TOD of Vilnius

Development of Vilnius public transport system and local centres to create walkable, transit oriented neighbourhoods

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What is TOD?

TOD - Transit Oriented Development is a land-use and transportation planning concept, that focuses urban development around public transit stations, stops, and exchanges.

Thesis scope

Critical reading of the existing Vilnius City masterplan
through the lens of Transit Oriented Development concept.



Development of a new public transport system in Vilnius (envisioned in Vilnius City Masterplan)

Development of denser, mixed-use areas around major public transport corridors and railway stations. (envisioned in Vilnius City Masterplan)

What will determine the success of future mobility and the use of public transport in Vilnius?

The future of public transport in Vilnius mainly depends on the places we mill manage to build around it.

Vilnius built environment

3 types of built environment in Vilnius



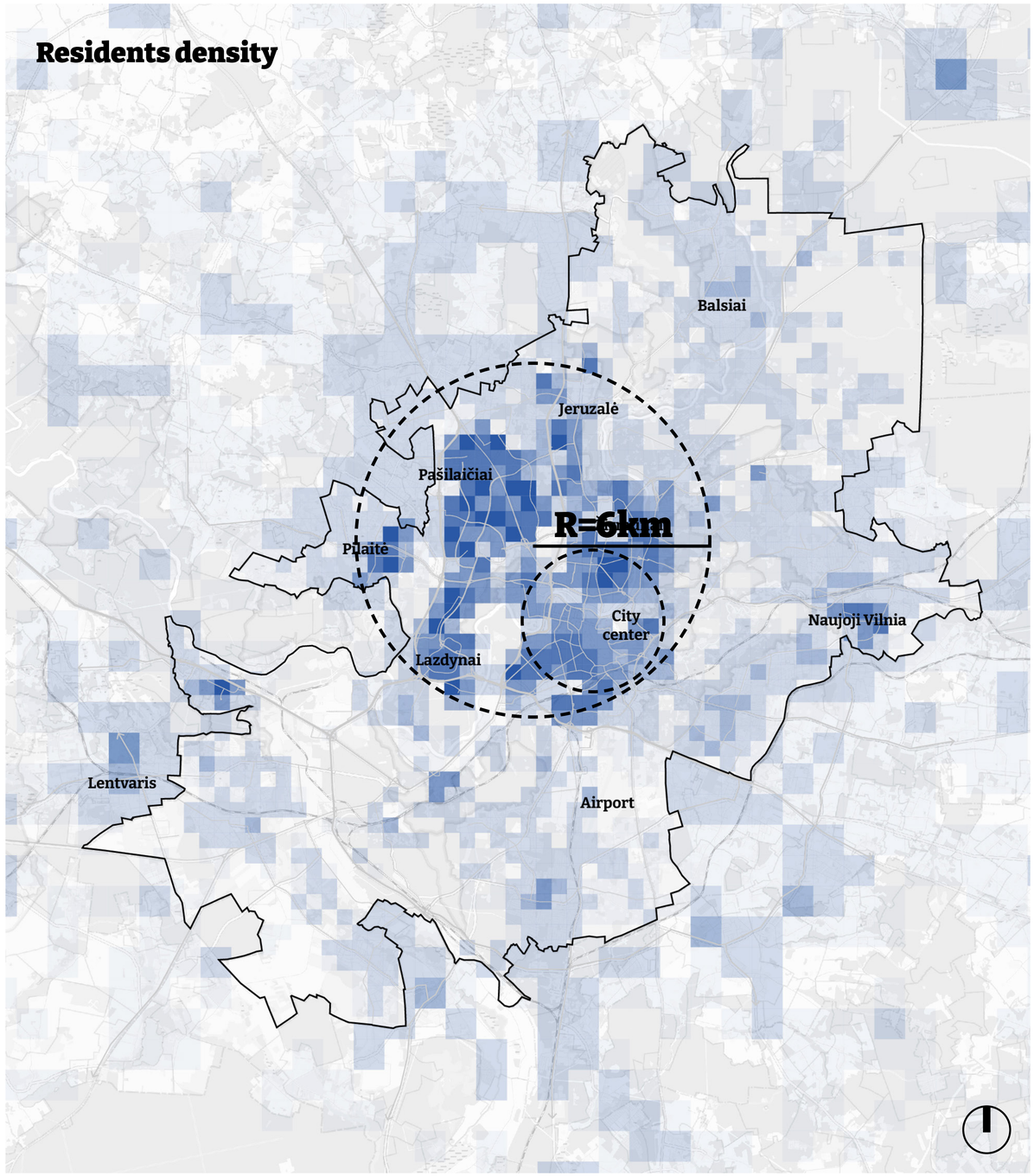
City centre



Modernist neighbourhoods



Low density suburbs



Urban development

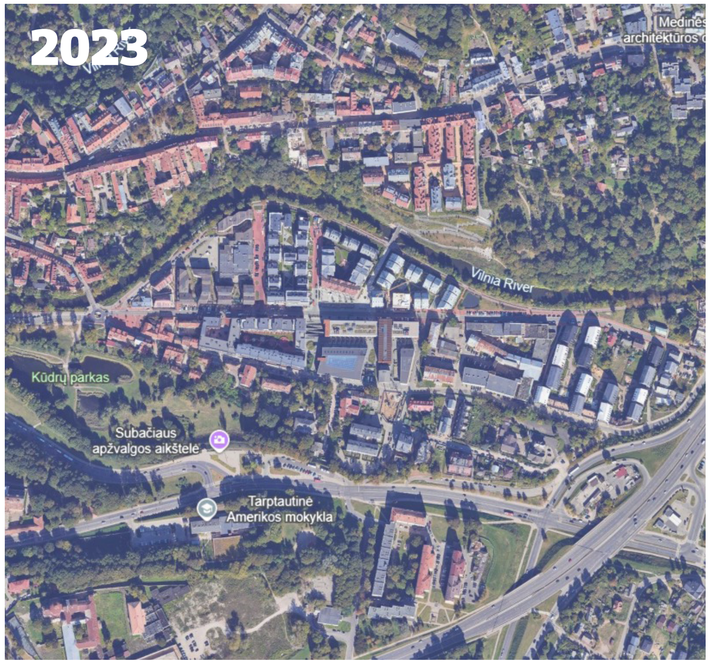




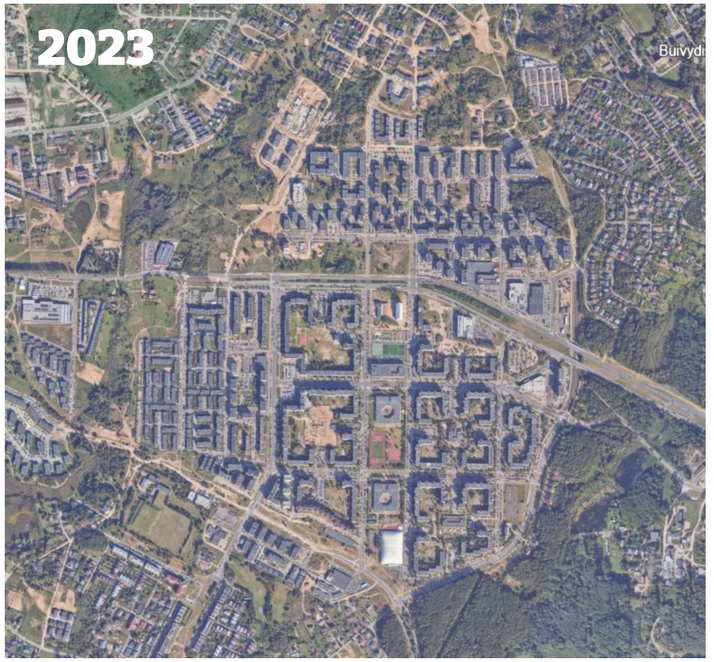




Urban development



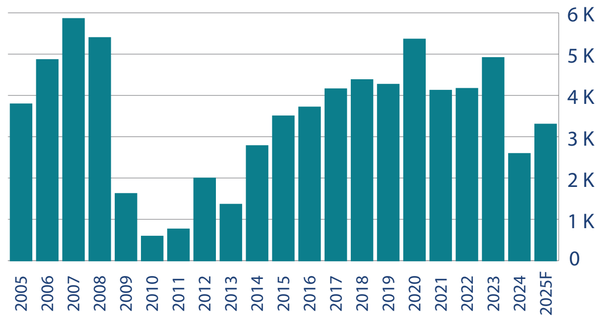




