

# Central and Eastern Europe Local Government and Housing Privatization

Prepared for the Office of Housing and Urban Programs  
Agency for International Development



ICMA  
Consortium Report

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**PILOT FEASIBILITY STUDY FOR REDEVELOPING  
THE TRADE ENTERPRISE FOR FUEL AND  
BUILDING MATERIALS SITE**

**WARSAW, POLAND  
JULY 1994**

**Prepared for the Office of Housing and Urban Programs  
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT**

**By**

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**INTERNATIONAL CITY/COUNTY MANAGEMENT ASSOCIATION  
USAID Project No. 180-0034  
USAID Contract No. EUR-0034-C-00-2034-00  
Local Government and Housing Privatization  
Request for Services #60**

## **PREFACE**

This report was prepared by the City of Warsaw's Economic Analysis Unit. The Unit was jointly established in 1993 by the City of Warsaw and the U.S. Agency for International Development. Mr. Olgierd Dziekonski, Vice Mayor of the City of Warsaw and Ms. Sonia Hammam, Director of the Regional Office of Housing and Urban Programs of U.S.A.I.D., conceived the idea of the Unit and were instrumental in its creation. Over the past year, staff of the Unit conducted a market and financial feasibility study of redeveloping the Trade Enterprise for Fuel and Building Materials site, located in the South Warsaw Airport Project area. The study was conducted in close cooperation with the Warsaw Development Authority, and members of the Unit wish to thank Mr. Sergiusz Madurowicz, Director of the Authority and his staff for their excellent cooperation and support.

Dr. Barbara Sakowska-Knapp served as the principal author of the study. She was assisted by Malgorzata Zoltowska, Katarzyna Baczynska and Agnieszka Zoltowska. Mr. Michael Beyard of the Urban Land Institute and Professor John Landis of the University of California at Berkeley provided market and financial feasibility analysis training. David Dowall directed the preparation of the study. The report was revised and edited by Ms. Susan Friedland. In Washington, D.C., Mr. Chris Banks of U.S.A.I.D. and Marta Goldsmith and Laura Cole of the Urban Land Institute provided critical logistical support for the project.

David E. Dowall  
Team Leader

## TABLE OF CONTENTS

<b>CHAPTER 1: EXECUTIVE SUMMARY .....</b>	<b>4</b>
Introduction .....	4
1.1. Background of study .....	4
1.2. Project site and surrounding area .....	5
1.3. Market demand for warehouse facilities.....	5
1.4. Market supply .....	6
1.5. Assessing the project's financial feasibility .....	7
1.6. Next steps .....	8
<b>CHAPTER 2: ANALYSIS OF THE PROJECT SITE AND SURROUNDING AREA .....</b>	<b>10</b>
Introduction .....	10
2.1. The site's relationship to the metropolitan area of Warsaw.....	10
2.2. The site's relationship to the region of southern Warsaw .....	11
2.3. Neighboring parcels .....	15
2.4. Parcels immediately adjacent to site .....	24
2.5. Characteristics of the site .....	24
Current use .....	25
Topographical .....	25
Environmental.....	27
Infrastructure .....	27
Legal ownership .....	27
2.6. Summary .....	29
<b>CHAPTER 3: MARKET DEMAND FOR WAREHOUSE FACILITIES .....</b>	<b>30</b>
Introduction .....	30
Methodology .....	30
3.1. Polish and Warsaw economy .....	31
3.2. Impacts of economic change on the warehousing sector .....	40
3.3. Projections of future changes.....	42
3.4. New type of warehouses facility demand.....	49
3.5. Conclusion .....	56
<b>CHAPTER 4: MARKET SUPPLY.....</b>	<b>57</b>
Introduction .....	57
Methodology .....	57
4.1. Warehouse supply in Warsaw .....	58
Quantitative estimates of supply .....	58

Physical characteristic of surveyed adapted warehouses. ....	58
Lease profile of warehouses projects .....	65
4.2. Does supply meet demand? .....	67
Suitability of industrial building for modern warehouses demand.....	67
Supply of other types of facilities .....	69
4.3. Future trends .....	71
a. Supply of new warehouse facilities by 1997 .....	71
b. Factors influencing future supply .....	72
4.4. Conclusion .....	74
<b>CHAPTER 5: ASSESSING THE PROJECT'S FINANCIAL FEASIBILITY .....</b>	<b>75</b>
Introduction .....	75
5.1. Proposed development plan .....	75
5.2. Income Potential of Project .....	80
5.3. Project construction costs.....	80
5.4. Land residual analysis.....	83
5.5. Suggested next steps.....	83
5.6. Conclusion .....	85

## TABLE OF TABLES, MAPS, FIGURES AND PHOTOS

<b>MAP 2-1: PROJECT LOCATION IN WARSAW .....</b>	<b>12</b>
<b>MAP 2-1: LOCATION OF THE PROJECT IN THE SOUTHERN PART OF WARSAW .....</b>	<b>13</b>
<b>MAP 2-3: FRAGMENT OF THE ACTUAL MASTER PLAN OF WARSAW.....</b>	<b>16</b>
<b>PHOTO 2-1 AND 2-2: SURROUNDING PARCELS .....</b>	<b>17</b>
<b>MAP 2-4: AN ASSESSMENT OF THE TECHNICAL MERIT OF EXISTING BUILDINGS.....</b>	<b>18</b>
<b>TABLE 2-2: SURVEY OF PLOTS IN THE VICINITY OF THE SITE .....</b>	<b>19</b>
<b>FIGURE 2-1: BARCHART OF PLOTS BY COVERAGE .....</b>	<b>20</b>
<b>MAP 2-5: PLOT BORDERS AND OWNERSHIP OF NEIGHBORING SITES.....</b>	<b>22</b>
<b>MAP 2-6: ACCESS TO INFRASTRUCTURE .....</b>	<b>23</b>
<b>PHOTOS 2-3 AND 2-4: TEFBM PROPERTY .....</b>	<b>26</b>
<b>TABLE 3-1: NATIONAL LEVEL CHANGES IN MACROECONOMIC INDICES IN FIXED PRICES .....</b>	<b>32</b>
<b>TABLE 3-2: TRENDS IN GDP IN CONSTANT PRICES.....</b>	<b>34</b>
<b>TABLE 3-3: EMPLOYMENT IN NATIONAL ECONOMY BY SECTOR IN POLAND AND METROPOLITAN WARSAW .....</b>	<b>35</b>
<b>TABLE 3-4: ESTIMATED WHOLESALE TRADE EMPLOYMENT IN METROPOLITAN WARSAW (1988-1992) .....</b>	<b>36</b>
<b>TABLE 3-5: WORKING PERSONS BY FORM OF OWNERSHIP IN POLAND.....</b>	<b>38</b>
<b>TABLE 3-6: VALUE OF EXPORTS AND IMPORTS IN CONSTANT PRICES (1988-1992) .....</b>	<b>39</b>
<b>TABLE 3-7: PROJECTIONS OF EMPLOYMENT FOR METROPOLITAN WARSAW (1992-1997) .....</b>	<b>43</b>
<b>TABLE 3-8: PROJECTIONS OF POLAND AND METROPOLITAN WARSAW GROSS DOMESTIC PRODUCT (1992-1997).....</b>	<b>44</b>
<b>TABLE 3-9: PROJECTED FUTURE EMPLOYMENT IN WHOLESALE TRADE IN 1997 .....</b>	<b>45</b>
<b>TABLE 3-10: WHOLESALE AND RETAIL EMPLOYMENT IN SELECTED UNITED STATES CITIES IN 1988 .....</b>	<b>47</b>
<b>TABLE 3-11: PROJECTED DEMAND FOR WAREHOUSING FACILITIES IN 1997 .....</b>	<b>48</b>
<b>TABLE 3-12: WHOLESALE TENANTS SURVEY RESULTS.....</b>	<b>50</b>
<b>TABLE 3-13: FACTORS CONSIDERED IMPORTANT BY WHOLESALE AND DISTRIBUTION FIRMS WHEN SELECTED A SITE.....</b>	<b>52</b>
<b>TABLE 3-14: DISTRIBUTION OF WAREHOUSING SPACE .....</b>	<b>55</b>
<b>TABLE 4-1: ESTIMATES OF INDUSTRIAL SPACE, METROPOLITAN WARSAW.....</b>	<b>59</b>
<b>TABLE 4-2: WAREHOUSE PROJECTS SURVEYED .....</b>	<b>60</b>
<b>TABLE 4-3: PHYSICAL CHARACTERISTICS OF WAREHOUSE PROJECTS.....</b>	<b>61</b>
<b>TABLE 4-4: LEASE CHARACTERISTICS OF WAREHOUSE PROJECTS.....</b>	<b>66</b>
<b>PHOTOS 4-1, 4-2 AND 4-3: WAREHOUSE FACILITIES IN THE RASZYN GMINA .....</b>	<b>70</b>
<b>TABLE 4-5: SCENARIOS FOR NET DEMAND OF NEWLY CONSTRUCTED WAREHOUSE FACILITIES .....</b>	<b>73</b>
<b>MAP 5-1: SITE PLAN FOR PROPOSED PROJECT .....</b>	<b>77</b>
<b>FIGURE 5-1: PERSPECTIVE VIEW OF PROPOSED PROJECT.....</b>	<b>78</b>
<b>TABLE 5-1: BUILDING DEVELOPMENT PLAN.....</b>	<b>80</b>
<b>TABLE 5-2: ESTIMATED BUILDING COSTS FOR PROPOSED PROJECT .....</b>	<b>83</b>

# CHAPTER 1

## EXECUTIVE SUMMARY

### Introduction

This report, *Pilot Feasibility Study for Redeveloping the Trade Enterprise for Fuel and Buildings Material Site*, presents a feasibility study for the development of a 14,565 sq. m. warehousing and office project in the Southern Warsaw Airport Project (SWAP) area. The subsequent chapters of this report will provide a detailed analysis of the project site and surrounding area, the market demand for warehouse facilities, the market supply of such facilities, and finally, the development plan for the proposed project. This section presents a summary of the report's findings and recommendations.

### 1.1. Background of study

This study was conducted by a consortium of the Urban Land Institute, the International City Managers Association, and the Urban Institute in conjunction with the Warsaw's Economic Analysis Unit (EAU). The EAU was established in 1993 with assistance from USAID so that the City of Warsaw could develop economic analysis capacity to better respond to changes posed by Poland's ongoing economic transformation. The EAU's immediate objectives include: 1) developing an economic database, 2) preparing a comprehensive economic assessment of the Warsaw area, and developing the technical capacity to conduct feasibility studies of real estate and infrastructure projects.

This study is the first of a series of feasibility studies to assist the City of Warsaw to develop a realistic and practical program for redeveloping and modernizing the South Warsaw Airport Project area. The current study illustrates the development potential of the site (the SWAP area) and shows how real estate market research can be used to design feasible redevelopment projects.

## **1.2. Project site and surrounding area**

The triangularly shaped project site has an area of 45,446 sq. m. It is situated within Mokotow district, in the Sluzewiec region adjacent to the Okecie International Airport. The site is currently used as an outdoor coal storage facility by the Trade Enterprise for Fuel and Building Materials. Surrounding parcels are similarly underutilized and occupied by obsolete buildings.

This site presents an attractive development opportunity due to the following positive attributes: its proximity to the airport and other transportation links, its location in an economically growing region, its high level of road and infrastructure development and its great potential for more intensive development. Furthermore, the proposed warehouse development on this site is in complete accord with the Master Plan of Warsaw. If the site is redeveloped as proposed below, it would spark much needed economic development in the SWAP area.

## **1.3. Market demand for warehouse facilities**

As a result of Poland's changing economy, in particular the growth of the wholesale trade sector in Warsaw, the overall demand for warehousing facilities in the

metropolitan area will rapidly grow. Projections indicate that between 1992 and 1997, net demand for such facilities will range between 3,400,000 and 4,000,000 sq. m. Although there is currently a surplus of vacant industrial buildings, new firms will require different types of facilities. The type of facility desired will differ among domestic and international firms, but will in either case include such factors as: advantageous location, good access to roads and airports, appropriate rent levels, and adequate infrastructure. The spatial distribution of this demand will be primarily in suburban areas around the City of Warsaw. This suggests that the demand for the proposed project site should be strong, given the site's location in a growing region, its proximity to highways and the airport and its quality of building and infrastructure.

#### **1.4. Market supply**

An examination of the existing supply of warehousing facilities in Warsaw reveals that most facilities are converted industrial building which are over 20 years old, are multistory with deficient elevators, have inadequate transportation access, and are often in poor condition. There are many problems associated with converting buildings from the use for which they were intended (production halls employing standards of the 1950's and 60's) to the needs of modern warehousing firms.

Domestic wholesaling firms that wish to survive in the market will have to gradually adapt their standards to those of their competitors, including their international competitors. At the same time, growing renovation costs of aging industrial buildings and rising operating costs make such buildings increasingly unattractive. This will create economic incentives to search for space in newly constructed buildings.

The demand for new warehousing space will range from 1,625,000 to 2,225,000 sq. m. between 1992 and 1997, or , on an annual basis, between 325,000 and 445,000 sq. m. If constructed, the proposed project would need to capture between 3 and five percent of the annual net demand in order to lease up within one year. The capture rate is very low and given the project's excellent location, we believe that the proposed project should be very successful and lease up quickly.

#### **1.5. Assessing the project's financial feasibility**

Based on our review of market demand and supply conditions, we propose a development plan program which includes the construction of five warehouse buildings, totaling 14,565 sq. m. Each unit provides office space and parking and is designed to offer flexible space tailored to user needs.

The analysis has developed financial estimates of the probable construction costs, market value and land value of the proposed project. Once completed and fully occupied, we estimate that the project will generate \$1,300,000 in net operating income per year. If this cashflow is capitalized at 10 percent, the total value of the project is approximately \$13,000,000. Construction costs are estimated at approximately \$10,000,000. After dedicating \$1,000,000 for developer profit, the site is currently worth nearly \$2,000,000 if redeveloped as a warehousing project. This is four to five times greater than the site's appraised value.

## **1.6. Next steps**

Given the project's high probability of success and its high level of financial yield, we recommend that the City consider implementing the project as a pilot. In moving the project from concept to reality, the City should consider the following steps (which should take between two and three years to complete) :

- Review this report and decide whether to go forward with the development proposal.
- If the City wants to proceed, it should commission a more detailed assessment of the potential environmental problems associated with developing a warehouse project on the former coal storage facility site.
- If the assessment is positive (ie. that the site can be cleaned up without adversely affecting the project's financial feasibility), the city should enter into negotiations with the Trade Enterprise for Fuel and Building Materials company to acquire the site and to clarify the property title.
- Once the site is under the control of the City (the Warsaw Development Authority), it should package the project for competitive tender and set its minimum reservation price. Packaging should include the pre-approval of all land use, infrastructure, architecture, and site design permits.
- The city should next announce its intention to sell or lease the property, by way of tender. Announcements are made (over a six week period) in local, national and

international print media. Direct mailings of the tender announcement should be sent to builders, banks, developers and large businesses.

- Submitted bids should be evaluated according to the following criteria: amount, form, and timing of land payments; bidders experience; conformance to RFP; quality of development program; market justification; financial feasibility; and financing.
- The winning developer should be awarded an exclusive right to negotiate for the site.
- Once the negotiations are completed, the development process could be initiated by the transfer of the site control to the developer. After obtaining financing and securing the remaining permits, construction could commence.

In conclusion, the City should consider redeveloping the site (and similarly situated sites in the SWAP area). If carried out on a wide scale basis, redevelopment projects would generate financial resources to modernize Southern Warsaw and spawn new economic activities.

## **CHAPTER 2**

### **ANALYSIS OF THE PROJECT SITE AND SURROUNDING AREA**

#### **Introduction**

This chapter presents the characteristics of the study site. It begins by providing a context of the site's location in the Warsaw Metropolitan Area, with a focus on the sub-region of southern Warsaw. It then describes the areas immediately surrounding the site in greater detail. Finally, it analyzes the characteristics of the site itself. This section aims to clarify the prospects for the region's economic development and to justify the recommendation of locating the proposed warehouse on the chosen site

#### **2.1. The site's relationship to the metropolitan area of Warsaw**

The proposed site is located in the southern part of Warsaw, within 500 meters of Okecie International Airport. Okecie, Poland's principal international airport, serves approximately 3 million passengers per year, and is equipped with modern cargo facilities. The distance from the site to the airport is about 2 km by road and takes several minutes to drive by automobile. There are provisions in the district's development plan for the construction of a tunnel beneath the existing railroad. This would open up a direct link, less than 1 km long, between the site of the proposed project and airport buildings.

The site lies within 1.5 km from intersections of transportation routes leading to the south of the country. This enables rapid access to international automobile routes to the west and east of Europe (the main routes lie between Warsaw and Katowice to Vienna, and Warsaw and Krakow to Southern European Countries).

