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SOLUTION OF TRAFFIC PROBLEMS IN THE CENTRAL AREA OF LVIV

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Abstract. Deficiencies in the traffic infrastructure in central Lviv lead to congestion and obstruction of pedestrian movement as well as pollution, but the main reasons of these problems are not physical. They lie in the absence of efficient administrative and legislative measures for the management of stationary traffic.

Key words: city centre, traffic, parking management, pedestrian zone, public transport.

1. Introduction

Since the independence in 1991 car ownership in the Ukraine increased significantly. But in 2012 there were still only 220 motor vehicles per 1000 inhabitants, excluding motorcycles and other two wheeled vehicles, compared to 580 in Poland or 588 in Germany[1]. Although the figure for Lviv no doubt is far above the Ukrainian average, traffic in the city will become more dense in future. On top, the UNESCO world heritage area will attract more visitors when tourists will no longer be deterred by the political insecurities.

Already today the traffic situation in central Lviv is difficult. With the rise to be expected this situation will become intolerable and jeopardize every effort to exploit the attraction of the historic city economically.

The Senior Experten Service (SES) is a German non profit organization which provides retired experts to foreign institutions. When the author was asked by the SES to work with the National Polytechnic University of Lviv he thought his professional experience and advice concerning planning methods or IT programmes might be needed. This turned out as an error because the university appeared to be working on the same high scientific level as German Technical Universities. Nevertheless there was an aspect of this task where his advice was needed – to share German experience about the habits of people concerning cars and traffic.

2. Investigation of the deficiencies

Because traffic causes so many problems in the central area of Lviv city government asked the Lviv Polytechnic National University to do an investigation of these problems. A working group at the Department of Urban Planning, headed by Prof. dr arch. Halyna Petryshyn, identified two types of reasons: external and internal causes¹.

External causes are problems in the overall road network of Lviv which have effects on the inner city. Deficiencies in this network divert traffic to the city centre although the destination is elsewhere. Instead of creating through traffic in the centre the road network could relieve the inner city if two lacking connections were constructed in order to close an inner and an outer ring system.

For the inner ring system the missing link lies east of the central area and could be closed by a tunnel under the high castle hill. An existing plan was abandoned because the costs appeared to be beyond the payable amount. There are two possible consequences. Either a new cost-benefit analysis proves the benefits to outweigh the costs after the problems increased and the tunnel has to be built – if this has not happened yet it will in the near future. The alternative is to find a new route which can be constructed on the surface.

¹ Working group: dr arch. Nadiya Sosnova, arch. Stepan Tupis, arch. Inessa Sklyarova, MA Roman Liubytskyi. Nature traffic investigations were executed on 1-15.12.2015 together with author.

The outer ring system is incomplete (over 20 km is missing) until it is connected to the shortcut of the E 40 which is planned in the North of Lviv [2]. As the project for this motorway is quite advanced a solution of this problem does not appear to be far away.

Internal problems are predominantly conflicts between individual and public transport especially on rails. Road profiles are too narrow in many places. This fact is aggravated by dysfunctional division of the profile between the different fractions of traffic. Most tram tracks are not arranged functionally. The optimal layout in two-directional traffic is tram tracks in the middle of the road with car lanes on either side of them. Road and tram rail layout in many places in the city centre is based on plans conceived over a hundred years ago. To correct this immediately on Lviv's extensive tram network is too expensive, but whenever tram rails have to be replaced because they are worn out – and a lot of them are – they should be repositioned in the most functional way.

3. Investigation of Lviv's traffic problems

Far more than being impeded by moving cars the public transport and traffic in general is impeded by cars when they are not moving. Looking at the city centre it is obvious that it is the parking which takes away valuable space for public and private transport as well as for pedestrians. In most of the European cities with a comparable historical center, let alone UNESCO heritage, cars are banned totally from the center. This is true for the inner cordon of world heritage area in Lviv too - at least in theory. In fact a lot of cars circulate or stand even in this area with whatever excuse. But the historical center of high urban value and exquisite buildings in Lviv is not confined to the UNESCO boundaries.