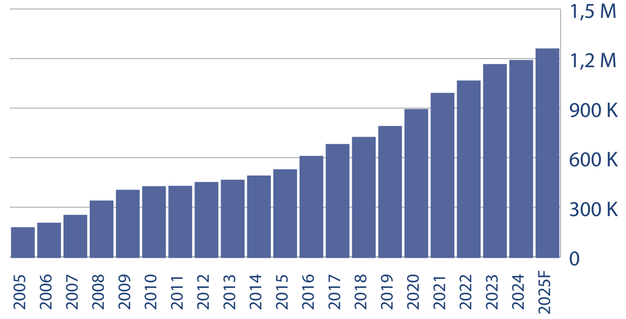


Urban development

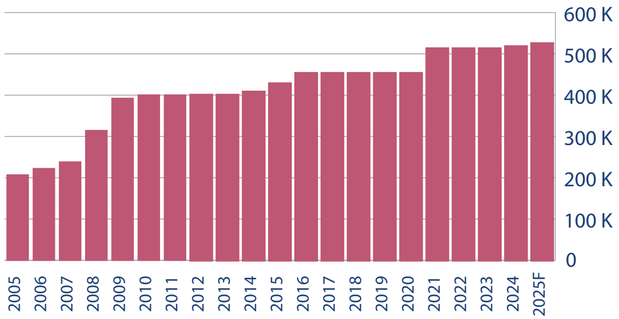
New apartment units



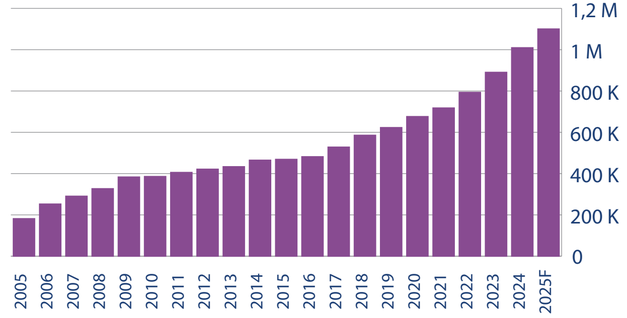
Total office stock



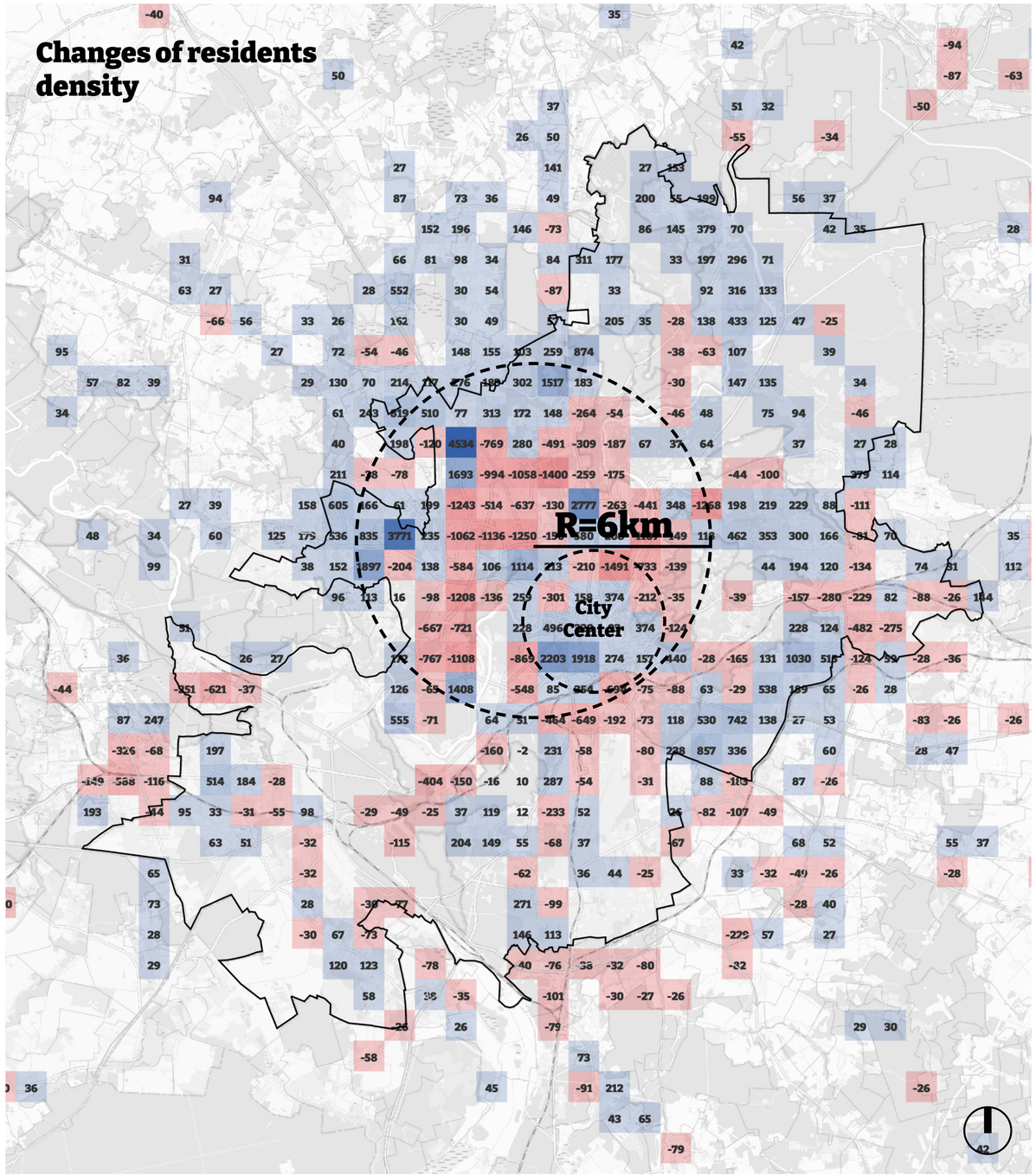
Total shopping malls space



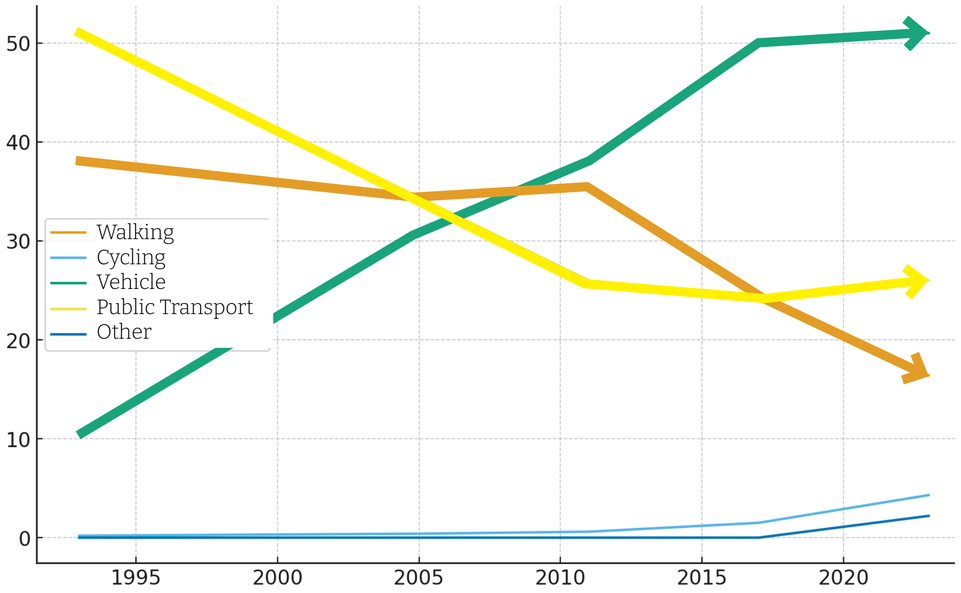
Total warehouse space



Suburbanization tendencies

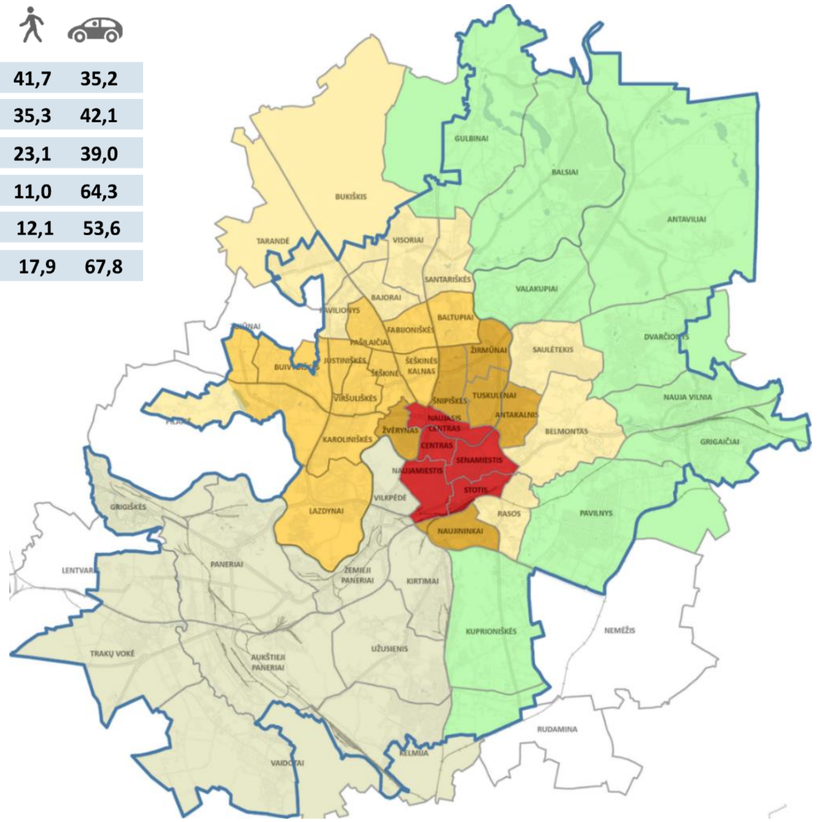


Mobility tendencies



Change in travel modal split in Vilnius. Source: JUDU, 2023.

%				
	21,8	1,3	41,7	35,2
	21,9	0,7	35,3	42,1
	37,1	0,8	23,1	39,0
	22,1	2,6	11,0	64,3
	34,3	0	12,1	53,6
	13,7	0,6	17,9	67,8



Modal split share across different neighbourhoods of Vilnius in 2017. Source: Vilniaus Planas, 2018.



Traffic congestion



Parking related issues

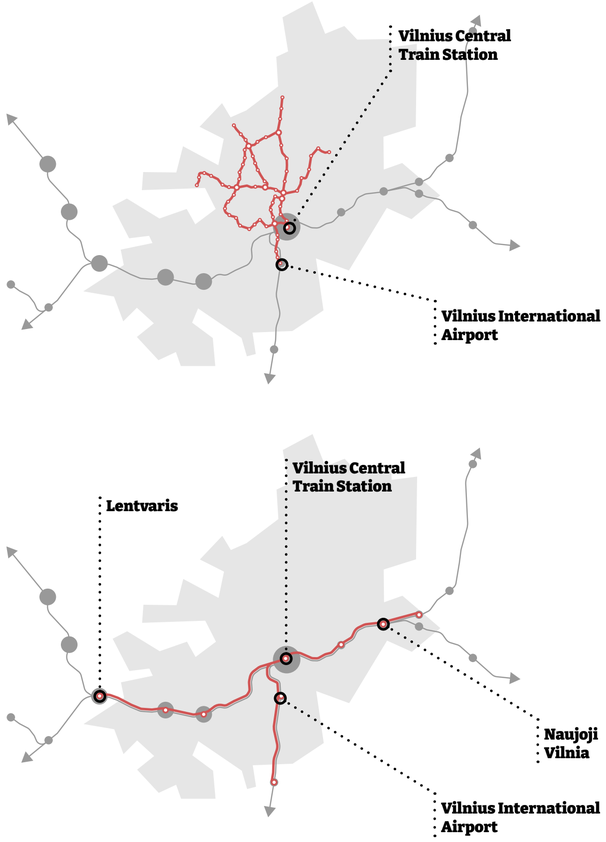


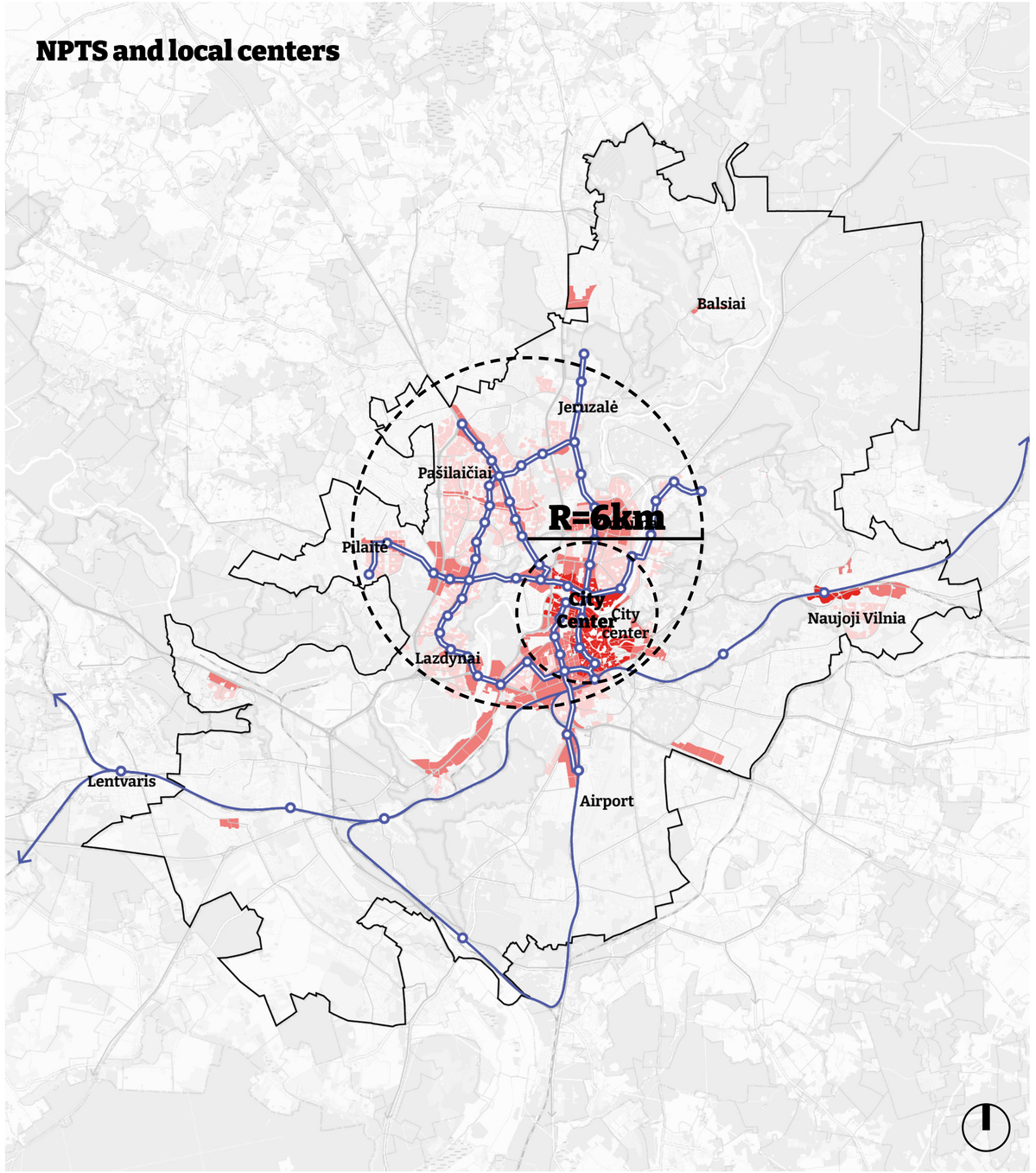
Noisy and unpleasant streets



Car focused environments around everyday functions

Transit and urban development plans







Tram street in Helsinki



Tram street in Oslo



Light rail in Bergen



Tram in Luxenburg

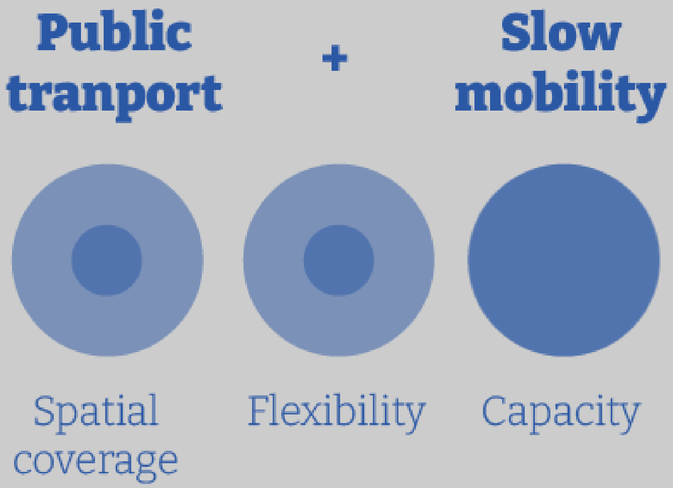

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Bus stop
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Vilnius Hotel
Regitra
Google Maps


