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Copies of qualifications documents of the preparers of the EIA Programme are presented in Text Annex 1.

ENVIRONMENTAL IMPACT ASSESSMENT PROGRAMME

STRUCTURE OF THE PROGRAMME

PART I TEXT

PART II TEXT ANNEXES

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PART I - TEXT

PART I

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ABBREVIATIONS USED IN THE TEXT

Abbreviation	Explanation
AB	Public company
OPTL	Overhead power transmission line
EBRD	European Bank for Reconstruction and Development
NF	natural framework
LitPol Link company	LitPol Link Sp. z o.o. – a company formed on 19 May 2008 for the coordination of preparatory works for the construction of the power transmission line between Lithuania and Poland.
LitPol Link	the planned double circuit 400 kV overhead power transmission line between the towns of Alytus (Republic of Lithuania) and Ełk (Republic of Poland), with a modern transformer substation in Alytus.
kV	Kilovolt
MW	Megawatt
CIS	Commonwealth of Independent States
EIA	Environmental impact assessment
PSE-Operator	Polskie Sieci Elektroenergetyczne Operator S. A., a Polish company
PEA	Planned economic activity
REPD	Regional environmental protection department
SPZ	Sanitary protection zone
SP	Special plan
SEA	Strategic environmental assessment
Alytus TS	Alytus transformer substation

1. INTRODUCTION

LitPoL Link, a Lithuanian – Polish company, was established on 19 May 2008 for the coordination of preparatory works for the construction of the power transmission line between Lithuania and Poland. The shareholders of the company are Lietuvos Energija AB, a subsidiary of the Lithuanian national energy company Leo LT, and Polskie Sieci Elektroenergetyczne Operator S. A., a Polish power transmission operator (“PSE-Operator”), each holding 50% of the shares in LitPoL Link.

The objectives of LitPoL Link include the selection and obtaining agreements on the route for the planned 400 kV overhead power transmission line in Lithuania and Poland, assessment of the impact on the environment in both countries by the construction and operation of the planned power transmission line, preparation of the technical project for the line, addressing of land ownership, permit and licensing issued, carrying out of other indispensable preparation works, and preparation of tender documentation for the selection of contractor for construction.

The power interconnection between Lithuania and Poland („the LitPol Link interconnection“) will consist of a double circuit 400 kV overhead power transmission line, approx. 154 km long, between the towns of Elk (Republic of Poland) and Alytus (Republic of Lithuania), with a reconstruction and extension of a transformer substation and construction of a back-to-back converter in Alytus. Approx. 106 km of the route will extend in the territory of the Republic of Poland (Podlaskie and Warmian-Masurian provinces) and approx. 48 km – in the Republic of Lithuania (Lazdijai and Alytus districts of Alytus County) (Graphic Annex 1).

The project on the construction of the Lithuanian – Polish power interconnection implemented by LitPol Link will connect, for the first time, the Baltic States’ power system with the Continental European Network. At present, Lithuania’s energy system is connected only to the Latvian, Estonian and CIS energy systems. The new power link will join the Baltic States’ systems with the Western and Central European network (including Austria, Belgium, Bosnia, Bulgaria, Czech Republic, West Denmark, Greece, Spain, Italy, Montenegro, Croatia, Poland, Luxembourg, Macedonia, France, Holland, Portugal, Romania, Serbia, Slovakia, Slovenia, Switzerland, Hungary and Germany).



Source: International Projects of the Lithuanian Energy System. Conference report. D.Virbickas. Alytus, 23 October 2009.

Fig. 1.1. The LitPol Link power transmission line

The LitPol Link interconnection will enhance the energy independence of the Baltic States, contribute to the development of the common electricity market of the EU, and increase the reliability of energy supply. The construction of the interconnection will also contribute to the reinforcement and development of the power transmission network in North-East Poland and South Lithuania.

Specific steps of planning and environmental impact assessment of the planned economic activity (PEA) have already been taken in the process of implementation of the LitPol Link project.

On 12 October 2009, the Minister of Energy of the Republic of Lithuania adopted a decision on the launching of the preparation of the special plan for the construction of the Lithuanian –

Polish power transmission link, with Lietuvos Energija AB appointed as the planning organiser.

On 22 October 2009, Lietuvos Energija AB signed a contract for the preparation of an environmental impact assessment (EIA) and a special plan (SP) for the LitPol Link project with a consortium to which the contract was awarded in the tendering procedure announced on 16 June 2008 – consisting of SWECO International AB and Sweco Lietuva UAB. The consortium will prepare the EIA for the construction and operation of the planned 400 kV power transmission line from the Alytus transformer substation to the Lithuanian – Polish border and will prepare the special plan for this interconnection in the territory of the Republic of Lithuania.

On 3 November 2009, the consortium consisting of SWECO International AB and Sweco Lietuva UAB was awarded a contract for the preparation of a feasibility study for the reconstruction and extension of the Alytus transformer substation (TS). The contract was signed by and between Lietuvos Energija AB and the consortium. In the present project phase, a feasibility study and a proposal for technologies for the Alytus TS and the back-to-back converter will be completed, along with the preparation of the territorial planning documents. These works will be completed by the end of 2010.

The EIA of the planned economic activities will be carried out in a comprehensive manner, i. e. the EIA will involve a simultaneous assessment of the impact of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian – Polish border and of the reconstruction of the Alytus TS and construction of a back-to-back-converter, with the results of the assessment presented in a single study and with common EIA publicity and agreement procedures implemented.

On completion of the EIA and the special plan, a tendering procedure will be held, based on the terms of reference prepared by LitPol Link company, for the selection of company for the preparation of a technical project on the construction of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian – Polish border and the reconstruction and extension of the Alytus TS.

LitPol Link company is also engaged in the coordination of the preparatory works related to the planning, designing and construction of the power transmission line on the Polish side. A detailed study on the selection of the line route, including a comparative analysis of alternatives, and documents indispensable for the starting of the EIA procedures have been completed. The EIA report on the PEA on the Polish side is to be completed by the end of 2010.

The preparatory works for the LitPol Link in Lithuania are financed by the Ignalina International Decommissioning Support Fund managed by the European Bank for Reconstruction and Development (EBRD).

1.1. OBJECTIVE, PURPOSE AND MAIN PROVISIONS OF THE PREPARATION OF THE PROGRAMME AND THE REPORT ON THE ENVIRONMENTAL IMPACT ASSESSMENT OF PLANNED ECONOMIC ACTIVITY

According to the EU and Lithuanian national legislation, any planned economic activity that can produce effects on the environment must be assessed for its potential environmental impact.

According to the Republic of Lithuania Law on Assessment of Impact on the Environment by Planned Economic Activities (No.X-258 of 21 June 2005) [9] as amended [10], any planned economic activities are categorised as follows: activities for which an environmental impact assessment (EIA) is mandatory and activities for which a screening for mandatory EIA must be carried out.

The planned economic activity under this project – the construction and operation of a 400 kV power transmission line from the Alytus transformer substation to the Lithuanian-Polish border and the reconstruction of the Alytus transformer substation and the construction of a back-to-back converter – is classified, according to item 8.8 of Annex 1 of the above-mentioned Law, as “building of overhead power transmission lines (where voltage is 110 kV or higher and length of the line is 15 km or more)”, for which an EIA is mandatory.

Under the Republic of Lithuania Law Amending the Law on Assessment of Impact on the Environment by Planned Economic Activities (Official Gazette, 2005, No. 84-3105) as amended [10] and orders by the Minister of Environment of the Republic of Lithuania No. D1-370 of 15 July 2005 „Concerning approval of the Procedure for Public Awareness of and Participation in the Process of Environmental Impact Assessment of Planned Economic Activities“ and No. D1-311 of 23 June 2006 “Concerning approval of the Procedure for the Examination of the Documentation on Environmental Impact Assessment of Planned Economic Activities by the Ministry of Environment and Institutions Subordinate to it“, the organiser of the planned activity or the entity preparing the EIA documentation, under authorisation of the organiser, must prepare an EIA programme on the planned activity, coordinate it with stakeholders in the EIA, present it to the public and submit it to the Ministry of Environment of the Republic of Lithuania or its structural division, Alytus Regional Environmental Protection Department, for consideration and approval.

Under the contract concluded with Lietuvos Energija AB, the entity preparing the EIA documentation – Sweco Lietuva UAB has undertaken to make the environmental impact assessment for the construction and operation of a 400 kV power transmission line from the Alytus TS to the Lithuanian – Polish border and to prepare the EIA report and programme, to

hold a public discussion of the prepared documentation, to obtain agreements on the documentation from the EIA stakeholders, and to submit it to the Ministry of Environment or its authorised division for consideration and approval. In addition, the entity preparing the EIA documentation is responsible for the completion of the international agreement procedures for the EIA of PEA (as necessary).

In December 2009, Sweco Lietuva completed the preparation of a **programme on assessment of the impact on the environment by the construction and operation of the 400 kV overhead power transmission line from the Alytus transformer substation to the Lithuanian – Polish border.**

The programme on assessment of the environmental impact by the planned economic activity (hereinafter referred to as the “EIA Programme”) has been prepared in accordance with the provisions of the Republic of Lithuania Law on Assessment of Impact on the Environment by Planned Economic Activities, taking guidance from the Regulations on the Preparation of an Environmental Impact Assessment Programme and Report approved by order of the Minister of Environment No. D1-636 of 23 December 2005 [11] as amended [12] and the Methodological Guidance on the Assessment of Impact On Public Health [13], and having regard to the specific characteristics of the planned economic activity. The EIA Programme contains background information on the PEA, current environment of the PEA and other general information. Furthermore, the EIA Programme outlines the structure of the EIA Report to be prepared later (by providing a draft content of the report), its methodological principles and subjects as well as methods to be employed in the evaluation.

The preparation of the EIA Programme has involved a preliminary analysis of the natural and social environment of the EIA area and its environs, with a regional-level analysis of the available information, and a brief overview of the information is presented. The analysis was based on the data and documents provided by the PEA Customer as well as other publicly available information [1-6, 23,24].

The information on PEA – technical parameters of the construction and operation of the overhead power transmission line and reconstruction, extension and operation of the transformer substation - presented in this EIA Programme is of preliminary nature and will be updated during the preparation of the EIA Report as well as in subsequent designing phases.

Purpose of EIA of the planned economic activity:

- determine, describe and assess the potential direct and indirect impact of PEA on the environment (humans, soil, earth interior, ambient air, water, climate, landscape, biodiversity, material values and immovable cultural heritage as well as interaction among all these components of the environment);

- identify and propose measures to minimise or avoid the adverse impact of the PEA on public health and other components of the environment; and
- determine whether the PEA and its impact are permissible in the selected location.

The methodological aspects of the EIA of the planned economic activity and the EIA Report are described in greater detail in Sub-Section 8.6.

2. INFORMATION ON THE PLANNED ECONOMIC ACTIVITY

2.1. GENERAL INFORMATION

2.1.1. INFORMATION ON THE ORGANISER OF THE PLANNED ECONOMIC ACTIVITY

Name of company	Lietuvos Energija AB
Address, telephone and fax No.	A.Juozapavičiaus g. 13, LT-09311 Vilnius Tel. (8 5) 278 2408, (8 5) 278 2416 Fax (8 5) 212 6736 E-mail: info@lietuvosenergija.lt
Contact person	Mr. Mindaugas Mikalčius Project Manager Investment Assets Division Tel. (8 5) 278 2408 E-mail: mindaugas.mikalcius@lpc.lt

Name of company	Lithuanian-Polish joint venture LitPoL Link Sp. z o.o.
Address, telephone and fax No.	Wojciecha Górskiego g.9 00-033 Warsaw, Republic of Poland Tel. +48 22 323 34 61
Contact person	Mr. Karolis Sankovski Manager of Environmental Division E-mail: k.sankovski@litpol-link.eu

**2.1.2. INFORMATION ON ENTITY PREPARING THE ENVIRONMENTAL IMPACT
ASSESSMENT DOCUMENTATION**

Name of company	Sweco Lietuva UAB
Address, telephone and fax No.	V.Gerulaičio g. 1, 08200 Vilnius Tel. (8 5) 2196574 Fax (8 5) 2617507 E-mail: LitPolLink@sweco.lt
Contact person	Mr. Vytautas Belickas EIA Project Manager Tel. (8 5) 219 6575 E-mail: vytautas.belickas@sweco.lt

2.1.3. DESCRIPTION, PURPOSE AND TERM OF THE PLANNED ECONOMIC ACTIVITY

<p>PEA</p>	<p>Construction and operation of the 400 kV overhead power transmission line (OPTL) from the Alytus transformer substation to the Lithuanian-Polish border.</p> <p>Reconstruction of the Alytus transformer substation (TS), its extension by the back-to-back converter and operation</p>
<p>Purpose of PEA</p>	<p>OPTL – to build a 400 kV double-circuit power transmission line from the Alytus transformer substation to the Lithuanian-Polish border, enabling the joining of the Baltic States' power systems with the Continental European System.</p> <p>Alytus TS – to reconstruct and extend the Alytus TS, converting it into the key point of power transmission in South Lithuania, ensuring the connection of the non-synchronous Polish and Lithuanian power transmission systems.</p>
<p>Project phase</p>	<p>Special plan</p> <p>Strategic environmental assessment</p> <p>Environmental impact assessment</p>
<p>Location of PEA</p>	<p>Lazdijai and Alytus districts, Alytus county, Republic of Lithuania</p>
<p>Expected term of completion of PEA</p>	<p>Planned start of LitPol Link's operation - 2015.</p> <p>Planned start of OPTL operation – 2015.</p> <p>Planned putting into operation of the Alytus TS on reconstruction and of back-to-back converter – 2015.</p>

Anticipated term of operation of the PEA's facilities	Unlimited
Estimated investments	Estimated value of the LitPol Link project – EUR 237 million. The value of implementation of the OPTL and Alytus TS projects is currently not known and will be estimated on completion of the special plan for the PEA.

2.1.4. INTERRELATION BETWEEN THE EIA REPORT AND THE TERRITORIAL PLANNING AND DESIGNING PHASES

The interconnection of the Lithuanian and Polish energy systems through a 400 kV power transmission line has been provided in the 2008 – 2012 Action Plan on the Implementation of the National Energy Strategy of the Republic of Lithuania, Measure 3.1 of the Group of Measures “Interconnection of the Lithuanian power system with UCTE“, approved by resolution of the Government of the Republic of Lithuania No. 1442 of 27 December 2007 (Official Gazette, 10 January 2008, No. 4-131). The preliminary route of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian-Polish border has been marked in the master plans of Alytus and Lazdijai districts (Graphic Annexes 2 and 3).

Planning and designing phases	EIA phases
Special plan on the construction of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian-Polish border	Strategic environmental (SEA) assessment of the construction and operation of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian-Polish border (Document determining the SEA scope and SEA Report)
	Environmental impact assessment (EIA) of the construction and operation of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian-Polish border (EIA Programme and EIA Report)

3. INFORMATION ON THE PLANNED ECONOMIC ACTIVITY

3.1. PEA DESCRIPTION

The power interconnection between Lithuania and Poland (“the LitPol Link“) will consist of an approx. 150 km long double-circuit power transmission line from the town of Elk (Republic of Poland) to the town of Alytus (Republic of Lithuania), where the Alytus transformer substation will be reconstructed and extended by a back-to-back converter. Approx. 100 km of the route will extend in the territory of the Republic of Poland (Podlaskie and Warmian-Masurian provinces) and approx. 50 km – in the Republic of Lithuania (Lazdijai and Alytus districts of Alytus County) (Graphic Annex 1).

By 2015, electricity grids will be developed in North East Poland between the towns of Ostrołęka, Olsztyn and Białystok, while in Lithuania a new power transmission line Alytus – Kruonis pumped storage plant is planned to be built.



Source: International Projects of the Lithuanian Energy System. Conference report.
D.Virbickas. Alytus, 23 October 2009.

Fig. 3.1. The present energy system of the Republic of Lithuania

To implement Measure 3.1 (Interconnection of the Lithuanian power system with UCTE) of the 2008 – 2012 Action Plan on the Implementation of the National Energy Strategy of the Republic of Lithuania approved by resolution of the Government of the Republic of Lithuania No. 1442 of 27 December 2007 (Official Gazette, 10 January 2008, No. 4-131), the following facilities will be designed:

- construction of a 400 kV double-circuit overhead power transmission line from the Alytus transformer substation to the Lithuanian-Polish border;
- reconstruction of the Alytus transformer substation and its extension by a back-to-back converter.



Fig. 3.2. The planned extension and reconstruction of the Lithuanian power transmission networks

Phases of carrying out of PEA, their terms and sequence

- Completion of the special plan for PEA, strategic environmental assessment, environmental impact assessment and technical solutions – 2009-2010.
- Starting of construction of the 400 kV double-circuit overhead power transmission line from the Alytus transformer substation to the Lithuanian – Polish border – 2012.

- Starting of reconstruction of the Alytus transformer substation and construction of the back-to-back converter – 2012.

3.1.1. PEA PRODUCTION PROCESSES AND EQUIPMENT

Overhead power transmission line

Main technical characteristics of the planned OPTL:

- voltage – 400 kV;
- approximate line length ~50 km – in the Lazdijai and Alytus districts of Alytus County;
- number of circuits – 2;
- transmitted power – 2x500 MW;
- start of OPTL – Alytus TS;
- end of OPTL – Lithuanian-Polish state border;
- wires 3 x AFL – 8350 mm²;
- design temperature of wires 80°C;
- transmission capacity (according to calculation methodology applied by Polskie Sieci Elektroenergetyczne Operator S.A., the Polish power transmission operator)":
 - at ambient temperature + 30°C – 2340A (1620 MVA);
 - at ambient temperature 0°C and lower – 2970A (2060 MVA).
- optic fibre – OPGW48J;
- supports – metal and/or reinforced concrete;
- distance between supports – 320 m on average, in individual cases may reach 600 m;
- height of supports – up to 73 m;
- distance between farthest wires – up to 19 m;
- number of supports – 100 to 150 pc. (in the territory of the Republic of Lithuania);
- isolators - glass.

Detailed information of the OPTL's production equipment and processes will be provided in the EIA Report.

Alytus TS

The Alytus transformer substation on reconstruction and extension will become the main power transmission hub in South Lithuania (Graphic Annex 2). A back-to-back converter station necessary for the interconnection of the power transmission systems will be constructed.

A site of approx. 3.4 ha (170 m x 200 m) is required for the installation of one(500 MW) back-to-back converter unit. To ensure operation of the OPTL at full capacity, two such units will be required.

The scope of the Alytus TS reconstruction:

- extension of the present 330 kV substation;
- construction of a new back-to-back converter station;
- construction of a new 400 kV substation;
- preparations for the connection of two new 330 kV lines from Kruonis HAE;
- connection of a double-circuit 400 kV line from Elk (Poland).

The present 330 kV substation will also be prepared for the connection to the planned OPTL.

The OPTL being designed will be connected to the new 400 kV transformer substation being designed.

Typical spatial dimensions are as follows:

- extension of the present 330 kV substation - 180 x 100 m;
- construction of a new substation for the back-to-back converter station – 300 x 500 m;
- construction of a new 400 kV substation – 200 x 100 m.

Several technological and spatial alternatives are possible in the designing of the transformer substation. The main difference (excluding technology) lies in that some of them require installation in open grounds, while others – in closed premises.

Detailed information on the technological solutions and equipment of the Alytus transformer substation and the back-to-back converter station will be provided in the EIA Report.

3.1.2. INFORMATION ON MATERIALS AND PRODUCTS TO BE USED

OPTL

Manufactured metal supporting structures, support reinforcements, reinforced concrete foundations, reinforced concrete beams, wires etc. will be supplied for the installation on site.

