Bulletin of the Maritime Institute

Gdańsk, 1998, 25, 1

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POSSIBILITIES OF DEVELOPMENT OF GENERAL URBAN FUNCTIONS OF GDAŃSK IN THE PORT AREA

Abstract

In result of the present political and economical transformation in Poland, the previously completely broken in the period of centralised economy links between ports and their cities and regions are being gradually rebuilt. This starts a process of intense transformation in the port and near-port space.

The paper discusses these problems on the example of the Port and Industrial Complex of Gdańsk. On the background of the present structure and intensity of use of the port areas and of the predicted development of various port functions, the requirements for new areas, i.e. the space consumption of development processes proceeding in the port in Gdańsk, are determined. It is also indicated which areas, and on what principles, may be designated in the nearest future for the development of port-related urban (municipal) functions, thereby facilitating spatial integration of the port and city, and also enhancing the port character of Gdańsk.

1. Identification of the area

The term port and industrial areas of Gdańsk in most general terms means a system of areas the designation of which is (or should be) determined by making use of the widely understood rent of location at contact of land and sea. These are the areas on which are developing (or will be developed) port functions in their full contemporary scope (transport, industry, distribution and trade, tourism, technical and administrative services).

The process of development of the port/industrial areas of Gdańsk has a history as long as the history of Gdańsk itself. Through all the centuries it was under the pressure of external and internal factors, due to which the range of performed functions changed and the area, on which port and industrial activities were realised,

moved and extended. The most significant - also in spatial sense - example from the last period is the appearance and development of the North Harbour.

The character of links between the various functions of port areas and their environment changed also, as well as the degree of complexity of these links.

The present system of port/industrial areas of Gdańsk has a clear identity, resulting not only from the mission it fulfils as a transport junction and industrial centre, but also because of the cultural and historical values connected with the Port of Gdańsk (the Wisłoujście Fortress, Westerplatte and historical port facilities located in the present port area).

The characteristic feature of the port/industrial areas of Gdańsk is their compactness, which allows to use the concept of a port/industrial c o m p l e x . Within this complex, on the basis of type of investment, arrangement of port basins, and of possibilities of development, three parts may be distinguished (Fig. 1):

— the inner harbour,

— the North Harbour,

— the inland harbour.

It should be stressed that the area of the Port/Industrial Complex of Gdańsk (PICG) is not identical with the area contained within the official territorial boundaries of the Port of Gdańsk[1] nor with the area lying within the designed boundaries[2], and in accordance with the adopted definition of the complex includes also neighbouring areas.

The PICG includes the following spatial (planning) units or their parts: Nowy Port, Młyniska-Letnica, Młyniska-Ostrów, Stogi-Krakowiec-Górki Zachodnie and the waters of the port channel, of Martwa Wisła, Śmiała Wisła, and basins of the North Harbour. The total area is 5933 ha, of which about 3950 ha (66.5%) is land and 1985 ha (33.5%) is water areas.

Of the 3950 ha of land areas, about 2250 (57%) have been developed (invested). The land-use structure of invested areas is as follows:

— industrial/storage areas	~885 ha	(39.2%)
— port areas	~331 ha	(19.6%)
— transport	~319 ha	(14.1%)
— cultivated green areas	~298 ha	(13.1%)
— housing areas	~141 ha	(6.2%)
— administration and services	~ 97 ha	(4.3%)
— others	~189 ha	(8.4%)

1 Decree of the Council of Oct. 19th 1950; Dz.U. It. 464, 1950.

2 Proposed boundary of the Port of Gdańsk, elaborated by the Maritime Office in Gdynia in 1975 and corrected in 1998, presently under final discussion with the City Board of Gdańsk.