The working group established an abstract ideal city model (Fig. 1) with a central area consisting of an inner zone, an outer zone and a ring of car parkings around this zone. The assumption, based on experience in Germany, is that people accept a walking distance from a car park to the inner zone of about 7 minutes which corresponds to a distance of 300 to 500 m, in some studies even 1000 to 1500 m [3]. The ideal model has to be translated to the physical nature of Lviv, which is depicted in the map (Fig. 2).

The inner zone of the city should be pedestrianized totally to protect the buildings and make visitors experience this precious part of Lviv undisturbed. There should be the consequent rule: No access for cars to this inner zone, except emergency vehicles like ambulance and fire brigade, for cars of handicapped people and for delivery from 7 to 9.30 am (recommended)². This is neither unreasonable nor unfair to car drivers. It is the question of priorities and most of the historic cities I know have decided to favour their buildings and pedestrians.

City center parkings arrangement model. (By prof. G. Zantke)

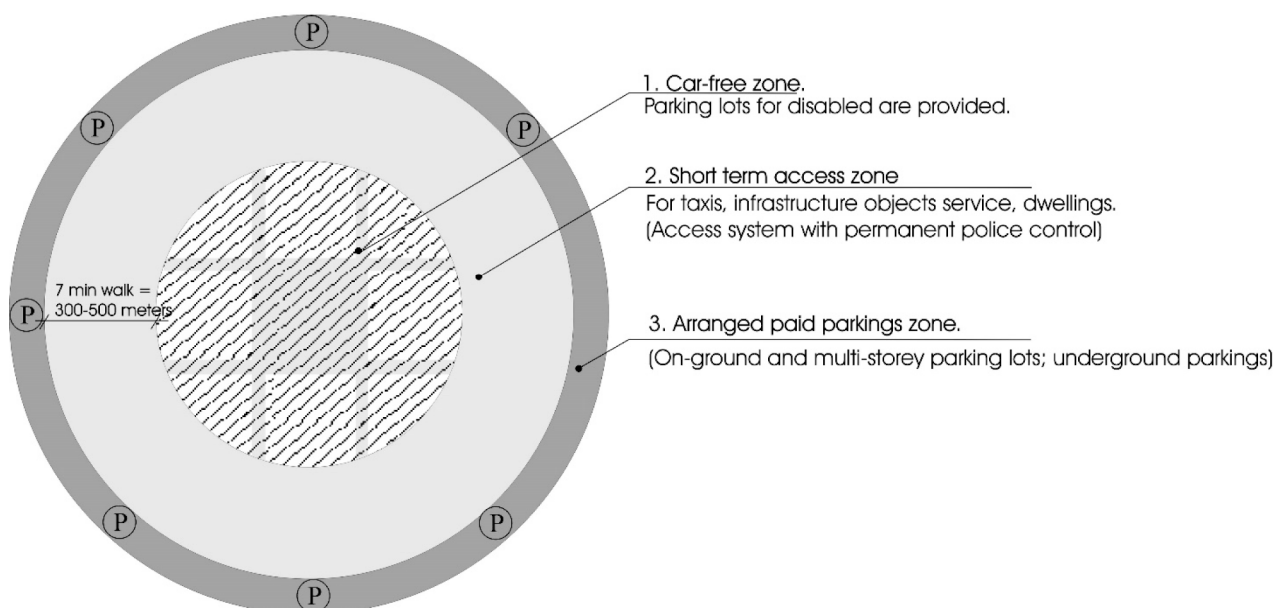


Fig. 1. Ideal model of city parking arrangement of Lviv (By prof. G.Zantke)

² Delivery hour shave to be defined by the city municipality.