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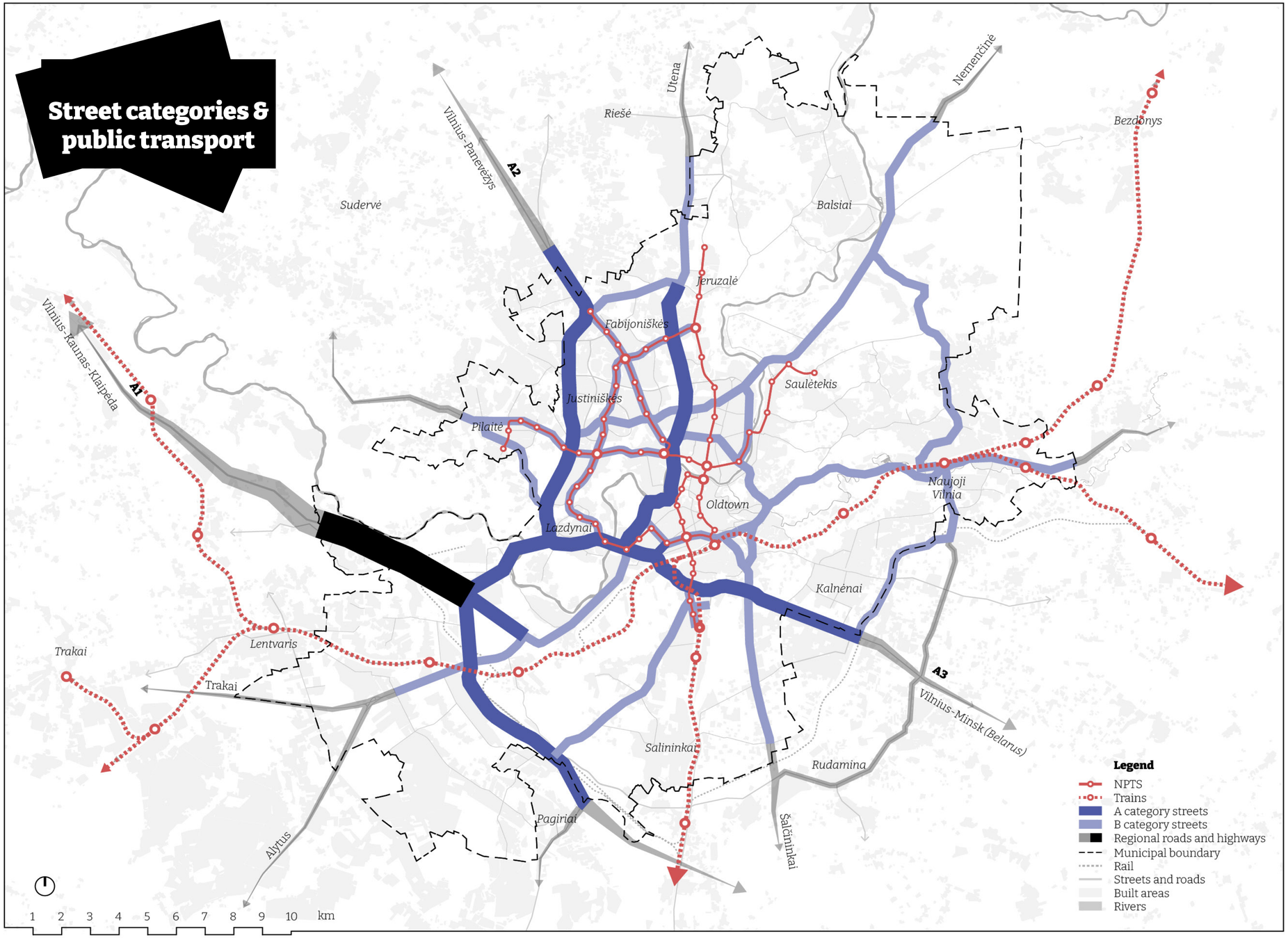

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Bus stop
Konstitucijos pr.
Google Maps

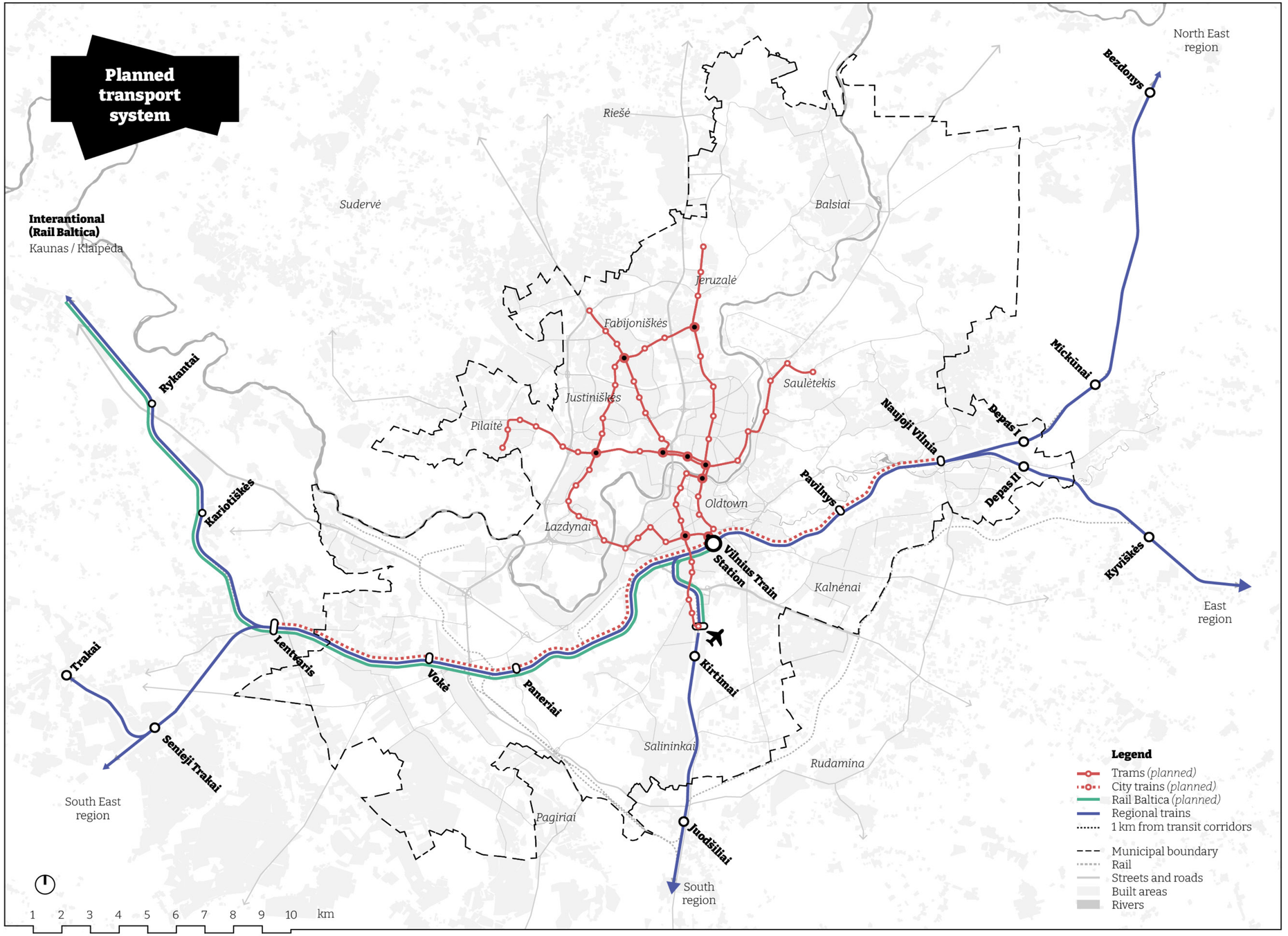

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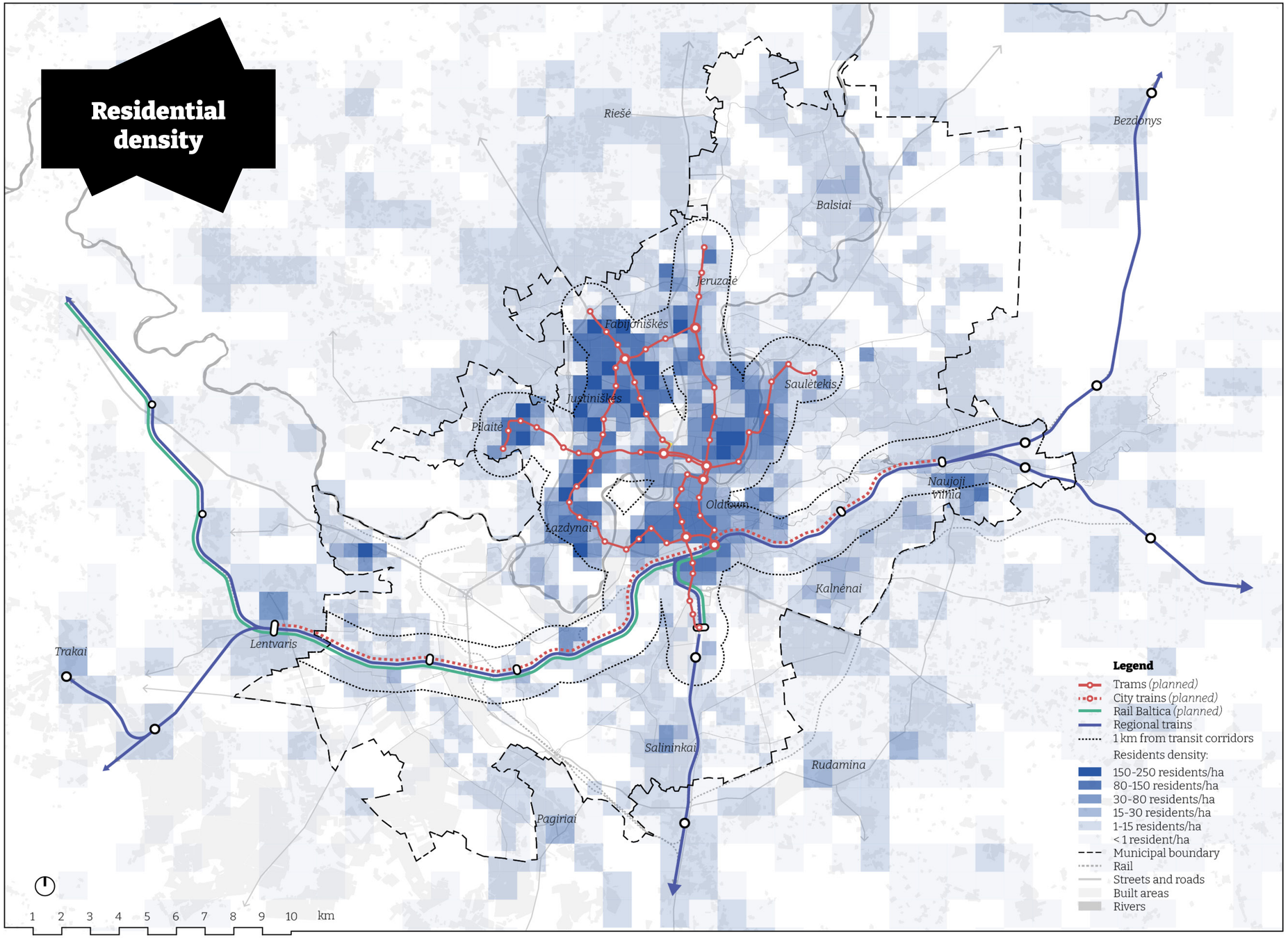

