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FRAMEWORK FOR ASSESSING STREETSCAPE IN HISTORIC CITY CENTRE

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Abstract. Over time, street landscapes have changed their meaning, from significant gathering, socializing and movement places they have become intense traffic corridors dominated by street transport. Today, however, more and more people are once again beginning to identify streets as more than just corridors for movement and transport, but also as important multifunctional outdoor spaces. Social habits have also changed as the needs for a healthy and safe environment have increased, and people are increasingly choosing environmentally friendly ways of moving, active lifestyles, being outdoors, in nature. The implementation of the needs of modern society on the streets of the historic city centres is complex, influenced by a number of factors: the historical identity of the place, the historic character and elements of the streetscape that are often protected by legal acts; the needs and interests of various interested parties, including accessibility of the streetscape for people with disabilities; the growing need to solve problems of climate in cities – mitigation of heat islands, air pollution, flooding caused by intensive rainfalls, which is complicated by the lack of green areas in the historic city centre. In order to develop the most appropriate solutions for the development of historic streets, it is necessary to identify all the limiting and promotive aspects. The purpose of this study is to develop and to test the methodological framework for the research of historical streetscape as the basis for the development of public space compliant with modern requirements, by performing streetscape analysis based on public needs, historical, ecological and socioeconomic criteria. The developed methodology has been tested in the context of Terbatas Street in Riga city, Latvia. Key results from the study showed that for historic streets it is essential to identify those elements of the streetscape that can be transformed and adapted to modern requirements and societal needs, and those elements that are essential to preserve in order to maintain the historical character and identity of the place. As one of the main conclusions of the study – the overall development strategy of the historic city centre plays an important role in research and development of historic streetscape, which includes both mobility, green infrastructure, public space network, tourism development, as well as functional and ecological links with other parts of the city.
Keywords: development of historic city centre, streetscape analysis, accessible public space, street infrastructure

Introduction

Even in the old days city streets were important public spaces where residents gathered and walked together, children played. Over times, as technology developed and people's way of life changed, city streets became dominated by motor vehicles, displacing human presence from there. Today there's more and more talk about human centred urban planning, including returning street spaces to people creating them as a public outdoor space (Gehl, 2010; Maghraoui, 2019). The specific article examines the research of the streetscape of the historic city centre as the basis for their further development planning.

The streetscape research is closely linked to street planning, so landscape analysis should be based on the same principles and criteria used in street design. More and more in the streetscape planning the needs of users of these areas are highlighted in interaction with the physical and functional parameters of the street landscape (width, traffic intensity, etc.). Society as a whole has its basic needs in the public space (Gehl, 2010), just as each group of streetscape users (including people with disabilities) has their own individual needs, which often overlap due to the limited width of the streetscape, and a compromise should be found (Manual for streets, 2007; Inclusive Mobility..., 2021) For example, for safety reasons cycle lanes should preferably be constructed separately from pedestrian pavements, which is not always possible. Therefore, the overall city mobility plan is also important, that allows to find the streets with appropriate physical parameters for cycling routes instead of using narrow streets for this purpose. Similarly, a significant group of users are pedestrians who use street as a public space where they want to be safe, breathe clean air and relax, so the green infrastructure of the street is essential, including the possibility of reducing noise, as well as there are often as a compromise some parking spaces are dedicated for the creation of greenery and recreation areas. The common city infrastructure planning is also relevant here, which allows to evaluate alternatives to creation of infrastructure on streets which are more appropriate for definite solutions (e.g., development of public transport, micromobility, provision of parking spaces in another location). A well-planned street space must be safe, reducing the potential for conflict between different user groups (safety); comfortable and available, including for people with disabilities (comfort); planned elements of streetscape must be in accordance with other elements and buildings of the street landscape space (coherence); with more direct movement where possible for pedestrians from one point to another (directness); streetscape must be attractive creating a positive and safe aesthetic experience (attractiveness); adaptive and, if necessary, transformable without major reconstruction and investment (adaptability) (London Cycling Design Standards, 2016).

Street planning nowadays is closely linked to sustainability principles, which include ecology, social and economic aspects. As one of the models which is used in several European cities is healthy streets, which is created by the following indicators: pedestrians from all walks of life; people choose to walk, cycle and use public transport; clean air; people feel safe; not too noisy; easy to cross; places to stop and rest; shade and shelter; people feel relaxed; things to see and do (Streetscape Guidance, 2019; Interchange Best Practice Guidelines, 2021).

Modern scientific studies in the field of streetscape research put greater emphasis on the problems in the area of environmental quality created by transport and hard surfacing. Therefore, research on environmental quality of streetscape covers topics of beneficial effects of plants on humans, mitigation of air pollution, heat islands, management

of rainwater, etc. , as well as the possibilities for improvement of environmental quality by choosing appropriate tree species and green solutions (Horte&Eisenman, 2020; Lua et.al., 2018; Vries et al., 2013). In turn, the number of historical street studies is less extensive and mainly there are analysed views applying approaches used in human perception research (El-Deen et.al., 2024; Mundher et.al., 2022).

