

**Environmental Impact Assessment Report**  
**A1 Motorway (Phase I)**  
**Poland**

**Executive Summary**

**Gdańsk June 2001**

---

**TABLE OF CONTENTS**

<b><u>1. INTRODUCTION</u></b> .....	<b>3</b>
<u>1.1. Background</u> .....	3
<u>1.2. The need for the investment</u> .....	3
<u>1.3. Legal and institutional framework</u> .....	4
<b><u>2. DESCRIPTION OF THE INVESTMENT</u></b> .....	<b>6</b>
<u>2.1. Route variants</u> .....	6
<u>2.2. Technical parameters</u> .....	7
<u>2.3. Traveller service stations</u> .....	7
<b><u>3. GENERAL DESCRIPTION OF A1 (PHASE 1)</u></b> .....	<b>8</b>
<u>3.1. The pomeranian voivodeship</u> .....	8
<u>3.2. The kujawy and pomeranian voivodeship</u> .....	8
<b><u>4. ENVIRONMENTAL IMPACT ASSESSMENT</u></b> .....	<b>9</b>
<u>4.1. Environmental impact assessment on flora, fauna and habitat</u> .....	9
<u>4.2. The environmental impact assessment for cultural/heritage and landscape</u> .....	11
<u>4.3. Environmental impact assessment - social and economic issues</u> .....	12
<b><u>5. SECTIONS REQUIRING INTEGRATED MITIGATION MEASURES</u></b> .....	<b>13</b>
<b><u>6. CONCLUSIONS</u></b> .....	<b>16</b>
<b><u>7. RECOMMENDATIONS</u></b> .....	<b>16</b>

## **1. INTRODUCTION**

### **1.1. BACKGROUND**

The present Executive Summary of the EIA prepared for the EBRD comprises a brief evaluation of the design of Phase 1 of the A-1 motorway and a description of the EIA procedure, identification of significant environmental impacts including landscape, cultural heritage and social issues, and recommendations for mitigating adverse impacts.

The Environmental Impact Assessment (EIA) for Phase 1 of the A-1 motorway comprises a 89-kilometre route from the “Rusocin” junction (0 km) to the “Nowe Marzy” junction (89 km). In Phase 2 the motorway will be extended from the “Nowe Marzy” junction to Toruń, where it will be connected with an existing 11-kilometre road section including the bridge over the Vistula River in Czerniewice.

This summary is a part of the EIA procedure which is necessary in order to obtain the permit to construct the motorway. The process has been undertaken in compliance with the requirements of Polish Law, the European Union and the standards of the European Bank for Reconstruction and Development. The process has included public consultation and access to information during the Scoping Meetings held to define the scope of the present EIA .

### **1.2. THE NEED FOR THE INVESTMENT**

A-1 motorway was anticipated for execution in the late 1960s as a part of TransEuropean Motorway North – South (TAPP), joining Scandinavia with the countries located by the Mediterranean Sea. The corridor running from the north to the south of Europe via Poland was established as the VI European Transport Corridor according to provisions of the Crete Conference in 1994. In this corridor there are locations with trans-national importance i.e. Gdańsk / Gdynia, Łódź / Warsaw and Upper Silesia, as well as the major elements of Poland’s transport infrastructure such as basic railway lines and vehicle road networks.

In the VI European Transport Corridor is found the national road No 1 Gdynia / Gdańsk – Toruń – Łódź – Katowice – Cieszyn (the Polish State border). This road has class III technical parameters. It is no longer acceptable for fast and safe motor traffic, apart from the section between Piotrków Trybunalski and Częstochowa which is comparable with motorway standards. The distance from the Gdańsk / Gdynia harbour area to the Polish State border with the Czech Republic is about 600 km. The total length of the A-1 motorway when complete will be roughly 560 km, shortening the travelling route by 40 km and the travelling time by 1/3 in comparison with today (Drawing 1).

In the area of Łódź and Katowice, A-1 motorway will cross the planned A-2 and A-4 east – west motorways, located in the transport corridors that join the European Union with Russia and the Ukraine.

The traffic projections conducted by the Agency for Construction and Exploitation of Motorways estimates that for the A1 (Phase 1) there will be 12,000 vehicles per 24 hrs in 2005; 21,000 vehicles per 24 hrs in 2010, and 26.000 to 30.000 vehicles per 24 hrs in 2020.

The development of the A-1 motorway will benefit the ferry, container and roll-on-roll-off carrier connections between Gdańsk and Gdynia and the harbours of the Baltic and North Sea.

