Poland

Proposed Wholesale Market in Gdansk

Environmental Impact Assessment

EXECUTIVE SUMMARY

Project Description

1. The project is to build a contemporary wholesale market for perishable foodstuff and flowers on the outskirts of the port city of Gdansk, complete with attendant infrastructure. The market will replace two existing primitive facilities and will service, in the first instance, the 1.5 million urban population of the three city agglomeration of Gdansk, Sopot and Gdynia. It will further serve as a source for exports to the East, particularly to Kaliningrad, Belarus and Ukraine, for both Polish and imported products.

2. The market will be constructed and operated by a limited liability company incorporated under Polish corporate law. The expanding shareholdership now counts over 250 individuals, mostly traders and farmers, as well as a number of public and private institutions, including one bank. Both the city of Gdansk and the local Voivod (regional authority) have committed to the timely construction of supporting infrastructure, notably the supply of water and the evacuation of waste water, and the construction of access to the adjacent ring road around the three city agglomeration.

Environmental Review and Assessment

3. The Environmental Impact Assessment (EIA) took into account pertinent Bank rules (OD 4.01), as well as current Polish legislation on the subject, amended last in 1995. It focused on the following seven main environmental concerns and issues, and reached the indicated conclusions:

a) Ground and soil characteristics including geologic assessment and current land use. The study finds no major environmental problems with the site of the planned wholesale market since the soil is of low agricultural quality and geological conditions are acceptable for the proposed structures. Nobody is living on the site, hence there are no re-settlement questions.

b) Hydrological characteristics including ground and surface waters with particular attention to streams and wetlands. The proposed location is within the basins of, resp. a stream and a river. The water table is only a few feet below the surface over a sizable area along the site's south western border. Furthermore, there are several hectares of wetland on the western edge of the site, which before the construction of the existing highway were partially drained through a third stream. Because of the relative fragility of the area and the proximity of a watershed, the
area is within the zone of indirect protection of the Radunia river as specified by an ordinance the Gdansk Voivod of August, 1993. This decision defines conditions under which treated sewage can be released; use of agricultural land; design of emergency spillways, pumping stations and treatment plants; use of chemicals, precautions to be taken for parking space in terms of hydrocarbon collection, etc. As a result of the proposed construction, the soil will lose its ability to soak up and filter water during rain periods and, hence, the flow of water into rivers and retention basins will increase. Appropriate measures to maintain the quality of the water must be taken in the form of retention and pre-treatment ponds and ditches. (see the table with the costs of mitigation measures at the end of this summary, for details)

c) Issues pertaining to landscaping and cultural heritage of the region. The impact of the change of landscape from open agricultural land to a site with large halls and parking lots will be significant. However, visual mitigation measures in the form of tree lines and bushes should help make the general appearance of the site more appealing. The location of the wholesale market in proximity of a landscape park and a residential area will require specific mitigation measures minimizing the impact of the market during construction and operation. (see also point f). There are no known archaeological interests on the site or in its vicinity.

d) Issues related to air and noise pollution during the construction as well as while the market is in operation. The increase in traffic due to market construction and operation will have a significant effect on air quality, particularly under certain weather conditions. This will be most evident during the period of construction when not only traffic from and to the site will increase but when also heavy diesel powered construction equipment will be used and dust producing activities such as welding, cement mixing, and others will be undertaken. However, these emissions are expected to remain below legal standards. The noise levels during construction and after inauguration are expected to rise considerably as compared with the current situation, first as a result of construction activities and later due to market related traffic. Some of the noisiest activities must therefore be performed during day time. Once construction is completed, noise levels should come down but will not be subdued completely due to increased traffic as well as a result of the use of cooling and ventilation equipment on the market.

e) Comparison of the existing land use and development plans of the area with that under the proposed development. Earlier land use plans designated the area for warehousing and storage associated with the shunting yard for a freight container terminal from the Polish National Railroads. The proposed wholesale market is in accordance with the current land use plan established by the city of Gdansk for the area. However, a coalition of neighbors and other interested parties tabled opposition against the market construction during the period of discussion of the revised area development plan in the municipal council of Gdansk. When ultimately voted upon in the council, the plan was approved with 49 votes in favor
and 2 against. Following mandatory procedures, the Voivod's office subsequently declared the process of planning and approval as followed by the municipality to be in accordance with prevailing law.

f) **Issues relative to human health and stress due to construction activity and increase in traffic once market is in operation.** Residents of a neighboring residential area have expressed concerns about noise and air pollution resulting from increased traffic. To mitigate these problems the direct access road from the market site to the adjacent highway will be constructed prior to the start of on-site activities of market construction, obviating the need for construction related traffic to pass through a residential area. Moreover, an earthen dike will be laid along the border of the market complex facing the residential area. This dike will be planted with trees and shrubs. Appropriate landscaping on the site and, particularly, on its periphery will further alleviate stress on the inhabitants of adjacent residential areas.

g) **The potential for birds to endanger air traffic.** The proposed market location is close to the airport of Gdansk. Solid waste generated by the market's operations might attract birds that, in turn, could come into the flight paths of planes approaching or leaving the airport. To mitigate this potential danger, the market will be equipped with closed containers and will operate a waste separation system. Collected solid waste will be transported to the sanitary landfill of the city of Gdansk.

**Institutional and Regulatory Framework**

4. The market will be constructed under a turn key contract entered into after International Competitive Bidding by the "Pomeranian Wholesale Agri-Food Center S.A.". The latter company will be assisted in construction supervision by a specialized engineering company hired for that purpose. Initiating and completing construction on the site will be subject to a municipal building permit, itself pre-conditioned by a permit from the municipal environmental office.

**Summary Mitigation Measures**

5. The EIA identified seven specific measures to be incorporated in project design, and hence in investment, to mitigate the identified potentially detrimental effects on the environment. The following table lists these measures, their costs as estimated in the EIA and the costs ultimately budgeted for in the investment estimates:
Table 1: Mitigation Measures and Their Costs (PLN)

<table>
<thead>
<tr>
<th>Environmental Concerns</th>
<th>EIA Cost Estimates</th>
<th>Actually Budgeted Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>water supply interface</td>
<td>800,000</td>
<td>669,240</td>
</tr>
<tr>
<td>sanitary sewage discharge</td>
<td>40,000</td>
<td>686,070</td>
</tr>
<tr>
<td>rain water discharge system</td>
<td>4,000,000</td>
<td>3,835,680</td>
</tr>
<tr>
<td>landscaping</td>
<td>300,000</td>
<td>178,100</td>
</tr>
<tr>
<td>solid waste collection &amp; disposal</td>
<td>250,000</td>
<td>300,000</td>
</tr>
<tr>
<td>highway exit construction</td>
<td></td>
<td>3,066,680</td>
</tr>
<tr>
<td>access road construction</td>
<td></td>
<td>712,000</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>5,390,000</strong></td>
<td><strong>9,447,770</strong></td>
</tr>
</tbody>
</table>

* In addition, PLN 304,000 per year have been included in the estimated operating costs of the market.

Conclusion

6. With the recommended mitigation measures, the construction and operation of the proposed wholesale market does not have environmental consequences that would lead to a recommendation to abstain from the proposed development. Present legal and regulatory procedures have been followed by the pertinent local authorities; the proposed development has received a vote of acceptance in the elected municipal council of Gdansk, with an overwhelming majority. Obtaining the building permit, and ultimately, permission to operate the market is contingent upon fulfillment of specific mitigation measures.
ENVIRONMENTAL IMPACT ASSESSMENT STUDY ON THE DEVELOPMENT OF THE POMERANIAN WHOLESALE AGRI-FOOD CENTRE

WARSAW - MAY - 1996 YEAR
President of the Managing Board

Bronisław Kamiński, Ph.D., Eng.

Research Team Leader
Andrzej Tyszecki, Ph.D., Eng.*

Research Team
Tomasz Andrzejewski, Ph.D., Eng.
Witold Bystrzanowski, M.Sc. *
Ewa Elster-Granatowicz, M.Sc.
Bogdan Grechuta, M.A.
Aleksandra Sas-Bojarska, Ph.D., Eng.Arch.
Piotr Sierżęga, M.A.*
Andrzej Tyszecki, Ph.D., Eng.*

Consultants
Wanda Bogusławska, M.Sc., Arch.
Andrzej Graczyk, Ph.D.
Bogna Lipińska, Ph.D., Eng.Arch.

* Expert of the Ministry of Environmental Protection, Natural Resources and Forestry
CONTENTS

1. EXECUTIVE SUMMARY ........................................................................................................ 1
   Preface ................................................................................................................................. 1
   Requirements for performing Environmental Impact Assessment .................................... 1
   Description of the investment sponsor proposal .............................................................. 1
   Investment project objectives ............................................................................................ 2
   Alternative solutions .......................................................................................................... 3
   Scope of environmental impacts assessment ..................................................................... 3
   Conclusions from the report ............................................................................................... 3

2. INTRODUCTION .................................................................................................................. 6
   2.1. Preface .......................................................................................................................... 6
   2.2. Subject and objective of assessment ........................................................................... 7
   2.3. Scope of assessment ...................................................................................................... 8
   2.4. Qualification of the investment project ........................................................................ 9

3. FORMAL AND LEGAL ASPECTS OF THE EIA STUDY ................................................... 9

4. THE OBJECTIVES OF THE INVESTMENT PROJECT ........................................................ 11

5. LOCATION, DESCRIPTION AND FUNCTIONS OF THE PROPOSED INVESTMENT PROJECT .................................................................................................................... 12
   5.1. The project site ............................................................................................................... 12
   5.2. Investment project characteristics .............................................................................. 13
   5.3. Set-up of technical infrastructure services ................................................................. 15
   5.4. Phasing the project implementation ............................................................................ 18

6. OPPORTUNITIES FOR ALTERNATIVES TO THE INVESTMENT PROJECT ............... 20
   6.1. Alternative solutions considered by the investment sponsor ....................................... 20
   6.2. Theoretical scope of alternatives ................................................................................ 21

7. FUNCTIONAL AND SPATIAL CIRCUMSTANCES .............................................................. 23
   7.1. General circumstances ................................................................................................. 23
   7.2. Circumstances arising from the land use existing pattern in the area of the project site .............................................................................................................................. 24
   7.3. Circumstances arising from the proposed site development ....................................... 25

8. CHARACTERISTICS OF THE VALUES AND RESOURCES OF NATURAL AND CULTURAL ENVIRONMENT .............................................................................................................. 27

9. ENVIRONMENTAL IMPACT RESULTING FROM PROJECT IMPLEMENTATION .......... 37
   9.1. Impact on the landscape ............................................................................................... 37
   9.2. Impact on the existing site development and land use (within the site) ....................... 39
   9.3. Impact on the air quality ............................................................................................... 39
   9.4. Impact on acoustic climate .......................................................................................... 40
   9.5. Impact on surface and ground water .......................................................................... 40
   9.6. Impact on soil and natural environment ...................................................................... 40
   9.7. Impact on the human environment ............................................................................. 41

10. ENVIRONMENTAL IMPACTS CAUSED BY OPERATION OF FACILITIES ................. 41
    10.1. Impact on air ............................................................................................................. 41
    10.2. Impact on acoustic climate ....................................................................................... 43
    10.3. Surface flow assessment ............................................................................................ 46
    10.4. Impact on ground water ............................................................................................ 47
    10.5. Environmental threats in the case of emergencies ..................................................... 49
    10.6. Impact on the landscape ........................................................................................... 50
    10.7 Impact on cultural values ........................................................................................... 50
11. ASSESSMENT OF ENVIRONMENTAL IMPACTS SIGNIFICANCE, INCLUDING MITIGATION MEASURES ............................................................... 50
12. IDENTIFICATION OF PROBLEMS REQUIRING FURTHER RESEARCH ............................................................... 58
13. ECONOMICAL ASPECTS OF ENVIRONMENTAL PROTECTION IN THE INVESTMENT PROCESS ............................................................... 58
14. PROBLEMS OF THE ENVIRONMENTAL PROTECTION MANAGEMENT ............................................................... 61
15. MONITORING RECOMMENDATIONS ............................................................... 64
16. COURSE OF THE PUBLIC PARTICIPATION PROCESS ............................................................... 65
17. CONCLUSIONS ............................................................... 66
18. LIST OF USED MATERIALS ............................................................... 70

FIGURES

Figure 1. Site location in Gdańsk region
Figure 2. Site location in Gdańsk agglomeration
Figure 3. Phase one site layout - scheme
Figure 4. Ultimate site layout - scheme
Figure 5. Ultimate site layout of Pomeranian Wholesale Agree-Food Centre in its surroundings
Figure 6. The existing and planned land use pattern in the surroundings of the activity
Figure 7. The ecological appraisal and cultural heritage appraisal in the surroundings of the activity
Figure 8. Hydrogeological documentation map
Figure 9. Hydrogeological section
Figure 10. Visibility assessment, viewpoints
Figure 11. Photographs. Viewpoints A, B, C1-C4, D1-D4, E
Figure 12. Mitigation measures scheme

TABLES

Table 1. The area and dimensions of trading units
Table 2. The efficiency of the water treatment
Table 3. The assessment matrix - the significance and scope of impacts during construction and operational phase
APPENDICES

1. General land use plan of Gdańsk - statement

2. The information from SAUR NEPTUN GDAŃSK S.A., concerning technical circumstances for water and sewage system

3. The note from Gdańsk County Council listing materials delivered to Pomeranian Wholesale Agri-Food Centre

4. The note from Gdańsk County Council concerning the guidances on environmental protection in relation to feasibility study of infrastructure project

5. The note from Design Office ,,EL-EN-PROJECT" concerning the electricity supply

6. The note from ,,Gdańskie Melioracje" Sp. z o.o. concerning rain-water drainage

7. The protocol of the formal meeting and discussion on the problems concerning the activity development, which took place in Gdańsk County Council, and the list of participants

8. The invitation for technical conference on Pomeranian Wholesale Agri-Food Centre, concerning road infrastructure

9. The map of site property pattern

10. The application for change in Land-use plan of Osowa concerning the location of local „Koziorożca" road to the Centre, given by local housing estate authority „Akademicka Spółdzielnia Mieszkaniowa"

11. The list of questions and doubts from residents of Osowa housing district, concerning the transportation system and their proposals of changes (including map).

12. The note from Gdańsk County Council concerning the construction of local road „Koziorożca"

13. The protest of residents from Osowa housing district concerning „Koziorożca" street

14. The note from County Council concerning the construction of Koziorożca Street

15. The information note from County Council concerning the schedule and the scope of construction phase of Koziorożca Street

16. The official statement of the Voievodship Nature Conservator concerning rain-water drainage

17. The note from the Minister of Transportation and Sea Management concerning the neighbouring of the international airport in Rębiechowo (risk for air transportation of increased bird population).
Alternative solutions

Different variants of the investment project, construction, and operation were considered:

1. Expansion of one of the existing wholesale buildings.
2. Expansion of the retail center.
4. Building size and location.
5. Operation of the open trade.
6. Environmental impact assessment during the construction and operation stage of the investment project.
7. Land use plan.
8. Creating a conservation zone.

Screening environmental impact assessment:

Impacts considered in the environmental impact assessment were identified through the complex and non-linear impacts of the project on the environment, land use, during the construction and operation stage of the investment project.

The following impacts have been identified:

- on the soil and natural environment;
- on the surface and groundwater;
- on the landscape and cultural heritage;
- on the air and acoustic climate;
- on the existing and planned land use and development;
- on the human health and conditions of life and relaxation.
Conclusions from the report

1. From the functional point of view, the location of the planned Centrum Hurów is very advantageous. It has a convenient location in relation to the food supply and the market. It is located near the Western Circular Road (Obojgórowo-Zołotów-Hurów railway line), the airport in Rzeszów, and the main harbours of Gdańsk and Gdynia.

2. Within the location site of the Centrum Hurów, there do not appear any important environmental problems or conflicts in the present or planned land use. Some smaller areas need to be included in the officially designated recreation area and almost no investments directly affect historical objects that traverse the site.

3. Areas adjacent to and surrounding the planned Centrum Hurów have complex natural and environmental conditions, specifically:
   - the protected zone of the Tomaszów Landscape Park
   - the area of the protected zone for surface water intake at Staszów
   - the resource area of the ground water intake at Osowa
   - the area of the regional nature system, within the elements of the National Ecological Network-ECONET
   - the built-up area in the district of Gdańsk, called Osowa

4. Environmental impacts related to the construction and operation phases of the Centrum Hurów will vary. The most important impact in the construction phase will be the exclusion of more than 50 hectares of urban farmland, while the recreation area for plants and animals will be less important, in terms of importance and intensity. There will be, however, significant and irreversible changes in the landscape. Impacts of the operational phase will be more serious. Significant changes in water conditions in the Tomaszów Landscape Park, in terms of air and quality of water, climate should be considered. Also, the present recreational Value of many allotments located near the Oczyszczenia junction will be lost.

A gradual increase of the conflict between the planned Centrum Hurów and the nearby housing development of Osowa should be also considered.

Impact on the water resources of the ground water intake at Osowa is not expected.
6. The location of the Centrum Hurtowe in the direct neighbourhood of the Trójmińska Landscape Park and the housing area of Osowa estate in the indirect protection zone of the surface water intake 'Straszyn', within the resource area of the groundwater intake 'Osowa', and in the neighbourhood of the allotment area, requires the use of special mitigation measures minimizing the impacts of implementation and operation phases of the Centrum Hurtowe.

- Because of the proximity of the airport in Rzeletejowe, and a danger which may cause to the air traffic is necessary to develop an entirely safe solution for the waste collection in the Centrum and disposal to the dump in Szadojk.

The implementation of the Centrum Hurtowe investment project requires strict implementation of the transportation infrastructure (cyclist/pedestrian paths, roads, water, gas, electricity, supply, and sewage and rainwater drainage).

In terms of the local resource and analysis, the range of water resources and impacts of the allotments around the Szczecin area, should be defined, and the expected number of allotments should be realised for other land uses. The remaining allotments should be sentenced to sewage disposal units.

- Because of the high protection requirements for the water intake 'Straszyn', there should be conducted a continual monitoring of the water quality discharged from the area of Centrum Hurtowe to the Strzelienka rye.
2. INTRODUCTION

2.1. Preface

The present "Environmental Impact Assessment of the Pomorskie Hurtowe Centrum Rolno-Spożywcze in Gdańsk" was carried out by PROEKO Ltd. in Warsaw with the co-operation of Project-Design Office „EKO-KONSULT” in Gdańsk under the Service Contract concluded with the British Agricultural Development Fund represented by the British Embassy in Warsaw.

The objective of the Environmental Impact Assessment study of the proposed investment project was to:

- identify environmental and spatial impacts caused by the construction process and the operation phase of the wholesale market Centre located along the Western Circular Road (Obwodowa Zachodnia) in the vicinity of Barniewice;
- propose solutions for the project design allowing reduction of potential negative environmental impacts during construction and operation of the facilities.

Basic documents for the preparation of this assessment study are:

- Prefeasibility studies for implementation of the project „Pomorskie Hurtowe Centrum Rolno-Spożywcze w Gdańsku-Barniewicach”, Consult-Expert Gdańsk, 1996;
- "General land use management plan of the City of Gdańsk" endorsed by the Resolution No. LXV/484/93 of the 24 June 1993, Spatial Development Planning Office, Gdańsk;
- Draft detailed local land use plan for the Barniewice - Owczamia district, Spatial Development Planning Department of the Gdańsk City Authority, 1996.

The Environmental Impact Assessment of the proposed investment project represents an element of the decision making procedure connected with the necessity of obtaining a decision on conditions of building and development of the site in accordance with the requirements of the Act on Spatial Development.
The study and recommendations therefore will constitute a base to apply to
the local municipal authority for the decision on conditions of building and
development of the site, which will need to be endorsed by the Voievod and sanitary
authorities.

2.2. Subject and objective of assessment

The subject of this study is the environmental impact of the Pomorskie
Hurtowe Centrum Rolno-Spożywcze S.A. in Gdańsk located at the Barniewice -
Owczarnia district along the Western Circular Road (Figure 1).

Figure 1. Site location in Gdańsk region
The study is carried out for one location option, because the subject site for the wholesale Centre has been purchased by the sponsor of the investment project.

The objective of the present assessment study is to:

- confirm the purposefulness of the investment project;
- analyse and assess the impact of the "no action" alternative, i.e. not carrying out the project;
- identify and assess possible solutions of the project implementation which fulfil the criteria of rationality;
- identify basic environmental and spatial circumstances for the implementation of the investment project;
- identify the character, importance and scope of the potential impacts on nature, land use, landscape and culture heritage connected with the construction and operation of proposed facilities as well as their influence on the development of transportation links of this part of the city;
- identify issues requiring further studies;
- determine opportunities for mitigating negative impacts;
- determine opportunities for reduction of potential accidental threats, including accidental environmental threats;
- propose an environmental protection management system (phased);
- prepare an environmental monitoring plan;
- draw conclusions from the public participation process.

2.3. Scope of assessment

The scope of environmental impact assessment of the proposed investment project is based on the formal requirements of the Service Contract, based on the World Bank Operational Directive 4.01. of 3 October 1991, and the prescribed legal requirements mentioned under item 3 of this report, with particular attention to the Ordinance of the Minister of Environmental Protection, Natural Resources and Forestry of the 13th May 1995 on Determination of Development Projects Harmful to the Environment and Human Health and Environmental Impact Assessment Studies (M.P. 52, item 284).
The scope is also determined by:

- the character and scale of the investment project;
- the possibility of phasing (technology of construction, operation, structure, location of buildings, their size, site development, transportation and infrastructure links, etc.);
- the circumstances determined by existing and planned land-use pattern in surrounding of the development activity;
- resources and values of the natural environment in closer and further vicinity of the project site;
- necessity of enclosure of requirements for cultural values protection;
- requirements for protection of landscape and visual values;
- necessity of reduction of environmental threat risks resulting from break downs and accidents;
- necessity of formulating recommendations and conclusions for: designing, construction and operation of the Centre.