The anticipated route of the A-2 limited access highway linking Berlin and Moscow will run approximately 1 km south of the site. This new highway will reorganize the transportation system of the region by substantially relieving the main traffic arteries, and will likewise increase the accessibility of the site to international auto routes. (Map 2-1)

## **2.2. The site's relationship to the region of southern Warsaw (the Sluzewiec region)**

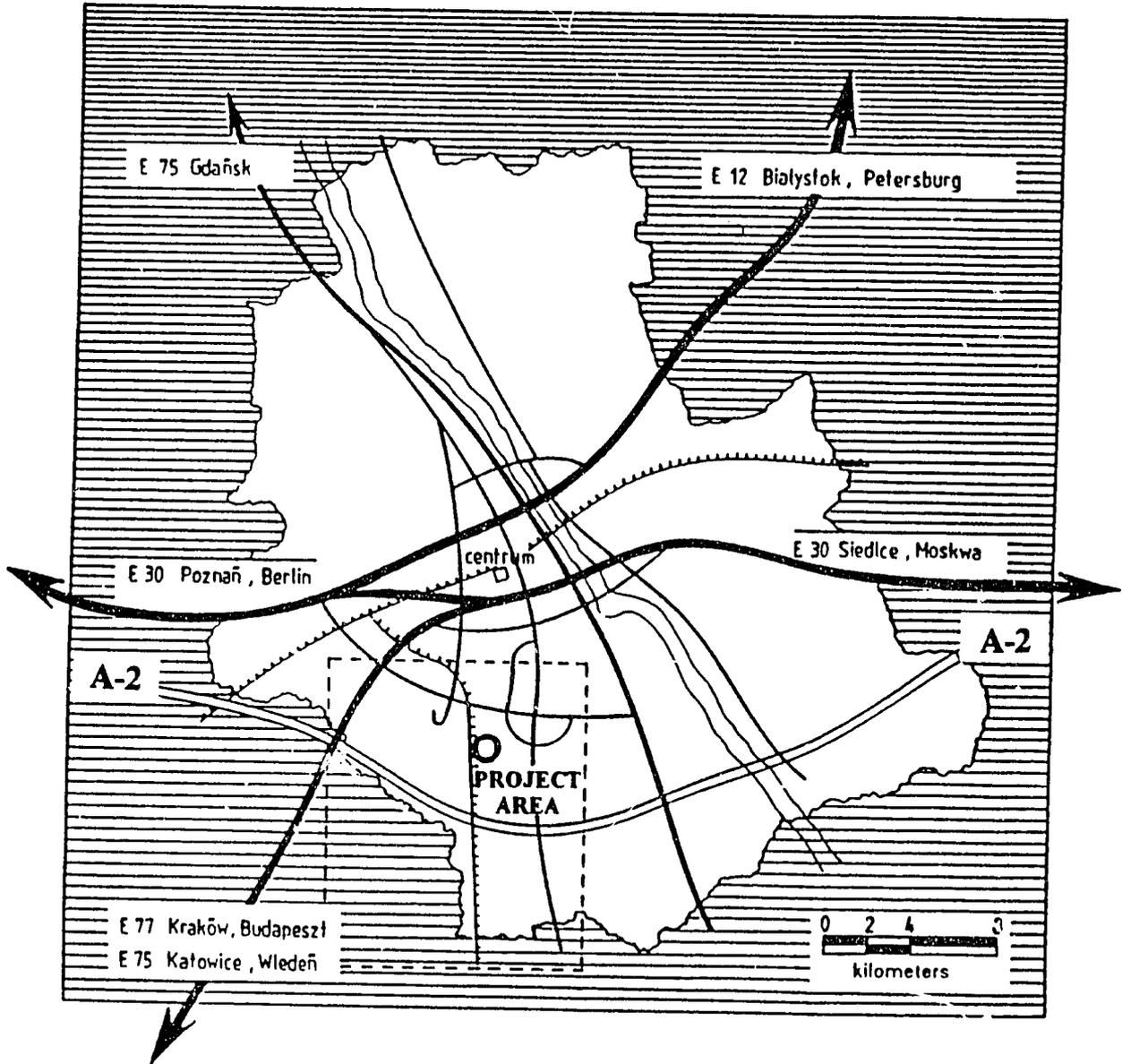
The southern region of Warsaw, with a population of 1.5 million, possesses several important characteristics which render it ripe for economic development. It consists of functionally diverse areas, such as the aforementioned Okęcie Airport, the surrounding industrial district and two large residential districts of the capital city, Ursynow-Natolin (which has a population of 120,000). These residential districts, Wilanow and Sadyba, feature high-quality detached single-family homes.

The proposed site is situated within an industrial district built in the 1960s and designated, at the time, for the development of environmentally benign industries. Recently, the reduction of industrial activity has resulted in the need to restructure this region and introduce new functions which would enhance the economic vitality of the area. Sluzewiec's most important regional attributes are as follows:

- ***Proximity to the international airport to other important transportation links.*** As mentioned above, the planned route of the A-2 Berlin-Moscow limited access highway (Map 2-1) will link the region with Western European countries and Russia. The transportation system existent in this region (Map 2-2) allows for easy access to the city center by way of four main arteries. The time required to cover this distance averages about 15-20 minutes. Furthermore, the completion (scheduled

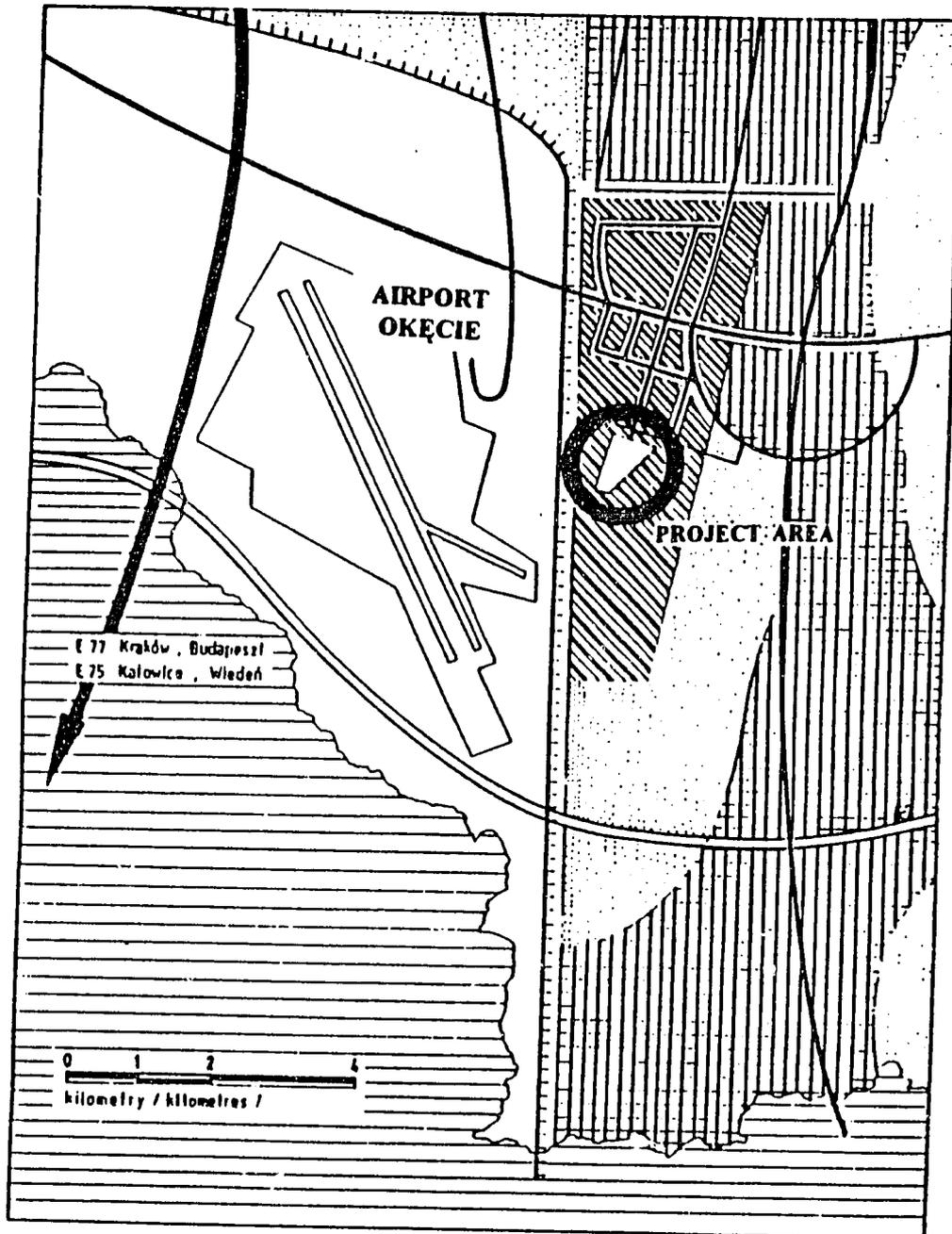
# Map 2-1

## Project Location in Warsaw



### Map 2-2

### Location of the project in the southern part of Warsaw



-  - Industrial sites ( Służewiec Przemysłowy )
-  - Planned free-way: A2-Berlin-Moscow

for the end of 1994) of the construction of the first segment of the metro within 2 km of the proposed site will provide additional possibilities for quick access to central districts and contribute to raising the economic attractiveness of this region. The location of the site next to the main transportation junctions of the capital allows for a supply system which reaches the entire Warsaw region, with its 2.5 million residents. Likewise, the rapid connections with southern Poland make it possible to contact two-thirds of the country's population.

- ***Growing residential population in neighboring areas.*** The site is located on the periphery of the largest residential complex in the capital which supports a significant number of specialized retail stores with diverse profiles, serving districts representing high household incomes. Construction of more high-quality residential housing is anticipated. The growing residential market and corresponding retail market stems in part from the advantageous climate of this area of the city; low levels of local air pollution result from prevailing westerly winds which bring air masses from agricultural and forested terrain. Moreover, Mokotow, the southern district of the city, is surrounded by the Kabacki Forest which serves as a recreation amenity for the region's residents.
- ***Rapid economic expansion.*** The southern region of Warsaw and the adjacent townships outside the administrative borders of the capital are growing dynamically. This swift economic expansion is expressed by the number of newly established firms, which is significantly higher than the national average. This is accompanied by the extensive expansion of trade centers in and around the Mokotow district. This expansion has created a demand for high-quality warehouses, geared toward serving retail enterprises in the southern capital region.

- ***Planning climate that encourages development.*** An important element influencing the success of new development projects is their consistency with Master plans. In the case of the site under consideration, the proposed warehouse function is in complete accord with the Master Plan of Warsaw, which provides for the expansion of "technical service" of an unburdensome character for the city. As the attached Table 2-1 and Map 2-3 reveal, a warehouse facility would not conflict with the Basic Development Policy for the area. Further, because the site is located in a "peripheral district", it may be granted expediency in obtaining building permits and may be levied lower taxes. This status, however, has not been granted at this time.

### **2.3. Neighboring parcels**

As shown in Map 2-2, the area surrounding the site consists primarily of industrial buildings, as well as a large quantity of unused railroad. Most buildings were erected in the 1960's and are unrenovated, with technical conditions ranging from average to dilapidated. The state of repair of these buildings is illustrated in Photographs 2-1 and 2-2.

As Map 2-4 illustrates, only four buildings in the neighboring area have been modernized. One such building, located on plot no. 108 (on the eastern side), is a newly-reconstructed modern building for exhibitions and trade fairs. Table 2-2 and Figure 2-1 show that plots immediately adjacent to the project site are only about 16 percent built-up; the plots within the analyzed area that are not immediately adjacent are approximately 30 percent built-up. Within a radius of 200 meters from the proposed area, there are 3-, 5-, and 7-story buildings, which were formerly used for industrial production.

**Table 2-1 and Map 2-3**

**Fragment of the actual master plan of Warsaw**

<b>PLANNING POINTS for Area</b>		<b>TP-45</b>
<p><b>1. EXTENT OF THE AREA</b></p> <p>Covers Służewiec Przemysłowy (PDPS), delimited by the Woronicza, Modzelewskiego, Domaniewska, Komarowa, Obrzeźna, Kłobucka Taborowa streets and the Radom railroad line.</p>	<p><b>WARSAW DISTRICT</b> MOKOTÓW</p> 	
<p><b>2. FUNCTIONS OF THE AREA.</b></p>	<p>TECHNICAL-PRODUCTION.</p>	
<p><b>3. BASIC DEVELOPMENT POLICY FOR THE AREA.</b></p> <p>a) in the area, preference is accorded the preservation and locating of:</p> <ul style="list-style-type: none"><li>- technical functions of the II and III degree of service</li><li>- production functions</li></ul> <p>b) in the area, the preservation and locating of the other functions that don't conflict with the preferred functions is permitted, provided their establishment doesn't limit the functioning of the preferred sites.</p> <p>c) in the area, not permitted are:</p> <ul style="list-style-type: none"><li>- the locating of residential building and protected services (education, health) not connected with the basic functions</li><li>- locating of buildings whose onerousness and harmfulness to the environment would carry over the borders of the area.</li></ul>		