Alytus TS

Transformer oils and other consumables – chemical substances will be used for ensuring production processes in the new substation, therefore, preventive measures to minimise the adverse impact on the environment must be provided for (e. g. designing sumps etc.).

Raw materials and other materials including chemical substances and preparations to be used in the construction and operation phases will be detailed in the EIA Report.

3.1.3. WASTE

Certain quantities of non-hazardous waste will be generated in the OPTL and Alytus TS construction processes. Operation of facilities (specifically, Alytus TS) can also generate hazardous and non-hazardous waste. The waste will be managed according to the provisions of the Lithuanian legal acts and the waste management procedures established by Lietuvos Energija AB.

The types and quantities of waste, management methods, disposal and use will be described in greater detail in the EIA Report.

3.2. PEA LOCATION AND CHARACTERISTICS

The PEA will be carried out in the Alytus and Lazdijai districts. The PEA area considered from the point of view of EIA covers an approx. 650 km² area of these districts. In the present EIA phase, information on these districts' geographical-administrative conditions, natural conditions (orohydrographic, climatic, pedologic, geologic and hydrogeologic), landscape, flora, fauna and other biodiversity, and cultural heritage is provided on regional level, based on the publicly available information [1-6, 23,24].

3.2.1. GEOGRAPHIC SITUATION

Alytus District

Alytus district is located in the South Lithuanian highlands, which are divided into two parts by the River Nemunas. Nemunas is the main water artery crossing the Alytus district. Other rivers flowing across these lands include Bambena, Peršėké and Varėnė. The district has over 70 lakes and 4 ponds. 21.8% of the Alytus district is covered by forests. The largest forest areas are near the Nemunas. The district has a number of protected areas such as the National Žuvintas Nature Reserve – the oldest in Lithuania, parts of the Dzūkija National Park and Meteliai and Nemuno Kilpa regional parks, Pivašiūnai and Sudvajai geomorphologic

reserves, Balkasodis and Vidzgiris botanical reserves, and Sabališkiai and Varčia pedological reserves.

The territory of the Alytus districts is 1411 km². It is divided into 11 eldership areas.

Lazdijai District

Lazdijai district is in Dzūkija, a region in the south of Lithuania. The region has always been famous for its nature not damaged by industry. Although low-productivity lands prevail here, people of this district have engaged in agricultural activities with determination. A formerly outlying region has become important and well-known on restoration of Lithuania's independence, when a state border crossing-point was opened at Akmeniai village, becoming the first gate to Europe for Lithuania. The Lazdijai district occupies an area of 1309 km². The district has over 150 lakes. Veisiejai and Meteliai regional parks recently have become important tourist attractions. Good conditions for the development of recreational and tourist activities prevail nearly all over the territory of the Lazdijai district municipality.

3.2.2. ADMINISTRATIVE SUBORDINATION AND USE OF AREA

Alytus District

Local authorities – representative body Alytus District Board, executive authority – Alytus District Municipal Administration.

The district is comprised of 11 elderships:

- Alytaus eldership (Alytus);
- Alovės eldership (Alovė);
- Butrimonių eldership (Butrimonys);
- Daugų eldership (Daugai);
- Krokialaukio eldership (Krokialaukis);
- Miroslavo eldership (Miroslavas);
- Nemunaičio eldership (Nemunaitis);
- Pivašiūnų eldership (Pivašiūnai);
- Punios eldership (Punia);
- Raitininkų eldership (Makniūnai);
- Simno eldership (Simnas).

The district has:

- 2 towns – Daugai and Simnas;
- 3 townships – Butrimonys, Krokialaukis, Nemunaitis;
- 426 villages.

Largest settlements:

- Simnas;
- Daugai;
- Butrimonys;
- Miklusėnai;
- Punia;
- Luksnėnai;
- Venciūnai;
- Alovė;
- Daugų village;
- Ūdrija [23].

Lazdijai District

Lazdijai district is located in the south western part of Lithuania, near the borders with Poland and Belarus. Administrative centre – Lazdijai.

The district has 14 elderships:

- Būdviečio eldership;
- Kapčiamiesčio eldership;
- Krosnos eldership;
- Kučiūnų eldership;
- Lazdijų eldership;
- Lazdijai town eldership;
- Noragėlių eldership;
- Seirijų eldership;
- Šeštokų eldership;

- Šlavantų eldership;
- Šventežerio eldership;
- Teizų eldership;
- Veisiejų eldership;
- Veisiejų town eldership.

The district has:

- 2 towns – Lazdijai and Veisiejai;
- 6 townships – Kapčiamiestis, Krosna, Rudamina, Seirijai, Šeštokai and Šventežeris;
- 350 villages.

Largest settlements:

- Lazdijai;
- Veisiejai;
- Seirijai;
- Šeštokai;
- Kapčiamiestis;
- Kailiniai;
- Lazdijų village;
- Krosna;
- Teizai;
- Verstaminai [24].

The area of PEA under consideration covers the Alytus County administrative area and includes the Alytus and Lazdijai district municipalities (Graphic Annex 1).

Alytus District	Lazdijai District
Alytaus eldership	Būdviečio eldership
Krokialaukio eldership	Krosnos eldership
Miroslavo eldership	Lazdijų eldership
Simno eldership	Lazdijų town eldership
	Teizų eldership
	Šeštokų eldership

According to the solutions provided for in the master plans of Alytus and Lazdijai districts, the OPTL will cross mainly areas of agricultural purpose and forest areas.

Updated information on the administrative subordination and use of the location of the PEA as well as on social environment will be provided in the EIA Report.

3.2.3. CLIMATIC CONDITIONS

The climate in the PEA area is the climate of mid-latitudes, transitional from maritime into Continental. The climate is more Continental than in other parts of Lithuania, however, compared with other parts, it is characterised by stronger seasonal temperature contrasts. The annual amount of solar radiation received 86 kcal/cm^2 – is one of the largest in Lithuania. In spring and summer, the average monthly air temperature in the PEA area is $0.5\text{-}1.0^\circ\text{C}$ higher than in western or northern regions of the country. July is the warmest month. Its average temperature is $+17.7^\circ\text{C}$, maximum $+37.0^\circ\text{C}$ (the highest in Lithuania). January is the coldest month, with the average temperature -5.4°C and the lowest recorded temperature in January – -40.0°C . The average annual air temperature is $+6.2^\circ\text{C}$.

Daily temperature fluctuations in this region are among the highest in Lithuania. The sands warms up quickly but also releases the accumulated heat easily. Therefore, frosts last longer in spring and start earliest in autumn compared to any other place in Lithuania. The earliest and the latest frosts are recorded here.

Western, south-western and southern winds prevail. In autumn, a strong correlation front in the N-S direction is formed by the prevailing southern, south-western and south-eastern winds (Fig. 3.1). The average speed of these winds is 3.1 m/s , which means that they are half as strong as the winds on the seaside. The average annual precipitation is 673 mm , the majority of them falling on July and August. This is nearly the same as the Lithuanian average. On average, there are 169 days with precipitation in a year. The snow covers the land approx. 75-80 days. However, winters with not permanent snow covering, lasting less than one month, occur quite often. In the warm period, downpours and thunders are more frequent here compared to other parts of Lithuania. The number of such days exceeds 30 per year.

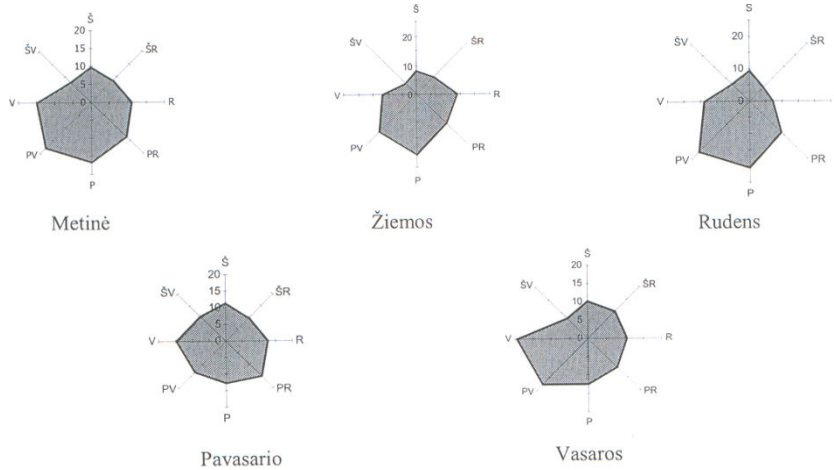


Fig. 3.3. Wind Rose

The average precipitation in the Alytus and Lazdijai districts varies from 576 mm to 683 mm. The lowest precipitation is in winter and the highest – at the beginning of summer. Distribution of precipitation in Lithuania and in the PEA area is illustrated in Fig. 3.4.

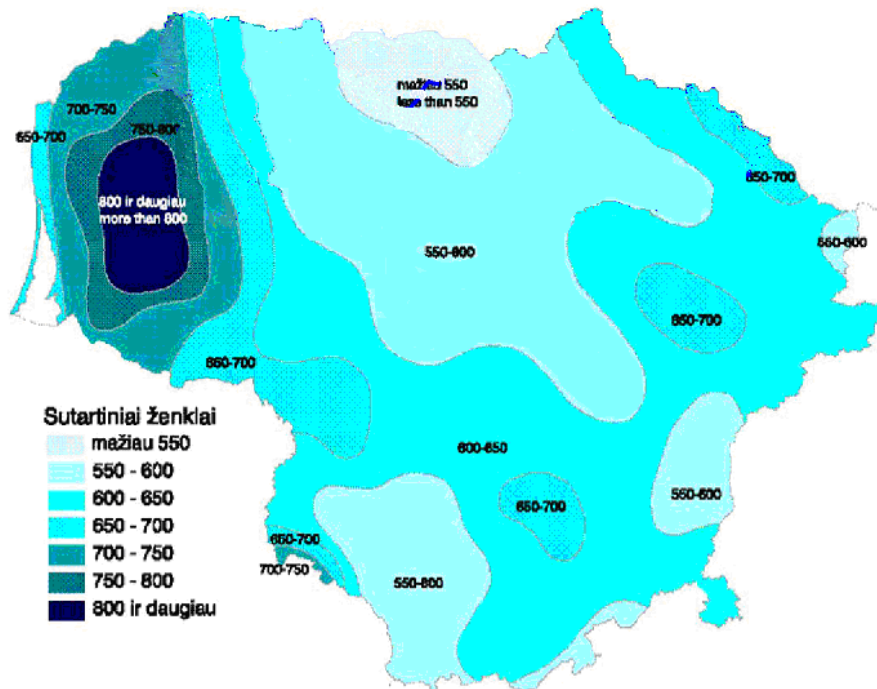


Fig. 3.4. Annual precipitation in Lithuania and in the PEA area

More detailed information on climatic conditions in the Alytus and Lazdijai districts will be presented in the EIA Report.

3.2.4. OROHYDROGRAPHIC LOCAL CONDITIONS

Geomorphologically, the region has a quite diverse terrain in terms of age, origin and structure. There are highlands and plateaux pushed by the glaciers of the next-to-last glaciation and reformed by subsequent geological processes; the highlands left in the central part by the last glaciation, extending from north-east to south-west and a plain formed by their melting waters and occupying the southern – south eastern part of the region; the plateaux left by the glaciers of the last glaciation in the northern – north western part of the region and a plain formed in the same period in the west.

Surface waters in Lithuania are formed by rivers, lakes and ponds as well as the Curonian Lagoon. Lithuania is situated in the excess humidity zone (average annual precipitation - 748 mm, including 512 mm evaporated precipitation and 236 mm flowing by surface into rivers and finally into the sea), therefore, it has a dense river network.

The total number of rivers and streams longer than 0.25 km is over 29,000, with the length totalling over 64,000,000 km, density – approx. 1 km/km². Natural sections of rivers and streams in Lithuania now account for only 15% of the total length (in agrarian plains – just 4 – 9%, in plains with forests 10 – 15%, in agrarian hill areas 15 – 20%, and in hills with forests 40 – 45%).

Alytus District

In Alytus District, lakes occupy 3,2% of the total area. There are 70 lakes in the territory of the Alytus district municipality. The largest lakes include: Atesys (area 109.8 ha), Didžiulis (area 907 ha), Giluitis (area 235 ha), Gudelių (area 120 ha), Kavalys (area 140,4 ha), Obelija (area 572,5 ha), Simno (area 245 ha), Suvingis (area 101,9 ha), and Žuvintas (area 981,8 ha).

The density of the river network in Alytus district is 1.0 – 1.25 km/km².

Areas classified as migration corridors account for 23% of the area of the Alytus district. The Nemunas River Valley – a migration corridor of national importance, which divides the district in half, accounts for more than two-thirds of such areas. The remaining part consists of the valleys of the rivers and streams of the Nemunas basin - Peršėké, Bambena, Varėnė etc.

Main areas of use of water bodies in the district:

- protection of the ecosystems (water bodies in the protected territories, the largest of them being the Ofelija Lake);
- recreation (29 lakes including 11 with additional economic functions; rivers and ponds close to towns and rural areas). The largest lakes: Didžiulio (Daugų), Gilučio, Simno, Kavolio, Suvingio, Alovės;
- fisheries – the Nemunas River, Didžiulio (Daugų), Gilučio, Simno, Gudelių, Kavolio, Atesio, Suvingio and Alovės lakes; fishery ponds [1,3].

Lazdijai District

In Lazdijai district, waters account for 8,2% of the total district area, while the national average is just 2.6%.

This is double the rate of the Alytus District (3.20%), accounting for 6,10% of the territory of the district.

There are 156 in the Lazdijai district municipality, with the area totalling 8968.6 ha. The largest lakes are Ančia – 490.8 ha, Dusia – 2334 ha (among the top ten largest lakes of Lithuania), Galstas - 385 ha, Metelys – 1289,5 ha (among the top ten largest lakes of Lithuania), Seirijis – 503,4 ha, Snaigynas – 207,5 ha, and Veisiejis – 776 ha.

There are 20 ponds in the Lazdijai district with the total area 377.5 ha. The largest ponds: Baltosios Ančios on the Baltosios Ančios River and the Seirijai River (area 252.1 ha), Birutos – called the Lanku Lake, on the Kiaulyčia River (area 38.7 ha), and Kapčiamiesčio on the Nieda River (area 24.0 ha).

In Lazdijai District, the density of the river network is 1.00 – 1.25 km/km².

The entire territory of Lazdijai district fall within the Nemunas River Basin; the river network is formed by a large number of rivers and streams of different lengths. There are approximately 20 of them in the district. The largest ones: Baltoji Ančia is a tributary of the Nemunas (length – 43.5 km), Igara is a tributary of the Nemunas (length 13,8 km), Kiaulyčia flows into Dovine, then – Šešupė (length – 19,4 km) and Nemunas – the territory of the municipality borders a section of approx. 21 km, Seira flows into Baltoji Ančia, further into the Nemunas, length - 32,6 km, Strumbagalvė is a tributary of Kirsna, further – Šešupė length 7,8 km, and Zapsė flows into Baltoji Ančia, further – into the Nemunas, length 9,5 km [2, 4-6].

3.2.5. TERRAIN

Just like in Lithuania as a whole, terrain in the Alytus and Lazdijai districts was formed by glaciers. In the northern part of the county, moraine with hills and ravines (the Sūduva highland) and with steep slopes with boulders prevails. Lakes and bogs occur in numerous ravines in the moraine. Hollows formed by massive ice blocks are filled with waters of large lakes - Dusios, Metelio and Ofelijos. This area may be considered to be a large terminal basin, which penetrates deeply into the internal structure of the Baltic hill range. Previously it was believed that most hills consist of moraine clay loams but it has been established that the hills are made of sand or gravel, mostly stratified, deposits (keim-type hills). A rise has formed to the north from Lazdijai, at the Dusia Lake. It was created by a glacial tongue, which, unable to reach the rise, was forced to bypass it [1-6].

A certain part of the terrain consists of narrow and long blind valleys – the so-called rines or chutes. These rines should be considered to be the most characteristic forms of the marginal section of the last glaciation, which wide-spread in this region. Most rines are occupied by long narrow lakes extending in trains (the so-called rine lakes). The highest concentration of such lake sis observed in the environs of Molėtai, Zarasai – Dusetos and Veisiejai. Quite pronounced regularity is seen in the arrangement of the longitudinal rines. Almost everywhere they are perpendicular to the distal edge of the hill range, therefore, their orientation is different at different sections of the hill range. In South Lithuania (Lazdijai, Veisiejai, Leipalingis), rines extend mainly from the north to the south [1-6].

As many as three related types of fluvioglacial plains are found in South East Lithuania: zandres, fluvioglacial terraces and fluvioglacial deltas. The zandric plains situated in the Lazdijai district were formed by numerous streams flowing from under the glacier. Having just emerged from under the glacier, the streams carried lots of sandy and gravely deposits, which remained near the melting glacier, forming large and flat zandric cones. Connecting with each other, they formed an undulating surface covered with sand and gravel, which follows the Baltic hill range as a nearly continuous belt. This is undulating terrain of a zandre close to the glacier, diversified by numerous karstic hollows left behind by the melting ice blocks. Such terrain is characteristic for the environs of Veisiejai. Having formed zandric plains, numerous glacial streams joined together into a single large river. Numerous Continental dunes characteristic of the south-eastern sandy plain were formed as well. Individual branches of this range of dunes extend down to the south; on the southern side of Kapčiamiestis they also occur on the left bank of the Nemunas River. Soils are not fertile in South Lithuania – sandy areas are overgrown with pine forests [1-6].

3.2.6. GEOLOGIC AND GEOMORPHOLOGIC STRUCTURE

From the standpoint of physical and geographical zoning, the PEA area falls within the region of the Mid-Nemunas plateau of the Baltic lowlands geomorphological zone and the Sūduva highlands region of the moraine highlands of the last glaciation. Geomorphologically, the area is characterised by high diversity of terrain in terms of age, origin and structure. The main orographic complexes from plains to hilly highlands occur here, characterised by very different terrain characteristics and wide range of altitudes. These are the Sūduva and Alytus highlands occupying a large part of the PEA area under consideration and the Mid-Nemunas plateau in the north-eastern part, pushed together by the glaciers of the last glaciation period and by subsequent geological processes. In the western part of the area under consideration, the Rudamina hilly moraine formed by the edge section of the glacier occurs, further to the north-east there is the Lazdijai fluvioglacial valley, the Verstaminai ridgy moraine area, in the

central part – the Dusia limnic tongue glaciodepression and the Luksnenai hilly moraine area. The altitudes in this area vary from 90 to 190 m.

The largest shapes of the present terrain in most parts of the country were created by the last (Nemunas) glacier. By actively accumulating glacial formations and by deforming the underlying sediments of different age and origin, the glaciers formed all the most significant highlands of Lithuania, leaving ridges on the marginal parts of the melting glacier. After complete melting of the glaciers, plains formed in the central parts of the glacial hands and tongues. At many places they were „remade“ by the flows of melting glacial waters or the accumulating basins of these waters. After the latter became shallow, the remaining sandy deposits were formed into dunes. The melting of the glacier was also the start of formation of the present river network. 10 thousand years ago, when the remnants of the last glacier finally melted and the climate became warmer, the latest period of the Quaternary epoch – the Holocene started. In this period, sediments were (and still are) accumulating in the rivers and lakes; intense bogging of water bodies has been taking place – resulting in the formation of sapropel and peat deposits. Erosion processes still continuing today have left a distinct mark in the terrain: the slopes of valleys and hills are lined with gulleys, while the moving layers of deposits have covered the slopes of the rivers and steeper hills.