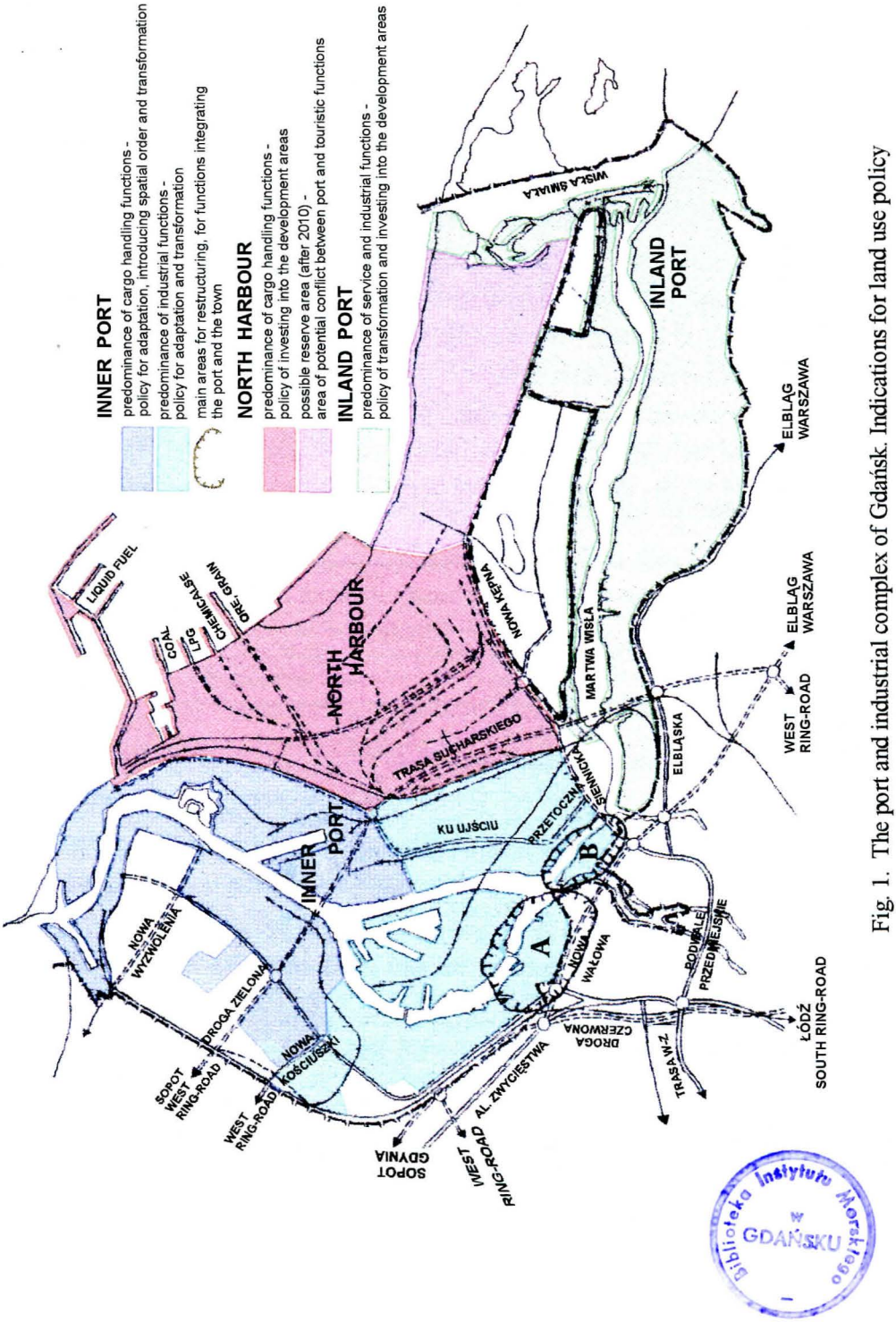

Fig. 1. The port and industrial complex of Gdańsk. Indications for land use policy

The structure of land-use reflects the character of the area, in which the industrial and storage, port and connected with them transport functions take up together 70% of the invested land. The highest area consumption characterises the industrial/ storage function, in which the shipbuilding/shiprepair and oil industries predominate (together over 50% of industrial areas).

The relatively high percentage of cultivated greens is due to the location in the discussed area of several complexes of allotments.

The level and structure of investment are different in the various parts of the area.

In the so-called inner harbour, invested plots constitute about 84 % of all the terrain, areas utilised by the Port of Gdańsk Authority S.A. and areas used for the cargo handling function cover 175 ha, and further 60 ha should be recognised as reserve for the handling function. Industrial areas cover about 380 ha, of which 60-80 ha (within the location of the Gdańsk Shipyard - Fig. 1A and within location of the Polski Hak - Fig. 1B) could be designated for a deep restructuring for the needs of functions integrating the city and the port. Such functions could be also given to the port quays within Nowy Port (the Five Whistle Turn, Grain Quay), including areas of the closed CPN (Centrala Produktów Naftowych - Oil Product Central).

The land-use structure in the two distinguished planning units, lying in the inner harbour along the left, western side of the port channel, is shown in Table 1.