In Latvia, the research of the landscape space of historical streets of the city in the context of its possible development has not been carried out extensively, historical values of these streets – buildings and other objects have been studied more (Krastiņš, 2012; Krastiņš, 2023). In its turn, for example, in legal acts of Riga City Latvia there is emphasized the preservation of the historical street landscape space, which is influenced by the street profile (proportions of road parts and pavement parameters (Rīgas vēsturiskā centra..., 2013).

The historic centre of Riga city in Latvia is included in the World Heritage List of the United Nations Educational, Scientific and Cultural Organization as a cultural and historical value of international significance. The unique value of this area consists of an indivisible set, which includes both the spatial structure and architecture of the site, the panorama and silhouette of the city, nature elements and greenery, as well as certain lifestyles and other diverse values (Rīgas vēsturiskā centra..., 2006; Rīgas vēsturiskā centra..., 2013; Rīgas kultūrvēsturisko teritoriju..., 2017; Dambis, 2010). The fundamental problem of the area forms in contradiction between the protection of traditional values and the continuous development of the city in accordance with the increasing requirements of the quality of life, which also applies to street development.

One of the long-term development objectives of the city set out in the sustainable development strategy of Riga City is "an urban environment that is comfortable, safe and enjoyable to the people", for which a number of initiatives are applicable: development of traffic infrastructure in accordance with the priority order: pedestrian – cyclist – public transport – motor vehicles – freight transport (commercial transport); environmental quality and adaptation to climate changes, environmentally friendly solutions; a healthy and educated society; a competitive and innovative urban environment; natural and cultural values as a forming elements of the place identity (Rīgas ilgtspējīgas attīstības stratеģija, 2014). Under this initiative, it is planned to develop an important city linkage that will connect the historic city centre to the one of the neighbourhoods in the outskirts of the city. At the same time, while being in the densely built central part of the city, it is essential to reduce emissions and noise from motor vehicles by improving air and environmental quality for residents and city visitors. The linkage also partly falls within the protection zone of the historic centre of Riga, where preservation of cultural heritage plays an important role.

Therefore, the aim of this particular study is to develop and to test a methodological framework for the research of historic streetscape, which would allow to assess the historic values to be preserved and opportunities to integrate solutions based on public needs, ecological and economic criteria, healthy streets principles.

The developed methodology has been tested in the context of Terbatas Street in Riga city, Latvia, which is planned to be one of the streets forming the new city linkage. Terbatas Street is characterised by historical spatial structure and elements, but at the same time the location of the street in the city active centre makes it necessary to seek a compromise between modern requirements and the preservation of the historic heritage.

Material and Methods

Method

For the research of streetscape in the historic centre of the city there was used a complex approach consisting of an exploration of the various factors influencing spatial structures of the landscape and the possible future development and public needs (Fig.1). Groups of influencing factors are based on the principles of sustainable development, which consist of balanced interaction between economic, social and environmental aspects and the principles of healthy streets (Streetscape Guidance, 2019; Interchange Best Practice Guidelines, 2021).

In the case of historical streetscape research historical and cultural aspects are most important factors influencing the development of streetscape area and should be highlighted in the research (El-Deen et.al., 2024; Mundher et.al., 2022). It is the **cultural and historical qualities** that will make the place unique, maintaining a close connection with the history of the place, strengthening the identity of the place. It is therefore essential in this section to identify the historical spatial structure, elements and usage of the street landscape as an opportunity to use them to preserve and strengthen the identity of the place. A combined approach is applied to the exploration of cultural and historical qualities by comparing data from historical materials (images, maps, descriptions, interviews, etc.) and street survey in nature, analysing what historical elements and street spatial structure have remained and currently form a character and identity of the place. In the cultural and historical aspects section, it is important to define the spatial structure of the streetscape, determined by the interaction of building facades, driveways and pedestrian pavement parameters, which allows the better modelling of planned changes in the spatial structure of the street, which would not significantly alter the original, historical character of streetscape.

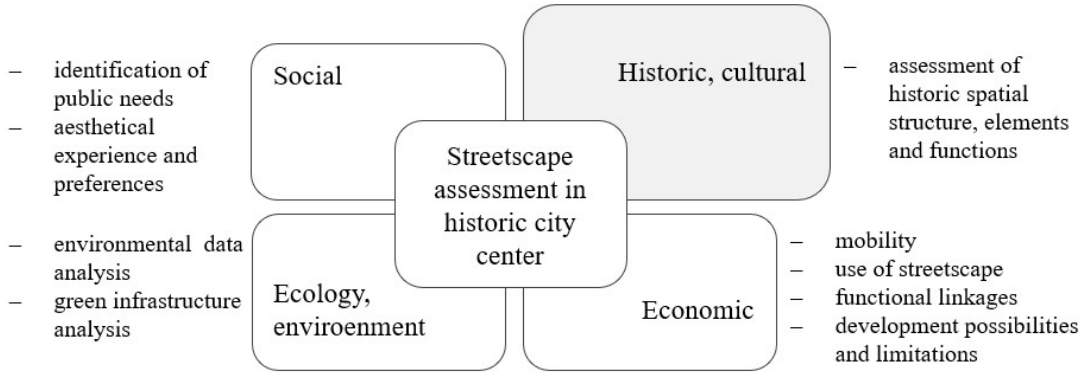

Fig. 1. Main influencing factors and approaches used in assessment of streetscape of historic city centre (created by the authors)