Quaternary deposits all over Lithuania provide the geological environment for direct human activities. 60% of groundwater resources used for central water supply and 98% of all sand, gravel and clay resources are related to the deposits of this age. Quaternary deposits that form the present terrain determine, at the same time, the landscape characteristics and the ecogeological environment (permeability of soils and dispersion of chemical substances, groundwater safety), the engineering-geological conditions of soil, soil types etc. On the other hand, terrain is being changed considerably by human economic activities [20].

The description of the geological structure and the hydrogeological conditions of the area is based on archive materials, literature and information published on the Lithuanian Geologic Survey's website (www.lgt.lt).

The upper part of the area under consideration is covered by the Quaternary deposits formed by the glacial accumulation processes (Graphic Annex 5). The Quaternary surface is highly diverse lithologically; it has been affected by glacial waters and periglacial processes. Thickness of the Quaternary deposits in the PEA area varies from 80 to 210 m. The lithological composition of the deposits is varied: from moraine sandy loam and clay loam to sand of different fineness levels, gravel, pleurite and clay. Ground moraine and lateral moraine of the Baltic stage of the Upper Pleistocene prevail, as well as sediments of lateral fluvioglacial ridges, limnoglacial sediments of inner ice, and fluvioglacial near-glacial and limnoglacial sediments of near-glacial basins. Thickness of the formations of this stage varies from 7 to 60 m. Among Holocene formations, biogenic deposits prevail; they occur most

frequently in the eastern part of the area to the east and south east from Krokialaukis, in the central part around Simnas town and in the west, in the section between Lazdijai and Šeštokai. In the low peat bogs of the Žuvintas Lake, the maximum thickness of the peat layer is 8.1 m, while at other places it varies from 7 to 9 m. The valleys of all the streams are filled with alluvial deposits.

Glacigenous, limnoglacial and fluvioglacial deposits of Grūda till 3 to 37 m thick occur under the formations of the Baltic stage. In the cross-section of the Quaternary formations, there are deeper rocks of the Mid-Pleistocene Medininkai train (25 - 62 m thick), Žemaitija train (5 - 150 m thick), Dainava train (1 - 34 m thick), and Dzūkija train (10 - 20 m thick).

Pre-Quaternary rocks occur under the Quaternary cover (Graphic Annex 6). In most parts of Lazdijai district, Palaeogene (Pg) rocks of Cainozoic erythema made of sand and sandstone, and in Alytus district – Upper Cretaceous (K₂) rocks of Mesozoic erythema made of white chalk or chalky marl occur.

3.2.6.1. ENGINEERING-GEOLOGICAL CONDITIONS

The engineering-geologic conditions in the area represent the entirety of natural geologic and technogenous conditions on which the territorial planning, selection of locations for various structures, designing and construction of the structures, and other economic uses of the area are based. The geologic conditions are called engineering geologic conditions as they are investigated, assessed and forecasted for the purposes of above-the-ground and underground construction. Engineering-geologic conditions is the result of interaction of different elements of the geologic environment such as terrain on the surface of the earth, soils, rocks, groundwater, geologic processes and phenomena. The engineering-geologic conditions for construction and for the use of structures are determined by the prevailing soils and rocks of different origin, composition and physical and mechanical properties as well as by current geologic processes and phenomena [20].

Engineering-geologic conditions for the construction of the PEA facilities are favourable in the larger part of the area under consideration. Clay and clay loam (gt III bl, lgt III bl) of the glacigenous (lateral moraine, limnoglacial formations of inner ice) and limnoglacial deposits are classified as cohesive firm and very firm soil, while fluvioglacial sand and gravel and limnoglacial sand (f III bl, lgt III bl) – as cohesionless strong and very strong soils (The Engineering Geologic Map of Lithuania, scaled 1:500 000, LGT, 1992). Organogenic peat and terrigenous alluvial deposits occurring in a small part of the area under consideration are classified as muddy highly compressible soils. These deposits are not favourable for the construction of engineering structures.

Clay rocks prevailing in the area are characterised by low density ($e > 0.80$) and increased compressibility, while non-cohesive disintegrated rocks are usually of medium density, medium compressibility and medium firmness.

The engineering-geologic characteristics of the Pre-Quaternary rocks are not very important for the project as the engineering works will be carried out on a relatively shallow level.

3.2.6.2. GEOLOGIC PROCESSES AND PHENOMENA AND THEIR PREVENTION

Exogenous and endogenous geologic processes and phenomena prevail in the territory of Lithuania. Some of them, e. g. karst occur in a quite large area, while others such as slides and suffosion are of limited nature. The occurrence and evolution of geologic processes affects the ecogeological conditions of territories and pose a threat to the stability of territories and structures built therein as well as to economic activities and safety of people.

Landslides are most widespread and most dangerous for structures among all the geologic processes and phenomena occurring in Lithuania. Landslides form not only on natural slopes – lake shores, slopes of the valleys of the Nemunas and other rivers, but also on the shores of artificial water bodies, slopes of cultural heritage objects such as old castle mounds, slopes of excavations and banks at main roads, on the walls/slopes of quarries and landfills. Landslides occurring in urban areas pose a particular hazard. They can do considerable damage to municipal facilities as they cause emergencies in buildings, damage to engineering systems, and sometimes deaths. Response actions in case of landslides can be very costly.

Bogs represent an important obstacle to construction as they consist of weak soils of peculiar composition and properties – peat, sapropel, mud. Compressibility of these soils is high and varies. Peat are either removed during construction or the structure is built on piles.

Endogenous processes are also observed in the territory of Lithuania such as movements of the earth crust and earthquakes.

Prevention is the main purpose of investigation of geologic processes and phenomena. This is possible only on detailed study of the conditions for the occurrence and evolution of these processes and phenomena and on determination of the contributing factors [20].

3.2.6.3. HYDROGEOLOGIC CONDITIONS

Groundwater is a component part of the hydrosphere. It occurs beneath the aeration zone – deposits not saturated with water occurring between the earth surface and the groundwater surface. The surface of the groundwater level occurs at different depths and closely follows the features of terrain, however, the flow direction, intensity of inclination and hydrodynamics

are determined by rivers. Groundwater aquifer is found on the first continuous impermeable layer on top of the Quaternary cover. In the areas covered with sand and boggy areas it often has an underlying moraine clay loam layer or, less often, limnoglacial clay. In the sediments layer, groundwater is accumulated by different sands, pebbles, peat and clay loam weathering cracks or sandy lenses. Considerable amounts of groundwater are accumulated in bogs.

In the area of Alytus district municipality, groundwater occurs at the depths of 10 – 20 m or deeper, near the Dusia and Meteliai lakes – at the depth of 1 - 3 m, while in the most part of Lazdijai district – at 5 – 10 m.

Quaternary intermoraine aquifers (Q) are important for the supply of fresh groundwater to the Alytus town and settlements in the Alytus and Lazdijai districts. In this region, the intermoraine Nemunas deposits aquifer, the Medininkų – Žemaitijos intermoraine aquifer, and the Žemaitijos – Dainavos intermoraine aquifer are found.

Information on the explored fresh groundwater resources in use and the natural protection of these resources in the Alytus town and Alytus and Lazdijai districts are presented in Table 3.1 and Graphic Annex 1.

Table 3.1. Explored fresh groundwater resources in use

Municipality	Wellfield	Groundwater aquifer in use	Wellfield sub-group*
Alytus town and district	Vidzgirio	Q(agII-lžm-dn)	IIb ²
	Radžiūnų	Q(agII-lžm-dn), K ₂	IIb ²
	Strielčių	Q(agII-lžm-dn)	IIb ²
	Simno (Alytaus r.)	Q(agII-lžm-dn)	IIb ¹
Lazdijų district	Mockavos railway (Lazdijų r.)	Q(agIIIbI)	IIb ¹
	Lazdijų mst.	P	IIb ¹
	Seirijų	Q(agIII-lmd-žm)	IIb ¹
	Veisiejų	Q(agIII-lmd-žm)	IIb ¹

Note:

In the Lithuanian Hygiene Standard HN 44:2006 „Setting and Maintenance of Sanitary Protection Zones for Wellfield“, wellfields are classified into 3 groups and 8 sub-groups according to the nature of relation to precipitation, surface water and groundwater:

Group I – closed wellfield;

Group II – semi-closed wellfields divided into subgroups: more close – in multi-layer deposits (IIa¹) and near-rivers (IIa²); more open – in multi-layer deposits (IIb¹) and near-rivers (IIb²);

Group III – open wellfields divided into subgroups: ground (IIIa); shore (IIIb¹) and infiltration (IIIb²).

The Palaeogene aquifer widespread in Lazdijai district is used by the wellfield of Lazdijai town.

3.2.6.4. GROUNDWATER PROTECTION

Two types of deposit areas can be identified according to lithological composition and filtration properties. The first type includes clay, clay loam and sandy loam soils with the filtration coefficients usually not exceeding 0.01 - 1 m/day. The second type of loose sandy – pebbly soils includes different alluvial sands, fluvio-glacial and sandy limnoglacial formations of higher degree of coarseness with the filtration coefficients 5 - 25 m/day; in some sections filtration properties exceed the specified ones several times. In such sections the protection level of groundwater is lower.

In terms of the PEA, an impact to the surface and shallow groundwater only is anticipated; due to shallow engineering works the probability of impact on intermoraine aquifers and pre-Quaternary artesian aquifers is low.

3.2.6.5. PROTECTED GEOLOGIC OBJECTS

Except for a spring of the Baltasis Ežeras (Lazdijai spring) and the Simnas bolder exposition, there are no protected geologic sites in the PEA area under consideration. The spring is on the western shore of the Baltasis Ežeras, while the boulder exhibition – at S.Dariaus ir S.Girėno St. 33, Simnas.

3.2.7. RESOURCES OF THE EARTH IN TERRIOR

Peat deposits prevail in the PEA area under consideration in the Alytus district municipality; no peat deposit is currently in use. The district also contains five sand, four gravel, three sapropel, two clay and one fresh-water limestone deposits. Most of these deposits are currently not in use. Only two sand deposits (Norūnų plot II and Radžiūnai), three gravel deposits (Kulabiškės, Talokiai and Putinai) and both clay deposits (Ūdrija and Revai) are used (Graphic Annex 1).

Lazdijai district is not abundant in mineral resources. Gravel is the most important resource. Only six gravel deposits are in operation in Lazdijai district: Klapotkė, Palazdijai II, Šlavantai lot I, Vainiūnai lot I, Mangarotas, Bagatėlius. One of the deposits has been exploited in full. There are abandoned gravel deposits such as Šlavantai lot II.

The number of sand deposits in Lazdijai district is a bit smaller. The sand deposits within the area of the municipality are not in use.

Lazdijai municipality also has peat deposits but they are not in use. There are several deposits of deep-water limestone (Žališkės, Rimiečio and Kaviškės) but they are not used either. The district also has the only deposit of sapropel – not used at present.

Information on the mineral resources deposits in the area of the OPTL is provided in Table 3.2.

Table 3.2. Deposits of mineral resources in the area of the OPTL.

Item No..	Identification No. in LGS database	Name	Resource	Condition	Address
1	214	Vankiškių samaninė	Peat	Not in use	Alytaus r. sav.
2	2483	Kavalys	Sapropel	Not in use	Alytaus r. sav.
3	667	Bernotiškės	Peat	Not in use	Alytaus r. sav., Alytaus sen., Bernotiškių k.
4	461	Patrakė	Peat	Not in use	Alytaus r. sav., Krokialaukio sen., Patrakės k.
5	665	Krokininkai	Peat	Not in use	Alytaus r. sav., Krokialaukio sen., Krokininkų k.
6	211	Ponkiškiai	Peat	Not in use	Alytaus r. sav.
7	212	Meteliai	Peat	Not in use	Alytaus r. sav.
8	210	Bažava	Peat	Not in use	Alytaus r. sav.
9	664	Giraitė	Peat	Not in use	Alytaus r. sav., Simno sen.
10	1389	Obelninkai	Sand	Not in use	Alytaus r. sav., Miroslavo sen.
11	219	Krikštėnai	Peat	Not in use	Alytaus r. sav.
12	207	Veliuonis	Peat	Abandoned	Alytaus r. sav.
13	666	Cibiliekai	Peat	Not in use	Alytaus r. sav., Krokialaukio sen., Cibiliekų k.
14	2481	Ūdrija	Sapropel	Not in use	Alytaus r. sav.
15	467	Čižikai (Alksnynas)	Peat	Not in use	Alytaus r. sav., Krokialaukio sen., Čižikų k.
16	1393	Ūdrija	Clay	Used	Alytaus r. sav., Krokialaukio sen.
17	2480	Žuvintas	Sapropel	Not in use	Alytaus r. sav.
18	460	Žuvintas	Peat	Not in use	Alytaus r. sav., Simno sen.
19	213	Dzingiškiei	Peat	Not in use	Alytaus r. sav.
20	668	Mikasa (Užubaliai)	Peat	Not in use	Alytaus r. sav., Alytaus sen., Užubalių k.
21	1382	Putinai	Gravel	Used	Alytaus r. sav., Alytaus sen.
22	1400	Strielčiai	Gravel	Not in use	Alytaus r. sav., Punios sen.
23	2491	Žališkė	Deepwater limestone	Not in use	Alytaus r. sav.

Table 3.2 continued

Item No.	Identification No. in LGS database	Name	Resource	Condition	Address
24	1390	Dirmiškės	Sand	Not in use	Alytaus r. sav., Miroslavo sen.
25	4036	Revai	Clay	Used	Alytaus r. sav., Alytaus sen., Volungių k.
26	2296	Norūnai (II sklypas)	Sand	Used	Alytaus r. sav., Alytaus sen.
27	2297	Norūnai (III sklypas)	Sand	Not in use	Alytaus r. sav., Alytaus sen.
28	1387	Talokiai	Gravel	Not in use	Alytaus r. sav., Alytaus sen.
29	1388	Radžiūnai	Sand	Used	Alytaus r. sav., Alytaus sen.
30	1381	Kulabiškės	Gravel	Used	Alytaus r. sav., Punios sen.
31	619	Birščių plynė	Peat	Not in use	Lazdijų r. sav., Krosnos sen., Birsčių k.
32	1087	Krosnėnai	Sand	Not in use	Lazdijų r. sav., Šeštokų sen.
33	610	Kirsna	Peat	Not in use	Lazdijų r. sav., Šeštokų sen.
34	1181	Bielėnai	Gravel	Not in use	Lazdijų r. sav., Būdviečio sen.
35	4101	Bielėnai II	Sand	Not in use	Lazdijų r. sav., Būdviečio sen., Bielėnų k.
36	1182	Beviršiai	Gravel	Not in use	Lazdijų r. sav., Lazdijų sen.
37	1195	Klapotkė	Gravel	Used	Lazdijų r. sav., Lazdijų sen.
38	1187	Palazdijai II	Gravel	Used	Lazdijų r. sav., Lazdijų sen.
39	1185	Papalazdijai	Gravel	Not in use	Lazdijų r. sav., Lazdijų sen.
40	1186	Raistai	Gravel	Not in use	Lazdijų r. sav., Šventežerio sen.
41	616	Ganiava	Peat	Not in use	Lazdijų r. sav., Šventežerio sen.
42	613	Rimutis	Peat	Not in use	Lazdijų r. sav., Šeštokų sen.
43	2468	Rimietis	Sapropel	Not in use	Lazdijų r. sav.
44	612	Karužai	Peat	Not in use	Lazdijų r. sav., Lazdijų sen., Karužų k.
45	611	Raišupis	Peat	Not in use	Lazdijų r. sav., Lazdijų sen., Rimiečio k.
46	614	Roliai	Peat	Not in use	Lazdijų r. sav., Šeštokų sen., Rolių k.
47	2490	Rimietis	Deepwater limestone	Not in use	Lazdijų r. sav.
48	615	Bukta	Peat	Not in use	Lazdijų r. sav., Lazdijų sen., Buktos k.
49	2295	Bagatėlius	Gravel	Not in use	Lazdijų r. sav., Šeštokų sen.

Table 3.2 continued

Item No.	Identification No. in LGS database	Name	Resource	Condition	Address
50	1180	Elzbietina	Gravel	Not in use	Lazdijų r. sav., Lazdijų sen.
51	684	Žaltytis	Peat	Not in use	Marijampolės sav., Liudvinavo sen.
52	675	Sūsia	Peat	Not in use	Kalvarijos sav., Kalvarijos sen.

3.2.8. SOIL

The Lithuanian National Classification of Soils (LTDK-99) has been adapted to the international FAO-UNESCO Soil Map of the World (1994) and the ISSS-ISRIC-FAO World Reference Base for Soil Resources (1998): primary soil, lime soil, cambisol, luvisol, eutric planosol, albeluvisol, sandy soil, podzolic soil, gleyic soil, peat soil, salpic soil and fertiliser soil.

According to the classification presented in the Lithuanian Hygiene Standard HN 60:2004 (Official Gazette No. 41-1357) [22], the majority of the soils prevailing in the PEA area are classified as soils resistant to chemical contamination (sand and sandy loam) or soil with medium resistance (clay loam). Only small areas of soils formed on clayey rocks are not resistant to chemical contamination. Organogenic peaty soils accounting for a large part of the project area are inclined to accumulate chemical pollutants, in particular heavy metals.

Soils in Lithuania have formed in the mineral soil-forming rocks (mainly moraine, limnoglacial, fluvioglacial, alluvial, eolic and biogenic (peat)). According to granulometric composition, mineral rocks consist of sandy light loam (34,3%), clay loam of medium heaviness (17,8%), sand (12,8%), sandy loam (6,6%), cohesive sand (4,9%), and dusty clay (4,2%). The carbonate content varies: soil-forming rocks with the highest carbonate content are found in the central lowlands, in particular its northern part (carbonate content up to 30%). Lower carbonate content is observed in the Baltic highlands (10-15%), low – in the western part of Žemaičių highlands and Pajūrio lowlands, and the lowest – in Medininkų highlands.

Different soils have formed in the soil-forming rocks under the action of different factors – jauric, de-claying, cambisolic, turfing and bogging; they have been divided into 12 groups according to the soil-formation characteristics determining the specific structure and properties of soil, moisture conditions and fertility, except for cases where the properties are determined by the soil-forming rocks.

Albeluvisols are soils that have the diagnostic property of albeluvisolisation and the mollic horizon. A jauric horizon is characterised by albeluvisolisation, penetrating in the form of tongues into the mollic illuvial horizon. Albeluvisols are classified as saturated or non-

saturated with bases, stagnic and gleyic or deeper gleyic albeluvisols. Such soils account for approx. 20.4% of the soil cover in Lithuania. Humus content is low or medium (1-2,5%), acidity is medium or high (pH 4-5), nutrient content is low, usually lime and amelioration have been applied. Small areas of typical saturated albeluvisols are found in the northern and north-eastern part of Lazdijai district, at the large lakes – Dusia ir Metelys.

Sandy soils account for approx. 11.9% of soil cover in Lithuania. These are soils with a low or medium level of development, thickness over 100 cm, sand or gravel, fine or medium coarseness. Carbonate, cambisolic, ordinary, jauric and gleyic or deep gleyic sandy soils can be found. Their economic value is low. The largest areas of sandy soil are situated in the Dzūkija fluvioglacial and the seaside eolic sandy areas. Unsaturated ordinary sandy soils are more widespread in the southern part of the Lazdijai district, where there is the Dainava plain formed by the water from the melting glacier (fluvioglacial plain). Small areas of saturated ordinary sandy soils are found all over the area of the municipality.