Table 1. Land-use structure

Specification	District	
	Nowy Port	Młyniska-Letnica
	[in hectars]	
Total area	**240.00**	**480.00**
Invested areas	198.03	405.03
in that:		
port areas	62.57	27.18
industrial/storage areas	13.77	127.95
transport	17.50	78.36
cultivated greens	41.75	79.11
housing	31.78	22.92
administration & services	20.29	13.79
others	10.37	61.72

The North Harbour is the main development area of the Port of Gdańsk, in which present investment processes are concentrated. The oil, coal and ore terminals with already existing and shortly to be constructed bases in the hinterland take up about 125 ha. Further 100 ha (partly formed by land reclamation) will be used for building a container terminal. In principle, such a scope of investment makes full use of the capacity of North Harbour areas lying directly by the waterline up to the beach at the tram loop at Stogi. Realisation of these investments, together with the building of a bridge over Martwa Wisła on the Sucharski Route, which route in the future will also become connected with the Green Route by means of a high bridge or tunnel, will

significantly strengthen the location rent of the areas situated in the hinterland of the newly built terminals, i.e. of areas between the terminals and the deeper inland lying basic transport system.

No clear vision of development exists for the inland harbour system (areas adjoining the Martwa Wisła and Śmiała Wisła). The present users only to a limited extent make use of the location at a navigable water basin, which forms a part of the Port of Gdańsk. In the land-use structure prevail industrial (refinery complex, several small shipyards) and service areas, which often are extensively utilised.

At the Wisła Śmiała outlet the yachting function predominates, with large capacity for intensification of activities.

The future of the system is largely dependent on the future of inland navigation in the context of servicing the port and the city. Presently realised investments into the hydrotechnic infrastructure at the Wisła Śmiała outlet (deepening of navigation channel, modernisation of breakwaters) shall improve significantly the accessibility of the Wisła Śmiała and Martwa Wisła navigation routes, and will increase the range of possibilities of utilising the adjoining area.

2. Directions of utilisation of PICG in the light of development forecasts[3]

Formulated in the last years predictions of development of the basic functions of the PIGC[4] are based on the assumption that for the nearest dozen or more years there will be no significant recession in the world economy. Advantageous conditions will be formed for the economical development of Poland and other Central and East European countries. Poland will become an EU member, and other economical blocks will not realise discriminative policies against export and import of Polish goods. According to existing predictions, the present economical growth of Poland has good chances to continue, and this allows to expect a further growth of the stream of Polish foreign trade cargo. This trend is strengthened by the increasing openness of Polish economy to the global markets. The port in Gdańsk can play an important role in the service of cargo coming from the international transit hinterland, including Bielorussian and West Ukrainian cargoes. The average annual dynamics of growth of the value of Polish foreign trade throughput is expected to be higher by 2-4% than the GNP dynamics. The throughput of highly processed cargoes, belonging to the general cargo group, will grow even quicker. In the process of acquiring cargoes, the Port of Gdańsk will use its location values, strengthening them with high quality of offered services. A factor limiting the growth of cargo throughput of the Port of Gdańsk (especially in the realistic

3 A.Tubielewicz et al. Prediction of factors determining the development of the Port/Industrial Complex of Gdańsk, Master Plan for the Port/Industrial Areas of Gdańsk, Gdańsk 1995-1996.

4 Ibidem.

alternative of the forecast) will be the strong competition of German ports, and also of other Polish ports.

In the realistic forecast (Table 2), it is expected that cargo traffic in the PICG will nearly double. This will be due to more than twofold growth of oil imports through the North Harbour for the needs of the Polish fuel and oil industry, at simultaneous decrease of imports of Russian oil (in the predicted growth of cargo traffic of the PICG until 2015 by 14-18 mln. tonnes, participation of oil and oil products and of liquid gas reaches 9-12 mln. tonnes). Also increased iron ore imports, larger export and import of highly processed goods (general cargo) - mainly in containers and ro/ro units, and also a limited import of grain and fodder are expected.