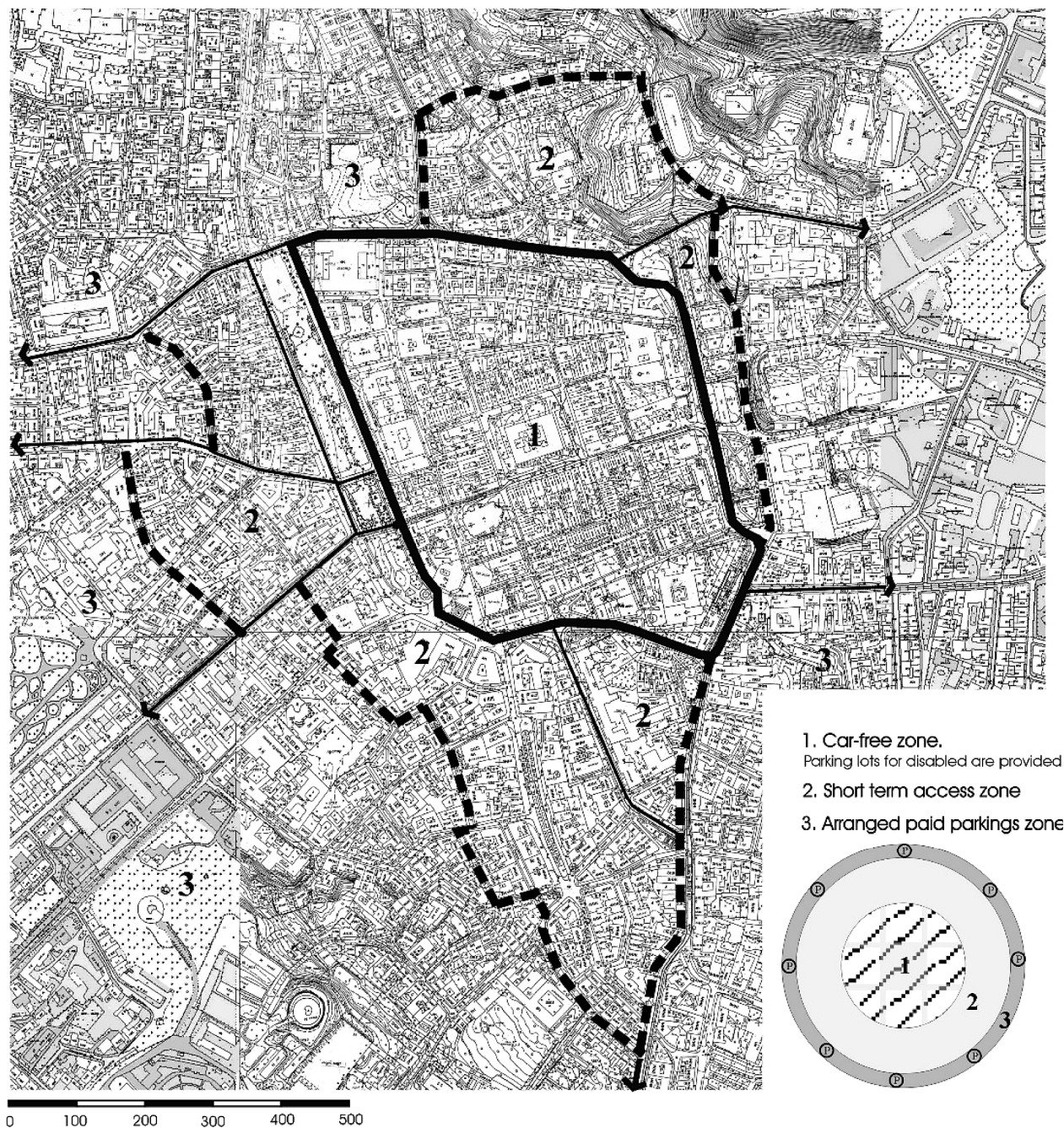


Fig. 2. Actual shape of proposed zones of central area.