Social quality

In the social dimension block, there are assessed the needs of different groups of users (pedestrians, cyclists, motorists, locals and tourists, people with disabilities, mothers with baby carriages, small children) and the parameters and elements of the streetscape necessary for their implementation (Manual for streets, 2007; Inclusive Mobility..., 2021). The visual qualities of the street landscape are also assessed, not only the views on important and valuable historical objects, but also the aesthetic quality and historic coherence of the used surface materials and streetscape elements.

The ecological and environmental aspects of the place examine the green infrastructure and street vegetation, the ecological linkages with the adjacent green structures (Klemm et.al., 2015; Rehan, 2013; Horte&Eisenman, 2020). Similarly, analyse noise levels, heat islands in the context of environmental aspects (Pētījums Klimata pārmaiņas..., 2016; Aktuālā informācija un pārskati..., n.d.).

Economic aspects include exploration of existing and potential mobility according to user groups (public transport, private transport and parking spaces, cyclists, electric scooters, etc); functional linkages with other parts of the city and important public facilities; exploration of existing and potential usage of the street landscape space in the context of the parameters of the streetscape (amount of free space, possibilities for short-term solutions, for example, street parklets); exploration of possible developments and restrictions (access to buildings, city restrictions for area planning in historic centre, etc)) (Streetscape guidance, 2019, Manual for streets, 2007).

It should be noted that often the streetscape is stretched over several blocks, within which it may be very variable and different. It is therefore necessary in the streetscape research to divide street into sections, the division of which is determined by the spatial structure and elements of the street (how wide the street space is, whether there is planting, cultural and historical elements, outdoor elements, etc.), the intensity of usage (groups and types of users, mobility). According to the division into sections, the exploration of the influencing factors mentioned above is made for each of them. Based on the results of the research, development proposals are subsequently developed for each section of the street.

Research object

Terbatas Street in the historic centre of Riga city, Latvia has been selected for testing of the developed method. Terbatas Street is actively used on a daily basis as it is adjacent to both residential buildings and public establishments – cafes, shops, etc.

The length of Terbatas Street is 1810 m, from the 1919s to 1955s the street had changed its names in line with the political trends of the time, the old name was restored to the street in 1990. The name of Terbatas Street originated from the university founded in Tartu (Estonia) in 17th century, which is the second oldest university in Northern Europe. The street is surrounded by historically significant buildings, four of which are monuments of national significance, there is Vermanes garden at the beginning of the street, which is a significant historic public space and a cultural monument of national significance (Fig.2, Fig.3).

A significant number of historic buildings with distinctive facades - cultural monuments of regional and local significance also located in the streetscape (Lecis&Grandāne, 2024). The authentic cobble stone pavement has remained on separate street sections, a tram moves along the street. Considering the popularity of the street, there have been several ideas of transforming the street into a pedestrian street, also testing summer activity – closing the street to traffic for fixed period in summer in 2020. Within the summer experiment there were interviewed the locals and entrepreneurs who admitted the street has the potential to become a pedestrian street, yet more as part of short-term activity (Novērojumi pētījumam...., 2020; Vasaras ielas eksperiments...., 2020). In recent years, several improvement projects have been carried out for streets perpendicularly connecting to Terbatas Street, including the creation of cycle lanes, which in future will form good links with other urban cycling routes, thus allowing Terbatas Street to develop as a street with pedestrian priority. In parallel, several projects are being implemented aimed at public participation and education, such as green solutions in the public outdoor spaces adjacent to the street; and activities involving the public in the development of the former market territory. These activities in future will create a different landscape of Terbatas Street, with its new place identity.

Results and Discussions

The research of historical streetscape has been tested in the context of Terbatas Street in Riga, including historical, environmental, social and economic aspects, as well as taking into account the principles of the healthy streets approach.

Historical values, spatial structure and elements of the streetscape. Given the objective of the study, which is aimed at creating a safe and qualitative streetscape and infrastructure for different groups of users, therefore particular attention is paid to the parameters of the street space (width of road carriageway and pavements, surface materials) and to the different functions and the usage of the street. As the best approach for consolidation of such information is an inventory of streetscape, which includes data on the

Fig. 2, 3. Existing situation – Terbatas street in Riga city (authors photo, 2023)

Fig. 4, 5. The beginning of Terbatas Street, with a lime trees avenue on the right near the historic Vermanes garden, cobble stone paving dominates (photo from the beginning of the 20th century) and the overall character of Terbatas Street (photo from 30s of the 20th century) Rīga. Tērbatas iela. Riga - Dorpater Strasse, 191-; Rīga. Tērbatas ielā 14, n.d.)