2.4. Qualification of the investment project

In accordance with §3 item 8 letter "l" of the Ordinance of the Minister of Environmental Protection and Forestry of the 13 May 1995 on the determination of investment projects harmful to the environment and human health and environmental impact assessment, the proposed investment project of the wholesale market centre belongs to the category of investments which may aggravate the environment.

The decision on the building and development of the project site can be issued for the investment project basing on the local land development plan and requires approval of the Voievod and the State Provincial Sanitary Inspector as required by Art. 40, par. 4, item 2 of the Act on Spatial Development of July 7th, 1994.

3. FORMAL AND LEGAL ASPECTS OF THE EIA STUDY

Environmental Impact Assessment. However in this document both documents were considered.

The basic legal acts prescribing requirements for Environmental Impact Assessment are as it follows:

- The Act of the 31st January 1980 on Protection and Shaping the Environment; Announcement of the Minister of Environmental Protection, Natural Resources and Forestry of the 21 March 1994 on the publication of unified text of the said Act (Dz.U. No. 49, item 196);
- The Act of the 7th July 1994 on Spatial Management (Dz.U. No. 89, item 415);
- Ordinance of the Minister of Environmental Protection, Natural Resources and Forestry of the 13th May 1995 on Determination of Development Projects Harmful to the Environment and Human Health and Environmental Impact Assessment Studies (M.P. 52, item 284).

Apart from that other regulations, than the mentioned above, must be taken into account when considering environmental effects of the proposed Wholesale Centre. This includes a considerable number of parliamentary acts as well as execution ordinances. The main Acts are listed below:

- Act of the 7th July, 1994 - Building Law (Dz.U. No.89 item 414);
- Act of the 24th October 1974 - Water Law (Dz.U. No.38 item 230; 1980 No.3 item 6; 1983 No.44 item 201; 1989 No.26 item 139, No.35 item 192; 1990 No.34 item 198, No.39 item 222; 1991 No.32 item 131, No.77 item 335; 1993 No.40 item 183; 1994 No.27 item 96);
- Act of 16th October 1991 on Nature Conservation (Dz.U. No.114 item 492; 1992 No.52 item 255; 1994 No.89 item 415);
- Act of 4th February 1994 Geologic and Mining Law (Dz.U. No.27 item 96);
- Act of 3rd February 1995 on Protection of Agriculture and Forest Land (Dz.U. No.16 item 78);
- Act of 28th September 1991 on Forests (Dz.U. No.101 item 444; 1992 No.21 item 85, No.54 item 254);
- Act of 15th February 1962 on Protection of Cultural Heritage and Museums (Dz.U. No.10 item 48; 1983 No.38 item 173; 1989 No.35 item 192; 1990 No.34 item 198, No.56 item 322);
- Act of 20th July 1991 on the State Environmental Protection Inspection (Dz.U. No.72 item 335);
- Act of 14th March 1985 on the State Sanitary Inspection (Dz.U. No.12 item 49);
- Act of 31st May 1962 - Air Law (Dz.U. No.32 item 153; 1984 No.53 item 272; 1987 No.33 item 180; 1988 No.41 item 324; 1989 No.35 item 192);

A separate group of regulations co-ordinates sanitary conditions of food products sale. These are:
- Act of 25th November 1970 on Health Conditions of Food Products and Nutrition (Dz.U. No.29 item 245 with subsequent amendments);
- Ministry of Agriculture and Food Products Management Ordinance of 15th July 1994 on Labelling of Food-Stuffs, Condiments and Additives Intended for Trade (Dz.U. No.86 item 402);
- Ministry of Agriculture and Food Products Management Ordinance of 4th July 1995 changing the above Ordinance;
- Ministry of Industry and Trade Ordinance of 25th October 1994 on Sanitary Requirements in Circuitous Sale of Food-Stuffs and Condiments (Dz.U. No.119 item 574);
- Minister of Health and Social Welfare Enactment of 31st January 1972 on Health Control of Food-Stuffs Quality, imported from abroad (Dz.Urz. MZiOS No.4 item 18);
- Council of Ministers Resolution No.152 of 21st July 1971 on Health Quality Control of the Food-Stuffs and Hygiene Compliance in the Companies Producing Food and Introducing it to the Market (MP No.43 item 272);
- Polish Standard PN-64/A-07008 - Hygiene-sanitary conditions in cold storage plants;
- PN-83/A-07005 - Food products, climatic conditions and periods of storing in cold storage plants;
- PN-90/A-75032 - Fruit-and-vegetable, vegetable-and-meat, and mushroom processed food-stuffs, wine and drinking honey. Packaging, storage, and transportation;
- BN-86/8160-10 - Food products. Directives of freezing in cold storage plants;
- PN-92/A-86932 - Edible plant fats. Packaging, storage, and transportation;
- BN-66/8010-04 - Storage of pickled meat in metal containers;
- Minister of Health and Social Welfare Enactment of 17 September 1971 on General Conditions for Food-Stuffs Transportation (M.P. No.50 item 320).
4. THE OBJECTIVES OF THE INVESTMENT PROJECT

The investment project presents a response to the requirement for a network of modern wholesale markets for fruits, vegetables and other food products. The need to develop such facilities has been confirmed by analyses performed by the Government of Poland, Commission of the EU and the World Bank, reflected in the report "Agricultural Strategy for Poland".

The following are the objectives of the wholesale Centre:

- supplying the population of the Gdańsk region;
- distribution of products to the remaining parts of Poland;
- distribution of goods to the markets of Baltic countries and to countries of CIS.

The expected benefits are:

- stimulation and improved efficiency of international, Polish and local trade resulting from the creation of a modern set-up of wholesale trade;
- stimulation of regional economy through the development of marketing infrastructure, creation of new employment opportunities (market and related sectors), increase of tax incomes;
- lower costs of distribution (increased distribution efficiency, rational use of time and transportation means);
- lower marginal profits (not costs of products);
- increase of income from food products trade;
- lower losses and decrease in product quality in result of proper storage and wholesale trade conditions;
- stabilisation of the food market (continuity and regularity of market supplies, quality standards, marketing information, wider variety of products);
- improvement of trade conditions (efficiency, hygiene, order);
- possibility for acquisition of a wide range of high quality goods in one place;
- increase of turnover (and income) in result of demand concentration;
- increase in purchasing safety.
5. LOCATION, DESCRIPTION AND FUNCTIONS OF THE PROPOSED INVESTMENT PROJECT

5.1. The project site

The site of the Pomorskie Hurtowe Centrum Handlu Rolno-Spożywczego is located within the Gdańsk - Barniewice district, to the West from the Gdańsk agglomeration, between the Rębichowo International Airport and the Osowa housing district (Figure 2).

On the East, the site is neighbouring with the Western Circular highroad No. 6 and the international road E28, which in future will constitute the commencement of the planned Highway A1, connecting Gdańsk with the South of the country. This road facilitates good transportation with the entire domestic road system, and as such provides adequate international links. It gives also a good connection between the centres of the Gdańsk, Gdynia and Sopot cities as well as with the harbours of Gdańsk and Gdynia (which are the furthest eastern ports on the Baltic Sea operating year round). On the South the Centre's site borders with the railway branch leading to the Rębichowo Airport.

The site borders on the Trójmiejski Landscape Park. A landscape park is a large-spatial form of nature protection. This area is protected due to its natural, historical and cultural values. Pomorskie Hurtowe Centrum Rolno-Spożywczego S.A. in Gdańsk will be located in the protection zone of the Trójmiejski landscape Park. It should be stressed that the protection zone is not a protected area.

The area of Barniewice, due to the Draft Local Land Use Plan, is appropriated to a change of its function. This is a peripheral area of the city of Gdańsk, which borders with the Żukowo commune. In the South it borders with the housing estate „Osowa”, and in the south-east with Wysockie Lake.

5.2. Investment project characteristics

The site belonging to the Centre is about 56 hectares in size. The project area is divided into three parts:

A 40.19 hectares where the office building, flower hall, vegetable and fruit hall, general foodstuffs hall, fish hall, dairy products hall, meat hall, and covered stalls located;

B 10.90 hectares reserved for services facilities (financial reserve);

C 5.78 hectares reserved for service facilities (i.e. hotels).
Ogólny plan inwestycji na dostruktury terytorium aglomeracji gdańskiej

Rys. 2.
Development of the zone A will be implemented in two phases. During the first phase, on an area of 12 hectares, the following facilities will be constructed:

- inside roads and parking;
- vegetable-and-fruit hall;
- general food product hall;
- flower hall;
- administration buildings;
- sheltered area for sales directly from vehicles.

During the second phase, the following elements are expected on an area of 18 hectares:

- meat hall;
- dairy hall;
- fish hall;
- expansion of the flower hall.

Since the Centre will house companies of different sizes, designing of facilities is based on the principle of merging standard modules as the required. All units will be equipped a the telephone line and energy supply, and will be connected to the water supply and sewage systems. Refrigerated stores and racks will be provided by merchants.

The layout and size of objects will follow the current practice and principles for designing similar facilities for wholesale markets. For each type of commodities a single covered market hall, with automatically closing gates, as a protection, has been designed. Construction of three large and three smaller halls, as well as covered stalls (depending on the needs) is planned.

<table>
<thead>
<tr>
<th>Products</th>
<th>Area [m²]</th>
<th>Dimensions</th>
<th>Size of stalls [m²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit and vegetables</td>
<td>10 000</td>
<td>138 x 72</td>
<td>50</td>
</tr>
<tr>
<td>Flowers</td>
<td>5 000</td>
<td>55 x 89</td>
<td>25</td>
</tr>
<tr>
<td>Foodstuff general</td>
<td>10 000</td>
<td>138 x 72</td>
<td>50</td>
</tr>
<tr>
<td>Meat</td>
<td>4 000</td>
<td>30 x 76</td>
<td></td>
</tr>
<tr>
<td>Dairy products</td>
<td>4 000</td>
<td>30 x 76</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>2 000</td>
<td>30 x 38</td>
<td></td>
</tr>
</tbody>
</table>
The objects of the Pomorskie Hurtowe Centrum Rolno-Spożywcze must comply with EU regulations. The regulations to be met are particularly harsh for meat, fish and diary halls, which has caused the necessity to postpone their construction to the second phase.

A detailed technical design of each hall has been prepared due to the particular requirements concerning layout of specific boxes, issues connected with a possibility of adaptation, heating method, air-conditioning, services, and sanitary requirements.

The need for open, and partly open, air trade for small merchants has resulted in designing partly covered stalls for about 200 vehicles, with a total area of 1800 m². This area will be build as a central promenade for the sellers and buyers, with open boxes where the vehicles would be parked. It is assumed that only a part of the vehicles will be under the roof (about 1 - 2 m).

5.3. Set-up of technical infrastructure services

**Water supply.** The water supply for human purposes is assessed for the first phase as:

\[ Q_{\text{average}} = 116,000 \text{ dm}^3/\text{day} \]
\[ Q_{\text{maximum/day}} = 133,400 \text{ dm}^3/\text{day}. \]

The demand for water for the fire control purposes is estimated for 50 \text{ dm}^3/s. There is no water supply system within the investment site. In the draft development plan it is assumed that the ground water intake "Osowa" will be the source of water supply for the district of Baraniewice-Owczamia. During the first phase of the project implementation the construction of two pipelines of 150 mm and 200 mm is planned. Ultimately the Centre will be supplied with water with a 500 mm pipeline, which will be built from the Osowa residential quarters to Barniewice, Klukowa and Rębichowo.

**Discharge of sanitary waste water.** The amount of discharged sewage during the first phase is estimated:

\[ Q_{\text{average}} = 116,000 \text{ dm}^3/\text{day} \]
\[ Q_{\text{maximum/day}} = 133,400 \text{ dm}^3/\text{day}. \]

The objects of the first stage of the construction of the Centre will be connected to the existing sanitary sewage system, discharging the waste water from Osowa to Oliwa. Ultimately the discharge of sewage from the area of Barniewice,
thus from the Centre, requires the construction of a sewer system connected to the collector "Morena" at Kokoszki. This will involve the construction of several kilometres of sewage network and a system of pumping stations. The connection of the further phases of the Centre's constructions will require adaptation to the future infrastructure.

**Discharge of rainwater.** To solve the problem of the rainwater discharge from the Centrum Hurtowe, much larger area has to be considered, which borders are as follows:

- in the North - the road junction „Wysoka”,
- in the South - the edge of existing residential district Bamiewice,
- in the West - Wysockie Lake,
- in the East - the border of the Trójmiejski Landscape Park.

The area of Bamiewice is located in the watershed of the Radunia river and the streams draining off water directly to Gdańsk Bay. The Eastern part of this area belongs to the Potok Oliwski drainage basin, and the western one to the Strzelenka drainage basin.

In the south-west part, along the stream which drains off water to Strzelenka river, there are areas with raised water levels and a small depression filled in with peat.

To the west of Owczarnia, directly next to the Western Circular Road, is a significant depression with a stable water level, which is overgrown to a certain degree. This is a section of a wetland area, with ditches, which was irreversibly separated as a result of the construction of the Western Circular road and Passover. This area was hydrographically linked to many depressions with stable water levels, part of which were filled during construction works (the analysis of the maps from the period before the construction works, confirms the fact that the area of about 157 hectares has been cut off). Water flow from this part of the drainage basin was directed, through a culvert under the Western Circular road, (nearby Owczarnia) to the Prochowy Potok (Oliwski Potok tributary). Since there was no maintenance or conservation works undertaken, the efficiency of this solution has been gradually decreasing. At present the culvert is silted up, and a part of a ditch, linking a pond nearby Owczarnia with the Prochowy Potok, is choked. This has resulted in the appearance of ponds on the western side of the Western Circular, and periodical flooding of the allotments, located in the neighbouring area.
Expected realisation of the Centrum Hurtowe as well as housing construction in the southern part of Osowa housing estate will cause decrease of surface retention, and consequently an increase of water flow off and increase bankful flows in streams discharging rainwater. In order to discharge rainwater, the previously existing system of rainwater discharge should be reconstructed and modernised. The former system used to discharge water from the entire area located between the road junction Wysoka, the southern edge of the housing estate Bamiewice, Wysockie Lake, and the western border of the Trójmiejski Landscape Park. The system should be able to discharge occasionally increased amounts of rainwater flows.

The construction of the Centrum Hurtowe requires reconstruction of part of the ditch divided along Meteorytowa street and cleaning out the ditch along its full length.

Rainwater from the considered area should be discharged to:
- the Potok Oliwski stream;
- the Radunia River via Strzelenka stream.

The existing soil conditions, showing high filtration coefficients, allow for the feeding of underground waters, which should stop the lowering of their levels.

*Heat supply.* In the area of Bamiewice Wschodnie and Bamiewice Zachodnie, and in a part of the housing estate in Osowa, heat is produced by seven coal heat plants. Six of them are to be liquidated. One will be radone to burn oil or gas.

In the new designed investments, there is expected the installation of oil or gas burning facilities. The Draft Spatial Development Plan provides for exclusively gas and oil based heat production.

*Gas supply.* A medium pressure gas pipeline Dn 150 mm, laid along the railway, supplies gas to the existing secondary reduction and metering station. This may be used for gas supply during the first phase of project implementation. A medium pressure gas pipeline, of Dn 350 mm diameter, exists along Galaktyczna street. Connection of the market objects to this line would be necessary to satisfy future demand.
Electricity supply. For the first phase, 1500 kW electric power will be supplied from the new 15 kV sub-station erected on the Centre's site. Further supplies depend on the construction of a new overhead line 110 kV over the Northern part of the area and a new, large substation to the West from that line.

Solid waste disposal. Solid waste produced in the area of Centrum Hurtowe contains a significant proportion of organic substances (over 50%) of high humidity level (60-70%) and low calorific value (about 1000 kcal/kg).

The best waste management system, which is often applied in wholesale markets, is considered to be waste collection in sealed containers. The waste is then collected in skips. These skips should be distributed at strategic points of the market to be successively filled up and then exchanged for new ones at the end of the day. Since the airport in Rębiechowo is located so close, the problem of waste collection and disposal from the Centrum Hurtowe should be solved with special care. Particularly important is to protect the waste from foraging birds, who could cause threat to air traffic.

Telecommunication. The presently constructed telephone exchange for 2600 lines will serve only 100 telephone numbers in the Centre. It is necessary to construct a new switching board, specifically for the needs of the Centrum Hurtowe.

Road links. The Centre will be connected to the Western Circular road (Obwodowa Zachodnia) after completion of the presently constructed Owczamia junction.

Railway transport. A partial service of the Centre by railway is considered by the railroad passing by along the Southern border of the site, linking up with the airport at Rębiechowo and the railway system of the Gdańsk agglomeration via Osowa. The Board of the Centre has resigned from the railway reserve foreseen by the "General plan of spatial development of the City of Gdańsk" to provide for the location of a container terminal for the needs of the Centre in exchange for another area reservation.

5.4. Phasing the project implementation

The investor sponsor foresees a phased implementation of the Centrum Handlowe. During the first phase the construction the following facilities is foreseen (Figure 3):

- the transportation infrastructure and parking places on an area of 11,60 hectares;
- vegetable and fruit hall;
- general foodstuff hall;
- flower hall;
- covered merchant stalls;
- office buildings (2000 m²).

**Figure 3. Phase one site layout - scheme**

During the second phase, the following are planned to be constructed (Figure 4):

- parts of the technical infrastructure, concerning discharge of wastewater, discharge of rainwater, supply of water, gas, electricity and telecommunication;
- extension of the flower hall;
- meat hall,
- fish hall;
- dairy products hall;
- possibly a hotel within the Centre site and extension of office facilities.
Figure 4. Ultimate site layout - scheme

6. OPPORTUNITIES FOR ALTERNATIVES TO THE INVESTMENT PROJECT

6.1. Alternative solutions considered by the investment sponsor

- Searching for alternatives in the beginning, the extension of the existing market has been considered. Within the Gdańsk agglomeration three open air wholesale markets are in operation: at Chwaszczyno (7 hectares), at the Miałki Szlak (5 hectares) and in Gdańsk (2 hectares) (Figure 2). The first two are dealing with fresh horticultural products, overseas commodities, drinks and a limited amount of meat and dairy products. The third market is used for sale of flowers. The market in Chwaszczyno is privately owned. The remaining two belong to local municipalities and have a higher technical standard (hardened surface). At all the markets, technical improvements are difficult to be introduced. Technical infrastructure is missing. The sanitary state of basic facilities is far from proper and do not comply with EU standards.
Organisational, technical and economic concerns inclined the investment sponsor to forgo of the expansion of the existing buildings. The alternative chosen comprises realisation of the investment in the new location.

- Different alternatives of the Centrum Hurtowe implementation phasing were analysed.

Examining alternatives for the investment phasing was due to the economical concerns. The following variants were considered:

- to build primarily one large hall for the users of different branches, with the possibility to move some of them to new halls later on;
- to build two halls, half the size, and further expansion to the ultimate sizes during the subsequent phases;
- to build more, but small or and narrower halls.

In the end, the alternative of the construction of the two large, full size halls, and one flower hall of half the size, were chosen.

- **Building construction.** Because of the climatic conditions, different alternatives for the front door, and the optimal number of doors were considered. Finally the variant of the self-closing door, made of rubber or plastic strips, which would create a line of protection. All small vehicles will be allowed to enter the halls to unload.

- **Building size and layout.** Different alternatives of the size and layout, of the halls as well as the layout of paths inside the halls, were considered. Hall proportions were specified through the marketing research, as a demand largesse. Inside of the halls will result form functional and economical conditions.

- **Organisation of the open air market.** Various alternatives for the organisation of the open air market were taken into account. Operations on partly covered stalls (with temporary, movable structure), and on plots outside, for very small merchants selling directly from vehicles, were considered.

- **Transportation services.** The location of the Centrum Hurtowe, existing landscape conditions, and administrative authorities attitude, restrict the opportunities of alternatives for technical infrastructure development. The solutions resulted from the number of negotiations were decided upon.
6.2. Theoretical scope of alternatives

Theoretical scope for alternatives could refer to:

- **not carrying out the action** (the no-action alternative)

- **links to the transportation system** - an access to the Centrum Hurtowe is possible via housing estate Osowa; however local community protests made this alternative untenable; to guarantee transportation access, already during the construction phase, the construction of a new road junction „Owczarnia”, located on the Western Circular, is necessary already before the project period start;

- **sanitary sewage discharge**, which can be discharged to the Gdańsk sewage system (collector „Morena”) through different routes of collectors;

- **rainwater discharge** - there is a company CEMENT S.A. (a former Cement and Lime Pouring Plant) located in the area of Barniewice Zachodnie; from this area the rainwater is discharged to the outlet of Wysockie Lake with a collector, a diameter of 800 mm. Therefore there is a possibility of connecting the Centrum Hurtowe objects to this collector; however it is not advantageous because:
  - this would cause a conflict - the collector outlet is located in the area of Żukowo commune, and the commune authorities do not permit this solution;
  - it is an expensive solution - it would require a construction of rainwater pumping station, and a regulation of a long and difficult stretch stream, which flows out from Wysockie Lake.

- **because of the landscape concerns** the following aspects should be considered:
  - another layout for buildings,
  - other forms of building mass, height, roofing;
  - building materials, colour patterns,
  - different shaping of the area (for instance isolating dikes, lowered surface),
  - different shaping of the site's pavement - from fully hardened to half-hardened (for instance through application of blocks of the "Kasprowy" type, where possible),
  - more greenery, in conjunction with the surroundings and their requirement (vicinity of the Tri-City Landscape Park), both inside the Centre as well as on its perimeters.
7. FUNCTIONAL AND SPATIAL CIRCUMSTANCES

7.1. General circumstances

The area of the planned Pomeranian Agriculture and Food Merchandise Centre situated between the Obwodowa Zachodnia road and the areas of Zachodnie Barniewice will, after the construction of the road junction linking to the circular road, have a good connection with the basic elements of the functional and spatial infrastructure of the Gdańsk agglomeration:

- with the road system;
- with the railway system;
- with sea ports;
- with the international airport,

and in consequence with direct and indirect ready markets within the Gdańsk agglomeration, in Poland and beyond her borders.