Today, there are road improvements being carried out in Gdańsk and Gdynia aimed at improving the connection of the harbour and industrial districts with the existing by-pass of Gdansk and Gdynia, and ultimately with the A-1 motorway. In Gdynia the Kwiatkowski Route is being planned and the Janek Wiśniewski route is under construction. In Gdańsk the Sucharski Route and Armii Krajowej route are under construction.

The economic activity of Boroughs with current low economic outputs are anticipated to grow as a result of the motorway passing by them. The trade development is expected for small and medium sized enterprises and other forms of activity such as tourism, which will benefit potential leisure areas adjacent to the motorway.

### **1.3. LEGAL AND INSTITUTIONAL FRAMEWORK**

To implement the governmental program of motorway construction, the Polish Parliament passed a law on the 27 October 1994 concerning toll motorways. It defined special regulations for the location and construction for such motorways. These regulations are different from those binding other forms of development.

From 1 January 2001 the law of 9 November 2000 came into force. This law is compliant with the European Union Law and provides for public access to information regarding environmental protection and environmental impact assessment. It enables the following:

- adapting the Polish law to be compliant with European Union Directive 85/337/EEC 'Proposal for a Council Directive concerning the environmental effects of certain public and private projects' dated 27th June 1985 and its subsequent amendment 97/11/EU dated 3rd March 1997;
- adapting the Polish law to be compliant with European Union Directive 90/313/EEC dated 7th June 1990 'Public Access to Information about the Environment';
- The possibility of ratifying the UN/EEC Aarhus Convention 1998 signed by the Polish Government 'Access to Information, public participation in decision making and access to justice in environmental matters'.

The Act of 31 January 1980 on the Protection of the Environment and its associated regulations provided the basis for assessing the environmental impact of the A1 for the purposes of local planning and route location indications and decisions. With regard to these regulations, the Agency for Construction and Exploitation of Motorways obtained Location

Decisions from the Gdańsk Voivod and Bydgoszcz Voivod which define the motorway location from the "Rusocin" junction to the "Nowe Marzy" junction (Attachment 2).

In accordance with the Polish law 'Access to information about the environment, its protection and the environmental assessment procedure' and associated regulations, the Concessionaire will have to conduct an environmental impact assessment procedure for the detailed design (construction) project. This is necessary to obtain permits to construct the A1 and the accompanying structures.

In spite of the fact that up to the end of 2000 Polish Law did not comprehensively cover public consultation within the EIA procedure to EU standards, some public consultation was conducted before the Location Decisions were issued. They were as follows:

- A-1 motorway route has been included in the local land use plans. Prior to approval by self-governing Boroughs the plans were presented to the public for consultation so that interested parties and individuals could become acquainted with the plans and table comments or questions.
- The motorway designers and the representatives of the Agency for Construction and Exploitation of the Motorways participated in meetings with the representatives of the self-governments of the Boroughs through which the motorway passes.
- Representatives of the self-government administration, environmental protection administration and ecological organisations were invited to a session of the Committee for the Environmental Impact Assessment at the Ministry of Environmental Protection, Natural Resources and Forestry that took place in December 1995.
- The impact assessment reports concerning environment, agricultural land and forests, and culture/heritage were made available to provincial environment protection authorities, self-governments at province and borough level.
- The draft location decision was announced to self-governments and borough inhabitants in the form of announcements at Borough Offices..

The detailed scope of the EIA for the motorway is currently regulated by the Minister's Environmental Protection, Natural Resources and Forestry act of 5 July 1995. In 2001 the regulation will be replaced with the Ministry of Environment regulation which will define the detailed requirements of the motorway environmental impact assessment at the construction design stage.

The Location Decisions concerning the motorway issued by the Voivods define the conditions resulting from the need to protect the environment, cultural/heritage sites values, and protection of third party interests.

These Location Decisions cover detailed conclusions for the Designer, Investor and Concessionaire. They will also have been included in this report.

Moreover, in compliance with the requirements of the European Bank of Reconstruction and Development, EIA Scoping Meetings were held in Toruń and Gdańsk on 29th and 30th March 2001. During these public meetings further details were discussed

concerning the scope of the EIA in the Kujawy and Pomeranian and Pomeranian Voivodeships. Detailed requirements for the A1 motorway have been announced related to the environment, cultural/heritage sites and landscape and social aspects.

