST70 BIOCIDE	4
Ammonia NH4OH	45	INHIBITOR NALCO 7359	2
Potassium hydroxide KOH	0	Stabilizer NALCO 23289	1,5
Nitric acid HNOy	3	Ionite stuffs according to the catalogues	0
Sodium phosphate Na_3PO_4	0.5	Calc-casing remover BREX	0
Sodium sulphite Na_2SO_3	1	TOPECOR	0
Boric acid H_3BO_3	0	Ionite Lewatit MonoPlus M500	0
Mikrosorban coagulant	9	Sodium hypochloride NaClO	1
Biodisperzant	0	Petroleum products lubricant oils	16.7

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.3 - Consumption of chemical and oil products at Mochovce NPP in 2007

1.3.2 Energy sources

The consumption of electrical energy is currently ensured by production from the EMO12 and ranges around 1.07% of the total energy produced (482,976 MWh annually).

Heating at EMO12 is taken from the surplus of thermal energy produced by the NPP which is currently 2,231 TJ.

Additional sources for heat production include an auxiliary natural gas boiler (consumption of natural gas in 2007 – 4,673 m^3) and the site's security boiler (consumption of natural gas in 2007 – 55,762 m^3). A backup source of electrical energy is a diesel generator station (DGS) with diesel consumption for 2007 being 80.6 t (Table IV.4).

The energy sources and the ways in which they are obtained will not significantly change for the Units 3 and 4. The volumes consumed will increase twofold with the operation of all four units.

Source	Fuel consumption
Auxiliary start-up boiler plant heated by natural gas, Mochovce NPP	4,673 m^3
Boiler plant heated by natural gas, guarding area, Mochovce NPP	55,762 m^3
Diesel Generator Stations - oil-fuel	80.6 t

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.4 - Consumption of fuel at Mochovce NPP in 2007

1.4 Transport infrastructure

There is a network of roads and railway lines in the affected territory. Road junctions, railway branches and engineering and telecommunication network connections as well as on-site communications have been constructed for the operation of all the four units. Realization of the proposed activities will not place a greater burden on road communications, railway lines or technical infrastructures.

1.5 Manpower demands

In order to ensure the operation of the Mochovce NPP units 1 and 2, approximately 1,780 employees are required. The expansion of the NPP with 2 additional units will lead to an increase in the number of employees by the addition of service staff in the reactor and workers that cannot be taken from the existing service staff in units 1 and 2. This would therefore increase job opportunities.

1.6 Other requirements

The proposed activities do not create any other requirements.

2 DATA ON OUTPUTS

2.1 Air

Sources of air pollution are combustion processes and aerosol of radionuclides (radioactive materials) produced by the operation of the nuclear reactor.

Concerning EMO12, emissions from the combustion processes are connected with a large source (auxiliary start-up boiler) and medium sources (site's security boiler and diesel units at the site). Emissions from these sources are shown in the following table.

Source: SE-EMO	**Solid contaminants tons/year**	**SO_2 tons/year**	**NO_x tons/year**	**CO tons/year**	**Σ C (total carbon) tons/year**
auxiliary natural gas start-up boiler	0.000355	0.000043	0.007813	0.002619	0.000333
Natural gas boiler, site security	0.004238	0.000509	0.082639	0.033374	0.005562
DGS – diesel in tones	0.114452	0.001612	0.403	0.06448	0.009188
TOTAL	0.119045	0.002164	0.493452	0.100473	0.015083

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.5 - Sources of air pollution from non-radioactive emissions in 2007

The equipment for operation of MO34 is identical to that of EMO12, hence there will be approximately twofold increase as far as concerns this kind of emission.

Radioactive aerosols originated in the relevant buildings of EMO12 are captured and filtered in the air conditioning system and released to the atmosphere by the HVAC (heating, venting and air conditioning) system through the ventilation stack. Active gases are significantly reduced in the system of aerosol and iodine filters.

Requirements for operation of EMO12 (table IV.6) are set in decision including the yearly limits in emissions for radionuclide of noble gases ($4.1 \cdot 10^{15}$ Bq), iodine radioisotope ^{131}I in total gaseous and aerosol forms ($6.7 \cdot 10^{10}$ Bq) and radionuclide mixtures (except ^{131}I) in aerosol with half-life of 8 days ($1.7 \cdot 10^{11}$ Bq).

The following reference levels are set:

a) investigation levels for releases to atmosphere for radionuclides of noble gases ($1.1 \cdot 10^{13}$ Bq/day), iodine radioisotope ^{131}I in gaseous form ($1.8 \cdot 10^{8}$ Bq/day) and radionuclide mixtures in aerosol ($0.5 \cdot 10^{9}$ Bq/day);

b) intervention levels for release to the atmosphere for radionuclides of noble gases ($5.5 \cdot 10^{13}$ Bq/day), iodine radioisotope ^{131}I in gaseous form ($9.0 \cdot 10^{8}$ Bq/day) and radionuclide mixtures in aerosol ($2.5 \cdot 10^{9}$ Bq/day).

	Yearly limit	Reference investigation level	
		a) investigation level	b) intervention level
Radionuclide of noble gases	$4.1 \cdot 10^{15}$ Bq/year	$1.1 \cdot 10^{13}$ Bq/day	$5.5 \cdot 10^{13}$ Bq/day
Iodine radioisotope ^{131}I	$6.7 \cdot 10^{10}$ Bq/year	$1.8 \cdot 10^{8}$ Bq/day	$9.0 \cdot 10^{8}$ Bq/day
Radionuclide mixtures	$1.7 \cdot 10^{11}$ Bq/year	$0.5 \cdot 10^{9}$ Bq/day	$2.5 \cdot 10^{9}$ Bq/day

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.6 Limits of output activity from EMO 12 to the atmosphere

If the intervention limits mentioned in the table are met or exceeded for any of the components, then measures are taken to reduce the discharge below the limits. In addition, there are measures to not exceed annual discharge limits.

The values for RAL discharges to the atmosphere are within the authorized limits (less than 1% for all components).

The main source of radioactive emissions to the atmosphere during operation is technological equipment for the treatment and degasification of cooling water from the primary circuit. Radioactive substances discharged to the atmosphere are made up of gas, aerosol and Iodine. Total volume of discharge is approximately 5.10^{5} m^3/hour. Table IV.7 shows data obtained from instruments located in the ventilation shafts and from laboratory analyses.

Year	Noble gas		Iodine ^{131}I		Aerosol	
	Limit [GBq]	$4.1 \cdot 10^6$	Limit [MBq]	$6.7 \cdot 10^4$	Limit [MBq]	$1.7 \cdot 10^5$
	Unit [GBq]	% of annual limit	Unit [MBq]	% of annual limit	Unit [MBq]	% of annual limit
1998	7,890	0.192	77.25	0.12	13.62	0.0080
1999	12,507	0.305	108.57	0.16	24.13	0.0142
2000	14,412	0.352	56.53	0.084	10.92	0.0064
2001	12,712	0.310	14.65	0.022	17.77	0.0105
2002	11,419	0.279	14.93	0.022	8.18	0.0048
2003	10,805	0.264	1.93	0.0029	12.52	0.0074
2004	3,145	0.077	2.18	0.0032	8.12	0.0048
2005	4,566	0.111	0.38	0.0005	20.53	0.0121
2006	3,061	0.075	0.43	0.0006	19.23	0.0113
2007	2,706	0.066	10.05	0.0150	10.20	0.0060

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.7 - RAL released to the atmosphere from EMO12

RAL releases to the atmosphere are limited by annual values which are monitored and submitted in the form of reports to the relevant authorities e.g. UVZ SR and UJD SR.

The limit values of the nuclear facility for discharge of RAL to the environment are set so that the effective dose will not exceed 250 μSv per calendar year in the relevant critical group of inhabitant. This value is considered as a limit dose for the design and construction of a nuclear facility in the given location (Annex 3 of Act No. 345/2006 Coll.).

Limit conditions for radionuclide activity were set for the operation of all four units prior to starting the operation of EMO12. After beginning operation of EMO12 they were amended for the operation of 2 units. Relevant values for RAL discharge to the atmosphere are within the authorized limits (less than 1% for all components). And an increase of operation will not exceed these limits.

2.2 Waste water

Discharge receptors of wastewater coming from Mochovce NPP are as follows:

- River Hron, for waste water from EMO12 and meteoric water collected in Mochovce NPP;
- Telinsky stream for sanitary water coming from MO34 and drainage water from Čifáre sludge bed;
- Širočina stream for drainage water coming from the drying process of sludge produced during the drinking water treatment from the source in Červený hrádok.

The main wastewater source discharged to river Hron is represented by industrial wastewater (cooling water) from EMO12. The industrial wastewater can be divided into:

- wastewater without radionuclides comprising cooling tower blow downs and water coming from the regeneration of resins for demineralised water production; and
- wastewater with presence of low activity radionuclides, constituted by condensation of vapour coming from radioactive liquid treatment.

If the activity is higher than 40 Bq/l, wastewater is not discharged to the relevant receptor, but sent back to the radioactive liquid treatment.

The different typologies of wastewater are collected by three different pipelines which join into a steel pipe of 1.0 m diameter and 6.0 km long, and by gravity, flow into the river Hron. The three pipelines are dedicated to the collection of:

- meteoric water from EMO12 and MO34;
- non radioactive wastewater and treated sanitary wastewater from EMO12; and
- low radioactive waste water from EMO12.

In 2007, a total amount of 4,450,000 m^3 of water has been discharged from operation of EMO12. 83,000 m^3 derived from sanitary wastewater treatment and the remaining 4,367,000 m^3 from industrial wastewater (Table IV.8).

The volume of discharged wastewater has never exceeded the permitted annual value set in the decisions of the Regional office in Nitra No. 2003/01320 valid for 2 and 4 units.

	Discharged industrial wastewater [m^3]	Treated wastewater [m^3]	Total discharged wastewater [m^3]	*Permitted annual value [m^3](*)*
2001	3,571,575	297,282	3,868,857	***12,097,000***
2002	4,427,582	299,939	4,727,521	***12,097,000***
2003	4,417,581	328,804	4,746,385	***12,097,000***
2004	4,285,390	363,466	4,648,856	***6,000,000***
2005	4,969,195	157,609	5,126,804	***6,000,000***
2006	4,762,647	96,000	4,858,647	***6,000,000***
2007	4,367,000	83,000	4,450,000	***6,000,000***

(*) The values are referred to 4 units for the years 2001-2003 and to 2 units for 2004-2007.

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.8 - Discharged wastewater to river Hron from Mochovce NPP between 2001 and 2005

By a preliminary estimate, the operation of Units 3 and 4 should lead to a 100% increase in wastewater, 25 % increase in treated sanitary water and a 105% total increase in discharge i.e. approx. 9 million $m^{3.}$ The assumed volume of wastewater will not exceed the permitted limits for 4 units (12 million m^3).

2.2.1 Evaluation of discharged non-radioactive water

New values of indicators of wastewater discharged to the river Hron were specified in decision of the water management body KÚ Nitra, OŽP No. 2003/01320 issued in date 8.1.2004 and implemented by successive decision MŽP No. 132/2004-4.3 issued in date 26.4.2004.

The Decision sets the limits for the discharged flow, concentration and maximum annual quantitative for the different parameters, temperature and pH of discharged wastewater.

The limit and measured values for discharged water in 2005 to river Hron are reported for the different monitored parameter in Table IV.9.

Limit values in 2005 were not exceeded. Only for soluble substances (RL_{550}) and pH, measured values were in several samples very close to the limit values.

Parameter (*)	Limit value [t/year]	Achieved value [t/year]
BOD_5	90	25.7
COD_{Cr}	210	75.67
SS	240	65.8
$DS_{105\ °C}$	9,000	4,736.4
$DS_{550\ °C}$	6,000	3,618.9
$N\text{-}NH_4^+$	18	1.33
$N\text{-}NO_3^-$	95 (72*)	44.80
SO_4^{2-}	4,140	1,834.54
Cl^-	600	189.66
TPH	6	0.51
P_{total}	6	1.74
residual Chlorine	1.8	0.25
hydrazine	24	0.87
AOX	3	1.02

(*) value indicated in the footnote(4)

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.9 - Limit and achieved values of monitored parameters in wastewater discharged to river Hron (2005)

Analyses are carried out 6 times a year on samples composed by mixed samples regularly collected during 8 hours. Limit values should never be exceeded.

The discharge permit for water coming from the drying process of sludge produced during the drinking water treatment to Širočina stream was issued by the Regional Environmental Office in Nitra, with decision No. 2003/01577 in date 19.09.2003.

Analyses are carried out 4 times. Limit values should never be exceeded.

During the operation of 4 units it can be assumed that the volume of discharged wastewater will roughly double and the quality of discharged wastewater using the current water treatment technology will not significantly change. Under these conditions the permitted limits for discharged wastewater from the NPP and treated drinking water at Červený Hrádek will be met. Measures will have to be taken at the Čiháre settling tank in order to not exceed the limit values.

(4) BOD_5 – Biological oxygen demand over 5 days; COD_{Cr} – Chemical oxygen demand dichromate method; SS – suspended solids; DS_{105} – dissolved solids dry weight; DS_{550} – dissolved solids annealed; $N\text{-}NH_4$ – ammonium; $N–NO_3$ – nitrates; SO_4 – sulphate; CL^- – chlorides; TPH – total petroleum hydrocarbons; P_{total} – total phosphorous; active chlorine – radical chlorine (residue after water treatment); hydrazine – ; AOX – absorbable chlorinated organic substances; pH – water reaction.

2.2.2 Discharge of radioactive wastewater

The authorization for the release of liquid radioactive effluent from the installation under normal conditions is established by the Decision of the Public Health Authority of the Slovak Republic No. 000ZPZ/6274/2006 of 2 November 2006. The decision is valid until the 1st of November 2011.

This Decision sets the conditions for operation of EMO12 (Table IV.10) including the yearly limits of radionuclide activity in emissions for Tritium (1.2×10^{13} Bq) and for fission and activation/corrosion products (1.1×10^{9} Bq).

In addition, it sets limits for volume activities of liquid discharges to hydrosphere for Tritium (1.0×10^{5} Bq/l) and for fission and activation/corrosion products (40·Bq/l).

	Yearly limits	Concentration limit (*)
Tritium	1.2×10^{13} Bq/year	a) 3.0 10^{4}Bq/l b) $1.0\cdot10^{5}$ Bq/l
Activation/corrosion products	1.1×10^{9} Bq/year	40 Bq/l

(*) a) investigative level b) intervention level

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.10 - Yearly and volume activity limits for radioactive liquid release under normal condition for EMO12

The volume of discharged low-activity water from the NPP is approximately 40,000 m^3 annually, which is less than 1% of the total volume of discharged wastewater. The amount of RAL activity discharged with the wastewater to surface watercourses illustrates that the authorized limits were not exceeded for any wastewater source.

Starting from the operational experience gained at EMO12, the amount of wastes deriving from the treatment of liquid radioactive substances, which can be expected during the assumed 40-year life of Units 3 and 4, is reported in Table IV.11.

Waste type	Amount [m^3]
Radioactive concentrate	9,025
Low-activity sorbents	122
Medium-activity sorbents	204
Radioactive oils	9.5
Sludges	400
Sediments	8.5

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.11 - Assumed amount of wastes deriving from liquid radioactive treatment during the MO34 operation period

An outline of the limit values of activities specified for releases from EMO12 into the environment are given in IV.12

Release type	Unit	EMO12 (2004)
Tritium water (^3H)	Bq/year	9.83×10^{12}
Corrosion and fission products	Bq/year	3.78×10^{6}
Annual limit value for tritium water releases	TBq/year	12
Annual activity limit value for corrosion and fission products in waste water	GBq/year	1.1

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.12 - Annual releases and limit values for summary activities of tritium, corrosion and fission products in waste water in some operated power plants

Based on the design, the levels of low-activity releases assumed for the four reactor units in Mochovce NPP are reported in Table IV.13.

Source	Amount [m^3/year]	β volumetric activity without tritium [Bq/m^3]	Tritium volumetric activity [Bq/m^3]
Operational building	75,000	3.7×10^3	0
TCCP	22,000	5.5×10^4	0
Regeneration solutions from the steam generator blow-down treatment plant	6,000	5.5×10^4	0
Tritium water	6,400	5.5×10^4	3.7×10^9

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.13 - Assumed annual average levels of low-activity and conditionally active releases for four Mochovce NPP reactors units

2.3 Waste

Produced waste is handled at the Mochovce NPP pursuant to valid waste management legislation and internal guidelines (PO/5100) and on the decision of the authorities in Levice for handling of hazardous waste No. T-2004/00469-ODP-Z from the 30th of March 2004, on the decision No. T 2006/01500-ODP-Z from the 16th of October 2006 and on the decision of the authorities in Levice No. T-2004/00468-ODP-Z on the collection of hazardous waste without prior sorting and valid contracts for waste disposal entered into with the related authorized companies. The waste management program for the period 2005 was approved in the decision of OU OZP Levice No. T-2003/00198-ODP-Oa dated 19.2.2003. in 2006 no national waste management plan was issued and the subsequent regional and district waste management plans, which set the volume and conditions of the waste management plan of the originator, were also not elaborated.