The planned Centre lies close to large settlement units, from which it is separated with the areas of the Trójmiejski Landscape Park. The location of the Centrum Hurtowe might arise the conflicts with the other elements of spatial development and the environment, because of:

- the close proximity of Osowa district developing main residential functions towards the future Centre;
- nearness of the airfield, which causes: limited height of buildings of the Centre;
- situation of the Centre within the protected zone of the Trójmiejski Landscape Park, which may cause a degradation of the Parks value (mainly in result of increased level of noise and air pollution from intensified traffic of heavy vehicles along the circular road, also situated within the protected zone);
- situation of the Centre within the protected zone of the surface water intake "Straszyn";
- situation of the Centre within the area of the regional natural system of the Gdańsk voivodship, which represents a part of the planned countrywide ecological network ECONET. The area of the Trójmiejski Landscape Park is a part of the ecological corridor of national importance.
- location of the site of the planned Centre is situated on the perimeters of the groundwater intake "Osowa".
7.2. Circumstances arising from the land use existing pattern in the area of the project site

**The area designated for the development**

The entire area is used for agricultural purposes, the majority for crop production (units "A" and "B" of total area 51.09 hectares) and as meadows and pastures (unit "C" of 5.78 hectares). On the whole site of the future investment project no elements of development exist apart from line infrastructure elements, such as:

- unsurfaced field way leading from north-west to south-east, with many old trees along;
- 15 kV power line, situated parallel to the road, on its Western side about 200 m away;
- short section of a field way leading north-south-South at the Eastern part of the subject area.

Sporadically along the roads single trees are growing. Within the area "C", in the south-eastern part of the area two ponds and a small wood are situated (Figure 5).

The functional structure of the units „A”, „B”, and „C" was suited to the existing location conditions.

**Neighbouring areas:**

- **to the South** - the area of the Centre borders directly with the railway line of local importance, leading from Firoga via Klukowo, Owczarnia, Osowa, Wielki Kack to Gdynia. To the South of the railway arable land is lying without any kind of buildings. To the West from the unit "C", where to railway changes direction towards the North-South, areas of allotment gardens are situated. To the South from the unit "C" a small forest is growing.

- **to the East** - the site of the Centre borders directly with a double lane fast bypass road, the Obwodowa Zachodnia, running North-South. Beyond the road on its Western side a complex of allotment gardens (within a belt 200 - 350 m wide and about 2 km long), and further beyond the compact forest area of the Tri-City Landscape Park.

- **to the North** - an area of cropland divided by unsurfaced field ways. The closest single buildings are about 100 m away. To the north-east from the unit "A" and to the North from the unit "C" a small complex of buildings about 200 m from the border of the site is situated.
KONCEPCJA PLANU
ZAGOSPODAROWANIA TERENU
POMORSKIEGO HURTOWEGO
CENTRUM RÓLNO-SPOŻYWczEGO

TEREN A
1. BIURA
2. HALA KWATOWA
3. HALA WARZYWNO-OWOCOWA
4. STOISK ZADASZONE
5. HALA OGÓLNOSPÓŻYWcZA
6. HALA RYBNA
7. HALA MLECZARSKA
8. HALA MIĘSNA

TEREN B
REZERWA NA USŁUGI

TEREN C
REZERWA NA USŁUGI

ETAP I
ETAP II

RYS. 5
• **to the West** - cropland. About 150 m away from the site border a dense complex of farm buildings exists. Further to the West, about 350 m away from the Centre site, a functioning industrial estate, producing plastic elements, is present. About 700 m from the site boundary to the East from that factory another industrial facility - cement distribution - is in operation. Both estates are surrounded by arable land. Both companies are surrounded by the arable areas. To the south-east of the Centre, along the local road, a complex of lose rural settlements is situated.

**Land ownership**

The whole area designated for the development belongs to the Pomorskie Hurtowe Centrum Rolno-Spożywczego S.A. The parcel of 56 hectares has been taken over from the Agency of Agricultural Land Ownership of the State Treasury for shares of 3,9 million PLN value.

7.3. **Circumstances arising from the proposed site development**

**The area designated.** The area designated for the project development is subject of conditions laid down by two land use plans, which embrace two structural units: Barniewice Wschodnie - Owczamia, and Osowa.

**Barniewice Wschodnie - Owczamia.** The area of the future investment project belonging to this structural unit was, in its greater part, designated for railway functions (unit "A") and for industry, depots and bases (unit "B"). In result of conclusions between the Railway Management, the City, and the investment sponsor, the Polish State Railways have resigned from using those areas to the benefit of the Centre in exchange for another area obtained from the City to built a cargo handling base. Thus, as stated by the Draft Land Use Plan, the entire unit "A" and "B" belonging to the Barniewice - Owczamia area is presently designated for industrial, storage and base purposes, i.e. in accordance with the future functions of the planned development project. The area "C" has been appropriated, as reserved land, for possible construction of a hotel (motel), with conservation of the existing landscape components (ponds and forest) (Figure 6).

**Osowa.** A narrow strip of land belonging to the Centre, stretching on the North parallel to the proposed Nowy Świat road, has been designated by the Local Detailed Land Use Plan Osowa as isolation greenery.
The neighbouring areas are included in conclusions of the Local Land Use Plans of the two structural units, in the west - Barniewice Zachodnie, in the south - Klukowo-Rębiechowo, and, in the east, in the General Development Plan of the City of Gdańsk.

1. OSOWA

The area adjacent to the Centre on the North is subject of conclusions of the Land Use Plan Osowa. Within the belt directly adjoin to the project area (about 250 m wide) low intensity residential functions are foreseen, and further mixed residential/services functions (including large areas for educational and sporting services with accompanying greenery).

Within the belt directly adjoining the Obwodowa Zachodnia by-pass road, about 120 wide and about 600 m long plots have been allocated for city service facilities.

The area adjacent on the Northern side of the unit "B", and to the South from the proposed Nowy Świat street is partly designated for handicraft, storage, bases functions and partly for service functions requiring concentration in adequate centres.

2. BARNIEWICE WSCHODNIE-OWCZARNIA

Area within the belt 150 - 200 m wide on the Western side is subject of conclusions of the Land Use Plan Barniewice Wschodnie - Owczarnia. The development of handicraft, storage and bases is foreseen. The area further to the West is included in the Land Use Plan of Barniewice Zachodnie, which also assumes further development of this area towards warehousing, bases and handicraft along up to the area of the residential/and services area located along the Rębichowo - Osowa railway, on its Eastern side.

3. BARNIEWICE ZACHODNIE

The new changes, introduced in the draft land use plan of the region Gdańsk Barniewice Zachodnie, provide with the changes of arable land classification, designate meadows to the housing plots, and a part of industrial areas to allotment gardens.

Housing in the Barniewice area will cause new sources of organised and unorganised emissions. External sources of organised emissions will be caused by:
- outlets of the technological processes from industrial plants and artisans workshops;
- heating plants chimneys from housing and industrial premises.
External sources of unorganised emissions will be caused by cars. Introduction of the planned changes in land development will cause the sealing of the drainage basin, which, in the quantitative aspect, will cause:

- decrease of retention,
- increase of surface flow,
- increase of high water amplitude,

and in the qualitative aspect:

- pollution of water drained off the access roads, parking places, turnaround areas, and storage areas.

4. KLUKOWO-RĘBIECHOWO

On the South the land use plan Klukowa - Rębichowo presumes subsequently from the side of the Obwodowa Zachodnia:

- retention of the greenery function, hence a belt of parks and greenery along the by-pass road, preservation of the existing wood area further to the east as well as maintaining the present function of allotment gardens adjacent to the woods;
- further to the West retention of the function of cropland.

5. GENERAL LAND USE PLAN OF THE CITY OF GDANSK

In the General Land Use Plan of the City of Gdańsk the continuation of the present function of the existing allotment gardens to the East from the by-pass road is foreseen, and on the area between the gardens and the Tri-City Landscape Park a tourist services and services function with accompanying greenery proposed. A small area between two complexes of allotment gardens has been allocated to meadows and pastures.

8. CHARACTERISTICS OF THE VALUES AND RESOURCES OF NATURAL AND CULTURAL ENVIRONMENT

Location. The area of the proposed location of the wholesale market belongs administratively to the Gdańsk - Barniewice - Owczarnia district. It lies to the West of the Obwodowa Zachodnia by-pass road and to north-west from the "Owczarnia" road junction. According to the physical and geographical regional zoning of Poland by J. Kondracki, extended and completed with regard to the Gdańsk voivodship by B. Augustowski and J. Szukalski, the area in question is situated on the Pojezierze
Kaszubskie (Kaszub Lakeland) within the Wysoczyzna Chwaszczyńsko-Ręboszewska (Chwaszczyńsko-Ręboszewska Height).

The area, where the Centrum Hurtowe location is foreseen, is a part of the regional (voivodeship) system of nature areas, as it is located in the protection zone of the Trójmiejski Landscape Park (Figure 7). The Trójmiejski Landscape Park comprises the most valuable forest areas, located in the escarpment zone of the Gdańsk High Plain.

The park was created according to the Provincial (Voivodeship) Council resolution of 20th October 1975. The goal of the park is to protect the natural, historical, and cultural values of the areas included in it. In the substantiation of the decision was stressed a „necessity to satisfy tourist-and-recreational needs, and to conserve the natural values of the forest environment” in the area of the municipal forests of Gdańsk, Gdynia and Sopot cities, and the national forests of the contemporary Oliwa Forest Inspectore Board.

Within the range of work on the draft Spatial Development Plan of the park, the boundaries of the park were more specified, and this made a basis for the Provincial (Voivodeship) Council resolution of 3rd May 1979, No. XVI/89179 on creating the Trójmiejski Landscape Park (Dz. Urz. WRN in Gdańsk 1979, No.7 item 35).

The final course of the park and its protection zone borders was defined by the Gdańsk Voivod Ordinance No. 5/94 of 8th November 1994, on creating areas of protected landscape, defining borders of landscape parks, and setting up protected zones around them, as well as prohibitions and restrictions in them (Dz.Urz.-Woj.Gd. 1994, No. 27 item 139). For the area of the protected zone the following prohibitions and restrictions were formulated. It has been prohibited e.g.:

- to locate and built industrial object of more then the local scale, which could decrease environmental values;
- to drain off the peatlands, wetlands, water reservoirs etc., and while melioration works, the approval of the Landscape Park Director should be obtained (in regard to the work within the park);
- to locate or build industrial waste landfills;
- to locate or build tourist-and-recreational objects and facilities, and to locate or build them in the distance of 30 m from the edge of a forest.
- At the same time, among others, the appropriate public administration representatives were obliged to tend to concentrate housing and other premises within already existing villages, and to limit allowance of the forest areas for the other purposes.
an extended area of comparatively higher table of ground water exists, with small hollows filled with peat.

To the West from Owczamia, directly along the Zachodnia Obwodowa road a considerably large depression with a constituent water level and partly overgrown by water plants is situated. This area constitutes a small part of a many hectares of wetland with a network of draining ditches, which in result of the construction of the Obwodowa Zachodnia road and the flyover underneath this road has bee divided forever. This area was hydrologically integrated with a number of depressions maintaining constant levels of water; part of them have been filled during the construction of Zachodnia Obwodowa by-pass road. The analyses of maps from times before the construction show the existence of integrity between the Ewa Potok stream and the above mentioned wetland.

The watershed between the Radunia river and the Potok Jelitkowski drainage basins runs through the area of the planned Centrum. According to the Gdańsk Voivod Decision No. 0-V-7226/1/93 of 6th August 1993, the Radunia river has been put under protection, since the protected zone of the surface water intake „Straszyn” was established. The analysed area has been included in the zone of indirect protection of the water intake, so consequently there are obligatory different prohibitions and restrictions. There is prohibited to perform works and activities which could decrease usefulness of the pumped water, and the intake efficiency, and in particular:

- discharge of treated sewage to the lakes and their tributaries in the section of three km from their outlet to the lakes;
- discharge of treated sewage to the lakes and their tributaries, if they do not comply with individual requirements, which are specified every time in water legal permits;
- use of human and industrial sewage for farming purposes;
- use of emergency spillways in pumping stations, and treatment plants, which discharge sewage to the protected water;
- introduction of the chemical agents to the surface water, and direct sprays filling from rivers, lakes, and water reservoirs;
- washing of vehicles or other equipment in the protected water, and setting up parking areas in the distance lower then 100 m from the banks;
- construction of the new engineer objects, and food processing companies, in the distance lower then 100 m from the river and lake banks;
• location of water intensive companies, and other nuisance companies, if the Environmental Impact Assessment will indicate their environmental harm;

• location of the liquid oil based products storages, and other chemical substances storages, as well as pipes for their transportation, which have more then local significance;

• location of municipal and industrial sewage discharge, and the industrial waste landfills.

Geologic conditions. Geological survey of the High plain is good in the vicinity of the water intakes (Osowa, Tuchom, Owczamia, Dolina Radości). In the rest of the area it is lime and refers mostly to the point survey (Figure 8).

A model of geological structure was made, based on the collected geological materials. It has been presented as the hydrological section in the Figure 9. The oldest surveyed structures originate from the Tertiary period, which were recognised in Owczamia and in the water intake „Dolina Radości“.

The Tertiary structures are represented by Oligocene and Miocene deposits. In the Oligocene deposits occur slimly-and-clayey sediments with sand layers, sometimes with carbonated deposits. Miocene deposits were deposited mainly in the typical brown coal facies. They are built of clay, loam with additives of brown coal dust, with brown coal lenses and sandy layers, which depths reach sometimes up to some dozens of meters.

The depths of the Miocene deposits differ as a consequence of the large relative heights of the roof layer resulting from the late Tertiary denudation, glacier erosion, and erosion caused by thawing water.

Quaternary deposits covering the High plain are undisturbed. Their depths depend on the geomorphology of the area, and the relief of the postquaternary surface. The total depth of the quaternary deposits is from 40 up to 170 m. The largest relief of the surface occurs around Osowa and Owczamia.

In the area of Osowa intake appears a deeply cut erosion channel, filled mainly with sand deposits. However, in the surroundings of Owczamia was noticed a large uplift of Tertiary deposits.

The quaternary deposits differ as well.
ISTNIEJĄCE I PROJEKTOWANE ZAGOSPODAROWANIE W REJONIE INWESTYCJI skala 1:25 000

Rys.6.
OCHRONA WALORÓW ŚRODOWISKA PRZYGODNICZEGO I KULTUROWEGO
SKALA 1:50 000

teren inwestycji
projektowany węzeł drogowy
Trójmiejski Park Krajobrazowy
odwodnienia Trójmiejskiego Parku Krajobrazowego
rezerwaty przyrody*
pomniki przyrody*
las

doliny ekologiczne
ochrona strefy krawędziowej wysoczyzny
ogrody działkowe*

pas szczególnej ochrony wzdłuż rzeki
Strzelin wewnątrz WTOP (wewnętrznego terenu ochrony pośredniej)
granica WTOP (wewnętrznego terenu ochrony pośredniej, d. strefa "A")
granica strefy ochronnej ujścia wody Straszyn
(zewnętrznego terenu ochrony pośredniej d strefa "B")
tereny ujścia wody pitnej "Osowa" i "Dolina Raduśołca" (stanowiska i roczne)
obszary żasobowe ujścia wody "Osowa" i "Dolina Raduśołca"
kierunek ruchu wód podziemnych
granica terenu GZWP Nr 113 (Główny Zbiornik Wód Podziemnych)
historyczne siedliska osadnicze*
układ dróg historycznych*
stanowiska archeologiczne*

* w bezpośrednim sąsiedztwie inwestycji

Rys. 7.
OBJAŚNIENIA

- teren getty towarowej
- otwory archaiczne
- "A" "A'" - linia przekroju hydrogeologicznego
- granica nieciągłości głównego czwartorzędowego poziomu wodonośnego
- granica obszaru zasobowego ujęcia "OSOWA" i "DOLINA RADOŚCI"
- teren ujęcia "OSOWA"
- "4" - perspektywa rozbudowy ujęcia "OSOWA"
- teren ujęcia "DOLINA RADOŚCI"
- "120" - hydroizohipsy czwartorzędowego (głównego) poziomu wodonośnego – stan aktualnej eksploatacji
- "146" - hydroizohipsy – prognoza
- wielkość obniżenia zwierciadła wód podziemnych przy eksploatacji ujęcia "OSOWA" φ = 1052 m/h
- kierunek ruchu wód podziemnych

Rys.8.
PRZEKRÓJ HYDROGEOLOGICZNY A - A'

OBJAŚNIENIA

- Gлина zwaflowa
- Piaski
- Piaski ze zwirem
- Muflki
- Liny
- Zwierciadła wody ustabiliizowane
- Zwierciadła wody nawiercone
- Regionalny kierunek przepływu wód
- Lina zwierciadła wód podziemnych
- Zafiltrowanie
- Granica stratygraficzna

Rys. 9.
In the area of planned Centrum Hurtowe were recognised:

- glacial sediments - sandy clay, boulder clay
- glacial water sediments - gravel, sands of different granulations
- hollow sediments - silt, loam

**Hydrogeologic conditions.** The scheme of the Tertiary and Quaternary ground water in the area of the Centrum Hurtowe, in relation to hydrogeological conditions of „Osowa” and „Dolina Radości” intakes, is presented in the hydrogeological section.

Ground waters of the Tertiary period are connected with the Oligocene and Miocene fine sands. The Oligocene layer is not of a large significance. The ground water of the „Dolina Radości” intake is taken from Miocene layer. In the zones, where the Miocene sands are uplifted, occur contacts of this water layer with the Quaternary water layers.

Within the Quaternary deposits occur the water layers of regional significance:

- the lower layer with average depth of 20 m, however the deeply cut channel near Osowa reaches the depth of 100 m;
- upper layer, located at the depth of 20 to 40 m, which is covered with boulder clay. This layer is made of sand deposits of different granulation, gravel, and pebble. The total depths of this layer differ, and reach from several meters up to 60 m. In the „Osowa” intake the average depth is 40 m; these layers occasionally contact each other, remaining in the hydraulic links.

The lower layer is characterised with very good hydrogeological parameters. Average indicator of filtration „K” is $2.1 \times 10^4$ m/s. The efficiency of the well is about $20$ m$^3$/h/ImS, and the conductance equals $T= 36$ m$^2$/h. The upper layer is largely taken in the High Plain, and in small amounts in the „Osowa” intake. The water table in the area of the planned Centrum, occurs from 105 to 110 m above sea level. The water flows in an easterly direction, to Nadmorski terrace and the Gdańsk bay with the gradient of $9/100$. In the region of the Centrum the gradient reaches $8/100$.

The lower water layer has an impermeable cap rock layer of boulder clay and clay loam, of a total depth of a few meters to 20 m. This water layer creates the base for the „Osowa” water intake, and has an estimated reservoir of $1,062$ m$^3$/hr.
According to the isotopic research, this layer in the „Osowa” water intake is sufficiently protected against external influences. The proof for this is the lack of tritium and the estimated age of the water, based on the C¹⁴ method, which is about 900 years old.

The upper layer is supplied by rainwater. A quick exchange of water is observed here. This fact is proved by the research of water age held in the Institute of Nuclear Physics of the Mining and Metallurgy Academy in Kraków. The estimated exchange time is about two or three years.

Differentiation of the water circulation and exchange is proved by the results of the chemical research. In the upper layer runs water of a hardness of 3.5 mval/dm³ and of a higher content of nitrogen. The total mineral content does not exceed 250 mg/dm³.

Water in the lower level is characterised by an alkalinity of 0.7 mval/dm³, with a total hardness is 4.5 mval/dm³. The mineral content is 300 mg/dm³. Nitrogens do not appear in significant amounts - 0.16 mgN/dm³.

According to the hydrological data, in the water bearing cap rock deposits appears an aeration zone with a depth of 20 + 24 m. It consists of sandy gravel deposits covered with a clay layer of 12 m.

Climatic conditions. For the analyses of climatic conditions the archive materials of the Rębichowo station, based several kilometres to the West from the development site. Basing on observation materials from many years, the characteristics of the climate has bee described on such factors which are decisive for the specific climate of the study area. Particular attention was given to the migration of air pollution, e.g. the direction and speed of winds and the weak balance of the atmosphere.

- Cloudiness influences the radiation balance, exerting a direct impact on the influx of short wave radiation and on the exchange of long wave radiation. In general the cloudiness is described by monthly means and annual values. The minimum values for cloudiness for the Rębichowo station, independent of the time of the day, are occurring in May, June, August and September; maximum in November, December and January. In course of twenty-four hours, during the warm half of the year the greatest cloud has bee noticed during noon hours. At that time better condition exist for the creation of thermal convection. During the colder half-year maximum mean cloudiness is visible during morning hours and the smallest at evening time.
- **Air temperature.** Maximum monthly mean air temperatures occur in July and August, and the lowest in February. Typically for coastal zones thermal differences between the warmer autumn and cooler spring are apparent.

- **Relative air humidity** in course of the year attains highest values from November till February. May and June are the driest. In course of twenty-four hours the highest values of relative humidity occur during morning hours, while the lowest during midday. The analyses of relative humidity data indicate an even distribution during the year, however with a clear domination of high values - over 60%. Domination of values in classes of 60-75% and 80-100% influences indirectly the hygienic status of the air. The subject literature assumes relative humidity values of 70% as threshold value, above which the conversion of air pollution becomes greater, particularly of sulphur dioxide and sulphur compounds.