Table 2. Predicted cargo traffic through the Port of Gdańsk in 2015

Specification	Realised in 1996	Forecast	
		realistic	optimistic
	in mln. tonnes		
TOTAL	**16.5**	**29.7-34.7**	
in that:			
coal	6.1	6.0	
ore	0.2	0.5-1.0	
other bulk cargo (in that; fertiliser raws, sulphur, liquid chemicals)	2.9	3.5-4.0	
grain and fodder	0.3	1.0	
timber	-	0.2	
total general cargo	2.0	3.0-4.0	
in that: containers and ro/ro	0.35	1.5-2.0	
ferries	0.05	0.3	
oil and oil products	5.0	15.0-17.0	
gas	-	0.5-1.0	
	in thous. of passengers		
Predicted passenger traffic	42	100-200	250-300

The optimistic prediction is based on the assumption that the PICG in the nearest years will make use of its advantages of location (*int. alia* the accessibility of the port for all ships entering the Baltic Sea and the very good accessibility from the hinterland for rail and pipeline transports) and will improve its position on the internal and international market, at cost of competing ports.

In the optimistic alternative, growth of cargo traffic in the PICG will be connected mainly with the realisation of three large investments in the North Harbour: the Europort grain and fodder terminal, the Rudoport ore terminal and the big container terminal. All these investments are in the development plans of the port for the nearest future, however their realisation might become delayed. The appearance of these three terminals, and also activities of the port in servicing export and import of bulk cargoes - coal, liquid chemicals, oil and gas - can result in a threefold growth of cargo traffic. Oil and gas may constitute about 45-50% of the total cargo volume.

In both alternatives of the forecast, increased cargo throughput will be accompanied by an activation of other economical functions of the port.

Industrial function - in the optimistic alternative new handling/storage terminals will be built in the North Harbour (ore, grain and fodder), connected, in agreement with world trends, with locating in the port area of processing and distribution of cargoes exported and imported by sea. This will result in the appearance and development of handling/processing complexes, realising cargo handling, storage, processing and distribution. The following can be expected:

- a further growth of the oil complex in the North Harbour area (building of new berths and tank park) and in the Gdańsk Refinery system, which is prepared for a threefold growth of production;
- forming of a gas complex in the North Harbour, with a deep water handling/storage terminal and supporting facilities, tank base and pipeline systems;
- forming of an agricultural/food complex in the North Harbour, with a handling/storage terminal for grain and fodder, and processing and distribution objects.

In the realistic alternative, first of all the first of these complexes - the oil sector is expected to develop.

Indenpendently of the development of the handling/storage and the industrial functions, PICG will be certainly faced with the problem of development of the distribution/logistics function, formed on the basis of container, grain and fodder, and conventional general cargo handling. The distribution/logistics centre will first of all include various manipulation and value adding activities, increasing the value of cargo directed through the Port of Gdańsk. Beginnings of these activities are taking place even now in the western part of the inner harbour, inland of the general cargo terminal Dworzec Wiślany. In the period of the forecast, this function may develop at two sites: inland of the Dworzec Wiślany port region (areas up to the Marynarki Polskiej str.), and in the North Harbour II region - north of the Mjr. Sucharski route, inland of the designed port terminals.

An important line of development, especially in the aspect of integration processes around the Baltic, is service of passenger traffic: ferry traffic, touristic traffic on passenger ships, yachting and water sports.

The ferry potential of Gdańsk is very small (a 1-berth terminal at the Ziółkowski quay), there is no separate berth for touristic passenger vessels, which exclusively enter the port in Gdynia, and there are only limited possibilities of receiving yachts. Development of this function is in agreement with public expectations, and promotes integration of the port and city. Reserves of areas and waterfront in the inner and inland harbours allow for increasing the capacities of the port for servicing passenger traffic and fulfilling all its needs.

In the realistic alternative, service of growing cargo throughput of the PICG (mainly of oil) and development of port industry (mainly oil processing) will be carried out within the existing location systems. This means that the existing potential will be more intensively utilised, since it has large, unused cargo handling and spatial

reserves. However, these systems must undergo restructuring. New areas, required for servicing the port and industrial functions will be limited in this alternative to:

1. utilising and developing a part of the areas in the North Harbour I - lying along the waterline between the existing coal terminal ore pier and also lying inland of this area (**M** in Fig. 2);

2. fulfilling the needs related to the construction of the new container terminal in one of the possible two sites:

- in North Harbour II (as the first stage of building a big container terminal for large container vessels), utilising the newly reclaimed areas (**K1** in Fig. 2),
- in the inner harbour on reserve areas inland of the Ore Quay and Timber Terminal (**K2** - in Fig. 2);

3. development of the potential for servicing passenger traffic, either through building a second berth for passenger/car ferries in the existing ferry terminal on the Ziółkowski Quay (minimum programme), or by building a new passenger service centre (two ferry berths and a berth for passenger vessels, support services); in our opinion two sites should be considered:

- the south-east part of the Gdańsk Shipyard S.A. areas, including areas of the closed gas plant (**A**);
- the Polish Hook area (**B**).

