

Zane Veja

*Under the Bridge:
Space Seen as an
Opportunity or
Threat?*

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Abstract

Elevated infrastructure – highways, railroad lines, and waterfronts under bridges – comprises places where major gaps disrupt the overall continuity of the city fabric. However, while they provide fundamental linkages within cities, these massive, elevated network structures can also cause fragmentation on the urban fabric ground level, particularly restraining pedestrian mobility. Overall, these structures ensure the expansion of neighbourhoods, thus creating countless unused spaces under elevated infrastructure that cannot be regarded as part of the road or the street.

This research paper examines Riga city lost spaces – unused urban spaces under elevated infrastructure – analyzing both their shortcomings and the potential opportunities to become part of the social life of residents. Attention is paid to two important large-scale objects, Gustava Zemgala overpass and Riga Central Railway Station, whose territorial conversion is related to the construction of the Rail Baltica tracks and the multi-modal public transport hub. In both cases, elevated infrastructure creates a valuable space below what could be seen and used for the neighbourhoods' social / spatial connector.

The last part of the article focuses on the ongoing project of the new Rail Baltica station, more specifically the area of Riga Central Railway Station from 11th of November Embankment to the Stockmann shopping centre, which will be reconstructed, while the railway will be located on an estacade. The author presents a spatial design proposal for this newly created territory, emphasizing the preservation of open and transparent public space under an elevated infrastructure by providing a wide range of active functions and points of social interaction. The design proposal includes large-scale traffic reorganization, with a focus on pedestrians, cyclists, and public transport accessibility.

Keywords

elevated infrastructure, mobility, undefined city space, urban public space

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Introduction

Linear infrastructure in the contemporary city has determined the physical form of the urban fabric and prevails over the image of the landscape. In a dense urban environment, bridges, roads, railways, and highway networks serve a primary purpose, providing for fast movement of vehicular traffic. Therefore, it could be considered that mobility provided by infrastructure networks has become an increasingly important part of the functional city (Verheijen, 2015). The main definitions used frequently in this text and introduced by the author are *linear infrastructure* and *elevated linear infrastructure*, which are based on Cabinet of Ministers Regulations No. 240 “General regulations for spatial planning, use and building” (MK Nr.240, 2013). For further clarification, the focal point of this article is on those built infrastructure formations that create additional urban space underneath, which could be used for public outdoor space amenities.

But the planned built form is not the decisive factor that characterizes the contemporary city; much of the city is occupied by large spaces which cannot be included in the building category. These spaces consist of parking lots; undeveloped and ruined land areas; former industrial, now brownfield territories; public parks; huge children’s playgrounds and theme parks; unused plazas near high-rises; and high-speed roads and urban expressways. This inaccessibility exists because these modern spaces cannot be categorized, but are rather called gaps, hiatuses, *junkspaces*, lost spaces or non-places, which cannot be associated with buildings or places (Franck, 2007). These issues highlight the significance of the complication that these territories have no affiliation and coherence with urban space. Therefore, the territories have difficulty in carrying out valuable functions, which is why there is a need to prevent their formation as completely independent urban elements and fully integrate them into the city (Trancik, 1986).



Figure 1. Buffalo Bayou Promenade
(Houston: SWA Group (photo: Tom Fox), 2015)



Figure 2. Underpass Park (Toronto: PFS Studio (photo on the right-side: Tom Arban), 2016)

Case Studies

Since in Riga the concern about revitalizing spaces under elevated infrastructure is a relatively new topic, there is a lack of comprehensive research related to unused spaces under elevated infrastructure. It is necessary to study foreign examples, evaluating them not only in terms of functionality and social aspects, but also in terms of cooperation models that have helped to implement these projects. Cooperation models are considered as one of the leading factors for successful implementation of a project, including both the planning and construction process and finalized project maintenance. Therefore, this section will be dedicated to reviewing several international examples.

Each unused space under elevated infrastructure is in a way unique; therefore, diverse rejuvenation strategies may be applied. For example, spaces like tunnels act as a psychological barrier for pedestrians, who choose other, safer walking routes, avoiding unpleasant city spaces. In other cases, larger-scale unused spaces create a physical barrier, leading to city-scale urban

fabric disruption. Accordingly, selection of the case studies is based on different rejuvenation strategies, collaboration models and influencing factors. The results of the research reveal several main cooperation models: the public/private collaboration model, the public organization and government collaboration model, the neighbourhood connection model, and the social function implementation model. There are several successful examples in Houston, USA; Toronto, Canada; and Zaanstad, Netherlands. Each shows how neglected parts of the city could be integrated into a coherent urban fabric.