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The author had a planning office in Bonn, former German capital (1949–1990). In Bonn the whole inner city is pedestrianized, the diameter of this zone is about 600 m. In Bonn no retractable poles like in Lviv are needed to prevent unauthorized access – everybody respects the pedestrian area. He would be stopped by police immediately if he did not. This is not a specific reaction by an overcorrect police of Germany or Western Europe. Ukraine's neighbor Poland is very consequent in this respect too¹. To what extent can car drivers be expected to respect a pedestrian area, which walking distances are acceptable for residents or visitors of a historic city centre like Lviv?

¹ The author has recently been to Krakow. He wanted to rent a bicycle and the bicycle rental was in a zone of limited access. Having business there he assumed to be entitled to enter that restricted inner area. He was stopped by the police and was fined 500 Zloty equivalent to 3000 UAH! Ukraine's neighbor Poland shared the experience of the recent history. The example from Krakow shows that nevertheless they do not hesitate to execute their laws. Of course nobody likes to pay a fine of 500 Zloty but although painful he has to understand the necessity!

The author is aware that only 25 years in a democratic state and past communist economy people in Ukraine enjoy the possession of private cars and they want to use them. And he is aware as well that after a very long period in a totalitarian regime people resent restrictions of their personal freedom, every kind of regulation and their memory on police and military might still be disturbed. But as much as they suddenly have experienced a total change of attitude to their soldiers defending their freedom and inviolability of national borders as much they will understand that a civil society has to respect the self given rules and that the police is indispensable for that.



Parking at Valova str.



Parking at Pidvalna str.



Parking at Pidvalna str.

Fig. 3.-5.² Existing look of officially defined parking places.
(Photos of G. Zantke, December 2015)

“Drivers park their cars everywhere – on the sidewalk, in crosswalks, in moving lanes, on playgrounds, in public plazas, on grass and seemingly wherever a surface space can be accessed”[4]. This quote from the Institute for Development & Transportation Policy, New York, was written to describe the situation for Kyiv but is true for Lviv too. Field studies in the centre of Lviv showed that car drivers keep parking irresponsibly, just where they like it, and a “No Parking” sign does not impress them at all! They only would change their bad habits if they know there is a heavy fine. Until now there is hardly any enforcement of parking rules. The police is engaged with more serious tasks like crime fighting. Controlling parked cars would mean binding highly skilled forces to simple tasks. So most cities in Europe have traffic wardens to do this, less qualified than professional police and also with a different legal status. They can learn their job in a week of training. A lot of jobs is created, in most countries the majority are women with less chances on the labour market than men. Their salaries are less than those of police. Even if the costs for placing meters in every street are considered there are no extra cost for the city but a profit instead from what the parking fees and fines add up to. In Germany the annual revenue is 20.000–125.000 Euro (0,5–3 Mil UAH)⁴ per meter, the average maintenance costs are 870 Euro (20.000 UAH)! [5] Fees for an hour of metered parking are the equivalent of about 40–50 UAH in Germany, about 35 UAH in Poland. Fines like 500 UAH in Germany must be paid within a week's time, otherwise a warning is issued which costs three times as much and is registered at a central agency. After a certain amount of warnings the driving license is withdrawn for a month time. If a car is obstructing vehicle and pedestrian traffic in Germany the consequences are more severe.

² 1 Euro = 25 UAH (December 2015).

The illegally parked car will be towed away by a service and the driver has to reclaim it on their yard at the outskirts of the city, pay the price for the towing and a fine on top, together at least 5000 UAH. This measure can only be ordered by the police. Even people who have the privilege to be residents of the historic centre of Lviv or to run a shop or restaurant there have no claim to a garage or car parking. For example, in Bonn residents learned to walk the last 300-400 m from a car park to their home or their workplace in the center.