Source : Master Plan of Warsaw - description

Map 2-3

Fragment of the Actual Master Plan of Warsaw

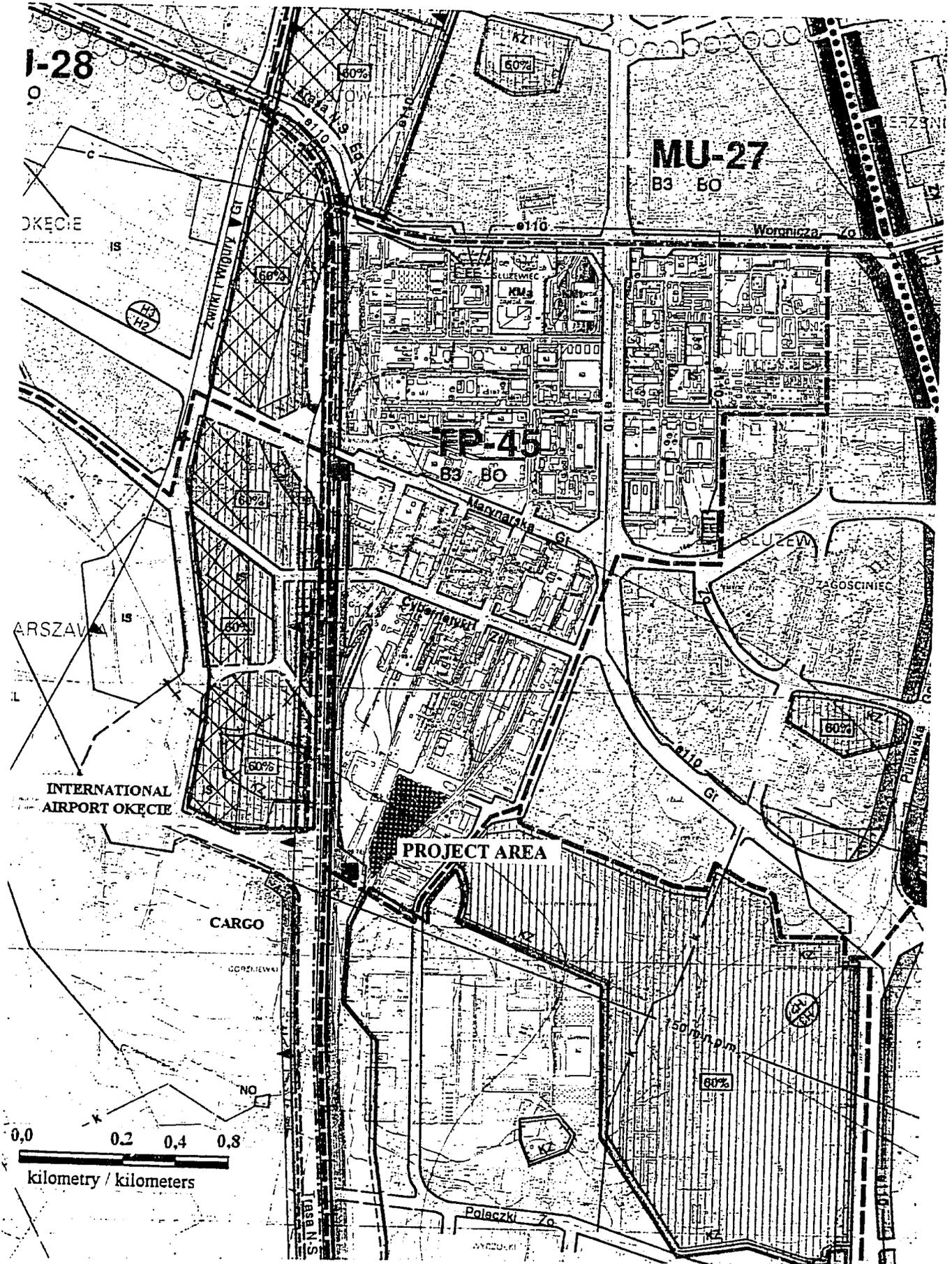
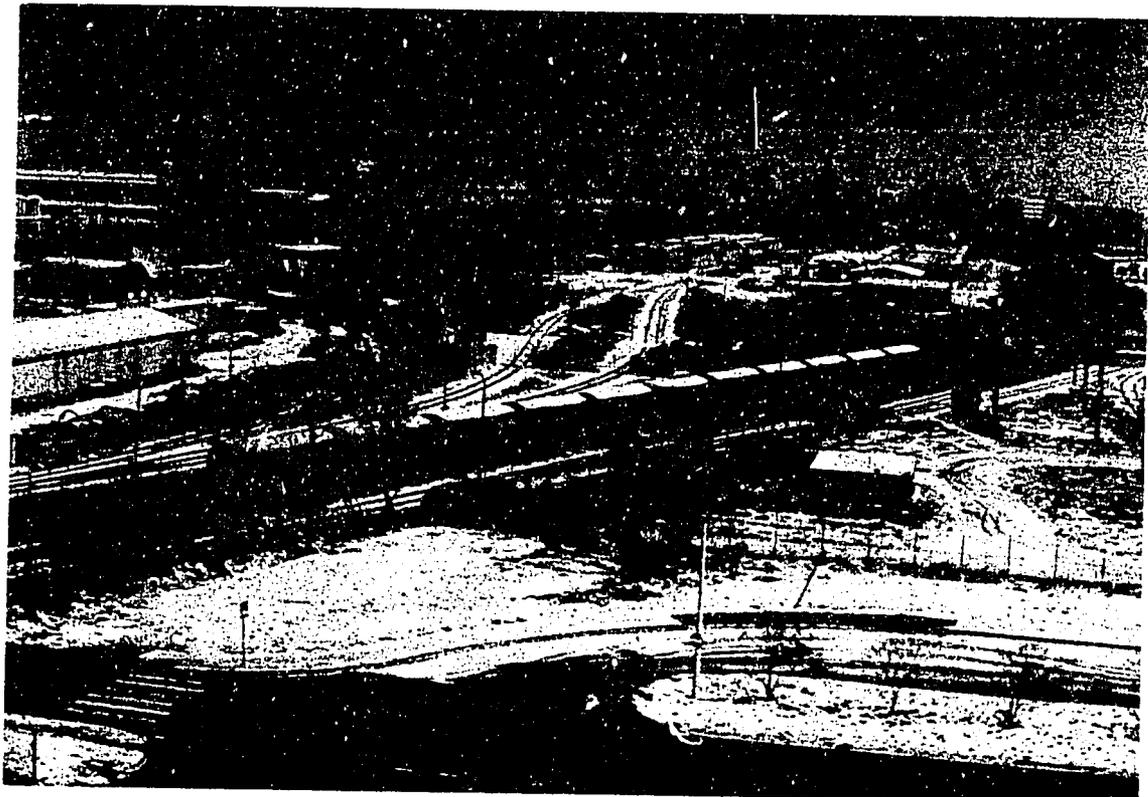
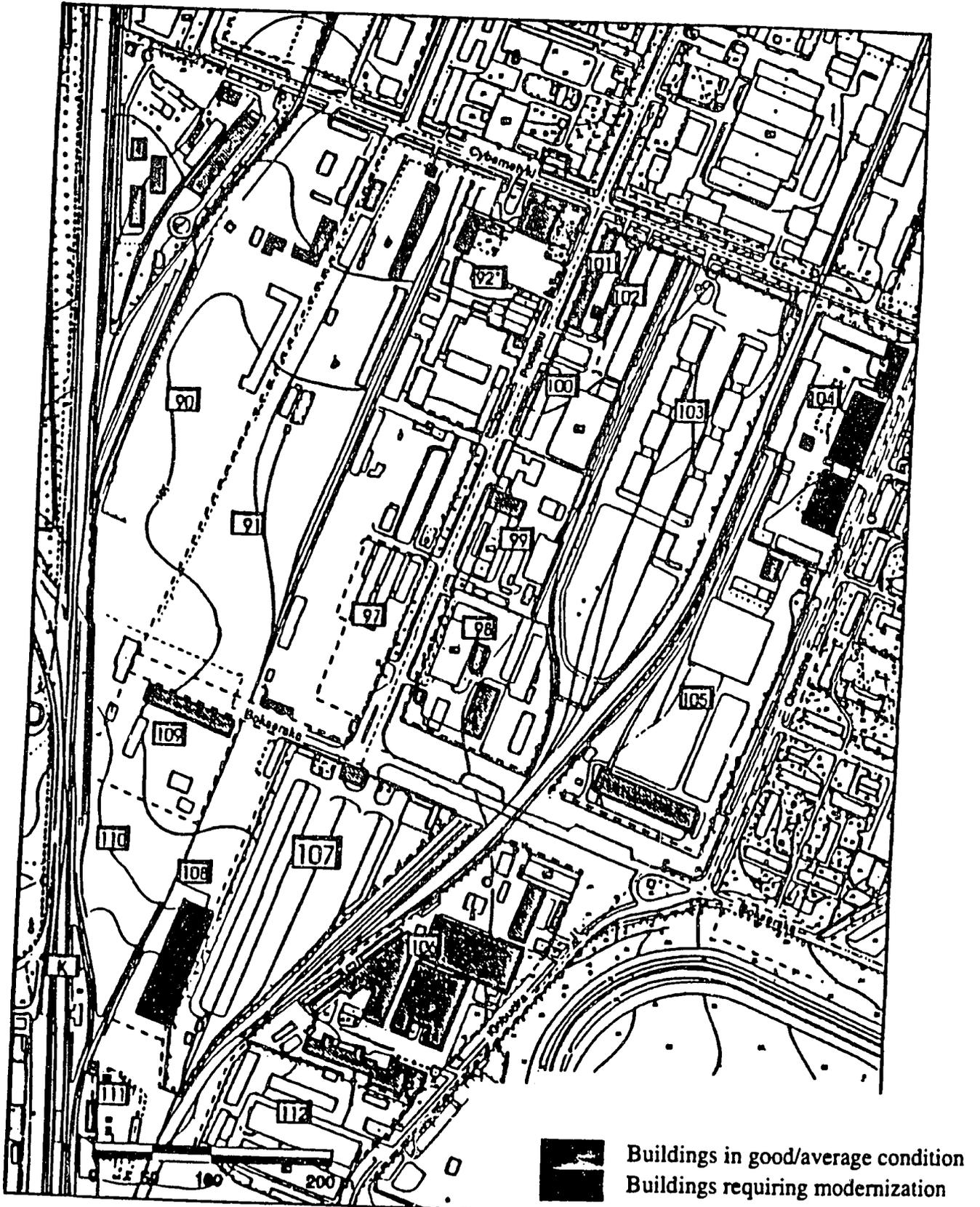


Photo 2-1 and 2-2  
Surrounding Parcels



Map 2-4

An assessment of the technical merit of existing buildings



**Table 2-2**

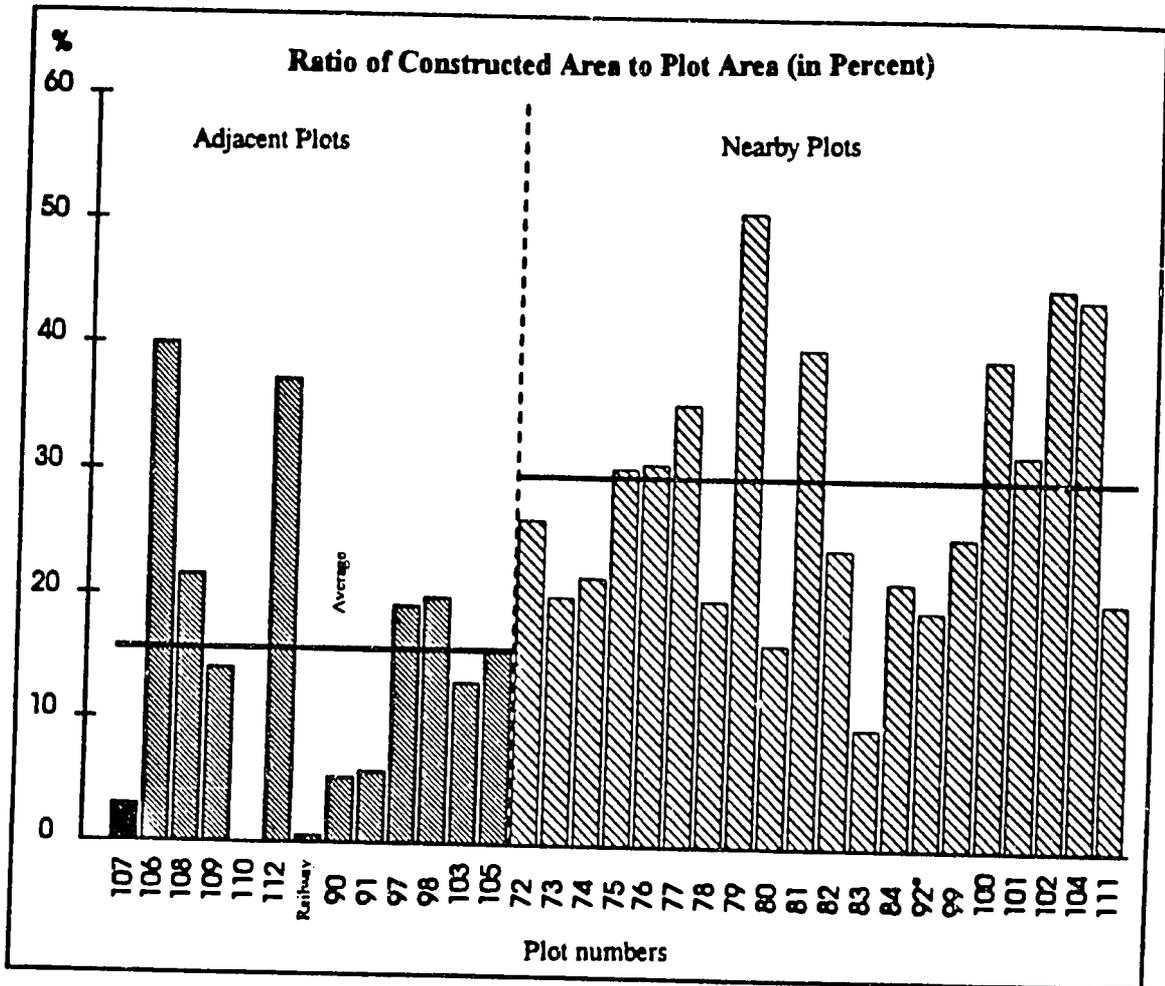
**Survey of plots in the vicinity of the site**

No.	Plot Number	Plot Area (m <sup>2</sup> )	Constructed Area (m <sup>2</sup> )	Ratio of Constructed Area to Plot Area (%)
1	107	45444	625	1.37
2	106	44240	18450	41.00
3	108	19760	4610	23.00
4	109	19550	2880	15.00
5	110	15000	0	0.00
6	112	24800	9450	38.00
7	R*	35500	650	1.80
8	90	76700	4800	6.20
9	91	100400	6800	6.70
10	97	11200	3840	20.00
11	98	21900	4740	21.00
12	103	57200	8000	14.00
13	105	32400	5470	16.00
Total		504094	70315	
Average		38776	5409	15.69
14	72	6720	1870	27.00
15	73	14400	2940	20.00
16	74	20480	4700	23.00
17	75	71540	22600	31.00
18	76	18940	6080	32.00
19	77	23600	8500	36.00
20	78	34800	7100	20.00
21	79	560	320	57.00
22	80	11440	2050	17.00
23	81	17000	7120	41.00
24	82	5000	1250	25.00
25	83	15000	1740	11.00
26	84	39000	9410	23.00
27	92*	32560	5540	20.00
28	99	17920	4670	26.00
29	100	13520	5410	40.00
30	101	4940	2240	33.00
31	102	8590	2880	45.00
32	104	18000	7950	44.00
33	111	4500	896	20.00
Total		374010	104370	
Average		18701	5219	29.55

92\* - Total sum of cluster of 5 small neighbouring plots (0.9-1.1 ha).

R\* - Railway areas

**Figure 2-1**  
**Barchart of plots by coverage**



Source: Economic Analysis Unit

From a land use perspective, the area surrounding the site appears to be inefficiently utilized; the level of build-out is very low and existing facilities are underutilized, as they serve primarily as warehouses and storage facilities. Further, parcels are irregularly shaped and have not maximized road access.

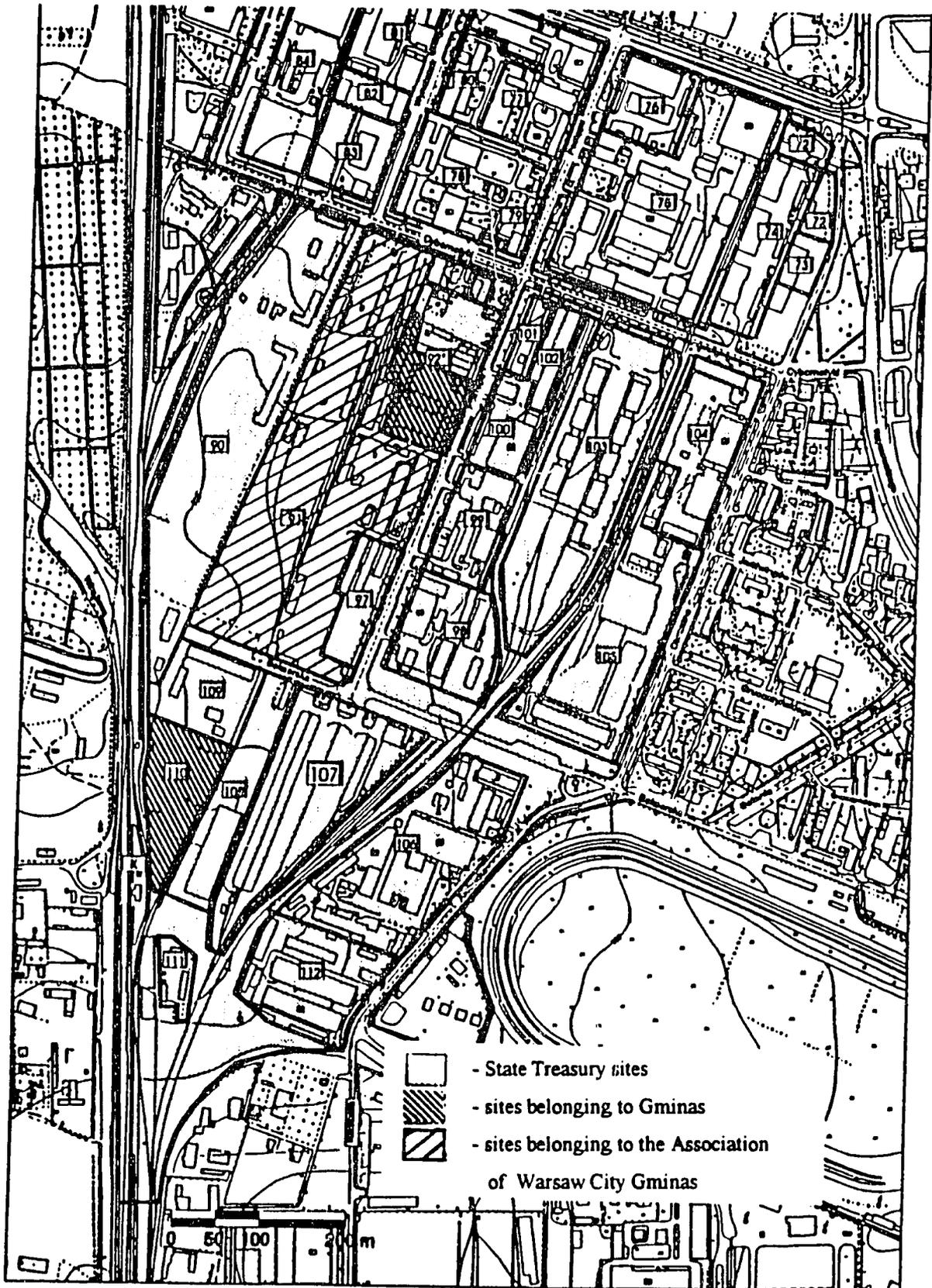
As illustrated in Map 2-5, the State Treasury owns the majority of the plots surrounding the site. Only Plots 90 and 91 belong to the Association of Warsaw City Gminas (districts). As of April 1994, resulting from the introduction of a new administrative division of Warsaw, these Plots are the property of two different districts. Plot 110 is situated within the Ursynow district, and Plot 92 is the property of the central district. As a result of the new administrative division of the city, the project site lies within Ursynow district. The district boundary runs along Bokszerska street, which abuts the project site.

As described at the regional level above, the analyzed area possesses a convenient transportation system, both in terms of auto roads and railroads. The site lies in close proximity to the main arteries of the Sluzewiec region, which leads to routes out of the city, to the center, and to Okecie airport. These roads are characterized by high capacity, accommodating 800 to 2,200 vehicles per hour; currently, up to 60 percent of this capacity is used. Junctions of local streets with through routes (Rzymowskiego or Marynarska streets) are quite safe due to traffic lights allowing vehicles to turn in either direction. Local streets, including the one leading directly to the proposed site, have a hardened asphalt surface and are sufficiently wide to accommodate transport vehicles up to 15-20 meters long.

In addition to excellent road access, the site's surrounding area possesses a full technical infrastructure, including water mains, main heat lines, sewers, powerlines, natural gas network for industrial usage with well-developed local systems. Reserve capacity exists in all systems. Map 2-6 illustrates the site's access to infrastructure.