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Maxima
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Public tranport
+
Slow mobility
Spatial coverage
Flexibility
Capacity

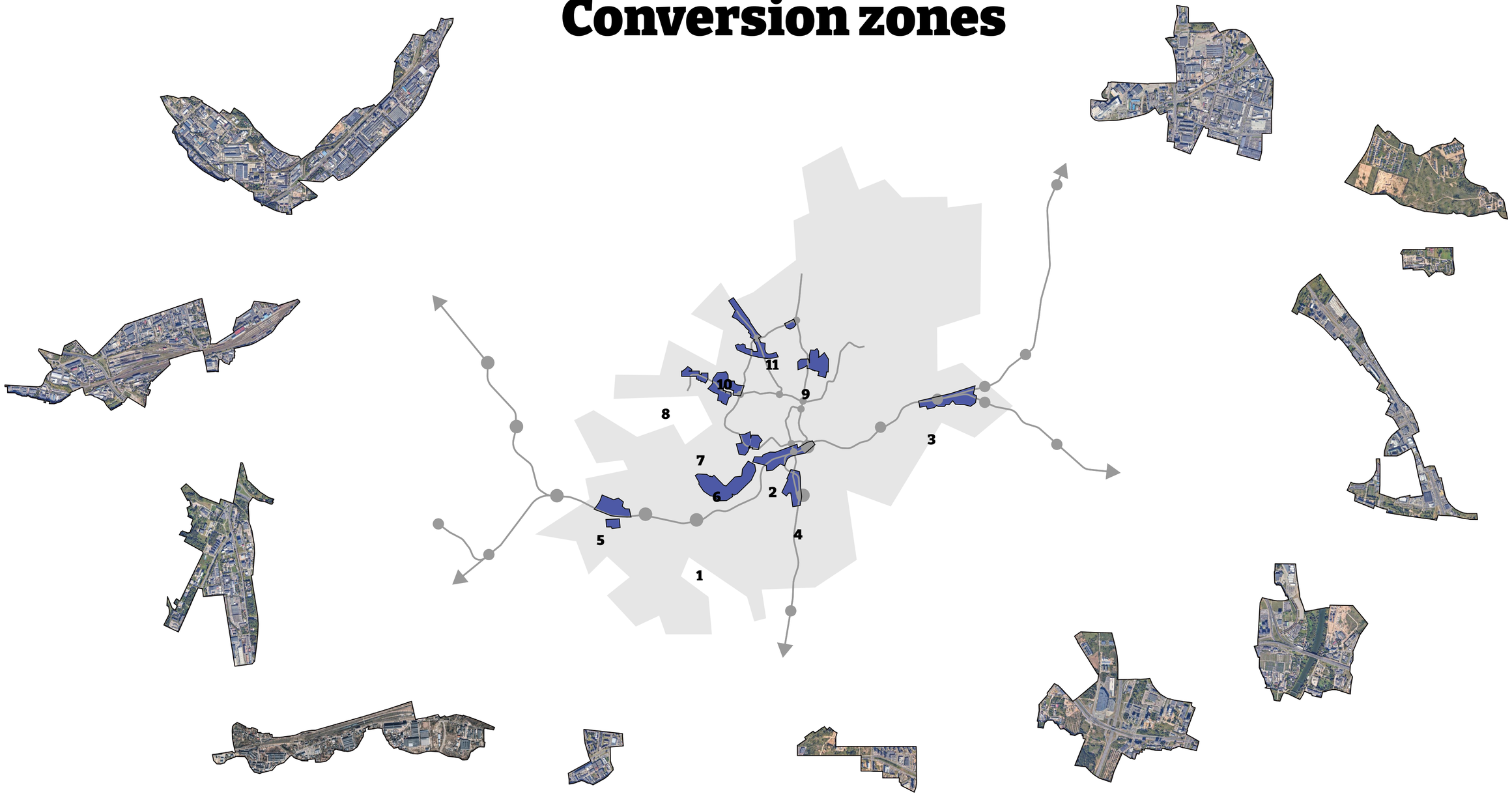
Almost every public transport journey begins and ends on foot


Street categories & public transport
Vilnius-Panevėžys
A2
Utena
Riešė
Nemenčinė
Bezdonys
Sudervė
Balsiai
Jeruzalė
Fabijoniškės
Vilnius-Kaunas-Klaipėda
A1
Saulėtekis
Justiniškės
Pilaitė
Naujoji Vilnia
Oldtown
Lazdynai
Kalnėnai
Lentvaris
Trakai
Trakai
A3
Vilnius-Minsk (Belarus)
Salininkai
Rudamina
Pagiriai
Šalčininkai
Alytus
1 2 3 4 5 6 7 8 9 10 km
Legend
NPTS
Trains
A category streets
B category streets
Regional roads and highways
Municipal boundary
Rail
Streets and roads
Built areas
Rivers

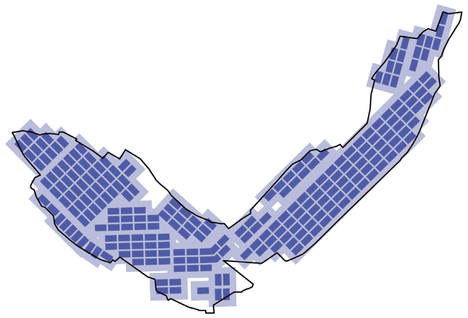

Planned transport system
Interantional (Rail Baltica)
Kaunas / Klaipėda
Rykantai
Kariotiškės
Trakai
Senieji Trakai
South East region
Lentvaris
Voké
Paneriai
Riešė
Sudervė
Balsiai
Jeruzalė
Fabijoniškės
Justiniškės
Pilaitė
Saulėtekis
Oldtown
Lazdynai
Vilnius Train Station
Kalnėnai
Salininkai
Rudamina
Pagiriai
Kirtimai
Juodšiliai
South region
Bezdonys
North East region
Mickūnai
Naujoji Vilnia
Depas I
Depas II
Pavilnys
Kyviškės
East region
Legend
Trams (planned)
City trains (planned)
Rail Baltica (planned)
Regional trains
1 km from transit corridors
Municipal boundary
Rail
Streets and roads
Built areas
Rivers
1 2 3 4 5 6 7 8 9 10 km

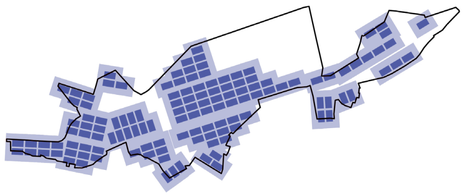

Residential density
Riešė
Balsiai
Bezdonys
Jeruzalė
Fabijoniškės
Saulėtekis
Justiniškės
Pilaitė
Naujoji Vilnia
Old town
Lazdynai
Kalnėnai
Trakai
Lentvaris
Salininkai
Rudamina
Pagiriai
1 2 3 4 5 6 7 8 9 10 km
Legend
Trams (planned)
City trains (planned)
Rail Baltica (planned)
Regional trains
1 km from transit corridors
Residents density:
150-250 residents/ha
80-150 residents/ha
30-80 residents/ha
15-30 residents/ha
1-15 residents/ha
< 1 resident/ha
Municipal boundary
Rail
Streets and roads
Built areas
Rivers

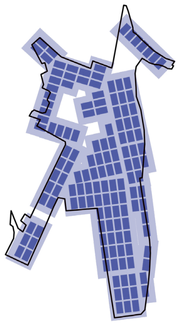
Conversion zones

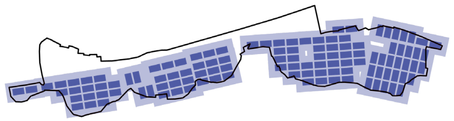


Conversion zones

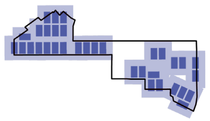


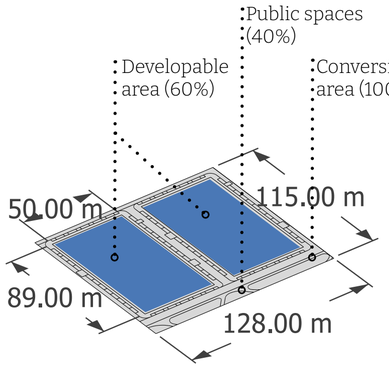




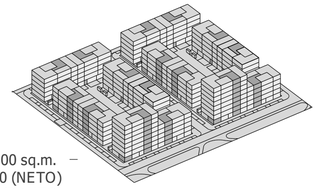




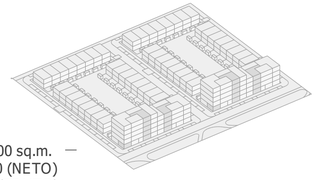




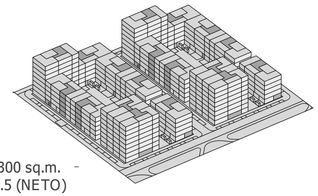
* NIA = 80% GFA (internal walls, staircases, elevators are excluded FSI calculation)



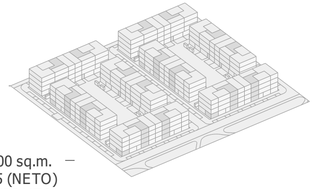
NIA 9 100 sq.m.
FSI 2.0 (NETO)
FSI 1.2 (BRUTO)



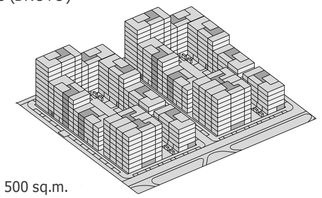
NIA 4 500 sq.m.
FSI 1.0 (NETO)
FSI 0.6 (BRUTO)



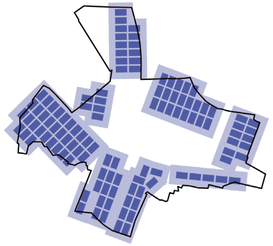
NIA 11 300 sq.m.
FSI 2.5 (NETO)
FSI 1.5 (BRUTO)

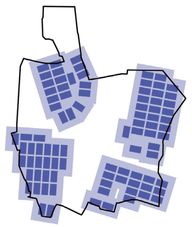


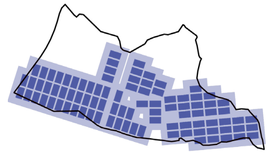
NIA 6 700 sq.m.
FSI 1.5 (NETO)
FSI 0.9 (BRUTO)



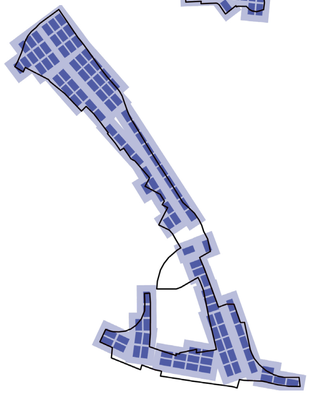
NIA 13 500 sq.m.
FSI 3.0 (NETO)
FSI 1.8 (BRUTO)