Decision No. T-2004/00966-ODP-K dated 11.8.2004 issued by ObUZP Levice approved of the handling and removal of domestically reusable waste.

2.3.1 Non-radioactive waste

Balances of non-radioactive waste for the period 1996 – 2001 and 2002-2007 are reported in Table IV.14 and Table IV.15 respectively.

Year	1996	1997	1998	1999	2000	2001
S (t)	1,113.3	386.55	898.35	1,213.668	1,070	1,206.6
H (t)	24.738	21.721	11.664	35.678	34	41.1
O (t)	1,302.71	332.035	3,840.54	3,876.64	8,470	7,706.4
Total (t)	2,440.748	740.306	4,750.554	5,125.986	9,574	8,954.1

Note: S – special waste, H – hazardous waste, O - other waste

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.14 - Waste balance for the period 1996 – 2001

Year	2002	2003	2004	2005	2006	2007
S (t)	-	-	-	-		
H (t)	67.807	73.12	40.925	50.47	62.991	55.8918
O (t)	9,603.4	5,402.99	3,282.2	3,993.88	3,884.44	3,994,40
Total (t)	9,671.207	5,476.11	3,323.125	4,044.35	3,947.44	4,050.29

Note: S – special waste, H – hazardous waste, O – other waste

(Source: Slovenské elektrárne, a.s. EMO)

Table IV.15 - Waste balance for the period 2002 - 2007

In the period 1996 – 2000, due to the starting of operation of unit 1 (1998) and unit 2 (1999), the total production of waste increased due to the overall production of sludge from the treatment of raw water. Production of other waste was generally the same for the whole period. An increase in the total volume of waste starting from 2005 compared with 2004 was caused by an increase in the generation of sludge from the water treatment. That increase was due to a greater volume of discharged technological water in relation to the increase in the production of electrical energy in 2005.

The increase in the production of electrical energy after starting units 3 and 4 will double the generation of non-radioactive waste, other types of wastes will remain unchanged as waste separation is assumed to be effective.

2.3.2 Handling with radioactive waste

Radioactive wastes (spent nuclear fuel is not considered as RAW) can be produced either during the NPP operation or during the decommissioning period and can be grouped according to their state:

- gaseous;
- liquid;
- solid.

In whatever state it is, the radioactive waste requires a specific approach to be taken by the Operator during its collection, sorting, pre-treatment, temporary storage, final processing, conditioning and final disposal or release to the environment.

Radioactive gases are mostly released into the air on the basis of a limit specified for each radionuclide. In case that they cannot be released at the time of their production, they are stored for the necessary time period and they are then released into the air after having reached an activity below the release limit values.

NPP Mochovce liquid radioactive wastes are processed as follows: all liquid wastes originating from the operation are subjected to radiological and chemical control and in case that their quality conforms to prescribed limit values it is possible to release them into the environment, otherwise they are reprocessed and controlled again, and where they comply with discharge limits, they are released.

The maximum design based capacity of the liquid radioactive waste processing and conditioning by the combination of bituminisation and

cementation is 870 m^3/year for radioactive concentrates and 40 m^3/year for sorbents and sludges which represents a 4 year production of twin reactor units, i.e., the Final Liquid Radioactive Waste Processing capacity is also sufficient for Units 3 and 4.

Following the processing and conditioning, Units 3 and 4 operation wastes will be disposed in the National Radioactive Waste Repository in Mochovce.

RAW that will not meet the surface disposal acceptance criteria will have to be stored in the Integrated RAW Storage Facility situated on the JAVYS, a.s., site in Jaslovské Bohunice and subsequently disposed in the deep underground geological disposal (once available).

2.4 Noise and vibrations

Sources of noise and vibrations are machines and equipment - pumps, turbines, and compressors. Employees are protected against excessive noise by the use of PPE – noise protectors. No excessive noise was recorded at the site. There are no workplaces at the site with vibration levels higher than the limit set by the relevant governmental decree.

2.5 Radiation and other physical fields

During the operation of the reactor, gamma and neutron radiation is generated. Other sources of radiation are the reactor's cooling medium in the primary circuit, active parts of the reactor AZ, spent fuel assemblies deposited at the bottom on the spent fuel pool and subsequently in MSVP and all types of RAW that are collected at the site and temporarily stored therein. Equipment for the manipulation of these sources of radiation are designed and constructed to meet the relevant hygienic standards and limits for the irradiation of employees at the NPP. In addition, the health of inhabitants in the surroundings of the facility and the environment are protected as well. The adherence to standards and limits is continually monitored. From the point of view of monitoring the environment in the surrounding of the NPP, current arrangements for EMO12 will be kept also for Units 3 and 4, which will have relevant emergency plans elaborated for the material and organizational safeguarding of all the likely emergency situations.

2.6 Odour and other outputs

There are no odors produced in the technological processes at the NPP which would decrease the comfort of the surrounding environment.

Approximately 38% of the thermal energy produced in the reactor is used for the production of electricity. The thermal energy which is not used in other heat consumers in the equipment or buildings at the NPP is released through the cooling towers to the atmosphere or to the water recipient.

Operation of unit 3 and 4 will result in a twofold increase in waste heat release to atmosphere through cooling towers.

2.7 Other possible impacts

The project, as any other large construction, will contribute to stabilization of economy and to economical development in the region. In fact it will result in a number of positive effects, both providing economic benefits to the immediate and surrounding communities and avoiding greenhouse gases emissions, compared to conventional plants.

3 DATA ON ANTICIPATED DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

In order to evaluate the anticipated direct and indirect impacts, it is firstly necessary to determine the works and activities related to Units 3 and 4 that can have a potential interaction with the environment.

On the basis of the characteristics of the projects, it can potentially interact with the following environmental components:

- Atmospheric environment;
- Hydrology and groundwater;
- Terrestrial environment.

3.1 Likely environmental effects on atmospheric environment

The interaction of Units 3 and 4 with atmospheric environment are due to release of combustion products (NO_x, SO_x and CO), water vapour emissions from cooling towers and from the radioactive gas deriving from gas cleaning system and the off gas deriving from the liquid radioactive waste treatment facility (LRAWTF).

The Power Plant is not a significant emitter of conventional air pollutants including NO_x, SO_x, CO_2 and particulates. The larger source of such emissions during operations is represented by the stand-by diesel generators.

The effect of the modelled concentration of pollutants is negligible for several reasons. First, the existing air quality is good and not impacted by the current testing of six generators from the operating units 1 and 2. Second the modelling assumption included worst case climatic conditions that would overestimate the effects.

During full operation, for EMO12, emissions into the atmosphere are approximately 3,740 MW of heat output. in the form of waste heat. Taking into consideration the relatively low energy output of Mochovce NPP, and the huge distance from the cooling towers of Units 1 and 2 and of Units 3 and 4, the impact of the emissions of heat and vapour will have only a modest local significance.

The intensity of the impact depends on the output of the power plant and on the period of the year. The greatest intensity is in summer months. The total volume of emissions in 2006 was 15,498,960.00 m^3, and for 2005 was 14,695,839.60 m^3, which corresponds to emissions of 0.49 m^3/s and 0.47 m^3/s, respectively.

The predicted effects of the water vapour releases are minor for two reasons. First, the effects are local (not exceeding the Protection zone) and second the magnitude of the effect is well within the normal variation in local meteorological conditions. In summary the effects of cooling tower emissions on the local microclimate are trivial or barely noticeable.

Regarding radioactive aerosol, considering that Units 3 and 4 will have approximately the same level of emission of EMO12 and also on the basis of air monitoring program measures (see chapter 10.2 of part IV), the anticipated impacts can be considered negligible.

3.2 Likely environmental effects on hydrology and groundwater

Likely effects of normal operation on hydrology and groundwater are related to:

- heat release;
- quality of surface water and groundwater;
- radioactive emissions.

3.2.1 Heat release

Small amounts of heat can be released into the River Hron through cooling tower blow down.

Liquid effluents released to the river are regularly monitored in order to comply with the regulatory limit set by the Slovak Decree No.296/2005, which limits the permissible temperature of non-trout rivers to 26 °C and the maximum river temperature rise to 5 °C.

3.2.2 Change to the quality of surface water

Similarly to the heat release, the quality of the liquid effluents is regularly monitored in order to comply with the regulatory limit of the Slovak Decree No.296/2005.

3.2.3 Radioactive emissions

Project-environment interactions with Radioactivity in surface water and in the aquatic environment, included groundwater, were identified for projects activities during operation phase.

The extent of the effects of radioactivity in surface water and in the aquatic environment, included groundwater is detected through the radio-ecological detailed monitoring plan.

As already said, it is expected that when the Units 3 and 4 of Mochovce NPP will be in operation, their annual discharges will be comparable with EMO12 discharges.

In this case, 95% of the (negligible) dose from releases from the NPP will be due to tritium discharge to river Hron.

It can be useful to remark that the tritium calculated dose itself is much less than normal variations of the natural background. For example, the calculated tritium dose is lower than the variations (decrease) of natural dose rate (at 1 m above ground) after 10 mm of rain. In other words, these variations have an effect on individual dose greater than tritium contribution dose (NUREG Report 1501/August 1994 on parts regarding the variability of background radioactivity).

3.3 Likely environmental effects on terrestrial environment

No long-term build up of pollutants in the environment is likely because of the absence of measurable effects on the terrestrial environment.

4 EVALUATION OF HEALTH RISKS

In consideration of the characteristics of MO34, of the technical and organizational measures for protection of inhabitants and environment nearby nuclear power plant, described in chapter 10 of present section IV, and on the basis of data coming from the operation of EMO12, health risks are negligible.

As a matter of fact health risks can be evaluated taking into account the releases of radiation into the atmosphere from the operation of the plant. Considering that the radioactive emission from EMO12 are for the worst case of noble gas, less than 0.08% of annual limits well below the regulatory annual limits, the operation of Units 3 and 4 will not significantly increase the level of radiation in the environment.

5 DATA ON ANTICIPATED IMPACTS OF PROPOSED ACTIVITY ON PROTECTED AREAS ANT THEIR PROTECTION ZONES

No existing or proposed bird protection zones, zones of European importance, Natura 2000 sites, national parks, protected landscape areas or protected water management areas, which might be potentially influenced by the operation of Units 3 and 4, are located in a radius of 10 km from the nuclear power plant.

A National nature reservation Patianska Cerina and an arboretum Mlyňany (workplace of SAV – Slovakian Science Academy) are located within a radius of 5-10 km from the nuclear power plant. The southwest forelands of CHKO (protected landscape area) Štiavnické highlands are located on the northeastern boundary of this zone.

Impacts of the Mochovce NPP on these protection areas have yet to be recorded. It is expected that the proposed activity will not impact the above mentioned natural formations.

6 ASSESSMENT OF ANTICIPATED IMPACTS WITH REGARD TO THEIR RELEVANCE AND TIME BEHAVIOR OF THEIR EFFECT

No adverse environmental impacts related to the proposed activity for air, hydrology, hydrogeology and aquatic environment were identified.

Minor adverse effects were identified for the operation phase due to employees and public exposure to radiation. Assumed doses are well below regulatory limits. For example, the expected dose for the public considering the impacts of the project is less than 0.1% of Slovak and international standards.

7 ANTICIPATED CROSS-BOUNDARY IMPACTS

The Slovak Republic borders with five states: Hungary, Austria, Czech Republic, Poland and Ukraine. Approximate distance of Units 3 and 4 from the individual state borders is given in the table (Tab. II.1 – Distance of MO34 site from individual state borders).

The distance to the Hungarian border is approximately 37 km, 85 km to the border with the Czech Republic, 110 km to the Austrian border, 130 km to the Polish border and 270 km to the Ukraine border.

Analysis of activity released to surrounding atmosphere and hydrosphere during the operation of Units 3 and 4 indicates that the authorized limits determined for EMO12 and also the assumed limits for MO34 will not be exceeded. It means that the radiation load of inhabitants in the surroundings of the NPP in a radius above 35 km will be not significant and therefore impacts overcoming state borders are not expected.

8 INDUCED INTERRELATIONS THAT MAY RESULT IN IMPACTS TAKING INTO ACCOUNT CURRENT ENVIRONMENTAL CONDITIONS IN THE CONCERNED AREA

Not currently known.

9 OTHER POTENTIAL RISKS ASSOCIATED WITH IMPLEMENTATION OF PROPOSED ACTIVITY

The proposed activity does not require further measures for the protection of employees and inhabitants in the surroundings of the site. Technological measures for the operation and organization of the facility ensure a minimization of adverse effects to the surroundings due to the fact that the facility maintains gaseous release and liquid discharge activities as well as the production of RAW at very low levels. Land use measures for inhabitant protection have a preventive character and are prepared to deal with emergency situations not only at Units 3 and 4 but within the whole area of the Mochovce NPP. Limits and conditions consider prevention measures which prevent discharges being exceeded in operation and prevent breakdowns and emergency situations in the technology.

10 MEASURES TO MITIGATE ADVERSE EFFECTS OF INDIVIDUAL ALTERNATIVES OF PROPOSED ACTIVITY ON ENVIRONMENT

The proposed activity requires specific technical (design) as well as organizational measures (monitoring and safety planning) for protection of inhabitants and environment nearby.

To maintain a reactor in a safe shut-down condition, the following safety functions are fulfilled:

- sub criticality;
- core cooling;
- heat removal by the ultimate heat sink;
- reactor cooling system integrity,
- confinement integrity; and
- coolant inventory.

10.1 Technical measures

To ensure safety and prevent any uncontrolled release of radioactive materials into the environment, each unit of the NPP is provided with safety systems, which perform the required function even in the case of loss of off-site power and following a seismic event. In case of a failure in the external electrical source there is a backup safety system comprising a diesel generator station (containing six diesel generators 3.5 MVA i.e. three for each block)

Assessing Units 3 and 4, it is necessary to consider that their safety has been already upgraded based on requirements of IAEA, and this upgrade has led to the following safety improvements for Units 3 and 4:

- design measures for Severe Accident Management;
- improvements of I&C and electrical equipment;
- seismic upgrade;
- design measures for the reduction of internal hazards;
- improved design of safety systems and safety-related equipment.

The containment system is composed of:

- reinforced concrete providing confinement function of the system;
- bubbler condenser, providing passive pressure-suppression function;
- water spray system, providing active pressure-suppression function and radioactivity removal function.

The containment of Units 3 and 4 is equipped with safety systems so that the integrity of the containment is ensured during and after an accident.

10.2 Monitoring

Monitoring is controlled by the regulation "*Programme of radiation monitoring in the vicinity of Mochovce NPP (QA-07-01)"* that describes the radiation monitoring around NPP Mochovce in a radius of 20 km from the plant.

A teledosimetry system (TDS), equipped with 40 monitoring stations, monitors the dose rate of gamma radiation, the volume activity of aerosol, the volume activity of radioactive Iodine and supplementary data on the state of the environment.

The monitoring system has been set up for the whole site of Mochovce, hence, once in operation, Units 3 and 4 will be covered as well.

10.3 Emergency plans

External and internal emergency plans have been prepared to solve problems of accidents. The plans show emergency actions, land reclamation as well as waste material handling. A dispersion model has been prepared for predicting atmospheric radiation. The consequences of radiation spreading will be related mainly to leakage intensity, source of radiation, length of leakage, climatic characteristics and character of land exposed by radioactivity.

Off-site Emergency Response Organization is provided at two levels:

- National level - the Governmental Commission of the Slovak Republic for Radiation Accidents is the top management and co-ordination body to provide the uniform preparations for protection from radiological events and to take measures considering both the public and economy in the territory of the Slovak Republic.
- Regional level - County Emergency Commissions are established at the regional level. They are coordinated by the Emergency Commission of villages and chaired in this district by Head of the Regional Emergency Commission in Nitra and in Banská Bystrica. The Commission is responsible for "Planning Measures to be taken by the Regional Administration Bodies". The executive body is represented by the Civil Protection Section of the County Office in Nitra.

On-site Emergency Response Organization (ERO) is created to fulfil the procedures in accordance with the on-site emergency plan.

The major tasks of the Emergency Response Organization, which are carried out in compliance with defined procedures after an extraordinary event, are as follows:

- assessment of extraordinary events;
- warning and notification of the plant personnel and surrounding population;
- announcing and bringing the co-operating companies into the alert state;
- giving information to regulatory and superior bodies and institutions;
- coordination of the activities of monitoring teams in environment;
- giving recommendations for public protection;
- implementation of activities to remove the extraordinary event and to return the plant to a safe state.