- **Atmospheric precipitation** in accordance with results of analyses performed on data from the Rębichowo station, are characterised by low values (below 550 mm annually). In course of the whole year the highest mean monthly total atmospheric precipitation occur in July. The next, secondary precipitation maximum is showing up in October, and the lowest monthly precipitation totals are observed in February and March. Months with the highest totals of monthly precipitation do not fully fall in line with months of the maximum numbers of rainy days. This conclusion is important, because the formation of, among others, bioclimatic conditions depends to a greater extent from the number of days with precipitation and the probability of their occurrence than the annual total of atmospheric precipitation. The greatest number of days with precipitation is observed in October, November and December and clearly lower during the month with the highest total atmospheric precipitation, i.e. in July.

- **Winds.** The review of wind directions indicates to a deciding dominance of Western and south-western winds. For the first observation period the share of Western winds was 26.3%. A similar result was noted during the second observation period - 23.1%. During the evening time the dominant share of Western wind was maintained at 21.4%.

In course of the year the main share in general came from the north-eastern winds with 9% as at 19.00 hours. The frequency of still air in course of twenty-four hours is also interesting. The lowest frequency in this respect occurs during noon time with a share at merely 1%. During the heating season Western sector winds prevail, with a share of 24% at Rębichowo station. Characteristic is the lowest frequency of Northern sector winds. Their share does not exceed 6%. Also at summer time winds coming from the Western sector are prevailing. Their contribution reaches 22.2% (second period). Exceptionally during the third period north-eastern winds were prevailing at 18.3% while the Western winds have shown a lesser participation at 17.9%.
The strongest winds are observed during the heating period, i.e. from November till March. Both, the mean monthly wind speed as well as its increased humidity showing a speed of 8 m/s. Slowest winds are occurring during May, July and September. In course of those months also the participation of still wind or very slow breeze (below 2.0 m/s).

Analysis of the twenty four hour wind speed indicated that there are lower speeds in the afternoons. During this time of the day very weak winds and calm air predominates. The strongest wind within the whole year occurs from the North, and the weakest from the West.

- **Fog.** Appearance of fog contributes to the worsening of the hygienic state of air and restricts influx of direct short-wave radiation to the Earth surface. In annual mean the largest number of foggy days is observed in February and March. The smallest number in May, June and July.

**Acoustic climate.** The area of Centrum Hurtowe is not highly developed and therefore lacks significant noise sources. The only exception is the Western Circular road, which influences the acoustic climate of the adjacent areas.

Traffic on this road has an average speed of 80 - 90 km/h and a density of actual vehicles during the day of up to 1300 veh/h (heavy transport = 17%) and at night of up to 450 veh/h (heavy transport = 21%). Sound levels 1 m from the edge of the road are 77 dB during the day and 73 dB at night and at a 50 m distance are 59 dB during the day and 57.5 dB at night.

Other, less important, noise sources in the area are the Gdańsk Rębiechowo Airport, which has an impact during aircraft takeoffs and landings, and the railway line side-track between Osowa and Rębiechowo, which at present, depending on the terrain, occasionally has an impact on the area 25 to 70 m from the track.

**Vegetation cover.** The area under study presents an extensive farming land with the domination of plant population plants usually covering intercrop spaces. The division lines between runners are overgrown by ruderal plants with young specimen of trees (maple or birch trees). Trees (maple, lime and birch trees) are creating an avenue form along the Nowy Świat street. In the valley of the right tributary of the Strzelkenka River, in a shallow, wetland area a peat structure was formed with a small pond. This area is overgrown by giant sedge rushes and bushes of wideleafed willow. This peatbog presents and enclave of wetland vegetation and refuge for wild animals. Water and rushes plant communities are met between the "Owczarnia" junction and the Obwodowa Zachodnia. This is part of a former vast wetland area coherent with the Potok Ewa stream.
**Landscape.** The area of the proposed development project lies within the protective zone of the Tri-City Landscape Park. It is, however, cut off from the latter by a spatial barrier of the double lane by-pass road Obwodowa Zachodnia. Therefore, when viewing spatial relationships, no clear direct link between the cut-off part of the protective zone and the area of the Park exists.

The future Centre is situated on an almost flat area of monotonous, uniform physiognomy of a rural landscape, with the dominance of cropland, single dispersed buildings beyond the site borders, with a small number of unsurfaced roads, tree clusters, small water mirrors (distant) and swampy ground pits (Figure 5). In the East, a clear site boundary is represented by the line of the by-pass road, in the South, by the existing railway side-track, and in the East, by houses and industrial buildings. In the North the view from the site area is open, with a housing estate in the far distance. In general the landscape has no dominant features, except for the buildings of the cement pouring plant in the West (photographs A - E). One of the important landscape elements of the Centrum surroundings is edge of the Tri-city landscape park forest on the Eastern edge of the site. The strong linear element, which has a high aesthetic value, is the Nowy Świat avenue, with its old maple, ash, sycamore, and lime trees, running across the Centrum Hurtowe area.

**Cultural Environment.** The most important cultural elements of the macro landscape composition of the examined area are:

- Linear elements of the former infrastructure: the crossing of transportation tracks in the neighbourhood of Owczamia, which lead from the north to the south to Gdańsk and from the west to Oliwa through the moraine hills. Their importance was signified by the planting of noble tree species (lime, sycamore, and ash) in avenues. The tracks connect:
  - The farm of Barniewice with Oliwa (now Meteorytowa street)
  - The farm of Nowy Świat with Oliwa (now Nowy Świat street, creating the maple/ash tree avenue).

These routes would connect in the large farm of Owczarnia, and then the Dolina Ewy track would lead through the hills to the Oliwa forest and further to Stara Oliwa.
- Wysoka, Owczamia and Klukowo (running parallel to the Tri-city landscape park forest, from North to South).

*On the basis: Studium wartości kulturowych oraz wytyczne konserwatorskie do miejscowego planu zagospodarowania przestrzennego dzielnicy Barniewice Wschodnie-Owczamia, Wydział Architektury Politechniki Gdańskiej, 1996*
Viewpoint 01: Widok z wiaduktu Owczarnia w kierunku południowo-wschodnim, na Owczarnię i TPK.

Viewpoint 02: Widok z wiaduktu Owczarnia w kierunku północno-wschodnim, na TPK.
• Form of settlements:
  - Settlements of Owczarnia valley (including farm workers housing), and of Nowy Świat farm
  - The regular structure of the colony area, south of the railway embankment.

  In the area of the former Owczarnia property, which is the most precious element of the material culture, the following are protected.
  • Well kept spatial structures of the farm house and farm workers dwellings,
  • Premises (storage and inventory houses, stone cellars, and a small stone pigsty
  • Architectural detail (entrance gate posts, gravel)
  • Tree lines and single trees of the former park structure (spruce, oaks, maples, sycamore, beech, willow, and hornbeam)
  • Natural elements (an erratic, a pond, and shrubs)

  In the very precious area of the foresters lodge are protected:
  • spatial structure of the foresters lodge;
  • buildings (main house, inventory building, small storage house);
  • boundary planting of spruces;
  • architectural detail.

  In the area of the Nowy Świat farm are protect:
  • spatial structure of the buildings
  • buildings (farm house)
  • remains of the trees and the entrance ash tree avenue, with a wayside shrine.

  In the area of the farming colony are protected:
  • the regular structure of the colony parcels.

  In the system of the historical roads are protected:
  • the imprint of the road (the historical course)
  • avenue trees (small-leaf lime, maple, sycamore, ash trees)
  • granite route stones
Also recommended for protection are views on the local natural elements (i.e. terrain depressions and ponds) and cultural elements (i.e. forms of the old settlements).

9. ENVIRONMENTAL IMPACTS RESULTING FROM PROJECT IMPLEMENTATION

9.1. Impact on the landscape

The negative impact may be caused by:

- permanent change of the pattern of use of a vast area from open agriculture to highly urbanised, with an industrial character;
- appearance of buildings of vast dimensions;
- destruction of the natural relief of the terrain (change from slightly undulated to completely flat);
- noise, vibration, air pollution (mainly dust during construction) caused by the use of heavy equipment;
- cutting of single trees;
- complete destruction of low vegetation;
- temporary piling of diggings;
- violation of the landscape harmony;
- appearance of temporary construction back-up facilities in the landscape.

The transformation of the landscape, caused by the expansion of the transportation system and construction of the large buildings, will remain a permanent element of the landscape.

The Centrum Hurtowe halls are lightly built constructions which do not need deep foundations. Therefore there is no danger of disturbing the ground water balance.

If the construction and assembly of the Centrum Hurtowe is undertaken in compliance with the present regulations, then the building process will not cause a danger to the environment. This conclusion refers to both the first and second phases of the investment project.
The closeness of the Western Circular road, which is one of the main access roads to Gdańsk, is significant when assessing visual value, since the Centrum Hurtowe may become a representative symbol (contemporary) of the region.

The fieldwork showed that the future investment, during both the construction process and operation, will be visible from small sections of the Western Circular road, in the vicinity of the road junction „Owczarnia,” of the total length of 500 m. From the other small parts it will partly visible, and not visible at all from the rest of the Western Circular road (Figure 10).

Because the Western Circular road will become a very busy transportation route in the future, visual impressions will be significant, even though they appear only in a small section. Therefore, the spatial development of the Centrum Hurtowe (especially zones B and C, surrounds of the road junction and administration buildings) should be designed to keep existing aesthetic values, or even raise them, in this new development. The valuable forms of the existing development should be protected (the avenue of trees along Nowy Świat street, the small ponds, the view of the Tri-city Landscape Park and forest, the trees and bushes along the railway track, the objects of cultural value in Owczarnia, and the old single trees) and a project of greeneries should be made.

The visual problem is different from the open areas in the North, West, and South. From the North, from the housing estate Osowa, Centrum Hurtowe is very well seen, especially its western part, where the huge halls will be constructed in the future. The eastern part, where there is no construction expected, is obscured by a small hill covered with plants.

The open visibility of the future Center from existing and planned housing in Osowa, will be the key issue while specifying mitigating measures and activities in landscape shaping and protection.

From the West and the South, where the local roads are located, the Centrum Hurtowe is also very well seen. However, because these local roads are only very small and sporadically used, the visual impressions are of very little significance in comparison to the visual impacts on the permanent inhabitants of Osowa.

9.2. Impact on the existing site development and land use (within the site)

Presently, the entire area of the future Centre is being used for farming. No development facilities exist on the site (except for few roads, 15 kV high tension electric line which is planned to be removed). The proposed use of the area and its
development will completely change its present character. Instead of cropland an
intensively developed Centre will appear, with numerous large scale structures,
infrastructure and fully surfaced grounds. The trees along Nowy Świat street are
threatened with being cut because the street is planned to be liquidated.

9.3. Impact on the air quality

Most of the construction works will be the source of air pollution because of:

- earth moving, levelling and excavations
- cement mixing process (cement and lime) and sand storage
- welding works emitting dust, NO2, CO
- painting works connected with the emission of organic solvents
- vehicle transport, causing secondary dust emission

Amounts of emitted pollution might be significant but the range of their
influence will be limited by their absorption by the ground. Emission of pollution to
the air will be lower than emissions generated by the car traffic on the Western
Circular road.

9.4 Impact on acoustic climate

During the time of project implementation the main source of noise will be the
construction equipment, road construction machines and heavy transport
(bulldozers, frontloaders, excavators, pile-drivers if used, ground densing machines,
paving machines and road rollers). These are sources of high acoustic power (as a
role over 100 dB) exerting impact up to 200-300 m from the place of action. This
impact is varying in time and occurs with different intensity depending on the type of
works performed. Close to residential areas (Osowa) must be limited to day time.
The level of noise during construction works is not regulated by standards and has
no limitations. During the construction period no substantial differences in noise
intensity is linked to phases of construction, though during the II phase noise should
be less burdensome since road construction, and substantial part of excavation and
levelling works will be completed during phase I.

9.5 Impact on surface and ground water

The impact of the implementation of the Centrum Hurtowe project (mainly
excavations) will be a small amount of pollution draining off with rainwater to the
irrigation ditches. There might be different sludges and dirts containing oil based
substances. The possibility of the discharge of these substances should be effectively eliminated by the use of portable pre-treatment equipment periodically installed in the ditches.

There will be no impact on the ground water, since the foundations will be shallow and due to the effective isolation of the useful ground water reservoirs.

9.6 Impact on soil and natural environment

The impact on soil and vegetation will be limited to the area where the Centrum Hurtowe will be located, where the levelling and ground removal will take place.

After the removal and breaking up of the surface layer of soil, it should be disposed in areas not exposed to pollution. The soil collected in this way can therefore be used for other purposes, such as farming or gardening.

Because of the location of the present trees and bushes, some will need to be removed.

The construction work may temporarily disturb animals and birds in the investment project area.

9.7 Impact on the human environment

Construction of the Centrum Hurtowe will last for many years and will comprise of the two phases of the investment implementation and the construction of the technical and transportation infrastructure, which will allow for the Centrum to function. The range and scale of the investment may cause a significant concentration and intensity of small scale harmful environmental impacts. These will be first of all noise, dust and gases from welding, solvent fumes from painting, and air pollution from levelling, excavation and ground works.

People who may suffer from the negative impacts, such as noise, vibrations, and dusting, will be, first of all, users of the allotment gardens on both sides of the Western Circular road, in the vicinity of the planned Centrum Hurtowe and the road junction „Owczarnia.”

Another group of people may be Osowa inhabitants, who will feel impacts related to the increased vehicle traffic serving the investment area construction site.
Because the distance from the investment area to the dense Osowa housing estate is significant, the possibility of a negative impact of the construction on people's health is excluded.

The more detrimental period will be the second phase of the investment project, when some objects will already exist (vegetable and fruit, flowers, and foodstuffs halls) and be functioning. This will result in the assembly and construction process and the delivery and transport of foodstuffs occurring at the same time.

10. ENVIRONMENTAL IMPACTS CAUSED BY OPERATION OF FACILITIES

10.1. Impact on air

*Transport communication pollution.* The main source of transport communication pollution will be the Obwodowa Zachodnia by-pass road, which is an existing element of the transportation structure. The increased traffic, resulting from the Centrum Hurtowe implementation, and implementation of different objects of similar character in the neighbouring area, as well as increase of transhipment in the Gdynia harbour, and the transit carriages, will cause the increase in emissions of exhaust gases.

No data exist on the background air pollution for the Bamiewice region. The State Voivodship Sanitary Inspector has defined the following reserve of background pollution for 1995 (maximum concentration in 30 minutes emerge):

- sulphur dioxide - 40% of permissible level, i.e. 0.176 mg/m³
- nitrogen dioxide - 40% of permissible level, i.e. 0.2 mg/m³
- carbon oxide - 70% of permissible level, i.e. 0.3.5 mg/m³
- mixture of hydrocarbons - 50% of permissible level, i.e. 0.5 mg/m³
- total of lead - 20% of permissible level, i.e. 0.0007 mg/m³
- suspended particulate - 40% of permissible level, i.e. 0.05 mg/m³

The analysis of this documentation proves that the existing state of the acoustic climate is satisfactory. There is no exceed of any standards.
To assess the emissions from fuel combustion in the vehicles passing by the Obwodowa Zachodnia, according to the draft plan, the traffic intensity was assumed for 4,000 vehicles per hour one way, and 40,000 vehicles per day, including 10% of heavy transport.

On the local roads an increased intensity of transport is expected up to the following capacities:

- Średnicowa street 1000 vehicles/hr. one way
- Nowy Świat street 800 vehicles/hr. one way
- Meteorytowa street 2700 vehicles/hr. one way
- Wodnik street 2700 vehicles/hr. one way
- Galaktyczna street 1500 vehicles/hr. one way

The increase of traffic intensity will cause and increase of emission of pollution. However the latter will not be proportional to the traffic intensity increase for the following reasons:

- transportation will take place on new, less bending roads, which should improve their ventilation, and thus reduce the local concentration of pollution;
- emission from single vehicles will be smaller (new types of engines and exhaust systems).

The emissions from the motor vehicle exhausts, produces by the cars driving on the roads in vicinity of the Centrum Hurtowe, and from the exhausts emitted on the parking areas, will not exceed the permission limits of air pollution in so called „areas.”

However it may be assumed that the increased traffic on the Western Circular road may cause the occasional concentrations of the suprastandard air pollution, on the border of the protected area of the Tri-City Landscape Park. These situations may occur, when during the weak airing. Also in the area adjacent to the Western Circular, on the side where the Centrum Hurtowe is located, may occur exceedings of the permission limits.

Pollution caused by energy production. The heat production to supply the objects of the Centrum Hurtowe will be gas based. The heat will be produced in four heating plants in the first phase of the project implementation, and probably also in the second phase. Under the possible combustion technologies, this source of heat energy is the most environmentally friendly.
Since the heating plants in the housing estate of Osowa are to be modernised, the decrease of the total pollution, produced by the energy production, is expected in the whole area of Bamie\-wice. This conclusion is due to the following circumstances:

- 7 boiler houses fired by hard coal at Osowa will be replaced by one fed by heating oil or gas;
- objects of the Centre and other, which will be erected in the neighbourhood, will be heated by gas boilers;
- in relation to factories new requirements enforcing modernisation of energetic installations and change of heating venue.

Considering the facts listed above, it is expected that the emission of harmful substances, which are produced in the process of energy production, will not exceed the permission levels for the toxic substances emissions, in the area bordering with the protected Tri-City Landscape Park.

10.2. Impact on acoustic climate

After the project implementation is completed, the new sources of noise will appear and the area effected by the existing sources will increase. In the project, the construction of many new roads is foreseen, mainly to serve the new Centrum. Apart from them there will appear many new industrial sources of noise, resulting from the range and the purpose of investment implementation.

In the area of the Centrum Hurtowe, there will exist two basic types of the external, direct noise sources:

- transportation noise, from the car transportation and goods supply to the Centrum Hurtowe, car traffic in parking areas for the service of clients, parking places for the Centrum employees, railway transport, and internal transport for the unloaded supplies;
- noise from ventilation, air conditioning and cooling of the halls, offices and storage places.

Among the ventilating devices will be installed ventilation boards for aeration and blowing out, ventilation boards for aeration, cooling aggregates, sets of ventilating condensers, wall aeration ventilators, roof ventilators of different types, air curtains and heating-and-ventilating equipment.
Estimated results of the calculations related to the level of noise, emitted from the linear sources are presented below. It is expected that the assumed range of roads nuisances in the analysed area will look as it follows:

- **Western Circular road**
  - isoline \( L_{A_{eq}} = 50 \text{ dB} \quad r_x = 600 \text{ m} \)
  - isoline \( L_{A_{eq}} = 55 \text{ dB} \quad r_x = 320 \text{ m} \)
  - isoline \( L_{A_{eq}} = 60 \text{ dB} \quad r_x = 170 \text{ m} \)

- **Other planned roads**
  - isoline \( L_{A_{eq}} = 50 \text{ dB} \quad r_x = 200 - 250 \text{ m} \)
  - isoline \( L_{A_{eq}} = 55 \text{ dB} \quad r_x = 100 - 160 \text{ m} \)
  - isoline \( L_{A_{eq}} = 60 \text{ dB} \quad r_x = 60 - 90 \text{ m} \)

The assumed impact of the Western Circular road is considerably higher than at present. It results from the planned parameters of the road, but first of all from the increase of the car traffic and their speeds.

As already mentioned above, there will be two main types of sources emitting acousting energy to the surrounding - from the transportation and the installed felicities.

During the Centrum Hurtowe exploitation, the basic and difficult to eliminate source of noise will be the traffic noise from supplies delivery and goods removal to, from, and within the Centrum. The entire area of the Centrum will be a huge surface source, which would emit the noise in the course of the entire day, with the maximum during the more intensive car traffic (from 2.00 to 9.00 o'clock). This is the period of time which should be especially protected since the site area is bordering with the housing estate. The entrance roads to the Tri-City agglomeration will be particular nuisant in the same hours.

The noise from devices (ventilation, cooling, air-compressing and heating) installed in the Centrum will be of less significance, particularly that it could be effectively decreased with the technical means. Among the sources of noise from the mentioned installations, during the first phase the ventilators (vegetable and fruit hall), cooling and air-conditioning equipment (flower hall) will be of the most significance.
During the second phase the meat, dairy and fish halls are to be constructed. Because of the kind of the products to be traded, in these halls the powerful cooling system will have to be installed. The halls are to be built in the north-western part of the Centrum, close to the housing areas of Osowa and Barniewice Zachodnie.

Noise produced from this kind of installations may have an impact on the residential area located even several meters away, and may exceed the permissible level, particularly during the night time.

10.3. Surface flow assessment

The mutual influence between the intensity, time of lasting and probability of the rain falls may be formulated in different ways. In this paper was adopted the formula based on the collection of 67 years of rain falls observations in Warsaw, from the period 1937 - 1959, with the application of average intensity method:

\[
I_{Tm} = \frac{470 \sqrt{c}}{t^{0.67}} \text{ l/s/hectares, where:}
\]

\[
\begin{align*}
I_{Tm} & \quad \text{rain intensity l/s/hectares} \\
c & \quad \text{period (in years), when certain intensity was exceeded} \\
t & \quad \text{period of rain lasting}
\end{align*}
\]

To estimate the intensity of the rain the following measurements were taken:

- \( c = 1, t = 10 \text{ min.}, \) therefore \( I_{Tm} = 100 \text{ l/s/hectares} \)
- the area of the project analysis \( A = 60 \text{ hectares} \)
- the indicator of run off flow from the drainage basin \( \varphi = 0.8 \)
- the intensity of the surface run off \( Q_s = \varphi \times I_{Tm} \times A \)
- the capacity of the surface run off \( V_s = Q_s \times t \)

\[
Q_s = 0.8 \times 100 \times 60 = 4,800.0 \text{ l/s} = 4.80 \text{ m}^3/\text{s}
\]

The capacity of the surface run off will be:

\[
V_s = 4.8 \times 10 \times 60 = 2,880 \text{ m}^3
\]
The next issue related to rainwater discharge is water run off from the roads and the parking areas. The sources of pollution are:

- rainwater and snow melt run off,
- discharge of the harmful substances during car accidents.