Luvissols account for the largest part of the soil cover in Lithuania (approx. 21%). These are soils which accumulate, in their mollic horizons, salt and clay particles washed out from the upper alluvial horizon. The occurrence of such soils is gradually and not steeply increasing in the deeper layers of the alluvial horizon. Luvissols can be carbonate, ordinary, jauric, stagnic and gleyic or deep gleyic soils. They are mainly found in the east of Žemaičių highland and in the west of Aukštaičių highland, where the carbonate content of soil-forming rocks is lower, and are characterised by medium humus content (2 - 3%), low acidity or slightly acid reaction (pH 5 - 6). In the northern and north-western parts of the district, ordinary carbonate luvissols and ordinary carbonate luvissols with medium erosion occur.

Jauric soils and peat soils (Krakinio bog) occur in Lazdijai district in small areas. Alluvial plains have formed along the Nemunas River.

According to the soil deflation potential, Alytus county is considered to be an area with low but partly deflatory potential.

This is determined by the forest rate of the Alytus county (46%). However, the county is the first in Lithuania according to the amount of eroded soils, accounting for 42,4% of all eroded soils in Lithuania. The county exceeds the national average (16,15%) 2.6 times. Such situation in terms of soil erosion is determined by the granulometric and terrain characteristics of the soil surface. Sands, sandy loams and, at some places, sandy clayey loams prevail in the area. The situation is stabilised to some extent by abundant forests. The prevalence of eroded soils is closely related to the prevalence of forests. About 46,9% of soils in Lazdijai district are eroded soils. This is due to low forest rate and the highly cut terrain (Sūduvos highlands).

In the southern part of the municipality, the rate of use of lands for agriculture is low; the soils here are sensitive to wind erosion, while arable lands are not productive. To the north from Kapčiamiestis, soils are more sensitive to water erosion, productivity of arable lands – medium. Soils around the Metelys, Dusia and Ofelija lakes are less sensitive to intensive farming, the lands are of medium productivity and farms of different types and sizes can be combined.

3.2.9. LANDSCAPE

The area of PEA being considered falls within the region of South Lithuanian highlands, to be more exact, the Sūduva hill range. Although the terrain is impressive by the diversity of its landscape elements – numerous lakes, hills, forests, wet depressions overgrown with shrubs, river valleys – often it has lost its natural character, primarily due to considerable changes to the soil covering and intensive farming in strongly anthropogenised landscape. Besides, there are many plains in the northern part of Lazdijai district.

According to physical geographic zoning, the area is situated in the region of South Lithuanian highlands (hilly moraine terrain), where the surface consists of mixed moraine formations. The moraine area in which the PEA area is situated, is formed from numerous adjacent moraine chains divided into ranges of ridges and oval hills, separated by boggy depressions. The ridges consist of stratified formations, with individual blocks pushed together, and covered with moraine clay loam patches at some places. In the central, the highest, part the prevailing landscape is characterised by large and steep ridges and boggy terrain with prevailing sandy loams. The shapes and the ridges become smaller on both sides of the highest points.

Lakes of various types, with their own basins, are characteristic of the area under consideration and its closest environment. The Dusia lake has the status of a hydrographic reserve. The area of the lake is 2 334 ha, the area of its basin is 84,5 km². The basins of Sutré, Šventupė (with Pečiagrinda) and Pryga rivers account for 54,5% of the said basin, the remaining part consists of the slopes of the lake and small straightened streams and amelioration canals (25 in all), which mostly flow to the western side of the lake. The riverbeds of the largest tributaries to the lake, except Sutre, have been largely canalised. Since 1972 the level of the Dusia lake has been regulated (the design lift is approx. 0,5 m, but actually about 0,3 m) by a controlling sluice installed at the outflowing Spernia stream. The area of the Metelys lake – 1293 ha, the area of the feeding basin – 42,7 km². Metelys forms part of the Peršėkė basin; Metelytė stream outflows from the northern part of the lake. The largest tributary – Dubelis stream in the southern part. It accounts for 45% of the area of the basin feeding the lake (concentrated inflow). The remaining part of the basin (mainly eastern) is drained by canalised streams (approx. 26% of the basin area) and amelioration ditches.

Water volume in the Metelys lake – 0,087 km³, shore length – 18,8 km, bending coefficient – 1,47, average depths – 6,8 m (max depth – 15,0 m), average water level fluctuation amplitude – 32 cm. In 1968 a 0,7 m reinforced concrete dam was built on the lake, which has probably speeded up the abrasion of the shores (in particular eastern and north eastern). The damming conditions have been imposed on the lake before; its water was used by a mill before World War II.

The Žuvintas reserve bordering the area under consideration consists of a eutrophic shallow lake, low bogs and high bogs, which started prevailing after lake areas have become overgrown. The Žuvintas lake is in the mid-Dovinė river. This river outflowing from the Dusia lake is 67,8 km long and has several names. From its source to the Simnas lake it is called Spernia, between the Simnas and Žuvintas lakes – Bambena, and downstream Žuvintas - Dovinė. Other larger rivers of the reserve include Kiaulyčia and Rudė. It has been established that the inflow of water into the Žuvintas lake is 1,66 m³/s on average (at the mouth of the Bambena stream), and the outflow is 2,03 m³/s (at the source of Dovinė). The Bambena stream brings to the lake approx. 20,000 tons biogenic substances every year and approx. 3500 tons – from the basin of the lake. The surface area of the Žuvintas lake has been rapidly decreasing and in 1986 was just 880 ha. The average depth of the lake is approx. 0,6 m, the deepest point approx. 3 m. Approx. 2000 ha of low peat bogs are situated near the lake; to the west and north west – approx. 3400 ha of high peat bogs. Transition bogs, in small areas, are found between the bogs of these two types.

As part of an analysis of the natural framework of the Alytus district presented in the master plan of this district (Graphic Annex 3), it must be noted that the natural frame (NF) is a very important territorial multi-functional system ensuring the overall stability and viability of landscape and the continuity of migration relations occurring within it. Ensuring stability of natural environment by maintaining, forming or improving the quality of the NF's elements in an area guarantees a higher economic potential of the area and better quality of living environment. The NF of the Alytus district territory forms an integral part of the NF of entire territory of the Republic of Lithuania. All the parts of the NF identified in the Alytus district occupy about 71% of the territory. They overlap with the conservational areas and areas used for different economic purposes. The NF system is divided into the following parts:

- geo-ecological divide;
- focal points/areas of geosystems' stabilisation;
- migration corridors.

The PEA area under consideration at the start of the OPTL, near the transformer substation being designed, is the Sabališkių forest migration corridor of microregional significance. Further the OPTL should cross the internal stabilisation zone of the Gudelių-Duselės-Pluvijos-

Luksnėnų-Ūdrijos lakes. Further to the west, the Peršėkė migration corridor of regional importance will be crossed. Then the line crosses the divide of national significance, extending from the eastern side of the Žuvintas natural complex, through the Meteliai regional park to the Nemunas river, which forms a migration corridor of national significance at this point. Further to the west there is the Simnas lake and fishery ponds and the Spernia river migration corridor of microregional significance, with a transition into the Gilutis internal stabilisation area further to the west. The Kalniškės forest internal stabilisation area starts at the boundary of the Lazdijai district in the west.

Generally, the NF identified in the territory of Lazdijai district is an integral part of Lithuania's NF, forming the spatial concept of both the district and the country as a whole. According to the NF presented in the master plan of the Lazdijai district, the NF parts identified in the district account for 78% of its area. They overlap with conservation areas, forest areas, agricultural areas and, at many places, with anthropogenically active (urban) areas. The latter overlapping is most problematic from the environmental point of view. Thus the relatively stable internal stabilization area of Kalniškės forest undergoes a transition to the internal stabilisation area of Krosnėna-Gembašilis, which includes a landscape under strong anthropogenic impact. The latter joins the Kirsnos-Raišupio streams' migration corridor, which will be certainly crossed by the designed line of the PEA. Finally, there is a huge geo-ecological divide along the Lithuanian – Polish border, which contains natural areas, areas to be maintained, and areas requiring restoration. This zone surrounds the Lazdijai town almost completely, therefore, the designed OPTL will certainly cross this area.

The EIA Report will assess the impact of the planned economic activity both on the NF of the Alytus and Lazdijai districts, and on separate elements thereof.

Additional adverse impact on the natural landscape can be assessed from two aspects. Firstly, if the OPTL will extend along a strongly urbanised, i. e. damaged natural landscape, the impact on natural landscape will be minimal. On the other hand, as the OPTL crosses the natural elements of landscape, visualisation of the designed facility should be minimised. It should only be increased at places where this is necessary to insure protection of both migrating and local birds.

Furthermore, forms of surface covering and even terrain could be restored during construction by recultivating construction sites and by restoring former features of landscape.

3.2.10. FLORA, FAUNA AND OTHER BIODIVERSITY

Fauna and natural habitats

The PEA area under consideration extends through the botanical geographic regions of the highlands and plains of South Lithuania. The Southern Lithuanian highlands are characterised

by forests of broad-leaf trees growing in fertile soils with very rare mountain species, pine forests with the endemic species of the eastern part of Central Europe *Koeleria grandis* and *Festuca psammophila*; by pine forest, forest outskirts, and slope communities with mountain relicts and thermophilic species. The region of the Southern Lithuanian plains is characterised by oak and hornbeam forests and pine or pine-oak edaphic climax forests.

The area under consideration is not homogenous – urban areas and agricultural lands form a mosaic together with the areas of natural ecosystems that are damaged to a higher or lesser extent; in larger formations, ecosystems undamaged by anthropogenous activities can be found. The natural ecosystems are very diverse and includes forests, bogs of various types, meadows, standing and flowing water ecosystems.

Forest ecosystems do not account for large areas in the PEA area under consideration. Kalniškės, Trakiškės, Giraitės, Buktos and Rinkoto forests are of larger scope. However, wide diversity of communities is characteristic of the forests, comprising three classes of flora. The class of broad-leaf and mixed forests is represented by the communities of *Tilio-Carpinetum betuli*, *Circaeo-Alnetum* and *Querco-Ulmetum*. From the wet alder forest class, communities of *Carici elongatae-Alnetum glutinosae*, *Sphagno squarrosi-Alnetum glutinosae* and *Carici elongatae-Quercetum* are found. The widest diversity of communities is seen in the conifer forests including such communities as *Peucedano-Pinetum sylvestris*, *Vaccinio uliginosi-Pinetum*, *Sphagno girgensohnii-Piceetum*, *Betulo pubescentis-Piceetum* and *Querco-Piceetum*.

The area is not characterised by high rate of bogginess but bogs of all types are found here. Small bogs often form inserts into the forest areas, occupy over-flooded areas between hills and near the rivers, and occur at lakes. Buktos and Žuvinto bogs are the largest ones. In high peat bogs, *Ledo-Pinetum*, *Sphagnetum magellanicum* communities prevail; *Sphagno tenelli-Rhynchosporium albae* communities are sometimes found. *Caricetum lasiocarpae* communities prevail in transition bogs. Fens are represented by the communities of *Caricetum nigrae* and *Caricetum paniceo-lepidocarpae*.

Natural and relatively natural meadows occupy small areas, which concentrate in the stream valleys, near lakes, on slopes of hills and in the outskirts of forests. Alluvial communities of fertilised meadows (*Molinio-Arrhenatheretea elatioris*) prevail in the valleys, while on the slopes step meadow (*Festuco-Brometea erecti*) communities which are rare in Lithuania can be found. .

An inventory of a number of habitats included in Annex I to the EU Habitats Directive has been taken in the PEA area under consideration: 6210 Dry grasslands, 6410 Molinia meadows, 6430 Hydrophilous tall herb fringe communities, 6450 Alluvial meadows, 6510 Mesophile grasslands, 7110 Active raised bogs, 7120 Degraded raised bogs, 7140 Transition mires and quaking bogs, 7160 Fennoscandian mineral-rich springs and springfens, 7230

Alkaline fens, 9050 Herb rich forests, 9080 Deciduous swamp woods, 9160 Hornbeam forests, 91D0 Bog woodland, 91E0 Alluvial forests.

In the area under consideration, species included in the Red Book of Lithuania and Annex II to the Habitats Directive are found: *Cypripedium calceolus*, *Liparis loeselii*, *Thesium ebracteatum*, *Saxifraga hirculus*, *Hamatocaulis vernicosus*. Many species listed in the Lithuanian Red Book are found: *Toffieldia calyculata*, which is found at only one place in Lithuania, *Gentiana cruciata*, *Eriophorum gracile*, *Pedicularis sceptrum-carolinum*, *Huperzia selago*, *Allium ursinum*, *Bromopsis benekenii*, *Hedera helix*, *Dactylorhiza fuchsii*, *Dactylorhiza incarnata*, *Dactylorhiza ochroleuca*, *Dactylorhiza longifolia*, *Dactylorhiza maculata*, *Corallorhiza trifida*, *Hordelymus europaeus*, *Poa remota*, *Lathyrus laevigatus*, *Corydalis cava*, *Corydalis intermedia*, *Dactylis polygama*, *Agrimonia procera*, *Cerastium sylvaticum*, *Hypericum hirsutum*, *Vicia dumetorum*, *Arctium nemorosum*, *Mentha longifolia*, *Polemonium caeruleum*, *Peplis portula*, *Carex muricata*, *Platanthera chlorantha*, *Callitriche hermaphrodita*, *Neckera pennata*, *Lejeunea cavifolia*, *Paraleucobryum longifolium*, *Centunculus minimus*, *Salix lapponum*, *Drosera intermedia*, *Trifolium rubens*, *Lathyrus pisiformis*, *Vicia pisiformis*, *Laserpitium latifolium*, *Laserpitium prutenicum*, *Gentiana pneumonanthe*, *Pulmonaria angustifolia*, *Veronica polita*, *Melitis melissophyllum*, *Prunella grandiflora*, *Centaurea phrygia*, *Senecio congestus*, *Alisma gramineum*, *Alisma laceolatum*, *Allium vineale*, *Epipactis atrorubens*, *Orchis mascula*, *Malaxis monophyllos*, *Cyperus fuscus*, *Cladium mariscus*, *Carex distans*, *Scolochloa festucacea*, *Trisetum sibiricum*, *Glyceria nemoralis*, *Festuca altissima*.

The PEA area under consideration has a plant cover that is valuable on the national scale due to the species, communities and habitats forming it. As elements of plant diversity are always localised geographically, the area of future economic activities (locations of planned structures, maintenance access roads, construction site areas) should be as exact as possible in order to assess the impact. The EIA of the planned activity should cover the potential impact on the natural plant cover (protected species; forest, grassland, bog and water plant communities and habitats) both in the construction and operation phase. The impact assessment must be based on the data obtained through cartography of valuable elements of the plant cover (plant species, communities and habitats), determination of status and consideration of compensatory/alternative solutions.

Invertebrates

According to zoogeographic zoning in terms of prevalence of butterflies [32], the area of planned economic activities falls within the Sudūva region of the Baltic province and the Užnemunė subregion of the South East Lithuanian – North Belarus province with the characteristic complexes of butterflies and other insects. Mostly southern butterfly species are found here, including a number of representatives of steppe fauna: *Hipparchia aelia*, *Melitaea*

didyma, *Strymon spini*, *Erynnis tages* etc. In the Užnemunė subregion, where very dry places are less abundant, southern species *Thyria jacobea*, *Simyra nervosa* etc. not found in other localities were found. To generalise the invertebrate fauna in the PEA area, one may state that fauna typical of southern part of Lithuania is found here. There are many lakes and rivers connecting them. In the wet meadows on the lake and river banks, mollusc species of EC significance – vertigos have been found: *Vertigo moulinsiana*, *Vertigo angustior* ir *Vertigo geteri* entered in Annex II to the Habitats Directive. All the three species were found near the Meteliai lake and Meteliai river. Habitats of this type are also important for such species as *Aeshna viridis*, *Leucorrhinia albifrons*, *A.pectoralis*, *Anax parthenope*. These species leave the places of development in the imago phase and feed, for quite a long time, in the meadows near lakes and forests. It has not been studied in greater detail, but *Graphoderus bilineatus* and *Dytiscus latissimus* undoubtedly live here. If the latter requires larger water bodies, the former is satisfied with water bodies of any size where different water plants are abundant.

Dry grasslands with goldenrods of this region represent the main habitats for protected species *Thyria jacobea*, while sandy grasslands with *Securigera varia* – for *Zygaena ephialtes*, *Z.loti*, *Lycaena coridon*. The relevant grasslands must be preserved for these species. The protected species *Papilio machaon* is common for the area, while *Lycaena dispar* – on the shores of the lakes and rivers. Wet natural fertile grasslands are important for both species.

To sum up an overview of the rare invertebrate species, one may conclude that their protection requires preserving the present, even though small, water-bearing low bogs, which are important for molluscs *Vertigo sp.*; as well as shallow water bodies important for disappearing species of damselflies and natural dry grassland areas important for southern butterflies' species. The impact on these territories must be described in the EIA Report. For this purpose an inventory of all small bogs (especially sedge fens) must be taken, assessing their suitability for the vertigos; as well as of shallow natural water bodies important for damselflies; and natural dry grasslands, providing for their recultivation opportunities at the same time.

Fish

No fish species entered in the Lithuanian Red Book are found in the area of the PEA or in its closest environment. However, a number of protected fish species of Community significance (listed in Annex II to the Habitats Directive) are found in the Nemunas River. These include *Aspius aspius*, *Rhodeus sericeus amarus*, *Cobitis taenia*. Spined loach also lives in the Metelis lake group. Some fish species protected in the Community are quite abundant in the small tributaries of the Nemunas and other small clean streams – such as *Cottus gobio* and *Lampetra planeri*.

The type of the PEA does not involve any changes to natural lakes and rivers or their beds fragments, therefore, no separate examination of impact on the ichthyofauna is required, The more so that the protection of natural water bodies is ensured by a number of Lithuanian legal acts.

Reptilians and Amphibians

Reptilians and amphibians in the area are characterised by southern species including protected species listed both in the Lithuanian Red Book and Annex II to the Habitats Directive. Among them, European pond terrapin (*Emys orbicularis*) occupies a special position; its viable populations has survived in the environs of the PEA although it is probable that it can be found also in the area under consideration. In this case preservation of undamaged small open water-bearing bogs, where the populations have survived, is critical, together with the open slopes of the adjacent southern exposition. This species has been included in the Lithuanian Red Book (Category I) and Annex II of the Habitats Directive, just as a representative of amphibians occurring in the area - *Bombina bombina* (LRB, Category 5, HD Annex II). To ensure protection of this species, small open shallow water bodies and small swamps must be preserved. Among protected species of national importance, mention should be made of the amphibian species related to sandy soils - *Bufo viridis*, *B. calamita*. They spawn in small swamps or shallow well-heated water bodies and hunt in their environs at night. *Hyla arborea* (LRB, Category 3), living near small swamps and ponds overgrown with shrubs, can also be found in the planned area. This is a southern species, so far found only in the Lazdijai and Varena districts and its prevalence is highly local, therefore, all the places of its occurrence must be protected.

To sum up the overview of the rare reptilians and amphibians, one may conclude that first of all, in order to ensure their protection, water-bearing bogs between hills must be preserved irrespective of their size, together with shallow water bodies or larger boggy areas. The impact on such areas must be considered in the EIA Report. With this aim in view, an inventory of all small bogs must be taken, having regard to their suitability for the European pond terrapin and for the spawning of amphibians.

Birds

The area of the PEA under consideration is characterised by a wide variety of birds and by abundance of some bird species. This is determined by a relatively large diversity of habitats and, most importantly, the proximity of natural areas of exceptional ornithological significance, namely, Žuvintas and Meteliai reserves, to parts of which the status of areas important for birds' protection has been granted. Most of the protected and disappearing bird species in the PEA area are directly or indirectly related to these two areas, small part of which are also included in the area under consideration. These are mainly the species related to the water

complex: water birds, passerines hatching on the shores of water bodies and adjacent wetlands, as well as predatory birds and birds hatching or feeding in wetlands.