11 ASSESSMENT OF ANTICIPATED DEVELOPMENT OF THE AREA IN CASE THE PROPOSED ACTIVITY WAS NOT CARRIED OUT

The site location for the construction of the four units at Mochovce was determined based on a land use decision and the subsequent construction permit.

Mochovce NPP was designed and its construction has been launched and realized as a four-unit NPP with common technological components.

The area is not expected to develop in a way other than how it will be with Units 3 and 4, due to the presence of Units 1 and 2 that prevent the area from developing in any other way.

12 ASSESSMENT OF CONFORMANCE BETWEEN PROPOSED ACTIVITY AND THE PHYSICAL-PLANNING DOCUMENTATION

The history of construction of the nuclear power plant follows the regional planning process which provides a methodical and completely functional solution for the given location and defines the organization principles and material and time coordination of the construction of the installation in Mochovce. Regional planning process included not only maintenance of long-term harmony between natural and cultural values of this region, but it also focused on care for and protection of human health and of the main environmental components – soil, water and air.

The site location for the construction of the four units at Mochovce was determined based on a land use decision and the subsequent construction permit.

Mochovce NPP was designed and its construction has been launched and realized as a four-unit NPP with common technological components.

The proposed activity will take place in an area whose functional utilization was approved for these activities in 2004 in the valid town and country plan of the territorial unit of the region of Nitra – amendments and supplements. The site of Mochovce is classified, from an urbanization point of view (residential structure), as an "area for industry, civil engineering and warehousing activity" map and legend included in Annex 2.2).

A further related land use planning document is the town and country plan of the village of Kalná nad Hronom.

13 FURTHER PROCEDURE OF IMPACT ASSESSMENT IDENTIFYING THE MOST SIGNIFICANT PROBLEMS

No further significant problems have been identified during the impact assessment of operation of Units 3 and 4 of Mochovce NPP.

V COMPARISON OF ALTERNATIVES OF THE PROPOSED ACTIVITY AND SELECTION OF AN OPTIMUM ALTERNATIVE (INCLUDING THE COMPARISON WITH A ZERO ALTERNATIVE)

Based on a request from the proponent, Slovenske elektrarne NPP Mochovce, Units 3 and 4, dated the 15th of June 2008, the Ministry of Environment of Slovakia abandoned the request of alternative solutions for the proposed activity.

This has been confirmed by the Ministry of Environment by the letter to Slovenske Elektrarne a.s. No. 7451/2008-3-4/hp dated July the 31st 2008 (see annex no. 0.6).

The justification of such a request is based on the peculiarity of Mochovce NPP. As already mentioned, the power plant was designed and its construction has been launched and realized as a four-unit NPP with common civil structures and technological components to be shared by all the four units. From the civil structures point of view, the plant is built up to 70%.

All the environmental evaluations for the issuance of permits, have been carried out taking into account the likely impacts and the needs of four units.

From the point of view of all the external services and infrastructures, the site of Mochovce is already capable of bearing Units 3 and 4.

Moreover, due to the advanced stage of completion, Mochovce site represents a one off opportunity to cover in a short time the significant gap between demand and supply of electric energy on the Slovak network.

Due to the above mentioned reasons, it appears clear that the completion and operation of Mochovce Units 3 and 4 has no reasonable alternatives. A detailed justification follows.

Justification of request for abandon of alternative solutions:

Mochovce NPP was designed and its construction has been launched and realized as a four-unit NPP with common technological components.

In consideration of the degree of MO34 project completion, together with the already existing operating civil structures, representing the necessary operational systems needed for operation of Units 1 and 2, Units 3 and 4 can be

connected with civil structures of Mochovce NPP after minimal modifications. Current state of units 3 and 4 in Mochovce NPP is as follows:

- civil part – completed up to 70%;
- technological part – completed up to 30%.

Due to the high degree of completion of the civil part and mutual interlacing of civil structures with operating Units 1 and 2, it is not possible from an economical point of view as well as from a time management point of view to site (locate) assumed Unit 3 and 4 in another locality.

Protection against ionizing radiation, physical protection and emergency planning

Additional arguments supporting protection against harmful effects of ionizing radiation, physical protection and emergency planning conditioning completion of units 3 and 4 located in immediate proximity of EMO12 are reported below.

Operation of EMO12 as well as future operation of units 3 and 4 in Mochovce NPP is and will be subject to constant and very strict supervision of national and international authorities with regard to protection against harmful ionizing radiation. Limits for radioactive discharges have been fixed by the National regulatory Authority for EMO12. These limits are defined in such a way not to damage any of the environmental components including human health. It has to be pointed out that during normal operation of Units 1 and 2, there are no appreciable radiological impacts on population living in the close surroundings.

For this purpose, a set of systems for radiological protection is implemented and based on the following principles:

- Activity using ionizing radiation and assuming possible health detriment should be balanced by assumed positive contribution to a given person or the company; (more good than harm principles);
- Human exposure by any individual radiation source should be maintained as low as reasonably achievable (ALARA);
- Individual exposure resulting from combination of all relevant radiation sources should be ruled by requirement that none of the employees is exposed to radiation risks unacceptable under normal circumstances;
- Central radiological control system (CRCS) represents measuring and information system providing means for interconnection with other

information systems in NPP; it will be used for all units on Mochovce NPP site. Measured data are transmitted to:

  - NPP control rooms (radiation monitoring control room EMO12, radiation monitoring control room MO34, main and emergency control rooms in MO34) and emergency response centres (emergency control centre and backup emergency control centre) – measured radiation values are presented in suitable form and on required display means;
  - Other technological and whole-site power plant information systems (diagnostic, chemistry, TIS, etc.) – information exchange among these systems enables more detailed evaluation of NPP safety and reliable operation;

- Common monitoring program of SE-EMO widespread area (monitors impacts on EMO12 surroundings and final deposit of LRAW) will be also used for monitoring of NPP MO34 impacts (after completion and commissioning);
- All calculated individual dose values from designed SE-EMO releases (EMO12 and MO34) at normal operation are lower than 0.25 mSv – goal value for acceptance criteria for MO34 project and radiation limits defined in Governmental order of SR No. 345/2006 Coll.;
- Area covering approximately 20 km around NPP (for operation of 4 units) is provided with system of stations and teledosimetry stations for monitoring of radioactivity around NPP equipped with measuring system, extraction of environmental samples and their measuring and evaluation; this system has been operated for several years by trained and qualified personnel from LRKO Levice;
- Operational NPP EMO12 and MO34 employs and will employ qualified personnel with the required knowledge, required trainings and skills pursuant to valid legislation.

Identical principles and arguments can be implemented also in physical protection and emergency planning and preparedness, e.g.:

- Technical means of physical protection for SE MO34 are identical with those used in SE EMO and described in valid document “Physical protection plan of SE EMO”;
- Common physical protection centre is used both for SE MO34 and SE EMO;
- Software is extended for control of four-unit PP arrangement;
- Valid agreement on mutual cooperation in emergency planning and preparation on Mochovce site between SE-MO34 and SE-EMO; agreement

principles reflect in internal documents of both plants. These documents are closely interconnected with internal emergency plan of SE-EMO in field of personnel protection – use of equipment and mans of NI SE-EMO, preparation of personnel trainings, drills and practice exercises;

- Emergency response control process in the case of real situations is managed by the emergency response organization in SE-EMO for the whole EMO location.

Evaluation concept of environmental components on Mochovce NPP site

Concept of surface water extraction balance is characterized by one common decision permitting water extraction pursuant to the basic design for units 1 to 4 NPP EMO. Operation of 2 units used 42% of permitted amount.

Complete water chain – decarbonization, chemical water treatment – was designed and constructed for four-unit arrangement. Water objects for all four units passed the use permit inspection (intake object – Hron pumping station, pressure piping, water storage tanks 2 x 6,000 m^3, supply piping, decarbonization, chemical water treatment plant, chemical storage, etc.) as part of completion of the 2nd construction of units 1 and 2 EMO.

Potable water source consists of two wells in Červený Hrádok with a chemical water treatment plant for removal of iron and manganese, pressure piping, water storage tank, supply piping and distribution piping. Capacity of water source and potable water treatment plant has sufficient reserve for operation of all four units. Also wastewater discharge system is designed as common with divided canalization (sewage, rainwater, oiled water, special – industrial). All of them are equipped with water treatment plants constructed and operated as part of units 1 and 2, and they will also serve for connection of systems of units 3 and 4.

Sewage canalization has been used since commissioning of units 1 and 2 in Mochovce NPP. It's linked to the biological wastewater treatment plant with sufficient capacity for all four units. This water treatment plant has high treatment efficiency – above 90%. Oiled water is discharged from potential contamination sources (turbine hall workshops, handling facilities with oil products, etc.) to gravity separator; from here, water is pumped to 2nd treatment stage – flocculation. Treated water is returned to production process. Special industrial canalization is used for removal of tritium water diluted with blowdown from technological processes and then discharged to wastewater piping.

Sewage, industrial, rainwater canalization is connected to one wastewater piping via common outlet measuring object used for measuring the volume of

discharged water and is equipped with extraction equipment for mixed samples pursuant to decision of the County environmental office Nitra on wastewater discharge. This object is also used for measuring the activity of discharged wastewater with regard to parameters defined by UVZ SR.

The power plant has a common waste system used for collection and storage of wastes from power plant operation and then transported for disposal. Waste system capacity is sufficient for operation of four units.

Safety aspects of MO34 project

SE, a.s. has reviewed the basic design of Units 3 and 4 of Mochovce NPP. This task was conditioned by a proposal of solution complying with the requirements of valid Slovak legislation and requirements of international organizations, e.g., IAEA and current engineering practice, including EUR requirements and requirements documented in WENRA (Western European Nuclear Regulators' Association).

Based on the above facts we can point out that the optimal alternative is represented by the proposed activity, where all four units of Mochovce NPP will be in operation.

Zero alternative

The zero alternative to the proposed activity corresponds to the environmental baseline characterized by the presence and operation of EMO12.

In the previous parts of this Intent, and in particular in points III and IV a description of the current status of Mochovce site has been already presented. Nevertheless, within the Final report a more exhaustive description of the current status of the site will be presented.

Conclusions

As already pointed out in section IV of the present Intent, considering the characteristics of MO34, the technical and organizational measures for protection of inhabitants and environment nearby the nuclear power plant, and on the basis of data coming from the operation of EMO12, it is expected that additional impacts on the environment coming from the proposed activity will be negligible.

VI. MAPS AND OTHER DOCUMENTATION

1 LIST OF TEXT AND GRAPHIC DOCUMENTATION WHICH WAS USED FOR THE PREPARATION OF THE INTENT AND LIST OF THE MAIN SOURCE MATERIAL USED. (GRAPHIC, MAP, TABLE AND PHOTO DOCUMENTATION)

Annex 0 Permitting process

0.1 Construction permit, Výst. 2010/86 of 23rd 1.1987

0.2 Land use permit, Výst. 3818/81 of 28th January 1982, ONV, Department of construction and ÚP, Levice

0.3 Decision of Regional Office in Nitra No. 97/02276-004 004 of 5th May 1997, KÚ in Nitra, Department of environment

0.4 Decision KSÚ in Nitra No. 2004/00402-007 007 of 15th July 2004, Nitra

0.5 ÚJD SR - DECISION no. 246/2008 - Number: 684/320-231/2008 - Trnava, August 14, 2008

0.6 Abandon of the alternative solution for the proposed activity – Ministry of Environment of Slovak Republic ref. 7451/2008-3-4/hp, date 31.7.2008.

Annex 1 Ownership

1.1 Cadastral map with site indicated

Annex 2 Maps

2.1	Wider surroundings	M 1 : 50.000
2.2	ÚZES VUC Nitra	M 1 : 100.000

Annex 3 Technology

3.1 Photo documentation of the current situation

VII ADDITIONAL INFORMATION FOR THE INTENT

1 LIST OF TEXT AND GRAPHIC DOCUMENTATION USED FOR THE PREPARATION OF THE INTENT AND LIST OF THE MAIN SOURCE MATERIAL USED

Mochovce NPP – Preliminary Safety Report, stage I, parts one and two, Energoprojekt Praha, June 1984

Preliminary Safety Report–Mochovce NPP, chap 2.4 Environmental Impact Assessment, elaborated by ÚRVT Košice, author: RNDr. Vladimír Stano et al., October 1984

Preoperational safety report of Units 1 and 2 of Mochovce NPP. Safety report elaborated by Škoda Praha

Program for increasing the nuclear safety in the Slovak Republic, Increasing safety and completion of units 1 and 2 of Mochovce NPP, Project documentation for the public participation program IV – Environmental Impact Assessment, elaborated by Slovenské elektrárne Bratislava and Elektricité de France Paris, December 1994.

Construction permit, Decision 2004/00402-007 of the regional building office in Nitra for the construction of units 3 and 4 of Mochovce NPP issued 15. 7. 2004.

Complex assessment of the state of the environment at the plant of SE a.s. in selected environmental aspects. Report for 2002, part -2- Mochovce NPP and VYZ, elaborated by VÚJE Trnava, a. s., authors Ing. Rudolf Rehák and Ing. Mária Letkovičová, March 2004.

Complex assessment of the state of the environment. Documents for the control system of environment management in 2005. Document No. MPR-EMO-054-2006.

Environmental study of units 3 and 4 of Mochovce NPP, Ref. No. 8620, elaborated by VUJE, a.s., author Ing. Rudolf Rehák et al., November 2004.

RÚSES Levice district, Ekopolis I., February 1995.

RÚSES Nitra region, AUREX spol.s r.o., June 1998.

Town and Country Plan of the Nitra Region, AUREX spol. s r.o., Authors Ing. arch. Vojtech Hrdina, Ing. arch Dušan Kostovský, January 1998.

Waste management program, Slovenské elektrárne a.s., Mochovce NPP Ref. No. o.z. 935 39 Mochovce, November 2002.

Evaluation of the health of inhabitants living in the surroundings of the Mochovce NPP after 5 years of operation, Environment, a.s. Nitra, Ing. Mária Letkovičová et al., March 2005.

VIII PLACE AND DATE OF INTENT PREPARATION

Rome, Bratislava 23rd of December 2008

IX CONFIRMATION OF DATA CORRECTNESS

1 INTENT ELABORATED BY

Project manager: .....

Project director: .....

Authors: .....

Golder (Europe) EEIG
No. of Registration GE130
VAT. No. UK 669 4704 91

2 CONFIRMATION OF DATA CORRECTNESS

By my signature I hereby confirm the correctness of the data included in this intent.

Authorized Representative of proponent: .....

Slovenské elektrárne, a.s.
závod
3. a 4. blok Elektrárne Mochovce
935 39 Mochovce

ANNEX 0.1
Construction permit, Výst. 2010/86 of 23rd 1.1987

District National Committee in Levice, Department of Construction and Urban Planning

No.: Výst.2010/86

Levice, 12 November 1986

CONSTRUCTION PERMIT

The building owner, EMO – Nuclear Power Plant, the concern, Branch Office Pražská 29, Bratislava asked on 24 September 1986 for awarding construction permit for the construction

"Mochovce Nuclear Power Plant, WWER 4x440 MW, Construction 3".

Location of this power plant was approved by the Building Office decision issued on 22 October 1980 with the number Výst.3865/80, which was amended by the decision issued on 10 July 1981 with the number Výst.2044/81 and Výst.3818/81 dated 28 January 1982.

Local Department of Construction and Urban Planning as a building office authorised by the Urban Planning Department of the Regional National Committee in Western Slovakia in Bratislava by the decision No. ÚP 416/1980-1982/Zš dated 1 September 1982 discussed the application in the building permission proceedings with affected state administration authorities and with the proceeding participants.