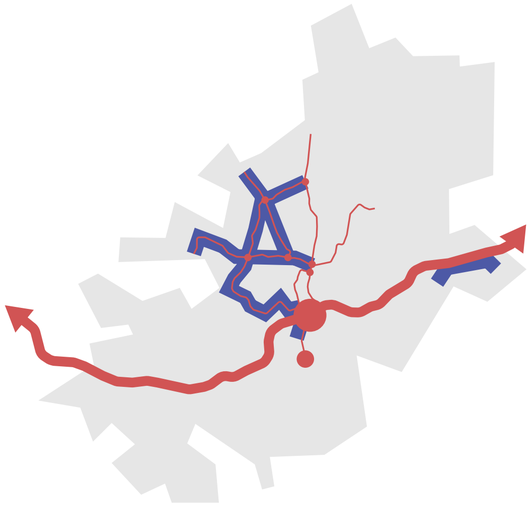




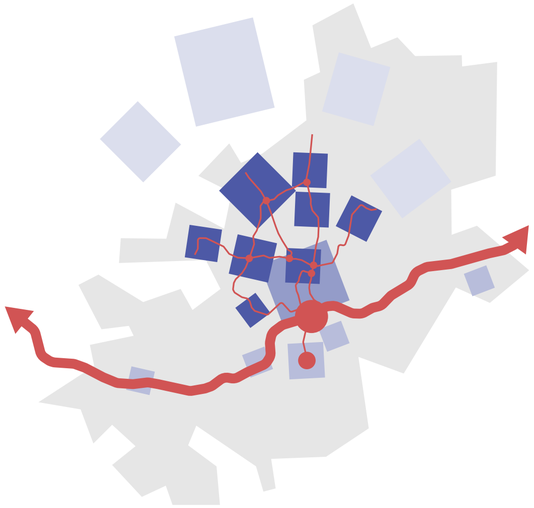




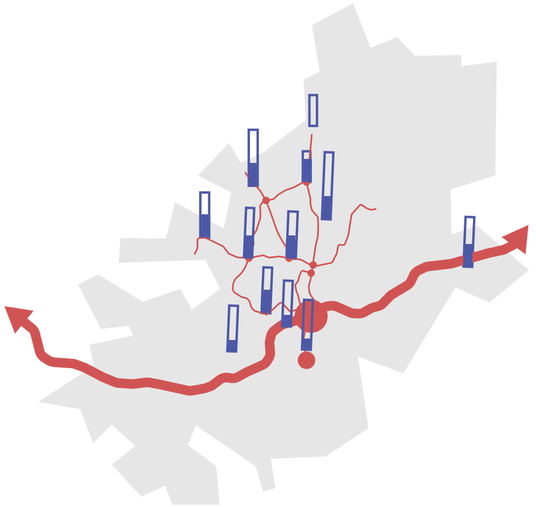
Key challenges of current transport and densification plans



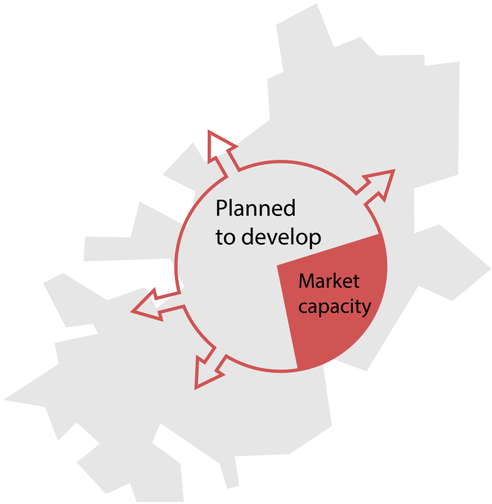
Conflict between transport planning, public transit planning and development planning



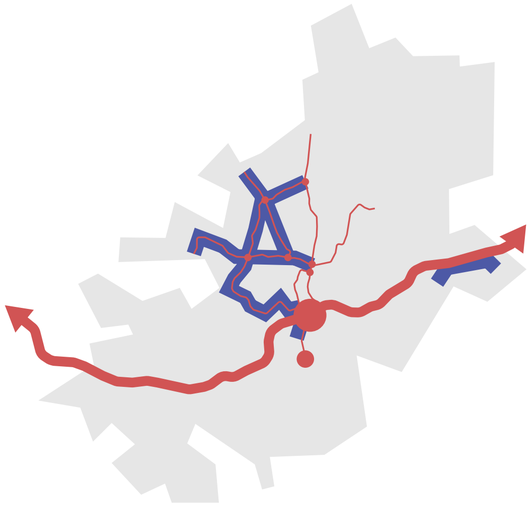
Node-place imbalance



Uniform development potential is planned, regardless of the planned transport hierarchy.



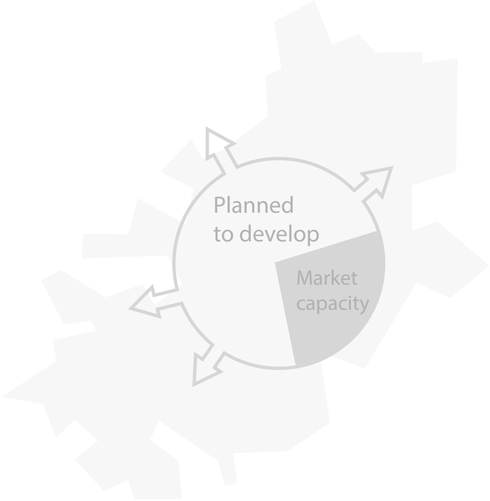
Excessive overall development potential



Conflict between transport planning, public transit planning and development planning

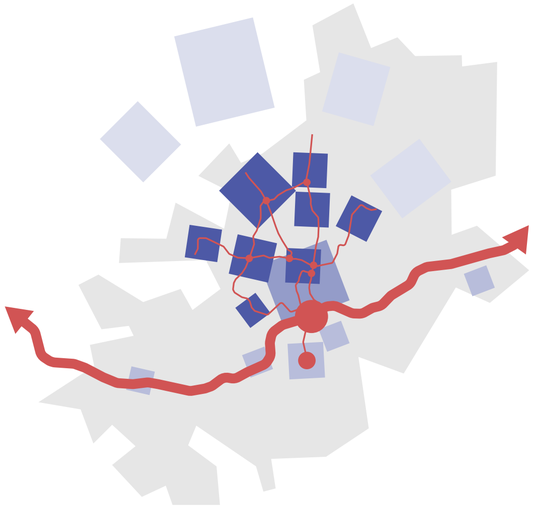
Node-place imbalance

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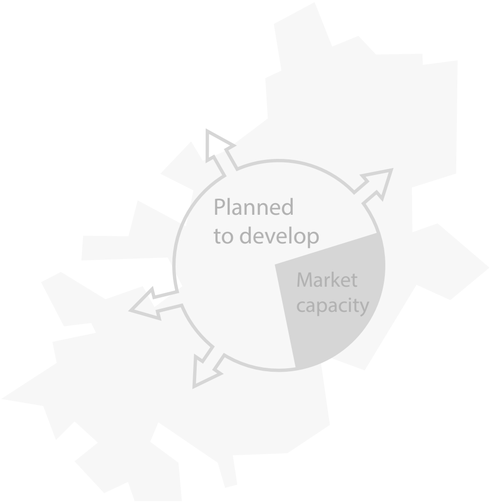
Excessive overall development potential

Conflict between transport planning, public transit planning and development planning



Node-place imbalance

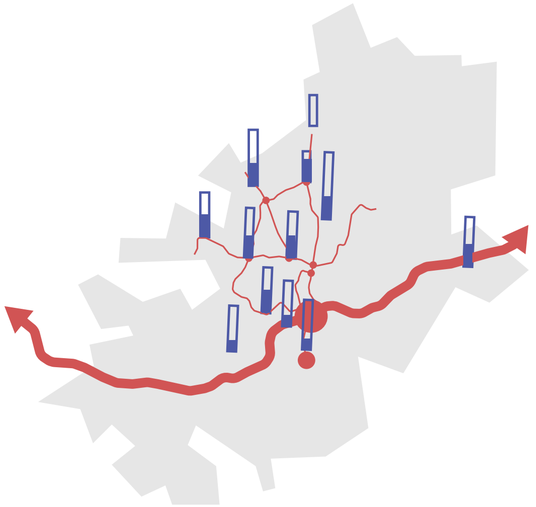
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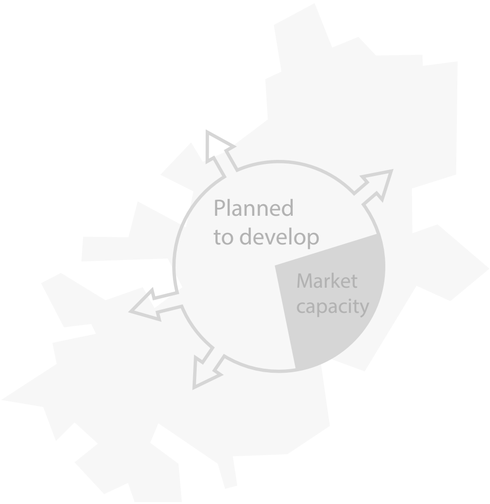
Excessive overall development potential

Conflict between transport planning, public transit planning and development planning

Node-place imbalance



Uniform development potential is planned, regardless of the planned transport hierarchy.

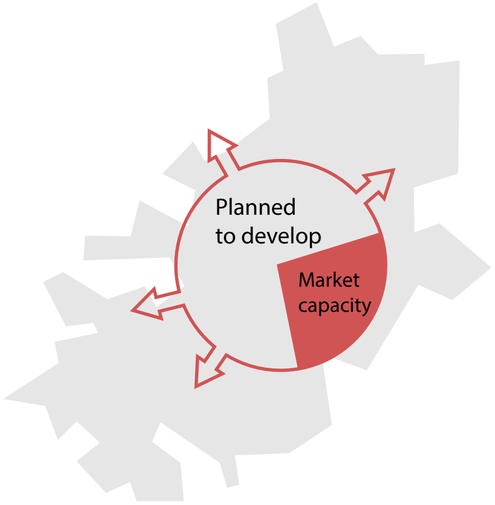


Excessive overall development potential

Conflict between transport planning, public transit planning and development planning

Node-place imbalance

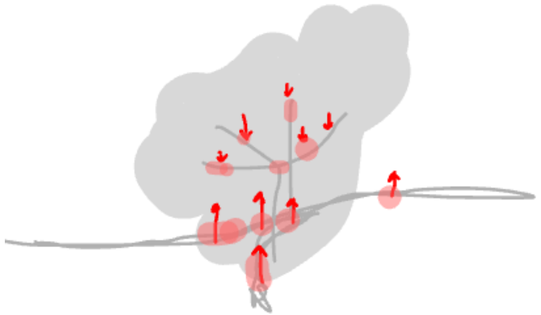
Uniform development potential is planned, regardless of the planned transport hierarchy.



Excessive overall development potential



Plan transit system as an urban development framework



Align urban development with transit hierarchy and market capacity

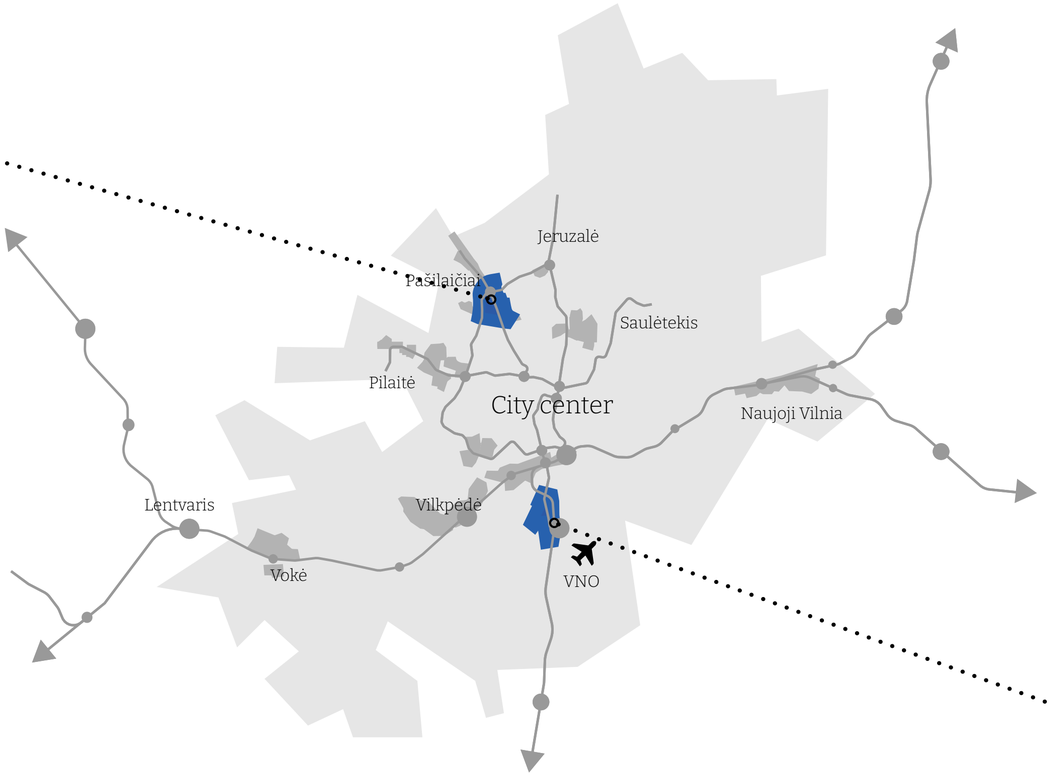


Develop vehicle infrastructure to prioritize development of transit and walkable neighbourhood centres