Among common water birds, mute swan (*Cygnus olor*) is the most famous as its national population was restored and the species became widespread namely in the Žuvintas and adjacent lakes. Apart from it, great crested grebs and coots are common in the large lakes of the Meteliai Reserve, Simnas and Gilučiai lakes. Protected and disappearing species of waterbirds are most important, however. First of all they include *Botaurus stellaris*, *Porzana porzana* and *Porzana parva*. All of them are very abundant in both Žuvintas and Meteliai reserves compared with other water bodies and wetlands in Lithuania. Therefore, the SPA status was assigned to both afore-said areas in relation to the protection of these species. Among the water birds mention should be made of *Aythya nyroca*, which is disappearing globally and whose stable population has remained only in the lakes of Metelio, Dusios and Obelijos lakes. Among protected hatching non-water birds, which are disappearing and which are related to water bodies and other wetland complexes, mention should be made of *Circus aeruginosus* and *Luscinia svecica*, for the protection of which SPA has also been granted. *Luscinia svecica* occurs only within the boundaries of SPA, while *Circus aeruginosus* can be found in different places of the PEA area as it also hatches in other water bodies or even small water-bearing swamps. A separate mention should also be made of globally disappearing *Acrocephalus paludicola*, whose hatching places are currently known only in the low bogs of the Žuvintas Reserve, however, individual pairs of this exceptional species can also hatch in the surrounding small sedge bogs. If this would be the case, then their importance would increase considerably, which could even affect the selection of the OPTL route. All the above-mentioned bird species have been included in the Lithuanian Red Book and Annex 1 to the Habitats Directive.

Attention should be focussed, however, on migrating water birds stopping for the night or rest in the lakes of the Žuvintas and Meteliai Reserves and flying for feeding to the surrounding fields, pastures or meadows. In this case the protection of their feeding places or even daily flying routes would be of exceptional importance as this would be the protection of places of accumulation of migrating birds of international significance. In case of the Žuvintas Reserve, depending on season, the area is important for geese (*A.anser*, *A.fabalis*, *A.albifrons*) and cranes (*Grus grus*). Whereas in the Meteliai Reserve mixed accumulations of different water birds form; *Podiceps cristatus*, *Aythya ferina* and *Fulica atra* should be separated out. Assessing the potential impact of the PEA on the accumulations of migrating birds, swans, geese and cranes are the most sensitive; they fly long distances between night and feeding places. Therefore, in this respect a higher adverse impact can be expected in the Žuvintas Reserve, in particular, in the environs of the Žuvintas lake, even though flying for feeding can amount to tens of kilometres. Thus daily flying routes of swans, geese and cranes must be

the object of attention while analysing the potential impact on accumulations of migrating birds, even though they form beyond the boundaries of the PEA area.

Based on other countries' experience, significant adverse impact is also possible on hatching colonial birds. In this case the determination of relevant locations is indispensable before assessing the potential impact of the PEA on birds.

Apart from the said hatching and migrating water birds, the planned area is important for the birds of open landscape and, in part, for forest birds. Mention should be made of the globally disappearing corn crake (*Crex crex*), which is widespread in the fertile meadows of Lithuania but is rapidly disappearing in Western Europe, red-backed shrike (*Lanius collurio*), which is a characteristic bird of our agrarian landscape not in intense use, and white stork (*Ciconia ciconia*), which is a national symbol of Lithuanian village. The impact of the PEA on these three disappearing species is different. Habitats of corn-crakes as well as of spotted crakes' hatching in small swamps must be preserved during the period of construction of the OPTL. Whereas red-backed shrike is influenced only by major changes in the landscape and land management, which are not planned in this case. White storks may even perish in the long term due to the construction of the line, therefore, visualisation of the line must be increased at the places of stork accumulation or higher density of hatching pairs. Therefore, studies aimed at determining such locations are required. All the said bird species are listed on Annex I to the Habitats Directive.

In case of forest birds, significant adverse impact can only be produced on protected predatory birds, the density of which in the PEA area is relatively low. Among these birds' species falling within the risk group, *Haliaeetus albicilla*, *Aquila pamarina* and *Milvus migrans* are found in the area. All their feeding places will have to be cartographed in order to assess the negative impact of the PEA. In addition, all these predatory bird species have been included in the Lithuanian Red Book and Annex I of the Habitats Directive.

Mammals

All the species of insectivores found in Lithuania live in the PEA area – a belt approx. 50 km long (from the Lithuanian-Polish border to Alytus) and 10-15 km wide (from the Žuvintas reserve in the north to the Meteliai reserve in the south) – moles, East European hedgehogs, common shrews, Eurasian pigmy shrews and water shrews. These are not protected species, furthermore, they are quite widespread. Therefore, one should assume that the new power line will have no significant impact on these animals.

Most species of rodents such as mice, the largest rodent in Europe – European beaver and hares (mountain hare and European hare) are found in this belt. The line should not have a significant or noticeable impact on them as most of them spend the largest part of their lives underground, while both hare species are very mobile.

Large predatory mammals – wolves and lynxes (*Lynx lynx*) do not live in the area constantly but sometimes cross it while travelling from outlying larger forests. It should be noted that lynx has not only been included in the Lithuanian Red Book (Category I) but is also listed in Annex II of the Habitats Directive. The area under consideration is populated by brown foxes, raccoon dogs, weasels, European polecats, least weasels; *Mustela erminea* listed in the Lithuanian Red Book (Category 4) is found here. Otters (*Lutra lutra*) (LRB, Category 5; HD II) and Canadian weasels are often found near water bodies. Out of the said protected predatory animals, an adverse impact of the planned activities is only possible on lynx, in case if larger forest bodies are fragmented. An adverse impact on otters is only possible in the line construction period if the works are performed in the places of breeding of the young.

Artiodactyles in this area are mostly represented by roe deers and wild boars. There are localities where red deers and European elks are always found. But the new line should not noticeably affect these large mammals, just as the predators, or maybe only temporary when the animals will be disturbed during the construction of the line.

Bats of all the species recorded in Lithuania probably settle in this area in the warm period. The species recorded until now at individual locations include *Myotis dasycneme*, abundant *Nyctalus noctula*, *Myotis daubentonii*, *Pipistrellus nathuzii* and *Pipistrellus pygmaeus*. Furthermore, information about *Nyctalus noctula*, *Eptesicus serotinus* and *E.nilssonii* is available. All these species except *Pipistrellus nathuzii* and *Pipistrellus pygmaeus* are listed in the Lithuanian Red Book. Furthermore, *Myotis dasycneme* is in Annex II to the Habitats Directive.

Bats very often feed near water bodies, in particular *Myotis dasycneme* of Community significance and *Nyctalus noctula* – the largest bat in Lithuania. These bats use the Žuvintas reserve, Simnas lakes and the lake complex of Meteliai reserve, therefore, the OPTL crossing this area can affect migration routes of bats. A colony of *Pipistrellus nathuzii*, one of the most abundant in the country, is in the regional part of the Nemunas loops. Bats fly to their wintering places in south west Europe in the direction of the OPTL being designed (from south west to north east). It is highly probable that part of the above-mentioned bat species will contact the line while flying both ways. It should be added that *Nyctalus noctula* and bats of some other species catch insects and feed at the height of 10-20 m, i. e. on the level of the line. Generally, the impact of power transmission lines on bats has been described in the literature, therefore, in the EIA process relevant studies have to be planned in order to determine the main locations of bat accumulation and/or bat migration routes.

Construction of the OPTL will take place both in natural and damaged natural environment. In this case, priority should always be given to damaged areas including agrarian landscape. As changes to natural water bodies are restricted by other legal acts, separate examination of direct impact on these ecosystems is not necessary in the EIA Report. However, protection of

the ecosystems of water bodies' shores, which have largely retained their natural properties, is very important. As small forests are characteristic of the area, forest cuttings should be avoided and destruction of the ecosystems will be avoided in the EIA Report. However, one cannot eliminate the possibility that building the OPTL over forest area will be considered, therefore, impact on the forest ecosystems will be examined. Small low bogs, usually formed in the valleys between hills, is another sensitive habitat. The operation of the line itself does not have direct impact on such ecosystems but there is a threat that the ecosystems will be damaged or even destroyed in the OPTL construction period. Therefore, inventory of all such small swamps must be taken in order to preserve these habitats of very limited area but of very high value from the point of view of the protection of nature. In individual cases of damage, restoration of swamps in degradation can be planned in order to maintain certain area of relevant habitats in the territory. Similar situation is seen in case of natural grasslands, the area of which has been considerably reduced due to agricultural and other human activities, however, it still remains larger compared with natural low bogs. Preservation of natural grasslands (which are mainly dry in the OPTL area) is very important both for the protected insect species and the disappearing higher animals. Recultivation measures will have to be provided for in case of damage to the habitats in the construction period.

In assessing the impact on the level of individual protected species, the most important issue is the preservation of the breeding habitats and feeding places, with the preservation of the requisite natural habitats first of all. As point-type facilities will be built during the PEA, destruction of habitats of protected species can always be avoided, if they are known. Therefore, apart from the published information on habitats available in the databases, additional studies will be required, first of all, intended for certain species. As regards invertebrates, it is important to determine the habitats of mollusc and insect species related to natural low bogs and insect species related to dry grasslands. In case of protected reptilians and amphibians, the bogs most important for them must be identified. For birds, the main feeding and transit locations of migrating water birds and the main feeding places for predatory birds must be established. All the water bird colonies in the close environment must be recorded due to the special impact on colonial water birds. Protection of water and grassland birds will be ensured by preserving the habitats, which are also important for plants and other animal groups. Favourable protection status of forest birds will be ensured through the preservation of forest areas containing many habitats of Community significance (HD Annex I). In case of bats, identification of the main accumulation places is most important, and these places should be avoided in the planning of the OPTL.

3.2.11. NETWORK OF PROTECTED AREAS

Both Alytus and Lazdijai districts are abundant in protected areas. Most national protected areas, however, are farther from the area under consideration. In Alytus district, the nearest environment contains only the Sabališkės state pedologic reserve, Vidzgirio state botanic reserve, Gulbynės municipal ornithological reserve, northern part of Meteliai regional park, and southern part of Žuvintas biosphere reserve. Farther from the planned area, in Alytus district, there are the Nemunas loops' national park, Balbieriškis biosphere ground, and state Ažuolų botanic reserve.

Part of these areas have the status of natural areas of Community significance, forming the Natura 2000 network. The Natura 2000 network consists of two types of areas of Community significance: the birds' special protection areas (BSPA) important for the protection of birds, implementing the provisions of the EU Birds Directive (79/409/EEC) and habitats' special protection areas (HSPA) for the protection of habitats under the EU Habitats Directive (92/43/EEB). Sometimes an area has both the BSPA and the HSPA status. In particular, this is the case for significant parts of the Nemunas loops' national park, Meteliai regional park and Žuvintas biosphere reserve as well as the Balbieriškis biosphere ground. Detailed information about each of them is presented below, based on the information from the State Cadastre of Protected Areas.

Information about Protected Natural Areas Directly Overlapping with the Planned Economic Activity

Name of biosphere reserve: **Žuvinto biosphere reserve**

Area, ha: 18489.69

Founder: Government of the Republic of Lithuania

Date of establishment: 2002 11 23

Legal basis for establishment: LRV 2002 11 19 resolution No.1817 (Official Gazette, 2002, Nr. 112-5012)

Purpose of establishment: Controlling and forecasting changes in natural ecosystems; conducting nature protection development work in the natural complexes and their environs; conduct monitoring; conduct applied research; analyse impact of human activities on natural ecosystems; ensure sustainable use and restoration of natural resource; preserve stability of natural ecosystem and biota components including Žuvintas bog complex and Žaltytis lake and locations of water birds' passages and staying during migration; standard wet broad-leaf forest communities in the Bukta forest area, rare plant and grassland communities, bog and grassland birds, the remaining part of Amalvas bog and lake – a territory valuable from

zoologic and botanic points of view, restore any destroyed or damaged natural complexes and sites; develop ecological education; create conditions for organising exploratory tourism intended for education at designated places; disseminate ideas of nature protection.

Location: Marijampolės, Alytus district and Lazdijai district municipalities.

Status of area of international significance granted to the protected area or part thereof: Protection of birds, part of territory has protection of birds and habitation status.

Name of area important for birds' protection: **Žuvinto, Žaltyčio and Amalvo bogs**

Area identifier (EU code): LTALYB003

Location: Marijampolės, Alytus district and Lazdijai district municipalities.

Area, ha: 14198.11710667

Date on which status granted: 2004 04 17

Legal basis for establishment: resolution of the Government of the Republic of Lithuania 2004 04 08 No. 399 (Official Gazette, 2004, 55-1899)

Purpose of including the protected area in Natura 2000: Protection of places of accumulation of *Botaurus stellaris*, *Circus aeruginosus*, *Circus pygargus*, *Tetrao tetrix*, *Porzana porzana*, *Porzana parva*, *Grus grus*, *Tringa glareola*, *Dendrocopos medius*, *Dendrocopos leucotos*, *Luscinia svecica*, *Acrocephalus paludicola*; migrating *Anser albifrons* and *Anser fabalis*.

General regulations: Annex 2 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds“ (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of area important for habitats' protection: **Žuvinto lake and Buktos forest**

Area identifier (EU code): LTALY0005

Location: Marijampolės, Alytus district and Lazdijai district municipalities.

Area, ha: 15867.76660576

Protection status: HSPA approved by the Government of the Republic of Lithuania

Date on which status granted: 2004 12 01

Legal basis for establishment: resolution of the Government of the Republic of Lithuania 2009 03 04 No. 192 (Official Gazette, 2009, No. 34-1287)

Purpose of including the protected area in Natura 2000: 3140 Hard oligo-mesotrophic waters with benthic vegetation; 3160 Natural dystrophic lakes; 6410 *Molinia* meadows; 6430

Hydrophilous tall herb fringe communities; 6450 Alluvial meadows; 6510 Lowland hay meadows; 7110 Active raised bogs; 7120 Degraded raised bogs; 7140 Transition mires and quaking bogs; 7160 Fennoscandian mineral-rich springs and springfens; 7230 Alkaline fens; 9050 Fennoscandian herb-rich forests; 9080 Fennoscandian deciduous swamp woods; 9160 Hornbeam forests; 91D0 Bog woodland; 91E0 Alluvial forests; Scarce Fritillary; *Liparis loeselii*; *Saxifraga hirculus*; European Fire-bellied Toad; Otter; Large copper; *Dytiscus latissimus*; *Hamatocaulis vernicosus*; *Vertigas angustior*.

General regulations: Annex 1 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds“ (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of state park: **Metelių regional park**

Park type: regional

Area, ha: 17679.89007497

Founder: Supreme Council – Restorative Parliament of the Republic of Lithuania

Date of establishment: 1992 09 24

Legal basis: resolution of the Supreme Council of the Republic of Lithuania 1992 09 24 No. I-2913 (Official Gazette, 1992, Nr. 30-913)

Purpose of establishment: preserve the landscape of the large lakes of South Lithuania and their environs, the natural ecosystem and cultural heritage.

Location: Alytus district and Lazdijai district municipalities.

Status of area of international significance granted to the protected area or part thereof: Protection of birds

Data on functional priority zones: The plan of the boundaries of protection zones of the Metelių regional park was approved by resolution of the Government of the Republic of Lithuania 2001-07-07 No. 1310 (Official Gazette, 2001, Nr. 95-3353)

Name of area important for habitats' protection: **Metelių regional park**

Area identifier (EU code): LTLAZ0010

Location: Alytus district and Lazdijai district municipalities.

Area, ha: 17023.88340305

Protection status: Areas meeting HSPA criteria and approved by ministerial order

Date on which status granted: 2005 08 31

Legal basis for establishment of HSPA: order by the Minister of Environment 2009 04 22 No. D1-210 (Official Gazette, 2009, No. 51-2039)

Purpose of including the protected area in Natura 2000: 3150, Natural eutrophic lakes with *Magnopotamion/Hydrocharition*; 3160, Natural dystrophic lakes; 6120, Xeric sand calcareous grasslands; 6210, Semi-natural dry grasslands; 6530, Wooded meadows; 7110, Active raised bogs; 7140, Transition mires and quaking bogs; 9050, Herb-rich fir forests; 9080, Deciduous swamp woods; 9160, Hornbeam forests; 91D0, Bog woodland; 91E0, Alluvial forests; European Pond Terrapin; Large copper; Pond bat; Vertigas angustior; Osmoderma eremita; Spined loach; Lady's Slipper; Thesium ebracteatum; Desmoulin's whorl snail; Triturus cristatus; Otter.

General regulations: Annex 1 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds" (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of area important for birds' protection: **Metelių, Dusios and Obelijos lakes**

Area identifier (EU code): LTALYB001

Location: Alytus district and Lazdijai district municipalities.

Area, ha: 4479.51128401

Date on which status granted: 2004 04 17

Legal basis for establishing BSPA: resolution of the Government of the Republic of Lithuania 2004 04 08 No. 399 (Official Gazette, 2004, 55-1899).

Purpose of including the protected area in Natura 2000: Protection of the places of accumulation of migrating water birds and *Botaurus stellaris*, *Aythya nyroca*, *Circus aeruginosus*, *Porzana porzana*, *Porzana parva* and *Luscinia svecica*.

General regulations: Annex 2 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds" (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of reserve: **Sabališkės pedologic reserve**

Significance of reserve: State

Category of reserve: Nature

Type of reserve: Pedologic

Area, ha: 129.97237663

Location: Alytus district municipalities.

Founder: Council of Ministers of Lithuanian SSR

Date of establishment: 1988 02 29

Legal basis for establishment: resolution of the Council of Ministers of Lithuanian SSR 1988 02 29 No. 57 (Official Gazette, 1988, No. 9-65)

Purpose of establishment: preserve the standard sod gleyic clay loam and clay soils of the western slopes of East Lithuanian highlands

Status of area of international significance granted to the protected area or part thereof: None

Name of reserve: **Gulbynės ornithological reserve**

Significance of reserve: Municipal

Category of reserve: Nature

Type of reserve: Zoologic-ornithological

Area, ha: 8.12647421

Location: Alytus municipality

Founder: Alytus Council

Date of establishment: 1990 07 04

Legal basis for establishment: Alytus council decision 1990 07 04

Purpose of establishment: preserve rare species of water birds

Status of area of international significance granted to the protected area or part thereof: None

Information on protected areas in the nearest environment of the PEA

Name of state park: **Nemuno kilpų (Nemunas Loops) regional park**

Park type: Regional

Area, ha: 25368.27796209

Founder: Supreme Council – Restorative Parliament of the Republic of Lithuania

Date of establishment: 1992 09 24

Legal basis for establishment: LR AT 1992 09 24 resolution No. I-2913 (Official Gazette, 1992, No. 30-913)

Purpose of establishment: to preserve the unique landscape of the Large Loops of the Nemunas River and the Punia Forest, the natural ecosystem and cultural heritage.

Location: Prienai district, Birštonas and Alytus district municipalities.

Status of area of international significance granted to the protected area or part thereof: None

Name of area important for habitats' protection: **Nemuno kilpos**

Area identifier (EU code): LTPRI0010

Location: Alytus district, Birštonas and Prienai district municipalities.