The Building Office viewed the application according to §62 of the Act No. 50/1976 Coll. (Building Law) and decided as follows:

The Construction

Mochovce Nuclear Power Plant, WWER 4x440 MW, Construction 3

consisting of the following civil structures:

1) 330/1-01 Fence – Part II
2) 330/1-02 Power plant area landscaping – Part II
3) 330/1-03 Landscaping except fence area
4) 331/1-01 Mochovce village recultivation
5) 331/1-02 Alternative recultivation
6) 332/1-01 Mochovce village landscaping
7) 340/1-02 External lighting – Part II
8) 350/1-02 Trenches and channels for high current cables – Part II
9) 351/1-02 High current cable routing – Part II

10) 352/1-02 Trenches and channels for light current cables – Part II
11) 353/1-02 Main earthing network - Part II
12) 383/1-02 Hot water network on power plant area - Part II
13) 400/1-03 Pipe laying on ± 0.0 - construction works Part II
14) 400/1-04 Basement and encasing of the pipe bridge between the Auxiliary nuclear building and RAW
15) 401/1-02 Pipe channels - Part II
16) 442/1-02 Dieselgenerator station for Power Block II
17) 442/1-04 High-pressure air compressed station for Power Block II
18) 442/1-06 Lube oil system of DGS II
19) 490/1-02 Turbine hall of Power Block II
20) 490/1-04 TG basement / Unit 3 (31, 32, 41, 42)
21) 510/1-02 Unit 1 Power block transformer basements
22) 522/1-02 100 and 400 kV external substation within Power Block II
23) 566/1-02 Fuel oil discharging – DGS II
24) 566/1-04 Oil discharging
25) 568/1-02 Fuel oil system – DGS II
26) 622/1-02 Railways crossing basement - Power Block II transformer
27) 800/1-02 Reactor building – Power Block II
28) 801/1-02 Auxiliary nuclear building – Power Block II
29) 802/1-03 Bridge between Power Block II and Auxiliary nuclear building II
30) 802/1-04 Bridge between Power Block I and Power Block II
31) 803/1-02 Ventilation stack – Power Block II
32) 804/1-02 Air ducts to stack - Power Block II
33) 805/1-02 Lengthwise electrical equipment area - Power Block II
34) 806/1-03 Cross electrical equipment area at Unit 3
35) 806/1-04 Cross electrical equipment area at Unit 4
36) 806/1-01 Radioactive waste disposal
37) 810/1-03 Emergency feedwater supply for Unit 3

38) 810/1-04 Emergency feedwater supply for Unit 4

39) 942/1-02 Walkway for guards

40) 331/11-01 Recultivation of construction site installation area

41) MGZS buildings according to POV except for roads, waterworks and their parts.

on the lot numbers 2477/2, 1751/1, 1737/2 in Mochovce cadastral area in Mochovce village is according to §66 of the Building Law as amended by §25 and the following Decree No. 85/1976 Coll. on detailed arrangement of building permission proceedings and the building order

p e r m i t t e d .

The following obligatory conditions are determined for the construction erection:

1. The construction will be carried out according to documentation verified within the building permission proceedings; the documentation makes a part of this construction permit. Potential amendments shall not be made prior being approved by the Building Office.
2. The building owner will provide for staking of the site area according to the decision on location of the construction by an authorised authority of organisation.
3. At construction erection all directives related to labour safety and technical equipment shall be kept; it is also necessary to take care of health and life of people present on the site.
4. Relevant provisions (related to any construction) of the Decree No. 83/1976 Coll. which regulates general technical requirements put on construction and relevant technical standards shall be followed at construction erection.
5. The construction shall be finished within 15 month at the latest as this decision entered into force.
6. The construction shall be made using the following suppliers:
   - Building part supplier: Hydrostav, n.p., nám. SNP č. 14, Bratislava
   - Technological part supplier: Výstavba elektráren Škoda k.p. Prague

   The construction will be supervised by Mochovce NPP investor technical supervisor.
7. Individual buildings will be erected according to the verified building layout in 1:2000 scale, drawing No. 413-0-032792 elaborated by Energoprojekt, an engineering and design special organisation Prague with the Order Number 23-7453-02-001 within November 1985.
8. According to the Decision of the Czechoslovak Nuclear Safety Authority Prague No. 36/86, the investor shall incorporate all changes resulted from the submitted list of differences in technical solution of the Construction 3 Basic Design against the Construction 2 in relevant Mochovce NPP quality assurance programmes to 30 September 1989.

Considering sanitary regulations, the following shall be performed:

- Monitoring of coolant radioactivity in the primary circuit by the system for gamma spectrometry monitoring within 3 months prior the Unit physical start up.
- To implement additional measures in order to exclude a possibility of fuel transport container integrity impairment due to its drop prior the first fresh fuel supply.

To fulfil conditions of the Slovak Labour Safety Office Bratislava (hereinafter referred to as SUBP) included in the minutes of meeting from 28 August 1986 which makes an inseparable part of SUBP statement No. 2, 1, 2-752/86/S1 dated 22 September 1986.

Considering fire protection, the following shall be performed:

- To follow comments given in the written statement of the Regional National Committee of Western Slovakia - Regional Fire Protection Inspectorate Bratislava (hereinafter referred to as ZsKNV - KIPO) No. PO-167/5/86 dated 21 March 1986.
- The investor shall submit an opinion of the Russian party on solution of the reactor building 800/1-02 safety.
- To place a parallel signalling of basic states (additional control room) in the fire stations, building No. 656/1-01.
- To follow comments of HSPO of the Ministry of Interior of the SSR related to self-actuating sprinkling devices in cable channels and in areas proposed by SSZ.

To respect relevant valid Czechoslovak technical standards at the construction erection, especially ČSN 34 1050, ČSN 32 3320, ČSN 38 2156, ČSN 73 0872, ČSN 73 0802, ČSN 38 2156, and ČSN 65 0201.

9. The construction shall not be commenced prior the construction permit entries into force (§52 article 1 of the Act No. 71/1967 Coll.).
   The construction permit will expire if the construction does not start within 2 years after its entry into force.
10. The building owner shall fulfil all conditions under which the construction is permitted; as the construction permission is delivered, the building owner takes account of them and undertakes to fulfil them.
11. The investor undertakes to take into account all comments of authorities which will result from prepared measures for nuclear safety enhancement.

R e a s o n s:

The Building Office reviewed the submitted application for the construction permit within the building permission proceedings taking into account viewpoints mentioned in provisions of § 62 articles 1 and 2 of the Building Law, and it found out that neither interests of the company nor rights and justified interests of the proceeding participants are endangered, or inadequately limited or jeopardized by the construction completion and future use. The construction documentation fulfils requirements determined by the Decree No. 83/1976 Coll. on General Technical Requirements on Construction, as well as conditions of the urban planning decision on the construction location. During the building permission proceedings, the Building Office did not find any reasons which could prevent the construction to be permitted.

Permanent exclusion of agricultural and forest lands was solved in previous proceedings, because this construction permits follows the construction permits already issued with the following numbers: Výst.565/83 dated 30 March 1983, Výst.1762/83 dated 19 August 1983, Výst.2033/83 dated 2 September 1983, Výst.2199/84 dated 28 September 1984, Výst.665/85 dated 15 May 1985 and Výst.974/86 dated 27 June 1986.

The civil structures which can affect water conditions were approved according to §13 of the Act No. 138/73 Coll. by the relevant water management authority, ZsKNV PLVH Department Bratislava on 27 June 1986 in the decision Ref. No.PLVH-4/701/1986 and on 16 October 1986 in the decision Ref. No.PLVH-4/1141/1986.

Instruction

It is possible to appeal against this decision within 15 days after being delivered. A notice of appeal shall be served to the local department.

Head of Construction and
Urban Planning Department

Ondrej J u h á s z

Distribution List:

1) Nuclear Power Plant, concern, Mochovce – 10 copies plus an approved documentation
2) Building part supplier: Hydrostav, n.p., nám. SNP 14, Bratislava
   Technological part supplier: Výstavba elektrární Škoda k.p. Prague
3) Local National Committee, Kalná nad Hronom
4) Regional National Committee of Western Slovakia, Agricultural, Forest and Water Management Department
5) Regional National Committee of Western Slovakia, Fire Protection Regional Office
6) Regional Hygiene Office
7) SUBP Bratislava
8) Survey Engineering (Geodesy) Office Levice

ANNEX 0.2
Land use permit, Výst. 3818/81 of 28th January 1982, ONV, Department of construction and ÚP, Levice

This decision is valid and enforceable

Levice, 7.2.1982

Head of the building and land-use planning section

[*illegible signature – translator*]

District national committee, building and land-use planning section, Levice
Reference No.: Building 3818/81
Levice, 28 January 1982

Investičná výstavba energetiky Slovenska

Pražská 29
814 25 Bratislava

Decision on the location of buildings (siting Permit)

On 22 November 1981, IVES – Investičná výstavba energetiky Slovenska in Bratislava, submitted an application for the issuing of a decision on the location of buildings in the construction project

Mochovce Nuclear Power Station

Stage 1 of construction (site preparation)

Stage 2 of construction (VVER 2 x 440 MW blocks 1 and 2)

Stage 3 of construction (VVER 2 x 440 MW blocks 3 and 4)

on land with parcel numbers in the locations specified below in the cadastral territory of the municipalities of Mochovce, Veľký Ďúr (cadastral district Horný Ďúr), Kalná nad Hronom (cadastral district Kalnica), Nový Tekov (cadastral district Marušová) and Malé Kozmálovce, which are owned or managed by the JRD 29 augusta collective farm, Kalná nad Hronom, the Nový Tekov Breeding Institute, the Západoslovenské štátne lesy forestry agency, Levice, the Czechoslovak state administered by the local national committees of Malé Kozmálovce and Nový Tekov and the Watercourse Administration in Bratislava, the District Roads Administration in Levice, the Roman Catholic Church (in the municipality of Malé Kozmálovce) and private owners.

The building and land-use planning section of the District National Committee in Levice, as the competent building office authorised in accordance with section 119 (1) of Act no. 50/1976 Zb. by the land-use planning section of the Western Slovakia Regional National Committee Bratislava in authorisation no. ÚP 311/80 of 26.8.1980, has assessed the application in accordance with sections 37 and 38 of Act no. 50/1976 Zb. on land-use planning and the building code and section 8 of Decree no. 85/1976 Zb. and hereby issues

a decision on the location of construction

for structures in the first, second and third stages of the construction of the Mochovce Nuclear Power Station as follows:

I. Stage 1 of construction (site preparation)

1. Road to the main construction site
2. Parking lot at the main construction site
3. Site for the cooling system
4. 22 kV power line Nový Tekov – transmitter R 09 on Veľká Vápenná
5. Rerouted forest roads
6. Store no. 2 for tree stumps and woodchips
7. Site drainage
8. Site equipment for GDS for stages 2 and 3 of construction.

II. Stage 2 of construction (VVER 2 x 440 MW blocks 1 and 2)

1. Structures relating to industrial water
2. Alternative water source from Kalná nad Hronom
3. Store for inactive waste

III. Stage 3 of construction (VVER 2 x 440 MW blocks 3 and 4)

Specification of the plans for the main site modified since land-use decision Výst. 2044/81 of 10.7.1981 on land in the cadastral districts and parcels specified below:

I. Stage 1 of construction (site preparation)

1. Road to the main construction site

The structure is located on parcels no. 2341 and 2245/1 which are agricultural land used by the JRD 29 augusta collective farm Kalná nad Hronom and parcel no. 2370 – road and parcel no. 2009 – forest used by the Západoslovenské štátne lesy forestry agency, Levice.

The land is situated in the cadastral district of the municipality of Mochovce.

2. Parking lot at the main construction site

Situated on forest land used by the Západoslovenské štátne lesy forestry agency, Levice, parcel no. 2009 and parcel no. 2245/1, which is agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom. The land is situated in the cadastral district of the municipality of Mochovce.

3. Land for the cooling system

Situated on parcel no. 2003/3, which is agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom and parcel no. 2009 – forest land in the cadastral district of Mochovce. Also on parcel no. 1737 forest land in the cadastral district of Nový Tekov. Parcels no. 2009 and 1737 are used by the Západoslovenské štátne lesy forestry agency Levice.

All three cases involve additions to previously issued land-use decisions or specification of parcels and the purpose for which they are used because the site itself has already been approved in land-use decisions no. Výst. 3865/1980 of 22.10.1980 and Výst. 2044/1981 of 10.7.1981.

4. 22 kV power line Nový Tekov – transmitter R 09 on Veľká Vápenná

The route of the above-ground cable is situated on agricultural land in the cadastral district of Nový Tekov.

Parcels no. 3931, 3950, 3124, 2615, 2616, 2618, 3906 used by the JRD 29 augusta collective farm, Kalná nad Hronom,

Parcels no. 2649 and 2652 used by the Nový Tekov Breeding Institute,

Parcels no. 2799, 2798, 2617/3, 2619/2, 2620/3 used by private owners,

Parcels no. 3934/1, 3137, 3112, 3996/1, 3111, 2655 other land under the administration of the Local National Committee in Nový Tekov,

Parcel no. 1748 other land used by the Západoslovenské štátne lesy forestry agency, Levice

5. Rerouted forest roads

Situated on forest land used by the Západoslovenské štátne lesy forestry agency, Levice. The following parcels are affected:

1917, 1965 cadastral district of Malé Kozmálovce

1769, 1761, 1758, 1757, 1756, 1754, 1748/1, 1749, 1747, 1746, 1742, 1741, 1740, 1739, 1738, 1737, 1736, 1735, cadastral district of Nový Tekov

6. Store for tree stumps and woodchips

To be situated in the cadastral district of Mochovce on parcels no. 806, 825/2 and 451/3

The parcels are agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom.

7. Site drainage

The route of the pipe crosses parcel no. 2245/1 in the cadastral district of Mochovce, which is agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom.

8. Site equipment for GDS for stages 2 and 3 of construction.

Construction will take place on parcels no. 2537/2, 2341, 2414 and 2447, which are agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom, and on parcels no. 2506, 2667, 2274/2, 3226 and 2370 registered as other land and parcel no. 3056, a stream, under the administration of the Levice Centre of the State Land Improvement Administration (*Štátna melioračná správa*), Bratislava. The land is in the cadastral district of Mochovce.

Land-use decision no. Výst. 3865/1980 of 22.10.1980 included parcels for the construction of rerouted forest roads and the 22 kV power line Nový Tekov – R 09 Veľká Vápenná that do not include the affected land. Therefore the building office cancels points 2 and 3 on pages 3 and 4 in full by a **separate decision**.

II. Stage 2 of construction (VVER 2 x 440 MW blocks 1 and 2)

1. Structures relating to industrial water

situated in the cadastral district of Malé Kozmálovce on parcels no. 1067/1, 1105/1, 1108, 1105/2, which is agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom, and parcel no. 1112 – other land used by the Levice District Roads Administration, and parcels no. 1116, 1493/1 – other land used by the Hron River Authority (*správa Povodia Hrona*) and 1174 used by the Roman Catholic church in Malé Kozmálovce.

In the cadastral district of Nový Tekov on agricultural land with the following parcel numbers: 4027, 3950, 3959, 3931, 3906, 3131, 3135, 1744/1 used by the JRD 29 augusta collective farm, Kalná nad Hronom,

4029, 4023/1, 4016, 1856, 3813 used by the Nový Tekov Breeding Institute,

3182, 3181, 3180, 3174, 3173, 3169, 3168, 3164, 3159, 3156, 3149/2, 3149/1, 3148, 3939, 3141/1, 3141/2, 3132, used by private owners,

3163, 3160 under the administration of the local national committee in Nový Tekov,

on other land

in the cadastral district of Nový Tekov on parcels no. 4026/1, 4025, 3995, 3934/1, 3998/1, 3933/2, 3138, 3135 under the administration of the local national committee in Nový Tekov, parcels no. 4026/2, 4028, 1879, 4014 used by the Nový Tekov Breeding Institute,

parcel no. 1881 used by the JRD 29 augusta collective farm, Kalná nad Hronom

watercourses on parcels 1866 and 3933/1 used by the Hron River Authority,

forest land on parcels no. 1743, 1741, 1739, 1746, 1749, 1754, 1740, 1742 used by the Západoslovenské štátne lesy forestry agency, Levice

2. Alternative water source in Kalná nad Hronom

The route of the pipe crosses the cadastral territories of Kalnica, Marušová, Nový Tekov and Mochovce.

Cadastral district Kalnica

parcel no. 893/1 agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom.

Cadastral district Marušová

parcels no. 658, 685 agricultural land used by the JRD 29 augusta collective farm, Kalná nad Hronom.

parcels no. 662, 659 – other land used by the JRD 29 augusta collective farm, Kalná nad Hronom.

parcel no. 658 – water used by Western Slovakia water and sewerage enterprise (*Zs VAK*) Bratislava.

Cadastral district Nový Tekov

agricultural land on parcels no. 1477, 930, 1217, 1216 used by the JRD 29 augusta collective farm, Kalná nad Hronom,

parcels no. 1248, 3849, 1687, 1692 used by the Nový Tekov Breeding Institute,

parcel no. 1689 forest land used by the Západoslovenské štátne lesy forestry agency, Levice

other land

parcels no. 1348, 1343, 1694, 1693, 1641 used by the Nový Tekov Breeding Institute,

parcel no. 1642 used by the JRD 29 augusta collective farm, Kalná nad Hronom

parcels no. 1347/2, 1349 used by the Levice District Roads Administration

Cadastral district Mochovce

agricultural land

parcels no. 3253, 2537/2, 2341, 2068/1, 2022/1, 1751 used by the JRD 29 augusta collective farm, Kalná nad Hronom

other land

parcels no. 3256, 3255, 3226, 1747/2 used by the JRD 29 augusta collective farm, Kalná nad Hronom

parcels no. 3256, 421/2, 421/1, 420, 2131 used by the Levice District Roads Administration

parcel no. 2018 used by the Západoslovenské štátne lesy forestry agency, Levice

forest land

parcels no. 3386, 3387, 3388/1, 2017, 2011 used by the Západoslovenské štátne lesy forestry agency, Levice

3. Store for inactive waste

This will be situated on parcels no. 919, 946/1, 1219, which is forest land used by the Západoslovenské štátne lesy forestry agency, Levice, situated in the cadastral district of Horný Ďúr.

