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THE SETTLEMENTS DEVELOPMENT IN LJUBLJANA REGION IN THE CORRIDORS OF THE RAILWAY TRANSPORTATION

1 Introduction

The principal issue of this article is the connection between the urban development and the improved railway system, as it is planned for Ljubljana region. In the Urban Planning Institute of the Republic of Slovenia we have completed the research project, in which we have prepared the concept of the settlements development in the corridors of the integrated city and regional railway transportation for the City of Ljubljana (Sasek Divjak et al. 2002).

Ljubljana is the capital of the Republic of Slovenia; which is a small Central European country (20,256 sq. km), with a population of about 2 million. Slovenia, one of the six former Yugoslavian federal republics, was proclaimed as an independent country in 1991. During the past ten years, Slovenia has gone through extensive restructuring and adaptation to the democratic system and the market economy. According to macro-economic indicators, it is one of the most successful transitional countries in Central and Eastern Europe. In connection with the new spatial planning strategies, it is currently improving spatial legislation with emphasis on land policy.

As Slovenian largest city, Ljubljana is a political, cultural and economic centre. The city experienced an extremely rapid growth in the period between 1950's and 1980's, mostly by the construction of large housing estates (block complexes), built at the edges of the city. In opposition to these extensive areas of scattered single-family detached houses have appeared in the wider city region. Recently the biggest attention is given to the reconstruction and renovation of degraded inner-city complexes and areas along the city access roads (such as former military complexes).

Some of the most important problems the city will have to face in the next years are:

- How to improve the traffic network, especially the public transport;
- How to accommodate the increase in the demand for new housing units;
- How to restrict the uncontrolled suburban spread of low-density construction (mainly detached one-family houses).

All three questions are reflected in our study project.

2 Congestion, public transport decline and urban sprawl

The actual trend in most European countries is an increase in the number of private cars per person, which has direct impact on the increase of congestion, the decrease in public transport efficiency, new expressway requirements and environmental degradation. There

are important effects on low-density urban development, which increase automobile dependence and extensive land use.

One of the main problems of development in the Ljubljana region is also the great extent of suburban sprawl. There are more than 270,000 inhabitants within the municipal boundary, but inclusion of the outlying districts (in the functional urban region) increases the total to more than 500,000 inhabitants. The level of motorization is high (1car per 2,2 inhabitants) and the mobility (per day) is already 2,4 travels per inhabitant. Increasing of private car traffic and decrease of public transport represent one of the main problems in transportation system and a threat for the environment.

Among the weaknesses of the past, it is worth emphasising that the construction of single family houses had a considerable influence on the extent of town spread and on the demands for the communal infrastructure. Extensive development of housing construction from 1960's to 1990's resulted in two directions. On the one hand there was the mass construction of large residential block complexes in the suburbs and at the edges of the city. As an opposite of collective construction, scattered single-family housing has appeared in the wider areas between smaller settlements. Such type of housing means the wasteful use of land and has frequently insufficient and expensive communal infrastructure. More than a half of the population from the suburbanised areas commutes daily to bigger centres to work and increase the motor vehicle traffic. These districts are often monofunctional and monotonous. They need urban restructuring and renewal.

Another aspect is a shortage of housing where the demand exceeds supply. As the result, the prices of dwellings and the cost of rents are high. The primary objective of the National Housing Program of Slovenia is to ensure gradually (until 2009) the construction of 10.000 housing units per year, either by new housing construction or by the renewal of the existing housing fund. For this purpose, it will be necessary to prepare a certain number of suitable locations in towns, suburban areas and other settlements. It is therefore urgent to thoroughly consider where, in what form and to what extent newly built housing communities could be located.