Area, ha: 1345.75430949

Protection status: Areas meeting HSPA criteria and approved by ministerial order

Date on which status granted: 2005 08 31

Legal basis for establishing HSPA: Order of the Minister of Environment 2009 04 22 No. D1-210 (Official Gazette, 2009, Nr. 51-2039)

Purpose of including the protected area in Natura 2000: 3270, Rivers with muddy banks; *Rhodeus sericeus*; *Cobitis taenia*; *Ophiogomphus cecilia*; *Aspius aspius*; Otter.

General regulations: Annex 1 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds" (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of area important for birds' protection: **Nemunas between Pelėšiškės and Balbieriškis**

Area identifier (EU code): LTPRIB006

Location: Birštonas and Alytus district municipalities.

Area, ha: 404.16264436

Date on which status granted: 2004 04 17

Legal basis for establishing BSPA: resolution of the Government of the Republic of Lithuania 2004 04 08 No. 399 (Official Gazette, 2004, 55-1899)

Purpose of including the protected area in Natura 2000: Protection of *Sterna albifrons*

General regulations: Annex 2 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds" (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of reserve: **Ažuolų botanic reserve**

Significance of reserve: State

Category of reserve: Nature

Type of reserve: Botanic

Area, ha: 267.51220747

Location: Prienai district municipality

Founder: Supreme Council – Restorative Parliament of the Republic of Lithuania

Date of establishment: 1992 09 24

Legal basis for establishment: resolution of the Supreme Council 1992 09 24 Nor. I-2913 (Official Gazette, 1992, No. 30-913)

Purpose of establishment: preserve the fauna in South Lithuania's oak forests.

Status of area of international significance granted to the protected area or part thereof: Protection of birds

Name of biosphere ground: **Balbieriškio forest biosphere ground**

Area, ha: 3060.61009602

Founder: Ministry of Environment of the Republic of Lithuania

Date of establishment: 2004-11-26

Legal basis for establishment: order of the Minister of Environment 2004 11 15 No. D1-590 (Official Gazette, 2004, No. 170-6287).

Purpose of establishment: Preserve the ecosystem of Balbieriškio forest, in particular in order to preserve the population of middle spotted woodpecker (*Dendrocopos medius*).

Location: Prienai district municipality

Status of area of international significance granted to the protected area or part thereof: Protection of birds

Name of area important for habitats' protection: **Balbieriškio forest**

Area identifier (EU code): LTPRI0015

Location: Prienai district municipality

Area, ha: 528.74399831

Protection status: Areas meeting HSPA criteria and approved by ministerial order

Legal basis for establishing HSPA: order of the Minister of Environment 2009 11 03 No. D1-654 (Official Gazette, 2009, No. 135-5903).

Purpose of including the protected area in Natura 2000: 9050, Herb-rich fir forests; 9160, Hornbeam forests.

General regulations: Annex 1 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds“ (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of area important for birds' protection: **Balbieriškio forest**

Area identifier (EU code): LTPRIB003

Location: Prienai district municipality

Area, ha: 3060.61344859

Date on which status granted: 2005 04 24

Legal basis for establishment of BSPA: resolution of the Government of the Republic of Lithuania 2005 04 No. 431 (Official Gazette, 2005, 52-1742).

Purpose of including the protected area in Natura 2000: Protection of *Dendrocopos medius*.

General regulations: Annex 2 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds“ (Žin, 2004, No. 41-1335; 2006, No. 44-1606)

Name of reserve: **Vidzgirio botanic reserve**

Significance of reserve: State

Category of reserve: Nature

Type of reserve: Botanic

Area, ha: 387.77599605

Location: Alytus municipality

Founder: Council of Ministers of the Lithuanian SSR

Date of establishment: 1960 09 27

Legal basis for establishment: resolution of Council of Ministers 1960 09 27 No. 517 (Official Gazette, 1960, No. 27-244).

Purpose of establishment: preserve the natural forest area in the Nemunas valley in South Lithuania with habitats of rare plant species.

Status of area of international significance granted to the protected area or part thereof:
Protection of habitats

Name of area important for habitats' protection: **Vidzgirio forest**

Area identifier (EU code): LTALY0001

Location: Alytus district municipality

Area, ha: 387.77599605

Protection status: HSPA approved by the Government of the Republic of Lithuania

Date on which status granted: 2005 08 31

Legal basis for establishing HSPA: resolution of the government 2009 03 04 No. 192 (Official Gazette, 2009, No. 34-1287)

Purpose of including the protected area in Natura 2000: 9160 Hornbeam forests; 91E0 Alluvial forests; Triturus cristatus; European fire-bellied toad; Osmoderma eremita; Lady's Slipper.

General regulations: Annex 1 to resolution of the Government of the Republic of Lithuania 2004 03 15 No. 276 Concerning approval of the Regulations on Areas Important for the Protection of Habitats or Birds“ (Žin, 2004, No. 41-1335; 2006, No. 44-1606).

3.2.12. CULTURAL HERITAGE

The PEA will be carried out in Alytus and Lazdijai districts. The PEA area considered in the EIA covers approx. 650 km² of the said districts. In this EIA phase, data on existing cultural heritage on district level based on publicly accessible information [1-6, 23, 24].

Alytus District

Immovable cultural heritage of Alytus district is separated out from other Lithuania's municipalities by its integrated character. A large part of protected sites and interrelated by visual or historical semantic ties and form places of accumulation of cultural heritage.

Most sites of the cultural heritage have been adapted to expressive forms of terrain thus complementing the picturesque natural landscape. The largest areas of the accumulation of immovable cultural heritage have formed in the south east and south west part of the Alytus

District, in the areas near the Nemunas River around Alytus town and in the northern part of those areas. Prevalence of archaeological sites, namely, late castle mounds is a characteristic feature of Alytus district's cultural heritage. Many architectural heritage sites have pronounced historical value; sacral structures dominate among them.

In Butrimonių, Simno and Daugų areas, priority should be given to making the urban heritage more distinct and to its revival as well as to the protection of the sacral architectural heritage, which is inseparable from it.

Sites of architectural heritage prevail in Daugų, Pivašiunų, Alovės, Punios, Rumbonių, Miroslavo areas. Natural landscape of these areas is picturesque and multi-layered. Architectural sites are interrelated with valuable sacral heritage of Catholic architecture and ancient burial sites. The Nemunas valley zone is considered to be one of the areas with the greatest tourism development potential in Lithuania (National Tourism Development Programme 2003-2006, 5.10, 2003-12-18, No. 1637). The Panemunių region (areas near the Nemunas) and Alytus and Punia mounds have been included in the list of areas of national significance.

Raižiai – a unique area of Lithuanian ethnic culture has survived in Alytus district. This area of historical settlements and ancient burial sites of Tartars is considered to be the spiritual centre for today's Tartars in Lithuania. Although it is known that historical Tartar settlements existed in other places of Alytus district (Bazorai, Butrimonys), Raižiai is unique due to the continuity of cultural and religious tradition of Lithuanian Muslims, dating back several ages.

Accumulations of natural and cultural heritage sites are found in the territories of parks. Sites and areas in the Dzūkija national park and the Nemunas Loops regional park are protected under the Republic of Lithuania Law on Protection of Immovable Cultural Heritage and the Law on Protected Areas. The cultural heritage located in these areas are managed according to the relevant regulations of these parks, boundary and zoning plans, management plans, special plans for cultural heritage, monument management projects, legal acts governing protection of cultural heritage and strategic planning documents. Even though a threat to them compared with the sites in non-protected areas is lower, still there is a risk of degradation due to insufficient maintenance.

All the cultural heritage sites in the Alytus district are listed in Graphic Annex 1 and Table 3.3.

Table 3.3. Cultural heritage sites in Alytus district

Item No	Unique site code*	Name of site	Address
Urban areas			
1	17107	Historical town centre	Alytaus aps., Alytaus r. Simnas
2	10306	Street-type village with 20 farmsteads	Alytaus aps., Alytaus r., Krokialaukio sen., Daugirdų k.
Sets of structures			
3	1302 23580	Švč. Trejybės church complex: church and belfry	Alytaus r. sav., Alovės k. (Alovės sen.)
4	12215	School complex: school and wind plant	Alytaus r. sav., Kurnėnų k. (Miroslavo sen.)
5	41	Dapkiškių farmstead	Alytaus r. sav., Dapkiškių k. (Krokialaukio sen.)
6	44	Former Obelijos manor fragment	Alytaus r. sav., Obelijos k. (Miroslavo sen.)
7	46	Former Raudonosios Alovės farmstead fragments	Alytaus r. sav., Alovės k. (Alovės sen.)
8	10474	Farmstead	Alytaus r. sav., Balkūnų k. dal. (Krokialaukio sen.) (iki 1998 06 02)
9	16620	Farmstead	Alytaus r. sav., Ostampo k. (Simno sen.).
Structures			
10	852	Švč. M. Marijos Ėmimo į dangų church	Alytaus r. sav., Simno m. (Simno sen.), Kreivoji g. 3
11	1303	House	Alytaus r. sav., Liuklingėnų k. (Krokialaukio sen.)
12	2592	House	Alytaus r. sav., Simno m. (Simno sen.), Vytauto g. 51
13	2591	House	Alytaus r. sav., Simno m. (Simno sen.), Vytauto g. 2/43
Burial sites			
14	20559	Old cemetery I	Alytaus r. sav., Krekštėnų k. (Krokialaukio sen.)

Table 3.3 continued

Item No.	Unique site code*	Name of site	Address
15	2661	Partisans Grave	Alytaus r. sav., Simno m. (Simno sen.)
16	20967	Cemetery not in use	Alytaus r. sav., Babininkų k. (Simno sen.)
17	4094	Partisans Grave	Alytaus r. sav., Simno m. (Simno sen.)
18	4501	Lithuanian Soldiers Cemetery	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
19	11456	Old Jewish cemetery in Miroslavas	Alytaus aps., Alytaus r. Gudiniškės k.
20	12280	Old cemetery II in Krekštėnai („Kapinynas“)	Alytaus r. sav., Krekštėnų k. (Krokialaukio sen.)
21	12281	Alytaus r. sav., Krekštėnai k. (Krokialaukio sen.)	Alytaus r. sav., Miroslavo k. (Miroslavo sen.)
22	12285	Old cemetery in Ponkiškių village	Alytaus r. sav., Ponkiškių k. (Simno sen.)
23	12288	Old cemetery in Seimeniškių village	Alytaus r. sav., Seimeniškiei (Miroslavo sen.)
24	12290	Old cemetery II in Tonkūnai	Alytaus r. sav., Tolkūnai (Miroslavo sen.)
25	12291	Old cemetery I in Varnagiriai	Alytaus r. sav., Varnagirių k. (Krokialaukio sen.)
26	12292	Old cemetery II in Varnagiriai	Alytaus r. sav., Varnagirių k. (Krokialaukio sen.)
27	12289	Old cemetery in Talogiriai	Alytaus r. sav., Talokių k. (Alytaus sen.)
28	16971	Grave of T. Norus-Naruševičius	Alytaus r. sav., Krokialaukio mstl. (Krokialaukio sen.)
29	20560	Old cemetery II in Rumbonys	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
30	4142	Burial and cross	Alytaus r. sav., Pasimniai (Simno sen.)
31	12286	WWII German soldiers cemetery	Alytaus r. sav., Pošnios k. (Krokialaukio sen.)

Table 3.3 continued

Item No.	Unique site code*	Name of site	Address
Archeologic heritage			
32	22603	Archeologijų heritage sites	Alytaus r. sav., Arminai I (Alytaus sen.)
33	1846	Bundorių, Punios Forest castle mounds	Alytaus r. sav., Bundorių k. (Alytaus sen.)
34	1845	Margaravos mound (Raudonkalnis, Margirio kalnas)	Alytaus r. sav., Margaravos k. (Alytaus sen.)
35	22605	Rumbonių mound and settlement	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
36	1847	Smolnicos, Punios Forest mounds (Kurganai, Švedkapiai)	Alytaus r. sav., Smolnicos k. (Alytaus sen.)
37	1851	Dirmiškių mound with settlement (Strumpakalnis)	Alytaus r. sav., Dirmiškių k. (Miroslavo sen.)
38	1852	Dirmiškių mound (Švedkapiai)	Alytaus r. sav., Dirmiškių k. (Miroslavo sen.)
39	22611	Kaukų castle mound and settlement	Alytaus r. sav., Kaukų I k. (Miroslavo sen.)
40	1853	Obelijos castle mound (Zaramkalnis)	Alytaus r. sav., Obelijos k. (Miroslavo sen.)
41	22615	Pupasodžio, Žilvios castle mound and settlement	Alytaus r. sav., Pupasodžio k. (Miroslavo sen.)
42	22623	Ažuolinių, Bambininkų castle mound and settlement	Alytaus r. sav., Ažuolinių k. (Simno sen.)
43	22625	Giluičių castle mound and settlement	Alytaus r. sav., Giluičių k. (Simno sen.)
44	23910	Užubalių ancient settlement	Alytaus r. sav., Užubalių k. (Alytaus sen.)
45	17142	Pupasodžio burial site	Alytaus r. sav., Pupasodžio k. (Miroslavo sen.)
46	17145	Aleknonių burial site	Alytaus r. sav., Aleknonių k. (Simno sen.)
47	2808	Papėčių castle mound	Alytaus r. sav., Papėčių k. (Miroslavo sen.)
48	22111	Pasimnių manor site	Alytaus r. sav., Pasimnių k. (Simno sen.)

Table 3.3 continued

Item No.	Unique site code*	Name of site	Address
49	5764	Ancient grave	Alytaus r. sav., Norūnų k. (Alytaus sen.)
50	5780	Ancient grave (Milžinkapis)	Alytaus r. sav., Gudelių k. (Krokialaukio sen.)
51	2370	Luksnėnų burial site	Alytaus r. sav., Luksnėnų k. (Alytaus sen.)
52	2371	Ancient graves	Alytaus r. sav., Mankūnų k. (Miro
53	2373	Ancient graves	Alytaus r. sav., Grinkiškių k. (Simno sen.)
54	5779	Ancient grave (Žvirblio burial site)	Alytaus r. sav., Cigoniškių k. (Miroslavo sen.)
Mythologic sites			
55	21472	Olakalnis (Šauliakalnis) mountain	Alytaus r. sav., Bendrės k. (Miroslavo sen.)
56	21474	Laumės stone	Alytaus r. sav., Obelninkų k. (Miroslavo sen.)
Event places			
57	4399	Partisans perishing place	Alytaus r. sav.
58	4422	K.Pyplys-Mažytis and J.Makarevičius-Žilvytis perishing place	Alytaus r. sav.
59	22898	A.Grušauskas-Siaubas perishing place	Alytaus r. sav.
60	25105	Perishing place	Alytaus r. sav.
61	26416	Liepakojų battle place	Alytaus r. sav., Liepakojų k. (Simno sen.)
62	26417	J. Kazlauskas-Klevas and A. Simonaitytė-Rūta perishing place	Alytaus r. sav.
63	29579	B. Labėnas-Kariūnas perishing place	Alytaus r. sav.
64	29581	Perishing place	Alytaus r. sav.
65	29591	Perishing place	Alytaus r. sav., Balkasodžio k. (Miroslavo sen.)
66	29592	Perishing place	Alytaus r. sav.
67	29594	V.Kuzmickas-Viesulas and V.Petrauskas-Guoba Perishing place	Alytaus r. sav.
68	29597	Perishing place	Alytaus r. sav.

Table 3.3 continued

Item No.	Unique site code*	Name of site	Address
69	4481	Hiding place and cross	Alytaus r. sav.
Monuments			
70	7664	Tombstone	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
71	8693	Roof-pole, 3 tiers, with patterned cross	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
72	8694	Cross	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
73	8699	Chapel with with patterned cross and Jono Nepomuko sculpture	Alytaus r. sav., Peršėkės k. (Krokialaukio sen.)
74	8721	Cross with chapel and Crucifix	Alytaus r. sav., Žuvintų k. (Simno sen.)
75	4144	Monument	Alytaus r. sav., Krekštėnų k. (Krokialaukio sen.)
76	22	Cross	Alytaus r. sav., Krekštėnų k. (Krokialaukio sen.)
77	14698	Cross	Alytaus r. sav., Rumbonių k. (Alytaus sen.)
78	14700	Cross	Alytaus r. sav., Kaniūkų k. (Alytaus sen.)

Note * unique site code is specified according to the Register of Cultural Values <http://kvr.kpd.lt/heritage/>.

Lazdijai District

Cultural heritage of Lazdijai district has been investigated to a quite high extent. According to cultural value, the sites are classified as protected sites, i. e. those registered in the List of Cultural Monuments, and sites to be protected in the future, i. e. with indications of cultural value but not sufficiently studied and registered in lower-level registers.

The oldest historical sites of the district are castle mounds with settlements, burial mounds, burial sites, ancient settlements and manor places. They adorn the district's landscape and make it richer. The most famous archaeological values include the Prelomciškės, Paveisininkų, Rudaminos and Giraitės castle mounds. Šlavantų, Krikštonių, Elveriškės, Verstaminų castle mounds are also picturesque and significant. Krikščionių burial mound – an archeological monument of national significance is located at Margotė's inflow into the

Nemunas river. Vainežeris defence structures (Okopka) is an interesting archaeological monument.

The Aštriosios Kirsnos manor house has been included in the Register of Immovable Values of the Republic of Lithuania having archaeological, historical, urban and landscape value. Veisiejai and Rudamina churches are architectural monuments.

No valuable ethnic villages have remained in the district but buildings of a typical Dzūkija village can be seen in Pranas Dzūkas' farmstead as well as more outlying villages and farmsteads.

Position of Lazdijai as a border district has left distinct traces in the district's historical map. They include cemeteries of World War I soldiers – Russians, Germans, also common Russian-German graves, graves of Lithuanian volunteers, cemetery of Soviet soldiers from WWII, graves of participants in the resistance movement, and battle sites.

The cultural heritage sites identified in the PEA area and its environs in Lazdijai district (based on the data of the Register of Cultural Values) are listed in Graphic Annex 1 and Table 3.4.

Table 3.4. Cultural heritage sites in Lazdijai district

Item No	Unique site code*	Name of site	Address
Sets of structures			
1	32383	Railway station in Šeštokų railway station buildings complex	Lazdijų r. sav., Šeštokų mstl. (Šeštokų sen.), Sodų g. 1
2	1498	Aštriosios Kirsnos manor house	Lazdijų r. sav., Aštriosios Kirsnos k. (Būdviečio sen.)
3	1501	Church and rectory	Lazdijų r. sav., Rudaminos mstl. (Lazdijų sen.)
Structures			
4	22827	Horse shed	Lazdijų r. sav., Aštriosios Kirsnos k. (Būdviečio sen.)
5	263	Former manor house fragments (AtV 502)263	Lazdijų r. sav., Būdviečio k. (Būdviečio sen.)
6	15980	Farmstead	Lazdijų r. sav., Delnicos k. (Šeštokų sen.)
7	267	Rudamina manor house fragments	Lazdijų r. sav., Rudaminos k. (Lazdijų sen.)