Waste will be transported across forest land parcels no. 2043, 2040, 2045 and forest road parcel no. 2054 used by the Západoslovenské štátne lesy forestry agency, Levice.

The affected land is shown on plans, which were presented for inspection at oral proceedings and are held at the building and land-use planning section of the district national committee in Levice.

The following conditions are set for the location and design of the various structures:

1) to abide by the conditions set in the Single Combined Standpoint of the Western Slovakia regional national committee Bratislava issued by the section under reference no. Výst. 80/1980-Má and the amendments, reference no. Výst. 203/81-Má of 28 May 1981 and reference no. Výst. 241/81-Má of 13 July 1981

2) to abide by the conditions set by the regional hygiene office of the Western Slovakia regional national committee Bratislava in decision no. 1890-244.9/1981 of 2.8.1981 and decision no. 1636-241.1 of 23.7.1981 and the requirements laid down in the minutes taken at the regional hygiene station in Bratislava on 8.12.1981.

3) to comply with the conditions set it in the standpoint of the State Energy Inspectorate in Trenčín, reference no. 1251/587/81/V/Bá of 11.8.1981

4) to comply with the conditions included in land-use decision no. Výst. 3865/1980 of 22.10.1980.

5) to take into consideration in design work the requirements of ZSE k.p. Bratislava relating to the way in which the power line should cross intake and/or waste pipes.

6) the applicant must provide a solution for the radio-relay connection to transmitter R 09 by the date for submission of the application for the building permit for any structure in stages 2 and 3 of construction, or obtain the consent of the operator of the transmitter for a delay by this date.

7) the route of the feed line of the alternative water source shall follow the reconstructed Kalná nad Hronom – Mochovce road in such a way that the route from the source to the road is as short as possible.

8) to comply with the requirements of authorities and organizations added to their original decisions or standpoints, or which have been agreed with the investor.

9) in the case of structure no. 4, 22 kV power line Nový Tekov – transmitter R 09 on Veľká Vápenná, structure no. 6, store for tree stumps and woodchips, and structure no. 2, alternative water source from Kalná nad Hronom, this is a withdrawal of agricultural land in accordance with section 25 of Act No. 124/76 Zb. for a period of 1 year.

Rationale

The applicant submitted the application for the location of structures relating to stages 1, 2 and 3 of the construction of the Mochovce Nuclear Power Station in Levice District, Western Slovakia Region, sector and subsector industry, production of heat and electricity. The investor is Investičná výstavba energetiky Slovenska, Bratislava, whose managing authority is the Federal Ministry of Fuels and Power, Prague. The chief designer is Energoprojekt. The senor contractors for construction are Hydrostav n.p. Bratislava and Vahostav n.p. Žilina, the contractor for equipment is Oborový Podnik Škoda Plzeň. The construction project is a nuclear power station with a total output of 4 x 440 MW, and the production of heat for the municipalities of Levice, Nitra, Vráble and Tlmáče.

The applicant justifies the application both on the basis of a change in the general plan for the main site, where there has been a change in the positioning of the main blocks and the cooling equipment and also improvements in the economic and technical efficiency of the industrial water supply.

The application was supported by the Single Combined Standpoint of the Western Slovakia regional national committee Bratislava.

Prior consent for the withdrawal of agricultural land from agricultural production was issued by the Ministry of Agriculture and Food of the Slovak Socialist Republic under no. 10698/81-PV on 10.12.1981.

Consent for the withdrawal of forest land was issued by the PLVH section of the the Western Slovakia regional national committee under no. 3./694/1981 on 7.5.1981.

The building and land-use planning section of the Levice district national committee informed all parties to the proceedings and affected state administrative bodies of the start of on 29.12.1981 under reference no. Výst. 3818/1981 and oral proceedings took place on 12.1.1981.

The standpoints of the parties are included in the conditions for this decision or have been included in the land-use decisions no. Výst. 3865/1981 of 22.10.1980 and Výst. 2044/1981 of 10.7.1981.

The land is shown on the plans, which are held at the building and land-use planning section of the Levice district national committee and which form an integral part of this decision.

The location of the structures satisfies general technical requirements in accordance with Decree no. 83/1976 Zb.

The location of the Nuclear Power Station in Mochovce was decided by this department in accordance with decision no. 221 of the government of the CSSR of 7 September 1978.

This decision shall remain in force for 2 years from its entry into force in accordance with section 40 (1) of Act no. 50/1976 and shall not terminate if an application for a building permit is submitted during this period or an application for the extension of validity is submitted during this period.

An appeal against this decision may be submitted to the land-use planning section of the Western Slovakia regional national committee through the building and land-use planning section of the Levice district national committee up to 15 days from the date of this announcement

Head of the building and land-use planning section of the Levice district national committee

Ing. Czúdor Arpád

Annexes:

ANNEX 0.3
Decision of Regional Office in Nitra No. 97/02276-004 004 of 5th May 1997, KÚ in Nitra, Department of environment

REGIONAL OFFICE
In NITRA
949 80 NITRA, Štefánikova trieda 69

File No.: 97/02276-004
To the construction permit
No. Výst.2010/86 dated 23 January 1986

In Nitra on 5 May 1997

Ref: Construction completion deadline change

Slovenské elektrárne Mochovce, a.s., Mochovce NPP, Branch asked on 17 April 1997 by the letter Ref. No. 8.2/5010/Ša/AJ/906/97 the Regional Office in Nitra - The Environmental Department for changing the completion deadline of the construction:
"Mochovce Nuclear Power Plant, WWER 4x400 MW – Construction 3".

The Regional Office in Nitra – The Environmental Department as a relevant building office according to the provision of §123 of the Act No. 50/79 Coll. (Building Law) as amended and §4 article 1 of the Act No. 595/1990 on State Administration for the Environment as amended

changes

the legal construction permit No. Výst.2010/86 dated 12 November 1986 awarded by the District National Committee in Levice, Department of Construction and Urban Planning in point 5 of conditions for the construction erection:

- **the construction shall be completed to 31 December 2005 at the latest.**

RNDr. Július S z a b ó
Head of the Environmental Department

For information:
Slovenské elektrárne, a.s.
Mochovce NPP Branch, 935 39 Mochovce

ANNEX 0.4
Decision KSÚ in Nitra No. 2004/00402-007 007 of 15th July 2004, Nitra

Regional Building Office in Nitra
Lomnická 1, 949 01 Nitra

No. 2004/00402-007

In Nitra on 15 July 2004

DECISION

Slovenské elektrárne a.s. Bratislava, Mochovce NPP Units 3&4, Branch (SE, Bratislava a.s., Mochovce NPP Units 3&4 Branch) asked on 2 June 2004 for changing the completion deadline of the construction:

Construction 3
Mochovce Nuclear Power Plant WWER 4x440 MW

located in lands of the lot number 2477 in Mochovce cadastral area, Kalná nad Hronom and the lot number 1751 in Nový Tekov cadastral area, district Levice.
The Regional Building Office in Nitra as a relevant building office according to §123 of the Act No. 50/1976 Coll. on Urban Planning and Building Order as amended (Building Law) discussed the request according to §68 of the Building Act in such as a scope as the construction change prior its completion concerns rights, legal-protected interests or obligations of participants of the above-mentioned proceeding as well as interests protected by affected state administration authorities, and decided as follows:

Valid construction permit awarded by the District National Committee in Levice, Department of Construction and Urban Planning with the Ref. No. Výst.2010/86 dated 12 November 1986

is changed

in point 5 of the obligatory conditions of the construction erection so that:
"The construction completion deadline is set to 31 December 2011."

This decision makes an inseparable part of the construction permit No. Výst.2010/86 dated 12 November 1986.

S u b s t a n t i a t i o n

SE, Bratislava a.s., Mochovce NPP Units 3&4, Branch (the building owner) asked the relevant building office for changing the completion deadline of the construction "Construction 3 – Mochovce Nuclear Power Plant WWER 4x440 MW" (hereinafter referred to as Construction) to 31 December 2011. The building owner stated in its application Ref. No. MO34/2004/003607 dated 27 May 2004 that the construction started to be built in 1986; it was not completed to April 1996 set in the construction permit No.Výst.2010/86 dated 12 November 1986 and it is expected that it will not be finished to 31 December 2005 stated in the notice Ref. No. 97/02276-004 dated 5 May 1997 issued by the Regional Office in Nitra, the Environmental Department which makes an inseparable part of the above-mentioned

construction permit. A "preliminary schedule of Mochovce NPP Units 3&4 completion" where 31 December 2011 is set as a deadline of the construction completion is enclosed to the application.
The building owner substantiates its application by the fact that the construction is unfinished and kept in good technical condition so that it does not affect the environment. The building owner now provides for analyses, studies and technical concepts, and prepares a financial and supply model aimed at Mochovce NPP Units 3&4 completion preparation.
The Building Office informed on commencement of proceedings on the construction change prior its completion to individual participants and affected state administration authorities by the letter Ref. No. 2004/00402-002 dated 18 June 2004.
The following affected state administration authorities expressed their opinions on the construction change prior its completion:

1) Nuclear Regulatory Authority of the SR
   - The opinion Ref. No. 1647/320-244/2004/HI dated 30 June 2004
   - The affirmative opinion Ref. No. 1647/320-244/2004/Hi dated 8 July 2004 with comments related to meeting requirements given in the letter as well as in the opinion on the completion concept making and annex to this letter

2) National Labour Inspectorate
   - The affirmative opinion Ref. No. 1668-2, 5/2004/Dk dated 6 July 2004.

The opinions are neither negative nor contradictory; as resulted from them, the construction change prior its completion consisting in Mochovce Construction 3 deadline change on 31 December 2011 can be permitted.

SE, a.s., Mochovce NPP, Branch, as the proceeding participant, commented the proceeding and submitted an affirmative opinion by the letter ref. No. EMO/2004/0265551 dated 2 July 2004.

Instruction

It is possible to appeal against this decision within 15 days after being delivered according to §54 of the Act No. 71/1967 Coll. on Administration Proceedings to the Regional Building Office Nitra, Lomnická 1, P. O. Box 55/C, 949 01 Nitra.
This decision can be inquired by court after application of usual remedial instruments.

Mr. František Halás
Chairman

To be distributed according to page 3.

ANNEX 0.5
ÚJD SR - DECISION NO. 246/2008 - NUMBER: 684/320-231/2008 - TRNAVA, AUGUST 14, 2008

Nuclear Regulatory Authority of the Slovak Republic,
Bajkalská 27, P.O.Box 24, 820 07 Bratislava 27,
Trnava workplace, Okružná 5, 918 64 Trnava

Number: 684/320-231/2008

Slovenské Elektrárne, a.s.
Units 3 and 4 of NPP Mochovce
935 39 Mochovce

D E C I S I O N no. 246/2008

The Nuclear Regulatory Authority of the Slovak Republic (hereinafter as "authority") as factually administrative body according to § 4 par. Letter j) of the Act no. 541/2004 Coll. about use of nuclear energy for peaceful purposes (Atomic Act) and about change and completion of some Acts according to Act no. 238/2006 Coll., Act no.21/2007 Coll., Act no.94/2007 Coll. and Act no. 335/2007 Coll. and according to § 121 par. 2 letter e) of the Act no. 50/1976 Coll. about landscape planning and building regulations (hereinafter as "building act") as amended negotiated the builder application according to § 39a par. 3 letter d), §55, §62, §68 of building act and decided as follows:

Change of construction before finishing **"Nuclear Power Plant Mochovce VVER 4x440 MW 3rd construction"** in the area of Slovenské Elektrárne a.s. NPP Mochovce Units 3 and 4 is being

permitted

within the scope of UJV Řež a.s. design – EGP Prague division, Vyskočilova 3/741, P.O.Box 158, Praha in compliance with § 66 of the building act.
The change of construction before finishing will be performed in following scope:
Buildings of 3rd construction and related buildings of the 2nd construction:
320/1-08 External barrier – demolition of a part of the fencing in the area of leading-in and side lodge
320/1-09 External barrier – establishment of the new entrance for the building vehicles.
320/1-10 Basement of the internal barrier – new open-pit points of line.
320/1-12 Fencing of ventilation towers of the 2nd MPB - new open-pit points of line.
320/1-18 Temporary fencing, 320/1-19 temporary fencing (between units 3 and 4) – Change of the technical solution of the fence, location of the open-pit points and structure of founding.
320/1-20 Temporary fencing – new building that will be used for separation of the part of operated power plant and the part under construction Building 599/1-01 and after its finishing

it will be dismantled and final modification of the landscape will be done by spreading the topsoil to the level of 237.100 m over the sea level. It is an over-ground line building that once crosses already existing road. On the line of the fence there will be 2 pieces of double-wing gates 4000/2500mm. Total length of fencing is 315.300 m, the fence height over the landscape is 500 mm plinth + 2000 mm mesh + 500 mm bracing with stressing wire. The fencing consists of 12 sections among 14 open-pit points. The fence structure is from steel thin-wall columns, mesh and rod beams in "V" shape with three hangers for stressing wire. The whole line of the fence is equipped by the cameras of industrial TV. The cameras are located on independent columns, power supply and data technological cabling is located in the gaps anchored on the fencing columns, lightening devices are located on original columns. Location of temporary construction see drawing no. **SO41601A02V.**

350/1-02 Cuts and channels of power cables 2nd part – Removal of channels EK 328S and EK 428, construction and seismic reinforcement of the new channels of EK 328S, EK 459EK 361, EK 362, EK 363, EK 460.

352/1-02 - **Cuts and channels of light-current lines –** cancelled

360/1-04 – Rain water sewerage – Changes of spill way lines and shafts, new smaller lines.

361/1-04 – Sanitary sewerage – Change of materials and small parts of the lines.

362/1-04 – Industrial sewerage - Change of materials and small parts of the lines.

371/1-03 – Drinking water system - Change of materials, shafts and small parts of the lines.

372/1-03 – Fire and utility water system - Change of materials of all the lines.

383/1-02 – Thermal network in the area of the power plant – 2nd part – new seismic-resistant pipeline channel PKS 91(90) with the line of heating water and cool form the channel TK 21 (32) and changes in channels TK21, TK32 and TK42.

400/1-04 – Foundations of the pipeline bridge between building 801/1-02 and 801/1-01 – new building for transport of liquid radioactive wastes from building 801/1-02 Reactors building of the 2nd MPB to 801/1-01 FS KRAO, along building 442/1-02 DGS of the MPB. There will be a steel pipeline bridge based on foundation of reinforced concrete that will carry three pipelines for sorbent, concentrate and one pipeline will be a reserve one. According to the transport the building is connected to communication system of the 3rd construction. The built-up area is 42 m², total length of the line is 192 m. The steel structure of the bridge is along building 801/1-01 and 1-02 fixed on brackets anchored into reinforced concrete wall of the auxiliary nuclear buildings. In the free area between the buildings there is a pipeline located on the bridge with steel columns mounted into reinforced concrete footings. The steel structure (hereinafter as "SS") of the bridge is elaborated in DPS 3.54.04. The foundation footings are from reinforced concrete, they are monolithic from the concrete of C16/20-B20 class, reinforced by the steel of 10335 (J). 22 pieces of footings will be with dimensions of 1.0 x 1.3 m and height of 1.5 m. One footing as a fixed point will have dimensions of 1.3 x 2.2 m and height of 1.85 m. For location of the foundation see drawing no. **SO41620A02V** and fro ground plan and footings cross-section see drawing no. **SO41620A03V**.

400/1-05 Foundation for dry riser – building permitted by Regional authority for the environment Nitra, division of state water management no. 2008/00375 from April 21st, 2008.

401/1-02 Pipeline channels 2nd part A, E, F, H – removal of the pipeline channel TK32 and building of the new channels PKS90 and PKS91.

442/1-02 Diesel generator station of the 2nd MPB – Exchange of the roof coat, reinforcement of partition walls and exchange of fire-resistant doors.

442/1-04 High-pressure compression station – 2nd MPB - Exchange of the roof coat and exchange of fire-resistant doors.

442/1-06 Oil management of DG station of 2nd MPB – Exchange of aisle roof by saddle roof, exchange of fire-resistant doors and covers and addition of firewalls.