All the requirements mentioned above were:

- included in the new environmental law,
- included in the Location Decisions issued by the Voivods,
- formed during the Scoping Meetings.
- They will have to be precisely referred to at the stage of the construction design while conducting the EIA procedure before the construction permit is obtained, as well as in course of construction and operation of future A1 sections.

## **2. DESCRIPTION OF THE INVESTMENT**

### **2.1. ROUTE VARIANTS**

The route of A-1 motorway between Gdańsk and Cieszyn (the southern Polish border) results from long-term studies in the scope of transport and land use planning. When the motorway was being planned the following conditions were considered: land use, environment, cultural, social and others. The research and design works carried out in 1980s made the route of the motorway and its connections with the adjacent areas better integrated.

In the 90 km long motorway section between Gdańsk and the “Nowe Marzy” junction three alternative route were evaluated:

- alternative I – basic (selected),
- alternative II – using the fragment of the by-pass of Gdansk and Gdynia and included a 24 km section through the northern part of Bory Tucholskie,
- alternative III – modification of alternative II with the route passing through the periphery of Bory Tucholskie.

The original route of the motorway passed between the lakes Łąkosz and Czarne and through the valley of the Maława River. To avoid this environmentally sensitive area, the motorway route was moved further east. Each of the route variants required extensive tree felling.

The design and planning works were accompanied by public consultations carried out by the motorway designers.

A-1 motorway planned between Gdańsk and Nowe Marzy runs through the jurisdiction of the following Voivodeships:

- the Pomeranian Voivodeship in the boroughs: Pruszcz Gdański, Trąbki Wielkie, Pszczółki, Tczew, Subkowy, Starogard Gdański, Pelplin, Morzeszczyn, Skórcz, Smętowo Graniczne,
- the Kujawy and Pomeranian Voivodeship in the boroughs: Nowe, Warlubie, Jezewo, Dragacz.

In the entire part the route of the planned A-1 motorway is compliant with the requirements of the local land use development plans.

## **2.2. TECHNICAL PARAMETERS**

The motorway design will meet the following technical parameters:

- technical class I (motorway);
- design speed 120 km/h;
- number of roadways 2;
- number of lanes 4 (two roadways 2 lanes each);
- targeted number of lanes 6 (two roadways 3 lanes each);
- lane width 3.75 m;
- central reservation width 4.00 m
- emergency lane width 3.00 m;
- road crown width 28.5 m;
- targeted road crown width 36.00 m;
- hard shoulder width 1.25 m.

## **2.3. TRAVELLER SERVICE STATIONS**

Types of Traveller Service Stations (MOP):

- I – Leisure MOP, comprising parking spaces for passenger cars and lorries, leisure places with toilets, green areas, food and drink facilities;
- II – Leisure and Service MOP, comprising the utilities for I-type MOP plus a filling station, car service station, food, drink and retail facilities;
- III – Complex Services MOP, comprising the utilities as for II-type MOP, extended by a motel.

Throughout the Pomeranian Voivodeship, four pairs of Traveller Service Stations have been located: "Kleszczewo" in the borough of Pszczółki, "Goszyn" in the borough of Tczew, "Olsze" in the borough Pelplin and "Bobrowiec" in the borough of Skórcz. In the Kujawy and Pomeranian Voivodeship two pairs of MOPs have been located: "Gajewo" in the borough of Nowe and "Mniszek" in the borough of Dragacz.

### 3. GENERAL DESCRIPTION OF A1

#### 3.1. THE POMERANIAN VOIVODESHIP

The A1 starts in the Pomeranian Voivodeship at the “Rusocin” junction (near Pruszcz Gdański) and ends near Rychława village (65.8 km). This part runs through the eastern edge of the upland gradually reducing in elevation towards the valley of the Vistula River. In consequence the motorway crosses river valleys that drain this area a number of times and it also crosses extensive wetland, boggy and land improvement areas.

This area is characterised by advantageous natural conditions:

- the existing environmental standards are not exceeded,
- in most cases the soils have significant agricultural value.

This area is mainly used for agricultural purposes with the high intensity of plant and animal production. The motorway does not cross any large compact forest areas. Small areas of tree felling only will be necessary in the valley of Motławy / Szpęgawy (the area of “Swarożyn” and “Pelpin” junctions) and in the area of Borków.

On the initial section of the A1 to the MOP “Kleszczewko”, the motorway runs above the Main Underground Water Reservoir – GWZP No 111 – ‘Subniecka Gdańska’, which is well isolated from the surface. On the motorway route in the Pomeranian Voivodeship, there are no documented natural resources deposits that would be of any economic value.