Table 3.4 continued

Item No	Unique site code*	Name of site	Address
8	1500	Chapel-mausoleum	Lazdijų r. sav., Būdviečio k. (Būdviečio sen.)
9	1499	Granary barn	Lazdijų r. sav., Būdviečio k. (Būdviečio sen.)
Burial sites			
10	29583	A.Čėpla-Apuokas and J.Račas-Miškinis perishing place	Lazdijų r. sav., Skaistučių k. (Lazdijų sen.)
11	29559	A. Kisieliauskas-Karvelis perishing place	Lazdijų r. sav., Murgų k. (Teizų sen.)
12	29543	A.Vabuolas-Varmas and A.Jaruševičius-Klevas perishing place	Lazdijų r. sav., Šulnelių k. (Lazdijų sen.)
13	20232	Altar with pictures „Crucifix“ and “Rosary Mary“	Lazdijų r. sav., Krosnos mstl. (Krosnos sen.)
14	5323	Ancient burial	Lazdijų r. sav., Verstaminų k. (Teizų sen.)
15	6309	Ancient burial	Lazdijų r. sav., Natalinos k. (Būdviečio sen.)
16	6310	Ancient burial (Milžinkalnis)	Lazdijų r. sav., Strumbagalvės k. (Būdviečio sen.)
17	6323	Kaimelių village cemetery	Lazdijų r. sav., Kaimelių k. (Lazdijų sen.)
18	6327	Ancient burial	Lazdijų r. sav., Salos k. (Lazdijų sen.)
19	6346	Ancient burial with AD III-IV site	Lazdijų r. sav., Delnicos k. (Šeštokų sen.)
20	6361	Ancient burial	Lazdijų r. sav., Teizių k. (Teizų sen.)
21	11015	Grave of resurrection participants	Lazdijų r. sav.
22	20816	Old Jewish cemetery of Lazdijai	Lazdijų r. sav., Lazdijų m. (Lazdijų miesto sen.)

Table 3.4 continued

Item No	Unique site code*	Name of site	Address
23	20818	Old Jewish cemetery of Rudamina	Lazdijų r. sav., Rudaminos mstl. (Lazdijų sen.)
24	20933	Part of old cemetery of Paliūnų village	Lazdijų r. sav., Dzūkų k. (Būdviečio sen.)
25	20934	Old cemetery of Paliūnų village	Lazdijų r. sav., Paliūnų k. (Būdviečio sen.)
26	24614	Old Evangelist-Lutherans cemetery Lazdijai	Lazdijų r. sav., Lazdijų m. (Lazdijų miesto sen.), Seinų
27	25470	Old cemetery of Gudeliškės	Lazdijų r. sav., Gudeliškės k. (Šeštokų sen.)
28	11002	Cemetery	Lazdijų r. sav., Lazdijų m. (Lazdijų miesto sen.)
29	11007	Cemetery	Lazdijų r. sav., Galinių k. (Lazdijų sen.)
30	11008	Cemetery	Lazdijų r. sav., Katkiškės k. (Lazdijų sen.)
31	11012	Cemetery	Lazdijų r. sav., Rudaminos mstl. (Lazdijų sen.)
Archaeologic heritage sites			
32	22627	Buniškių castle mound with settlement	Lazdijų r. sav., Buniškių k. (Lazdijų sen.)
33	22939	Elveriškės castle mound with settlement	Lazdijų r. sav., Elveriškės k. (Lazdijų sen.)
34	5298	Kuklių castle mound	Lazdijų r. sav., Kuklių k. (Lazdijų sen.)
35	5300	Ūdininkų ancient settlement	Lazdijų r. sav., Ūdininkų k. (Lazdijų sen.)
36	5319	Verstaminų castle mound	Lazdijų r. sav., Verstaminų k. (Teizų sen.)
37	17176	Zebrėnų ancient settlement	Lazdijų r. sav., Zebrėnų k. (Teizų sen.)
38	22627	Buniškių castle mound with settlement	Lazdijų r. sav., Buniškių k. (Lazdijų sen.)
39	22933	Papalazdijų piliakalnis su gyvenvieta	Lazdijų r. sav., Papalazdijų I k. (Lazdijų sen.)

Table 3.4 continued

Item No	Unique site code*	Name of site	Address
40	22939	Elveriškės castle mound with settlement	Lazdijų r. sav., Elveriškės k. (Lazdijų sen.)
41	22941	Rudaminos castle mound with settlement	Lazdijų r. sav., Rudaminos mstl. (Lazdijų sen.)
42	22947	Prelomčiškės castle mound with settlement	Lazdijų r. sav., Prelomčiškės k. (Teizų sen.)
43	22949	Verstaminų castle mound II ith settlement	Lazdijų r. sav., Verstaminų k. (Teizų sen.)
44	22951	Verstaminų castle mound III with settlement	Lazdijų r. sav., Verstaminų k. (Teizų sen.)
45	26633	Padusio, Dusios ancient settlement	Lazdijų r. sav., Padusio k. (Teizų sen.)
46	30284	Ancient settlement II	Lazdijų r. sav., Ūdininkų k. (Lazdijų sen.)
47	5307	Castle mound	Lazdijų r. sav., Gumbelių k. (Šeštokų sen.)
48	5317	Castle mound	Lazdijų r. sav., Giraitės k. (Teizų sen.)
Mythological sites			
49	5322	Koplyčkalnis mountain	Lazdijų r. sav., Verstaminų k. (Teizų sen.)
Places of events			
50	27637	Battle site	Lazdijų r. sav., Naujosios Kirsnos k. (Šeštokų sen.)
51	29538	Place of perish	Lazdijų r. sav., Bilvyčių k. (Būdviečio sen.)
52	29543	A.Vabuolas-Varmas and A.Jaruševičius-Klevas perishing place	Lazdijų r. sav., Šulnelių k. (Lazdijų sen.)
53	29558	Place of perish	Lazdijų r. sav., Giraitės k. (Teizų sen.)
54	29559	A.Kisieliauskas-Karvelis perishing place	Lazdijų r. sav., Murgių k. (Teizų sen.)
55	29583	A.Čėplos-Apuokas and J.Račas-Miškinis perishing place	Lazdijų r. sav., Skaistučių k. (Lazdijų sen.)

Table 3.4 continued

Item No	Unique site code*	Name of site	Address
56	29584	Battle site	Lazdijų r. sav., Delnicos k. (Šeštokų sen.)
57	29606	V.Neimanas-Jaunutiks and V.Tuinyla-Karys perishing place	Lazdijų r. sav., Stebulių k. (Teizų sen.)
Monuments			
58	9631	Cross with chapel	Lazdijų r. sav., Lazdijų m. (Lazdijų miesto sen.)
59	9640	Cross with chapel	Lazdijų r. sav., Krosnos mstl. (Krosnos sen.)

Note * unique site code is specified according to the Register of Cultural Values <http://kvr.kpd.lt/heritage/>.

4. PRINCIPLES OF PREPARATION, SCOPE AND CONTENT OF THE EIA REPORT

4.1. PRINCIPLES OF THE EIA OF THE PLANNED ECONOMIC ACTIVITY

The main principles applied in the EIA of the planned economic activity:

- The EIA will be made according to the provisions of the current laws, regulations, guidelines and methodologies valid in the Republic of Lithuania and the European Union.
- The EIA will be made in a comprehensive manner, i. e. the EIA will involve a simultaneous assessment of the impact of the 400 kV power transmission line from the Alytus transformer substation to the Lithuanian – Polish border and of the reconstruction of the Alytus TS and construction of a back-to-back-converter station, with the results of the assessment presented in a single study and with common EIA publicity and agreement procedures implemented (despite that the technical approaches used in both facilities will be detailed in two separate contracts with different information submission time limits);
- The EIA will be made in two phases of implementation of the PEA: construction and operation.
- Evaluation of current situation. The situation will be described as of 2008. The situation in 2008 is treated as a baseline position, i. e. it is assumed that if no PEA are carried out, the indicators of the environmental condition would correspond to the situation in 2008. The year 2009 is not selected for the evaluation as all the requisite summarised information for 2009 will not be available at the time of preparation of the EIA Report.
- The EIA will be made using the gradual detailing approach, i.e. the PEA alternatives will be examined on several levels, from the broadest (district level) to the most narrow (local level).
- It is probable, based on a preliminary analysis and experience, that the PEA can produce impact on the ambient air only to an insignificant extent and only temporarily, in the construction phase (emissions from vehicles), therefore, no detailed assessment of the PEA's impact on ambient air will be made. However, should it become clear in the course of EIA, on detailing of technical approaches, that the PEA can still produce significant adverse impact on the ambient air, the impact will be assessed.

- The EIA for the PEA will be made and the EIA Report will be prepared in winter and early spring (due to the contractual time limits set by the PEA organiser for the preparer of the EIA documents), therefore, detailed field investigations of biodiversity are only possible by the end of this phase (March – April). The results of the investigations may influence the adopted approaches and the outlined impact and there might be the need to correct the EIA conclusions. If necessary the requisite investigations will be conducted as soon as meteorological and natural conditions allow.

4.2. PRELIMINARY CONTENT OF THE EIA REPORT

The title of the EIA report to be prepared - **Assessment of the Environmental Impact of the Construction and Operation of the 400 kV Overhead Power Transmission Line between the Alytus Transformer Substation and the Lithuanian – Polish Border.**

It is planned that the EIA Report will consist of two parts: A – text part and B – text and graphic annexes. The planned structure of the EIA Report is subject to change as necessary.

The EIA Report will present the background information on the PEA and prospects of its development as well as its alternatives, a detailed description of the conditions in the area and current condition of the environment, and a summary of the EIA Report. In other sections, detailed assessment of the PEA's impact on individual components of the environment during construction and operation is presented. No term has been set for the PEA, therefore, no assessment of the termination period is required or mandatory. The section on the impact of water will contain a brief overview of water bodies in the PEA area as well as their condition and an assessment of potential impact of the PEA on surface water bodies. In other sections, the impact on the following components of the environment will be assessed: landscape, biodiversity, soil, earth interior and cultural heritage. In addition, a detailed assessment of the PEA's impact on public health will be made. A separate section will be devoted to assessment of threat and risks of emergencies and emergency forecasts. The need for monitoring will be evaluated; an overview of the PEA alternatives and justification of the optimal alternative proposed will be presented in a separate section.

The preliminary content of the future EIA Report and the subjects covered by the EIA are specified below.

BACKGROUND*
DESCRIPTION OF POTENTIAL IMPACT OF PLANNED ECONOMIC ACTIVITIES ON THE ENVIRONMENT (SUMMARY OF EIA REPORT)
INTRODUCTION
Objective, purpose and main principles of preparation of the environmental impact assessment report for planned economic activities
ASSESSMENT OF IMPACT OF PEA ON THE ENVIRONMENT
Background
Information on the organiser of PEA
Information on the preparer of EIA documents for the PEA
Name, purpose and term of the project
Interrelation between the EIA documents and the designing phases
Description of implementation of the planned economic activities
Description of planned facilities and production processes
Information on raw materials, products and production waste
Raw materials
Products
Production waste
Energy resource requirements and sources
Conditions for the connection of the designed structures and facilities to the engineering systems
Comparison of the proposed production techniques with the best available techniques (BAT) in the European Union and HELCOM recommendations**.
Description of location of the planned economic activity
Geographical position of the area
Orohydrographic conditions in the area
Geologic – hydrogeologic conditions in the area
Meteorological and climatic conditions in the area
Information on current environmental pollution levels (ambient air, soil, soils in aeration zone, groundwater, surface water bodies)
Information on biodiversity in the area
Information on anthropogenic environment
IMPACT ON WATER*
Potential significant impact of PEA on water
Protection belts and zones of the shores of surface water bodies, protection zones of wellfields and drilled wells
Potential impact abatement measures

IMPACT ON AMBIENT AIR* (will be prepared only if it becomes clear that impact by PEA can be significant)
IMPACT ON OTHER COMPONENTS OF THE ENVIRONMENT
Potential impact of PEA on soil
Area, thickness and volume of fertile soil layer to be removed during construction
Physical impact on soil by the PEA
Planned abatement measures to reduce the PEA's impact on soil
Potential impact of the PEA on the earth interior
Potential impact of the PEA on aeration zone
Potential impact of the PEA on groundwater
Planned abatement measures to reduce the PEA's impact on the earth interior
Potential impact of PEA on biodiversity
Potential impact of PEA on landscape
Present and planned usable land resources and their protection
Planned abatement measures to reduce the PEA's impact on landscape
Potential impact of PEA on cultural heritage sites
Planned abatement measures to reduce the PEA's impact on cultural heritage sites
IMPACT ON PUBLIC HEALTH*
Assessment of impact on public health
Current public health situation in Alytus and Lazdijai districts
Population and birth rates
Mortality rates
Public health
Prevalence of diseases
Temporary incapacity for work
Primary disability
Socio-economic environment in Alytus and Lazdijai districts:
Labour
Investments
Residents income
Access to healthcare services
Distribution by age and gender
Estimated impact of the PEA on public health
Health factors and risk groups
Main factors and effects
Residents' risk groups
Impact of factors of physical environment (noise, electromagnetic radiation etc.)

Assessment of dose and response for hazardous factors exceeding permissible levels
Number of people, exposure length, location, graveness of impact on health
Risk profile
Impact on socio-economic environment
Possible public dissatisfaction with the construction of the power link
Inaccuracies in the assessment of impact on public health
Assessment of impact characteristics
Methods of assessment of impact on public health. Method types. Method characteristics
Sanitary protection zone (SPZ)
Normative SPZ size. Adjusted SPZ size having regard to the PEA's impact on the environment and public health
Information on numbers of residents within SPZ. SPZ arrangements
Conclusions and recommendations related to the assessment of impact on public health
Measures to reduce adverse impact on public health
Conclusion on the assessment of impact on public health
ANALYSIS OF ALTERNATIVES
Analysis of strategic, location, time and technical approaches' alternatives
Selection of optimal alternative for the PEA
EMERGENCIES AND PREVENTIVE MEASURES*
Analysis of potential threats and risks of emergencies in the facilities being designed
Environmental impact abatement measures
Planning of measures to reduce potential impact in the environment in emergencies
REFERENCES
TEXT AND GRAPHIC ANNEXES
CONCLUSIONS BY STAKEHOLDERS IN THE EVALUATION OF THE EIA REPORT AND PUBLIC DISCUSSION DOCUMENTS

* - the level of detail and structure of the presented content of the EIA Report, the sequence of presentation of information is subject to change without reducing the scope of the subjects described in the EIA programme.

4.3. POTENTIAL IMPACT OF THE PEA ON COMPONENTS OF THE ENVIRONMENT AND IMPACT ABATEMENT MEASURES

1	Potential object of impact / component of environment	Ambient air
1.1	Current condition of ambient air in the PEA area	Detailed information on the condition of the air in the PEA area is not available in this assessment phase. As the PEA will take place in an area with a low industrialisation and urbanisation level, it is probable that the condition of the air is good. The information will be detailed in the course of the EIA and the preparation of the EIA report.
1.2	Potential impact during PEA construction/implementation	Probable temporary impact from mobile air pollution sources (vehicles and other equipment) in the construction phase.
1.3	Potential impact during PEA operation	The probability of impact in the period of the OPTL operation is low. The impact of Alytus TS will be examined in the EIA Report, on detailing of the technical approaches.
1.4	Impact abatement/localisation measures planned	Additional impact abatement measures will be provided for on assessment of potential impact.

2	Potential object of impact / component of environment	Surface water
2.1	Current condition of surface waters in the PEA area	Detailed information on the condition of specific surface water bodies in the PEA area that may be under the impact is not available in this assessment phase as the location of the OPTL and the need for additional land plots for the Alytus TS extension are not clear. The information will be detailed in the course of the EIA and the preparation of the EIA report.
2.2	Potential impact during PEA construction/implementation	Probable temporary impact in the construction phase.
2.3	Potential impact during PEA operation	Surface wastewater will be generated by the Alytus TS. Potential impact on surface water bodies will be assessed in the EIA Report.
2.4	Impact abatement/localisation measures planned	Impact abatement measures may be provided for in the EIA Report on assessment of potential impact.

3	Potential object of impact / component of environment	Soil
3.1	Current condition of soil in the PEA area	See 3.2.6. The information will be detailed in the course of the EIA and

		the preparation of the EIA report.
3.2	Potential impact during PEA construction/implementation	Soil may be damaged during the construction and installation of the OPTL and Alytus TS. The extension of the Alytus TS will require an additional land plot which will be largely built up and covered with artificial coverings. The OPTL may cross forest areas, therefore, may affect forest soils as well. The EIA Report will contain an assessment of the area, thickness and volume of fertile soil to be removed in the construction phase, soil pollution caused by the PEA, and chemical and physical impact on soil caused by the PEA.
3.3	Potential impact during PEA operation	Low probability of impact
3.4	Impact abatement/localisation measures planned	Impact abatement measures will be provided for in the EIA Report on assessment of potential impact.

4	Potential object of impact / component of environment	Earth interior
4.1	Current condition of the earth interior in the PEA area	See 3.2.6 The information will be detailed in the course of the EIA and the preparation of the EIA report..
4.2	Potential impact during PEA construction/implementation	Probable temporary impact in the construction phase. Construction of the OPTL and Alytus TS facilities will require working in the upper layer of the earth interior (mainly in the aeration zone, groundwater aquifers, and, in individual cases, potentially in deeper layers). In such cases temporary hydrodynamic impact is possible; there is a probability of chemical contamination.
4.3	Potential impact during PEA operation	Low probability of impact
4.4	Impact abatement/localisation measures planned	The EIA Report will contain an analysis of potential impact of the PEA on the earth interior, aeration zone and groundwater; measures to reduce this impact will be provided for as necessary.

5	Potential object of impact / component of environment	Landscape
5.1	Current condition of landscape in the PEA area	The PEA area falls within the Sūduva hill region – a region of South Lithuanian highlands. The area has diverse forms of terrain and elements of landscape – many lakes, hills,

		<p>forest areas wet recessions overgrown with shrubs, and stream valleys, however, it has lost its natural features at many places, mainly due to significant changes to the soil cover and intensive farming in a highly anthropogenic landscape. The northern part of Lazdijai district has many plains (in greater detail – p. 3.2.9).</p> <p>The information will be detailed in the course of the EIA and the preparation of the EIA report.</p>
5.2	Potential impact during PEA construction/implementation	<p>Probable temporary impact in the construction phase.</p> <p>During construction, soil cover and even terrain forms may be restored by recultivating former construction sites and restoring former landscape features.</p>
5.3	Potential impact during PEA operation	<p>Additional adverse impact on the natural landscape can be assessed from two aspects. Firstly, if the OPTL will extend along a strongly urbanised, i. e. damaged natural landscape, the impact on natural landscape will be minimal. On the other hand, as the OPTL crosses the natural elements of landscape, visualisation of the designed facility should be minimised. It should only be increased at places where this is necessary to insure protection of both migrating and local birds.</p>
5.4	Impact abatement/localisation measures planned	<p>The EIA Report will contain an assessment of the impact of the PEA both on the natural framework of Alytus and Lazdijai districts as a whole, and on individual elements of the NF; aspects of reducing visualisation and recultivation of damage will be considered.</p>

6	Potential object of impact / component of environment	Protected natural areas
6.1	Current condition of fauna in the PEA area	<p>See p. 3.2.10</p> <p>The information will be detailed in the course of the EIA and the preparation of the EIA report.</p>
6.2	Potential impact during PEA construction/implementation	<p>Impact on all Natura 2000 areas will be assessed through detailed assessment of potential negative impact on all target protected species and habitats of all Natura 2000 areas. This assessment will be made according to the Procedure approved by order of the Minister of Environment No. D1-255 of 22 May 2006. In case of protected areas of national significance, impact on the natural values within them will be evaluated.</p>
6.3	Potential impact during PEA	Probable impact

	operation	
6.4	Impact abatement/localisation measures planned	The abatement will be considered by proposing alternative locations for the PEA, in addition, the impact abatement measures not for protected areas as a whole but for the protected sites (for the protection of which the areas were established) within such areas will be proposed.