442/1-07 Common diesel generator station of the 2nd MPB – New building standing independently with dimensions of 19 x 14.90 m, located next to building 568/1-02 and 566/1-02 connected by the channel. The building specifies the area fro foundation for placement of the container with DGS and strengthened area for service. Next to the foundation there is the underground part of the building divided into area of the tank with diesel oil of 30m³ and turbine hall. The foundation for DGS has dimensions of 15.00 x 3.00 x 0.85 m, it is designed from reinforced concrete from concrete of C16/20 – B20 class. The manipulation area is (except the roof of the underground part) is made of reinforced concrete paving bricks set into the cement bedding. The underground part of the building – the tank, will be located on the concrete foundations. The tank structure is monolithic reinforced concrete bath insulated against oil products leakages. The tank bottom is on the level of approximately –4.80 m. Vertical bearing walls and ceiling bearing structures are monolithic reinforced concrete of 400 mm thickness. The roof over the underground area is ascendable with concrete pavement. Built-up area is 272.30 m². Extension area: 886 m². Maximum depth of foundation is –5.900 m. For location of the building see drawing no. **SO41689A03V.**

490/1-02 Turbine hall of the 2nd MPB – Units 3 and 4 – Exchange of the roof coating, reinforcement of roof SS, reinforcement of external cladding bracing, exchange of 2 pieces of gates, new outbuildings of the turbine hall extinguishing device, new building of the switch room, roofing of the aeration channel, completed gallery of visitors, exchange of fire-resistant doors, new hydrazine tank. Seismic reinforcement of the roof – horizontal bracing of the roof girders Z2, Z4, diagonal D2 of the nogging piece, girder V1 – lower band, horizontal bracing of the roof girders – middle band, vertical noggin piece in row A.

510/1-02 Foundations of transformers with oil tanks of the 2nd MPB – new standings including connection to oil pits and two new baths for fire water collection.

522/1-02 External switchyard 110 kV and 400 kV – 2nd MPB – removal of the footings and their new location, new cable channels.

566/1-02 Racking of the diesel oil and oil of the 2nd MPB – consolidation of the building 566/1-04 and 566/1-02 – new racking place , channel and emergency tank.

580/1-04 Ventilation cooling tower II-1, 580/1-05, Ventilation cooling tower II-2, 580/1-06 Ventilation cooling tower II-3 – Exchange of asbestos, massive reinforcement in SS, reinforcement of concrete structures of the intermediate bracing walls. Seismic reinforcement means addition of vertical steel bracings, reinforcement of reinforced concrete vertical walls in longitudinal axis of the tower over the edge of the vessel up to +4.20m.

581/1-05 Draft cooling tower 31, 581/1-06 Draft cooling tower 32, 581/1-07 Draft cooling tower 41, 581/1-08 Draft cooling tower 42 – Exchange of asbestos material of cooling tower internal by new one – plastic.

584/1-02 Central pumping station of non-essential service water and non-system fire water of the 2nd MPB – reinforcement of the roof beams, reinforcement of SS by exchange of bracings, disassembly of the roof coating and assembly of the new one, exchange of fire-resistant doors.

584/1-04 Pumping station of the essential service water, utility and system fire water of 2nd MPB – reinforcement of SS by exchange of the bracings, reinforcement of roof beams, exchange of fire-resistant doors. Seismic reinforcement means exchange of longitudinal bracings in row A and C, reinforcement of the lower band of beams and reinforcement of boundary diagonal of the beams.

622/1-02 Foundation of the transversal rail fro transformers of the 2nd MPB – new lining of the railways.

652/1-01 Side lodge – the new building functionally replaces the temporary side lodge made from UNIMO cell and it will be used as entrance and exit lodge including all securing and check functions. The side lodge is located in north-west part of EMO area, west from existing

building of 881/1-01. Location corresponds with original lodge. Ground plan dimensions of the building on the level of ±0.000 are 20.900 x 17.600 m, the height of attic is 4.920 m over the modified landscape, level of footing base –1.300 m and –1.600 m. There are connections of drinking water system, fire water system, sanitary sewerage, rain water sewerage, hot water connection, return cooled water, cable channel (heavy current, telephone connection, EPS) in the building. The control area for vehicles together with pavements is 19.75 m wide and 23.00 m long. Between the traffic lanes there is a steel ramp with steps to the lodge and main entrance. The area for control activities is covered by light structure with headroom height of 5.30 m. The bearing structure is made of columns and steel tubes, horizontal beams and polycarbonate boards. The covered area of the drive-in is 223.380 m². The building will be accessible from the road by the pavement that within the framework of building 690/1-03 connects to an area reinforced by inter-pavers before entrance to ledger. For location of the building see drawing no. **SO41660A04V.**

670/1-03 Interplant train part 3 – building was permitted by the Authority for regulation of the railway transport with no. 1987/08 – ŠSÚ/J-Vg from June 16, 2008.

670/1-06 Drainage of interplant train part 3 – new draining shaft.

800/1-02 Reactor hall of the 2nd MPB – reinforcement of cellular concrete panels, reinforcement of bricked walls, reinforcement of SS roof, reinforcement of SS columns, civil modifications for solution of beyond design accidents, exchange of the lifts, new gallery for visitors, exchange of fire doors, disassembly of the old and assembly of the new roof coating. Seismic reinforcement of the gable walls, roof, columns in row G axis 218 and 220 and horizontal elements of the profile I.

800/1-02 Building of active auxiliary operations for 2nd MPB – additional building for the transport area, reinforcement of peripheral siporex panels, reinforcement of bricked walls, new reinforced concrete wall, exchange of fire doors, exchange of the lifts, disassembly of the old and assembly of the new roof coating. Seismic reinforcement means reinforcement of the transversal bracing in row 1, reinforcement of the staircase stringer, reinforcement of the beams in row 7, reinforcement of longitudinal bracings in V 4-5, G 11-12 V1 11-12, reinforcement of columns anchoring in part 01-7 and A-G in part 7-17 and V-G, improvement of peripheral panels fixation.

802/1-03 Connection bridge between 2nd MPB and building 801/1-02 –Disassembly of the old and assembly of the new roof coating.

802/1-04 Connection bridge between 1st MPB and 2nd MPB - Disassembly of the old and assembly of the new roof coating.

804/1-02 Air duct to ventilation stack of the 2nd MPB - Disassembly of the old and assembly of the new roof coating.

805/1-02 Areas of electrical devices longitudinally Units 3and 4 – reinforcement of SS columns and bracings, yoking of the ceiling board and SS, gas-tight modifications of the rooms (main control room), new out-of unit control room, new gallery of visitors, exchange of the lifts, reinforcement of cellular concrete facades, reinforcement of bricked walls, disassembly of the old and assembly of the new roof coating, new fire-resistant doors. Seismic reinforcement of the transversal bracing in row 1, stringers between rows 01 and 1, beams in row 7, longitudinal bracings V4-5, G11-12, V1 11-12, anchoring columns 01-7 and A-G, 7-17 and V-G.

806/1-03 Areas of electric device transversally – Unit 3 - Yoking of the ceiling board and SS , air-conditioning for the control rooms, reinforcement of SS roof, disassembly of the old and assembly of the new roof coating, exchange of fire-resistant doors. Anchoring into the wall in row 310.

806/1-04 Areas of electric device transversally – Unit 4 - Yoking of the ceiling board and SS , air-conditioning for the control rooms, reinforcement of SS roof, disassembly of the old

and assembly of the new roof coating, exchange of fire-resistant doors. Anchoring into the wall in row 410.

810/1-03 Emergency feed water system Unit 3, 810/1-04 Emergency feed water system Unit 4 – Reinforcement of the ceiling board under the DEMI water tanks by 350 mm, reinforcement of the structure by SS, topping of the peripheral walls of the staircase.

810/1-05 Reserve water source – 2nd MPB – A new independent building standing in front of southern frontage of 806/1-03 (Areas of electric devices transversally – Unit 3). According to transport the building is connected to access road led from service road on the southern side of the building 810/1-03. The built-up area is 374 m², extension area is 2526 m². The ground plan dimensions of the building are 38.10 x 8.5 m. lower edge of the tanks +0.200 m, height of the building +4.440/+5.200 m, maximum depth of foundation –3.450 m. The building is cellaraged, partially double-floor. On –2.45 m floor there is a room for pumps and exchangers where there is a new channel and cable area connected into which there are new energy channels connected. On ±0.00 floor there is light current and heavy current switch room. Three steel tanks are set in the collection bath (on the level of +0.200m) with internal dimensions of 8.20 m x 23.95 m, height 4.00 m that is located next to bricked part of the building. The building structure is designed as reinforced concrete up to level of –0.100, monolithic with reinforced concrete peripheral walls with one over-ground floor. The over-ground part is bricked. The collection bath is next to bricked part of the building. The bath bottom is made of steel-concrete board with 750 mm thickness. The roof is flat. For location of the building see drawing no. **SO41682A03V.**

371/1-02 Drinking water system, 372/1-02 Fire and utility water system – relocation

510/1-01 Foundations of transformers with oil tanks of the 1st MPB – Removal of the old foundations, construction of the new cable channels and foundations.

522/1-01 External switchyard 110 kV and 400 kV – 1st MPB – Removal of the old foundations, construction of the new cable channels and foundations.

593/1-01 Decarbonisation of the chemical water treatment – 2nd construction – Disassembly of the original and implementation of the new tanks, change of staircase in the building of lime silos.

599/1-01 Sludge treatment of the chemical water treatment – new structures (tanks, building, sludge presses)

690/1-01 Interplant roads part 1 – Change of the line next to 881/1-01 Metrology station.

801/1-01 Building of active auxiliary operations 1st MPB – New room of the sorbent tank – change of usage purpose.

808/1-01 Radioactive waste liquidation – is not going to be realised, it is replaced by the building of final processing of liquid radioactive wastes.

840/1-01 Operational building – The subject of the solution is the new monitoring system of contaminated persons control and related building modifications on floors +10.500, +18.900 and 23.100m.

882/1-01 Low-pressure compressor station and cool source station – 2nd construction – New concrete collection tanks, modifications of the concrete columns.

Buildings with small building modifications:

350/1-01 Cuts and channels of the power cables, **351/1-02** Heavy current line 2nd part, **353/1-02** Main grounding network, **376/1-02** Control probes of bleeding, 2nd part, **400/1-03** Putting the pipeline to ±0.00 2nd part, **568/1-02** Diesel oil management 2nd MPB, **582/1-04** Cooling water pipeline in the towers circuit of 2nd MPB, **583/1-02** Cooling water channels in the towers circuit of 2nd MPB, **585/1-02** Sludge pipeline of the cooling towers of 2nd MPB, Cooling water pipeline in the towers circuit of 2nd MPB**, 682/1-01** Modification of the road before building finishing, **690/1-02** Interplant road 2nd part, **690/1-03** Interplant road 3rd part,

690/1-06 Interplant road drainage 3rd part, **780/1-02** Civil defence shelter under 655/1-01, **803/1-02** Ventilation stack**.**

The authority in compliance with § 66 of the building act determines following binding conditions of the construction finishing:

1. To perform the change of construction before finishing according to design documentation verified by the authority in building proceedings.
2. The builder is obliged to fulfil the regulation related to work safety technical equipment and at the same time to pay attention to health protection and personal protection on site while performing building activities.
3. To maintain provisions of the building act, Decrees of the Ministry of Environment of the Slovak Republic no. 532/2002 Coll. about general technical requirements for buildings and corresponding technical standards while performing the building activities.
4. The builder is responsible for compliance of the buildings with the documentation verified in the building proceeding.
5. The builder **is obliged** to announce the **beginning of the building change** to the authority.
6. To finish the construction till **December 31st, 2013**.
7. To inform the authority about the building supplier in 15 days after the tendering results declaration.
8. To fulfil following conditions according to § 66 par. 2 letter b) and e) of the building act from binding standpoints of involved bodies:

To provide removal of the shortcomings in the design documentation to assure safety and protection of personal health in compliance with § 7 par. 3 letter c) of the Slovak Republic Government Act no. 125/2006 Coll. about work inspection and about change and amendment of the Act no. 82/2005 Coll.:

a) In the technical report or design documentation there is not a solution of evaluated residual threads and dangers arising from proposed technical solutions, which is contrary to § 4 of the act no. 124/2006 Coll. about labour safety and health protection during the work and about change and amendment of some of the acts as amended (hereinafter as act no. 124/2006 Coll.)
b) In the text of WP 04.1Revision and completion of Basic design for MO 34, B – Summarising technical report, there is mentioned the Act no. 124/2006 Coll. about labour safety and health protection and about change and completion of some of the acts according to amendment of the act no. 309/2007 Coll. and act no. 140/2008 Coll. is missing or listed only as amended.
c) In the document of WP 04.1 in the table of the act no. 264/1999 Coll. as amended there are cancelled legal regulations e.g. Decree of the Government no. 29/2001 Coll. and it should be Decree of the Government no. 35/2008 Coll. that is contrary to § 4 par. 1, § 6 par. 1 letter a), n) and § 13 par.1 and 2 of the Act no. 124/2006 Coll. and §10 par. 4, §13 of the Act no. 264/1999 Coll. as amended.

Deadline: In two months after this decision comes into force. The removal of shortcomings should be announced in written for to corresponding Labour Authority.

To maintain following conditions in compliance with §16 par. 1 letter b) point 2 of the Act no. 223/2001Coll. about wastes:

a) Arisen wastes will be separated and collected in compliance with §19 of the act no, 223/2001 Coll. about wastes (in case of contaminates wastes, category "N", separately from wastes of category "O")
b) Collection of wastes arisen during the building works before their further handling will be provided in compliance with §22 par.1 of the Ministry of Environment Decree no. 283/2001 Coll. as amended.
c) For substantial inspection the investor will submit the document about disposal of unusable wastes that have arisen during the building works, including the material balance.
d) When handling the wastes from building works, the originator is obliged to respect provisions of § 40cof the act no. 223/2001 Coll. about wastes as amended.
e) In case the arisen amount of dangerous waste crosses the limit defined in the decision by which the consent for dangerous waste handling was given to the originator, SE, a.s. NPP Mochovce Units 3 and 4 according to §7 par.1 letter g) of the act no. 223/2001 Coll. about wastes as amended, the waste keeper is obliged to ask for the change of subjected consent according to §75 par. 1 letter a) point 2 of the act about wastes.

To keep the provisions of §3 par.1 and §4 par.1 of the act no. 543/2002 Coll. about protection of nature and landscape as amended and in case that in relation to the construction it is necessary to chop down wood or bush growing out of the forest, it is necessary to continue in compliance with § 47 of the act no. 543/2002 Coll. and they will enclose to the application for building permit also the consent of Kalná nad Hronom for chopping down the wood. In case of necessity of excavation works near existing woods, it is necessary to perform these works manually to avoid damaging of the root system.

To maintain the location and height parameter till 100 m over the landscape according to §30 par.1 letter a) of the act no. 143/1998 Coll. about civil aviation and about the change and amendment of some acts as amended. In other case it is necessary to ask the Air transport authority of the Slovak Republic for re-assessment.

In compliance with §12 par.1 letter e) of the act no. 42/1994 Coll. about civil protection of the citizens as amended, it is necessary to submit the design of communication and data network as well as radio network and VYRVAR for approval to the Ministry of Interior of the Slovak Republic.

Deadline: December 31, 2010

To maintain binding conditions of the building performance in compliance with §26 par.1 letter b) of the act no. 314/2001 Coll. about fire protection as amended, §40 and §40b of the Decree of the Ministry of Interior of the Slovak Republic no. 121/2002 Coll. about fire prevention according to Decree of the Ministry of Interior of the Slovak Republic no. 591/2005 Coll.

a) To fill each gap in connection of two civil structures or more civil structures isolating a formed fire section from other construction spaces or free site so to respect an integrity and isolation of this structure, and thus to meet its function of a fire isolating structure only with material with the required fire resistance and fire reaction class A1 or A2

b) To install only electric switchboards and electric panels with fire resistance declared by the subject product manufacturer to an escape route and a cable corridor in the civil structure "Reactor Building" where electric switchboards and electric panels are designed; additional enhancement of fire resistance of the electric switchboard and the electric panel by its lining with bricks, panelling or spraying is not considered to be fulfilment of the requirement for installation of the electric switchboard and the electric panel with fire resistance;

c) To install only ceiling with fire resistance to an escape route where the ceiling is designed in order to isolate wiring that goes through the escape route and does not meet the function for this escape route

d) To design and implement a water curtain in order to respect the requirement for fire hazardous area between the outer side of the civil structure SO 490/1-02 "Turbine Hall II. of the Main Power Block" and the adjacent group of external transformers, while

a) the water curtain substituting a fire isolating structure in the area of each window will prevent spread of fire from the Turbine Hall to free space between the Turbine Hall wall and transformers in the same manner as the civil structure where the window is installed during 30 minutes by water supply;

b) Depending on the EPS (fire detection system) signal, nozzles installed from the outside of all windows that are situated in front of the entire turbine set load with fire, at least before windows installed in quarter of the wall height behind which the turbine set with the aforementioned failure - fire will be activated;

c) Water to the water curtain system will be supplied by a pump backed up with a pump of the same power and start-up characteristics to full power within the time of at least 10 seconds;

d) An option of the water curtain manual start-up is not excluded, but this start-up will not have a retarding function with regard to the start-up from the EPS;

e)A proposed design will be delivered to the Presidium of Fire and Rescue Corps at least 60 days before inspection of the completed Turbine Hall

e) To design and implement technical measures in the civil structure "Turbine Hall" so to prevent an uncontrolled spread of released flammable liquid from lubrication and cooling oil system of the steam turbine so that released liquid

a) contacting the Turbine Hall floor at the level of ± 0.0 m is accumulated in a trap on the Turbine Hall floor and drained by a continuous pipeline to an emergency tank,

b) contacting the walking grid at the level of ± 0.0 m isolating the Turbine Hall floor from the area with the floor at the level of -5.5 m is accumulated in a trap below the grid and drained by a continuous pipeline to an emergency tank, while this requirement relates only to the grid the pipeline is not going through,

d) flowing around the outside of a pipeline penetrating the turbine hall floor to the area under the Turbine Hall ending at the level of -5.5 m has a limited contact with free space, namely installed protective sleeve around the pipeline flown around by released oil, while the protective sleeve will start immediately under the grid in the floor at the level of ± 0.0 m and will run into the continuous pipeline draining released flammable liquid to an emergency tank.

