

USING MODERN TOOLS IN CADASTRAL MANAGEMENT AND LAND MONITORING

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Abstract

The paper is aimed to present the facilities of using modern tools in establishing the regulation of the urban development of an industrial area from Braşov, the Marub area which includes also the Tractorul Park. The Zonal Urban Plan creates a framework for a coherent development of a consumer service area, offices and a clean industry, by providing a series of objectives including permissions and restrictions. This plan is based on terrestrial measurements using different surveying methods, chosen so as to reproduce the land as closely as possible. The cadastral monitoring of this area and the main aim of the Zonal Urban Plan to reduce the level of pollution led to an analysis of the capacity of taking the pollutant provided by the industrial zone by each tree from the near park. The results of the pollution studies allow the issuing of limitations rules regarding the traffic from that area. Therefore the conclusions refer to the necessity of improving the air quality and also to the sustainable development and the conservation of the urban green areas from Braşov.

Key words: green areas, modern tools, pollution, surveying methods, urban development.

INTRODUCTION

The Zonal Urban Plan, for the Marub area, is prepared in order to modify the existing Zonal Urban Plan, by returning to the initial destination. The approved destination in 2008 through the ZUP Marub “Residential assembly with complex features with the height P+24” is totally unfeasible in the present economic conditions, considering that it was proposed in a period of real estate boom. The main purpose for the current documentation is to establish specific regulation for a consumer service area and a clean industry. These regulations provide urban indicators of occupancy and land use, according to the Urbanism Certificate no. 771 from 27.03.2012.

In this context, the analysis of the current level of pollution from that area and the vegetation capacity of absorbing the pollutant contribute to the issuing of fair rules so that to reduce the existing pollution and to avoid the other ways or methods which can provide it (Bolea et al., 2005).

MATERIALS AND METHODS

In order to complete the Zonal Urban Plan, different surveying methods were used, such as: polygonal traversing survey with nodal points, traversing survey supported at the ends points and vectoring of the areas that could not be surveyed due to the lack of visibility. The surveying equipment used consist in 2 GNSS equipment (GPS1200) and a Total Station Leica TPS405.

The survey plan and the database (including the surveying points and other specific information) were completed by using the software AutoCAD Land Desktop2009 and ArcGIS 9.3 (Tereşneu and Tamaş, 2010).

The ZUP includes the Marub area and Tractorul Park from Brasov. The vegetation study from this park was conducted by field investigations and statistical methods which have provided the forecast of the future situations.

RESULTS AND DISCUSSIONS

The topographic plan represents a reliable geodetic base for obtaining the approval of the Local Service for the Zonal Urban Plan. The methods that have been used give a precision which is situated under the given tolerance. This plan reveals with great accuracy the details from that area and it has perfect match with the specific ortophoto map (Figure 1).



Figure 1 A section of the topographic plan superposed above the ortophoto map

The precisions given by the used methods were compared and the results show that polygonal traversing survey with nodal points offers the best accuracy, but it is important to underline that this method is not applicable in any situation. This way, for the particular case of the park this method would not be suitable and it reveals that the traversing survey supported at the ends points gave the desired results.

In another train of thoughts, according to the territorial balance the existing industry from this area requires updating and the developing of a new area with clean industry and consumer services and also different residential facilities (Table 1). The current status of the infrastructure requires the rehabilitation of the existing road frame which will optimize the zonal traffic by removing the stationary periods and the setting up of limitations in terms of

heavy transport, all these in order to reduce the pollution.

Starting from the research work of Dr. Eng. ValentinBolea, the aspects of toxicity and pollution were studied in order to find practical solutions and recommendations for the Zonal Urban Plan. Considering the mineral elements content in the needles of Norway spruce in relation to their nutrition a foliar diagnosis of the pollution can be made (Bolea and Chira, 2008). In this area the pollution is close to the toxicity point at fluorine, exceeds the toxicity point by 1.1-1.4 times at copper and by 2.5-2.8 times at sodium (Figure 2). The Norway spruce from this area shows calcium excess and a manganese suboptimal nutrition.



Figure 2 The pollution effect on PiceaAbies

The needles content in cooper, sodium and chloride grows with the increasing of the traffic and for this reason the Zonal Urban Plan regulation will include restrictions, such as: setting up a single-lane traffic on the sense of direction, providing the adequate number of parking spaces according to the industrial and consumer service area, creating green spaces inside these areas according to the territorial balance, which will reach up to 10% of the considered area.