7	Potential object of impact / component of environment	Flora
7.1	Current condition of flora in the PEA area	See p. 3.2.10. The PEA area has a plant cover having specific significance on a national scale due to the southern plant species, communities and habitats forming it. As elements of fauna are always localised geographically, the area of PEA must be known as exactly as possible for the impact assessment purposes (i.e. locations of facilities to be constructed, access roads for maintenance, construction site areas). The EIA of the planned activity will cover the potential impact on the natural plant cover (protected species; forest, grassland, bog and water plant communities and habitats) both in the construction and operation phase. The impact assessment must be based on the data obtained through cartographing of valuable elements of the plant cover (plant species, communities and habitats), determination of status and consideration of compensatory/alternative solutions
7.2	Potential impact during PEA construction/implementation	Potential adverse impact on natural plant cover.
7.3	Potential impact during PEA operation	Low probability of adverse impact.
7.4	Impact abatement/localisation measures planned	Compensatory measures to reduce the overall adverse impact on flora, in particular in the facilities' construction phase, will be provided for in the EIA Report.

8	Potential object of impact / component of environment	Fauna and other biodiversity
8.1	Current condition of fauna in the PEA area	See p. 3.2.10. The information will be detailed in the course of the EIA and the preparation of the EIA report.
8.2	Potential impact during PEA	Potential adverse impact is probable.

	construction/implementation	Impact on all Natura 2000 areas will be assessed through detailed assessment of potential negative impact on all target protected species (e. g. halcyon and corn-crake) and habitats of all Natura 2000 areas.
8.3	Potential impact during PEA operation	Probable impact
8.4	Impact abatement/localisation measures planned	Compensatory measures to reduce the overall adverse impact on fauna in the construction and operation phases will be provided for in the EIA Report. Compensatory measures reducing the impact on halcyon and corn-crake may be provided for. Technological measures to reduce impact on birds. The abatement will be considered by proposing alternative locations for the PEA, in addition, the impact abatement measures not for protected areas as a whole but for the protected sites (for the protection of which the areas were established) within such areas will be proposed.

9	Potential object of impact / component of environment	Cultural heritage sites
9.1	Current condition of cultural heritage in the PEA area	See p. 3.2.12 The information will be detailed in the course of the EIA and the preparation of the EIA report.
9.2	Potential impact during PEA construction/implementation	Probable temporary impact in the construction phase.
9.3	Potential impact during PEA operation	No impact foreseen.
9.4	Impact abatement/localisation measures planned	The EIA Report will contain information on the cultural heritage sites in the areas adjacent to the PEA area, an analysis of potential impact on such sites, and impact abatement measures planned.

10	Potential object of impact / component of environment	Public health and living environment
10.1	Current condition of public health in the PEA area	The PEA is classified as an activity with a potential physical impact. Therefore, according to HN 104:2000, a distance of 250 m is recommended from the 400 kW overhead power line to residential buildings. According to item 5.1 of this hygiene norm, if the overhead line field strength under the wires will not exceed 5 kV/m, this distance may be reduced

		to 30 m. The EIA Report will contain an analysis of the current condition of public health in the PEA area; a sanitary protection zone for the PEA facilities will be established.
10.2	Potential impact during PEA construction/implementation	Probable temporary impact in the construction phase.
10.3	Potential impact during PEA operation	The EIA Report will contain a detailed analysis of potential physical impact (electromagnetic radiation, noise) and other impact on living environment and public health.
10.4	Impact abatement/localisation measures planned	The planning alternatives, the need for environmental monitoring, aspects of selection of abatement measures and compensatory measures will be considered and assessed in the EIA Report.

Monitoring

The need for environmental monitoring in the PEA construction and operation phases will be decided only on completion of a detailed EIA of the PEA. The relevant information will be presented in the EIA Report.

Emergencies

Potential emergencies during PEA will be assessed according to the Recommendations for the Assessment of Risk of Potential Emergencies in Planned Economic Activities approved by order of the Minister of Environment No. 367 of 16 June 2002 and other relevant regulations.

The EIA Report will contain an analysis of emergencies (including forecasting of most probable scenarios of maximum impact) that may occur in the operation of the OPTL and Alytus TS; emergency prevention and response measures will be recommended.

4.4. PRELIMINARY METHODOLOGY OF THE PEA ALTERNATIVES' ANALYSIS IN TERMS OF EIA

Alternatives of solutions on different levels have been and will be analysed as part of the EIA of the PEA. Most of the alternatives are based on strategic and economic-technological criteria.

The PEA alternatives can be classified as:

- strategic,
- time-related;
- technological;

- place-related
- environmental.

Strategic alternatives are determined by the following key criteria:

- interests of stakeholders;
- European Union's environmental regulations;
- trends and competition in the global energy markets;

Time-related alternatives

The LitPol Link interconnection (from Alytus to Elk) is planned to implement in full by 2015. The OPTL construction and the reconstruction and extension of the Alytus TS are to be implemented by 2015. Factors that may influence the term of implementation of the PEA:

- search for and selection of optimal technological approaches;
- global economic crisis;
- adjustment of strategic plans according to decisions by the PEA organisers;
- amendments to the EU and Lithuanian legislation;
- term of the OPTL construction depending on the periods of fauna migration, vegetation of flora etc.

Technological alternatives

It is anticipated that all the new PEA facilities and production will be planned according to the best available techniques and technologies applied in the global practice. Optimal technologies allowing to achieve maximum efficiency and minimal impact on the environment will be selected. The planned technological approaches are partly described in this Programme, while a more in-depth assessment of alternative approaches will be presented in the EIA Report, upon selection and adoption of final decisions.

Place-related alternatives

Different technological alternatives under consideration, economic and environmental criteria, the PEA area build-up density, and interests of land owners may influence the selection of location.

Potential factors affecting the selection of the OPTL location:

- residential areas;
- protected natural areas and their protection zones;
- protected cultural heritage;

- areas of resources of the earth interior and areas of their protection zones;
- forest areas;
- water bodies;
- main service lines, present and future
- finally decided starting points and present territorial planning approaches;
- interests of land owners;
- PEA needs and technological aspects;
- other aspects.

Planned methodology for the assessment of alternative locations for the OPTL

The EIA will be made using the gradual detailing approach, i.e. the PEA alternatives will be examined on several levels, from the broadest (district level) to the most narrow (local level). The evaluation path proposed:

Assessment level I. EIA corridor for the PEA. This is a conventional territory defined and examined by the evaluator based on the primary conceptual approaches of the plan; it is adopted that within this territory the economic activity may be planned and that within it the search for the optimal OPTL alternatives will be conducted and the impact of the alternatives on the environment will be assessed. Present natural conditions and important natural objects have been preliminary described in the EIA Programme within the boundaries of this territory.

A territorial corridor with the width varying from 6.7 to 16 km and with the length of 48 km has been selected. The area would occupy approx. 591 km² (Graphic Annex 1). Its south-western boundary is a section approx. 10 - 11 km long, extending along the Lithuanian – Polish border from the boundary of Lazdijai district to the southern side of the Galadusio lake. In this section, the point/section of crossing of the state border by the PEA will be selected.

North east border – a section approx. 12 km long, in the northern side starting at the boundary of Alytus town and extending along the country road Alytus-Prienai till the boundary of Alytus town and further along the boundary of the Alytus town and district up to the boundary of the Vidzgirio botanic reserve. The starting point of the PEA is at the present Alytus TS on the north western side of Alytus town.

The southern boundary of the conventional corridor extends along the areas of Alytus and Lazdijai districts. It starts at the southern part of the Alytus town area (are of the Vidzgirio botanic reserve), crosses the territory of Alytus district (Vankišķiai, Buckūnai), then,

extending along the territory of Lazdijai district, passes by the Meteliai regional park and Lazdijai town, and ends at the southern edge of Galadusio lake.

The northern boundary of the corridor starts at the intersection of the Alytus district boundary with the country road 130 Alytus-Prienai, extends along the boundary of Alytus district, passes by the Žuvintas biosphere reserve and then extends along the Lazdijai district boundary to the Lithuanian – Polish border.

Assessment level II. Alternatives of the planned OPTL routes. These are the potential PEA alternative belts, identified in the process of strategic environmental assessment and of the EIA corridor analysis, in which the opportunities of the PEA and the EIA related to the realisation of such opportunities can be considered. These belts would cover the strips of territory up to 2.5 km wide (depending on circumstances the width may vary in different sections), starting at the Alytus TS and ending at the Lithuanian-Polish border (border crossing point or section). More than one such belt is being planned. One of the belts would cover the OPTL provided for in the current master plans of Alytus and Lazdijai districts.

Assessment level III. This assessment period will involve an assessment of any OPTL location changes in the optimal (from the standpoint of EIA) alternative (the belt of the OPTL route). These changes may occur due to interests of land owners, any new information which has not been evaluated before etc.

The assessment result to be achieved: a belt for the construction of the OPTL route, which is optimal from the standpoint of EIA, will be selected, at the same time leaving for the PEA organiser the opportunity and freedom (within the boundaries of the agreed belt) to slightly change and adjust the line marking in the phase of agreement with the land plot owners.

The OPTL route location alternatives, which have been considered and selected, will be described in detail and specified in the EIA Report.

4.5. PRELIMINARY PROCEDURE FOR THE COORDINATION AND PUBLICITY OF THE EIA REPORT

Anticipated stakeholders in the EIA procedure

According to p. 1.2.5 of Annex 1 to the Procedure for the Examination of the Documentation on the Assessment of the Impact of Planned Economic Activities on the Environment at the Ministry of Environment and Institutions Subordinate to it (23 June 2006 No. D1-131 („when the EIA is made according to the provisions of the Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO)“), the Ministry of Environment of the Republic of Lithuania should act as a responsible body managing the EIA process in assessment of PEA carried out by Lietuvos Energija AB. Having regard to the territorial

aspect of the PEA (the EIA for the PEA will be made in the territory of each state separately) and to the contact zone between the states (only the border crossing point is relevant) as well as the current agreements between the Republic of Lithuania and the Republic of Poland [29], it is known that the Ministry of Environment will ensure only transboundary consultations in the EIA process, with the delegation of the supervision over the EIA procedures and the functions of a responsible authority on a local level to a structural division of the ministry – the Alytus Regional Environmental Protection Department.

Item No.	EIA responsible authority	Notes
1	Alytus Regional Environmental Protection Department Ministry of Environment	EIA Programme EIA Report Transboundary consultations

Table 4.1. EIA stakeholders which will present their conclusions on the EIA Programme and EIA Report concerning PEA by Lietuvos Energija AB

Item No	EIA stakeholders**	Notes
1	Alytus county governor's administration	EIA Programme* EIA Report
2	Alytus district municipal administration	EIA Programme EIA Report
3	Lazdijai district municipal administration	EIA Programme EIA Report
4	Alytus local unit of the Cultural Heritage Department under the Ministry of Culture	EIA Programme* EIA Report
5	Alytus fire rescue service	EIA Programme* EIA Report
6	Lazdijai fire rescue service	EIA Programme* EIA Report
7	Alytus Public Health Centre under the State Public Health Service under the Ministry of Health of the Republic of Lithuania	EIA Programme EIA Report
8	Lazdijai Unit of the Alytus Public Health Centre under the State Public Health Service under the Ministry of Health of the Republic of Lithuania	EIA Programme EIA Report
9	State Protected Areas Authority	EIA Programme*** EIA Report
10	Lithuanian Geologic Survey under the Ministry of Environment	EIA Programme*** EIA Report
11	The public	EIA Programme EIA Report

*- according to Section II, Article 8(6) of the EIA Law [9], the said stakeholders may state that they do not wish to examine the EIA Report and in such a case the report is not submitted to them.

** - the list of EIA stakeholders is subject to change during the EIA Programme agreement process;

*** - probable stakeholders.

Public awareness and participation in the EIA process

According to the Law on EIA, the public shall be informed about planned economic activities and enabled to participated in the EIA process following the procedure established in the Law and regulations (order by the Minister of Environment of the Republic of Lithuania No. D1-370 of 15 July 2005 "Concerning approval of the Procedure for Public Awareness of and Participation in the Process of Environmental Impact Assessment of Planned Economic Activities").

In the process of EIA, the public must be made aware of all the PEA location alternatives through information and holding public discussions in all municipalities and elderships within the zone of impact of the planned economic activity (see Table 4.2 and Graphic Annex 6).

Table 4.2. Planned publicity procedure for the EIA Report

Item No	Item No	Municipality / eldership	Information item No.
1	1	Alytus district municipality	1, 3, 5,7,12
2	1.1	Alytus district municipality, Alytus eldership	2, 4,8,12
3	1.2	Alytus district municipality, Simnas eldership	2, 4,8,12
4	1.3	Alytus district mun., Miroslavas eldership	2, 4,8,12
5	1.4	Alytus district mun., Krokialaukis eldership	2, 4,8,12
6	2	Lazdijai district municipality	1, 3, 5,7,12
7	2.1	Lazdijai district mun., Lazdijai town neigh.	2, 4,8,12
8	2.2	Lazdijai district municipality, Krosnos eldership	2, 4,8,12
9	2.3	Lazdijai district municipality, Šeštokų eldership	2, 4,8,12
10	2.4	Lazdijai district municipality, Teizų eldership	2, 4,8,12
11	2.5	Lazdijai district mun., Būdviečio eldership	2, 4,8,12
12	2.6	Lazdijai district mun., Lazdijai eldership	2, 4,8,12

Table 4.3. EIA Report publicity measures and procedures

Item No	Publicity/information measure	Legal basis
1	Announcement in the national press	Order of the Minister of Environment of the Republic of Lithuania No. D1-370 of 15 July 2005 „Concerning approval of the Procedure for Public Awareness of and Participation in the Process of Environmental Impact Assessment of Planned Economic Activities“, Section IV, p. 18 and 18.1, Section V, p. 38
2	Announcement in the district press	Order of the Minister of Environment No. D1-370, Section IV, p. 18 and 18.1, Section V, p. 38
3	Announcement on notice board in the municipality	Order of the Minister of Environment No. D1-370, Section IV, p. 18 and 18.1, Section V, p. 38
4	Announcement on notice board in the eldership office	Order of the Minister of Environment No. D1-370, Section IV, p. 18 and 18.1, Section V, p. 38
5	Information on municipality's website	On initiative of municipality and at the request of PEA organiser and preparer of EIA documents
6	Information on eldership 's website	On initiative of municipality and at the request of PEA organiser and preparer of EIA documents
7	Displaying of the full EIA report in the district municipality until its public presentation meeting	Order of the Minister of Environment No. D1-370, Section IV, p. 22
8	Displaying of the full EIA report in the eldership office of district municipality until its public presentation meeting	Order of the Minister of Environment No. D1-370, Section IV, p. 22
9	Displaying of the full EIA report in the offices of the PEA organiser until its public presentation meeting	Order of the Minister of Environment No. D1-370, Section IV, p. 22
10	Displaying of the full EIA report in the offices of preparer of EIA documents until its public presentation meeting	Order of the Minister of Environment No. D1-370, Section IV, p. 22

Table 4.3 continued

Item No.	Publicity/information measure	Legal basis
11	Displaying of the full EIA report at other places until its public presentation meeting	On initiative of PEA organiser and preparer of EIA documents
12	Public presentation of the EIA report at a meeting	Order of the Minister of Environment No. D1-370, Section IV, p. 22
13	Information on the website of the PEA organiser	Order of the Minister of Environment No. D1-370, Section IV, p. 18 and Section V, p. 38 On initiative of PEA organiser
14	Information on the website of the preparer of EIA documents	On initiative of preparer of EIA documents
15	Information on the website of responsible authority	Order of the Minister of Environment No. D1-370, Section V, p. 36, 37
16	Notice by registered letter	
17	Distribution of booklets on PEA	Order of the Minister of Environment No. D1-370, Section IV, p. 19 On initiative of PEA organiser and preparer of EIA documents
18	Dissemination of information on PEA in the press	Order of the Minister of Environment No. D1-370, Section IV, p. 19 On initiative of PEA organiser and preparer of EIA documents

EBRD publicity

The preparatory works for the LitPol Link in Lithuania are financed by the Ignalina International Decommissioning Support Fund managed by the European Bank for Reconstruction and Development (EBRD). The bank has established procedures for the publicity of documentation, which will be followed in the process of making of the EIA for the PEA. On completion of the EIA Programme it will be presented to the EBRD, whose proposals and comments will be taken into account while preparing the EIA Report.

4.6. ENVIRONMENTAL IMPACT ASSESSMENT IN TRANSNATIONAL CONTEXT

The process of an EIA for planned economic activities in transnational context is governed by a number of legal acts. The following legal acts are relevant to the PEA:

- Republic of Lithuania Law on the Ratification of the 1991 Convention on Environmental Impact Assessment in a Transboundary Context (Official Gazette, 1999, No. 92-2687);

- Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO, 1991) (Official Gazette, 1999, No. 92-2688);
- Agreement by and between the Government of the Republic of Lithuania and the Government of the Republic of Poland on the Implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (Official Gazette, 2004, Nr. 92-3353).

The PEA is not listed in Annex 1 of the ESPOO Convention on Environmental Impact Assessment in a Transboundary Context. However, under Article 1(2) of the Agreement by and between the Government of the Republic of Lithuania and the Government of the Republic of Poland on the Implementation of the Convention on Environmental Impact Assessment in a Transboundary Context, „the Agreement shall apply to any planned activities which may give rise to a material transboundary impact and for which the environmental impact assessment procedures shall be performed and the documents on the impact of the planned economic activity on the environment shall be prepared according to the valid legal acts of each country.“

Taking account of the fact that, although the EIA for the PEA will be made in the territory of each country separately but there will be a contact zone between the countries (the border crossing point) and a common vision of implementation of the entire LitPol Link project, it is planned that interstate consultations with the neighbouring country (the Republic of Poland) will be started according to the provisions of the ESPOO Convention and the agreement between the countries [25-27].

4.7. ENVIRONMENTAL IMPACT ASSESSMENT METHODS

The following shall be made/performed in the process of assessment of the impact on the environment and public health:

- analysis of available information on the condition of the environment;
- pollution and risk modelling, identification and forecasting of impacts;
- analysis of pollution values and other values obtained through modelling and investigations as well as comparison with the allowable levels;
- designing of measures to reduce the adverse impact on the environment and health and pollution modelling using the planned abatement measures;
- analysis of alternatives;
- qualitative evaluation of public health factors (socio-economic, lifestyle, psychological);

- drawings and maps of potential dispersion of pollution.

The following software will be used for modelling as necessary:

- ESRI ArcGIS (preparation of maps);
- AutoCAD (preparation of technical drawings);
- „ISC-AERMOD View” AERMOD mathematical model (modelling of pollution dispersion);
- Surfer (terrain modelling);
- CadnaA (noise modelling);
- Specific MS Excel spreadsheets (risk analysis, dispersion modelling).

Designing of measures to reduce the adverse impact on the environment and health will be based on the information on best available techniques:

- BAT Reference Notes developed by the European Commission;
- BAT Reference Notes developed by World Bank Group’s “Pollution Prevention and Abatement Handbook”;
- Batnees Guidance Notes developed by the Irish Environmental Protection Agency;
- PARCOM Recommendation 94/50;
- HELCOM Recommendations.

The dose-response evaluation will be based on the information received from the Internet and other databases (IRIS, Hazardous Substances Data Bank), the National Register of Potentially Dangerous Substances (State Centre for Environmental Health), Lithuanian hygiene norms and other regulations.

The following investigations will be conducted in the PEA area in the EIA process:

- field studies of fauna in the potential locations identified during the preliminary assessment, using standard floristic and phytocenologic study methods;
- inventory of small natural swamps and/or other natural water bodies (direct studies), determining potential habitats of amphibians, reptilians and invertebrate;
- identification of birds diversity, cartographing of breeding and feeding locations, determination of migration routes;
- determination of main accumulation points and/or migration routes of bats (by the ultrasound method);
- field landscape studies.

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