As it was stated above, the over twofold growth of oil traffic in the north Harbour (realistic alternative) requires no extension of the areas of the Gdańsk Refinery, since on these areas production can be increased by a factor of 3. Also oil handling facilities in the oil terminal of the North Harbour have a very large unused reserve handling capacity.

With respect to spatial requirements, the optimistic alternative differs from the realistic one by the need to cross into the territory of the North Harbour II. In this alternative, terrain demand for the development of the handling/storage and industrial functions is expected to be about 200 ha in the spatial structure of the North Harbour mainly: ore terminal and support area 16-20 ha (**R**); grain and fodder handling/storage/processing complex - about 50 ha (**Z**); container terminal - about 100 ha (**K**); liquid chemicals and gas handling/storage/distribution terminal - 20 ha (**H**); passenger-ferry terminal 10-12 ha.

In this alternative, plans should also provide for the development of a distribution/logistics centre in the North Harbour II (ΔΔ). Basing on experience from other European ports, such a centre would require an area of about 150-250 ha.

At present the concept of forming 5-6 large distribution/logistics centres in the Polish system of transport network is studied. Draft indications for locating such centres suggest that after key infrastructural investments, related with the planned strengthening of the handling/storage capacity of North Harbour, have been realised, the area between the designed container terminal in North Harbour II and the developed transport line (Sucharski route and rail system) will fulfil all requirements necessary for the formation of a regional distribution/logistics centre for the eastern coast of Poland.