3 Efficient public transport - a main problem

In similar middle-sized European cities the modern tramway was proved as a good solution to solve mobility problems in inner city districts. To avoid the limits of bus (the congestion problem, not enough capacity) or underground solutions (too expensive), the tramway on segregated right of way has proven to be one of the most efficient public transport technologies and has today gained a world success. In France: after eliminating the tramways 30-40 years ago, more and more cities are establishing modern tramway networks (Strasbourg - Fig.2, Nantes, Grenobles, Lille, St. Etienne). In Germany much more cities stayed with their tramway system and even expanding them in times, while this type of transport became increasingly unpopular elsewhere. Some of those cities, which demolished their system in the sixties, return to modern tramway (Oberhasen, Saarbrücken, Heilbronn). Elsewhere in Europe: Ireland, Great Britain (London, Manchester, Birmingham, Nottingham), Spain (Valencia, La Coruna, Barcelona),

Portugal (Porto, Coimbra) and Italy (Bologna, Firenze) municipalities are also reintroducing tramway in their cities. Even in the United States, after first experiments in the 80's, tramway construction is booming since 1990 (L.A., San Diego, Portland, Seattle, Dallas, St Louis, Salt Lake City, Denver) (TTK, 1999).

Figure 1: Ljubljana tramway's coach from the year 1901.

Figure 2: The new public transport network in Strasbourg has the tramway routes for the backbone around which bus terminals and interconnecting points are clustered.

Today buses are the only means of inner city public transport in Ljubljana, which is at the upper limits of its capacities. Ljubljana had tramway already in 1901 (Fig.1), but it was eliminated 40 years ago. Comparisons with solutions in similar cities have led to the conclusion, that the most favourable long-term answer is a dual public transport system: rail transport (light rail transport - able to leave the railway to run as a tramway through the city) and buses (suburban and urban system). That is why the city has commissioned several projects in the last 20 years to find possibilities for re-introduction of the tram and the reorganisation of the whole public transport system in the region.

4 Connection between public transportation and urban development

Problems caused by extensive suburbs residential areas (that consisted mainly of one-family housing), which generate a large volume of car transport for commuting and other problems, stimulated urban planers in the USA and Europe in last decades to start researches about more sustainable communities and prepare possible policy directions (CEC 1990, Calthorpe 1993, Expert Group EC 1996, Frey 1999 etc.). Similar concepts of neighbourhoods, that would implement the objectives of the sustainable development, were discussed and tested in several cases in practice and have been adopted with modifications in various countries: Pedestrian Pocket, Sustainable Communities, Transit-Oriented Development in USA, high density low-rise housing in Denmark, Urban Villages in Great Britain etc. In planning discussions in Slovenia an exchange of experience from different Europeans countries had also an important influence (project *European sustainable cities*, EC 1996).

In the last decades, directives concerning the planning of urban development in European cities emphasise the comprehensive approach that demands dealing with cities in the wider, regional sense. Especially important is the sustainable approach (respect for the principle of the Agenda 21 and Habitat Agenda), since activities tied to urban processes impose the greatest changes and burdens on the environment. Thus environmental protection strategies have to be tied to social, economic and other strategies (connecting economic development, environmental protection, transports, housing and planning policies etc.). Models of regional cities oriented towards sustainability include two strategies:

A. Development of the central built-up urban area and its historical core
Central urban places demand renewal, revitalisation and transformation of urban surfaces, especially to improve the urban tissue.

B. In suburbanised and rural areas decentralised densening, with smaller concentration centres and good network connection between them. An important principle of the decentralised concentration model is to connect regional structures of urban growth to public transport routes and their stations. The principle enables regeneration of these areas, which need new economic investments, with restructuring and new urban functions.

5 The case of Ljubljana functional region - Densely built-up centres in the suburban space

A star-like shape is typical of the regional development of Ljubljana: almost densely built-up city area stretches up to the round (circumferential) by-pass. From the by-pass outwards, the city has been expanding in the shape of five branches. Along those directions, dispersed housing of one-family houses prevails, frequently as dormitories that need the concentration of functions and upgrading in the sense of creating new job opportunities.