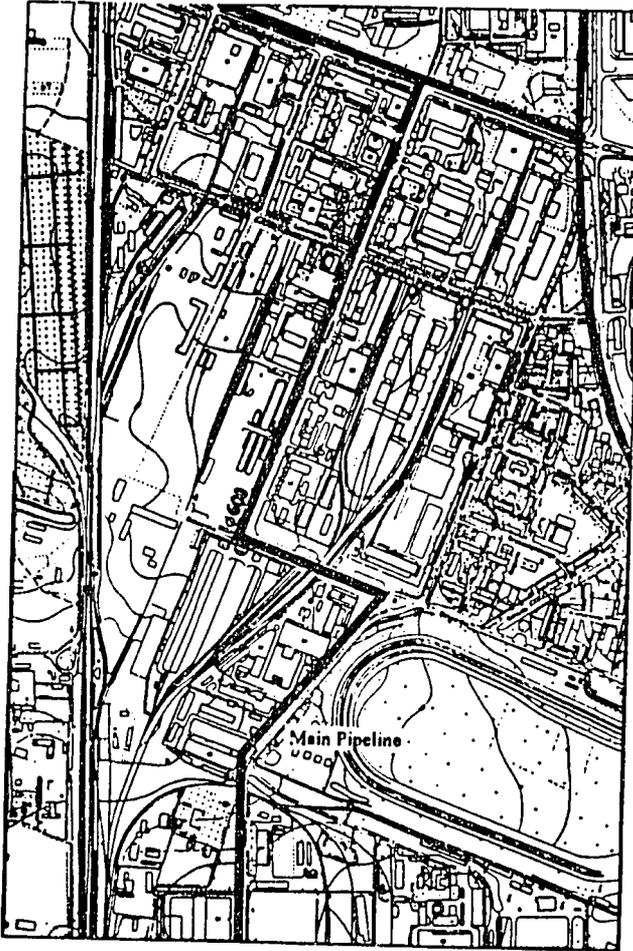
# Map 2-5

## Plot borders and ownership of neighboring sites

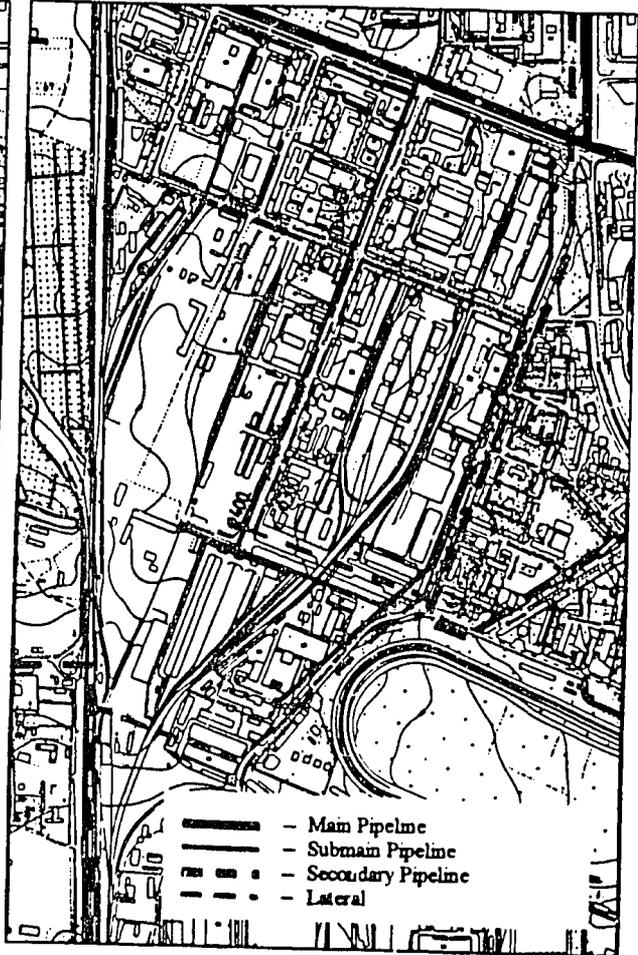


Access to infrastructure

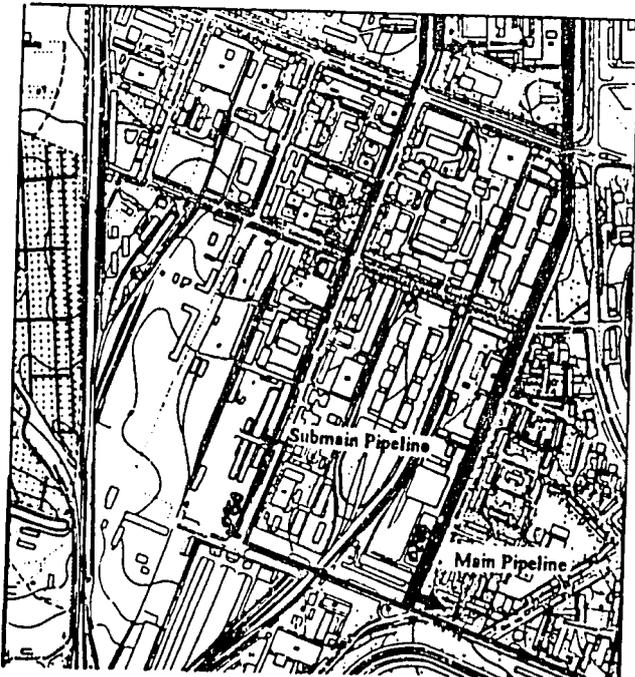
Water Supply



Sewer Network



Gas Supply



Electric Network and District Heat



#### **2.4. Parcels immediately adjacent to site**

The parcel on the east side of the site is a two-hectare plot for which New International Warsaw Fair has perpetual use rights (equivalent to a period of 99 years). On the west side of the site is a 4.6-hectare plot for which the Radio Ceramic Plant, an enterprise currently undergoing bankruptcy proceedings, has perpetual user rights. Its liquidation, on behalf of the state, has put individual elements of the factory's assets up for sale. Should the plant be liquidated, it could free up the plot for future investment. This plot is the most densely built-up (about 41 percent of the surface of Plot 106). The buildings have an industrial character, but due to the fact that they are multi-story and in bad condition, are not highly suitable for adaptation to modern technological processes.

On the other side of Bokszerska street, which runs along the southern side of the site runs, lie plots that are urbanized and built up to a low degree (about 7 percent of the surface). These sites, for the most part, belong to the State Treasury.

To the south and east of the project site's boundaries are parcels with no buildings, as they are occupied by railroad infrastructure (property of the State Treasury) which is essentially inactive at present. Thus, this land can be treated as potentially suitable for investment.

#### **2.5. Characteristics of the site**

The proposed site (Plot 107) has an area of about 45,446 sq. m., and has an irregular triangle shape: with its base (the shortest side to the south) running along a local street. This street functions as an access road, and due to its hardened surface, is suited for heavy trucks. The longest side of the triangle (to the east) borders a railroad line spur. This spur, as a result of changes in economic character and transportation

needs of the area, is not longer needed and can be removed. The proposed plot is fenced in and entirely surrounded by a row of mature poplar trees which stand 15 to 20 meters high and act as visual boundary for the site.

#### ***CURRENT USE***

The current user of the site is the Trade Enterprise for Fuel and Building Materials (TEFBM). A one story plus mezzanine brick building (with an area of 625 sq. m.), is located on the parcel and is currently used as an administrative and office base for TEFBM. The building, erected in the 1950s, has particular architectural qualities and stands out among the neighboring industrial buildings. It is in good technical and usage condition and would be suitable for preservation and adaptation (Photo 2-3). The building is situated very near to the street, on the main axis of the access road to the plot. It possesses adequate technical infrastructure facilities.

The remainder of the site has been used for decades as an outdoor storage facility for coal, domestic coke and small amounts of building materials (Photo 2-4). Currently, the coal and coke dumps cover most of the plot. Metal sheet roofing of negligible technical value has been installed adjacent to the administrative building, serving as temporary shelter for stored materials.

#### ***TOPOGRAPHICAL***

The plot is situated on flat terrain, of which the difference in elevation across the entire surface does not exceed several dozen centimeters; thus, there are no topographical limitations. The structure of the ground (typical for this part of the Mazowiecki plain, shaped during the ice age) permits the construction of a multi-story

Photos 2-3 and 2-4

Trade Enterprise for Fuel and Building Materials property



building without the necessity of using additional reinforcements in the foundation and elsewhere in the building.

#### ***ENVIRONMENTAL***

The site possesses some potential environmental problems. Part of the ground is contaminated with a 15 to 20 centimeter layer of coal dust mixed with sand - the remains of the coal dump - which should be removed or neutralized. It would be advisable to undertake a detailed environmental analysis at a later date.

#### ***INFRASTRUCTURE***

Map 2-6 shows all the major infrastructure available to the site. A water main, 600 mm in diameter, is connected close to the site. It is linked to a local networks serving the built-up areas, with a diameter of 150 mm. A sewer system has been built along the streets which surround the proposed site, and includes rain-water collectors to insure proper drainage of the area.

The heating system, built into the central system serving the entire district, provides a sufficient supply of heat for a industrial/warehouse/office use. The low-pressure gas system which runs along the adjacent street may also be utilized. A ground electric line runs along the same street. The local telecommunication network has limited capacity and additional lines would be needed to support a multi-number switchboard.

#### ***LEGAL OWNERSHIP***

All information attained concerning the legal situation of parcel no. 107 supports the assertion that acquiring this land for investment purposes should not create significant problems, despite the unclear ownership situation. On the authority of a decree dated 1945, the land is the property of the State Treasury. TEFBM, which uses part of the site, as of yet does not possess any legal title (even though it has been

present on the site for several dozen years and has financed the existing infrastructure and structures from its own resources). The Warsaw - Mokotow District Office on November 5, 1989 gave TEFBM the right to use an area of 3700 sq. m. for a fuel storage yard for a specified period of time (until December 31, 1991). In this decision the price of the land given under management (for use) was established in order to determine tax dues. This decision does not refer to any land management plan, so it is difficult to establish which portion of the parcel it refers to; however according to custom, the section which has buildings on it and is currently being used has been accepted.

The Trade Enterprises for Fuel and Building Materials is subordinate to the Provincial Administrator (the Warsaw Provincial Administrator is the founding body of the enterprise, and in the understanding of the law is its owner in the name of the State Treasury) and on the authority of law "about the change of law concerning the management of land and expropriation of real estate" dated November 29, 1990 may be granted a decision from the Province Office concerning permanent use of the terrain with an area of 3700 sq. m. (the part of land which was encompassed by the District Office's declaration dated November 5, 1989). However it has not filed such a motion yet and on authority of law it has already become such a permanent user and owner of buildings present there.

The remaining terrain of the parcel with an area of 41744 sq. m., which the TEFBM may file a claim for permanent use for, although not having any legal powers, is the property of the State Treasury. The fact that the right of permanent use has been granted (in the understanding of Polish law this means using the land for 99 years) is confirmed by the Provincial Administrator's decision.

Information attained in the District Office Inventory Commission from the Land Records kept by this Office determined that the proposed terrain will not be

communalized (it will remain in the hands of the State Treasury and will not be passed on as the property of the district, where it is located).

In the light of the present and planned regulations, the claims of the ex-owners of these lands should be recognized as impossible to realize, because compensatory damages law does not foresee compensation in this situation (the ex-owner and his successors are not farmers; they are also not striving for a building parcel), while the planned regulations of re privatization law do not anticipate returning "in kind". In this case, the ex-owners and their legal successors may solely bid for the sale of this real estate and purchase it for the price determined by a certified examiner, which seems unrealistic.

It appears that the site is, in legal terms, easier to acquire than the plots adjacent to the one proposed for the realization of the project. The above information regarding the legal situation of plot no. 107 leads to the hypothesis that acquiring this site for investment purposes should not afford problems connected with the unexplained or tangled ownership situation of the plot.

## **2.6. Summary**

This section has described in detail the attributes of the site adjacent to 31 Bokserska street, with an area of 45,444 sq. m., situated within Mokotow district, in the Sluzewiec region. Taking into account its proximity to the airport, its location in an economically growing region, its high level of road and infrastructure development and its great potential for more intensive development, this site presents an attractive development potential. This site is poised as a catalyst for the economic development of the entire region.

## **CHAPTER 3**

### **MARKET DEMAND FOR WAREHOUSES FACILITIES**

#### **Introduction**

This chapter analyzes the current status and future trends of the wholesale sector and assesses the correlated demand for warehouse facilities. This analysis will be framed by a discussion of the changing nature of the Polish economy as it transitions to a market economy. Forecasts prepared by the EAU indicate that Warsaw's economy will grow by about 4.5 percent per year over the next five years. In particular, wholesale activity is expected to expand significantly between 1992 and 1997. This report suggests that the demand for warehousing facilities will similarly rise over this period. It will outline the characteristics of the newly created demand for such facilities.

#### **Methodology**

In this section, the estimates of current and future demand for warehousing and distribution centers are based on calculations of data supplied by the Warsaw Voivodship Office of Statistics (WVUS) and from medium-term economic forecasts prepared by EAU. These forecasts estimate employment for total trade (both retail and wholesale activities). Based on surveys of existing wholesale activities and trends in wholesale employment found in North American cities, the likely future share of total trade employment devoted to wholesale activities was calculated. These employment

estimates were used to project the future demand for warehousing and distribution centers.

To develop a clearer understanding of Warsaw's wholesaling and distribution market, an extensive survey of warehousing projects was conducted. Interviews were held with over 80 warehousing tenants and property managers. The surveys were used to estimate the demand for warehousing space per employee (140 sq. m. on average) so that aggregate space estimates could be made. Estimates of future overall demand were made by multiplying employment forecasts of wholesale services with estimated area per employee.

The spatial distribution of warehouses' surface was difficult to determine precisely, due to the limited scope of information of employment in warehouses by city districts and townships (Gminas). Because most warehouses are located in currently unused production buildings, estimates were based on the spatial distribution of industrial buildings in Warsaw and the metropolitan area. Finally, interviewees were asked to characterize their ideal warehouse facility, with regards to size of building, amenities, location and rent.

### **3.1. Polish and Warsaw economy: Impact of economic reform on wholesale services**

- *The Polish economy is growing.*

Initially, shock therapy pushed Poland's GNP down by 12 percent between 1989 and 1990. However, signs of recovery emerged in 1992, and by late 1993 the economy had turned a corner and started to grow. Despite the initial declines in GNP, imports started to expand rapidly in 1990 and by 1992, stood 34.6 percent higher (in constant prices) than in 1988 (see Table 3-1). Exports have also increased, rising 17.7

**Table 3-1****National level changes in macroeconomic indices in fixed prices****(the Previous Year=100.0)**

Specification	1989	1990	1991	1992	1988=100.0	1988=1992
GNP	100.2	88.4	92.4	101.5		83.1
Consumption	98.7	88.3	103.3	105.0	94.5	
Accumulation	103.1	75.2	85.8	97.5	64.8	
Imports of Goods & Services	104.3	89.8	131.6	109.2	134.6	
Exports of Goods & Services	102.6	115.1	98.3	101.4	117.7	
GNP per Capita	99.9	88.1	92.1	101.2	82.0	

Source: Economic Analysis Unit

percent in real terms since 1988. While real GNP and real GNP per capita are still lower than 1988 levels, signs point to a rapid improvement in the Polish economy.

- *A large component of growth is in the trade sector.*

Table 3-2 illustrates trends in GDP by economic sector. It reveals that trade is growing very quickly, rising 13.5 percent in real terms between 1988 and 1992. The growth of trade establishments has been remarkable, increasing from 518 in 1988 to 37,276 in 1992, a 700 percent increase. Other sectors, such as industry, have not yet recovered and stand below 1988 levels. The differential rates of growth in sectors of the national economy indicate that the structure of Poland's and Warsaw's economy will change. Retail and wholesale trade, finance and insurance and other services will grow, and industrial, agricultural, forestry and other branches will decline. Rising international trade and consumption (up 5 percent in real terms since 1988) are the driving forces behind the demand for wholesale and retail trade activities.

Table 3-3 illustrates trends in employment by sector for Poland; this table highlights how the implications of structural changes in the economy are reflected in employment levels. Total employment declined from 17,128,800 in 1988 to 14,924,200 in 1992 a 13 percent decrease and a decline of over 2 million jobs. However, trade employment increased from 1,477,400 to 1,605,300 over the same time period, an increase of nearly 11 percent. Industrial employment, on the other hand has declined by over 20 percent, falling from 4,894,200 in 1988 to 3,882,100 in 1992.