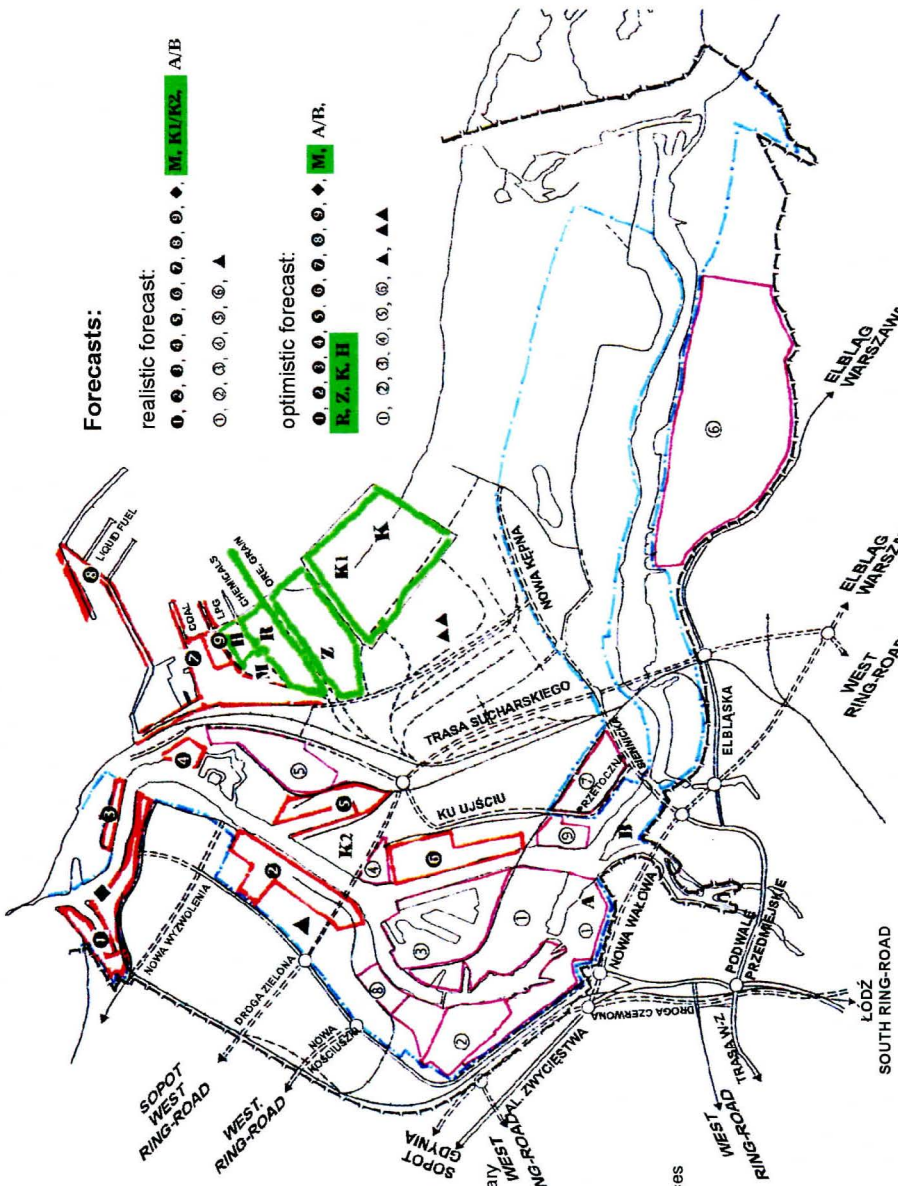

Fig. 2. Areas needed for handling/storage and industrial functions in the Port of Gdańsk, in acc. with the realistic and optimistic forecasts

Locating new port and industrial potential, servicing and processing large volumes of cargo exported and imported through the PICG, must be accompanied by intense development of road and rail transport systems, especially in the North Harbour araea. This especially concerns the building of a new road to the North Harbour over Martwa Wisła (including new road connections within the functional unit of North Harbour II), and the improvement of the North Harbour rail station with branches to all the port terminals.

3. Areas in the PICG system which may be used for developing general urban functions

Gdańsk is a port city, in which the presence of the sea, and to an even larger extent of the port, is difficult to see in the urban space and only slightly utilised in the functional sphere. This turning away of the city from the sea and port has many reasons. The largest influence on the present state of functional and spatial links between the city and port, and on the picture of neglect at the contact of city and port, had the over 40 years of centralised port policy, in which both organisms developed practically independently, in isolation from each other.

Market economy is forcing changes in the functioning of the port and city, which become apparent also in the spatial sphere. Such factors as:

- the variable and still differentiating intensity of port and near-port area use in Gdańsk, resulting from many conditions;
- realised by the Gdańsk Port Authority investment strategy, preferring new investment in the North Harbour area, and in effect concentration of port activities using modern, highly efficient and highly specialised potential on the east side of the port channel;
- implementation of a new model of port management, in which the city takes an important part and should realise its interests,

point to the need to analyse the spatial and functional inter-relationships with the in order to uncover the possibilities of intensifying the use of port space and of strengthening the integration of the port and city organisms.

Areas, which often are of secondary importance for the functioning of the port, may be very useful for the development of urban functions. This first of all concerns the left-bank part of the inner harbour, which is adjacent to the city centre and to Młyniska-Ostrów, Młyniska-Letnica and Nowy Port districts.

Several years ago appeared possibilities of designating a part of the Gdańsk Shipyard area for commercial uses. The area of about 35 ha (Fig. 3 - **A**), lying in the south-east part of the shipyard is taken up mainly by old, run down shipyard objects. In the revitalisation study elaborated under the leadership of prof. M. Kochanowski, which covered the areas of the shipyard and of the adjoining enterprises: the Pomeranian Gas Works, Elmor and State Road Transports, it is proposed to develop in this area a down-town economical/administrative centre, with a predomination of objects connected with foreign trade, finance and services (including a proposition of transforming the old dock into a passenger terminal). This would also