Densely built-up city within the circle created by the by-pass has possibilities of development by rehabilitating degraded areas (»grey zones«), by renovating older urban areas and by improving the location pattern. Taking into consideration the sustainable aspects of the city development and the problems caused by the motor traffic in the inner city, the solution to this issue is to discharge the pressure on the centre by applying the decentralised settlement model. This model gives priority to the development of several urban subcentres or densely built-up settlements (providing housing, services, employment opportunities, recreation) that would function almost independently along public transport lines. In such a way, the dispersed suburban housing pattern of mainly detached one-family houses would become more densely built-up and improved by a better supply. The city would grow along densely built-up axes with centres linked with a rapid public transportation system. The green intermediary spaces would enable transversal communication between landscape elements and would preserve the integrity of urban units.

In designing new or upgraded communities, the existing construction should be taken into consideration as well as the existing central surfaces in the smaller suburban agglomerations. At the same time the dispersed built-up area in the suburbs should become more densely built-up. New or improved central surfaces would represent the central part of the development areas and settling around them should be designed as an autonomous unit within walking distances where functions are intermixed (shops, services, public use of space, housing, etc.) Within such a framework, new job programs would be feasible, as well as new residential areas.

The central backbone of such model is the public transport system. For its satisfactory functioning, an integral solution for the regional traffic system is urgently needed.