Trends at the national level are mirrored at the Warsaw Metropolitan level (see Table 3-3). Employment in the metropolitan area declined from 961,200 to 935,800 between 1988 and 1992, a 3 percent decline. Most of the region's decline was due to the collapse of the industrial sector, in which employment fell from 298,700 to 252,300, a 16 percent decline. Offsetting the region's industrial decreases were

**Table 3-2**  
**Trends in GDP in constant prices**  
**(Previous Year = 100 %)**

	1989	1990	1991	1992	1992\1988 Percent
Industry	97.9	78.0	82.9	102.6	65.0
Construction	99.7	85.5	106.7	103.8	94.4
Agriculture	101.0	99.7	106.8	87.7	94.3
Forestry	94.8	78.1	68.2	118.5	60.1
Transport	101.1	85.2	80.1	100.9	69.6
Communication	105.3	98.1	78.6	114.9	93.0
Trade	104.7	100.7	107.9	99.8	113.5
Other Branches of Material Production	111.6	88.4	103.3	102.5	104.5
Communal Services	100.8	89.6	124.9	83.8	94.5
Housing	87.7	94.3	95.2	148.8	117.2
Education	100.5	109.4	100.4	103.3	114.0
Health Care	97.6	102.6	96.2	103.4	99.6
Remaining Branches of National Economy	110.2	97.0	79.0	79.8	68.2
Total	100.2	88.4	92.4	101.5	83.1

Source: Economic Analysis Unit

Table 3-3

**Employment in national economy by sector in Poland and Metropolitan  
Warsaw**  
(in thousands)

	88		90		91		92		Percent Change 1992\1988	
	Warsaw Metro- politan Area	Poland	Warsaw Metro- politan Area	Poland	Warsaw Metro- politan Area	Poland	Warsaw Metro- politan Area	Poland	Warsaw Metro- politan Area	Poland
Industry	298.7	4,894.2	322.7	4,619.9	282.5	4,249.9	252.3	3,882.1	76.9	79.3
Construction	104.9	1,349.9	102.4	1,242.7	103.0	1,116.7	96.0	1,066.2	82.7	79.0
Agriculture	12.6	4,731.3	15.7	4,424.9	12.7	4,264.8	12.3	4,037.1	85.7	85.3
Forestry	1.5	154.1	1.0	134.0	0.8	118.0	0.7	98.9	41.2	64.3
Transport	44.2	864.3	44.1	761.5	39.6	675.6	38.2	602.1	77.6	69.6
Communication	14.6	169.3	14.5	170.6	14.4	167.3	17.6	171.0	108.6	101.2
Trade	105.9	1,477.4	129.9	1,388.5	159.3	1,560.8	168.9	1,605.3	143.2	108.7
Communal Services	31.3	437.2	44.2	427.4	26.0	380.8	17.8	379.0	120.0	86.7
Housing	28.6	223.7	23.3	199.3	21.5	169.5	19.4	176.1	61.2	78.6
Science & Technics	53.4	111.4	41.5	96.2	37.2	81.7	28.0	71.3	47.6	64.0
Education	77.7	927.3	79.0	1,100.6	72.9	1,084.5	73.6	1,045.4	86.5	112.7
Culture & Art	21.7	91.4	19.6	119.4	16.6	91.2	12.4	84.5	50.0	92.3
Health Care	60.4	788.3	64.0	901.3	60.9	863.5	60.9	828.1	91.0	105.1
Sports & Recreation	14.0	110.9	11.8	112.7	11.1	75.7	23.5	64.0	68.0	58.6
Administration	25.4	267.4	23.6	259.7	25.6	273.1	26.1	296.6	113.8	111.2
Finance & Insurance	14.7	165.3	17.9	181.3	22.3	179.1	26.6	198.6	163.2	120.2
<b>Total</b>	<b>961.2</b>	<b>17,128.8</b>	<b>1,028.2</b>	<b>16,511.4</b>	<b>972.7</b>	<b>15,601.4</b>	<b>935.8</b>	<b>14,974.2</b>	<b>87.8</b>	<b>87.4</b>

Source: Economic Analysis Unit

increases in trade and services employment. Trade employment increased by nearly 60 percent, increasing in absolute terms by 63,000. Table 3-4 presents estimates of wholesale trade employment in metropolitan Warsaw. Wholesale employment increased from 5,800 in 1988 to 13,700 in 1992, increase of almost 8,000 jobs.

- *Growth is occurring primarily in the private sector.*

Another important aspect of Poland's structural change is the shift from the public to the private sector. As Table 3-5 shows, in 1989 nearly 53 percent of Poland workforce was employed in the public sector. By 1992, the private sector had literally taken over, accounting for over 57 percent of total employment.

Warsaw's employment also became increasingly private sector dominated. In 1988, only 15 percent of the region's workforce was in private sector. By 1992, the private sector's share of the region's employment had grown three-fold, increasing to 45 percent of total employment. In the trade sector nearly 80 percent of employment was in the private sector. This pattern of privatization, especially in the trade sector, indicates that the demand for wholesale firms to act as intermediaries between producers and retailers is growing rapidly.

- *Growth in international trade is resulting in increased demand for warehouse facilities.*

International trade patterns have increased notably over the 1988 to 1992 period. Table 3-6 illustrates patterns of exports and imports for Poland, Metropolitan Warsaw and the City of Warsaw, expressed in constant prices. At the national level, real exports are still below 1988 levels. However, an examination of exports patterns at the Metropolitan Warsaw level, reveal an increase of 106 percent between 1988 and 1992.

**Table 3-4**

**Estimated wholesale trade employment in Metropolitan Warsaw (1988-1992)**

Year	Employment	Percent Increase	Percent of Total Trade	Percent of Total Employment
1992	13,700	21.20	10.00	1.50
1991	11,300	22.80	8.50	1.20
1990	9,200	29.30*	7.50	1.20
1988	5,800		5.00	0.70

\* Annual rate

Source: Economic Analysis Unit

**Table 3-5**

**Working persons by form of ownership in Poland**

	1989	1990	1991	1992
Percent of Public	52.8	50.0	44.5	42.6
Percent of Private	47.2	50.0	55.5	57.4
Public	9,277,800	8,243,400	7,052,100	6,606,434
Private	8,280,200	8,230,600	8,809,100	8,888,053
<b>Total</b>	<b>17,558,000</b>	<b>16,474,000</b>	<b>15,861,200</b>	<b>15,494,487</b>

Source: GUS Statistical Yearbooks, 1988-1993

**Table 3-6****Value of exports and imports in constant prices (1988-1992)****Exports  
In billions zlotys**

	1988	1990	1991	1992	Percent Increase 1988-1992
Poland	6,011.0	6,345.8	5,876.1	5,815.1	-3.3
Warsaw Metropolitan Area	900.6	767.7	2,493.2	1,856.4	106.1
Warsaw	792.7	691.7	2,450.3	1,787.7	125.5

**Imports  
In billions zlotys**

	1988	1990	1991	1992	Percent Increase 1988-1992
Poland	5,272.3	3,895.5	6,960.1	7,307.3	38.6
Warsaw Metropolitan Area	1,475.9	895.0	3,458.0	3,436.6	132.8
Warsaw	1,409.4	843.2	3,324.5	3,248.6	130.5

Source: Economic Analysis Unit

Imports have risen more rapidly over the 1988-1992 period. Between 1988 and 1992, Poland's imports of goods and services increased by 38.6 percent. The level of import activity to Metropolitan Warsaw increased by 132.8 percent, about 3.4 times greater than for Poland as a whole. Metropolitan Warsaw's share of national level imports has increased from 28 percent in 1988 to 47 percent.

As the Polish economy becomes more open and as international trade increases, the demand for efficient warehousing and distribution centers will increase. In particular, this demand will increase in Warsaw as it becomes the leading center for exports and import processing, accounting for 32 percent of all exports and 47 percent of imports.

### **3.2. Impacts of economic change on the warehousing sector**

- *Privatization has changed the way of doing business.*

Until 1989, warehousing operations were centrally planned and directed both in terms of the territory served and the type of goods handled. The central wholesale trade institutions were state monopolies and administered the nation-wide network of warehouses. Both the territory served and the types of goods handled were, to a large degree, determined in an administrative manner, oftentimes without consideration to economic principles. The relatively low demand for warehouses was due to the fact that historically, storage space had been situated both within the production facilities themselves and directly in retail outlets. This phenomenon was a result of the lack of market prices in the rental market for retail space, and the lack of economic incentives for intensive utilization of land and factory buildings.

The introduction of systemic economic reform in Poland in 1989 led to significant changes in the nature of trade and, concurrently, of wholesaling services. The general privatization of trade was accompanied by similar processes in the wholesale trade sector. In 1990, trade was the most profitable sector of Warsaw's economy, as explained above. Growth in the importation of goods from the West after 1990 had a significant impact on the development of warehouses - a market in which there had been little competition. The profitability of trade sectors contributed significantly to the rapid growth of demand for space in newly established warehouses. Transformation processes and the strengthening of the economic position of private domestic warehousing activities has led to an increase in the typical surface area of warehouses, which now averages about 500 sq. m. in Warsaw.

- *Responses to the change in demand have been slow.*

The sudden expansion of demand by private firms has not been not matched by investments in warehouse buildings. A consequence of this imbalance is that retailers have had to store goods in adapted structures in underutilized buildings. For the most part, these are industrial buildings in which production has fully or partially ceased. A small portion of warehouses are housed in agricultural buildings with surface areas of 50 to 150 sq. m..

New warehouses built in 1992-1993 were, for the most part, investments made by foreign firms starting operations on the Polish market. It was not until 1993 that construction began on four to five large, modern warehouses by significant foreign firms for their own needs. One such example is TOYOTA MOTOR CO. LTD., which is building a 13,500 sq. m.; 67,000 cubic meters complex in close proximity to the proposed project site. None of these construction projects had been completed as of April 1994.

### **3.3. Projections of future changes in economy and the warehouse sector**

- *The Polish economy will continue to grow.*

This section presents projections of future economic activity and employment. As Table 3-7 shows, both Poland's and Metropolitan Warsaw's economies are projected to grow by nearly 25 percent between 1992 and 1997.

Based on these estimates of economic activity over the 1992-1997 period, projections were made for 1997 employment for metropolitan Warsaw by sector. The estimates (presented in Table 3-7, 3-8 and 3-9) are based on three scenarios of how demand for employment will be shaped by economic growth. Scenario I assumes that employment growth will follow actual trends during 1988-1992. Scenario II assumes that each sector employment growth will occur at 20 percent of the projected rate of economic growth for the sector. Scenario III projections are based on the assumption that sector employment will grow at 40 percent of the branch's economic growth rate. Total employment for the metropolitan region is forecasted to range from 950,900 to 1,044,800.

- *Poland's warehouse sector should grow comparably with that sector in other developed countries.*

Table 3-4 presented estimates of wholesale trade employment for the 1988 to 1992 period. In 1988, only 5 percent of total trade employment was devoted to wholesale functions. By 1992, 10 percent of total trade employment (13,700) was in wholesale activities.

Comparisons with developed countries, such as those in Western Europe and North America, suggest that wholesale trade sector growth is likely. By 1992, Warsaw had only 1.5 percent of its total employment in wholesale trade. In contrast, in Western Europe and North America wholesale employment ranges from 4 percent to 8 percent

**Table 3-7****Projections of employment for Metropolitan Warsaw (1992-1997)****(in thousands)**

Branch	1992 Employment	1997 Employment Projections		
		Scenario I	Scenario II	Scenario III
Industry	234.5	164.0	234.5	241.5
Construction	94.2	75.2	100	111.9
Forestry & Agriculture	74.1	74.1	69.3	64.5
Transport	39.7	31.5	40.8	45.8
Communication	16.4	19.1	17.9	18.5
Trade	136.7	167.5	141.8	147
Communal Services	41.6	57.2	45	46.6
Housing	19.7	12.7	20.6	21.1
Science & Technics	27.0	15.4	28.2	30.2
Education	78.5	74.3	81.7	86
Culture & Art	17.0	12.7	17.7	17.6
Health Care	64.0	63.1	66.9	70.2
Sports & Recreation	9.7	6.3	10.3	10.1
Administration	34.5	44.4	38.7	39.4
Finance & Insurances	30.4	68.5	34.2	38.1
Others	52.1	64.9	54.7	56.9
<b>Total</b>	<b>970.0</b>	<b>950.9</b>	<b>1002.3</b>	<b>1044.8</b>

Source: Economic Analysis Unit

**Table 3-8**

**Projections of Poland and Metropolitan Warsaw Gross Domestic Product  
(1992-1997)**

**in Billions of Constant Zlotys (1992=100)**

Year	Poland	Warsaw Metropolitan Area
1992	1,142,429	96,535
1993	1,189,268	103,368
1994	1,242,786	111,143
1995	1,298,711	119,479
1996	1,359,750	128,679
1997	1,420,939	138,330

Source: Economic Analysis Unit

**Table 3-9**

**Projected future employment in wholesale trade in 1997**

Scenario	Total Employment (000)	Wholesale Employment
I	950.9	38,000
II	1,002.3	40,100
III	1,044.8	41,800

Source: Economic Analysis Unit

of total employment. (Table 3-10 shows wholesale employment in North American cities.) Over the next five years, wholesale employment can be expected to grow to reach 4 percent of total metropolitan employment.

Based on the assumption that wholesale employment will account for 4 percent of total employment of the metropolitan area by 1997, Table 3-11 presents estimates of future wholesale trade employment. Projections range from a low of 38,000 to a high 41,800 employees in 1997, up from 13,700 in 1992. While this is a very fast rate of growth, it parallels Warsaw's annual growth of real imports and exports. Real imports grew at 24 percent annually between 1988 and 1992, while exports grew at 20 percent. Projections of employment average out to a 23 to 25 percent annual increase. Warsaw's exports and imports are projected to grow more rapidly during the 1992-1997 period than previous period (from 1988 to 1992). Furthermore, since there was very little wholesale employment prior to 1988, current levels of labor productivity are high and employment growth will therefore more closely follow output growth.

- *This sectoral growth will result in increased demand for warehouse facilities.*

On the basis of a field survey of warehouses and wholesaling activities, it is estimated that there is an average of 140 sq. m. of surface area per worker in this sector. This average was multiplied by the employment forecasts in wholesaling services, yielding estimated past and anticipated levels of warehouse space. Table 3-11 presents an estimate of net demand for warehouse space in 1997, which is based on an estimated total amount of warehouse space of 1,900,000 sq. m. in 1992 (13,700 people employed multiplied by 140 sq. m.). Table 3-11 shows that gross demand for warehouse space will grow to between 5.3 and 5.9 million square feet of surface area.

**Table 3-10****Wholesale and retail employment in selected United States cities in 1988**

City	Total Employment (000)	Wholesale Employment	Retail Employment	Wholesale as a Percent of Total	Wholesale as a Percent of (Retail & Wholesale)	Retail as a Percent of Total
Boston	2,055	119,494	340,722	5.8	26.0	16.6
Cleveland	1,380	79,337	210,994	6.0	27.0	15.3
Minneapolis	1,388	81,029	214,335	5.8	27.4	15.5
St Louis	1,262	65,323	191,586	6.2	25.4	15.2

Source: Economic Analysis Unit

**Table 3-11**

**Projected demand for warehousing facilities in 1997**

Scenario	Wholesale Employment	Wholesale Space Requirements* Sq. M	Net New Demand for Warehousing Space**
I	38,000	5,300,000	3,400,000
II	40,100	5,600,000	3,700,000
III	41,800	5,900,000	4,000,000

\* Assumes 140 sq.m. per employee

\*\* Net new demand is 1997 requirements minus 1,900,000

Source: Economic Analysis Unit

This suggests that, over a five-year period, the overall net demand for new warehouses and distribution services in the metropolitan area will reach approximately 3.4 to 4.0 million sq. m.

To date there is little evidence of widespread new construction of warehousing facilities in the region. This is partially due to the fact that the region has at least 10,000,000 sq. m. of industrial space which is no longer used for manufacturing. Assuming that all of the 1,900,000 sq. m. of warehousing space is located in such facilities and another 1,000,000 sq. m. is used for other purposes (offices, clubs, retail shops, sport facilities) there is at least 7,000,000 sq. m. of space available, enough to accommodate the projected net new demand for warehousing facilities for 1997.

### **3.4. New type of warehouses facility demand**

Given the abundant supply of vacant or underutilized industrial space in the Warsaw metropolitan area, it is important to differentiate between this available supply and the newly created demand for facilities. With the growth of domestic wholesale services, there should occur a raising standards of service and increasing level of productivity. Specialized foreign wholesale chains (for example, the first branch of Macro Cash & Carry which opened in Warsaw in March 1994) represent a competing type of service for existing domestic warehouses.

The diversification of types of wholesale facilities will require new, different types of warehouses. Small wholesale firms may seek to lease space in well-located modern warehouse facilities. Medium and large-sized distributors may seek tenancy in large facilities or construct their own facilities.