The first case study comprises revitalization of an urban waterfront. This case study represents a public-private partnership – *the Buffalo Bayou Promenade* in Houston, USA, is one of the largest investments in public parkland ever carried out by the City of Houston. This project was the result of an historic public-private partnership to revitalize Houston’s downtown urban waterfront. The project includes such functions as a park, a promenade, green infrastructure, a recreation area, a social events area, and pedestrian pathways. Although this megastructure in its original form

corresponds to the problematic category of the previously mentioned elevated infrastructure, it is now very well integrated in the city. The most important change is that the elevated freeway does not create disruption in the city's urban fabric; it causes neither a physical nor a psychological barrier for pedestrians. This case study represents reinvigoration in both spaces: the upper and lower level of infrastructure merge homogeneously with city movement (*SWA Group*, 2015) (Figure 1).

The next case study, "Underpass Park", represents an active public park providing diverse recreational and social opportunities while connecting new and existing local neighbourhoods and nearby parks. This previously neglected city space is part of a bigger urban revitalization project in Toronto, Canada. Before the revitalization, this area, as in the first case study, was a degraded place – unused space under the highway, a boundary line splitting several neighbourhoods. The public space location serves as a link between Corktown Common, River Square and the neighbourhoods on both sides of the overpass, providing such functions as a park, basketball courts, a skatepark, a playground, a flexible community space, an open-air art exhibition space and community gardens (*PFS Studio*, 2016) (Figure 2).

The third case study represents the collaboration model of a city administration, private business owners and social groups living in the area. The *A8ernA* project in the Netherlands is an attempt to restore the connection between the two sides of town, separated by an elevated highway, and to activate the space under the road. The new road crosses town by cutting through the city's urban fabric; moreover, this elevated highway separates important city administration and civic buildings. The city administration turned to various social groups, asking them to express their wishes. The wishes and suggestions of the community are laid out in a document called *A8ernA*, from where the name of the project arose. As the columns of the

highway are about seven meters high, the space under the elevated structure had broad potential. As a result, the area has been transformed into a multifunctional space, including community, activity, commercial and parking spaces. There is a skatepark and playground area, a breakdancing stage, table soccer, a soccer field, a basketball pitch, parking, a covered square with a supermarket, "letter columns", a flower and fish shop, a light fountain, another cross street, a sculptural bus stop, a mini-marina, a "panorama deck" and a view of the river. Out in the open is a park of small green hills with hollows where one can hold barbecues in summer and an enclosure for ballgames. (*NL Architects*, 2003) (Figure 3).

These international examples demonstrate the diversity of rejuvenation strategies, various collaboration models, and potential applicability to Riga city case studies.

Spatial and social survey of Riga. Problematique and potential of linear infrastructure.

Riga city's spatial composition depends on linkage and comprehension of the infrastructural systems involved: a waterway, railway, and highway. Therefore, a monocentric structure is not applicable to the centre of Riga. A large part of the premises belonging to these territories falls into the category of unclassified urban space. The Daugava is the most remarkable natural feature in Riga city space. It divides the city into two parts, whereas in the spatial composition, the river Daugava forms the central core of Riga, which can be crossed by 5 bridges, adjacent to numerous elevated overpasses, which form unexplored areas around the bridges and the waterfront.

Alongside this, 19th-century railway tracks play a large but negative role in the structure of the city. The railway tracks form linear barriers that divide the city and are difficult to cross; the elevated level crossings create a whole series of undeveloped



Figure 3. A8ernA, upper image - before, lower image - after (Zaanstad: NL Architects, 2006)

urban space. For example, the central railway station, with arrival tracks in the very centre of the city, separates Old Town from the suburb of Maskavas forštate, where a large part of the tracks is located on an artificial embankment, thus creating tunnels at intersections with crossing streets.