There are clusters of rural developments in the vicinity of the motorway. There are no large settlements. In the vicinity of the motorway, here are sites and areas legally protected by the Monuments Conservator, including manor parks and archaeological sites.

The areas adjacent to the motorway are characterised by little local infrastructure and low densities of road and rail networks.

#### 3.2. THE KUJAWY AND POMERANIAN VOIVODESHIP

In the territory of the Kujawy and Pomeranian Voivodeship, the section of A-1 motorway currently being evaluated runs from the areas of Rychława village to the “Nowe Marzy” junction (the borough of Dragacz). For the entire 24.5 kilometre section, the motorway runs through the areas of outwash and moraine plain. This area is characterised by :

- environmental standards not being exceeded,
- significant landscape and environmental values are found in some areas such as Bory Tucholskie and the Group of the Vistula River Landscape Parks (now the Landscape Park of the Lower Vistula Valley) receiving official protection in 1997 as the ‘Eastern Protected Landscape Area’.

In some places the motorway crosses the periphery of larger forested areas, including the eastern part of Bory Tucholskie. The largest tree felling will take place in the areas of Gajewo and from Rulewo to the “Nowe Marzy” junction.

The southern end of the motorway crosses over the edge of the Major Underground Water Reservoir No 219 of the Maława and Osa Rivers, which is poorly isolated from the surface.

On the motorway route within the Kujawy and Pomeranian Voivodeship there are no documented natural resources deposits of any economic value.

## **4. ENVIRONMENTAL IMPACT ASSESSMENT**

### **4.1. ENVIRONMENTAL IMPACT ASSESSMENT ON FLORA, FAUNA AND HABITAT**

The environmental impact assessment has been executed to date on the basis of available literature, analysis of natural resource maps and topographical maps. Thirty six potentially environmentally important areas, located either on the motorway route or in the adjacent area were selected for further site surveys. Site inspection has shown that only 14 of the 36 chosen areas selected is of higher than the average natural value. A detailed environmental evaluation was executed of these areas. On the basis of its results, it was determined that:

- none of the selected areas on the motorway route have the highest regional, or trans-regional environmental significance;
- 4 selected areas have environmental and landscape significance;
- 9 selected areas have medium environmental and landscape significance;
- 1 of the areas investigated had average environmental significance.

The following areas have been considered to have the greatest environmental impact:

- “Motława / Szpęgawa Valley”,
- “Forest complex in the area of Bielawka”,
- “Ecological grounds in Borków”,
- “The lake complex Łąkosz, Czarne, Zawada”.

Two areas “The River Motławy / Szpęgawy Value” and “Ecological Grounds in Borków” are similar in having great biodiversity. In one of the areas there are bogs, peatbogs, open waters, weeds and damp loving forests and multi-species forests. Thus, they are characterised by habitats with great biodiversity of flora and fauna including many legally protected species.

The Motława / Szpęgawa Valley is a local ecological corridor, joining the large forest complex in the area of Starogard Gdański with the valley of the Vistula River – a corridor of international significance. The preliminary site investigation of the flora and fauna have

shown that on the motorway route and its adjacent surroundings there are wild untouched habitats and semi wild habitats. The most valuable ones are: forest growing on dry ground *Aceri-Tilietum*, including many types of protected and rare plants with numerous populations of lilies. Some communities of rush *Phragmitetea*, willow thicket *Salicetum pentandro-cinereae* and alder and ash marshy meadow *Circaeo-Alnetum*.

In the area of the 'Ecological grounds' in Borków, the motorway will cross a small portion of forest, adjacent to a habitat of wetlands, thicket and damp loving forests to the north. This wetland area is connected to the tributaries of the Janka River by a drainage ditch and meadows. It plays an important ecological role. It is the habitat for numerous vertebrates, including amphibians, water fowl and deer. Also, it provides suitable conditions for the reproduction of frogs, especially the forest frog. The most important wetland species are the mosses from *Scheuchzerio-Caricetea fusca* class, thicket groups from *Phragmiteeta* class and water communities from *Lemnetea* class. Wetland birch *Betuletum pubescentis* and willow thicket *Salicetum pentandro-cinereae* also cover much of the area. At the edge of this habitat, small areas of alder *Ribo nigri-Alnetum* and mixtures of alder and ash *Circaeo-Alnetum*. Of considerable landscape significance, although less wild, are the forests surrounding these wetland habitats and 'ecological grounds' (protected habitats). The forests comprises mainly pine and a birch trees planted in dry ground amongst oak and hornbeam *Stellario-Carpinetum*. The importance of this area is underlined by the presence of rare and protected species: *Eriophorum angustifolium*, *Dryopteris cristata*, *Calla palustris* and in the forests - *Frangula alnus*, *Convallaria majalis* and others. It is recommended that an investigation into the flora and fauna of this area be conducted to permit a more complete evaluation of the natural resources.