To determine the nature of the demand for warehousing facilities, interviews were conducted with approximately 30 tenants. They were asked questions about the

Table 3-12

## Wholesale tenants survey results

Principal Product	Location	Gross Space sq. m	Month Rent / sq. m	Main Reasons for Choosing, Present Location
<b>WARSAW VOIVODSHIP</b>				
1/Hygiene	Opacz	210	\$2.5	location
1/Hygiene	Reguły	1,450	\$3	location,space
2/Oil "castrol"	Pruszków	4,700	\$2	location,size of space,price
3/Hygiene	Pruszków	10,000	n/a	location along road to Holland,ecology,high ceilings, access to aeroport or railway.
3/Cars accessories	Marysin	400	\$2	location
2/Clothing	Tarczyn	800	n/a	location,size of space,price ,standard
1/Hygiene	Otarzew	380	\$3.5	location,size of space,price ,standard
2/Alcohol	Otarzew	900	\$3.5+ renov	location,size of space,price ,standard
2/Clothing	Błonie	500	\$2+ renov	location along highway to Germany,parking area
2/Hygiene	Pruszków	4,000	\$3.5	location along read to Helenówek, high ceilings.
1/Foodstuffs governmental	Brwinów	6,000	n/a	previous settlements
4/Clothing	Wolica	1,250	n/a	n/a
1/Hygiene	Urząd	400	n/a	location
<b>WARSAW</b>				
1/Grocery governmental	Ochota	7,000	n/a	previous settlements
1/Foodstuffs	Mokotów	900	\$4.3	price,size of space
1/Cars accessories	Mokotów	2,300	\$4.8	location,size of space,price ,standard
1/Foodstuffs	Mokotów	900	\$3.3+\$1 plot	location ,rail access
5/Clothing	Mokotów	500	n/a	location,bay width
2/Hygiene	Mokotów	400	n/a	location,bay width
1/Mineral water	Mokotów	758	n/a	location,bay width
2/Shoes	Mokotów	300	\$4	price,location,security
1/Foodstuffs	Mokotów	300	\$5	location,bay width
2/Foodstuffs	Mokotów	350	\$4	price,bay width
2/Hygiene	Mokotów	1,176	\$5	location,bay width,rail access.
2/Building material	Mokotów	735	\$4	location,bay width
1/Paper material	Mokotów	5,800	\$3	location
2/Hygiene	Mokotów	900	\$5	location,temperature control, rail access.
1/Foodstuffs	Mokotów	760	\$4.7	location,bay width,temperature control.
1/Cigarette	Mokotów	730	\$4.7	location,temperature control.
2/Clothing	Mokotów	730	\$5	location,temperature control.
4/Toys	Mokotów	2,200	\$10	location,size of space,price ,standard

Source: Economic Analysis Unit

- 1) - Wholesale distribution company domestic.
- 2) - Wholesale distribution company foreign/domestic.
- 3) - Wholesale/retail trading company foreign.
- 4) - Retail trading company joint Ventures
- 5) - Wholesale/retail trading company domestic.

n/a - information not available

length of tenure at their current location, their space requirements, their current rent, what they liked about their current facilities and what criteria they would use to select a new location (Table 3-12). The conditions that are important in selecting warehouse space for various types of companies have an important influence on the suitability of spaces offered in adapted and existing buildings.

Overall, the survey suggests that most users want a facility close to main communication and transportation routes within the city, and located near other warehouses and support services. As the survey was conducted, it became apparent that users needs varied depending on type of firm. Thus, the following characterizes the different needs of foreign and domestic firms.

#### *FOREIGN VS. DOMESTIC FIRMS*

The differences between a foreign and domestic firms is shown in Table 3-13.

- Large foreign firms require more space than other users, on the order of 500 to 4,000 sq. m. These firms also look for the following factors in selecting a facility: a location allowing for convenient delivery of goods from abroad, internal conditions making it possible to maneuver and easily load and unload goods, and effectiveness of internal storage. Further, they require good insulation and security conditions. The preferences of large domestic firms focus on location factors, which helps to increase the number of clients; this factor is considered more important than leasing costs. Building design and docking facilities appear to be the least crucial factor, and are only important insofar as they permit the efficient delivery of goods.
- Small domestic firms require less space, averaging 200 to 500 sq. m. For these firms, the deciding factor in choosing warehouse space is cost. The next most frequently mentioned condition is location - proximity to other firms offering this type of wholesale facilities. In the area of standards, besides those factors mentioned by all

**Table 3-13**

**Factors considered important by wholesale and distribution firms when selected a site**

<b>Type of firm</b>		
<b>Large Foreign</b>	<b>Large Domestic</b>	<b>Small &amp; Medium Domestic</b>
<ol style="list-style-type: none"> <li>1. Location (enabling access to highway or airport)</li> <li>2. Docking, loading</li> <li>3. Standard bay : widths</li> <li>4. Ceiling heights</li> <li>5. Size of space (large)</li> <li>6. Temperature control</li> <li>7. Security</li> </ol>	<ol style="list-style-type: none"> <li>1. Location (near suppliers and buyers)</li> <li>2. Price</li> <li>3. Standard</li> <li>4. Bay widths</li> <li>5. Ceiling heights</li> <li>6. Parking area</li> </ol>	<ol style="list-style-type: none"> <li>1. Price</li> <li>2. Location (access to other wholesale)</li> <li>3. Standard</li> <li>4. Bay widths</li> <li>5. Ceiling heights</li> <li>6. Parking area</li> <li>7. Size of space (premise)</li> </ol>

Source: Economic Analysis Unit

Small & Medium 200 - 4000 m2

Large over 4000 m2

types of firms (space for efficient internal maneuvering and effective storage), the proper ceiling height and a sufficient number of parking spaces were deemed important. This is important because small delivery vehicles, and often passenger cars, are used frequently for picking up goods. The ability to divide relatively small spaces into office and storage compartments was the final factor.

### *RENTS*

Buildings which have good highway access, ample truck parking, truck-high loading docks, high ceilings, good security and, in some cases, provide heating, currently command \$10 and sometimes as high as \$15 per sq. m. per month. Buildings of lesser quality rent at \$4 to 8 per sq. m. per month. Rents outside administrative borders of Warsaw are lower, just over \$3, but may reach \$15 well-renovated buildings. The amount of rent paid was not given as a significant element in building choice. However, the greatest demand is for spaces in good condition with rents between \$3.5 to 7 outside Warsaw and \$ 5 to 9 in Warsaw.

### *STANDARDS*

Commonly, buildings offered do not suit tenant needs and rental agreements stipulate renovation of buildings and roads. Those costs incurred by the tenant in the modernization of building usually result in decreased rents. It appears that in the future, tenants would reject rental agreements which require tenant-conducted improvements, as they are time-consuming and costly. Fully equipped warehouses facilities would enable easier entry of new firms into the warehousing sector.

For example, a site's communication standards was often mentioned as an inconvenience at the current location, and was most often the first repair-investment done by the tenant. Demand for improvement telephone communication is one of the

conditions specified by small and domestic companies as well as by large and medium size companies, which frequently have to resort to cellular telephones.

#### *SPATIAL LOCATION*

If the demand for warehousing space is fully met by the stock of vacant industrial space, the spatial pattern of warehousing space demand should reflect the existing distribution of vacant industrial space. In 1992, research shows that 75 percent of the region's supply of warehousing facilities was located in the City of Warsaw (1,425,000 sq. m.). If this ratio remains the same in 1997, the City of Warsaw should capture 75 percent of the net new demand for space, between 1,875,000 and 3,000,000 sq. m. (Table 3-14).

On the other hand, if new construction of warehousing begins in earnest and starts to capture a share of the market, the future demand for warehousing and distribution facilities will shift to suburban areas. If new construction captures between 25 and 40 percent of the market and new construction is sited outside the City, then the spatial division of warehousing demand would be about 50 percent between the City of Warsaw and the surrounding ring. Table 3-14 presents estimates of the potential net new demand for warehousing facilities. This table suggests that between 1992 and 1997, the demand for additional warehouse space in the city of Warsaw will range from 1,225,000 to 3,000,000 sq. m., or 245,000 to 600,000 sq. m. annually. In suburban areas, the demand for additional space will range from 850,000 to 2,475,000 sq. m. (170,000 to 495,000 sq. m. per year).

**Table 3-14****Distribution of warehousing space**

Area	1992	1997			
		Low Estimate Share in City		High Estimate Share in City	
		50%	75%	50%	75%
City of Warsaw	1,425	2,650	3,975	2,950	4,350
Ring	475	2,650	1,325	2,950	4,425
Total	1,900	5,300	5,300	5,900	5,900

Source: Economic Analysis Unit

### **3.5. Conclusion**

As a result of Poland's changing economy, in particular the growth of the wholesale trade sector in Warsaw, the overall demand for warehousing facilities in the metropolitan area will grow rapidly. Projections indicate that between 1992 and 1997, net demand for such facilities will range between 3,400,000 and 4,000,000 sq. m. Although there is currently a surplus of vacant industrial buildings, new firms will require different types of facilities. The type of facility desired will differ among domestic and international firms, but will in either case include such factors as: advantageous location, good access to roads and airports, appropriate rent levels, and adequate infrastructure. The spatial distribution of this demand will be primarily in suburban areas around the City of Warsaw.

This suggests that the demand for the proposed project should be strong, given the site's location in a growing region, its proximity to highways and the airport and its quality of building and infrastructure. The next chapter considers the existing supply of warehouse facilities, projects future supply and assesses the proposed projects ability to compete given the characteristics of current and future demand, outlined by this chapter.

## **CHAPTER 4**

### **MARKET SUPPLY**

#### **Introduction**

This chapter provides a quantitative estimate and a qualitative description of the existing supply of warehousing facilities in Warsaw and the Warsaw metropolitan area. The first section details the physical and nonphysical characteristics of the existing supply of warehouse complexes, most of which have been adapted from a previous industrial use. It will then evaluate the suitability of the existing industrial building stock for warehouse use. The subsequent section will assess if current and projected supply of facilities will meet the demand outlined in Chapter 3. Such information serves as a basis for drawing conclusions about the economic feasibility of the proposed project.

#### **Methodology**

The current amount of space and forecasts of future demand was calculated based on the results of EAU's economic analyses of Warsaw and the surrounding region. The analysis of qualitative characteristics was conducted via field interviews and telephone conversations with over eighty wholesaling companies. Further, EAU conducted a detailed survey of nine warehouses large projects within Warsaw, chosen from field surveys and from suggestions offered by transport firms. These surveys provided information about the location, physical building conditions and leasing characteristics of warehousing complexes.

#### **4.1. Warehouse supply in Warsaw**

##### ***QUANTITATIVE ESTIMATES OF SUPPLY***

Based on the methodology presented in Chapter 3 (multiplying the employment figures for the warehousing sector by the average sq. m. used per employee), total amounts of actively used industrial space were estimated for 1988 through 1992 (Table 4-1). In 1992, it is estimated that of the 24 million sq. m. of industrial facilities, 14 million sq. m. were actively used, while 10 million sq. ft. were vacant or converted.

Because it was infeasible to catalogue all existing facilities, a sample was selected for analysis. Table 4-2 presents the location, address and accessibility for each of the nine selected large warehousing complexes in Warsaw. They constitute a cross-section of the most prevalent types of post-industrial buildings adapted for warehouse purposes and in two cases, old central storage centers currently leased to private companies.

The location of the selected projects in the three districts of Mokotow, Wola and Praga reflects the spatial concentration of warehouses in the City. Map 4-1 shows the proximity of projects within a district, which confirms the tendency for warehouses to group together within post-industrial areas. All the large warehouses analyzed are in the vicinity of main transit routes through the capital.

##### ***PHYSICAL CHARACTERISTIC OF SURVEYED ADAPTED WAREHOUSES.***

Table 4-3 categorizes the surveyed complex's physical characteristics. The following patterns emerged from our survey:

**Table 4-1**

**Estimates of industrial space, Metropolitan Warsaw (1988-1992)**

<b>Year</b>	<b>Employment</b>	<b>Actively Used Industrial Space (m2)</b>	<b>Estimated Stock of Facilities (m2)</b>	<b>Vacant or Converted Space (m2)</b>
1992	234,500	14,000,000	24,000,000	10,000,000
1991	282,500	17,000,000	23,800,000	6,800,000
1990	293,200	17,600,000	23,700,000	6,100,000
1988	352,600	21,200,000	23,500,000	2,300,000

Source: Economic Analysis Unit

Table 4-2

Warehouse projects surveyed

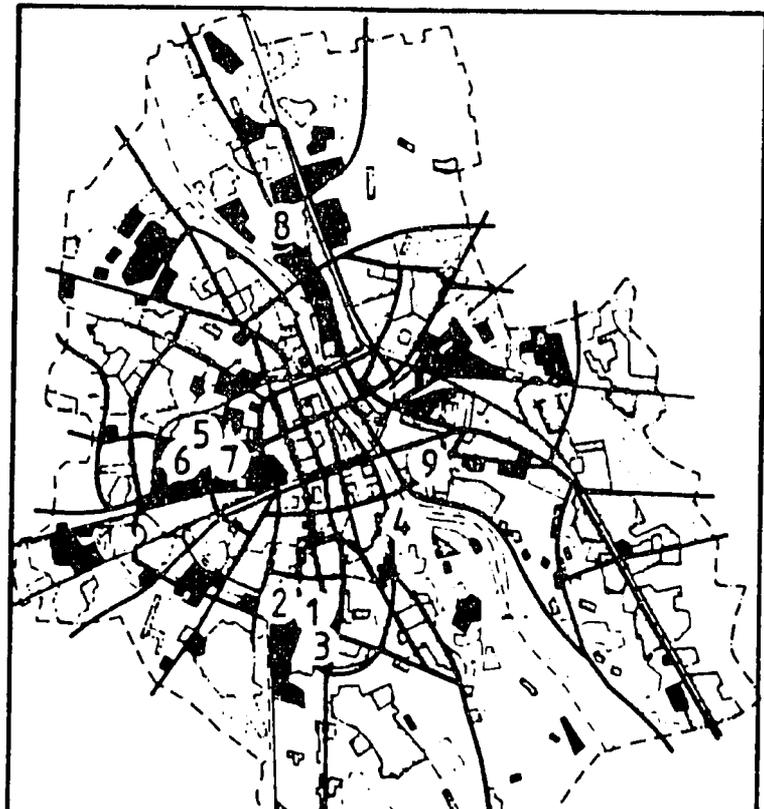
Map Key	Project Name	Location / Gmina	Address / Street	Access
1	Spółdzielnia Handlowo Usługowa	Mokotów	Marynarska	On transit roads through Warsaw
2	Składnica Importowa Materiałów Przemysłowych.	Mokotów	Marynarska	On transit roads through Warsaw
3	S.P.H.W.	Mokotów	Cybernetyki	Near transit road through Warsaw
4	Skład celny.	Mokotów	Czerwiakowska	On street on the Mokotów
5	Zakłady Kasprzaka.	Wola	M. Kasprzaka	Along highway to Germany
6	Składnica Księgarska	Wola	Kolejowa	About 1 km from main street in Wola - road to Germany
7	Kolej	Wola	Kolejowa	About 1 km from main street in Wola - road to Germany
8	Elemic	Praga	Odrowąza	1.5 km from east-west transit road
9	PZO	Praga	Mińska	300m from main street in the Praga

source: Economic Analysis Unit

Map 4-1

Project Location in Relation to Industrial Land in Warsaw

-  city limits
-  built-up land
-  major roads
-  railroad lines
-  forests and parks
-  municipal vegetation
-  water
-  industrial land
-  project number



**Table 4-3**

**Physical characteristics of warehouse projects**

Map Key	Type of facilities	Type of User -Size	Type of Products & User	Total Gross Leasable Area	No of Building	Year Facility Built.	Size of Site (ha)	F.A.R	Vacancy m2	% Vacant	Quality of Building	Quality of Facilities
1	2	Mix of medium & small	various, Domestic Firms	6,000m2	1	~1950	~1	1:0.60	no	0	good	truck-high docking platforms, high ceiling, bay depth
2	2	Mix of medium & small	various, Domestic Firms	4,000m2	1	~1950	~1	1:0.40	no	0	good	truck-high docking platforms, high ceiling, bay depth
3	2	Mix of large & small	various, Domestic Firms	24,000m2	3	~1950	0.75	1:3.20	no	0	good	truck-high docking platforms, high ceiling
4	1	Mix of large, medium & small	various trade, Domestic Firms	9,000m2	1	1964	3.1	1:0.29	1,800	20	obsolete	bay width, high ceiling.
5	1	Mix of large & small	various, Domestic Firms	48,853m2	3	~1950	7.8	1:0.63	31,555*	65	good	truck-high docking platforms, high ceiling
6	2	Mix of large & small	books, clothes, Domestic Firms	5,800m2	1	~1950	0.8	1:0.73	no	0	good	truck-high docking platforms, high ceiling
7	1	Many small tenants	books, clothing, Domestic Firm	~1,800m2	1	~1930	1.2	1:0.15	no	0	obsolete	X
8	1	Mix of medium & small	clothing, Domestic Firms & One Foreign	5,700m2	1	~1950	1.4	1:0.41	1,600	28	good	truck-high docking platforms, high ceiling
9	1	Mix of large & small	various, Domestic Firms	20,850m2	52	1923 - 1975	11,633	1:1.79	no	0	obsolete & good	some have bay width, high ceiling, parking area

Source: Economic Analysis Unit

1) - Old converted industrial building

2) - Old storage facilities.

\* Offered rent of the whole building

Small 200- 500m sq m

Medium 500 - 4,000 sq m

Large over 4,000 sq m

***Complexes are small in size with several buildings in each complex and cater to small and mid-sized domestic firms.***

Buildings offered as "warehouse buildings" in Warsaw generally range in size from an area of 4000 to 10,000 sq. m. In cases where a larger area is offered, it is generally a number of buildings on the same or adjacent parcel. For example, there are 52 separate buildings in complex #9. There are small warehouses in all the complexes (with areas of 200 to 500 sq. m.). Their share of total leased space varies between 30 and 80 percent. In one-third of the nine analyzed complexes, there was not a single warehouse with an area of over 4,000 sq. m.

The size of project sites in over 80 percent of the projects ranges from 0.8 to 3.1 ha. Two of the largest Warsaw enterprises, (#5 a facility for electronics, and #9 a production facility for military and optical equipment), have 8 and 11.6 ha. plots, respectively.