Over the past few years, major multi-level infrastructure nodes have been built over the railway, waterway, and urban environment. For example, Salu Bridge overpass and Dienvidu Bridge overpass form multi-level infrastructure nodes on both banks of the river; moreover, in the centre

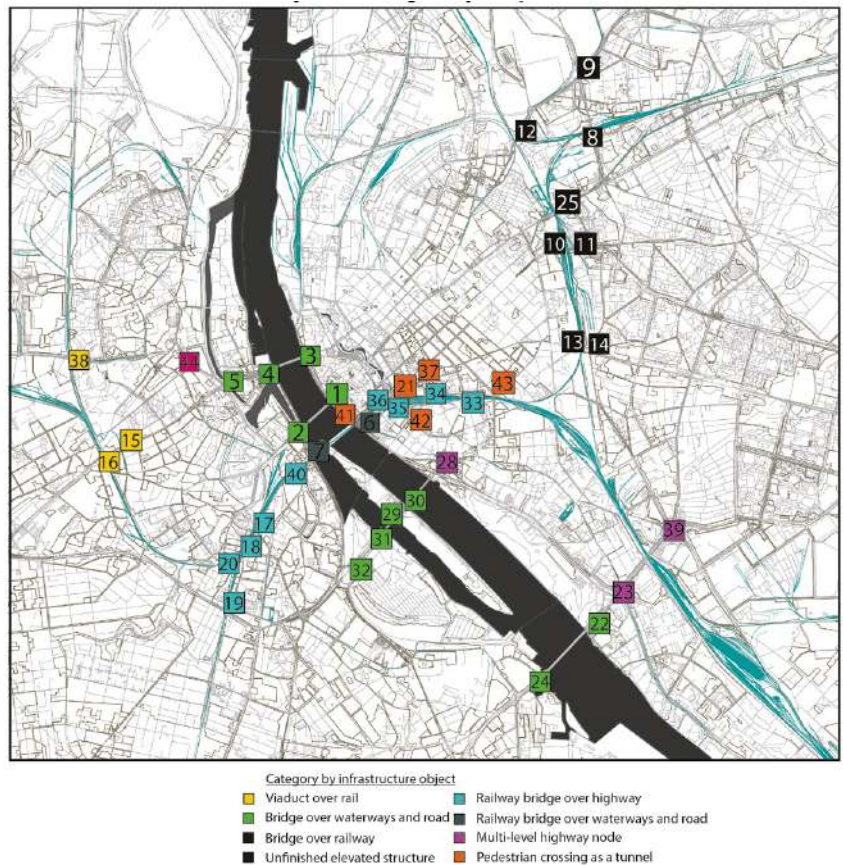
area both nodes form connections to Krasta and Maskavas Streets, thus creating large areas of new urban space between the adjacent Maskavas forštate suburb residential area and the river Daugava waterfront (Figure 4).

To link and integrate these undefined, leftover spaces into the urban environment, the necessary qualities and social aspects of urban public spaces must be mentioned here, which are decisive from the point of view of the end-users. The great accessibility and freedom that any space provides, offering various opportunities for exploration, creating spontaneous conditions for various activities – these aspects stimulate the liveliness of the place and the circumstances of social interaction. Social interactions and activities comprise all activities that depend on the presence of others in public spaces. Social activities include children at play, greetings and conversations, communal activities of various kinds, and finally – the most widespread social activity – passive contact, that is, simply seeing and hearing other people. Social activities occur spontaneously, as a direct consequence of people moving about and being in the same places (Gehl, 2011). This implies that social activities are indirectly supported by the spatial quality and functionality of the public space.

Mapping: unused spaces under elevated infrastructure. Riga.

As mentioned in the previous section, describing the main problems and potential of linear infrastructure, this article focuses on the territory of the centre of Riga, and the main elevated infrastructure objects are located in the central part of the city, connecting both banks of the river Daugava. In an urban context, it is important both to assess the current situation and to look at the city's development and future strategies. There are several such cases in Riga that should be highlighted and emphasized.

Figure 4. Map showing elevated infrastructure objects in Riga city (Riga: Zane Vēja, 2018)



One worth mentioning is Gustava Zemgala overpass, a relatively new overpass, the last stage of which was built at the beginning of 2011; the territory fragments and divides Čiekurkalns neighbourhood, creating almost 10 ha of unused space under the overpass. This is a very complex and important area, as it is located on the outskirts of the newly established residential / business district New Teika and acts as a splitter, yet it could be developed to serve as a unifying element of the Čiekurkalns community (Figure 5).