Fig. 6. Location of research object – Terbatas street in Riga city and division of Terbatas Street into sections by different landscape structure and architectural features and elements (created by the authors)

width of street space, elements and materials used, plantings and most important views. Previous studies, for example, the assessment of pedestrian and bicycle traffic flows in the historic centre of Riga (Gājēju un velosatiksmes plūsmu..., 2013) indicate that there is insufficient space for the provision of the flow of pedestrians and cyclists on certain sections of Terbatas Street. Given that there are no existing large trees on several sections of Terbatas Street, either historically or nowadays, therefore there is a possibility to change the profile of the street, while maintaining the historical character, for example by narrowing the road carriageway and expanding the space to be used by different user groups (cyclists, pedestrians, users of touristic and recreational facilities, caffe etc. A significant tree avenue is formed at the beginning of Terbatas Street, where it joins the historic park (Fig.4, Fig. 5).

In turn, the identified cultural heritage objects – historic buildings allow to identify places where the possibilities and assortment of new planting should be carefully assessed, ensuring that planned planting is not too close to or not completely covers the historic facades of buildings.

The value is also the historic cobble stone pavement, which should be preserved as much as possible, which is also determined by the regulations regarding the usage and building of the historic centre of Riga (Rīgas vēsturiskā centra..., 2006). Almost the entire length of the road carriageway part of Terbatas Street is covered with historical cobble stone, whose paving quality varies from section to section of the street. The main challenge here is integration of universal design solutions into historic stone paving areas, for example, in street intersections where pedestrians cross it. Similarly, due to the rough sections of the road carriageway on Terbatas Street cycle traffic is difficult, so cyclists often use sidewalks to move, creating an unsafe environment for pedestrians.

Different sections of the Terbatas Street are characterized by a various architectural and spatial structure of the streetscape. Consequently, Terbatas Street can be divided into three sections with different spatial structures, the nature of which is influenced both by the width of the street on a particular section of the street and by the functions of buildings adjacent to the street (cafes, shops, housing, etc.) and by the presence of trees (Fig. 6).

The spatial structure of 1st section of Terbatas Street, from Merkela Street to Elizabetes Street, consists of two public


Fig. 7, 8. Elements creating the spatial structure of Terbatas Street, from Merkela Street to Elizabetes Street (authors photo, 2023)


Fig. 9, 10. Elements creating the spatial structure of Terbatas Street, from Elizabetes Street to Stabu Street (authors photo, 2023)

spaces – Baumana Square at Brivibas Street and a pavement extension at the intersection of Terbatas Street and Elizabetes Street. The green structure of the street is made up of rows of trees on both sides of the street, greenery at the building of the Ministry of Justice (Fig.7, Fig.8). The amenities are mostly located in Baumana Square and in a pavement extension of Elizabetes Street. The nature and aura of the street are influenced by the flower market and proximity of Vermanes garden. Therefore, the key issues to be addressed at this section in the context of spatial structure are creation of link to public spaces adjacent to the streetscape, ensuring universal design solutions and accessibility, which is currently affected by existing pavement of different quality.

The next section (2nd section) of Terbatas Street, which forms a different spatial structure, is the section from Elizabetes Street to Stabu Street (Fig.9, Fig.10). At this section, the main spatial structures are made up of the historic cobble stone paving, a pavement area of varying surface, width and quality. The perception of the streetscape is differentiated by the design of the windows of shops, cafes and other service providers, and by certain elements of the outdoor space. Only individual trees are found, parklets and bicycle racks, installed in several locations along the section, stand out on the background of grey pavements. On the Terbatas Street 2nd section, the already implemented adjacent street project joins, where also a one-level, raised junction with Terbatas Street is resolved, but cycle traffic is not addressed. Perpendicular streets with already set up or planned cycle lanes are also connecting at this section. Cobble stone paving forms an antiquated aura of the place at this section.

The main issues to be addressed at this section are provision of safe passage for pedestrians on pavements, as bicycles and electric scooters are also currently moving along sidewalks, which could endanger pedestrian safety. Similarly, in some places the pavements are narrowed by the elements of cafe equipment, parklets and amenities placed on them. There is also insufficient greenery and streetscape facilities, intersection crossing is difficult affected by the rugged cobble stone pavement, also poor-quality pavement in some places, other accessibility issues.

The closing, 3rd section of Terbatas Street ranges from Stabu Street to Matisa Street the spatial structure of which in turn is influenced by the presence of existing, large trees that change the character of the street from "greyish to green" (Fig.11, Fig.12).