Design explorations

Two selected areas

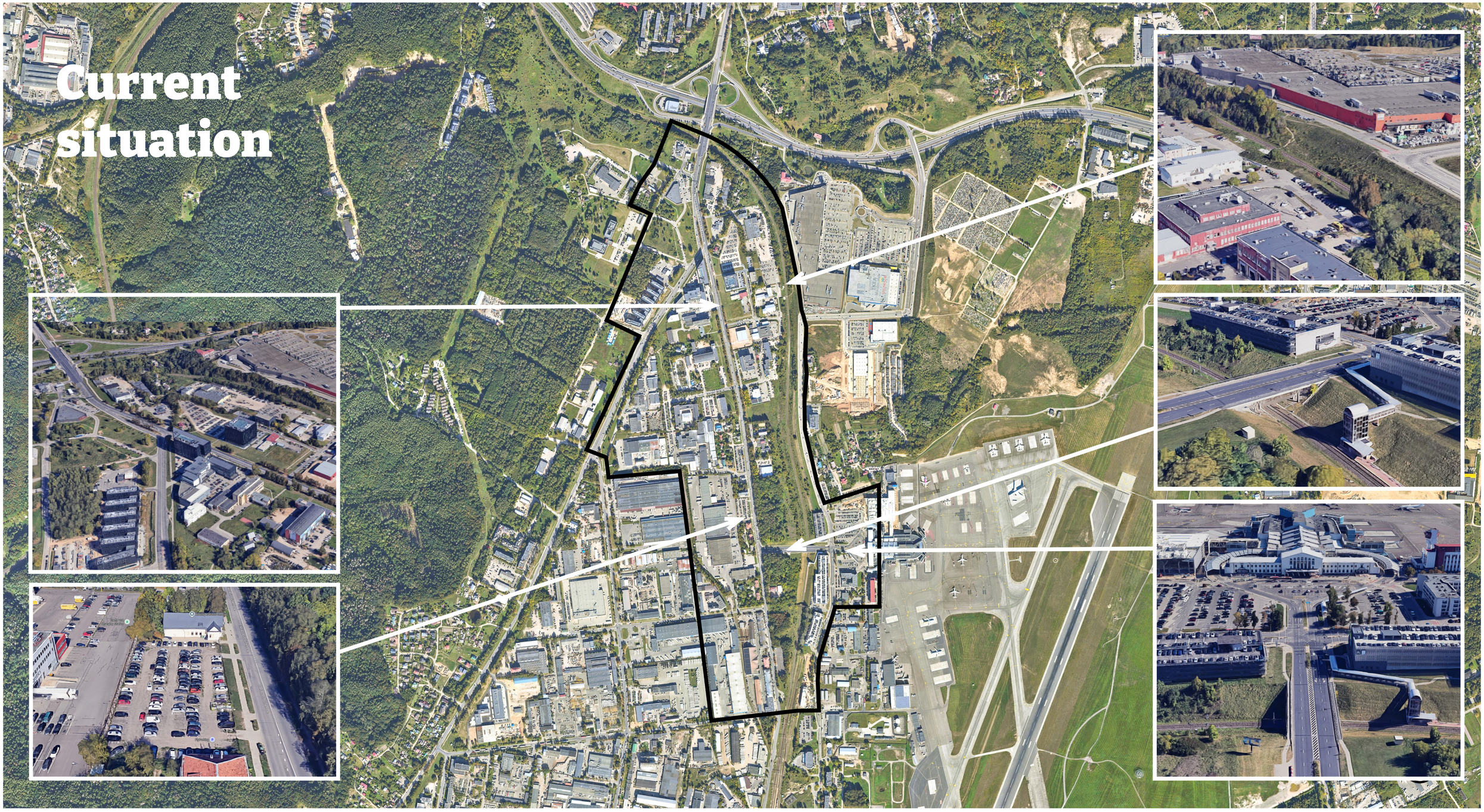
Residential neigbourhood centre



Metropolitan Centre


Metropolitan
center

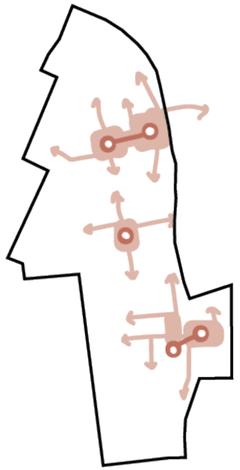
Current situation



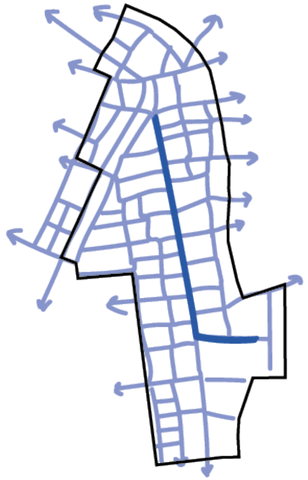
Concept



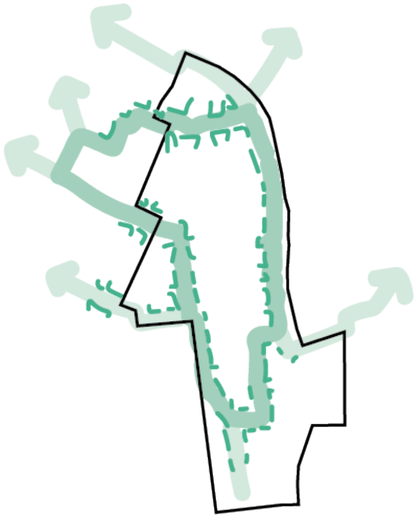
Transit corridors - the core of pedestrian oriented public space structuire



Main plazas, squares and mixed functions around stations



Dense grid of walkable, slow streets



Green park loop for pleasant residen- tial realms

Main transit corridor

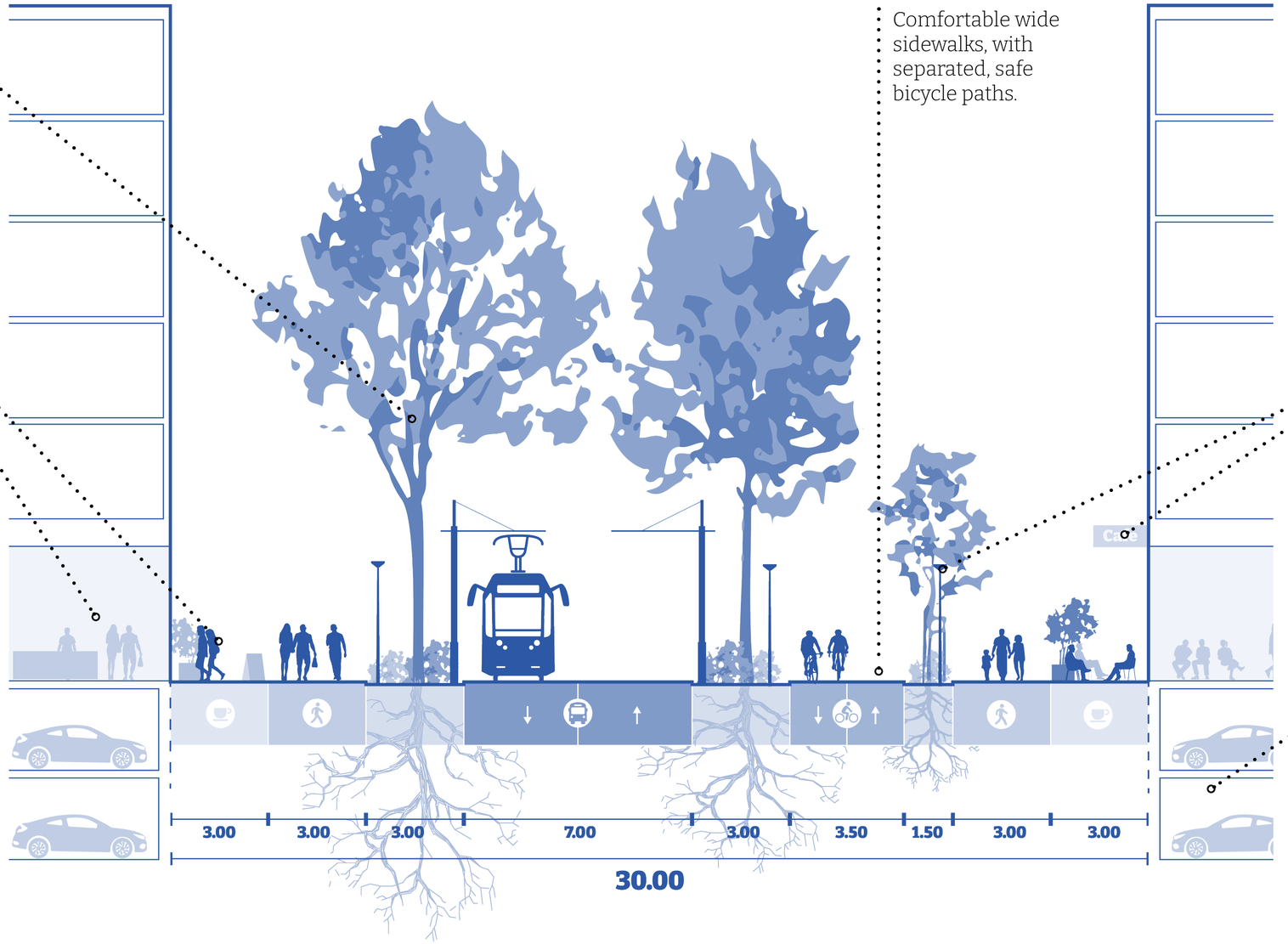
Lines of trees and bushes to create comfort and pleasant microclimate

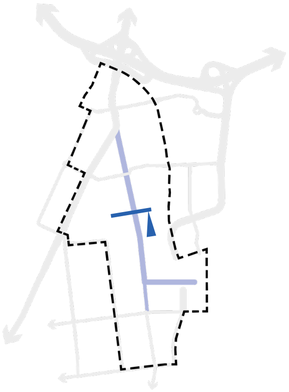
Entrance zone and commercial activities on groundfloor activates the street.

Comfortable wide sidewalks, with separated, safe bicycle paths.