Rainwater run off might be very polluted, especially after a long, dry period.

The main pollution indicators in the run off from the roads are:

- suspended matter;
- heavy metals and other toxic substances;
- chlorines;
- compounds characterised by the content of the carbon, BOD and COD;
- oil based substances.

The survey held by the Instytut Badawczy Dróg i Mostów (Roads and Bridges Research Institute) during 1988-1990 showed, that the largest harm to the waters recieving rainwater are:

- suspended matter average value 292.8 mg/l permitted value* 50.0 mg/l
- COD average value 362.2 mg/l permitted value* 150.0 mg/l

10.4 Impact on ground water

The area of the planned Centrum Hurtowe is located about 2 km south-east from the water supply system „Osowa”, and 2.5 km north-west from the „Dolina Radości” water intake. Most of the investment area is found within the resource area of the „Osowa” water intake. The detailed location is presented in the documentary map with the hydrological elements (Figure 8).

Exploitation forecasts of the „Osowa” water intake state, that the Centrum impact in the area will result the lowering of the ground water table by about 1 m. This decrease will not cause any change in the general ground water flow in the zone between the intake and the Centrum, since the water table decreases already

* According to Minister of Environmental Protection, Natural Resources and Forestry of 5th November 1991
appear in this area. There will be no threat of the possible pollution migrations to the „Osowa” water intake.

The „Dolina Radości” water intake, and in particular its impacts, are placed outside the ground water currents.

According to the data from the plans of the protected zones for these intakes, it may be stated that the area of the Centrum is located outside the area of the indirect protection zones (25 year of water inflow is foreseen).

The Centrum Hurtowe will be felicitated with the rainwater drainage system, and the sewage water system, which will be utilised for discharge of all the sewage to the proper recipients. With this kind of water management, and with the assumption that there is 10 m depth layer of clay, from the surface of the terrain, the threat of ground water during the normal exploitation is not expected.

Uncontrolled discharge of sewage to the ground may disturb environmental balance in the roof layers of Quaternary deposits.

In this case bacteria of Escherischia Coli are very important, therefore the biological water control is held with the use of Cola indicator.

The research of decomposition and survival of these typhus bacteria has proved that how long they stay alive depends on the environmental yield (organic pollution). The lower the degree of pollution (PO₄, NO₃, Cl, NO₂, NH₄), and consequently the lower use of KMnO₄, the bacteria have less chance to survive.

To estimate the time of sewage migration to the water layer through the aeration zone of 20 m (10 m of clay, and 10 m of sand), the following formula is used:

\[ t_h = \frac{h}{V_r} \cdot d \] , where:

\( V_r \) - the actual speed of vertical migration through the aeration zone;
\( h \) - depth of the aeration zone.
The actual vertical velocity is calculated according to the Bindeman formula:

\[ V_r = (ne)^{-1/2} \omega^2 K \]

assuming that the average yearly infiltration \( \omega = 2.5 \times 10^{-4} \) m/d (according to A.S. Kleczkowski), average filtration rate of the aeration zone \( K = 1 \) m/d, and the average effective porosity \( ne = 0.2 \):

\[ V_r = 0.015 \text{ m/d} \]

Therefore the time of percolation through the aeration zone will take 1333 days (about 3.5 year). This period guarantees the full water treatment from the biological pollution. Due to this there is no possibility of the pollution infiltration to the water layer in the natural way.

10.5 Environmental threats in the case of emergencies

Centrum Hurtowe, during its first phase of functioning, should not cause the that of the more serious emergencies, except for the fire danger. The type and the character of the food stuffs will not require a use of any special cooling devices, which work with the use of the large amounts of ammonia. Any sanitary threats should not occur.

However during the second phase of Centrum Hurtowe implementation, which includes among others the meat, fish, and dairy halls, the emergencies may occur, e.g. as the result of cooling installations breakdown, when the ammonia may be released to the air, or in the case of sanitary threats related to the trade of the very perishable food stuffs. In this case the most threaten will be the surface water supplying water intake in Straszyn.

The other problem is a hygiene threat, which may relate to the Centrum Hurtowe employees and the consumers of the food stuffs. A wholesale trade of the food products is regulated by a number of the sanitary ordinances, and will be permanently supervised by the State Voivodeship Sanitary Inspector.

10.6 Impact on the landscape

The main impact will be the appearance in the landscape of a group large dimension buildings, situated on an extensive area, mainly surfaced. In addition a negative impact will be caused by a permanent movement of a large number of
vehicles (including heavy and large ones as determined by the Centre's function) causing noise, vibration, air pollution, appearance of moving lights at night, etc., distorting the character of the surroundings hitherto. Because of the closeness of the residential areas of Osowa and the by-pass Zachodnia road, being a viewing passage along the Centre site, the buildings will be well exposed. This, together with the industrial character of the proposed investment project, means a substantial negative visual impact of permanent character, if no mitigation measures are taken.

The detailed impact on the landscape was described in the chapter 9.1 and presented in the Figure 10, since most of the impacts occur during both phases, the Centrum Hurtowe construction and operation.

10.7 Impact on cultural values

The impact on the cultural values refers to the area of the investment project (the threat of the trees habitat along the Nowy Świat street), and to the archaeological site with its surrounding (the impact on the valuable rural areas with the elements of the spatial development, like concentrations of the village housing and historical system of rural paths). The most precious historical object is the Owczamia farm, located 350 m east of the Centrum Hurtowe, which spatial structure and aesthetic values may be disturbed by the close neighbourhood of the different in its character Centrum, if it is not properly developed.

The new development and industrial features of the new activities can damage historical values of the area. The irreversible losses of cultural heritage and of the elements of historical development, which may improve modern forms of layout and architecture of new buildings, may occur.

11. ASSESSMENT OF ENVIRONMENTAL IMPACTS SIGNIFICANCE, INCLUDING MITIGATION MEASURES

The implementation of the Pomorskie Hurtowe Centrum Rolno-Spożywcze will begin a long term process of changes in the area of the investment, related to the buildings construction, the changes of spatial development in the surrounding area, realisation of the technical infrastructure, and expansion of the transportation system. This large investment programme and the increased attractiveness of the Centrum neighbourhood, may cause a process of secondary development in the adjacent areas. These development processes, together with the progressing growth of the Osowa housing estate, may result in a change of land use and development
character, and to the forming of an urbanised zone along the Western Circular road, in its western part.

The long lasting investment process will be of the greatest importance in determining the direction and scale of environmental transformation in this large area. Therefore the impact of the planned Centrum Hurtowe will be only one element in a wide range of influences.

Impacts of the planned Centrum Hurtowe will be significant during both phases, i.e. the construction and the functioning, which, for a certain period of time, will continue parallel. The kind, intensity, and range of impacts will be determined by the character of threats resulting from the Centrum Hurtowe construction, environmental conditions, and the way and range of the mitigation measures used.

The Centrum Hurtowe site is placed in the direct neighbourhood of the protected areas, i.e. the Tri-City Landscape Park, close to the Osowa housing estate, the direct protection zone of the surface water intake in Straszyn, the Ground Water Main Reservoir, and borders on an area of the allotment gardens.

The other restrictions result from the protection of the cultural environment. The natural rural landscape and bordering on the site of the Owczarnia farm and the forester’s house, put high demands on the aesthetic and cultural development of the investment area, its surroundings, and these particular objects.

Many of the changes which will occur in the environment as a result of the Centrum implementation will be irreversible. Over 50 hectares of arable area will be lost to farming. Also a significant number of allotment gardens will be liquidated as consequence of the „Owczarnia” road junction implementation. In the vicinity of the road junction, air quality and acoustic conditions will worsen, eliminating the possibility of further recreational use of a large number of the allotments.

The conditions of water run off will also be considerably changed. Due to the surface hardening, construction of the objects and the roads, rainwater will supply Radunia river and Straszyński reservoir through the Strzelenka river. Because of the necessity of protecting the water in the reservoir, many steps for water pre-treatment should be applied. These will require the setting up of retention and pre-treatment ponds and ditches, prolonging the time of water run off to the reservoir.
The efficiency of this treatment is presented in the table below (according to: Ochrona wód w otoczeniu dróg, April 1996, Instytut Budowy Dróg i Mostów, Warszawa):

Table 2

<table>
<thead>
<tr>
<th>Facility</th>
<th>Treatment effectiveness [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suspended matter</td>
</tr>
<tr>
<td>Retention and infiltration ponds</td>
<td>60 - 100</td>
</tr>
<tr>
<td>Infiltration basins</td>
<td>60 - 100</td>
</tr>
<tr>
<td>Infiltration ditches</td>
<td>60 - 100</td>
</tr>
<tr>
<td>Sodded ditches and surfaces</td>
<td>40 - 80</td>
</tr>
</tbody>
</table>

Proper elimination of pollution from the rainwater is particularly important in the Centrum Hurtowe, because most of this water will be discharged to the Straszyński reservoir, which is a drinking water intake for the city of Gdańsk.

The natural relief of the area allows for the opportunity to set up an additional, vegetation based, water treatment step. In figure 12 is pointed out the fragment of the Strzelenka river tributary, which should be used as the vegetation based treatment plant.

These activities will change the state of the already disturbed water conditions, which were caused during the construction of the Western Circular road, when the road created an artificial watershed. The planned activities will change the hydrographical conditions, as well as the soil and water relations in the area, where the environmental sensitivity is higher (the landscape park buffer zone). This will reduce the amount of water supply to the forest area of the Tri-City Landscape Park.

The area, where the planned Centrum Hurtowe will be located, has very little variation in vegetation. The farmlands, with segetal habitats, predominate. The trees along Nowy Świat street do not have any symptoms of degradation. There are spaces in the tree line along the road. The lay out plan of the objects in the Centrum foresees the liquidation of a considerable part of the mentioned avenue. Since the vegetation is very poor in the area, and there are a lack of trees and shrubs, the cutting of trees in the avenue will have a negative impact on the biotic conditions of the area.
The mentioned avenue should remain in this area, as a naturally active element, being included in the local system of open areas, which are linked with the Strzeleńka river valley and its left hand tributary from the area of Owczarnia. The line of trees would strengthen and fill in the green isolation zone, which is planned to go between the Centrum Hurtowe site and the housing estate of Osowa. It would also connect the biologically active areas on both sides of the planned investment project, which are, in the east, the Tri-city Landscape Park area, and, in the west, the open natural and recreational areas.

Because of small biotic variety, the area analysed is not used by birds for breeding or foraging. Occasionally, in the farmlands, may forage single or coveys of partridges, and periodically buzzards. Owls and magpies breed in the trees, especially old and sick trees. The tree avenues are rarely used for hooded crow or rook nesting. Birds usually chose areas richer in food, such as the Tri-city Landscape Park, the adjacent to the housing estates, and city parks.

The important problem which needs to be solved is a problem of birds congregating in the vicinity of the Centrum Hurtowe. Birds may occasionally fly closer to the area of the airport in Rębiechowo. At the present time birds are foraging in other areas, where more food can be found. The sanitary conditions and the safety demands of taking off and landing planes will require an efficient solution for the organic waste collection and disposal of the Centrum area. The best would be a system of containers placed in crucial spots of the Centrum. The organic waste and the waste of other origins should be collected in separate containers. At the end of every working day, the filled containers should be exchanged with new ones. The organic waste should be composted in the specially separated section of the municipal waste landfill in Szadółki.

The Centrum Hurtowe implementation will have various negative impacts on the arable land. They will result in the occupation of the land for construction of the Centrum objects, access roads and other related objects. During the construction phase there will occur a permanent change in land use, together with losses of the arable areas and soil degradation, resulting from:

- heavy construction equipment, causing soil compacting (increased density of the surface soil layer);
- damage of the fertile, humus layer of the soil;
- change in water conditions, caused by land levelling, etc.;
- soil pollution with oil based substances, building materials, etc.
As a result of the Centrum Hurtowe construction, geotechnical transformation of the soil will occur. The construction works will disturb the natural structure of the soil in the project site, and will damage the surface humus layer of the soil. Also a change in the relief of the terrain will occur, since the artificial dikes will be formed, and large pits will be dug for foundations and the technical infrastructure (linear elements of the technical infrastructure). This all will lead to the acceleration of the erosion processes, especially since the humus layer of the soil will be damaged, which normally stabilises the ground.

Levelling works and excavations will damage the soil profile, which will consequently decrease the original zone and lower the ground water level. The soil characterised by the parameters of different water capacity depending on the content of organic matter. Capability to collect and infiltrate rainwater through the soil is often increased as a consequence of dying and rotting of plant roots. The construction of the Centrum will cause a decrease of the surface and soil retention, and a change in the soil chemism, resulting from expansion of the insaturated zone (aeration zone).

Before the commencement of the construction works, the area where technical roads, permanent roads, linear elements of technical infrastructure, and the buildings of the Centrum will be located, a layer of soil, to a depth of 0.5 m, should be removed and collected in a specially prepared site, so it could be used later for construction of the new elements of the development (dikes, ditches, artificial hillocks). The remaining mass of the soil should be disposed in a previously prepared place, to be used for degraded area reclamation, construction of small architecture elements in the city or adjacent housing estates (necessary cooperation with the cities and housing estates self-governments).

To protect the land against the run off of pollution, resulting from the work of the construction equipment and stored materials, before the works commencement the access roads, and the technical roads within the Centrum should be properly prepared. The most accurate and profitable solution would be to built the ultimate transportation system before any construction works begin.

Significant changes are excepted in the landscape. The scale of planned objects will totally changed the character of the area. The existing landscape will transform to industrial, and will dominate on the agricultural areas. The new investment development will contrast with allotments, forests and housing estates. The decrease of landscape values is expected.
The listed above environmental impacts do not unable the implementation of the investment project because of the character and the range of the environmental interferences. There is a whole range of possibilities to reduce their negative impacts. They refer to both phases of the project implementation, which are the investment realisation, and the functioning. The negative impacts should be identified and considered when designing the Centrum Handlowe and the necessary technical and transportation infrastructure. In the table below are listed the degrees of the environmental threat, and the range of the negative impacts on the environmental components and spatial development, during various phases of the investment realisation. From the tabulation may be concluded that the environmental conditions will be worsening as the investment will be developing according to the basic variant, however the use of the mitigation means will be more likely.

In relation to the potential negative impacts identified in the area of the analysis, the following necessary mitigation means have been formulated (Figure 12):

- It is recommended to close off the view of the investment area from the north, where the existing and developing housing estate of Osowa is located. This should be realised by forming an isolation zone, which would be made of a green dike covered with vegetation layers of many tree lines and decorative bushes. The introduction of various evergreen species, which would create effective protection and visual value through the whole year, will be required. This zone would make, besides its visual function, a barrier against noise and air pollution.

The zone will also connect the green areas of the Tri-city Landscape Park in the east, and the open arable and recreational lands in the west, located around Wysockie lake. It is of great importance to start forming the dike and to plant vegetation at the same time as the investment implementation begins. The remaining soil from the ground levelling etc., should be used to form the dike.

The green dike will not cause any disharmony in the landscape, since the area of the investment project is naturally folded. It may even be in a certain way a continuation of the forest edge of the Tri-city Landscape Park, which covers the moraine hills. The present open view from Osowa will change its character and will be sheltered by the green barrier.

- It is recommended to create a green zone in the western part of the investment, which would have an aesthetic and isolation value, to separate the Centrum Hurtowe from the other storage areas.

- In the area adjacent to the Western Circular road is recommended to introduce architectural greenery, which would emphasis the existing high aesthetic values of the landscape. This is important, as the car traffic on the Western Circular road increases, and this road becomes the „indicator” of the Gdańsk agglomeration.
OCENA WIDOCZNOŚCI INWESTYCJI
skala 1:10 000
ZALECANE DZIAŁANIA ŁAGODZĄCE NIEKORZYSTNE Wpływ Środowiskowe Wywołane Inwestycją
Table 3. The assessment matrix - the significant and scope of impacts during construction and operational phase

<table>
<thead>
<tr>
<th>Environmental components and elements of the development</th>
<th>Phase I - construction</th>
<th>Phase I - exploitation</th>
<th>Phase II - exploitation</th>
<th>Phase I - exploitation</th>
<th>Phase II - exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic variant</td>
<td>Preferred variant</td>
<td>Basic variant</td>
<td>Preferred variant</td>
<td>Basic variant</td>
</tr>
<tr>
<td>Air</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Acoustic climat</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Relief</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Soils</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Biotic:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- flora</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>- fauna</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>- forests</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- protected areas</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Surface water</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Ground water</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Landscape</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Cultural heritage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- historical spatial systems</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- historical roads</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Development elements:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- planned housing estates</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>- arable land</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- allotments</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>People (physical/mental/health)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

0 no impact  
1 low significance  
2 high significance  
3 duże znaczenie  
local range of impact  
regional range of impact.
• The existing tree avenue along Nowy Świat street must be protected. It represents a cultural value (the remains of the historical road), and landscape and environmental values (the natural connection of the Tri-city Landscape Park with the open green areas around the Wysockie lake). The investment site development and the objects arrangement has to be suited to the existing tree layout. Where there is more space between the trees, the crossings connecting separated parts of the Centrum Hurtowe site could be located. Where possible, new plantings of the same species should be put in.

• There should be more plantings introduced in the existing green zone of trees and shrubs along the railway track, to develop a visible green border of the investment in the south.

• The relief, the streams and the ponds in the area „C”, and in the area adjacent to the Centrum Hurtowe in the South should be kept up. The latter renaturalization of the area should be attempted.

• The zone of the large constructions should not exceed the line pictured in figure 12.

• It is recommended to prepare a project of land development and greenery plantings in the site and in the surrounding of the planned road junction in Owczamia.

• According to the provisions of the land use plans, it is impossible to protect the existing form of the historical settlement and the road system. Therefore it is recommended to „draw in the new elements of the development in the planned urban architecture, which at the same time may increase their value, due to the variety and the original way of spatial design. The new designs should highlight the general architectural idea of the historical space.” The chaotic location of the new, large buildings should not be allowed.

• The tree lines along the local paths and the railway track should be filled in with the new plantings of the same species, and the old trees along the avenues should be entirely protected.

In regards to noise pollution, the best way to protect against it is to decrease its level at the source. Noise from the installed devices could be limited through the use of proper technical means (cases, silencers). The transportation noise can be reduced through the use of the proper protections of the landscape planning, as artificial screens or the green dikes.
Due to the impacts of the traffic, which is expected to produce air pollution over the permission limits and noise of a significant level, a number of the allotments, in the vicinity of the planned „Owczarnia” road junction should be liquidated, and instead protection green area should be put in.

From the two types of noise mentioned above, it is easier to reduce the noise from the installed devices through the possibility of its reduction at the source. Traffic noise propagation from the larger areas is more difficult to reduce. More effective seems to be passive protection, used in the points of reception, i.e. near the objects or directly in the objects, which should be protected.

In the area of the Centrum Hurtowe should be avoided locating of sources of significant industrial noise, like air-compressors, sets of ventilating condensers, and high power ventilators. It should be required to locate the sources of any significant noise in the southern and eastern elevations of the objects. In this way the objects themselves will act as screening elements in the directions of the existing and developing housing estate.

Due to the above mentioned reasons the main car traffic flow should be concentrated in the area between the Western Circular road and the eastern boundary of the Centrum Hurtowe site, and should pass around the adjacent streets of Nowy Świat and Średnicowa. These streets set the borders with the neighbouring areas of the housing estates in Osowa and Barniewice Zachodnie.

The access to the centre as well during the construction and operational face is possible only from the Western Circular, omitting the housing estate Osowa.

Areas recommended in the project for greenery, tree or shrub areas, or small architecture, should be developed according to the approved plan, if they are not to be used during the construction process; this refers particularly to the new forms of the relief (dikes, artificial hillocks), and introduction of the properly developed green areas (trees, shrubs). At the same time these areas, after their development, should be protected against negative impacts of the construction processes.

Before the commencement of the construction work, the health of the avenue of trees along Nowy Świat street should be assessed, and conservation measures should be worked out. This assessment will be a basis for the formulation of the recommendations in regard to which species should be applied to develop the zones of the trees and shrubs in a correct way. The plan of the site development should contain the locations of the protective zones, lay out of the trees and the bushes with the specification of their quantitative and qualitative variation. This project of the
properly developed lay out of the trees and bushes should create a coherent and mutually supporting system with the green areas within the investment site and the adjacent ones.

The development of the green areas should consider the directly neighbouring location of the airport. This issue refers particularly to the height of the breeding places of birds, which live in flocks (crows, starlings).

12. IDENTIFICATION OF PROBLEMS REQUIRING FURTHER RESEARCH

The present state of the planning and the development works does not allow for unequivocal judgement of the many significant problems related to the environmental impact assessment of the Centrum Hurtowe, and the investments which are necessary for its functioning. Due to this, during the preparation of the technical documentation (the construction plan) it is recommended to analyse the problems mentioned below:

- The way and the conditions of rainwater run off from the Centrum Hurtowe area, with particular emphasis on the recipients (Strzelenka river, Potok Oliwski).
- The intensity and range of the environmental impacts of the „Owczamia” road junction and the Western Circular road, on the garden allotments.
- Problems of the collection, disposal and transportation of the organic waste to the landfill in Szadółki, and the prevention of excessive bird foraging.
- Problem of the screening of the planned housing in the Osowa housing estate adjacent to the northern border of the Centrum Hurtowe.

13. ECONOMICAL ASPECTS OF ENVIRONMENTAL PROTECTION IN THE INVESTMENT PROCESS

To assess the negative impacts of the Centrum Hurtowe construction and functioning, there could be applied an approach based on the methods of cost-benefit analysis. This refers to the benefits, which the environment serves to its users, and to those who do not use the environment directly, but they are happy for its existence.
The first group of benefits relates mainly to those users, whose profit making activities will suffer from the investment project implementation. This will refer to the following consequences:

- allotment gardens liquidation;
- withdrawal of the arable areas from their present function.