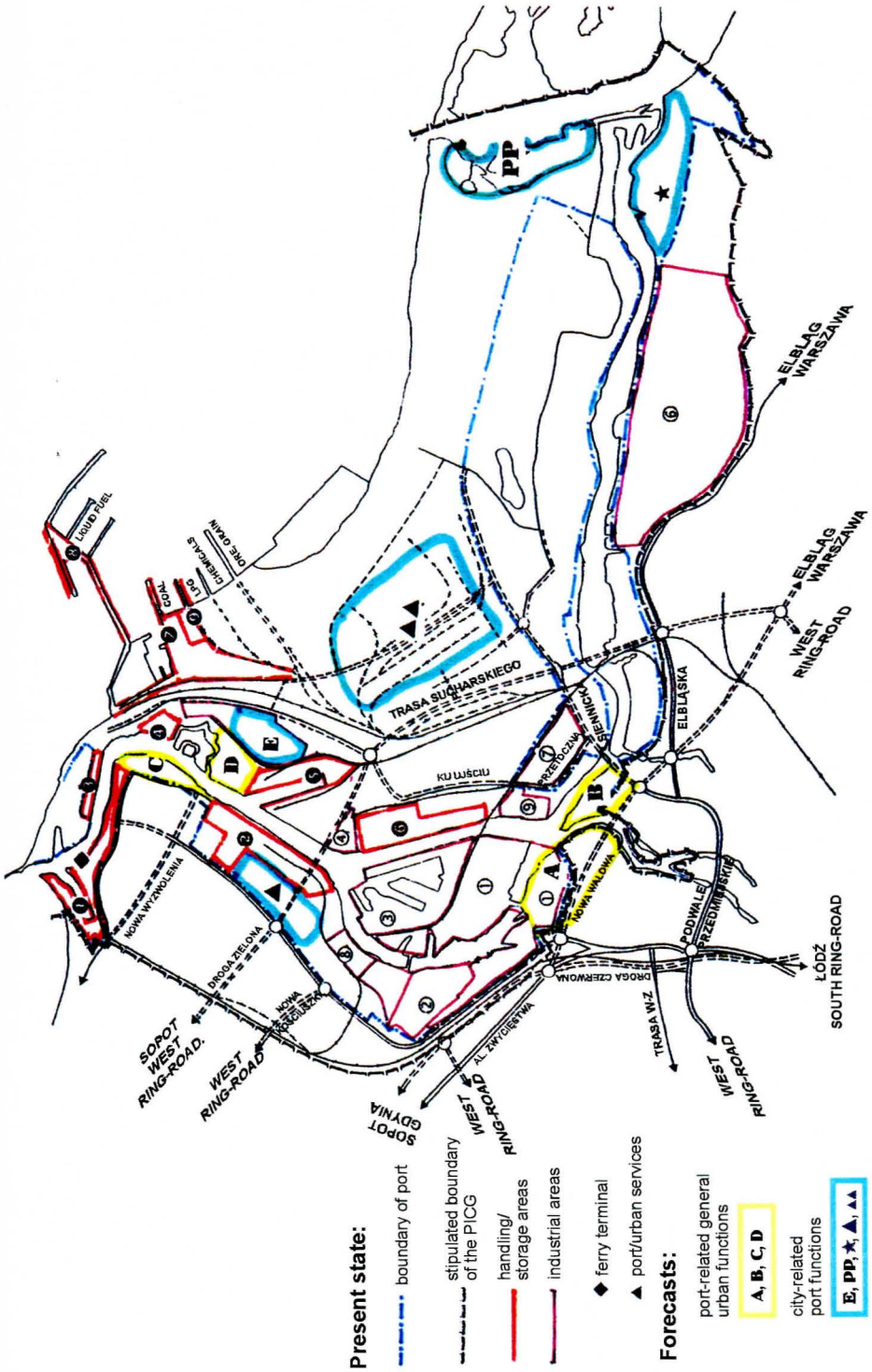

Fig. 3. Areas of the Port of Gdańsk proposed for locating general urban functions

allow to develop over 1 km of quays along the Motława and Martwa Wisła (extending the line of the Długie Pobrzeże) and would open the city space to contact with contemporary, not only the historical, basins of the Port of Gdańsk.

The second area, which is very attractive to general urban functions, is the Polish Hook (Polski Hak) area - Fig 3 - **B** (about 20 ha within the port boundaries). This area, after the fish processing industry has deteriorated, has no great value to the port and is left unused. The tip of the Polish Hook (Polski Hak) offers one of the most interesting, worth setting off, views of the port. The whole area up to Siennicka str., i.e. reaching far outside the port areas, requires deep restructuring, including a change in the local land-use plan[5] concerning full heritage protection (historical heritage objects - old fishermens buildings - which are in complete ruin; is this how historical heritage protection does operate?).

The city has taken steps to designate both the areas for down-town functions. In the currently prepared correction of the boundaries of the Port of Gdańsk, it is proposed to exclude about 35 ha of Gdańsk Shipyard and 20 ha of Polish Hook (Polski Hak) land out of the port boundaries. Work on the local land-use plan for the Polish Hook (Polski Hak) and Sienna Grobla region has started, and the urban and architectural shape of that region should be cohesive with solutions proposed for the post-shipyard areas (the so-called North City).