As Table 4-3 shows, the lessees of warehouse space in large complexes are mainly small and medium-sized domestic firms. Complex #8 was the only facility in which a foreign company had a registered office.

- ***Complexes are generally over 20 years old.***

Over 80 percent of structures adapted as warehouses are more than 30 years old. The sole structure built specifically for warehouse purposes was constructed in the 1970's. Adapted post-industrial buildings from the 1950s and 1960s are the most common building type in the analyzed sample and in Warsaw more generally.

- ***Complexes are generally multistory***

The high Floor Area Ratio (FAR) of the surveyed complexes is indicative of high building density. This is consistent with the location of the complexes within

densely built-up industrial districts, where multi-story buildings, which were popular in Poland 20 to 30 years ago, of industrial enterprises predominate.

- *Most complexes have low vacancies but some have significantly high vacancies.*

The percentage of vacancies in the analyzed complexes is low and often zero as shown in Table 4-3. However, complexes #4 and #5 have 20 percent and 28 percent vacancies respectively. In #5, one building accounts for 65 percent of the vacant space. The owner intends to lease the entire building for precisely defined 5-year time periods. Space is available in three of the analyzed nine sites. Factors contributing to vacancy will be discussed in a later section.

- *A majority of complexes have inadequate transportation access.*

Only 45 percent of projects have adequate maneuvering areas for delivery vehicles. The term "maneuverability" is defined as the size of accessible, non-built up areas on industrial sites, rather than its technical qualities (such as asphalted parking and loading areas and dedicated parking spaces). In the remaining 55 percent of cases, transportation conditions do not meet many necessary standards such as separate parking areas for employees. In warehouses located within densely built-up industrial districts, buildings abut the streets on which large supply vehicles must maneuver and park. For example, in complex #3, the construction of a building in progress will probably worsen the current difficulties of approach and parking directly from the street.

- *Most complexes are in good structural condition but many are in bad condition.*

The structural condition of the buildings was determined to be "good" in 70 percent of the cases. However, there was not a single example of a building in "very good" structural conditions. The remaining 30 percent of buildings were in "bad" or "very bad" or "obsolete" technical condition.

The qualification of technical conditions takes the standards currently accepted by users and attainable on the market into account. Structures considered to be in "good" condition were in average structural condition (not requiring general renovation), had all necessary infrastructure supplies (electricity, water, heat), and provided access and unloading conditions for supply vehicles enabling an average level of transportation service. The internal lay-out of the building was not taken into consideration in this assessment.

Buildings considered to be in "bad" condition, with varying degrees of deficiencies, constitute about 10 percent to 15 percent of the converted warehouse buildings in Warsaw. They are qualified as: old (over 30 years), unrenovated, without full infrastructure services (water, gas, heat), lacking proper approaches for supply vehicles; and lacking high ramps and wide doors for unloading goods. Another factor qualifying a complex as "bad" was a lack of security. This was a complaint expressed by the tenants of complex #7, who feel their security problems is due to the insufficient fencing of the plot and the weak construction of the buildings.

## ***LEASE PROFILE OF WAREHOUSES PROJECTS***

The aforementioned surveys and interviews yielded the following information on the nonphysical characteristic of existing warehouse facilities (Table 4-4):

- ***Rents***

As explained in Chapter 3, the average rent for smaller warehouse space in Mokotow and Ochota (districts located near the site) ranges from \$3 to 15 a sq. m. per month. The biggest complexes command rents between \$5 and \$15. The rents generally average \$10 per sq. m. for good-quality buildings located near the city center.

- ***Conditions of lease***

The lease conditions of surveyed complexes are presented in Table 4-4. The rental conditions are specified in individual contracts. Generally, rents do not cover utilities, insurance or security services, and often do not cover renovations, which in old adapted developments can be costly. However, many tenants chose to carry out renovation nonetheless and incur costs \$2 to 4 higher per month than their rent level. In most projects, leases do not specify duration, except for complex #5, which has a five year lease.

**Table 4-4**

**Lease characteristics of warehouse projects**

Map Key	Project Name	Size Distribution of Leased Space*	Basic Month Rent /m2	Term of Lease	Additional Charges
1	[SHU]	S, M	\$3,5-\$5	indefinite , dependent on agreement.	insurance, telephone
2	[SIMP]	M	\$4-\$5	indefinite , dependent on agreement.	insurance, telephone
3	[SPHW]	S, M	\$9-\$10	indefinite , dependent on agreement.	utilities, security, insurance, telephone.
4	[Sc]	S, M	\$4-\$5	indefinite , dependent on agreement.	utilities, security, insurance, telephone.
5	[ZK]	S, M, L	\$10-\$15	5-25years*	electr, water, heating ,telephone.
6	[SK]	S, M	\$5-\$7	indefinite , dependent on agreement.	utilities, electr, water, telephone.
7	[K]	S, M	\$3-\$4	indefinite , dependent on agreement.	electr, water, utilities
8	[E]	S, M, L	\$8-\$10	indefinite , dependent on agreement.	electr, water, utilities
9	[PZO]	S, M, L	\$2- \$5	indefinite , dependent on agreement.	electr, water, heating, telephone.

source: Economic Analysis Unit

\* S ) - Small 200-500m2  
 M ) - Medium 500-4000m2  
 L ) - Large over 4000m2

\* 5 - 25 years = 5, 10, 15, 20, 25

## **4.2. Does supply meet demand?**

### ***SUITABILITY OF INDUSTRIAL BUILDING FOR MODERN WAREHOUSES DEMAND***

The characteristics of converted industrial facilities in Warsaw were presented in Table 4-2. There are many problems associated with converting buildings from the use for which they were intended (production halls employing standards from the 50's and 60's) to the needs of modern warehousing firms. Based on surveys and phone interviews, it is possible to outline the reasons why some complexes are unsuitable and thus have high vacancy levels. They are as follows:

- The difficulty of rationally dividing large areas of industrial buildings among many lessees searching for small areas (200-500 sq. m.). The current internal division of space among several smaller firms has resulted in functional collisions and inefficient use of floor areas;
- The lack adequate maneuvering space and parking facilities for large trucks;
- The problems associated with multi-story buildings such as the avoidance by lessees of higher floors due to inconveniences in delivering and removing goods and the tendency of the few, old, post-industrial elevators to break down;
- The inappropriate construction and internal layout of the complexes for warehouse use. These buildings do not have any, or sufficient numbers of, freight elevators. Typical industrial buildings from the 1950s and 1960s most often have ceilings 4.6 meters high making it impossible to divide each floor into two levels and thus

accommodating an office (because one floor would be less than 2.0 meters high, taking into consideration the thickness of the average ceiling);

- In the case of #4, the building was not leased because it requires complete renovation, which the enterprise could not afford. This case is indicative of the difficulty which faces enterprises as they seek to secure financing for renovation, but are confronted with lending institutions which doubt the future return on their loan;

The disposition of a large percent of unused area is also determined by legal and organizational factors, some of which are discussed below:

- A large share of unused post-industrial area has not been leased out due, in part, to the passive behavior of the management of the property which lack policies promoting partial subleasing of unused buildings, and they do not prepare offers for potential subleasees. In general, the lease proposal originates with the leasees rather than the building owner;
- None of the sublease transactions surveyed, including those involving large areas (over 4,000 sq. m.), were conducted through brokers or real-estate agencies. Over 98 percent of leased premises or buildings were sought out by those interested in leasing either by driving around the region in which they wanted to locate warehouses, or through private acquaintances.

In light of the above explanation of the problems associated with existing industrial buildings as potential sites for warehouse complexes, the sheer number of sq. m. of space available becomes less relevant. The following questions remain: Will lessees be interested in extending their leases despite renovations and incurred costs?

How much rent will they be willing to pay for existing but not fully satisfactory buildings? Will the managers and owners of leased buildings continue to be interested in leasing them for warehousing purposes? Will they be able, with respect to financial and organizational considerations, to continue to lease them for warehousing purposes?

***SUPPLY OF OTHER TYPES OF FACILITIES USED AS WAREHOUSES OUTSIDE CENTRAL WARSAW***

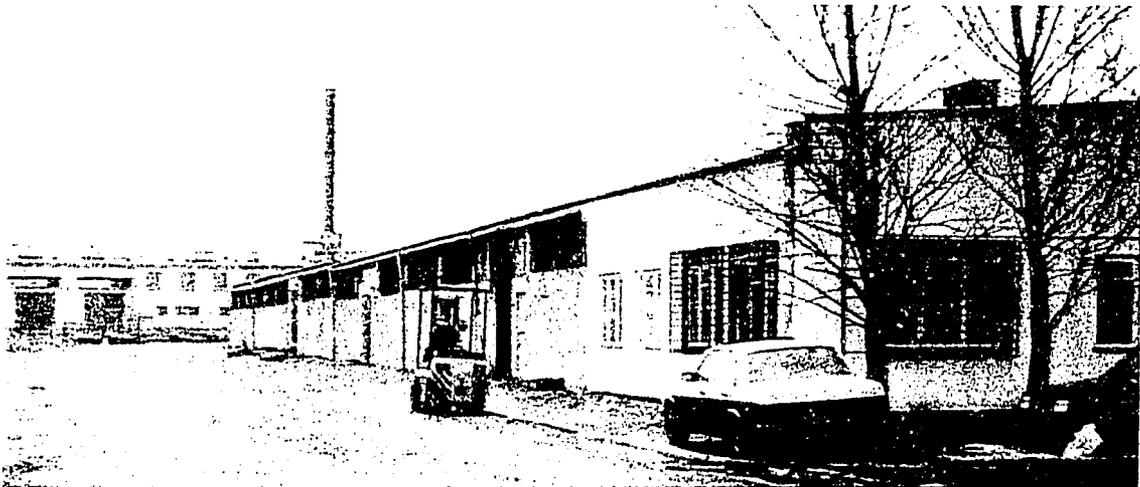
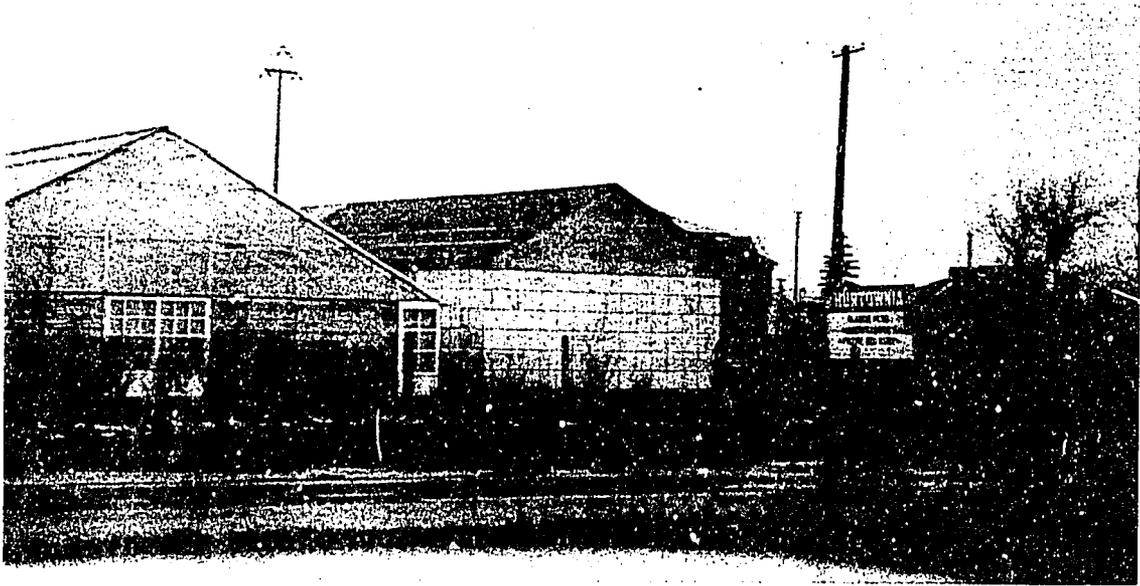
The survey cited above, which assessed complexes in postindustrial districts, represent the major segment of the warehousing supply. However, another segment of the market is smaller leased spaces located in adapted suburban buildings. These facilities are often old barns, greenhouses and single family houses which are small, rarely exceeding 1,000 sq. m.

A wind-shield survey done in Raszyn, a gmina located outside the administrative borders of Warsaw, identified over 40 warehouses (with a total space over 30,000 sq. m.) located in rural buildings or newly constructed medium standard structures.

These windshield surveys revealed that the quality of buildings converted or rebuilt as warehouses outside central Warsaw is highly varied. Although buildings in bad technical condition are the most prevalent, a few isolated modernized ones exist. Examples of such buildings are presented in photos 4-1 (the greenhouse) and 4-2 (the Sanyo warehouse). They are located about 25 km from Warsaw along the main road to Krakow, and are less than 1 km apart. The area of each of them does not exceed 300 sq. m. The warehouse located in a greenhouse was used in April 1994 by its owner. The Sanyo warehouse is an example of a completely new warehouse buildings, built onto an existing residential building converted into a high-standard office. In April 1994, this firm decided to leave this building, and is in the process of moving to a larger complex of buildings within Warsaw.

Photos 4-1, 4-2 and 4-3

Warehouse facilities in the Raszyn gmina



Converted post-industrial buildings outside Warsaw are also characterized by large differences in prices and standards. A postindustrial building, without heating, at a long distance from main roads, is rented for \$ 2 in the city Pruszkow, 30 km outside Warsaw (photo 4-3). However, in addition to rent, the tenant had to pay for improvements to the property. Also located in Pruszkow, a completely modernized double warehouse complex was offered in April 1994 for \$15 per sq. m. The firm which modernized the 10,000 sq. m. building, Procter & Gamble, moved into Warsaw.

### 4.3. Future trends

#### *SUPPLY OF NEW WAREHOUSE FACILITIES BY 1997*

As mentioned above, Table 4-1 shows that in 1992, an estimated 10,000,000 sq. m. of industrial buildings were not used for industrial purposes, of which virtually all was located in vacant industrial buildings. According to estimates presented in Chapter 3, 1,900,000 sq. m. was devoted to warehousing purposes. If we assume that an additional 1,000,000 sq. m. of unused industrial area was transferred to other functions, there still remains 7,100,000 sq. m. of unused industrial space on the market.

However, due to the poor condition and inappropriateness of this vacant space, only 25 percent of this space is appropriate for conversion to middle-standard warehousing facilities. Using this percentage, the amount of industrial area suitable for warehouse use would be 1,775,000 sq. m.

Based on the three economic growth scenarios for 1997 presented in Chapter Three (Tables 3-10 and 3-11), the net demand for warehousing facilities was estimated to be 3,400,000 sq. m. (Scenario I); 3,700,000 sq. m. (Scenario II); and 4,000,000 sq. m. (Scenario III). After subtracting the industrial building space that could be used for

warehousing purposes, the net demand for newly constructed space is 1,625,000 sq. m.; 1,925,000 sq. m. and 2,225,000 sq. m. for the three respective scenarios. (Table 4-5).

#### ***FACTORS INFLUENCING FUTURE SUPPLY***

Trends in the size and standards of future supply will be influenced by a number of factors. Among the most important will be the state of the national economy and the continuation of Warsaw's and the metropolitan area's role as a supply center for many regions of the country.

The internationalization of trade, and, in particular, the appearance of new firms, have given rise to demand for new high-standard warehouses. Our surveys indicate that a majority of firms would not be interested in leasing space in adapted industrial buildings, for the reasons enumerated above.

Domestic wholesaling firms that wish to survive in the market will have to gradually adapt their standards to those of their competitors, including their international competitors. At the same time, growing renovation costs of aging industrial buildings and rising energy costs will cause heating costs in old, insufficiently insulated buildings to rise significantly. This will create economic incentives to search for space in newly constructed buildings. Further, there is evidence that local governments will begin to discourage the current location of adapted warehouses within residential districts. The aforementioned arguments indicate that newly constructed warehouses will occupy a dominant market share.

**Table 4-5**  
**Scenarios for Net Demand of Newly Constructed Warehouse Facilities**  
**(in square meters)**

	<u>Scenario I</u>	<u>Scenario II</u>	<u>Scenario III</u>
Projected Demand	3,400,000	3,700,000	4,000,000
Available Space	1,775,000	1,775,000	1,775,000
Net New Demand	1,625,000	1,925,000	2,225,000

#### **4.4. Conclusion**

This chapter has outlined the major characteristic of the existing supply of warehouse facilities, and has enumerated the drawbacks of locating warehouses in adapted industrial buildings. Projections indicate that future supply of vacant and usable industrial buildings will cover only about 50 to 75 percent of future demand. Therefore, the demand for new warehousing space will range from 1,625,000 to 2,225,000 sq. m. between 1992-1997. On an annual average basis, the warranted demand for new warehousing space is projected to range from 325,000 to 445,000 sq. m. If constructed, the proposed project, which totals 15,000 sq. m. of leaseable space, which would need to capture between 3 and 5 percent of the annual net demand for warehousing space in order to lease up in one year. The estimated capture rate is very low, and given the project's excellent location, we conclude that there is a strong demand and clear market justification for the project. The next chapter assesses the potential financial performance of the proposed project and estimates the market value of the land.