The following areas also have significant landscape and environmental value: "The forest complex in the area of Bielawka", "The forests and wetland thicket in the area of Gajewo" and "The lake complex of Łąkosz, Czarne, Zawada". Similar to the areas described above, they are characterised by high biodiversity and play an important ecological role.

In the area of Bielawka, at about kilometre 38, the motorway route will cross a relatively narrow fragment of forest complex that grows a hilly area. In this area there are relatively young but wild habitats of oak and hornbeam *Stellario-Carpinetum*. forest. Also there are plantations of pine, birch and red oak which will be separated from the main forest by the motorway. The trees provide ground cover for protected and rare plants.

One important area comprises the edge of Bory Tucholskie which co-exists in a complex habitat with meadows, rushes, thickets and damp loving forests, and wetland species and includes a group of lakes Łąkosz, Czarne, and Zawada. These are enriched by small areas of open water, drainage ditches and watercourses – tributaries to the Czarne Lake. This area is characterised by great biodiversity and ecologically rich habitats. The extensive area is covered by forests and wetland thicket – marsh alder and ash and willow thicket. Strips of trees and thicket divide the meadows and wetland plants. In the adjacent forests, pine trees have been planted both in the damp and dry areas, in some areas there are mixed woodlands that gradually transform into pinewoods. This area has great

environmental importance. Its southern section borders a protected area. In the forest and meadows there are rare and protected plant species. The habitat creates suitable living and breeding conditions for birds. Amphibians and forest frogs reproduce in the ponds and ditches.

The motorway crosses the western end of two lakes – Czarne and Zawada. Agricultural landscape predominates around these lakes,. Small strips of alder trees are observed along the margins of the lakes. The different marginal zone widths of both lakes is formed by natural groups of rush plants. Small sections of pine and birch forest and mixed wood in the vicinity of the lakes will be isolated. They are not considered of great environmental importance although they are a part of the local ecology.

On the southern side of the Łąkosz Lake at a distance of about 1 km from the A1 is the “Osiny” forest reserve. Here there are environmentally important and unique forest and wetland habitats. The plants in this area are very sensitive to the changes in ground water levels. The motorway should not change water drainage patterns or ground water but to assess this potential impact it is recommended that an hydrological study be conducted.

The lake complex described, together with the surrounding forests, forms an hydrological system and landscape of great significance. During the preliminary site visit no protected plants or animal species were observed at the Czarne and Zawada Lakes which would be directly impacted by the motorway. However this area should be further investigated.

The presence of the railway line close to the lakes in this area has already caused some environmental and landscape disturbance and the fragmentation of a section of Bory Tucholskie.

#### **4.2. THE ENVIRONMENTAL IMPACT ASSESSMENT FOR CULTURAL/HERITAGE AND LANDSCAPE**

Phase 1 of the A1 Motorway construction will take place in an area of historical settlements including the ‘amber route’ from the south of Europe to the Baltic Sea. In consequence many archaeological sites have been identified within the motorway corridor. Some archaeological survey works and preliminary investigations are being conducted in the Pomeranian and Kujawy Viovodeship. They are planned to be completed by the end of 2001.

The motorway route crosses areas with a large variety of landscapes which have significant visual amenity resulting from natural and cultural development..

In the Pomeranian Voivodeship the route crosses a landscape of rural and cultural character which has significant visual amenity with many heritage sites. The agricultural landscape is enriched by forested areas, valleys of meandering rivers and wetland areas.

In the Kujawy and Pomeranian Voivodeship there are mostly forest, lake and marsh areas. Some areas are agricultural. A considerable part of the area crossed by the motorway is subject to different forms of nature and landscape protection, such as landscape parks and the areas of protected landscape. The protected areas are Bory Tucholskie and the Vistula River landscape park.

Important cultural landscapes are present along about 60% of the motorway route.