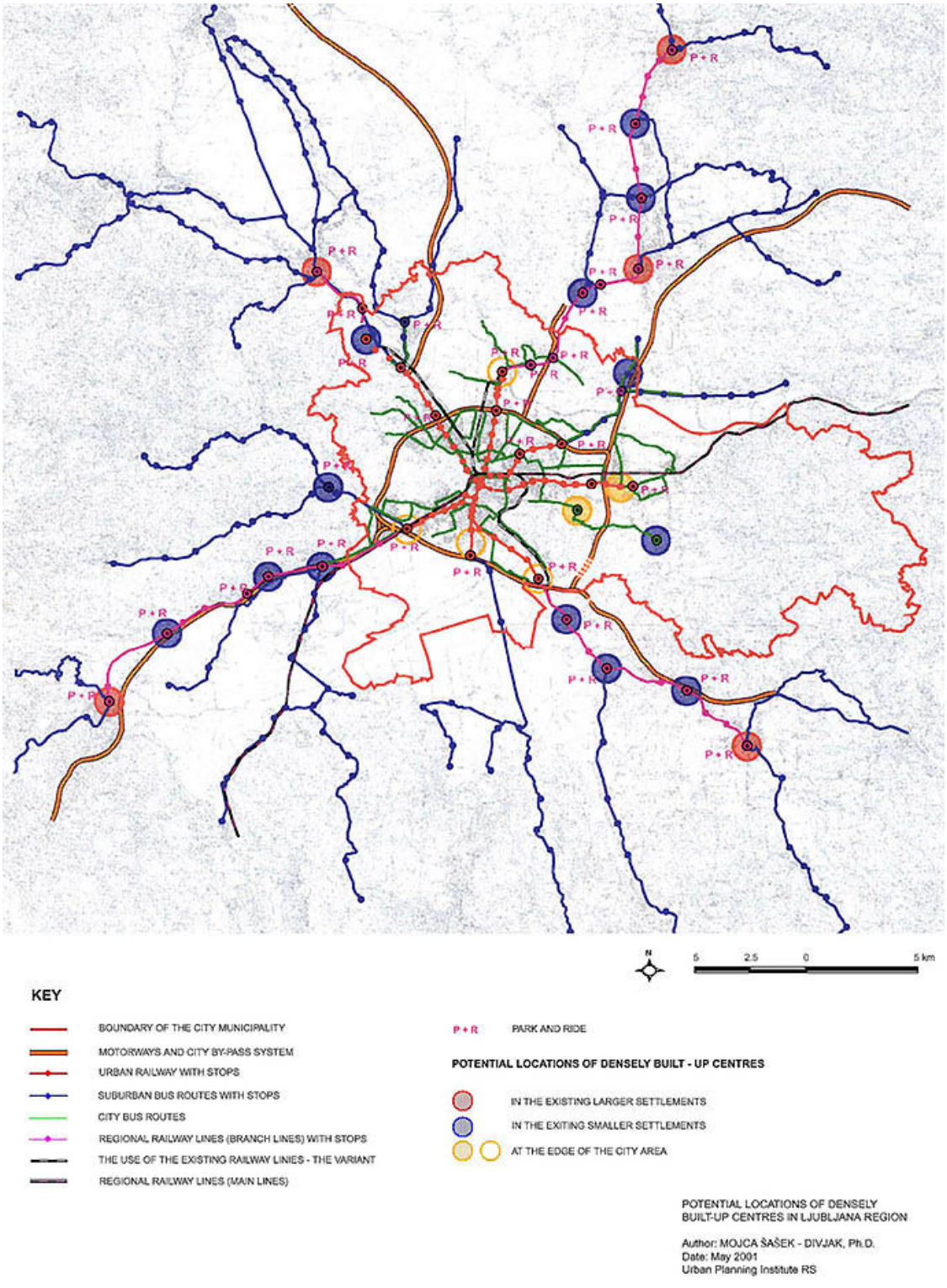

Figure 3: The model of decentralised concentration in Ljubljana functional region.

Author: Mojca Šašek Divjak, Ph.D., Urban Planning Institute RS, 2001

6 The planning concept in the corridors of the railway

In our research project the problems emerging in the functional urban region of Ljubljana are analysed, in the first place those that are concerned with suburbanisation in the corridors of the railway transportation. The corridors correspond to a shank-like way of settling in the shape of larger or smaller settlements with dispersed single-family housing in between. Such dormitory neighbourhoods demand concentration and enhancing of services and workplaces. Dispersed settling results in uneconomical use of space and in an excessive commuting by private cars that cause environmental pollution and traffic congestion.Several studies were made to find a “best suited network for public transport” for the long term and to identify a first priority investment. The analyses were combined with the results of workshops with traffic planners, urban planners and politicians of the Ljubljana region. Better prospects of the implementation of railway improvement exist in the branch lines leading to the north (to Kamnik) and to the south (to Grosuplje).

Figure 4, 5: One of the stations on the north branch line is Črnuče.

After analysing the costs of the investments into the railway and taking into account the technical and organisational aspects, the first priority line is towards Kamnik. That is the reason why this branch and its possibilities of concentrating settling in the nearer areas of the railway stations (10 min. walk) have been studied in detail. We have shown possibilities of the settlements growth, taking into account two strategies: upgrading (reuse) of the existing urban areas (preferentially in a short-term period) and adding new areas (according to the needs in a long-term period). We have taken into consideration the present land-use and limitations about agricultural land (preservation), forests, water sources (underground water), areas of overflows etc. The entire area is rich in natural and cultural heritage, which is under a special protection regime. Green areas will continue to play a significant role in planned activities, which will be aimed at preserving the existing ones and building the new ones (also for recreational purposes).

Figure 6, 7: The station near the old city core in Kamnik.

Figure 8, 9: In our development proposal the northern railway station will be located in Fužine, in the part of underutilised industrial complex. This degraded urban area represents a valuable possibility for the development of modern passenger terminus (railway and bus) serving as an interchange in the "park and ride" system. It could become the centre of a new mixed-use district (office, commercial, public, residential).