Riga Central Railway Station is located in the centre of the city, in the middle of the most

important points: the Central Market, the bus station, and Old Town. The importance and topicality of this area is confirmed by the tenders announced in recent years, which include the reconstruction of the Central Market, the reconstruction of the central bus station and the construction of the Rail Baltica track and the multi-modal public transport hub. A local plan is being developed for the area with the following main objectives: to define the preconditions for developing Riga Central Railway Station and its surroundings and for creating a multimodal traffic unit in line with 21st century trends and integrated into the city structure; to create a

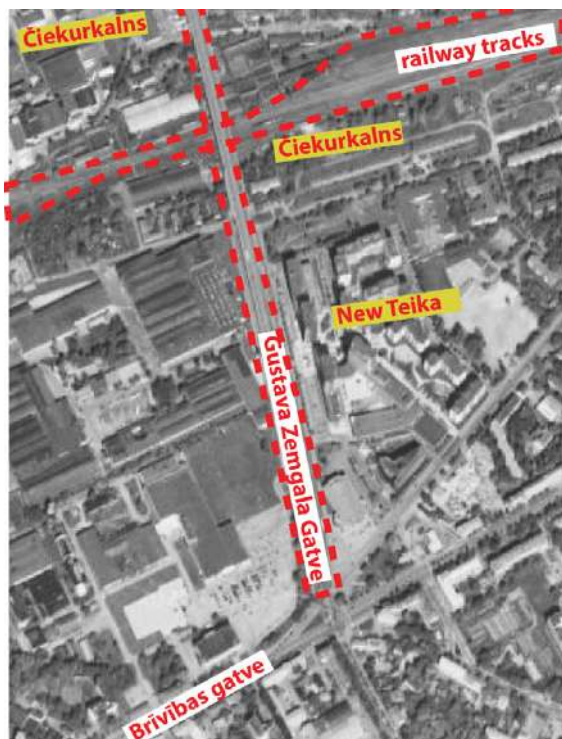


Figure 5. Gustava Zemgala overpass separating Čiekurkalns and New Teika neighbourhoods (Riga: Zane Vēja, 2018)

Figure 6. Riga Central Railway Station, indicating the railroad system that divides Old Town and the Maskavas forštate neighbourhood (Riga: Zane Vēja, 2018)



better link within the city (between Old Town and Maskavas forštate); and to improve the attractiveness of workplaces and residences in the local planning area using the railway infrastructure of Rail Baltica (Balgalis, 2018). The main design proposal of the Rail Baltica project includes dismantling the existing railway embankment and placing the new tracks on an estacade, thus creating a wide-open public space under elevated infrastructure in the city centre. The length of the planned estacade from Krasta Street to Prāgas Street is approximately 350 meters and creates around 9,000 m² of space under the elevated infrastructure. This open city space serves as an urban connector between Old Town and the Central Market neighbourhood (SIA “Eiropas dzelzceļa līnijas”, 2018) (Figure 6).

In both cases mentioned, it is important to investigate aspects on property ownership and management rights. The state roads and their adjacent land, including the road-land partitions and all the structures included in the network of these roads, are the property of the Republic of Latvia, transferred to the state joint stock company *Latvian State Roads*; in some cases, ownership may be transferred to the municipality. Both in the case of Gustava Zemgala overpass and in the case of Riga Central Railway Station and the Rail Baltica project, the land and infrastructure are owned by the state; after complete acceptance of the construction work, the question of the management of this infrastructure will arise. Beyond the issue that the function of the space under the Rail Baltica rails has still not been clarified, it is necessary to investigate the legislative background.

Analyzing legislative norms and definitions related to elevated infrastructure, it can be concluded that the only reference to space below or around an infrastructure object is made in definitions of road and railroad infrastructure, indicating that both include airspace in the road segment; however, it

Figure 7. Urban integration scheme (Riga: Zane Vēja, 2018)

is not precisely defined, nor are possible usages and restrictions specified. Regarding Riga Central Railway Station and Rail Baltica (Rail Baltica, 2018), legislative parties are expected to face new challenges and uncertainties; for example, the term “estacade”, designating the new structure for the tracks, is not defined in legislation. Consequently, neither regulations nor the practice of how to proceed in this case have been arranged.

In both cases, we can conclude that to a large extent (100% in the case of the Central Station embankment and partly in the case of Gustava Zemgala overpass) the land belongs to the state and is transferable to Riga municipality. The preferred scenario would then be for the municipal development department and construction board institutions, in cooperation with residents and the neighbourhood association, to determine the application of the best spatial and social functions for each territory.