Skilled introduction of the 'technical' elements into the existing landscape of significant visual amenity represents a challenge to the motorway designers.

To avoid negative impacts, the following areas have been identified that require the protection of the cultural landscape and landscape itself:

- the areas round Rusocin, Będzieszyn and Wojanów;
- the areas round Kopytkowo – Stara Jania – Leśna Jania – Frąca;
- the area of Bąkowo – Rulewo.

Moreover the areas which need to be protected and exposed are agricultural landscapes with groups of small Manor houses from Klonkowa to Borkowo.

There is also the potential for indirect impact caused by increased traffic on several historic buildings in Pelpin such as the Cathedral, Bishop's Palace and park, the Canon, and Collegium Marianum.

#### **4.3. ENVIRONMENTAL IMPACT ASSESSMENT - SOCIAL AND ECONOMIC ISSUES**

The selected motorway route does not cause any major social conflicts as it crosses scarcely inhabited agricultural and forest areas. The motorway does not cross through densely inhabited areas. The motorway route comes to within 100 to 500 metres of a few villages. There are about 110 individual buildings found within a distance of 20 metres outside of the motorway fence line.

In the Pomeranian Voivodeship the route crosses agricultural areas, scattered villages and individual farms. The division of land within the right of way is as follows: agricultural land (84%), forests (7%) and the rest (9%).

In the Kujawy and Pomeranian Voivodeship there are fewer settlements and single farms. The structure of land use is as follows: agricultural land 56%, forests (36%) and the rest 8%.

There is no need to alter the type of crops grown in the areas adjacent to the motorway. Some direct impact may arise from motorway traffic (air pollution, noise, vibration) where the route comes close to few settlements. Some villages which are very close together and have some functional connections will be bisected by the motorway. Communication between these villages will be more difficult.

A few places have been identified where inhabitants need protection against motorway impacts. In two villages Żeliszewki and Rębielcz, which are bisected by the motorway, local access to the borough school will be more difficult. The suggested solution is to provide a short pedestrian-bicycle path.

## 5. SECTIONS REQUIRING INTEGRATED MITIGATION MEASURES

The identification and definition of areas requiring integrated mitigation measures were based on the following factors:

- co-occurrence of unique nature, culture and landscape significance;
- vulnerability of the nature, culture and landscape components to adverse impacts;
- possible consequential environmental impacts on the areas adjacent to the motorway.

Along the A-1 section considered the following seven areas are particularly sensitive to motorway impacts:

- In the Pomeranian Voivodeship:
  - **km 0 - 2: the Ruscin-Będziszyn-Wojanowo section and the route through the Kłodawa river valley.** This is an area of historic significance with groups of Manor parks interconnected by avenues. The ecological function of the Kłodawa River should be maintained. There should be obstructions along the route so that the historic and landscape aspects can be appreciated from the motorway.
  - **km 22 – 24.8: the section from Goszyn MOP to WD-25 road bridge** comprises the valley of Motława / Szpęgawa. This acts as an ecological corridor joining the large forest habitat in the area of Starogard Gdański with the valley of the Vistula River. On the motorway route and its immediate surroundings there are untouched wild and semi-wild areas. The motorway route separates a portion of the forest, to maintain the continuity of the ecosystems three bridges and one animal passage are planned.
  - **km 29.5 - 31.5: this section of the motorway runs close to the town of Brzeźno** where it is located mostly along the western edge of a widespread forest area. Sometimes it cuts through the forest and enters the valley of the Wierzyca river. This is a drained meadow area intensely used by the local people. There is a thin strip of riverside alder trees and the southern side of the valley is covered with a dry-ground forest. The river valley is a local migration route for animals. Negative impact on animal migration is mitigated by the construction of an animal passage, a bridge and a farm passage which may be used by migrating animals.
  - **km 45 – 51: the section from Nowa Cerkiew to Piła** runs through a varied area with grassy depressions, and a dense network of ditches and drainage channels. The habitat includes many types of animals such as amphibians, water fowl and deer. It creates suitable conditions for frogs to breed, especially forest frogs. These areas are very sensitive and particularly vulnerable to adverse environmental impact and should be specifically protected during motorway construction activities.

Between Klonówka and Borkowo there are agricultural areas with significant landscape amenity characteristic by isolated settlements. of aesthetic value. The landscape is enriched with attractive church buildings that can be seen in the distance. The area has significant visual amenity. To protect the many species of flora and fauna in the area the following structures are planned to be built: four bridges, two bridges are for use by farmers, one passage for big animals and one passage for amphibians. Noise barriers should comprise landscaped greenery (trees/shrubs) in sympathy with existing land use. Construction of the Pelplin junction should be conducted from the direction of Starogard Gdański so that the cathedral at Pelplin is protected from construction traffic.