There is also a more seamless and high-quality cobble stone pavement. The solution of Bruninieku Street with bike lanes on both sides of the street connects to the section of Terbatas Street, however the intersection with Terbatas Street itself has not been resolved and should be included in the project of the development of Terbatas Street. The conservation and integration possibilities of existing trees in the new solutions, the adaptation of intersections to safe, easy crossing, including environmental accessibility solutions, are among the issues to be addressed at this section. The development of a comfortable and safe environment for pedestrians mitigating the potential impact of cycle traffic and electric scooters on pedestrian safety is also topical at this sector.

Economic aspects have been analysed both from the point of view of usage and in the context of accessibility and functional links between the urban environment. The Terbatas Street is also the most saturated with public facilities of the sections of the planned link to be developed in the future (Fig 13).

The main attraction objects of the city importance are mainly located in the main entrance and at the beginning of the Terbata Street, and they are – Vermanes garden, the Supreme Court of the Republic of Latvia, nearby Esplanade park and the Freedom Monument, connection with Old Riga (Old Town). There is also an important public object – the New

Fig.11, 12. Elements creating the spatial structure of Terbatas Street, from Stabu Street to Matisa Street (authors photo, 2023)

Fig. 13. Plan of existing directions of pedestrian and cyclist movements and main attraction objects on the Terbatas Street (created by the authors)

Riga Theatre, which is visited by people from all over Latvia. Natālija Draudziņa Riga Secondary School is also located at the section of Terbata Street. On both sides of the street there are located dense places for entertaining and catering. The main directions of the pedestrian and cyclist flow are closely linked to the infrastructure built and available on the adjacent street.

Public transport stops have also been explored in the context of accessibility. A trolleybus partly moves along Terbatas Street, existing public transport stops are without a parking extension and without shelter, with only a bench in individual locations. Public transport platforms are a part of a pedestrian pavement area where passengers wait for vehicles. Thus, this narrows the part of the pavement that can be used by pedestrians to move safely and comfortably. Similarly, cafe outdoor terraces, poles, cyclones, as well as other infrastructure elements have been built in pavement areas, which significantly reduces the usable width of the pavement. As a positive solution that does not affect the width to be used on the pavement, there are trolleybus contact wires that are attached to the facades of the buildings and streetlights are also hanging there. Almost all the entrance nodes of the buildings adjacent to the street are with more or less level difference. All these factors do not ensure adequate access to the environment for all street users, which should be resolved as far as possible in street reconstruction projects.

Separate intersections of Terbatas Street with adjacent streets are designed in one level and with adequate quality surface, which ensures accessibility of the environment and easy crossing of the intersection for different public groups, including people with disabilities. Vidzemes (Matisa) market is adjacent to Terbatas Street, which attracts the city's residents intensely, yet no qualitative pedestrian and bicycle infrastructure has been built to achieve this.

The usage of streetscape is also important. In the context of Terbatas Street, for example, there has been a discussion for several years about the development of this section of the street as a pedestrian street, testing it also in the summer street project, after which the views of various interested parties and experts on this activity were gathered. The results of the survey showed support for this idea, however, mainly noting it as the short-term activity (in summer season, on holidays or special holidays) (Novērojumi pētījumam...., 2020; Vasaras ielas eksperiments..., 2020).

Analysis of environmental aspects was performed from the point of view of environmental and ecological quality of the area, analysing available data and studies regarding environmental noise, air pollution and heat islands, as well as from the point of view of the stormwater management (Pētījums Klimata pārmaiņas...., 2016; Aktuālā informācija par vides troksni..., 2021).

Fig. 14. Noise map at historic Centre of Riga and Terbatas Street neighbourhood (created by the authors, using Aktuālās Rīgas trokņu kartes, 2021)

Noise. In accordance with the Regulation of the Cabinet of Ministers of the Republic of Latvia No.16 "The procedure for noise assessment and management" (Trokšņa novērtēšanas un pārvaldības..., 2014), which determines noise level limit values for areas of different functions, then in public building and mixed building areas the noise limit value shall be 55 – 65 dB. According to publicly available data, it could be determined that noise concentration presents directly in street corridors surrounded by multi-storey dense building, reaching noise levels on streets and in its close proximity during the day at 70 – 80 dB. (Aktuālās Rīgas trokņū kartes, 2021) (Fig.14).