As stated previously, one of the main rules for the quality of urban space is the comfort and well-being of the city. At present, both cases mentioned here are not used for pedestrian movement or any social function and could rather be called both psychological and physical barriers. Spaces creating a psychological barrier are ones we tend to avoid: dark and uninhabited spaces. A second barrier is created by spaces that are separated physically by fencing or lack pedestrian pavement, thus creating a complicated crossing.



Spatial proposal – Rail Baltica project: Riga Central Railway Station, the area from 11th of November Embankment to the Stockmann shopping centre

Considering the topicality of the Rail Baltica project, the article will offer a design proposal for the territory around Riga Central Railway Station, the area from 11th of November Embankment to the Stockmann shopping centre. The main development goals of the territory were the *Riga City Development Strategy for 2030*, stipulating that the Riga city centre should be transformed, focusing on several main priorities: high-quality open public outdoor space; exposure of car traffic to pedestrian and cyclist flows; and health and sports activities in city parks and by the water (Rīgas Domes attīstības departaments, 2014).

One of the starting points of the design was evaluation of the research area, including an analysis of functionality and traffic movements. More precisely, based on the development goals of the city of Riga and the design proposal developed by Rail Baltica, several key aspects had already been identified:

1. Within the framework of the Rail Baltica project, the area from 11th of November Embankment to the Stockmann shopping centre will be reconstructed, and the railway will be placed on an estacade, thus revealing open, public space under elevated infrastructure in Riga city’s historical centre (Rail Baltica, 2018).



2. Due to the construction of the new Rail Baltica track next to the adjacent rails, it has been determined that the *Titanic* car parking building will have to be significantly rebuilt or the building will need complete dismantling. The demolition of the building would free up public urban space by the water and provide for a wider pedestrian area, addressing the current connectivity problem between the Central Bus Station and Central Railway Station.

The author in his spatial proposal offers the partial removal of bus traffic from the western part of the plot, closer to Krasta Street, maintaining only the international bus flow. Using the new free space under the railway tracks would allow for the

construction of a separate international bus station and platforms in a strategically suitable place, directly between the Central Market and Old Town – the most important sights of the city (Figure 8). Alongside this, the poor-quality underground pedestrian crossings under Satekles Street and 13. Janvāra Streets are to be dismantled and replaced with wide surface pedestrian crossings that will connect Old Riga with the Central Market (Figure 7).

The spatial proposal target is to keep an open and transparent area under elevated infrastructure, while providing active functions as much as possible. New buildings are to be integrated – an international bus station, a café, a restaurant, a co-working space, a boat rental, and an art space



will be placed under the estacade, thus ensuring social and functional diversity. To provide a clear architectural connection between Old Town and the Central Market area, the space under the elevated infrastructure is to be complemented with steel arches, similar to Railway Bridge and the market pavilions (Figure 9).

Old Town and the Central Market now have poor-quality pedestrian connections: one underground pedestrian crossing through a tunnel and one ground-level pedestrian overpass located far from pedestrian traffic routes. The spatial proposal is to create two 9m-wide pedestrian crossings over 13. Janvāra Street to provide a better connection between Old Town and the Maskavas forštate neighbourhood.

Figure 9. The spatial proposal target is to keep an open and transparent area under elevated infrastructure (Riga: Zane Vēja, 2018)

The proposal includes traffic reorganization; 13. Janvāra Street traffic lanes must be reduced to two lanes in each direction. Traffic reorganization includes Krasta Street traffic flow reduction to two lanes in each direction and traffic moving away from the waterfront, closer to Central Market. This will provide for a wider, more open waterfront, to be complemented with boat moorings and sports activities (Figure 10).

Along 13. Janvāra Street, a wide bicycle lane is to be created, separate from pedestrian movement.



Figure 8. A strategically important point is that tourist buses can park here under the bridge – now in the most important part of the city – and tourists can easily go to Old Town on one side and to the Central Market on the other (Riga: Zane Vēja, 2018)

The new Railway Bridge is to be supplemented with a pedestrian/bicycle lane, which has two connections with the street level: a separate bicycle bridge circling over the water and connecting with Ķengaraga promenade and a further slope connecting with the pedestrian bridge over Kārļa basin towards the Central Market pavilions.