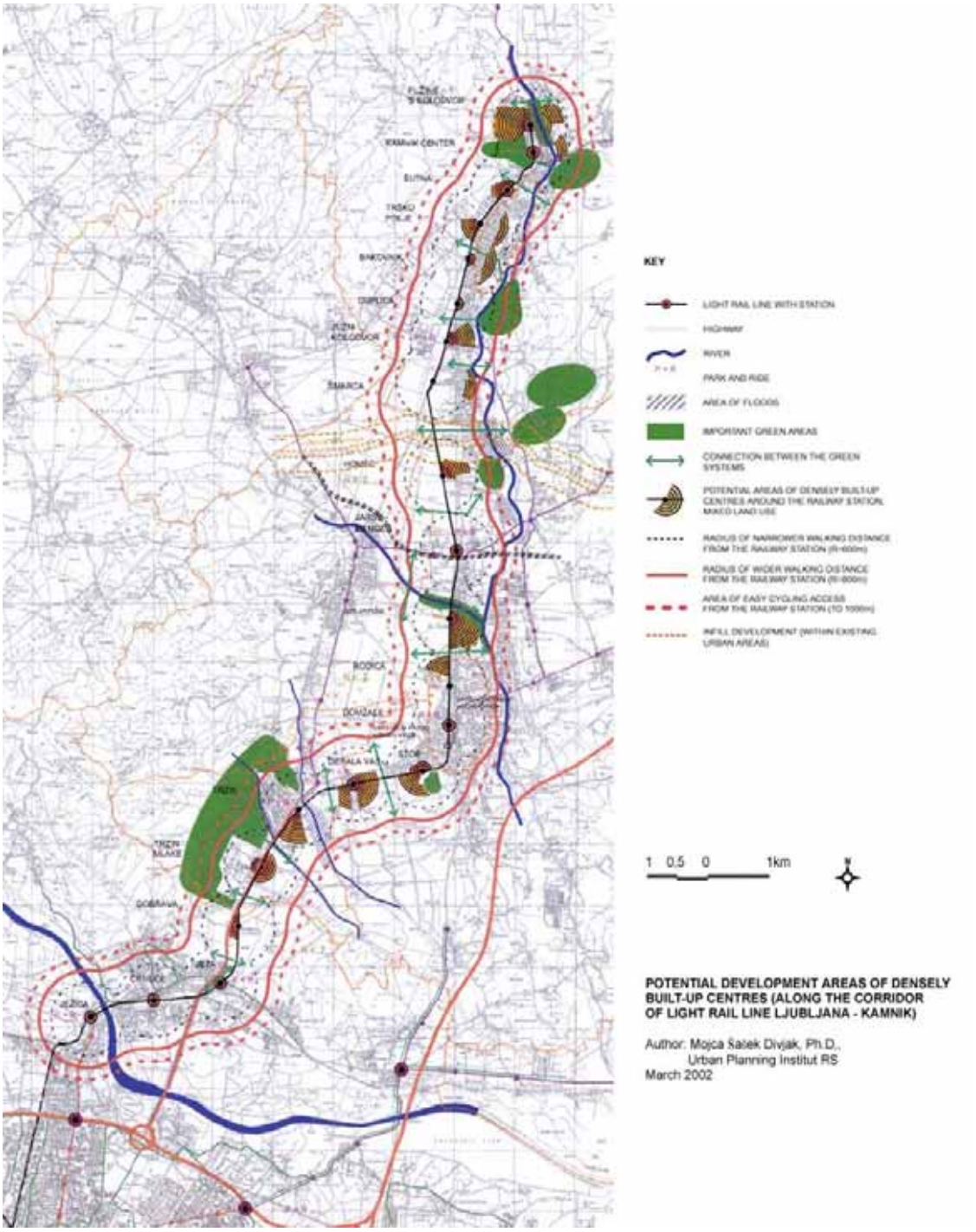

Figure 10: Potential possibilities for more dense built-up areas in northern part of Ljubljana region**.** Author: Mojca Šašek Divjak, Ph.D., Urban Planning Institute RS, 2002