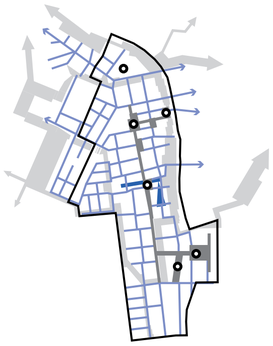
Pedestrian oriented lighting and human scale urban furniture

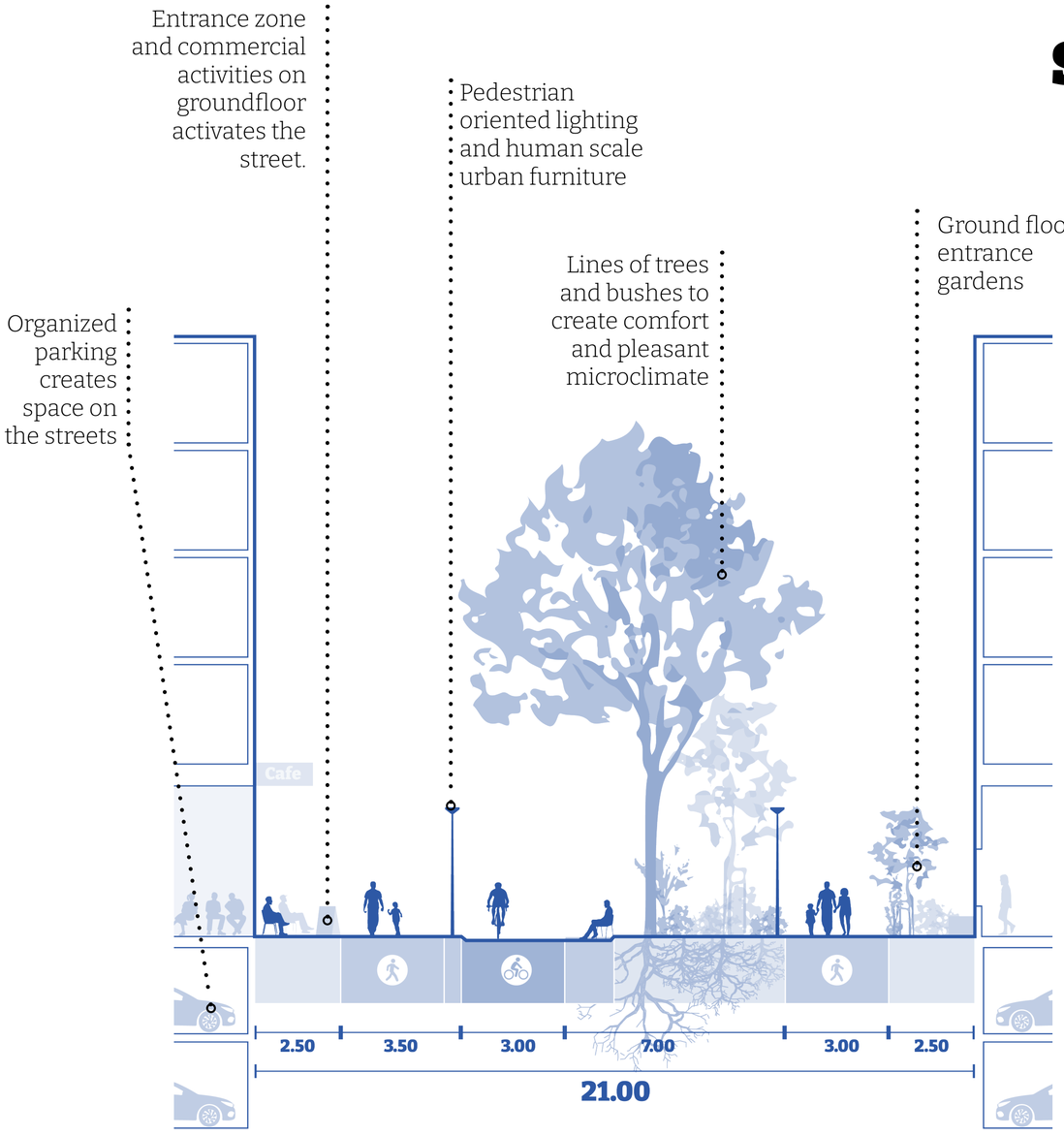
Organized parking creates space on the streets





Network of walkable streets





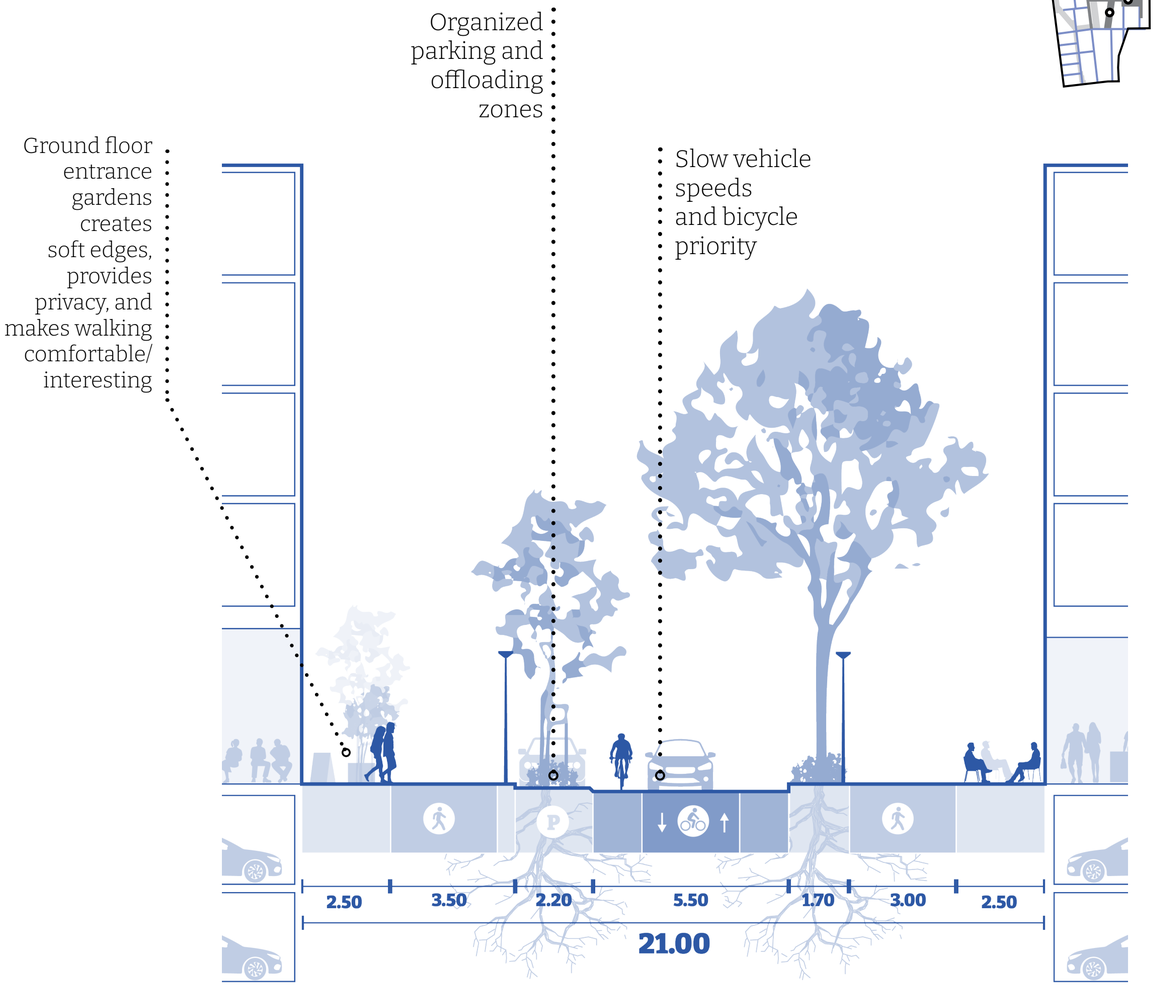




Figure 119. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)



Figure 119. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)

From underdeveloped, car oriented airport environments...



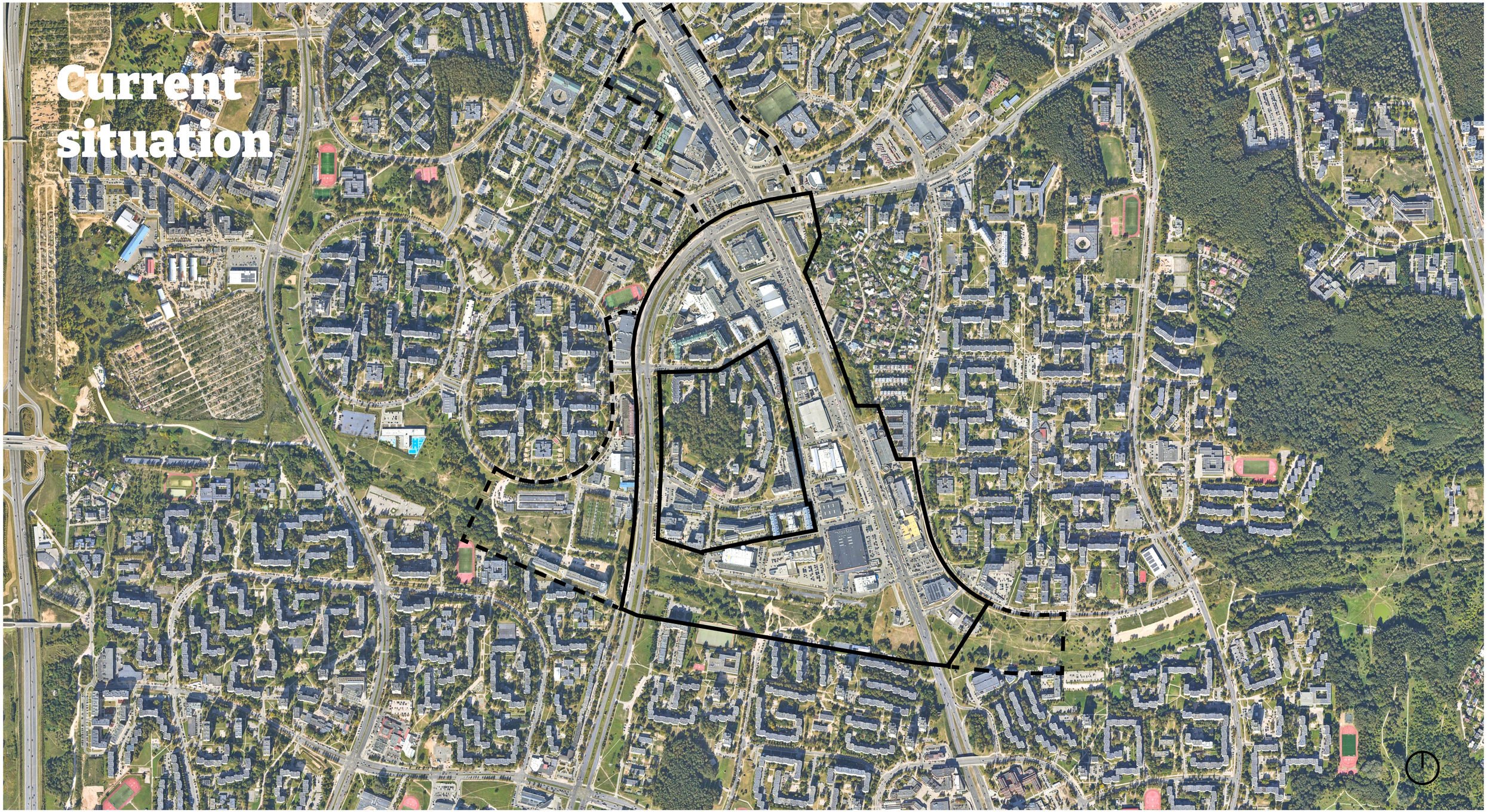
Figure 119. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)



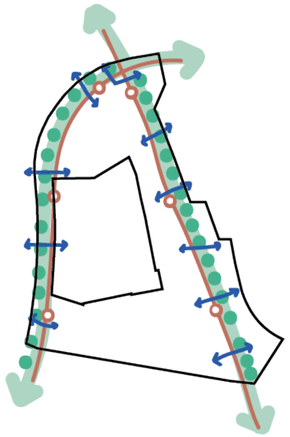
Figure 119. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)


Residential
Neighbourhood
Centre

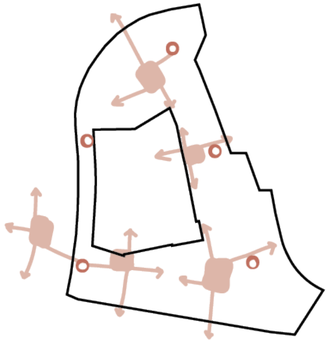
Current situation



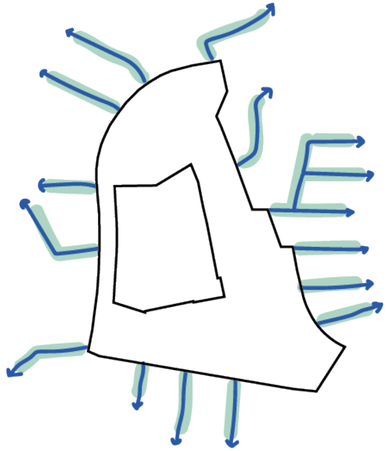
Concept



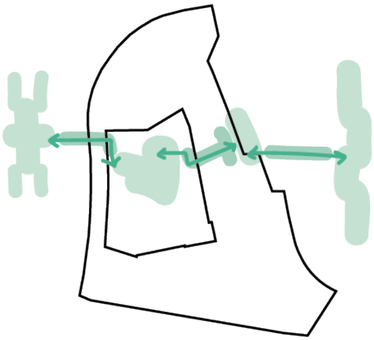
Development of tram = revitalizing the street