Inclusion and development of two waterfronts is solved within the framework of this spatial proposal. Firstly, the Daugava waterfront would become a very wide, open waterfront supplemented with necessary activities, providing a quality urban environment. By offering several boat moorings, a wide pedestrian viewing platform over the water and promenade between Railway and Vanšu Bridges and an outdoor skatepark and promenade would be established under Railway Bridge. The Kārļa basin waterfront would become available for pedestrians; the shoreline would be lowered to the water level and there would be an amphitheatre for musical and art events as well as a circular-form pedestrian footbridge over the water. The space under the pedestrian bridge would be used for kayak, canoe and SUP board rental – to provide more active water life in the city centre (Figure 11).

The aim of this article has been to highlight the problem as such, to emphasize the most topical

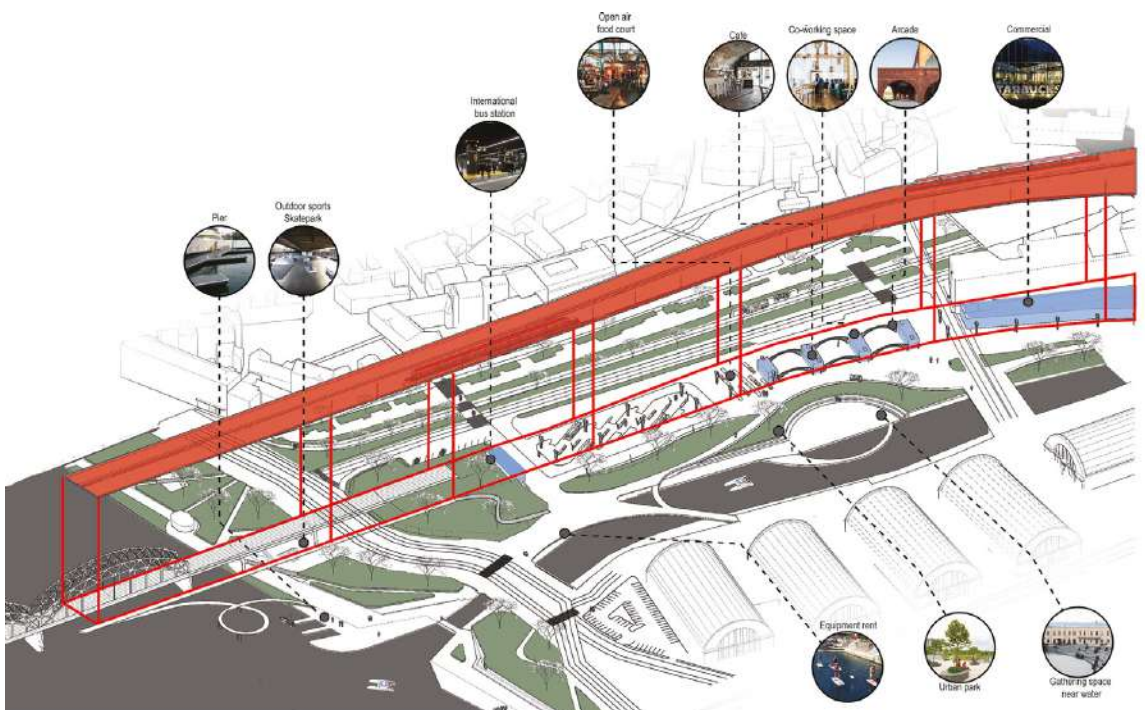
places of large infrastructure objects in the city of Riga which significantly affect neighbourhoods, creating divisions and thus establishing huge, unused spaces, which could be categorized as urban gaps, and to propose a contemporary design solution for the chosen site. It is important to point out that the author's proposal for space under elevated infrastructure entails a spatially functional diversity that provides for both physical and social interactions and creates a necessary connection between two different neighbourhoods. The proposal includes such important aspects as rearranging the traffic, focusing on the flow of pedestrians and cyclists, and highlighting the spatial qualities of the space: waterfronts and landmarks. Based on the analysis of international examples, the achievement of this proposal would require the application of a collaboration model: cooperation between the state, local government, and the private sector, as well as inviting representatives of the respective neighbourhoods. This type of cooperation model has proven to be the most optimal means of representing the interests of all parties.

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(right) Figure 10.
Design proposal. Traffic
reorganisation and pedestrian
crossings on 13. Janvāra Street
(Riga: Zane Vēja, 2018)



(below) Figure 11. Design
proposal. Axonometric
scheme with function
implementation (Riga: Zane
Vēja, 2018)



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