To assess the range of these consequences, the following two methods could be applied:

- assessment of the restitution costs (purchase of the proper areas, reconstruction of the investments and the plantings);
- assessment of the production losses (the net loss should be considered, i.e. the value of the average production/yield, after withdrawal of the costs put in by the farmers). Additionally, there should be assessed the shortened time of the farming. To do this the information about foreseen farming use of the arable areas should be collected from the local spatial development plan. If this was not specified in the plan, for the allotment gardens it can be assumed a period of 20 years, and for the arable areas 100 years.

The other group of consequences is related to the indirect impacts, or to the impacts which may arise later. This relates particularly to sewage and solid waste production, and to air pollution or noise generation. To assess these impacts, the most accurate method would be the one of prevention costs assessment. These are mainly investment costs, since the exploitation costs are relatively low in these cases.

In relation to the majority of investment works standardised price indicators could be used, being applied in the cost calculations of the engineering and excavation works. However, the costs cannot be properly estimated without an exact knowledge of the kind of works. The exploitation costs will mainly comprise conservation works (1 - 3% of the investment value for every year may be assumed). The other and more significant will be the cost of organic waste transportation and disposal. These costs differ enormously within the country.

The other problem arises from the charges from environmental use.

In the cost assessment always appears a problem of limitations or losses of the non measurable benefits. In this case a method of the polls, in which people would declare their preferences may be applied. In the polls among the local residents, they would be asked in particular about the amount of money which they would be willing to spend to avoid the environmental impacts, or how much they
In general may be stated that the costs necessary for the investment implementation, which are directly connected with the environmental protection will be in total (without stating separately how much costs will be covered by the Centrum Hurtowe):

- water supply with the waterpipe - phase I 800,000 PLN
- sanitary sewage discharge with the collector - phase I 40,000 PLN
- rainwater sewage system in the Centrum Barniewice and Osowa housing estates - phase I 4,000,000 PLN
- protective greenery 300,000 PLN
- collection and disposal of the solid waste 250,000 PLN

TOTAL 5,400,000 PLN

14. PROBLEMS OF THE ENVIRONMENTAL PROTECTION MANAGEMENT

After the investor obtains the decision on the conditions for the construction and area development, the planning phase of the Centrum Hurtowe will commence. This phase is to obtain a building licence. Construction projects like Centrum Hurtowe must undergo an Environmental impact Assessment, according to the Act on Protection and Shaping of the Environment, No. 68 item 5.

It is necessary to obtain permits specifying the use of the environment before a building license is granted. Because the investor is not planning a new water intake or individual sewage system, a permit for water intake exploitation or sewage discharge will not be needed from the Voivodship. Water and sewage systems should fulfill the technical conditions specified by Saur Neptun Gdańsk in the letter TS/30604/2S/bg/95 from 2.11.1995. SNG specify the technical conditions for water intake, 6 dm$^3$/s (in phase I - 2.32 dm$^3$/s) for social uses and 50 dm$^3$/s for fire protection, from the 500 mm diameter water main on Wodnika street. In the same letter SNG specify the conditions for the discharge of sewage. For the first phase, permission was given for sewage discharge to the existing Osowa - Oliwa collector. However, ultimately the sewage will be discharged to the planned sewage system (collector „Morena”).
For the discharge of rainwater (waste water), the investor must obtain a water supply and sewage effluent disposal consent. This is according to the requirements of the execution ordinances of the Water Law Act. However, it may be expected that the conditions which the sewage discharge should comply may be made more restrictive since it will be discharged to the Strzelenki, located Straszyna drainage basin.

If the investor decides to produce heat from his own source, in spite of the solution, it will be necessary to obtain a decision on the permitted emissions to the atmosphere of the pollution generated from the burning of fuel. It will be also necessary to carry out a feasibility study on the impact of noise.

The problem of collection, disposal, and utilisation of solid waste from the Centrum Hurtowe will require special consideration. Because of the origin and content of the solid waste, it should be collected in a way which separates organic from other wastes. Organic waste should be composed in the landfill in Szadólkach. The other kinds of waste require permission for their disposal. Organic waste should only be disposed of in the landfill in Szadólkach.

To guarantee the proper environmental management, it will be necessary to have an environmental management specialist. This will ensure the proper and effective functioning of the Centrum Hurtowe.

This specialist should continuously control the investment functioning (land management, parking, cleaning, disposal, sorting and waste removal, facilities exploitation, etc.).

Of particular importance will be the proper fulfilling of the aesthetic demands in the land development of the site and the closest surroundings. It is especially important since the investment is located in the protection zone of the Tri-city Landscape Park, and in an area of high cultural and natural value.

The existing vegetation should be kept and enriched, especially maple, ash, and lime trees in the avenues, the rush areas around the ponds, and the trees alone the railway track. Planting of new plants should take place as early as possible in the investment implementation. Domestic species should be planted to guarantee fast and effective growth, and the fast achievement of the ultimate planned state.

The program of landscape management, because of the environmental and cultural conditions (Tri-city Landscape Park and its protection zone, historical roads and settlements, natural landscape), should include not only the internal area of the
investment, but the surroundings, especially in the eastern part. It should comprise the entire area of the Owczarnia road junction and the area of the historical farm and foresters house in Owczarnia, to enable the proper spatial management of the visual impact of the protected objects.

The first years of planting - minimum three years (filling the gaps in the present landscape as well as new areas) - should have a guarantee from the company doing the planting. The guarantee should include the standard activities, such as planting, watering, weeding, fertilising, pest control, pruning, and, if necessary, replacement of plants.

There should be a regular overview of the state of the landscaping, including the health of the plants, to detect any problems, plant diseases or damage at an early stage.

The landscaping program should comprise layout and cultivation of trees, hedges, and lawns, and management of the ponds.

Lawns. It is forbidden to artificially fertilise and use pesticides on the designed lawns, to prevent possible pollution of surface and ground water, since the investment site is located in the protection zone of the water intake in Straszyn and on the boarder of the Main Ground Water Reservoir.

It is allowed to use herbicides, however it should be restricted to a minimum.

Trees. All trees should be regularly checked. Cultivation activities and, if necessary, immediate activities should be carried out on a regular basis.

Shrubbery. Proper species variety, which supports the functioning of the plant community of antropogenic origin and which raises the aesthetic value of the investment property, should be ensured. Periodic pruning should take place. However, this should be done outside bird breeding and nesting periods.

Hedges. They should be regularly pruned, but, again, outside of bird breeding and nesting times. It is not recommended to use chemical sprays on the hedges.

Ponds. The quality of water should be monitored. It is recommended to treat them mechanically, not chemically. Not more than 50% of pond banks should be accessible to the workers and clients, and a minimum of 50% should not be accessible, but left as an ecological reserve. The accessible part can be partly managed and the grass can be regularly cut. Fishing and bathing are not allowed.
Landscaping should play a hydrosanitary role, to exclude pollution runoff to the water.

The protection of the landscaping attractiveness should be parallel to the economic activities. The following basic elements of the landscape view should be shaped:

- foreground of the settlement area of Owczarnia
- the view axis (e.g. Nowy Świat street)
- characteristic landscape elements (old trees, forest fronts and tree lines, and ponds).

Transportation Infrastructure. It is assumed that the layout and construction of the roads should comply with the high demands of the European Union. They should be kept clean and tidy, and the ice and possible pollution should be removed.

Trainings. The program of Centrum workers training should include environmental protection issues, especially the disposal, reuse, and removal of the solid waste and the water and sewage service. The trainings should be on-going. The area of the Centrum should be properly managed and clearly signed to create conditions for proecological activities, including water and energy use, and to make environmental protection easier for the workers (readable signs on the containers to ensure the correct sorting of waste and the proper directions of transportation).

The proper standard of the facilities should be kept.

It is recommended to integrate the Centrum management system with one of the approved environmental management systems, for example British Standard 7750, EU management Environmental Management and Audit Scheme (EMAS), or the series of ISO 14000.

In the description above, the focus was on selected problems of environmental management which seem to be crucial in the Centrum. However, if the Board of the Centrum Hurtowe decides to introduce one of the environmental management systems, they should act according to the requirements of the chosen standard, and identify and solve problems according to the procedures recommended in those standards.
15. MONITORING RECOMMENDATIONS

Monitoring will be required for the quality of the rainwater discharged to the reservoir (Strzelenka river), ground water and noise.

Monitoring of water drained off of the area of the Centrum Hurtowe to the Straszyn drainage basin should be carried out continuously. After a detailed geological study, a local monitoring project of ground water, to approximately the depth of 20 meters, should be made (to the water table).

Checking measurements of noise sources should be carried out at the beginning of the implementation of the investment, to check the compliance with the recommendations formulated in the technical project preparation phase.

Checking measurements of the road noise at the level of the closest housing, particularly during the night, should be made. These measurements should be made after or during the beginning of the investment phases.

Continuous monitoring is not necessary. The measurements should be done by environmental protection services.

16. COURSE OF THE PUBLIC PARTICIPATION PROCESS

The course of the social consultancy process, described below, is related to the procedure of doing the local land use plan for the district of Barniewice-Owczarnia, within which is located the site of the proposed Centrum Hurtowe, and the adjacent housing estate of Osowa. Information about the planned construction of the Centrum Hurtowe was the subject of many press publication and radio and TV news. Due to this information, the local community and the people of Gdańsk obtain general knowledge about the character and scale of the planned investment. At the same time, documents, delivered to the local governments of the city of Gdańsk and administrative authorities, allowed for the development of the various aspects of the implementation and functioning of the Centrum. This referred to the conditions of land functions, and especially the transportation service, water and energy supply, and sewage discharge.

The idea of the investment implementation met approval of business circles and other social groups. At the same time, groups of local people expressed their concerns about worsen environmental conditions, lifestyles and recreation. These
were firstly residents of the housing estate Osowa, who are afraid of the implementation and functioning of the Centrum will considerably raise transportation impacts of the road system in this district, which is expected to be reconstructed. On this matter the citizens of Osowa and the authorities of the Akademicka housing collective were applying to the Municipality and City Council of Gdańsk. The statement expressed by the citizens finds its substantiation in the record related to the transportation solutions in the present local detailed plan of spatial development of the Osowa district. However, this record does not mean automatically that the traffic of the vehicles serving the Centrum will be directed to the newly planned transportation system. This statement is based on the acceptance by the DODP and investor, that the implementation of the junction in the Western Circular road is built prior to the implementation of the Centrum. This road junction should guarantee the full service of the Centrum, by-passing the housing area, in particular the internal roads of the housing estate.

The other social group expressing their concern over the implementation of the Centrum Hurtowe, or rather the road junction Owczarnia, is the users of the allotment gardens. Depending on the accepted technical solution of this junction, it will be necessary to liquidate up to several dozen allotments, however, in the vicinity of the junction, the conditions for recreation will worsen significantly, which will consequently lead to the further liquidation of the remaining allotments.

Other issues were raised by the administrative authorities of the city of Gdańsk, which related to the water and sewage services. The subject of their interest is the protection of the surface water (water intake for the city of Gdańsk, in Straszyn), ground water (intakes „Osowa” and „Dolina Radości”) and nature and landscape protection (Tri-city Landscape Park).

17. CONCLUSIONS

1. The planned investment of the Pomorskie Hurtowe Centrum Rolno-Spożycze S.A., in Gdańsk Barniewice, is completely reasonable due to existing or foreseen trade in foodstuff in the region of Gdańsk and in the cross-boarder markets and the markets of neighbouring countries. The two phases of the Centrum implementation are correct for the infrastructural conditions.

2. The location of the planned Centrum Hurtowe is very beneficial according to the planned functions. It has a good location in relation to the food supply and retail markets. It is located directly by the Western Circular road, a railway line, and
near by the Rębiechowo airport, and the Gdynia and Gdańsk harbours, therefore it has very good accessibility to transportation.

3. The Centrum Hurtowe site does not cause any significant problems or threats to the environment or with existing or planned land development, besides the necessity of protecting the trees along the Nowy Świat street. It is an arable area practically without investment. Soils within the area are of a low quality.

4. The area adjacent to the planned Centrum site and surrounding areas have complex environmental and natural conditions, which relate to the Centrum location:
   - in the protection zone of the Tri-city Landscape Park;
   - on the edge of the protection zone of the water intake „Straszyn”;
   - within resource area of the ground water intake „Osowa”;
   - on the boarder of the area of the Main Reservoir of Ground Water No. 113;
   - In the area of the region natural system, which is an element of the planned nation-wide ecological network ECONET;
   - nearby the Osowa district, which is developing in the direction of the future Centrum;
   - nearby existing garden allotments.

5. The commencement of the Centrum Hurtowe will require the prior construction of the transportation infrastructure (road junction „Owczarnia”) together with the system of access roads, water, gas and energy supple, and the discharge of sanitary sewage and rainwater.

6. Environmental impacts related to the implementation and operation phases of the Centrum Hurtowe will vary. The most important impact of the construction phase will be the exclusion of more then 50 hectares of soil from arable cultivation, and the liquidation of a large number of allotments. There will be significant and irreversible changes in the landscape. It will change its character from the rural to the industrial. Impact on the other elements will be smaller and of less influence. A threat may be caused by the change of the historical foregrounds of the historical settlements in Owczarnia (the farm and the forester’s house). This causes the necessity of the particularly careful planning of the architecture and greenery of the new junction road.

Impacts of the operation phase will be more serious. Significant changes in water conditions in a large area, and impacts on a section of the Trójmiejski Landscape Park, in the forms of air quality and the acoustic climate should be
considered. Also the present recreational value of many allotments, located near the „Owczarnia” junction, will be lost. A gradual increase, of the conflict between the planned Centrum Hurtowe, and the nearby housing development of Osowa, should be also considered. Impacts on the water resources of the ground water intake „Osowa” is not expected.

7. The location of the Centrum Hurtowe in the direct neighbourhood of the Trójmiejski Landscape Park and the housing area of Osowa estate, in the protection zone of the surface water intake „Straszyn”, within the resource area of the groundwater intake „Osowa”, and in the neighbourhood of the allotment area, requires the use of special mitigation means against the impacts of implementation and operation phases of the Centrum Hurtowe. There should be foreseen:

- the proper placement of the investment objects in the present landscape;
- isolation of the investment from the surrounding area, in the form of the properly shaped area (the dike) and the greenery of high density and continuous character;
- use of the technical systems and means to prevent soil and water pollution;
- isolation and disposal of the solid waste from the Centrum to the landfill in Szadółki.

8. The area of the Centrum Hurtowe is located outside the zones of impact on the closest ground water intake „Osowa” and „Dolina Radości”. However since it is located within the resource area of the „Osowa” intake, technical solutions for waste water management should be considered. Due to the present study, it may be stated that the planned Centrum will not have a negative impact on the ground water resources.

9. The restrictions which are due to the protection of the cultural environment, natural rural landscape, and close proximity of the investment to the historical farm and the forester's house in Owczarnia, put a high aesthetic demand on investment area management, and the management of its surrounding and particular objects. Due to the existence of the identified archaeological site, the prior immediate archaeological research should be begun.

10. Implementation of the Centrum Hurtowe, especially during the first phase (the food stuffs, vegetable and fruit, and flowers halls) will not cause any threats to peoples health, however, it will improve to a great degree sanitary conditions of the present wholesale trade of the food products.
11. Because of the proximity of the airport in Rębiechowo, and a danger which birds might cause to air traffic, it is necessary to develop an entirely safe solution for the waste collection in the Centrum, and disposal to the dump in Szadółki. The solutions proposed by the designers of collecting and temporary disposal of waste exclusively in containers and the system of their removal and transportation will eliminate the threats caused by the foraging and flying birds.

12. The emergencies may occur in the case of fire or the breakdown of the cooling facilities containing ammonia. Since the stands will be equipped with individual cooling facilities, even if the entire content of ammonia were to be released from such an installation, it will not cause any environmental emergency.

13. During implementation of the Centrum Hurtowe the existing greenery should be filled in, particularly the trees along the historical roads, and trees and shrubs along the railway track.

14. In the course of more specific research and analysis, the range of suprastandard impacts on the allotments around the „Owczamia” junction should be defined, and the specified number of allotments should be realised for other land functions. The remaining allotments should be surrounded by a green isolation zone.

15. Because of the high protection requirements of the water intake in Straszyń, there should be conducted a continual monitoring of the rainwater quality, discharged from the area of Centrum Hurtowe to the Strzelenka river.
18. LIST OF USED MATERIALS


3. Miejskowy plan ogólny zagospodarowania przestrzennego miasta Gdańska zatwierdzony Uchwałą nr LXV/484/93 Rady Miasta Gdańska z dnia 24 czerwca 1993, Biuro Planowania Przestrzennego w Gdańsku


6. Żbikowski A., Żelazo A., Ochrona środowiska w budownictwie wodnym , Warszawa, 1995


8. Eco-Management and Audit Scheme, Zarządzanie Wspólnot Europejskich, EEC No. 1836/93


11. Miejskowy szczegółowy plan zagospodarowania przestrzennego dzielnicy Gdańsk-Osowa zatwierdzony Uchwałą No. LXIV/476/93 Rady Miasta Gdańska z dnia 15.06.1993

12. Wytyczne z zakresu ochrony środowiska, do studium wykonalności infrastruktury towarzyszącej budowie Pomorskiego Hurtowego Centrum Rolno-Spożywczego w Gdańsku-Baniewicach, Wydział Ochrony Środowiska i Rolnictwa Urzędu Miejskiego w Gdańsku, październik 1995

13. Decyzja o ustanowieniu strefy ochronnej ujęcia wody powierzchniowej „Straszyn” z rzeki Raduni, Urząd Wojewódzki w Gdańsku, Wydział Ochrony Środowiska, 6.08.1993

14. Opinia Zarządu Parków Krajobrazowych w Gdańsku dotycząca zrzutu wód deszczowych do potoku Źródliska Ewy

15. Wytyczne techniczne wydane przez Gdańskie Melioracje Sp. z o.o.

16. Decyzja o ustanowieniu strefy ochronnej ujęcia wód podziemnych w „Dolinie Radości”, Urząd Wojewódzki w Gdańsku, Wydział Ochrony Środowiska nr 0-V-7226/8/95

APPENDICES
MIEJSWOWY OGÓLNY PLAN ZAGOSPODAROWANIA
PRZESTRZENNEGO MIASTA GDAŃSKA

„Część stanowiąca niniejszego planu jest ograniczona zapisem Uchwały Nr LXV/484/93 Rady Miasta Gdańska z dnia 15 czerwca 1993 r., o miejscowym planie ogólnym zagospodarowania przestrzennego miasta Gdańska”

RADA MIESTA GDAŃSKA
ZAŁĄCZNIK DO UCHWAŁY NR LXV/484/93
RADY MIESTA GDAŃSKA Z DNI 29 CZEWCA 1993 R.,
OGŁOSZONEJ W DZIENNIKU URZĘDOWYM WOJEWÓDZTWA GDAŃSKIEGO
NR 18, POZ. 102, Z Dnia 30 WRZEŚNIA 1993 R.
MIEJSKOWY OGÓLNY PLAN ZAGOSPODAROWANIA PRZESTRZENNEGO
MIESTA GDAŃSKA

Gdańsk, czerwiec 1993

RZECZOWIT WYPRACOWAŃ
W odpowiedzi na Państwa prośbę zawartą w piśmie 1.dz. KK/85/95 z dnia 18.10.1995r. Wydział Planowania Przestrzennego Urzędu Miejskiego przekazuje w załączeniu:

1. Odbitkę z mapy syt. - wys. Barniewic
2. Wyrys i wypis z planu ogólnego miasta Gdańska
3. Kserokopię mapy inwentaryzacyjnej stanu użytkowania terenu / oryginał do wglądu w pok. 408/
4. Odbitkę mapy ewidencyjnej gruntów.

D.ż. NACZELNIKA
Wydziału Planowania Przestrzennego
mgr inż. arch. Edmund Wiśniewski
Gdańsk, 24 października 1995r.

OŚR-II-7632/236L/95/BT

Dotyczy: wytycznych, z zakresu ochrony środowiska, do studium wykonalności infrastruktury towarzyszącej budowie Pomorskiego Hurtowego Centrum Rolno-Spożywczego w Gdańsku-Barniewicach.

Wydział Ochrony Środowiska i Rolnictwa Urzędu Miejskiego w Gdańsku określa następujące wytyczne, z zakresu ochrony środowiska, dla zamierzonej budowy w/w inwestycji:

w zakresie ochrony przyrody
- należy sporządzić projekt zieleni o funkcji izolacyjno-ochronnej. Projekt zieleni docelowej winien uwzględniać projektowane ujęcie terenu. Zielony wysoka winna być zaprojektowana w sposób niekolidujący z zabudową kubaturową i infrastrukturą techniczną;
- z uwagi na fakt, iż planowana inwestycja położona jest w granicach otuliny Trójmiejskiego Parku Krajobrazowego, w/w projekt zagospodarowania terenu należy uzgodnić z Zarządem Parków Krajobrazowych oraz Wojewódzkim Konserwatorami Przyrody - zgodnie z Rozporządzeniem Nr 594 Wojewody Gdańskiego z dnia 08.11.1994r. w sprawie wyznaczenia obszarów chronionego krajobrazu, określenia granic parków krajobrazowych i utworzenia wokół nich otulin oraz wprowadzenia obowiązujących w nich zakazów i ograniczeń (Dz. Urz. Woj. Gd. Nr 27 poz. 139, z dnia 25.11.1994r.);

w zakresie gospodarki wodno-ściekowej
- doprowadzenie wody do obiektów przewidzieć - z miejskiej sieci wodociągowej na warunkach i w uzgodnieniu z gestorem sieci tj. spółką SAUR NEPTUN GDAŃSK S.A.;
- odprowadzenie ścieków sanitarnych i technologicznych (np. z chłodni) należy przewidzieć do miejskiej sieci kanalizacyjnej.