Creating small local squares near the tram stops



Improving the connections in surround-ing neighbour-hoods



Connecting green areas of surround-ing neighbour-hoods

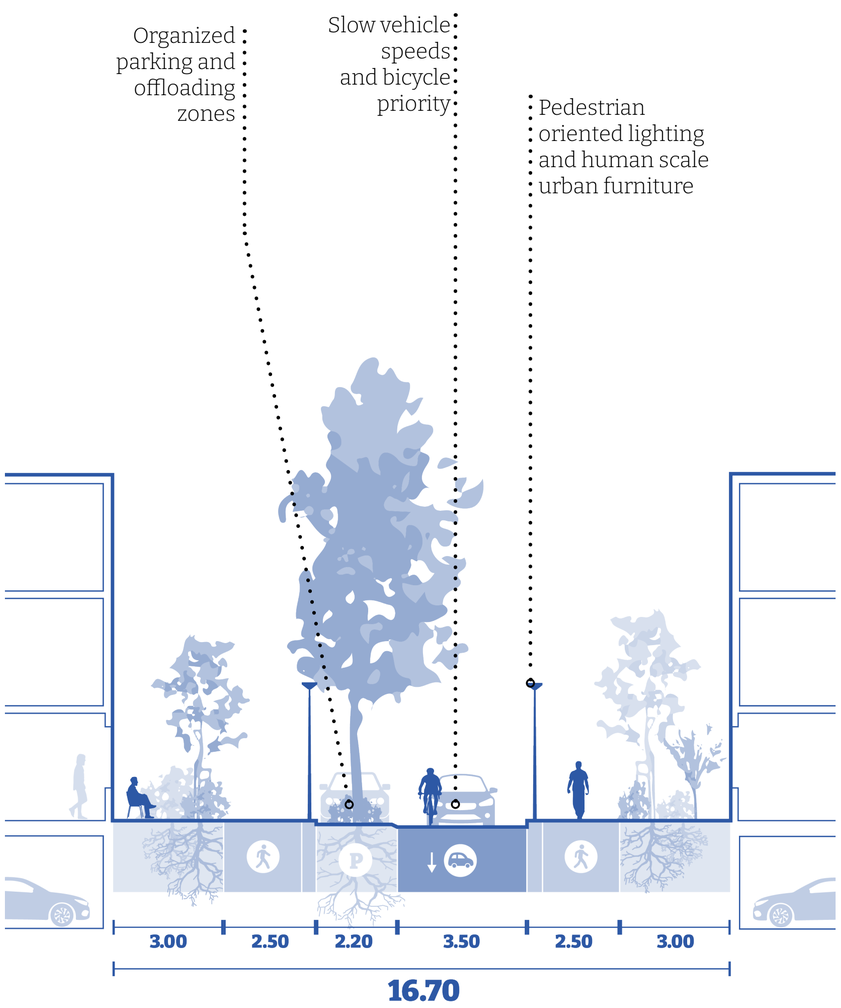


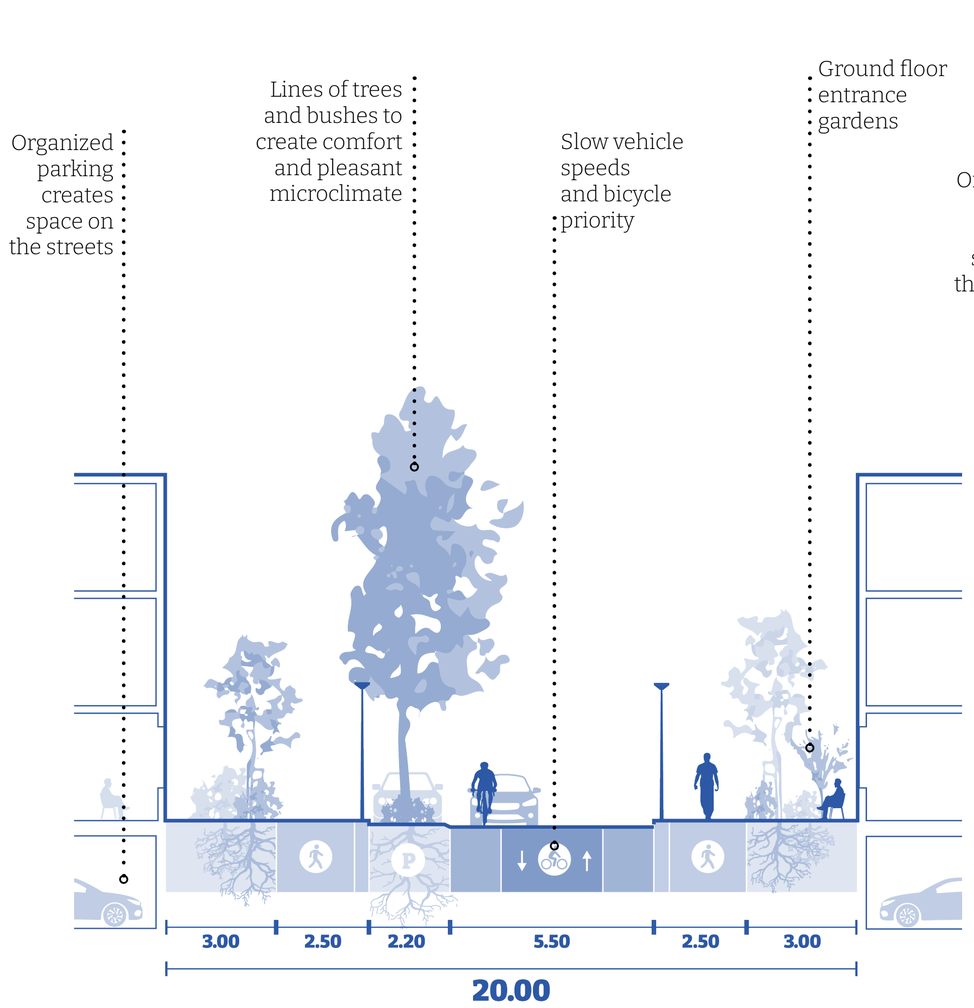
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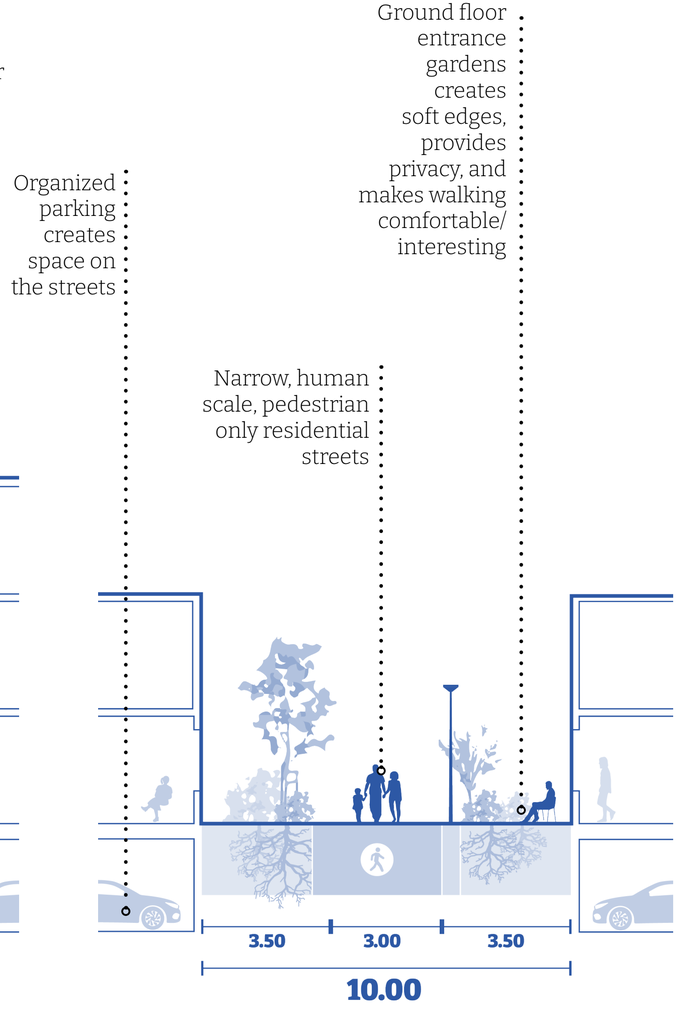


Figure 119. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)

Network of walkable streets









From car oriented back sides of suburban style malls...

Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)



Into vibrant, low density neighbourhoods, pedestrian oriented residential streets, and lively squares

Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)

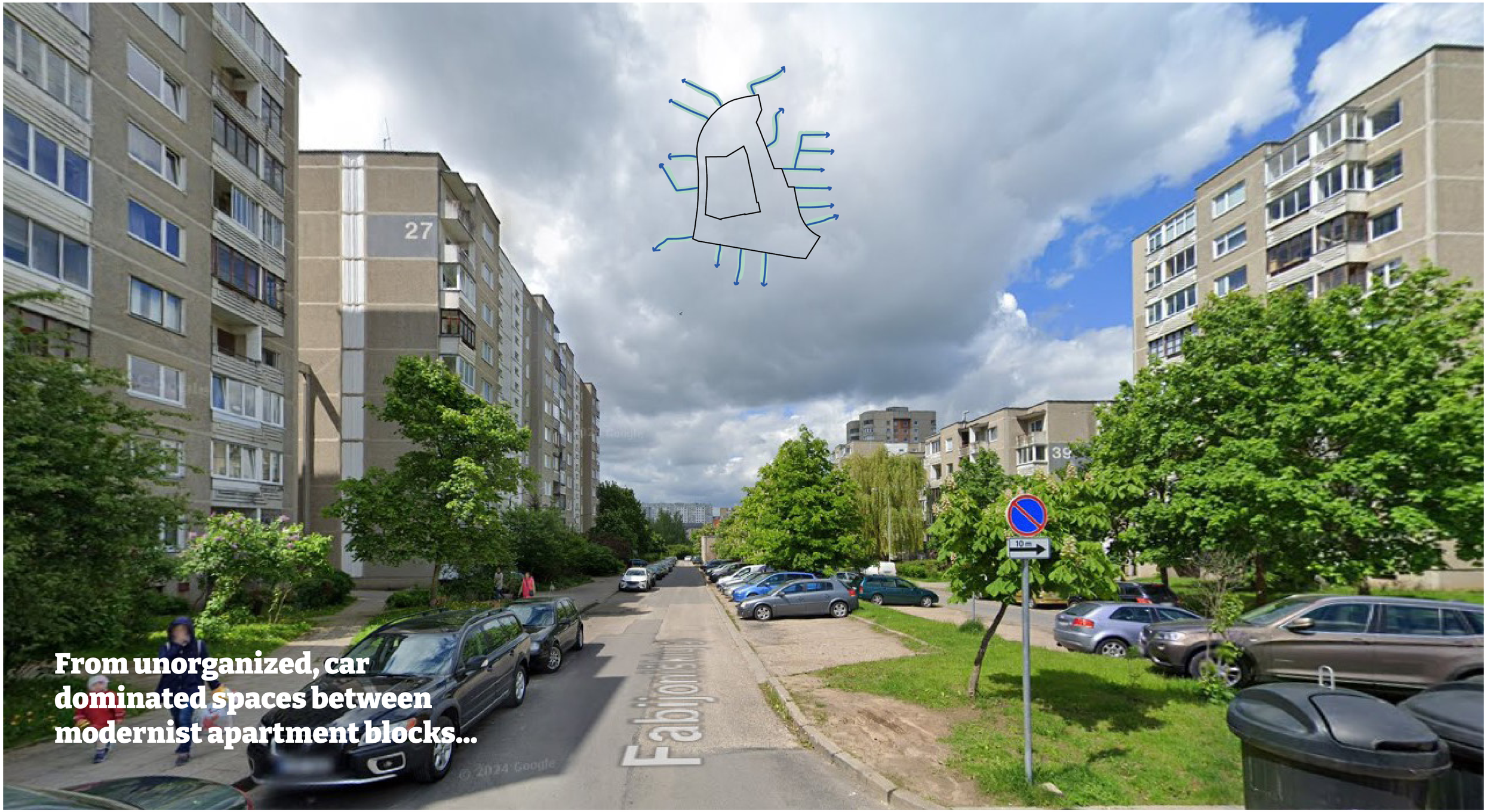


Figure 123. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)



Figure 123. Illustration of the proposed development vision. Generated using ChatGPT (OpenAI) (Indicative representation)

People do not ultimately choose transport - they choose places.

If we want people to choose public transport, we must create places around it that are worth choosing.

Thank you