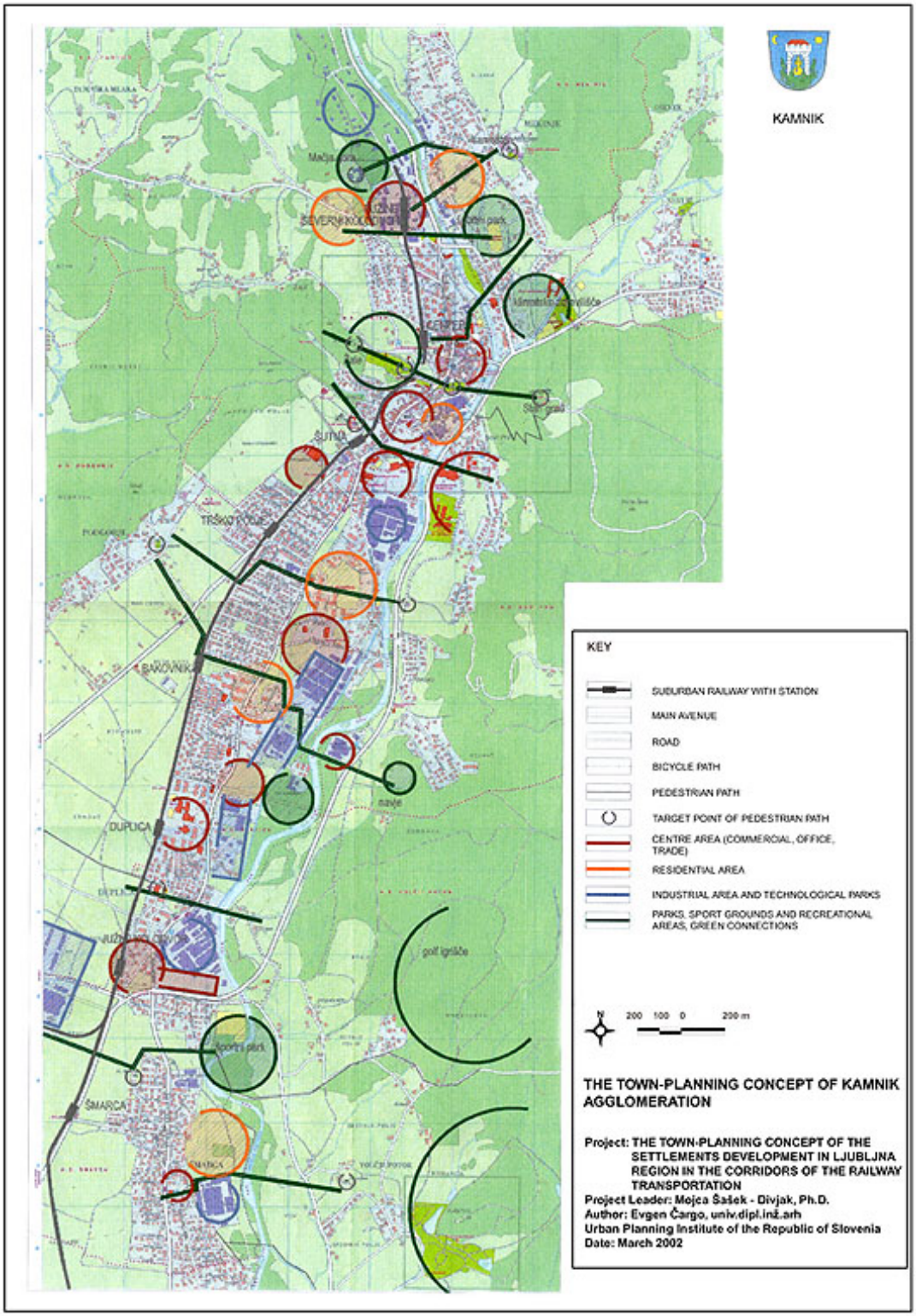

Figure 11: The town-planning concept of Kamnik agglomeration, UIRS 2002
Author: Evgen Čargo

In this concept for Kamnik there are green connections between new centre (and residential) areas and stops of suburban railway. The location near the railway station (max. 10 min. walk) is a primary prerequisite for any shift from commuter to public transport.

7 Conclusion

At the end we can say that the implementation of our proposed model for the north part of Ljubljana region could contribute to the following improvements in the urban environment:

- condensation of settling and better use of land;
- better urban standard, upgrading of functions (central, manufacturing, housing, recreational);
- new job opportunities;
- better communal and other infrastructures;
- promotion of sustainable modes of transportation (higher concentration of population - public transport).

Three main principles prevail in the concept: the regional structures of urban development must be linked with the development of the public transport, zoning should be replaced by the mixed use of land, and the policy of the urban design should be oriented towards man, public open areas, and human dimensions.

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