- **km 58 – 63: the area of “Kopytkowo” junction** – the route of the motorway through a low lying area characterised by high ground water levels and a dense network of drainage ditches and channels. In this area, there is a documented peat deposit. The motorway could disrupt the existing drainage arrangements and its connection with the Janka river catchment area. There adverse ground conditions in this area for laying the motorway foundations. In the area of Kopytkowo – Stara Jania – Leśna Jania – Frąca there is grouping of historic Manor Parks which are connected to one another by a network of tree lined avenues. Special landscaping is recommended for this area with the aim of protecting and enhancing the existing landscape.
- In the Kujawy and Pomeranian Voivodship:
  - **km 66 – 81: the section through Bory Tucholskie.** is an area of great landscape variety and has significant value. The initial section of the motorway runs along the eastern edge of the forest-meadow bog area, crossing through the forest from the western side. In some sections the motorway crosses sensitive wetland areas. The motorway runs along the edge of the Czarne Lake adjacent to the existing railway line. The motorway then crosses through part of the Eastern Landscape Protected Area of Bory Tucholskie (forest). The motorway route crosses the edge of Bory Tucholskie which comprises forested areas and also meadows, damp loving forest, and wetland habitats. These areas are enriched with small area of open water, drainage ditches, watercourses and tributaries to the Czarne Lake. This area is characteristic of rich habitats of great biodiversity and environmental value. A large area is covered with forests and marginal thicket comprising alder, water meadow and willow thicket. Strips of this vegetation divide meadows and rush. In the adjacent forest there are pine plantations on dry ground which gradually transform into mixed pine woods. This area has a significant environmental value requiring protection. The southern part of this area is protected. In the forests and meadows there are rare and protected plants. The entire habitat provides suitable living and breeding conditions for birds. Amphibians and forest frogs breed in the ponds and channels. About 1 km south of Łąkosz Lake is the forest reserve “Osiny”. In this reserve there are unique forest and wetland ecosystems. The flora and fauna of the reserve is very sensitive to any changes in ground water level. The motorway construction should not threaten these areas. However it is recommended that a hydrological study is covered out.

The lakes and surrounding forest forms an area of significant landscape value. Although the preliminary site inspection around Czarne and Zawada Lakes did not report any protected plant or animal species that would be directly impacted by the motorway, it is recommended that a detailed study of flora and fauna be conducted. To preserve the movement of animals within this area three road bridges are planned, three bridges for farm animals and two passages under the motorway for small animals. The motorway route comes close to a landscape arrangement of Manor Parks in the area of Bąkowo and Rulewo. The motorway is elevated above the railway line in the area of Bąkowo. It is recommended to conduct specialist landscape studies to preserve cultural aspects and local peoples' interests.

- **km 88 – 90.3: in the section to “Nowe Marzy” junction** the motorway crosses a water shed draining to the Vistula River through its tributaries Maława and Mniszka Rivers. The movement of surface and ground waters will be most vulnerable to adverse impact from the motorway construction. The Main Ground Water Reservoir (no 129) is located in the area of “Nowe Marzy” junction and is poorly isolated from surface waters. Rebuilding of drainage ditches and channels may cause the disruption of water movement. Motorway construction may require the removal or in situ improvement of poor load bearing soils. This may disrupt the natural soil structure and ground water levels. The high ground water level in this area will require construction works to be drained. If the water is drained incorrectly, changes to the water flow and levels in the surroundings will be observed. At the edge of Bory Tucholskie the land slopes towards the Vistula River. The soil in this area is very sandy and prone to erosion once the trees, which stabilise the soil, are removed. Mixed woodland predominates. On the dry slopes of the valley there are mainly pine plantations. These trees are of great significance for soil protection. These forests are located within the borders of Landscape Park of the Lower Vistula Valley. This is a significant region of visual amenity due to its variety and the vicinity of the Vistula valley. To protect ground water resources rain water run-off from the motorway must be correctly treated. The rain water run-off must be isolated from any possibility of contaminating ground water resources. Special measures must be taken to prevent soil erosion. Planned culverts will make it possible for animals to migrate.