To submit drawings and a text report documenting the proposal of measured mentioned in clauses a) to c) immediately after being elaborated to the Presidium of Fire and Rescue Corps, while the subject measures will be proposed and applied for the each turbine set individually

f) To install EPS and cables with properties relevant for fire protection in civil structures

a) 584/1-02 “Central Non-essential Service Water and Non-system Fire Water Pumping Station”, and

b) 584/1-04 “Essential Service Water and System Fire Water of the II. Main Power Block Pumping Station"

and so to reduce an accidental fire load in these structures considering an absence of protected escape routes of B type from the subject structures, and make a possibility of quick escape of people from the construction by timely identification of fire by the aforementioned fire technological installation

g) To isolate the room 101c/3, namely a staircase belonging to the fire section 80P02.01/N02 from the room 01c, namely from the essential service water pumps belonging to the fire section 80P02.01/N02C in the civil structure SO 584/1-04 "Essential Service Water and System Fire Water of the II. Main Power Block Pumping Station" with a civil structure with the required fire resistance

h) To isolate rooms 06/31 and 06/32, namely staircases from rooms 05/31 and 05/32, namely assembling shaft in the civil structure 810/1-03 "Emergency Feed water Supply in Unit 3" with a civil structure with the required fire resistance

i) To isolate a drainpipe intended for transport of flammable liquid from the trap to the emergency tank from the adjacent fire sections it goes through in the civil structure SO 442/1-02 "Diesel Generator Station of the II. Main Power Block" with an isolation structure with fire resistance of at least EI 90

j) To install a drain pipe in the civil structure SO 442/1-02 “Diesel Generator Station of the II. Main Power Block” in order to assure transport of flammable liquids from the trap situated below the each diesel generator to the emergency tank, and to fit the drain pipe with a hydraulic closure in compliance with Regulation of the Ministry of Interior of the Slovak Republic No. 96/2004 Coll

k) To install a lift in the civil structure SO 800/1-02 "Reactor Building of the II. Main Power Block" to an individual fire section; the lift will fulfil a function of a fire lift, and if two adjacent lifts fulfil the function of fire lifts, these can be in a common fire section, and to assure a redundant power supply for each lift with the fire lift function; a fire cell proposed in design documentation for isolation of the lift from other construction parts is not considered to be fulfilment of the requirement for formation of an independent fire section

l) To install fire closures isolating a load lift shaft belonging to the fire section 80N01.03/N05 at individual floors from adjacent fire sections in the civil structure SO 801/1-02 "Auxiliary Building for the II. Main Power Block"
m) To install a fire closure with the fire resistance of EI 90/D1 to the horizontal fire isolating structure separating the cable channel from the electric area in the civil structure SO 442/1-04 “High-pressure Compressor Station for the II. Main Power Block”;
n) To design and make ventilation of protected escape route lobbies in civil structures 805/1-02 "Longitudinal Electrical Building - Units 3&4”, 806/1-03 “Cross-wide Electrical Building - Unit 3" and 806/1-04 “Longitudinal Electrical Building – Unit 4” in compliance with Annex 7 of Regulation of the Ministry of Interior of the Slovak Republic No. 94/2004 Coll
o) To propose measures and assure their implementation in order to enhance fire resistance of vertical support structures at least to the level the highest required fire resistance has the supported structure that depends on the support structure; if obtained fire resistance of the structure fulfilling, in addition to the fire spread function, also the function of radiation protection is higher than its required fire resistance and this enhancement would be reached as a secondary phenomenon at fulfilment of the radiation protection requirements, than the fire resistance of the support structure supporting the structure fulfilling a dual function of radiation protection and fire spread protection shall be at least so as the supporting structure should have the fire resistance only at fulfilment of the fire spread prevention function
p) To propose and install control elements of equipment limiting fire spreading and helping to control fire in internal rescue routes in compliance with the requirement laid down in Article 84 subsection 5 of Regulation of the Ministry of Interior of the Slovak Republic No. 94/2004 Coll
q) To respect requirements of Regulation of the Ministry of Interior of the Slovak Republic No. 401/2007 Coll. at designing and execution of the construction heating
r) To make a fire band from the structural element of D1 type with the required fire resistance in compliance with provisions of subsection 3 of Article 44 of Regulation of the Ministry of Interior of the Slovak Republic No. 94/2004 Coll. in the civil structure SO 801/1-02 "Auxiliary Building for the II. Main Power Block” where the external wall connects the fire isolating structure
s) To inform the Presidium of Fire and Rescue Corps of any spraying or application of paint on steel structures in order to enhance their fire resistance at least 10 working days before commencement of works; to inform by fax using the fax number 02/44637535 and to attach an identification of the civil structure and localisation of the civil structure whose fire resistance should be enhanced and also a certificate of conformance of the applied product, including a written report of a notified person proving that all procedures of the compliance assessment related to the subject product have been fulfilled

t) To submit to the Presidium of Fire and Rescue Corps the following:

a) A declaration of conformity or a certificate issued by an independent third party informing of put of a cable system as a building product on the market in compliance with Act No. 90/1998 Coll. as amended before commencement of the cable system installation;

b) A declaration of conformity or a certificate issued by an independent third party informing of put of electric fire alarms, a stabile fire fighting equipment and heat and combustion gases removal equipment as building products on the market in compliance with Act No. 90/1998 Coll. as amended, to submit design documentation prepared by a person with a special certification of professional competence for designing the subject fire technical equipment; the declaration of conformity, the certificate and the design shall be submitted prior the installation;

c) an identification of all civil structures in a table form, including reached fire resistance and a method used for reaching the fire resistance, while the submission shall be made at least 60 days before submission of a proposal of the building owner for the final inspection proceedings;

d) a detailed design in accordance with the instruction specified in clause c)

u) To seal points of penetration of technical equipment and technological equipment through a fire isolating structure with material with the fire resistance at least the same as the civil structure through which the technical equipment and the technological equipment penetration is made

v) To make the construction in compliance with

a) The submitted and approved documentation of the Ministry of Interior of the Slovak Republic by the Presidium of Fire and Rescue Corps,

b) the proposed engineering solutions as intentional substitution approaches applied in case of a conflict resulted from the time that elapsed from the construction execution and requirements laid down in effective general binding legislation that should be applied today at change of the construction before its completion ,

c) conditions specified herein.

To ensure fulfilment of the conditions form NRA SR decision no. 266/2008 and 267/2008.

Detailed designs of the civil structures listed in proposition part of this decision which seismic resistance is required by basic design should be amended by specified calculations of seismic resistance verified by independent organisation that does not contribute to elaboration of the basic design and its changes. The documents about results of calculation verification should be given to the authority.

Deadline: Together with application for permission to put corresponding unit of the nuclear facility into operation.

For elaborators of the detailed design of the civil structures to elaborate the guide for calculations of the components anchoring where the seismic qualification is required. The proposal should be given to the authority for assessment.

Deadline: December 31, 2008.

To perform independent inspection of detailed designs of all the civil structures containing seismically qualified components from the point of view of meeting the conditions for their seismic resistance, including mutual interactions between components themselves as well as with the civil structures.

Deadline: During elaboration of implementation designs and during assembly works.

To ensure performance of repeated evaluation of the nuclear safety in other stages of the nuclear facility design in compliance with the requirement of NRA SR Decree no. 50/2006 Coll., Enclosure no.3 part B.I.A letter u)

Deadline: During elaboration of the basic design up to the level of implementation designs.

To add independent verification of the design safety evaluation, made by legal entities or natural persons independent from those who made the design in compliance with requirements of NRA SR Decree no. 50/2006 Coll., Enclosure no.3 part B.I.A letter x).

Deadline: December 31, 2008

9. The change of construction cannot be started before the permission for the change of construction before finishing comes into force.
10. Before finishing the builder is obliged to ask for substantial inspection .
11. The builder has to enable the representative of the State Building Inspection and the experts invited by them to access the site and to create the conditions for inspection performance.
12. According to § 43f of the building act to perform the construction it is possible to use only such a building product that is based on special regulations (Act no. 90/1998 Coll.) suitable for usage on site for intended purpose.

Given conditions of the decision do not impede the builder to start works according to documentation verified by building authority in this building proceeding.

At the same time the Authority by this decision changes the deadline of construction listed in binding condition no. 5 of the building permit no. 2010/86 from November 12, 1986 issued by Municipal office in Levice, department of construction and landscape planning because it reflects proposed changes, existing status of the construction and it is in full scope transformed into electronic form.

Justification

Based on application of Slovenské Elektrárne, a.s. Bratislava, NPP Mochovce Units 3 and 4 from May 27, 2008 no. SE/2008/065258 on the day of its submitting the authority started to act in the matter of work permit for change of construction before finishing "Nuclear power plant Mochovce VVER 4x440 MW 3rd construction".

The applicant has supported his submitting by letter from June 4, 2008 no. SE/2008/069203 by electronic documentation of the basic design, declaration about completeness of submitted documentation and summary of the fulfilment of requirements listed in § 11 par. 1 letter c) of the Ministry of Environment Decree no. 453/2000 Coll.

The submitted application was viewed from the points of views listed in § 62 of the building act and it was found that by performing of the construction (nor its further usage) the interests of the company are not threatened nor the rights and justified interests of the proceeding participants.

The application for the change of the construction before finishing was completed by design documentation in three copies as well as in digital form, reflecting present status of the construction as well as all the changes the builder asked for. The construction documentation meets general technical requirements for construction. Change of construction before finishing will be performed according to design documentation verified in building preceding that is a part of this decision.

The authority followed by sending the notice about its beginning to the proceeding participants known to it and involved bodies of the state administration from May 30, 2008 and at the same time it invited them to send their standpoint to construction being permitted for the field out of followed interests in 30 days from the notice delivery back to the Authority. In the proceeding following involved bodies replied: Labour inspection Nitra, Regional authority of environment Levice, department of environment items protection (hereinafter as RAE Levice, dep.EIP) – waste management RAE Levice, dep.EIP – state office for nature and landscape protection, Ministry of Interior of the Slovak Republic – Presidium of Fire and rescue brigade of the Slovak Republic, Aviation office of the Slovak Republic Bratislava. Their standpoints were included into conditions of the permission.

Village Nový Tekov, village Kalná nad Hronom, Technical inspection Nitra, Regional authority of the environment Nitra – state water management, RAE Levice, dep. EIP – state administration of air protection, Regional headquarters of Fire and rescue brigade in Nitra, public health service in Levice , Ministry of Economy of the Slovak Republic agreed with the change of construction before finishing without any comments.

Authority for railway transport regulation in Bratislava, Ministry of Health of the Slovak Republic, District authority in Nitra – department of civil protection and crisis management did not send their standpoints in given deadline that is why the building authority understands it that they agree with proposed change of construction before finishing without any comments.

Ministry of Environment SR Bratislava in its standpoint no. 7451/2008-3.4/hp. from August 8, 2008 states that it is not possible to regard the change of construction before finishing as a new activity nor a principal change of original design because administrative proceeding in the matter of permission of given activity according to special regulations was started before the act no. 24/2006 Coll. about assessment of impacts on environment and about change and amendment of some acts came into force and that is why this act cannot have an impact on activity that was permitted

before it came into force. At the same time we point to the fact that before giving the permission to put the nuclear facility into operation and consequent permission for operation it will be necessary to assess the facility according to the act about impacts on environment assessment.

The authority in relation to change of construction before finishing issued its decision no. 266/2008 in compliance with atomic act, by which there was a consent issued to implement changes influencing nuclear safety during the construction and decision no. 267/2008 by which the there was permission given to implement changes in Preliminary safety report.

There were no comments from the proceeding participants.

During the proceeding the building authority did not find any reasons that would impede the permission of the change of construction before finishing.

The change of construction before finishing will not adversely affect the environment and that is why it was decided as it is listed in proposition part of the decision.

Administrative fee in amount of 6000, SKK (six thousand Slovak Crowns) was stated according to act no. 145/1995 Coll. about administrative fees as amended, part V., item no. 60 letter g) and it was paid by duty stamps.

Advice:

According to § 61 par. 1 of the administrative regulations it is possible to lodge and appeal against this decision to Nuclear Regulatory Authority of the Slovak Republic, Okružná 5, 918 64 Trnava in 15 days from this decision delivery. The appeal lodged in time has a dilatory effect.

If this decision after depletion of permissible remedial instrument comes into force, its legality can be evaluated by the Court.

If the builder does not use the legal period to submit the remedial instrument against this decision, he is obliged to ask the authority for confirmation of its validity after expiration of 15-days period from the decision delivery.

In Trnava, on August 14, 2008

Duty stamp
Stamp of Nuclear Regulatory Authority
of the Slovak Republic

Ing, Peter Uhrík
General director of
the Department of Safety Evaluation
and Inspection Activities

Will be delivered to:

1. UJV Řež, a.s. – division EGP Prague, Vyskočilova 3/741, P.O.Box 158, 140 21 Praha 4

Copy to:

1. Village Nový Tekov, the mayor, 935 33 Nový Tekov 226
2. Village Kalná nad Hronom, the mayor, ČA 55, 935 32 Kalná nad Hronom
3. TI, Mostná 66, P.O.Box 29 B, 949 01 Nitra
4. IP Nitra, jelenecká 49, 949 01 Nitra
5. KÚŽP Nitra, ŠVS, J.Kráľa 124, 949 01 Nitra
6. ObÚŽP Levice, odb. OZŽP – OH, Dopravná 14, 934 03 Levice
7. ObÚŽP Levice, odb. OZŽP – OO, Dopravná 14, 934 03 Levice
8. ÚRŽD, section of special building authority, Miletičova 19, 820 05 Bratislava 25
9. MŽP SR, Nám. Ľ. Štúra 1, 812 35 Bratislava
10. MV SR – P HaZZ SR, Pribinova 2, 812 72 Bratislava
11. KR HaZZ in Nitra, Dolnočermánska 64, 949 01 Nitra
12. MZ SR, Limbova 2, P.O.Box 52, 837 52 Bratislava 37
13. ÚVZ SR, Trnavská cesta52, P.O.Box 45, 826 45 Bratislava
14. RÚVZ Levice, Komenského 4, 934 38 Levice
15. LÚ SR, Letisko M.R. Štefánika, 823 05 Bratislava
16. MH SR, Mierová 19, 827 15 Bratislava 212
17. OÚ Nitra, OCOaKR, Štefánikova tr. 69, 949 01 Nitra

ANNEX 0.6
Abandon of the alternative solution for the proposed activity – Ministry of Environment of Slovak Republic ref. 7451/2008-3-4/hp, date 31.7.2008

MINISTERSTVO ŽIVOTNÉHO PROSTREDIA
SLOVENSKEJ REPUBLIKY
812 35 BRATISLAVA, NÁMESTIE ĽUDOVÍTA ŠTÚRA 1

Slovenské elektrárne, a.s., Mochovce
Nuclear Power Plant, Units 3 and 4

935 39 M o ch o v c e

Your Ref./dated	Our reference	Attended by/Extension	Bratislava
SE/2008/087 3788	7451/2008-3.4/hp	Ponecová /0905 682024	31. 07. 2008

Re: **"Mochovce Nuclear Power Plant VVER 4 x 440 MW construction site No. 3"**
- Abandon of the alternative solution for the proposed activity

On 15 July 2008 you have asked the Ministry of Environment of the Slovak Republic to abandon of the requirement of alternative solution for the proposed activity for their standpoint whether the proposed activity **"Mochovce Nuclear Power Plant VVER 4 x 440 MW construction site No. 3"**pursuant to Act No. 24/2006 Coll. on the Assessment of Impacts on the Environment and on the amendment of certain acts (hereinafter as the "Act").