In the second zone (Fig. 1) vehicle traffic is permitted. But this is not the area to leave a car for two hours of shopping. There is no space for so many parking lots. Parking is restricted to 15 min. for urgent business. If cars are allowed to enter, why not let them park longer? If drivers do not find a place they keep circling waiting for a place to become vacant congesting the narrow roads, producing noise, danger and quite an amount of carbon dioxide, disturbing public transport and pedestrians who also want to enjoy this desirable and still beautiful part of the city. Until now the only argument was the protection of the beautiful city of Lviv and the comfort of residents and visitors there. As soon as carbon dioxide is mentioned it is clear that the issue is more complex as Lviv is obliged to contribute to the reduction of global warming like any other city.

4. Traffic network optimization

Considering the importance of car parks for the functioning of urban traffic it has to be accepted that car parks are as much part of the public traffic infrastructure as are the roads. So it is a public task to provide them. If the city government refuses to do this on the grounds of lacking funds this argument is not valid. In Germany car parks are so profitable that many cities do not leave this profit to private investors. The author's home city Bremen solved this problem quite satisfactorily. Bremen belongs to the poorest cities in Germany with the highest percentage of unemployment and highest debts. For building and running its car parks Bremen has launched the BREPARK, which is a private company legally in the form of a company with limited liability. This company operates like a private investor, takes loans from the bank, normally at very good interest rates since the risk for the bank is minimal, buys land for car parks, even if that is property of the city, builds the parking and runs it. The company is 100% owned by the city and profits go to the city if not reinvested in other parkings or in projects of public interest like the "Lloyd Passage". This passage once was an open street now covered with a glass roof. It is adjoining a parking house of Brepark. Together with the shopowners of the street Brepark financed this passage and managed the building process, a task too difficult for the city administration to do. A glance at website of Brepark reveals the number of 12.000 parking places in 9 garages and surface places and the prices: 70 cts (18 UAH) for half an hour, 12 Euro (300UAH) per day, 3,50 Euro (90 UAH) on Sun- or holidays.[6] Not only in Bremen this is a profitable thing for the city to do. There is no reason why this model should not work for Lviv – with prices adapted Ukraine's costs of living. It is obvious that a garage only has customers if people cannot station their vehicles illegally without paying or for just 4 UAH/hour³ a supervised car park in the centre as at present!

When the working group discussed locations for underground car parking in Lviv for most of those the argument was that the conservators do not allow to build a car park in the proximity of a historic building. This postulation is too restrictive. Bremen's history dates back to 780 after Christ, the city centre is still in the area of the earliest settlements and boasts a lot of very fine historic buildings. The city hall too belongs to the UNESCO world heritage. Nevertheless underground car parks and park houses are being constructed in the vicinity. Whenever remains of historic buildings are found, then the building process is stopped for a defined duration and the archeologists have the opportunity to excavate in this time what they need to. They may even order special procedures for the further building process eg. to conserve an old city wall in the basement of a new building. The duration and extent of the archeologists' measures are carefully negotiated but then the building process proceeds. A city is a living organism and every respect for the past must not choke this organism. Bremen's conservators have a lot of powers as to secure an adequate conservation of private old buildings including influence on the architecture of new buildings in the neighborhood but they understand that the city is not a museum! Part of the obligations of a world heritage is also its accessibility for visitors, so parking in a safe distance should be in the interest of the conservators if they respect the rules of ICOMOS, the agency for the UNESCO world heritage.

³ Fee for parking at Valovastreet is 4 UAH/hour(December 2015).

The next reported argument of the conservators (which was also discussed with working group in Lviv) is the fear, new building close to historical buildings might damage or even destroy these. One mayor problem is that of the ground water level. If lowered it can damage the foundations of a historical building which may even collapse. All of this is true for Germany as well and cities have been building in the neighborhood of gems of historic architecture without damage. This is nothing but a question of technical standards of the engineers and the building firms engaged. Because of recent economic problems in Ukraine projects have been built by companies which did not fulfil the high technical standards required and the result was damage. There is a very clear and simple answer to that: If a company does not guarantee for the qualification required no building permit can be given – but that should be evident! If buildings are not executed to the necessary technical rules whether these are more or less complicated something even more valuable than precious historic buildings are at stake: the life of people! Therefore this argument has to be dropped.