Taking into account the noise analysis data, it is possible to identify the main risks – the persistence of high noise levels over a long period of time. One of the main noise sources is road traffic. On reducing its volume and intensity (e.g. reducing private transport traffic, promoting micromobility) it will also reduce overall noise levels. It is also important to preserve existing large trees, as well as to create, as far as possible, new and diverse planting areas that would serve as sound-dampening elements capable of reducing noise intensity. This is highlighted also in The Energy and Climate Action Plan for Riga City (Rīgas pilsētas enerģētikas..., 2021)

Air pollution. Over the period from 2015 to 2019, the exceedances of several standards of air quality pollutants or upper pollution assessment thresholds had been registered in Riga City, as a result of which an action programme for improvement of air quality of Riga City for the 2021-2025 was prepared (Rīgas pilsētas gaisa kvalitātes...., 2021). It includes measures to reduce emissions of five pollutants. In programme there are assessed in detail those measures that may potentially have an impact on air quality, for example, measures to "calm" and reduce transport traffic in the city centre and in residential areas; development of public transport; linkages to the planned parking park system, linkages to the city public transport, railway and regional bus routes. Therefore, in the development of Terbatas Street it is also essential to reduce traffic intensity, which would also reduce air pollution. Support for traffic facilitation will be the creation of elevated, single-level intersections, which at the same time also ensure universal design principles.

Heat islands. Although around a third of the area in Riga is covered by green or water areas, most part of them are located in large massive areas on the periphery of the city, but in the densely built areas of the city centre the vegetation is not sufficient to reduce the heat island effect and overheating of buildings and streets during summer periods. Building dominates towards the historic centre and it is surrounded by a network of streets with hard, waterproof pavement, as well as a small number of large trees. All of this contributes to the formation of heat islands in hot weather. To mitigate this, there is a need to increase the amount of planting, possibly including water elements. The solutions to the project should also include solutions such as planting trees on the side of the street that is most sunbathed and heated, while parking places are located on the shadow side. One of the contributors to the formation of heat islands is an emission from motor vehicles. The development of environmentally friendly types of transport and reduction of traffic intensity will also reduce emissions from motor vehicles, which will have a positive impact on environmental quality. As risks to the reduction of heat islands, there are insufficient free space, unrestricted by the underground communication network, for planting large trees that would perform air cooling and microclimate improvement functions.

Social aspects

In the planned linkage of the historic centre of Riga with the neighbourhood in the outskirt of the city, the most socially and economically active section is Terbatas Street. It can be seen from publicly available data (Baltic Maps, n.d.) that most of the building at this section is used for public or recreational, catering, educational, cultural functions (Fig. 15). It is therefore important at Terbatas Street to find a solution for the creation of free areas in the street landscape as a platform for the implementation of possible activities (outdoor cafes, meeting places and socializing places, etc.). This section is also essential for day-to-day routes as in this area there are a number of schools, important public institutions, shopping centres, etc.

In order to determine the wishes and needs of residents and local entrepreneurs there were analysed several surveys carried out by Riga City municipality. Starting with a survey of residents on life in the neighbourhood of historic centre of Riga (Iedzīvotāju aptauja par dzīvi...., 2013), as well as studies

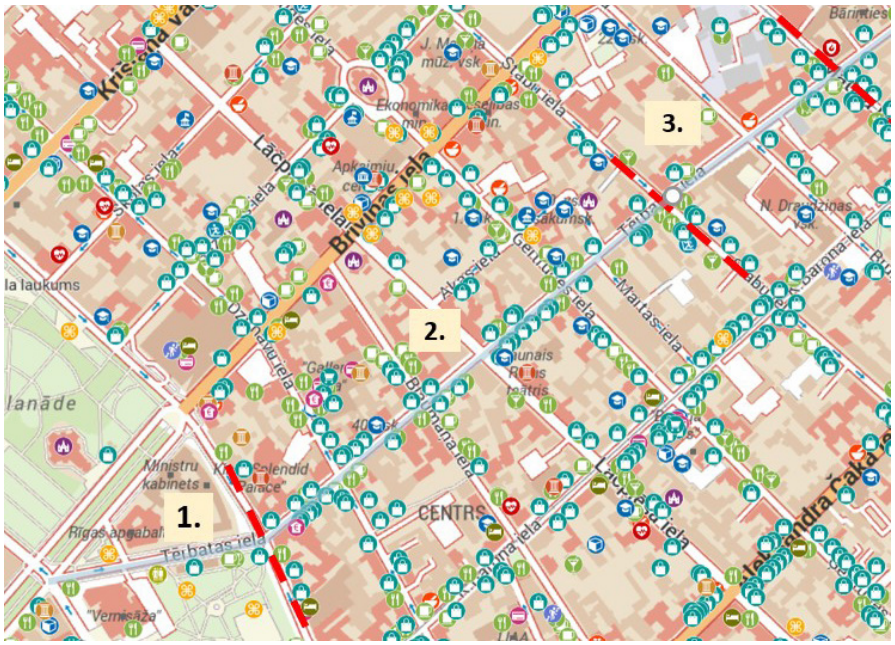

Fig. 15. Recreational, catering, educational, cultural functions (created by the authors using Baltic maps)