A passenger terminal should be located in one of the two areas. Its parameters and programme of services should correspond with the needs of Gdańsk.

The third area indicated for general urban functions connected with the port, lies in the port boundaries - in the west part of the inner harbour, and it is the zone directly neighbouring with quays in the Nowy Port District (Five-Whistle Turn, including Grain Quay), and the area of the CPN No. 1 Base (Fig. 3 - **C**). The planned since a long time correction of the waterline in this area, including flattening of the protrusion of the Grain Quay, to improve the conditions of navigation in this part of the port channel (mainly to allow navigation of larger vessels repaired in the Gdańsk Shiprepair Yard), could be connected with building of about 800 m. of new quay/berths of representational character and a waterfront promenade. Development of this region should be a part of the restructuring of the whole neighbouring Nowy Port District, which could have a functional and visual contact with the port basins and a view at the Wisłoujście Fortress and its surroundings.

The right-bank, east side of the inner port lies on the outskirts of the City and main housing districts. Reserves appearing in this part of the port should rather be used for storage, industrial, construction services, etc. functions.

However, in the vicinity of the Wisłoujście Fortress development of the recreation and services functions is worth considering. Independently of program-

5 Local Land-Use Plan for part of Gdańsk-Central District, accepted by Resolution 44/69 of City Council of March 5, 1969, with later changes.

mes of activating yachting and water sports functions in the outer moat of the fortress and its direct vicinity, in this part of the port the unused for many years reserve Wisłoujście quay and hinterland (about 350 m. of waterfront and 12 ha of terrain) could be developed (Fig. 3 -**D**); at present there are no specific investment plans for this area.

After negotiations with the Port Authority, this area could be used for e.g. an amusement park stressing historical, military and cultural values of the fortress, enriched with other recreation and cultural services easily accessible to inhabitants of Nowy Port (car ferry crossing of the port channel). The project would be a part of a wider touristic offer, connected with visiting the Westerpaltte.

The basic condition for activating the vicinity of the fortress and the Wisłoujście quay with its hinterland, and for improving the adjoining part of the Nowy Port District, is quick removal of environmental effects of handling and storage of crushed sulphur in the Siarkopol plant. Significant decrease of the volume of handled sulphur, and first of all fulfilment by Siarkopol of the many years standing requirement to handle liquid sulphur only, will cause that, besides eliminating pollution, in the nearest time a part of the Siarkopol terrain will also become available for other uses (about 15-20 ha) - Fig. 3 - **E**. However, it is difficult to assess how much time will be required to restore the freed from sulphur storage areas, and to remove other negative environmental effects.

According to forecasts, even in the optimistic alternative the future of the Timber Terminal is unclear; there is a concept that it eventually might be included into some stage of development of the container terminal. However, this area of about 40 ha (Fig. 2 - **K2**), due to its very high location rent should be kept as a reserve for the development of port functions requiring direct access to port basins.

In the case of the North Harbour and inland harbour systems, one may speak mainly about locating port functions which are connected with urban functions. Such conditions will be fulfilled first of all by the area lying along the Sucharski route, at the back of the designed container terminal, which is proposed for the distribution/logistics centre (Fig. 3 - ▲▲).

It is also considered, that though at the moment there is no real pressure for inland shipping, a reserve should be kept for an inland harbour in the port of Gdańsk (Fig. 3 - *).

The Wisła Śmiała outlet offers very good conditions for the development of yachting functions, especially as a yachting base for the people living in the Gdańsk agglomeration. It also offers possibilities for a significant development of touristic potential (Fig. 3 -**PP**).

In the mentioned earlier draft proposition of correction of the boundaries of the Port of Gdańsk, activities of the North Harbour end in the east before the tram loop at Stogi, leaving the coastal zone of the Stogi Island (excluding the Wisła Śmiała outlet) to recreation. Which is in accordance with its current use, and contrary to earlier propositions of leaving this strip as a reserve for further development needs of the North Harbour. In the process of developing the spatial policy of the City of Gdańsk, answers must be found to the questions: will the expected concentration

of handling/storage potential (oriented mainly at bulk cargo) in the North Harbour mark a definitive end to the recreational values of the beach and forest hinterland of Stogi, and will it be necessary - in spite of the correction of port boundaries - to move the bathing area to another place? Is taking over of these functions by the Sobieszewo Island realistic, and to what extent?