For all motorway section the following general guidance is recommended :

- engage landscape consultants to assist during the design phase so the motorway route is landscaped in sympathy with its surroundings and cultural and visual amenity is preserved;
- minimise the number and scale of some technical objects e.g. noise barriers, retaining walls;
- minimise tree felling especially tree along historic avenues;
- minimise earthworks.

## 6. CONCLUSIONS

The EIA process for Phase 1 of the A1 motorway, following the procedure required by the EBRD, has precisely defined the scope of the report as a result of public meetings with the participation of representatives of the self government administrative and ecological organisations. As a result, a report is being prepared which meets the requirements of : international financial institutions (EBRD and World Bank), European Union Law, and the Polish law (which conforms with the EU).

The motorway section examined in this summary (from the Rusocin Interchange to the Nowe Marzy Interchange) goes through the areas which are unique and varied in terms of natural environment, culture and landscape elements and therefore highly sensitive to any disturbances.

The intended motorway route and technical arrangements suggested do not cause any danger to the most precious components of the environment and landscape. The identified environmental impacts may be ameliorated by the recommended mitigation measures. Such mitigation measures have to be defined more precisely in the course of developing the construction design and the plan for execution of construction works. In the design development phase the environment impact assessment procedure including social participation will be continued in accordance with the Polish Law.

## 7. RECOMMENDATIONS

The preliminary design developed for Phase 1 of the A1 includes several environment protection measures to be implemented in the course of motorway construction or after its completion. Additional mitigation measures will be defined more precisely during construction design and work execution scheme.

The Motorway Agency undertook some preliminary mitigation measures. They purchased an approximate 20 metre wide belt of agricultural land on both sides of the motorway which will make it possible to remove any buildings and to provide future protection against transport related impacts.

Preliminary archaeological works were conducted and samples were taken. The archaeological works are expected to be finished by the end of 2001. Wooded areas to be removed and individual trees and bushes to be cut prior to commencement of the motorway construction were listed.

The preliminary design provides for protection of village settlements, surface and underground waters, valuable soils, sensitive ecosystems and landscapes. Moreover, the following documents shall be developed during the construction design:

- principles of crossing both wetlands and drained areas, principles of draining areas in the course of construction;
- principles of protecting sensitive ecosystems in the course of construction works;
- measures for reconstruction of surface and underground drainage systems;
- information on the volume of the humus layer removed from the main alignment and its intended use;
- guidelines for landscaping the motorway observing the protection of culture, heritage and the natural environment.

The preliminary design provides for construction of viaducts, bridges, farm passages and animal crossings within the right of way. They will potentially mitigate the effects of the motorway separating areas, ecosystems, river basins, drainage and ecological systems.

Settlements close to the right of way will be protected from noise by barriers or earth embankments which are scheduled to be constructed at the following locations:

- 10.94 - 11.63 km Żeliszewki - left side - earth embankment,
- 12.90 - 13.60 km Malenin - left side - noise barrier,
- 15.35 - 15.65 km Łukocin - both sides - noise barrier,
- 24.40 - 24.60 km Swaróżyn - right side - noise barrier,
- 43.20 - 43.63 km Nowa Cerkiew - left side - earth embankment,
- 43.63 - 43.85 km Nowa Cerkiew - left side - noise barrier,
- 43.85 - 44.00 km Nowa Cerkiew - left side - earth embankment,
- 47.50 - 48.00 km Borkowo - left side - noise barrier,
- 55.13 - 55.60 km Kornatka - right side - noise barrier,
- 64.00 - 65.30 km Kamionka - left side - noise barrier,
- 65.00 - 66.00 km Kamionka Wybudowanie - Rudawki - left side - earth embankment.

In the case of single houses / individual farms window frames will be replaced to protect against noise or the building use will be changed, i.e. instead of homes they will become uninhabited utility buildings.

In order to limit spread of air pollutants 15 metre wide belts of greenery shall be established along sections where valuable structures occur or certain crops are grown.

Moreover, sand filters and separators (over 250 pieces) will be installed to protect the environment against rainwater run-off from the motorway. At places where it is impossible to drain water from the motorway to natural water courses, five evaporation ponds are planned to be constructed. These will be sealed with membranes. The Nowe Marzy interchange is constructed on top of a major groundwater reservoir (No 129) which is not isolated from contamination from surface waters. Therefore the ground water reservoir will need to be protected from potential contamination.

The preliminary design provides for construction of seven passages for big animals, the location of these passages has been agreed with foresters. Two extra passages will be needed for amphibians.