If the arguments about unwilling investors and dangerous constructions are invalid then locations for new car parks close to the city center have to be identified. The working group found sufficient opportunities which are depicted in map (Fig. 6) The majority of them were already included in the masterplan of Lviv [9].

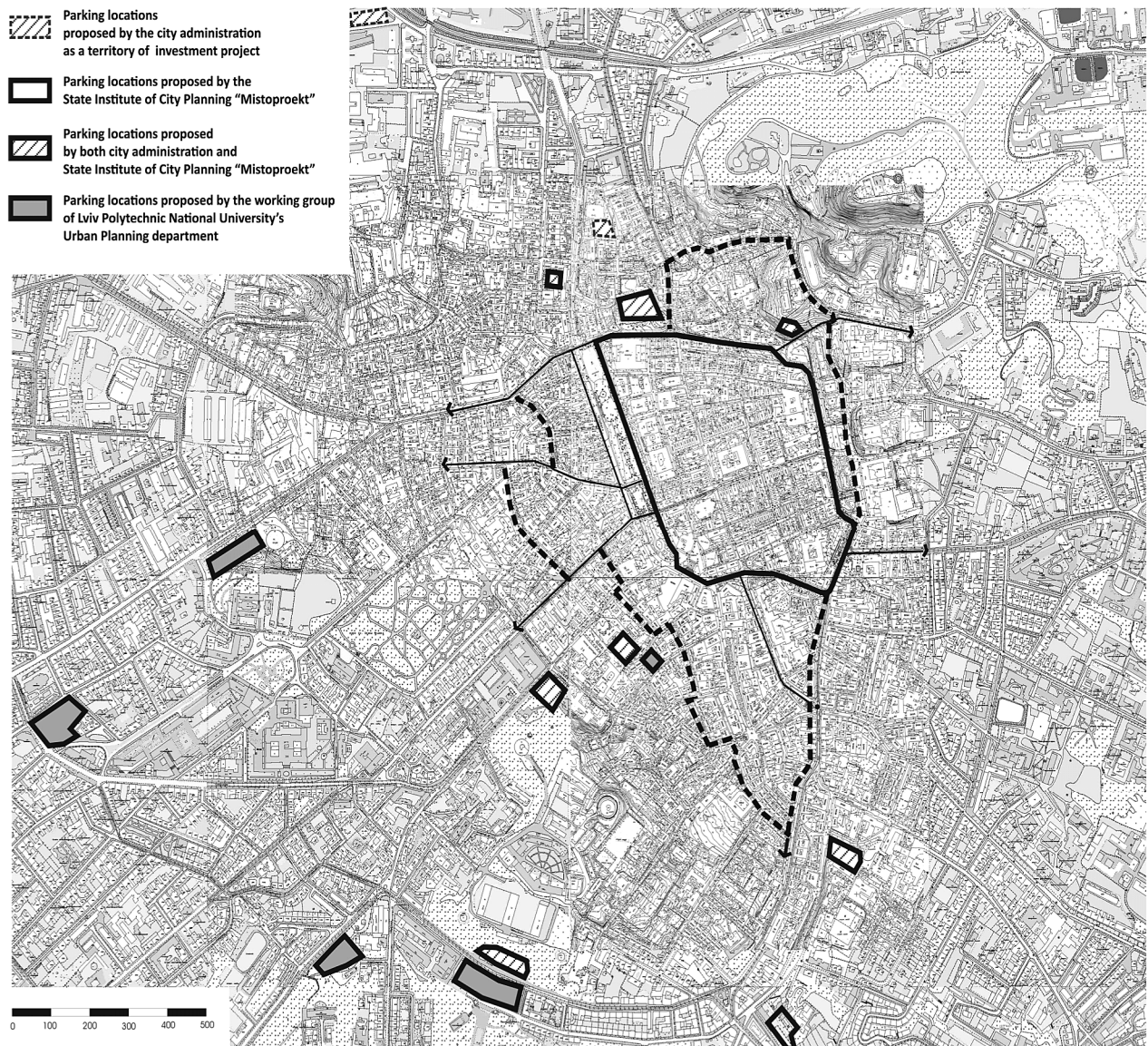


Fig. 6. Proposed locations of car parks

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5. Conclusion

The strategy to relieve the city from unnecessary and harmful traffic is twofold: Discourage individual car traffic to go to the city and encourage public transport, pedestrians and bicycles. In spite of its deplorable technical and maintenance standard the overall supply with public transport in Lviv is good. The tram network with the addition of the trolley- and other buses gives satisfactory access to the city as far as connections are concerned. Vehicle park and rail infrastructure have to be renewed, some tram cars already have been replaced by new models made in Lviv.

Are the proposed actions really necessary? The traffic situation at the moment is not inspiring but somehow the traffic seems to work. But the present situation will change dramatically in a few years – hopefully. When the war in the Donbass area will be over the economic situation of the Ukraine will recover, even more so since the EU-Ukraine “Deep and Comprehensive Free Trade Area” provisionally entered into force on January 1, 2016. Tourism to Lviv will undoubtedly increase, a lot of those tourists, especially from Poland will come by car and they want to visit the city centre.

Another development will take place. In countries with a high level of education not production but the service sector plays an ever increasing role. Lviv with many academic institutions, a high rate of well skilled academics combined with a lower wage level than the European Union will attract European companies. Close to the Eastern border of the EU a beautiful city as Lviv with a basically attractive supply of housing will face an increase of inhabitants most of which belonging to the higher income group. The number of car holders in Lviv ownership will rise accordingly.