Aktualnie, najbliższym kolektorem sanitarnym jest rurowiąz odprowadzający ścieki z Osowej do Oliwy. Z uwagi na jego przeciążenie możliwość przejmowania nowych parti ścieków jest ograniczona w związku z czym należy zwrócić się do dysponenta sieci czyli spółki SAUR NEPTUN GDAŃSK S.A.;

O ile powyższe rozwiązanie nie będzie możliwe odprowadzenie ścieków z Centrum należy zaprojektować w oparciu o przewidywany rurowiąz łączący Osowę z kolektorem "Morena". Niestety realizacja w/w rurowiązu przewidziana jest dopiero na następne lata, a aktualnie istnieje tylko koncepcja projektowa;
- szczególną uwagę należy zwrócić na gospodarkę wodami opadowymi. Wody z dachów budynków, przy sprzyjających warunkach glebowych (np. w przypadku występowania piasków) należy odprowadzić do gruntu, w celu poprawienia bilansu wody podziemnej.

VERTE
GDAŃSKIE MELIORACJE
SPÓLKA Z O.O.
80 - 743 Gdańsk, ul. Łąkowa 35 / 38
tel.: 31 - 24 - 58 , 31 - 54 - 58 fax / 058 / 31 - 51 - 09
KONTO: WBK OŚ GDAŃSK NR 351099-521329-131

Ldz. NT-WT/583/ 1208/95 Gdańsk, dnia 17.10.1995r

Pomorskie Hurtownie Centrum Rolno-Spożywcze SA
ul. Heweliusza 11
80-890 GDAŃSK

"Gdańskie Melioracje" Sp. z o.o. w Gdańsku wyraża zgodę na odprowadzenie wód deszczowych z terenu projektowanego Pomorskiego Hurtowego Centrum Rolno-Spożywczego w Gdańsku-Barniewicach po spełnieniu następujących warunków:

A. Warunki ogólne
1. Wprowadzone wody deszczowe winny odpowiadać kryteriom zawartym w Rozporządzeniu MOSZNiL z dn. 5.11.91 (Dz.U. 116/91)
3. Poniżej zbiornika zaprojektować regulację Potoku Prochowego na odcinku od miejsca zrzutu ze zbiornika do Potoku Oliwskiego (dł. ca 3,6 km)

B. Warunki szczegółowe
1. Sieć deszczową zaprojektować z rur PCV lub Wipro
2. Włączenie sieci deszczowej do zbiornika w formie komory lub studni rewizyjnej
3. PT uzgodnić w Gdańskich Melioracjach
4. Warunki ważne 2 lata.

Dyrekтор

[Podpisy]
PROTOKÓŁ

ze spotkania w dniu 11.12.1995 r. w sprawie lokalizacji Pomorskiego Hurtowego Centrum Rolno-Spożywczego w Gdańsku-Barniewicach

Spotkanie otworzyła mgr B. Szczersbowska - Kierownik Referatu Studiów i Planów Rozwoju Przestrzennego Wydziału Planowania Przestrzennego Urzędu Miejskiego w Gdańsku, w którym opracowywany jest plan miejscowy rejonu Gdańsk-Barniewice.

Następnie wystąpiła autor planu - główny projektant mgr inż. arch. W. Bogusławskiego, która zreferowała krótko podstawowe problemy, które wyłożyły się przy opracowaniu koncepcji planu i prosiła zebranych o zajęcie stanowiska.

Prezes Pomorskiego Hurtowego Centrum Rolno-Spożywczego scharakteryzował stan zaawansowania inwestycji Centrum oraz stan własności terenu który został zakupiony od Agencji Właściwości Rolnej Skarbu Państwa.

Podkreślił także potrzebę rozwiązania kwestii infrastruktury i obsługi komunikacyjnej, kolejowej i drogowej dla rynku hurtowego i Barniewic w ogóle – konieczność realizacji kolektora „Morena” oraz połączeń z obwodnicą Trójmiasta.

Prezes Centrum Hurtu zauważał także, że na inwestycję przeznaczone są kredyty z Banku Światowego i istnieje potrzeba pilnego wykonania planu, który będzie podstawą prawną dla decyzji inwestycyjnych.

Inż. W Bogusławskiego podkreśliła, że teren będący obecnie własnością giełdy przeznaczony jest w planie ogólnym zagospodarowania przestrzennego m. Gdańska pod rezerwę terenu dla kolei.

Następnie głos zabral A. Staszkiewicz - przedstawiciel Pln. DOKP - Biura Inwestycji Techniki i Rozwoju, który scharakteryzował potrzeby kolei. Podkreślił, że lokalizacja budowy planowanej stacji ładunkowej w rejonie Barniewic jest optymalna dla potrzeb kolei. PKP nie ma w planie inwestycyjnym budowy ładowni w najbliższym czasie jednak w planach należy rezerwować tereny pod taką inwestycję.

Docelowo wybudowanie stacji ładunkowej zwolni tereny obecnie istniejących stacji w Śródmieściu Gdańska dla innych funkcji oraz odciąży średnicową Gdańsk-Gdynia.

Z uwagi na koncepcję lokalizacji Centrum Hurtu Spożywczego w Barniewicach, PKP nie wyklucza możliwości alternatywnej lokalizacji stacji ładunkowej w rejonie Klukowa, która jest dobra pod względem kolejowym, jednak mniej korzystna z punktu widzenia transportu drogowego z wyładowni.

W dalszej części dyskusji zgłoszono następujące uwagi:

w/g rozdzielnika

Dyrekcja Okręgowa Dróg Publicznych w Gdańsku w uzgodnieniu z Wydziałem Komunikacji Urzędu Wojewódzkiego w Gdańsku organizuje Radę Techniczną dot. "Koncepcji programowej powiązania terenu przyległej Giełdy Towarowej z układem komunikacyjnym Trójmiasta w tym węzeł stanowiący połączenie drogowé z Obrudnicą Trójmiasta w miejscu istniejącego wiaduktu drogowego Owczarnia".

Rada Techniczna odbędzie się w dniu 19.04.1996 r. godz. 8.00 w sali konferencyjnej DODP, Gdańsk - Oliwa, ul. Subisława.

Proszę uprzednio o oddelegowanie upoważnionego przedstawiciela, gdyż celem Rady jest podjęcie właściwych ustaleń.

Rozdzielnik:

1. Wydz. Planowania Przestrzennego U.M. Gdańsk
2. Wydz. Architektury i Nadzoru Budowlanego U.M. Gdańsk
3. Wydz. Komunikacji Miejskiej U.M. Gdańsk
4. Pomorskie Hurtowe Centrum Rolno-Spożywcze S.A. Gdańsk
5. KONSULT - EXPERT, Gdańsk
6. a/s

---

Gdańsk, 1996.04.15.
**1.1.5. Bilans Terenu**

**Pomorskie Hurtowe Centrum Rolno-Spożywcze w Gdańsku**

![Diagram of land parcels]

<table>
<thead>
<tr>
<th>NR DZIALEK</th>
<th>Wg Wypisu z Rejestru Gruntów</th>
<th>NR DZIALEK</th>
<th>Wg Wypisu z Rejestru Gruntów</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEREN A</td>
<td></td>
<td>TEREN B</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>0.1777</td>
<td>121</td>
<td>0.0036</td>
</tr>
<tr>
<td>88</td>
<td>9.6871</td>
<td>122</td>
<td>0.0704</td>
</tr>
<tr>
<td>91</td>
<td>3.0797</td>
<td>123</td>
<td>0.0666</td>
</tr>
<tr>
<td>92</td>
<td>27.2503</td>
<td>124</td>
<td>0.0166</td>
</tr>
<tr>
<td>TEREN C</td>
<td></td>
<td>125/1</td>
<td>0.0666</td>
</tr>
<tr>
<td>112</td>
<td></td>
<td>125/2</td>
<td>0.0166</td>
</tr>
</tbody>
</table>

**Powierzchnie terenu w hektarach**

<table>
<thead>
<tr>
<th>ETAP I</th>
<th>ZABUDOWANE</th>
<th>DROGI I PLACE CENTRUM</th>
<th>DROGI MIEJSKIE</th>
<th>DROGI WOJEWODZKIE</th>
<th>INNE (os. Zieleń)</th>
<th>RAZEM ETAP I</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEREN A</td>
<td>3.90000</td>
<td>20.0000</td>
<td>1.50000</td>
<td>3.10000</td>
<td>3.19000</td>
<td>27.59000</td>
</tr>
<tr>
<td>87</td>
<td>0.1777</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>9.6871</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>3.0797</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>27.2503</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEREN B</td>
<td>0.0036</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.9056</td>
</tr>
<tr>
<td>121</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>122</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>0.0666</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>0.0166</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125/1</td>
<td>0.0666</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125/2</td>
<td>0.0166</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEREN C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.78000</td>
</tr>
<tr>
<td>112</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RAZEM ETAP II**

| ZABUDOWANE | 2.40000       | 3.00000       | 3.00000       | 3.00000         | 2.40000        |
| DROGI I PLACE CENTRUM | 2.40000       | 3.00000       | 3.00000       | 3.00000         | 2.40000        |
| DROGI MIEJSKIE | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| DROGI WOJEWODZKIE | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| INNE (os. Zieleń) | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| RAZEM ETAP II | 10.40000      | 3.00000       | 3.00000       | 3.00000         | 3.00000        |

**RAZEM ETAP III**

| ZABUDOWANE | 2.40000       | 3.00000       | 3.00000       | 3.00000         | 2.40000        |
| DROGI I PLACE CENTRUM | 2.40000       | 3.00000       | 3.00000       | 3.00000         | 2.40000        |
| DROGI MIEJSKIE | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| DROGI WOJEWODZKIE | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| INNE (os. Zieleń) | 3.00000       | 3.00000       | 3.00000       | 3.00000         | 3.00000        |
| RAZEM ETAP III | 2.20000       | 2.20000       | 2.20000       | 2.20000         | 2.20000        |
Zarząd Miasta Gdańska
ul. Nowe Ogrody 8/12
Gdańsk

Gdańsk, 1996.05.06
L.dz. ASM- 4/4 -96

dot. wniosku o zmianę miejscowego planu zagospodarowania przestrzennego dla Gdańska Osowej

Akademicka Spółdzielnia Mieszkaniowa w Gdańsku na podstawie Ustawy z dnia 7 lipca 1994 roku o zagospodarowaniu przestrzennym (Dz. U. nr 89 poz. 415) art. 31 ust. 2 i 3 wnioskuje o zmianę miejscowego planu zagospodarowania przestrzennego dla Gdańska Osowej w zakresie lokalizacji drogi średnicowej

UZASADNIEŃIE

W/w plan zagospodarowania przestrzennego zatwierdzony uchwałą Rady Miasta Gdańska nr LXIV/476/93 z dnia 15.06.1993 zakłada poprowadzenie przez teren zabudowy mieszkaniowej w Gdańsku Osowej 4-pasmowej drogi szybkiego ruchu tzw. średnicowej - Koziorożca, mającej łączyć węzeł drogowy Wysoka z Braniewicami i dalej z Rębiechowem. W związku z planowaną budową giełdy towarowej rolno-spożywczej w Barniewicach droga średnicowa będzie wykorzystywana także jako dojazd do tej giełdy samochodów dostawczych z rejonu Wejherowa i części Kaszub, co znacznie zwiększy uciążliwość ulicy Koziorożca dla
Gdańsk, 07 maj 1996 rok

BRMG-0056 KRP/155/96

Zarząd Miasta Gdańska

884

96.05.26/

Komisja Rozwoju Przestrzennego Rady Miasta Gdańska przesyła w załączeniu pytania i wątpliwości mieszkańców dz.Gdańsk - Osowa dot.
układu komunikacyjnego oraz ich propozycje (ideogram trasy, drogi zbiorczej) z prośbą o zajęcie stanowiska i przedłożenie sprawy Komisji.

Gdańsk, 08 maj 1996 rok

BRMG-0056 KRP/155/96

Zarząd Miasta Gdańska

884

96.05.26/

Komisja Rozwoju Przestrzennego Rady Miasta Gdańska przesyła w załączeniu pytania i wątpliwości mieszkańców dz.Gdańsk - Osowa dot.
układu komunikacyjnego oraz ich propozycje (ideogram trasy, drogi zbiorczej) z prośbą o zajęcie stanowiska i przedłożenie sprawy Komisji.

Gdańsk, 08 maj 1996 rok

BRMG-0056 KRP/155/96

Zarząd Miasta Gdańska

884

96.05.26/

Komisja Rozwoju Przestrzennego Rady Miasta Gdańska przesyła w załączeniu pytania i wątpliwości mieszkańców dz.Gdańsk - Osowa dot.
układu komunikacyjnego oraz ich propozycje (ideogram trasy, drogi zbiorczej) z prośbą o zajęcie stanowiska i przedłożenie sprawy Komisji.

Gdańsk, 08 maj 1996 rok
djęczy: realizacji ulicy Koziorożca w Gdańsku-Osowej.

W związku z kolejną korespondencją w sprawie protestu grupy mieszkańców Osowej, z zabudowy zlokalizowanej w rejonie projektowanej ulicy Koziorożca, informujemy, że odpowiednie wyjaśnienia na temat etapowej realizacji ulicy, oraz obecnego stanu przygotowania inwestycji, zawarliśmy w przekazanym do Waszego Wydziału w dn. 19.03.1996r. pismie IM/7335/1171/96/KL w podobnej sprawie związanej z protestem Akademickiej Spółdzielni Mieszkaniowej.
Działając jako jeden z pełnomocników grupy mieszkańców Gdańska-Osowy przesyłam na rece Pana Wiceprezydenta, do wiadomości Zarządu Miasta, kserokopie: protestu mieszkańców skierowanego do Rady Miasta Gdańska oraz załączonych do protestu list z podpisami.

Z poważaniem

dr Michał Bank

ul. Szafera 4E
80-299 Gdańsk
lotyczy: realizacji ulicy Koziorożca w Gdańsku-Osowej.

W nawiązaniu do polecenia Prezydenta Miasta Gdańska Pana Tomasza Posadzkiego; dn. 15.03.1996r. Wydział Inwestycji Miasta przekazuje informacje na temat zakresu budowy i terminów realizacji ulicy Koziorożca w Gdańsku-Osowej.
INFORMACJA
w sprawie terminów i zakresu realizacji ulicy Kozioroża w Gdańsku-Osowej.


Wychodząc naprzeciw postulatom mieszkańców skarżących się na uciążliwości komunikacyjne, wywoływane wzmożonym ruchem samochodowym, który z konieczności, ze względu na brak odpowiednich tras układu ogólnomiejskiego, obciąża niedostosowane do tego celu, wewnętrzne uliczki osiedlowe, przyspieszono rozpoczęcie realizacji zbiorczej trasy średnicowej.

Planowana w latach 1996/97 inwestycja, zgodna z ustaleniami obowiązującego "Miejscowego szczegółowego planu zagospodarowania przestrzennego dzielnicy Osowa" obejmować będzie pierwszy odcinek ulicy o dł. 600 m, o przekroju jednojezdniowym od skrzyżow. z ul. Kielnieńską do skrzyżow. z ul. Afrydyty i Jednoroża. Zakres robót obejmuje realizację ulicy, chodników, oświetlenia oraz niezbędnego uzbrojenia podziemnego.

Oddanie do użytku w/w fragmentu trasy umożliwi dogodny dojazd w głębi dzielnicy oraz na tereny przyszłościowej zabudowy, z pominięciem dotychczas wykorzystywanych wewnętrznych ulic osiedla (głównie ul. Sołdka).

Przygotowanie i realizację inwestycji w ramach pośrednictwa inwestycyjnego prowadzi Dyrekcja Rozbudowy Miasta Gdańska.

Jednocześnie informujemy, że planowana budowa Pomorskiego Centrum Handlu Hurtowego w Barniewicach, realizowana będzie kompleksowo, łącznie z wykonaniem niezbędnego układu drogowego. Zasadnicze powiązanie zespołu obiektów z podstawowym układem drogowym projektuje się poprzez bezpośrednie włączenie do Obwodowej Zachodniej z wykorzystaniem istniejącego wiaduktu nad Obwodową Zachodnią (w ciągu Owczarnia-Barniewice) oraz odpowiednią rozbudową towarzyszącego węzła i układu drogowego.
Wojewódzkiego Konserwatora Przyrody w sprawie możliwości odprowadzenia wód deszczowych z rejonu Osowa - Owczańcza, stniejącą drogą leśną w obrębie rezerwatu przyrody "Zródliska w Dolinie Ewy", a następnie kolektorem krytym w ul. Kościelskiej w Gdańsku.

Propozycja odprowadzenia wód deszczowych z rejonu Osowa - Owczańcza przez rezerwat przyrody "Zródliska Doliny Ewy" oraz ul. Kościelską w Gdańsku - Oliwie nie może uzyskać akceptacji wojewódzkiego Konserwatora Przyrody, ze względu na zasadniczy konflikt tego uzbrożenia z chronionymi elementami przyrodniczymi.

Równocześnie przepisy dotyczące ochrony przyrody zabraniają prowadzenia w obrębie rezerwatu przyrody jakichkolwiek prac spowodowanych zmienieniu przedmiotu ochrony.

"Zródliska Doliny Ewy" to rezerwat flory i fauny - leśny, gdzie szczególną ochroną podlegają rośliny wrażliwe na zmianę stosunków wodnych.

Propozycja odprowadzenia wód deszczowych z rejonu Osowa - Owczańcza przez rezerwat przyrody "Zródliska Doliny Ewy" oraz ul. Kościelską w Gdańsku - Oliwie nie może uzyskać akceptacji wojewódzkiego Konserwatora Przyrody, ze względu na zasadniczy konflikt tego uzbrożenia z chronionymi elementami przyrodniczymi.

Równocześnie przepisy dotyczące ochrony przyrody zabraniają prowadzenia w obrębie rezerwatu przyrody jakichkolwiek prac spowodowanych zmienieniu przedmiotu ochrony.

"Zródliska Doliny Ewy" to rezerwat flory i fauny - leśny, gdzie szczególną ochroną podlegają rośliny wrażliwe na zmianę stosunków wodnych.

Stanowisko negatywne dotyczy również realizacji kolektora deszczowego krytego w obrębie ulicy Kościelskiej, ze względu na występujący tam wartościowy starodrzew.

Zarząd Parków Krajobrazowych w Gdańsku

Nadleśnictwo Gdańsk
Uprzejmie informuję, że międzynarodowe organizacje lotnicze coraz częściej zwracają uwagę na zagrożenie zderzeń statków powietrznych z ptakami. W Polsce w ostatnich latach ma miejsce w skali rocznej około 30 - 40 zderzeń z ptakami. Statystyki lotnicze wykazują obecny wzrost tego zjawiska. Z doświadczeń międzynarodowych i krajowych wynika, że wysypiska odpadów komunalnych stanowią miejsca żerowisk ptaków zazwyczaj o dużej koncentracji i w przypadku lokalizacji ich w sąsiedztwie lotnisk, a zwłaszcza na przedłużeniu drogi startowej, powodują szczególne zagrożenie dla bezpieczeństwa lotów.

Zgodnie z zaleceniami międzynarodowymi przewidzianymi do wprowadzenia jako wyłączne źródło przepisów obowiązujących w Unii Europejskiej, przyjmuje się, że wysypiska odpadów komunalnych stanowią potencjalne zagrożenie dla lotnictwa, jeżeli są zlokalizowane w granicach do ok. 8 km od końca drogi startowej wzdłuż jej osi lub do ok. 3 km z boku drogi startowej. Prowadzone badania wykazały, że w przypadku lokalizacji wysypisk w podanych odległościach były one czynnikiem licznych wypadków lotniczych, spowodowanych zderzeniami statków powietrznych z ptakami, z których część pociągnęła za sobą nawet utratę życia. Z drugiej strony ogólnie uznaje się, że aktywność ptaków w podanym przedziale odległości, jest bardzo niepożądana, gdyż wiąże się on z wykonaniem najbardziej trudnej operacji lotniczej - podejścia do lądowania i startu samolotu.

Z doświadczeń krajowych wiadom jest, że oprócz ptaków żerujących na wysypiskach odpadów komunalnych, zlokalizowanych w sąsiedztwie lotniska, drugie poważne zagrożenie dla ruchu lotniczego stanowią hodowle gołębi w strefach przylotniskowych.

W ostatnim czasie obserwuje się liczne przypadki lokalizowania wysypisk odpadów komunalnych w najbliższym sąsiedztwie lotnisk. W związku z tym przedstawiając powyżej przytoczoną problematykę, zwracam się z uprzejmą prośbą o spowodowanie:
Oczekując spełnienia przez Pana wyżej przedstawionej prośby

łączę wyrazy szacunku

\[\text{\textbf{Bogusław Liberad}}\]
1. My, niżej podpisani mieszkańcy ulic: Smugowej, Szafera, Sołdka, Niedziałkowskiego, Perseusza, Biwakowej, Kozioroża, Afrodyty, Daru Pomorza, Otago i terenów do nich przyległych w Osowie, ponawiamy kategoryczny protest przeciwko zamiarowi budowy w bezpośrednim sąsiedztwie naszych domów trasy, mającej przebiegać od połączenia węzła drogowego Wysoka z ulicą Kielnierską, obok zabudowy ulic Smugowej i Szafera, ku dzisiejszej ulicy Kozioroża i dalej, na południe, ku tzw. dzielnicy przemysłowej Osowy. Niezależnie od terminów, jakimi trasa ta jest określana przez planistów i nazywana w korespondencji urzędowej, ma to być w każdym razie ulica o dwóch jezdniach (mających po 2 pasa ruchu) i szerokości 40 m.