## **CHAPTER 5**

### **ASSESSING THE PROJECT'S FINANCIAL FEASIBILITY**

#### **Introduction**

The previous three chapters have provided an assessment of the overall demand and supply for warehousing facilities in Warsaw. The results of this analysis suggest that there is a clear warranted demand for a warehousing facility at the subject site. This final chapter assess the financial feasibility of constructing a warehousing facility on the subject site. It describes the project's development program, estimates the potential net operating income and capitalized value of the completed project, estimates the construction of costs of the project and estimates the economic value of the land, should the project be built. The chapter ends by recommending a series of next steps.

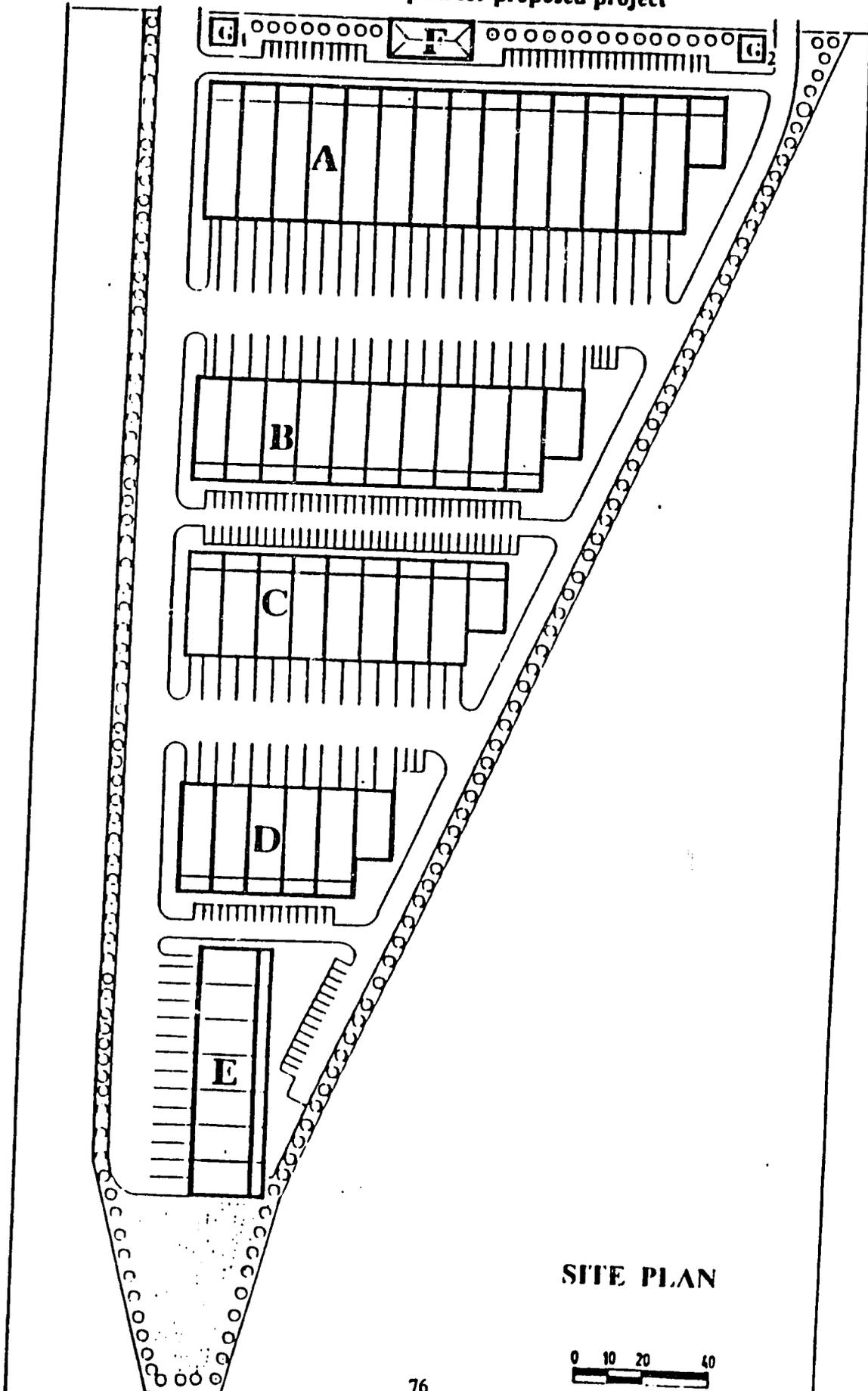
#### **5.1. Proposed development plan**

The site of the proposed project has an area of approximately 45,446 sq. m., and an irregular triangle shape with its base running along a local street which functions as an access road. The longest side of the triangle (to the east) borders a railroad line spur. The plot is fenced in and entirely surrounded by a row of mature poplar trees which stand 15 to 20 meters high and act as visual boundary for the site. Based on site characteristics and on the findings of the market study, we have designed a development program for warehousing activities.

In the attached site plan (Map 5-1), the proposed building scenario is presented. Figure 5-1 presents a perspective view. It consists of five newly constructed buildings (Buildings A-E), and the renovation the existing structure (Building F). Buildings A

Map 5-1

Site plan for proposed project

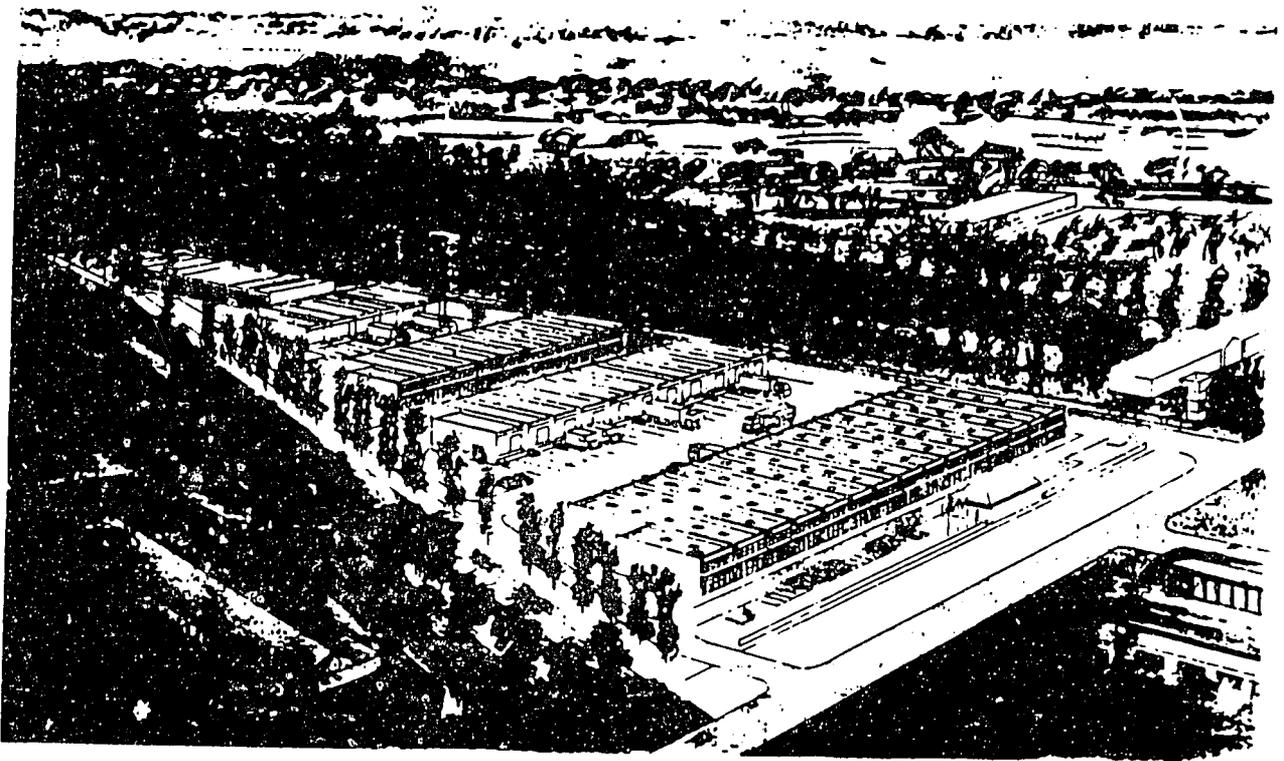


**SITE PLAN**



**Figure 5-1**

**Perspective view of proposed project**



though E are planned as modern warehousing facilities, with Building F will be marketed as office space. Truck and car parking is provided on site, and the area will be paved and linked with trunk infrastructure. The gross constructed area, including the existing building and two guardhouses is 14,565 sq. m.

The site plan proposes building modern warehouse buildings, accommodating between five and fourteen warehouse users. Table 5-1 presents a breakdown on the development program. The average warehouse unit ranges from 150 to 350 sq. m. The warehousing area totals 11,820 sq. m. Each warehouse unit is provided with an office area averaging 50 sq. m. per warehouse unit. Total office space, (including the 300 sq. m. in the existing building) is 2,600 sq. m. Each new building will be six meters in height and be lit by skylights. The foundations will be concrete pads, walls will be poured-in-place concrete tilt-up units and the ceiling structure will use glue-laminated beams. The roofing, 20 year bonded, will be sheathed of either plywood or sheet metal. Each unit will be equipped with a truck-high bay and an at-grade bay. Adequate at-grade paved parking will be provided to accommodate 88 truck spaces and 145 car spaces. Figure 5-1 provides a perspective view of the proposed project.

As described in Chapter 2, all major trunk infrastructure is currently available to the site or within 50 meters of the site. A water main, a sewer system, a ground electric line and a low-pressure gas system have been built along the streets adjacent to the site. The current heating system, built into the central system serving the entire district, provides a sufficient supply of heat for industrial/warehouse/office uses. The local telecommunication network has limited capacity and additional lines would be needed to support a multi-number switchboard.

**Table 5-1**  
**Building development plan**

Type of Building	Height	Average Office Unit	Number of Unit	Total Office Area	Average Warehouse Unit	Number of Unit	Total Warehouse Area	Additional Warehouse Space	Gross Area
	(m)								
A	6	50	15	750	350	14	4900	165	5615
B	6	50	10	500	250	10	2500	220	3220
C	6	50	9	450	200	8	1600	165	2215
D	6	50	5	250	200	5	1000	220	1470
E	6	50	7	350	150	7	1050	0	1400
Existing F	6								300
Porter's Q G1 & G2	2.5								145
<b>Total</b>			46	2300		44	11050	770	14565

	Trucks	Cars	Pedestrians	Landscape	Total
Parking Space	26	62	145	•	•
Total Area (sq m)					
Parking Space	2640	3874	1823	•	8337
Roads Pavements for	•	7198	3799	3766	14763
Existing	•	•	•	3574	
New	•	•	•	3073	
<b>Total</b>					29747

Source Economic Analysis Unit

## **5.2. Income Potential of Project**

When completed, the project will have a gross constructed area of 14,565 sq. m.. Of this amount, 14,420 sq. m. will be leaseable. Based on our marketing surveys and the site's locational attributes, we estimate that warehousing/office space can be rented for \$10 per sq. m. per month. If we assume that the project achieves and maintains a 10 percent vacancy rate and that the owner spends 15 percent of gross lease income for operations, maintenance and management, the project will generate approximately \$1,300,000 in net operating income per year. If this net operating income is capitalized at 10 percent, the project's economic value would be approximately \$13,000,000. The next section of this chapter estimates what it would cost to construct the project. After estimating construction costs, we will then estimate the land value of the project, using an appraisal technique known as "land residual analysis."

## **5.3. Project construction costs**

Cost estimates (see Table 5-2), prepared by analysts at the Warsaw School of Economics, were garnered from surveys of hard and soft costs for comparable developments in Warsaw. Interviews were conducted with architects and engineers to justify these cost estimates. Hard costs are estimated to average \$485 sq. m. for office space, \$310 sq. m. for warehouse and \$15 sq. m. for parking. Additional hard costs included: environmental remediation (removing 1/2 meter of existing soil and replacing it with 1/2 m of clean fill), landscaping, minor grading, and infrastructure development.

Soft cost are detailed in Table 5-2 and include a 25 percent contingency set-aside, a generous marketing and brokerage budget, as well as standard professional fees and permit costs. Construction finance estimates assume the following: all hard costs are borrowed, the lender charges a 3 percent origination fee, a loan interest rate is 10.75 percent, and there is a one year construction period during which time an overall average of 60 percent of the loan is outstanding.

In total, development costs amount to approximately \$10 million (\$10,027,000). This is an average of \$688 per sq. m., excluding land. The next section estimates the maximum land value of the site, using a land residual analysis.

#### **5.4. Land residual analysis**

The land residual analysis method can be used to estimate the project's land value. The method is requires the following simple steps: 1) estimate capitalized income of project; 2) subtract total construction costs; and 3) subtract developer profit. The remaining amount is the value of the land, assuming the project is developed. Profit is calculated on the basis of equity invested. In this case, we assume the developer's equity would be used to purchase the land and that the construction of the buildings and site works would be financed. An appropriate target rate of profit is 25 percent return per year (because about two years is likely to transpire between the

**Table 5-2**

**Estimated building costs for proposed project**

**HARD COSTS**

Category	Cost/unit	Units	Cost
<b>Building Costs</b>			
Office space	\$485 sq.m.	2300	\$1,114,580
Warehouse space	\$310 sq.m.	11820	\$3,664,200
Parking and Truck areas	\$15 sq.m.	23100	\$346,500
Landscaping	\$44 sq.m.	22500	\$990,000
Soil removal	\$3 cubic m.	22500	\$67,500
Soil addition	\$3 cubic m.	22500	\$67,500
Grading	\$2 sq.m.	6650	\$13,300
<b>Infrastructure</b>			
Electric	\$25 m	600	\$15,000
Gas	\$130 m	200	\$26,000
Water/wastewater	\$102 m	250	\$25,500
Telephone	\$40,000 Installation fee	1	\$40,000
<b>Subtotal Hard Costs</b>			<b>\$6,370,080</b>
<b>Soft Costs</b>			
Architectural & Engineering	6% Building cost		\$375,815
Construction Management	3% Hard Costs		\$191,102
Surveying	\$1,000 Bid estimate	1	\$1,000
Fees & Permits	\$1,000 Estimate	1	\$1,000
Professional Fees	\$15,000 Estimate	1	\$15,000
Developer Overhead	\$100,000 Estimate	1	\$100,000
Marketing & Promotion	4% Hard costs		\$254,803
Brokerage Fees	5% 3yrs rent		\$259,560
Contingency	25% Hard costs		\$1,592,520
Construction Finance			\$865,703
<b>Subtotal Soft Costs</b>			<b>\$3,656,504</b>
<b>TOTAL COSTS</b>			<b>\$10,026,584</b>

payment for the land and the commencement of operations, it is assumed that developer profit is equal to 50 percent of the land costs). Following these steps, the land value is estimated below:

1. Capitalized value of project	\$13,000,000
2. Construction cost	10,027,000
<u>3. Developer profit</u>	<u>992,000</u>
4. Land Value	\$1,984,000

Given the total land area of the site (45,446 sq. m.), the land value averages out to \$44 per sq. m. This is close to recent land valuations carried out in the SWAP area.

#### 5.5. Suggested next steps

Given the strong demand for warehousing activities in the region, the site's excellent location and its advantageous financial yield, we recommend that the City consider implementing the project as a pilot. In moving the project from concept to reality, the City should consider following steps these steps:

- Review this report and decide whether to go forward with the development proposal.
- If the City wants to proceed, it should commissions a more detailed assessment of the potential environmental problems associated with developing a warehouse project on the former coal storage facility site.

- If the assessment is positive (ie. that the site can be cleaned up without adversely affecting the project's financial feasibility), the city should enter into negotiations with the Trade Enterprise for Fuel and Building Materials company to acquire the site and to clarify the property title.
- Once the site is under the control of the City (the Warsaw Development Authority), it should package the project for competitive tender and set its minimum reservation price. Packaging should include the pre-approval of all land use, infrastructure, architecture, and site design permits.
- The city should next announce its intention to sell or lease the property, by way of tender. Announcements are made (over a six week period) in local, national and international print media. Direct mailings of the tender announcement are sent to builders, banks, developers and large businesses.
- Submitted bids should be evaluated according to the following criteria: amount, form, and timing of land payments; bidders experience; conformance to RFP; quality of development program; market justification; financial feasibility; and financing.
- The winning developer should be awarded an exclusive right to negotiate for the site.
- Once the negotiations are completed, the developer would then option the site and begin the development process. After obtaining financing and securing the remaining permits, construction could commence.

The overall process should take between two and three years to complete.

## **5.6. Conclusion**

The feasibility study has assessed the potential for developing a 14,565 sq. m. warehousing and office project in the South Warsaw Airport Project (SWAP) area. Our analysis suggests that there is a strong demand for warehousing and distribution facilities in Warsaw and that a project developed on the subject site could successfully attract tenants. The analysis has developed financial estimates of the probable construction costs, market value and land value of the proposed project. These estimates indicate that the site is currently worth nearly \$2,000,000 if it is redeveloped to a warehousing project. This value is four to five times greater than the site's current appraised value.

The City should consider redeveloping the site (and similarly situated sites in the SWAP area). If carried out on a wide scale basis, redevelopment projects would generate financial resources to modernize Southern Warsaw and spawn new economic activities.