Request to abandon of the alternative solution for the proposed activity was justified by saying that:

1. The history of the construction of nuclear installation (hereinafter as "NI") at Mochovce for the activity "Mochovce Nuclear Power Plant VVER 4 x 440 MW, construction site No. 3" (hereinafter as "Project MO 3, 4") is related to the process of land planning, which has methodically and complexly dealt with the functional using of the land, as well as with the material and time coordination of NI construction at Mochovce. The land planning process was taking into consideration the maintenance of long-term harmony of natural and cultural values in the territory and put special emphasis on the environmental care and protection of main environment components, as well as people's health.
2. Based on the decision on the usage of the land by situating the construction and subsequently based on the building permission the localisation of NI was determined to be at Mochovce.
3. Geological subsoil and its features were acceptable in terms of safety of nuclear power plant operation at Mochovce, particularly in terms of the characteristics of rocks comprising the bedrock for the power plant (with respect to their geological origin, physical and chemical characteristics, location of fractures at the site, and with respect to seismicity).
4. NI at Mochovce was designed and its construction was started and executed as a four-unit construction with common technological parts.
5. The status of progress in Project MO 3, 4 as well as the existence of civil structures that are currently in operation and comprise the inevitable operation systems

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IČO 678678
ponecová.helena@enviro.gov.sk

(compressed air and nitrogen system, boric acid regeneration system, auxiliary systems, etc.) necessary for the operation of units 1 and 2 of NPP Mochovce can be after minimal modifications connected to buildings of units 3 and 4 of Mochovce NPP.

6. Completion of units 3 and 4 of Mochovce NPP will enable the completion of the required capacity of NI quickly, with low construction costs and at the site that was relatively well prepared from a complex point of view.
7. Currently, the status of construction of units 3 and 4 of Mochovce NPP is as follows:
   - ✓ Civil part - 70% completed;
   - ✓ Technological part - 30% completed;
   - ✓ With respect to the advanced status of construction and the mutual connection of the premises with the existing operated part, from economic and time-related point of view the planned units 3 and 4 of Mochovce NPP cannot be situated at another site. Delivered and installed components for nuclear island do not enable other utilisation of them (e.g. for CCGT).
8. Operation of EMO 1,2 as well as the future operation of units 3 and 4 of Mochovce NPP will be under permanent and strict supervision of international and national bodies from the point of view of protection from negative impacts of ionizing radiation.
9. NI at Mochovce has determined limits for authorised discharges of radioactive substances into the environment, and these limits are defined in such a way as to avoid damage to any component of the environment, including the human health.
10. The central radiological control system will be common for all units of Mochovce NPP.
11. Common environment monitoring programme of NPP at Mochovce (monitoring the impact on the environment around EMO 1, 2 and FS KRAO) shall serve also to monitor the impact of EMO 3, 4 after its completion and putting in to operation.

Based on the information in your request we inform you that we abandon, pursuant to Article 22 (7) of the Act, the request for alternative solution of the intent.

The intent prepared pursuant to Art. 22 Annex No. 9 of the Act shall contain one alternative of the proposed activity, as well as zero alternative, i.e. alternative of the situation if the intent was not completed.

At the same time we notify you that if based on the comments to the submitted intent resulted a justified need of another realistic alternative to the activity, this will be taken into account in the proceeding pursuant to the Act.

Yours sincerely,

Ing. Oleg H a v a s i
Director of the Environmental
Impact Assessment Department

ANNEX 1.1
Cadastral map with site indicated

SLOVENSKÉ ELEKTRÁRNE, a.s.

ATÓMOVÉ ELEKTRÁRNE MOCHOVCE o.z.

Map of NPP Mochovce for proposed activity

Site Technical Services

NPP Mochovce 1 & 2

NPP Mochovce 1 & 2

Legend:

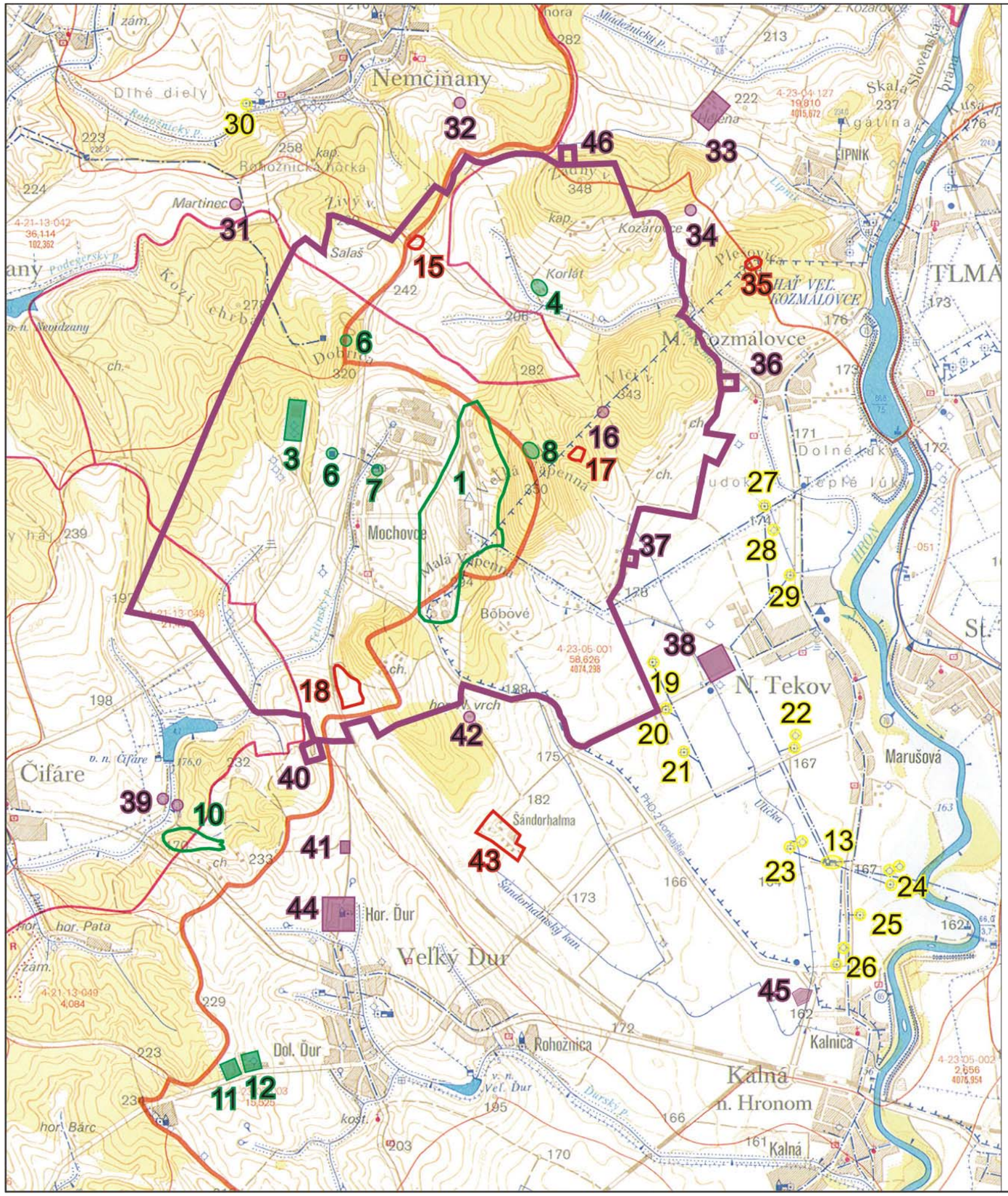
- Boundary of NPP Mochovce
- Boundary of cadastral area
- Location of 3rd. construction of NPP Mochovce
- 2477/41 Parcel numbers

S-JTSK Coordinate system

Local coordinate system ZVS-EMO

VYPRACOVAL	KONTROLOVAL	AUTORIZAČNE OVERIL	GEODETICKÁ KANCELÁRIA URBAN - LAUKO
ING. JOZEF URBAN	ING. PAVEL LAUKO	ING. JOZEF URBAN	Geodetická kancelária URBAN - LAUKO s.r.o. nám. Šoltésovej č. 14, 934 01 Levice, IČO: 36 796 336
INVESTOR:	SLOVENSKÉ ELEKRÁRNE		FORMÁT: A1
NÁZOV: MAP OF NPP MOCHOVCE AREA FOR PROPOSED ACTIVITY			DÁTUM: 12.1.2009
			ČÍSLO ZÁKAZKY: 36796336-9/2009
			ČÍSLO KÓPIE: 1
CONTENTS: MAIN CONSTRUCTION OF NPP MOCHOVCE AND BACK LANDS			MIERKA 1 : 2000 / SADA A

ANNEX 2.1
Wider Surroundings - M 1 : 50 000



Hygienic Protection Zone Pursuant to Decision of the Regional Hygiene Authorities No. H-IV-2370/79 from 15/10/1979;

Based on 16 1 : 10 000 maps and scaled down to 1 : 50 000

	Hygienic protection zone
	Areas owned or used by NPP Mochovce
	Areas used by NPP Mochovce
	Wells and drinking water pumping stations
	Permanent dwellings, recreation facilities, farmyards or stock farms
	Other buildings

LEGEND

1	Site of main building
2	The former village of Mochovce
3	RAW depositary
4	Korlát settlement
5	Dobrica settlement
6	Drinking water reservoir for supply of building site
7	Railway siding sluice
8	Utility water reservoir fed from a pumping station on the Hron
9	Utility water pumping station
10	Settling pond of inactive sludge
11	440 kV substation at Veľký Ďur
12	110 kV substation at Veľký Ďur
13	Back-up drinking water source
14	Kalná nad Hronom railway station
15	Meteorological station SHMÚ Bratislava
16	Hunting cabin object No.1
17	Radio booster station mast (R-09 Veľká Vápenná)
18	Solid waste municipal landfill under construction
19-29	Drinking water station for supply of Levice
30	Drinking water pumping station well for main water supply
31	Inhabited hamlet Martinec
32	Inhabited lodge - PD Nemčiňany
33	Farmyard – PD Kozárovce
34	Inhabited hamlet Kabát
35	Television booster station mast
36	Wine cellar - PD Kalná nad Hronom
37	Ranch Nový Tekov
38	Farmyard PD - Nový Tekov
39	Hunting cabin
40	Ruins of uninhabited hamlet Chladov
41	Ruins of uninhabited hamlet Galiba
42	Inhabited gamekeeper lodge – Nový vrch
43	Municipal waste landfill – Nový Tekov
44	Farmyard – PD Veľký Ďur
45	Farmyard – PD Kalná nad Hronom
46	Beekeeper cabin

Note: Small wine cellars inside and outside of the protection zone are not identified by numbers.

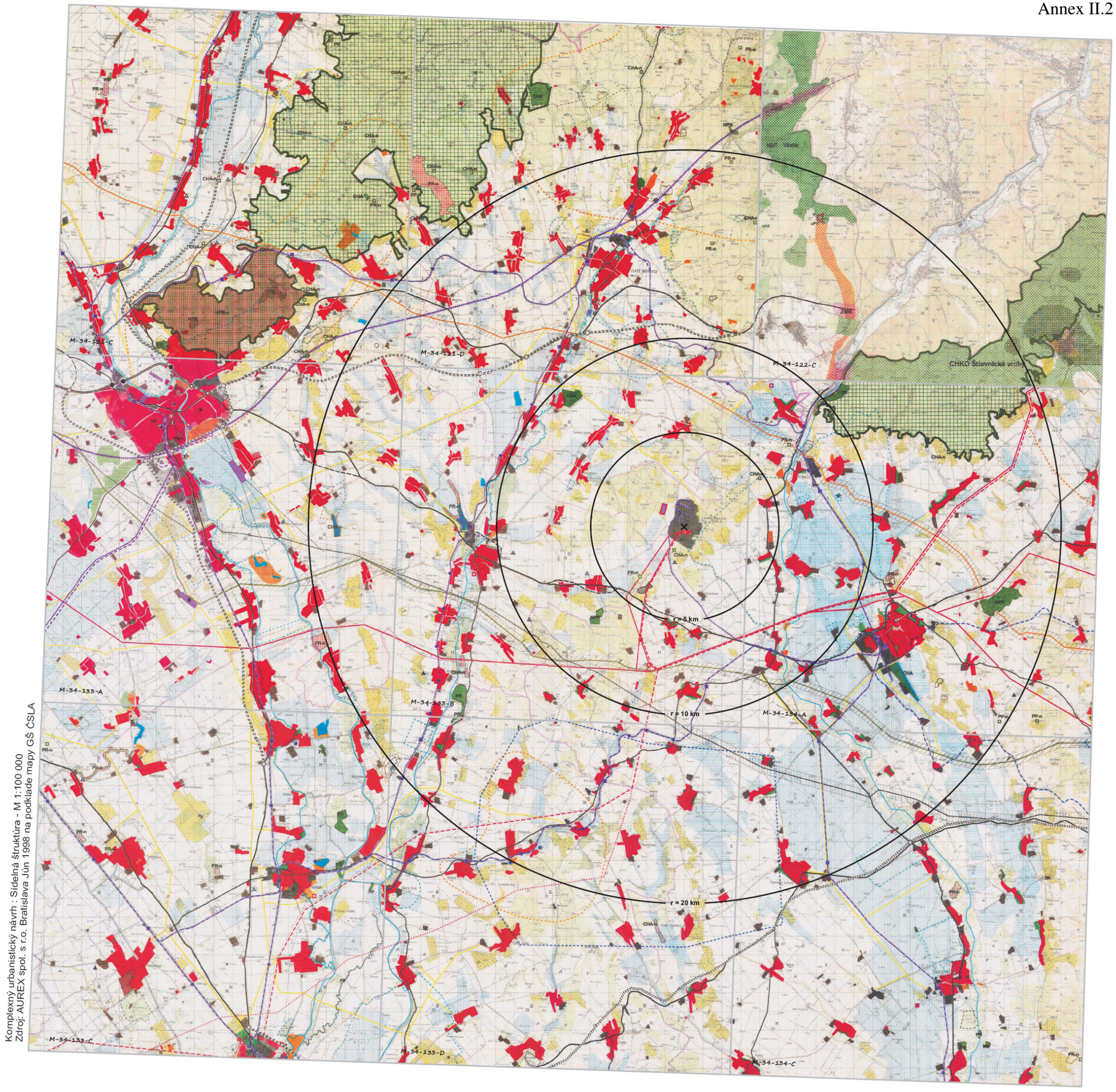
ANNEX 2.2
Úzes Vuc Nitra - M 1 : 100 000

Current and remaining state | Recommended and proposed state | Spatial reserve in land-use plan

- Slovak border
- Regional boundary
- District boundary
- Residential areas
- Industrial, civil engineering, storage areas
- Agricultural areas
- Separately designated areas
- Technical infrastructure and transport areas
- Urban green area
- Cultural – historic complex
- Recreational and sport areas
- Important park, arboretum
- Forest park
- Village with recreation function
- Water bodies and reservoirs
- Boundary of recreational territorial units
- Game preserve
- Significant tourist destination
- PRLA urban landmark reservation
- Landmark zone
- National cultural landmark
- High speed motorway
- Southern road
- 1st class road
- 2nd class road
- Fly-over
- High speed railway line
- Main railway line
- Nationwide railway line
- Regional railway line
- Integrated system of regional mass transport
- Railway station
- Railway stop
- Watercourse
- Port
- Combined transport terminal
- Transhipment centre
- Border crossing
- Selected regional airfields with development possibilities
- Other regional airfields
- Cycle path

Current and remaining state | Recommended and proposed state | Spatial reserve in land-use plan

- Main watercourse
- Hygienic protection zone
- Protected landscape area
- National nature reserve
- Nature reserve
- National natural landmark
- Natural landmark
- Protected area
- Wetland in the sense of the Ramsar convention
- Permanent plantation
- Permanent grassed coppice
- Drainage
- Irrigation
- Natural curative resource protection zone (1st level)
- Natural curative resource protection zone (2nd level)
- Geothermal borehole
- Geothermal energy protection zone
- Turf deposit
- Protected surface deposit
- Protected subsurface deposit
- Allotted area for surface deposit
- Allotted area for subsurface deposit
- Deposit without protection
- Affected overburden
- Seismic area with intensity of 8 st. MCS and higher
- Radioactive waste repository
- Settling pond
- Regional municipal waste landfill
- Waste landfills meeting technical standards
- Waste landfill meeting specific requirements
- Industrial, health and veterinary incinerator
- Selected sources of air pollution
- 400 kW electrical lines
- VHV substation
- Oil pipeline
- Transit gas pipeline
- International gas pipeline
- VVTL and VTL gas pipeline
- Oil pipeline protection zone
- Gas pipeline protection zone



Komplexný urbanistický návrh : Sídelná štruktúra - M 1:100 000
Zdroj: AUREX spol. s r.o. Bratislava Jún 1998 na podklade mapy GŠ ČSLA

ANNEX 3.1
Photo documentation of the current situation

Golder (Europe) EEIG