2. Wspomnianą trasę przewidywano pierwotnie (tj. w latach osiemdziesiątych) w odległości kilkuset metrów od lokalizacji planowanej obecnie, w rejonie dzisiejszej ulicy Wodnika. Trasa ta miała wykorzystywać istniejący tam dawny ciąg drogi polnej i starego nasypu kolejowego. Taki jej przebieg nie kolidował wówczas z istniejącą w owym rejonie zabudową, gdyż trasa przechodziła w bezpieczniej (w sensie możliwości zapewnienia niezbędnego pasa ochronnego) odległości od budynków spółdzielni mieszkaniowej im. Obronców Wybrzeża, nie stanowiąc też zagrożenia dla nielicznych w tym miejscu mieszkańców ulicy Perseusza.

wstrząsy i hałasy, miast zastosowania technologii tradycyjnej, masywnej, w układach statycznie wyznaczalnych, częściej rozdylatowanych i z odpowiednią stołarką okienną. Za masywne i odporne na wstrząsy i hałas trudno zresztą uznać którekolwiek z domów położonych przy planowanej trasie.

8. Jesteśmy świadomi potrzeby istnienia w osiedlach mieszkaniowych ulic, służących potrzebom lokalnej zbiorowości. Jest jednak rzeczą dla nas oczywistą, że w przypadku tworzenia nowych jednostek osadniczych najpierw wytycza się ciągi komunikacyjne, a potem podejmuje decyzje o zabudowie. Postępowanie odwrotne, którego jesteśmy aż nabytem czynnymi świadkami, oznacza pogardę nie tylko dla sztuki planowania urbanistycznego i interesów tych, którym to planowanie formalnie służy, ale i dla zdrowego rozsądku.


W imieniu mieszkańców

Pełnomocnicy:
2. Michał Bank, Gdańsk-Osowa, ul. Szafera 4E, tel. 52-73-56
4. Romuald Gęśicki, Gdańsk-Osowa, ul. Szafera 8A, tel. 52-72-85
5. Zbigniew Kowalewski, Gdańsk-Osowa, ul. Koziorożca 6/1
6. Urszula Pujdak, Gdańsk-Osowa, ul. Szafera 2A, tel. 52-70-49
7. Marian Sokalski, Gdańsk-Osowa, ul. Szafera 8D, tel. 52-77-90
8. Henryk Wesolowski, Gdańsk-Osowa, ul. Szafera 8E, tel. 52-72-89

Załączniki:
20 list, zawierających łącznie 30 nazwisk
- K. Trzebiatowska - Wydział Urbanistyki, Architektury i Nadzoru Budowlanego U.W.
gmina może zmienić ustalenia planu, jeżeli uzna, że potrzeby kolei mogą być realizowane w innym rejonie, pod warunkiem zgody PKP na takie rozwiązanie.

- inż. W. Bogusławska - zgłosiła uwagę do działań Agencji Właściwości Rolnej Skarbu Państwa tj. sprzedaży terenów dla kilkunastu nowych właścicieli w trakcie procesu opracowania planu, co może znacznie skomplikować sytuację planistyczną. Wg opinii projektanta należy wstrzymać zmianę właścicieli gruntu do czasu wykonania planu zagospodarowania przestrzennego tego obszaru Gdańska.

Na zakończenie spotkania inż. arch. W. Bogusławska podziękowała zebranym za udział w spotkaniu i wyrażenie swoich opinii, które będą pomocne w opracowaniu koncepcji planu miejscowego.
UKŁAD KOMUNIKACYJNY DZIELNICY GDAŃSK-OSOWA

PYTANIA I WĄTPLIWOŚCI

Podstawowe założenia dotyczące układu komunikacji regionu gdańskiego zostały sformułowane w latach 70-tych i zakładały rozwój miasta i przemysłu w kierunku Tczewa. Życie zweryfikowało te założenia i rozwój przedsiębiorczości wykazuje największą dynamikę w kierunku ŻUKOWA, KARTUZ, KOŚCIERZyny i WEJHEROWA.

Czy założenia układu komunikacyjnego uwzględniają te zmiany?

Jak się to ma w nawiązaniu do planowanej budowy drogi średnicowej (4 pasma ruchu), równoległej do obwodnicy, przy równoczesnym braku odciężenia ulic Spacerowej i Kielnieńskiej?

Jedyną drogą łączącą osiedle OSOWA z OLIWA jest ul. Kielnieńska i Spacerowa o bardzo dużym natężeniu ruchu z tendencją dalszego wzrostu.

Każda większa kolizja na tej trasie, zwalone drzewo, naprawa drogi, pożar - a wszystkie takie wydarzenia miały już miejsce - powodują paraliż komunikacyjny i mogą znacznie opóźnić dojazd straży pożarnej, pogotowia itp. służb do dzielnicy Osowa. Znane są powszechne trudności komunikacyjne na ulicy Kielnieńskiej (a szczególnie w okresie letnich weekendów) i w wypadku kolizji na tej ulicy brak możliwości objazdów uliczkami osiedlowymi.

Czy planowany układ komunikacyjny, równoległy do obwodnicy, w jakikolwiek sposób pomoże rozwiązać te uciążliwości?

3. Przebieg drogi średnicowej w sąsiedztwie granic osiedla LWSM „OSOWA” - jedn. „A” nie był oznaczony ani nawet zasygnalizowany przez władze miejskie zarówno w informacji o terenie jak i w decyzji lokalizacyjnej dla tego osiedla. Zaprojektowane i zrealizowane budynki mieszkalne przy ul. Smugowej, Szafa i Niedziałkowskiego, które obecnie znalazły się w bezpośrednim sąsiedztwie projektowanej drogi średnicowej, stanowią zabudowę szeregową, w postaci wielopiętrowych, 2-kondygnacyjnych ram żelbetowych, nieodpornych na wstrząsy i hałas.
W przedstawionej sytuacji rodzą się pytania:

- Czy przy ustalaniu trasy drogi średnicowej analizowano warunki gruntowe pod kątem podatności na przenoszenie wstrząsów komunikacyjnych?

- Czy w analizie techniczno-ekonomicznej dla projektowanej trasy przewidziano niezbędne nakłady na zabezpieczenie w/w budynków przed tymi uciągliwościami, niezależnie od kosztów budowy ewentualnych ekranów akustycznych?

Uproczamy, że mieszkańcy zastrzegają sobie prawo do dochodzenia roszczeń z tytułu istotnego ograniczenia korzystania z nieruchomości.


- Dlaczego nie zapewniono dojazdów na okres realizacji w/w osiedla, a cały ruch i dowóz materiałów budowlanych odbywa się uliczkami lokalnymi Sołdka i Niedziałkowskiego?

5. Projektowana droga średnicowa (o max3 włączeniach ulic osiedlowych na 1 km) w niewielkim stopniu obchodzi mieszkańców osiedla, natomiast z całą pewnością będzie służyła dla przeprowadzenia ruchu tranzytowego przez osiedle do giełdy towarowej, lotniska i terenów przemysłowych.

Rodzą się kolejne pytania:

- Czy interesy lobby przemysłowego muszą być osiągnięte kosztem mieszkańców?

- Czy przeprowadzono analizę innych, mniej kolizyjnych rozwiązań, po terenie dotychczas nie zabudowanym?
sąsiedniej zabudowy mieszkaniowej. Powstanie giełdy i skomunikowanie jej z ulicą średnicową zmieni zasadniczo warunki wyjściowe określone przy sporządzaniu planu Osowej, wnioskujemy więc o sporządzenie prognozy skutków wpływu ustalen miejscowego planu zagospodarowania przestrzennego na środowisko przyrodnicze z uwzględnieniem tej nowej sytuacji (na podstawie Rozporządzenia Ministra Ochrony Środowiska, Zasobów Naturalnych i Leśnictwa z dnia 9 marca 1995r, Dz.U. nr 29, poz.150) i na jej podstawie zmianę lokalizacji drogi szybkiego ruchu a także takie rozwiązanie komunikacji w Osowej, aby wykluczyć możliwość skomunikowania giełdy i lotniska w Rębiechowie z ulicami przechodzącymi przez zabudowę mieszkaniową lub w jej bliskim sąsiedztwie.

Ponadto stwierdzamy, że droga średnicowa została zaprojektowana niezgodnie z przepisami obowiązującymi w momencie zatwierdzania planu miejscowego (Rozporządzenie Ministra Administracji, Gospodarki Terenowej i Ochrony Środowiska z dnia 3 lipca 1980 r. w sprawie warunków technicznych, jakim powinny odpowiadać budynki), określającymi minimalną odległość budynków od drogi tej klasy na 40-80 m. Odległość ta nie została zachowana. Aktualnie odległość między istniejącymi i nowopowstającymi budynkami mieszkaniowymi, między którymi ma przebiegać 4-pasmowa droga nie przekracza 55 m, więc nie może być mowy o jakichkolwiek strefach ochrony.

Obecnie obowiązujące przepisy nakładają na projektantów i planistów uwzględnianie w swoich pracach wymogów ochrony środowiska, w tym ochrony przed hałasem i spalinami. Przy takim zbliżeniu ulicy do istniejącej zabudowy mieszkaniowej nie ma technicznych możliwości na wyeliminowanie negatywnych skutków drogi.

Z poważaniem

Do wiadomości:
Rada Miasta Gdańska
Komisja Rozwoju
Przestrzennego

PREZES ZARZĄDU
mgr inż. Tomasz Bartoszik
zbiornika wraz z rurociągami. Realizacja tego etapu poprawi jakość wody lecz w ograniczonej ilości, dlatego też niezbędna jest realizacja docelowej stacji uzdatniania. Termin realizacji docelowej stacji uzdatniania nie jest określony. W związku z powyższym na dzień dzisiejszy nie możemy gwarantować jakości wody dostarczanej naszym klientom.

Na granicy terenu Centrum przewidzieć studnię wodomierzową wyposażoną w zawór zwrotny od strony wewnętrznej. Pobór wody może nastąpić po zamontowaniu wodomierza, dostarczeniu nam pozytywnego wyniku z badania próbek wody i spisaniu umowy na dostawę wody.

Odprowadzenie ścieków sanitarnych docelowo należy przewidzieć do kanalu M-6 (wg. Programu z koncepcją opracowanego przez BPBK w Gdyni). Dla I-go etapu realizowanej inwestycji warunkowo, do czasu budowy kanalu M-6, wyrażamy zgodę na odprowadzenie ścieków do istniejącego kanalu Osowa-Oliwa Ø0,4m z włączeniem w Owczarni.

Szczegóły techniczne w dalszych etapach projektowania prosimy ustalać w Biurze Studiów S.N.G.

Do projektu technicznego prosimy załączyć plan realizacyjny zagospodarowania terenu.

Niniejsze warunki techniczne ważne są do dnia 30.10. 1997 r., należy je załączyć do dokumentacji.

W sprawie uzyskania warunków technicznych na odprowadzenie wód opadowych prosimy zwrócić się do Spółki „Gdańskie Melioracje” przy ul. Łąkowej 35/38 w Gdyni.

Z poważaniem,

DYREKTOR

ds. technicznych

Michał Szymborski

Do wiadomości:
Dział Uzgodnień i Odbiorów S.N.G.
DZIELNICA XI OSOWA-KOKOSZKI

Jednostka 21 Osowa — Barniewice

Obszar 2178,8 ha

Przewiduje się docelowo zmianę granic administracyjnych miasta i granic jednostki strukturalnej.

I. Stan istniejący.

Ludność — 4,60 tys. Zatrudnienie — 0,63 tys.

1. Pokrycie planami.

— Materiały do planu szczegółowego dzielnicy Barniewice z roku 1977,
— Studia planów ogólnych — Gdańsk Zachód i Gdańsk Osowa.

W opracowaniu:
— projekty planów szczegółowych Osowej i Klukowa.

2. Charakter dzielnicy.

Dzielnica o charakterze rolniczym, teren rozwojowy miasta — rozpoczęta realizacja funkcji miejskich.

Dotyczy to dzielnicy mieszkaniowej Osowa i przemysłowo — składowej Barniewice.

Jednostka obejmuje również część Trójmiejskiego Parku Krajobrazowego wraz z Owczańską (na wschód od obwodnicy).

3. Obszary chronione i ograniczenia zabudowy.

— Gleby III i IV klasy.
— Trójmiejski Park Krajobrazowy wraz z otuliną,
— Strefy A i B ujęcia wód powierzchniowych w Strasznym (zlewnia Strzełenki),
— Strefa ujęć wód głębinowych Osowa,
w części w zlewni potoku Jelitkowskiego. Uzbrojone w system kanalizacji deszczowej są jedynie rejon jednostki A w Osowej i rejon przepompowni cementu w Barniewicach.

10.4. Ciepłownictwo.

Na terenie znajdują się 23 kotłownie lokalne o wydajności 20,6 MWc, jak również ogrzewanie piecowe i gazowe.

10.5. Gazownictwo.

Dzielnica zasilana gazem ziemnym z gazociągu średnoprążnego biegnącego do Gdyni.


Zapotrzebowanie mocy 1,2 MW. Zasilanie w energię elektryczną z GPZ-ów 110/15 kV Wielki Kack, Sopot i Kokoszki.

II. USTALENIA PLANU

Ludność — 14,30 tys. Zatrudnienie — 4,60 tys. Ludność docelowo 25,00 do 30,00 tys.

1. Opracowanie planistyczne.

— Przewiduje się opracowanie projektów planów szczegółowych dzielnic Osowa i Rębiechowo–Klukowo i ich zatwierdzenie.

2. Charakter dzielnicy.

Charakter dzielnicy ulegnie zmianie poprzez rozwój różnorodnych funkcji opisanych niżej, szczególnie mieszkaniowej, produkcyjno–magazynowej i rekreacyjnej, ogólnodostępnej.

3. Tereny chronione i ograniczenia zabudowy.

3. 1. Ochronie podlegają obszary jak w pkt. I. 3.

Obszar stanowi teren rozwójowy miasta i w związku z czym rezygnuje się z ochrony gruntów rolnych, zabezpieczając ich użytkowanie rolnicze do czasu wejścia poszczególnych inwestycji.
3.2. Przyjmuje się dla okresu perspektywy ograniczenie rozbudowy mieszkalnictwa w Osowej Barniewicach do 15 tys. mieszkańców.

Pozostałe ok. 10 tys. będzie mogło być realizowane po budowie połączenia kanalizacji z kolektorem „Morena” w Kokoszkach, rozwiązania problemu ciepła poprzez budowę centralnego źródła i zapewnienie innych nośników np. gazu ziemnego, oraz rozbudowy systemu komunikacji miejskiej, która byłaby w stanie obsłużyć zwiększoną ilość pojazdów.

Na terenie występują ograniczenia związane z sąsiedztwem lotniska.

4. Warunki życia.

Dla poprawy warunków życia należy rozwiązać problemy ogrzewania i komunikacji oraz przystąpić do budowy usług podstawowych i dzielnicowych, dla których tereny rezerwowane są w opracowywanych planach szczegółowych. W planach tych występują również tereny usług ogólnomiejskich.

We wsi Klukowo przewiduje się adaptację zabudowy wzdłuż ulicy Radarowej poza strefami uciążliwości lotniska, z ewentualną możliwością tworzenia siedlisk ogrodniczych na terenach pomiędzy bocznicą kolejową i obwodnicą. Przewiduje się niewielki rozwój funkcji mieszkaniowej (mała jednostka mieszkaniowa) między innymi poprzez przemieszczenie ludzi wykwaterowanych w związku z rozbudową lotniska.

5. Funkcje ogólnomiejskie.

a) Tereny rekreacji i wypoczynku.

Na terenie jednostki i jej obrzędziu (gmina Żukowo, miasto Gdynia) znajdują się tereny przewidziane na usługi rekreacyjne:
- obrzeże jeziora Wysockiego – kąpielisko i usługi turystyczne,
- teren Owczarni usługi sportu i turystyki – teren buforowy dla Trójmiejskiego Parku,
- teren Trójmiejskiego Parku Krajobrazowego

b) na obszarze pomiędzy wsią Klukowo i Rębiechowom projektuje się nowy cmentarz komunalny dla miasta Gdańska wraz z terenami zabezpieczającymi usługi i parkingi dla cmentarza.
Istnieje również możliwość realizacji cmentarza projektowanego w dzielnicy Gdynia Zachód.

c) Po zachodniej stronie jeziora Wysockiego na terenie gminy Żukowo rezerwuje się obszar przeznaczony na funkcje usług i zarządzania (w tym usług zdrowia i nauki) w skali aglomeracji, z uwagi na położenie terenu centralnie w stosunku do zainteresowań zarówno miast Gdańska i Gdyni i planowane w okresie kierunkowym powiązanie terenów wysoczyzny SKM.

6. Przemysł, Bazy, Składy, Rzemiosło, produkcyjno-składowej.

Przewiduje się dalszą rozbudowę dzielnicy Osowa–Barniewice – zakładając funkcję obsługi miasta i aglomeracji w dziedzinie baz, składów, przemysłu drobnego, nieciągliwego i rzemiosła.

Pomiędzy projektowanym cmentarzem, bocznica kolejowa i ul. Słowackiego, w wsi Klukowo projektuje się rezerwę terenu na składy konsygnacyjne, strefę wolnocłową, zaplecze magazynowe i usługi związane z lotniskiem w Rębiechowie. Związana z tymi rejonami jest projektowana budowa dwóch ładowni kolejowych w Barniewicach i Klukowie.

7. Ochrona środowiska i zieleń.

Projektowany cmentarz w Klukowie oraz obszary pól i łąk zachowanych w granicach Strefy Raduni i strefy ujęć wody tworzą obszar ekologicznego powiązania Trójmiejskiego Parku Krajobrazowego w rejonie Owczarni z ternami otwartymi w gminie Żukowo.

Teren ten, jak również bezpośrednio przyległy do Trójmiejskiego Parku Krajobrazowego teren Owczarni winny być chronione przed zainwestowaniem, dopuszczając się urządzenie związane z rekreacją.

Pozosta tym plan zakłada:
- budowę kotłowni rejonowej w Barniewicach, aby wyłączyć część kotłowni lokalnych — wskazane jest ponadto wprowadzenie do zabudowy jednorodzinnej ogrzewania gazem,
- pełne skanalizowanie dzielnicy chroniące zlewnie potoku Jelitkowskiego, rzeki
zakładanie pasów zieleni izolacyjnej pomiędzy dzieliną przemysłową Barnie-
wiec a mieszkaniową w Osowej, oraz ogrodami działkowymi a Obwodnicą.

8. Komunikacja.

Plan przewiduje

W zakresie układu ulicznego podstawowego:

- adaptację obwodnicy Zachodniej Et 2/2 wraz z budową węzła z projektowaną
  ul. Nowa Reja.

- budowę trasy „Nowej Reja” Gt 2/2 od Oliwy do skrzyżowania z ul. „Średni-
  cową” w Osowie, rezerwację terenu na budowę odcinka od ul. „Średnicowej”
  do granic miasta Gdańska jako fragmentu drogi krajowej nr 6.

W zakresie układu podstawowego uzupełniającego:

- budowę trasy „średnicowej” Zo 1/2 na odcinku Osowa–Barniewice z pozosta-
  wieniem terenu na drugą jezdnię.

- rezerwację terenu na budowę trasy „średnicowej” na odcinku Barniewice–Rę-
  biechowo.

- budowę trasy w ciągu ul. Meteorowej w Barniewicach — odcinka o strony
  „średnicowej” do Obwodnicy Zachodniej Zo 1/2,

- rezerwację terenu na drugą jezdnię i budowę trasy wsi Barniewice do trasy
  „średnicowej”.

W zakresie komunikacji kolejowej:

- elektryfikację linii PKP Maksymilianowo–Gdynia, budowę drugiego toru, bu-
  dowę przystanku osobowego Barniewice, rozbudowę stacji Osowa.

- rozbudowę linii Osowa–Lotnisko o tory zdawkowo–odbiorcze w rejonie przesy-
  powni cementu, ładownie i punkt kontenerowy.

W zakresie zaplecza:

- budowa parkingu strategicznego w rejonie Barniewic.
9. Infrastruktura techniczna.

9.1. Zaopatrzenie w wodę.

Z istniejącego ujęcia w Osowej. Przewiduje się rozbudowę ujęcia poprzez budowę:

- 4 dalszych studni o poj. 200 m³ każda,
- zbiornika wyrównawczego 2 x 2000 o rzędnej 176,0 m n.p.m.,
- magistrali do jednostki B,
- w późniejszym terminie uzbrojenia dalszych części dzielnicy,
- połączenie ujęcia wody Osowa ze zbiornikiem Migowo magistralą 600 zaopatrując po drodze Barniewice, Klukowo, Złotą Karczmę i Kokoszki.

9.2. Kanalizacja sanitarna.

Docelowo przewiduje się budowę nowego układu kanalizacyjnego — kolektora „Wysokie” z przepompownią ścieków „Czapa” do kolektora „Morena” w Kokoszkach, odwrócenie układu kanalizacyjnego w rejonie Owczarni. Istniejący kolektor Osowa-Oliwa pozostanie jedynie jako kolektor odciągający.

Do czasu budowy nowego układu możliwość rozbudowy dzielnicy ograniczona do ok. 15 tys mieszkańców.


Przewiduje się dozbrojenie, w oparciu o istniejące kolektory do jeziora Wysokiego, dla jednostek B i C Osowej do potoku Jelitkowskiego.

Dla pozostałych obszarów należy wybudować nowy kolektor do dopływu rzeki Strzeluki.

Wszystkie kolektory istniejące i projektowane muszą być zaopatrywane w urządzenia oczyszczające przed wlotem do odbiornika.

9.4. Ciepłownictwo.

Przewidywany przyrost potrzeb cieplnych o 40.0 MWe wymaga budowy ciepłowni rejonowej o wydajności 70 MWe. Lokalizacja w dzielnicy przemysłowej
9.5. Gazownictwo.

Przewiduje się w miarę rozbudowy dzielnicy budowę układu sieci średniorozkopowej, dwóch stacji redukcyjno-pomiarowych i sieci niskiego ciśnienia.


Zapotrzebowanie mocy 14.0 MW.

Budowa GPZ-u 110/15 kV „Osowa” wraz z napowietrzną linią 110 kV długości 1.5 km.