Table 1 A capture of the territorial balance, realized by the architect Gabriel Roznovat

BILANT TERITORIAL		EXISTENT			PROPOS			POT		CUT		R.H.	
		HA	% din zona	% din total	HA	% din zona	% din total	EXISTENT	PROPOS	EXISTENT	PROPOS	PROPOS	
ZONA MARUB TERENURILE CARE AU GENERAT PUZ-UL	Z.ind.1 ZONA INDUSTRIE NEPOLUANTA SI PRESTARI SERVICII	zona construita	0.00	0.00	0.00	4.412	54.91	8.66	conform P.U.G.				
		accese/ circulatii	0.00	0.00	0.00	2.211	27.47	4.34					
		spatii verzi	0.00	0.00	0.00	0.735	9.14	1.44					
		total	0.00	0.00	0.00	7.354	91.52	14.44					
	Z.S. ZONA BINDURI SI PRESTARI SERVICII	zona construita	0.00	0.00	0.00	0.409	5.08	0.80					
		accese/ circulatii	0.00	0.00	0.00	0.136	1.70	0.265					
		spatii verzi	0.00	0.00	0.00	0.136	1.70	0.265					
		total	0.00	0.00	0.00	0.681	8.48	1.33					
	ZONA INDUSTRIE EXISTENTA CARE NECESITA RETEHNOLOGIZARE	zona construita	2.21	27.50	4.34	0.000	0.00	0.00					
		accese/ circulatii	5.42	67.50	10.64	0.000	0.00	0.00					
		spatii verzi	0.40	5.00	0.79	0.000	0.00	0.00					
		total	8.035	100.00	15.77	0.000	0.00	0.00					
	TOTAL		8.035	100.00	15.77	8.035	100.00	15.77					
ALTE TERENURI/ PROPRIETATI FOSTE ZONE INDUSTRIALE	Z.ind.1 ZONA INDUSTRIE NEPOLUANTA SI PRESTARI SERVICII	zona construita	0.00	0.00	0.00	4.325	53.40	8.49	conform P.U.G.				
		accese/ circulatii	0.00	0.00	0.00	2.163	26.70	4.24					
		spatii verzi	0.00	0.00	0.00	0.721	8.90	1.42					
		total	0.00	0.00	0.00	7.209	89.00	14.15					
	Z.S. ZONA BINDURI SI PRESTARI SERVICII	zona construita	0.00	0.00	0.00	0.535	6.60	1.05					
		accese/ circulatii	0.00	0.00	0.00	0.178	2.20	0.35					
		spatii verzi	0.00	0.00	0.00	0.178	2.20	0.35					
		total	0.00	0.00	0.00	0.891	11.00	1.75					
	ZONA INDUSTRIE EXISTENTA CARE NECESITA RETEHNOLOGIZARE	zona construita	2.885	35.61	5.66	0.000	0.00	0.00					
		accese/ circulatii	4.810	59.39	9.44	0.000	0.00	0.00					
		spatii verzi	0.405	5.00	0.80	0.000	0.00	0.00					
		total	8.100	100.00	15.90	0.000	0.00	0.00					
	TOTAL		8.100	100.00	15.90	8.100	100.00	15.90					
Z.ind.3	ZONA REMAT	zona construita	0.241	16.35	0.47	0.804	60.00	1.58	16.35%	60.00%	0.15	0.80	P+4/20M
		accese/ circulatii	0.965	73.65	1.90	0.402	30.00	0.79					
		spatii verzi	0.134	10.00	0.26	0.134	10.00	0.26					
		total	1.340	100.00	2.63	1.340	100.00	2.63					
Z.ind.2	ZONA INDUSTRIALA TRACTORUL	zona construita	3.135	29.79	6.16	6.314	60.00	12.39	29.79%	60.00%	0.27	0.80	P+4/20M
		accese/ circulatii	6.863	65.21	13.47	3.158	30.00	6.20					
		spatii verzi	0.526	5.00	1.03	1.052	10.00	2.07					
		total	10.524	100.00	20.66	10.524	100.00	20.66					
Z.V1	CORESPONDENT V3a CF. PUG MUN. BRASOV		12.900	73.82	25.32	12.900	73.82	25.32	conform P.U.G.				
Z.V2	SPATII VERZI AFERENTE ZONEI DE CALE FERATA		4.575	26.18	8.98	4.575	26.18	8.98
CIRCULATII	STRAZI EXISTENTE SAU PROPUSE PRIN PUZ FLAVUS		3.904	71.41	7.66	3.904	71.41	7.66
	SUPRAPATA CU DREPT DE ACCES/ EXTINDERE REEA TRAFIC CF. PUZ FLAVUS		0.832	15.22	1.63	0.832	15.22	1.63					
	CAI FERATE, PLATFORME, PARCARI		0.731	13.37	1.44	0.731	13.37	1.44					
	TOTAL		5.467	100.00	10.73	5.467	100.00	10.73					
TOTAL ZONA STUDIATA			50.941	100.00	50.941	100.00					

CONCLUSIONS

The modern tools, including topographic instruments and GIS facilities, allow detailed analyses which can outline recommendations

The air quality from Brasov has to be improved due to the exceeding of the toxicity point at copper and sodium.

The area included in the Zonal Urban Plan has to be reorganized considering the regulation and the main purposes of this plan.

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