If Lviv can somehow still exist with the transport problems in the central area now, it will be choked by traffic in future if these problems are not overcome by then. The solution of these problems is much more difficult when traffic has increased already. So the recommendation of the working group to the city of Lviv is to start to solve these problems now.

Shortage of funds is no excuse to wait. The immediate answer to the demand are predominantly administrative measures, first of which should be to organize a functional management of stationary traffic. For furnishing every street with roadside parking in the outer zone of the city centre with meters and establishing a force of traffic wardens the profit by far outweighs the investment as it does for the founding of a city owned private parking company.

Improving the quality of public transport should not be neglected because only then the massive increase of private car traffic to the city centre can be reduced. The necessary investment for this should not lead to the increase of fares. Today's fares of 2 UAH or even reduced of 1 UAH are symbolic rather than economic. But instead of increasing these prices to cover the actual cost of the system the opposite policy should be considered. European cities like Hasselt in Belgium [7], Tallinn in Estonia, Chengdu in China or Lübbecke and Templin in Germany [8] successfully introduced free public transport.

As soon as an improved economic situation enables the city to invest more into the infrastructure the gap in the inner road ring should be closed, the outer as soon as the E 40 north of Lviv offers this chance.

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**ВИРІШЕННЯ ПРОБЛЕМ РУХУ
В ЦЕНТРАЛЬНІЙ ЧАСТИНІ ЛЬВОВА**

***Анотація.** Недоліки в транспортній інфраструктурі у центральній частині Львова ведуть до заторів і ускладнення пішохідного руху, так само як і забруднення повітря. Основними причинами цих проблем є не фізичні параметри, а відсутність ефективних адміністративних та законодавчих заходів для управління транспортним рухом.*

***Ключові слова:** міський центр, транспортний рух, управління паркуванням, пішохідна зона, громадський транспорт.*