of the 2020 (observations and surveys) on the experience and opportunities of Terbatas Street as summer pedestrian street (Novērojumi pētījumam…., 2020; Vasaras ielas eksperiments…., 2020). During the summer street experiment, when Terbatas Street was closed almost entirely to road traffic through monitoring of visitor activities, the results showed increasing activity in sales and service, up to 428 times, a significant increase during the experiment was also recorded for shopping activities as well as drinking or eating activities. During the experiment the visits to private business areas in Terbatas Street as a whole had increased 4.3 times comparing to everyday life. These observations show that Terbatas Street has the potential to develop the streetscape as a multifunctional public space that would contribute social and economic activity in the neighbourhood. This can be developed if there is a sufficient free from motor vehicles area. During the summer street experiment, it was determined that Terbatas Street was actively used in the 2nd section leading up to Gertrudes Street, with usage activity of the next sectors of the street as a public outdoor space diminished. Surveys of visitors of the experiment also contained similar clues, the most suitable for creating a summer street is the section of Terbatas Street from Elizabeth Street to Stabu Street precisely (2nd section). In general, on analysing both the observations and the results of the survey it must be concluded that one of the sections of Terbatas Street could become a short-term platform for different types of activity, allowing both tourists and residents to be attracted (Novērojumi pētījumam…., 2020; Vasaras ielas eksperiments…., 2020).

In turn, when analysing the opinion of residents of the Historic centre neighbourhood regarding the values of the place and their choice to live in the particular neighbourhood, the role of the planting in creating an attractive living environment indicates. While the traffic intensity, noise and lack of parking spaces are mentioned as negative aspects. These issues can be solved by mitigating traffic, increasing green structures or pedestrian areas, providing environmentally friendly types of transport for residents and guests – cycle paths, walking routes, etc. Analysing also the types of movement of the residents of the Historic centre neighbourhood, as well as the location of the destinations to be reached, it should be concluded that the residents of the neighbourhood extensively use both public transport and bicycles and motorized means of transport, mainly because the destinations of daily activities (except the workplace) are mainly located in the city centre (Iedzīvotāju aptauja par dzīvi…., 2013).

A walkout format discussion on Terbatas Street was organized to better understand the needs and expectations of the society, as well as issues related to universal design solutions and accessibility, inviting various stakeholders. The main discussions covered the issue of insufficient free space for pedestrians due to limited street space width to also include there cycling infrastructure, car and public transport (trolleybus).

The methodology of the historical street research allowed to obtain versatile data that highlights the values and positive aspects of the street landscape space that could be used in the street development scenarios, as well as the issues to be solved. According to the research results, the following existing positive aspects can be noted for the development of the entire Terbatas Street:

- The street landscape is made up of several sections that differ in their spatial structure, elements and perception. Therefore, it allows for the development of a diverse public outdoor space.
- Several larger green structures (Baumaņa Square, Vērmanes Garden) connect to the street, which allows for the creation of recreational areas and, in some places, complementary walking routes.
- It is possible to place improvement elements (recreation areas with parklets, benches) on the Terbatas Streetscape, which would promote the 5–10-minute accessibility of various public outdoor spaces by walking or cycling.
- It is important to use historic stone pavement to keep historic landscape character of the Terbata Street
- The research results highlighted the following issues to be solved:
- Easy and safe movement and access to the environment for different groups of society (daily routes of the population – work, educational institutions, local authorities, shops, etc.; tourists or city guests) should be promoted on a single route. Provision of easy pedestrian connections to the key service areas. It is currently provided fragmentarily, which is mainly influenced

by poor pavement conditions, insufficient movement area for pedestrians, disruptive location of road and information signs in the movement area, as well as difficult crossing of street intersections for people with disabilities and visually challenged.

- Possibilities for extending free zones in streetscape to ensure that different functions do not overlap, for example, creation of a cycle lane, leaving pavements only for pedestrians; separation of public transport stops from pedestrian and bicycle traffic; or the usage of free areas for trade, cultural and recreation functions, in certain places also for short-term events.
- In places with historic cobble stone pavement, access to the environment is hampered because the rough surface interferes with movement for people with disabilities, with baby carriages, visually challenged people. However, the historic cobble stone paving will be kept to the maximum extent possible to form the appropriate aura and mood of Riga Historic Centre, considering alternative but equivalent surface only in areas where movement areas for people with disabilities are planned, as well as in the separately formed cycle lanes.
- Better route orientation and attractions by providing information stands and signs.
- Increasing the number of amenities (bicycle storage places, benches, drinking water taps, etc.).
- Opportunities for improving the climate of the city by reducing the formation of heat islands, floods caused by rainfall, pollution (noise, air pollution), using appropriate solutions, for example by providing "green" solutions where possible.

Conclusions

It is important to base on the principles of street planning in the development of methodological framework for the historical streetscape research, where a significant emphasis is precisely directed to meet the needs of different groups of society in the streetscape and promote accessibility of the environment. Public needs are based on the sustainability principles, thus there are used criteria and research approaches in methodology grouped into four groups: cultural-historical, environmental, economic and social. Such a multifaceted approach to the exploration of the historic streetscape also made it possible to analyse the correlations between these different aspects, for example, if it is in the public interest to develop a cycle lane, it is essential not only to identify those preferences, but also to define physical street parameters that would enable or prevent these intentions from being achieved. Which, in turn, points to the need to view the streetscape more broadly by analysing functional linkages with other streets, objects and parts of the city and opportunities, for example, developing a cycle lane on another neighbourhood street whose physical parameters allow it. The case of streetscape assessment of Terbatas Street in Riga clearly demonstrated that the existing street parameters do not allow for meeting all the necessary public needs. Therefore, it was necessary to look at a broader urban area and adjacent streets to assess which functions could be accommodated on Terbatas Street and which could be developed on the neighboring streets.

Consequently, one of the main conclusions of the study is that it is also important in the exploration of the historic street to consider the overall development of the neighbourhood, which includes both mobility, green infrastructure, public space network, tourism development, as well as functional and ecological linkages with other parts of the city. In the case of Terbatas Street, Riga's Sustainable Development Strategy designated this street as a significant urban corridor that would connect neighborhoods outside the city center. This, in turn, highlights the need to allocate street space for mobility and other outdoor facilities.

The approach taken, based on an exploration of public needs in interaction with other aspects of the landscape, makes it possible to identify those values that should be preserved invariably and things that could re-enter the street landscape. For example, it is essential for historical streets to identify those elements of the street landscape space that can be transformed and adapted to contemporary requirements and societal needs, and those elements that are essential to preserve in order to maintain the historical character and identity of the place. The parameters of historic streetscape—such as the proportion between buildings and the open street corridor—were emphasized as historically significant elements in the Terbatas Street case. Additionally, the historic cobblestone pavement poses a major challenge in ensuring accessibility. Therefore, a compromise must be sought to preserve key historical elements while simultaneously providing public spaces that meet modern societal needs.

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Kopsavilkums

Laika gaitā ielu ainavtelpas ir mainījušas savu nozīmi, no nozīmīgām pulcēšanās, socializēšanās un pārvietošanās vietām tās kļuvušas par intensīviem satiksmes koridoriem, kuros dominē autotransports. Tomēr mūsdienās aizvien vairāk sabiedrības atkal sāk apzināt ielas ne tikai kā pārvietošanās un transporta koridorus, bet arī kā nozīmīgu multifunkcionālu ārtelpu. Tāpat, aktualizējoties vajadzībām pēc veselīgas un drošas vides, mainījušies arī sabiedrības paradumi, cilvēki aizvien vairāk izvēlas videi draudzīgus pārvietošanās veidus, aktīvu dzīvesveidu, uzturēšanos dabā. Mūsdienu sabiedrības vajadzību īstenošana pilsētas vēsturisko centru ielās ir kompleksa, ko ietekmē vairāki faktori – vietas vēsturiskā identitāte, ielas ainavtelpas vēsturiskais raksturs un elementi, kuri bieži vien tiek aizsargāti ar tiesiskajiem aktiem; dažādu ieinteresēto pušu vajadzības un intereses, tajā skaitā ielas ainavtelpas pieejamību cilvēkiem ar funkcionāliem traucējumiem; pieaugošā vajadzība risināt pilsētās pieaugošās klimata problēmas – karstuma salu, gaisa piesārņojuma, lietusūdens radīto plūdu mazināšanu, ko apgrūtina zaļo teritoriju trūkums vēsturiskajā pilsētas centrā. Lai izstrādātu piemērotākos vēsturisko ielu attīstības risinājumus, ir nepieciešams apzināt visus ierobežojošos un attīstībai labvēlīgos aspektus. Šī pētījuma mērķis ir izstrādāt un testēt metodisko ietvaru vēsturisko ielu ainavtelpas izpētei kā pamatu mūsdienu prasībām atbilstošas publiskās ārtelpas attīstībai, veicot ielu ainavtelpas analīzi balstītu uz sabiedrības vajadzībām, vēsturiskajiem, ekoloģiskajiem un ekonomiskajiem kritērijiem. Izstrādātā metodika testēta Tērbatas ielas kontekstā Rīgā. Galvenie pētījuma rezultāti uzrādīja, ka vēsturiskajām ielām būtiski ir noteikt tos ielas ainavtelpas elementus, kurus iespējams transformēt un pielāgot mūsdienu prasībām un sabiedrības vajadzībām, un tos elementus, kurus ir būtiski saglabāt, lai uzturētu vietas vēsturisko veidolu un identitāti. Kā viens no būtiskākajiem pētījuma secinājumiem – ielu ainavtelpu vēsturiskajā pilsētas centrā izpētē un attīstībā nozīmīgu lomu veic kopējā vēsturiskā centra attīstības stratēģija, kas ietver gan mobilitāti, zaļo infrastruktūru, publisko ārtelpu tīklu, tūrisma attīstību, kā arī funkcionālās un ekoloģiskā sasaistes ar citām pilsētas daļām.