moscow state of mind

from object to subject: a metamorphosis towards context-sensitive urban futures

COLOPHON

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This thesis would not have been possible without Irina and Andrey, whose support and trust made it all happen. I am endlessly grateful to them both.

My deepest thanks go to my besties Natalia and Max, who put up with my complaints and worries for two years straight.

A heartfelt mention to all my friends from the Urbanism department, and especially to the Rights of Nature cluster community.

Dedicated to Charles and Yasha.

abstract

This master's thesis investigates the vulnerability and fragmentation of natural territories in the context of Moscow's intensive urban expansion. The study critically examines existing urban planning approaches, which rely on large-scale master plans and major development projects that often overlook local natural processes and socio-cultural contexts. The research raises the question of an alternative model of urban development in which natural territories are treated as active actors, possessing agency and the capacity to influence spatial and governance decisions.

The study is based on a critical analysis of historical and contemporary urban planning documents and management tools for Moscow's natural territories, with the aim of evaluating their effectiveness and degree of implementation. Building on identified gaps in current approaches, the research draws on theories of systems of care and rights of nature, rethinking the management of natural territories through recognition of their vulnerability, local processes, and spatial identity. The theoretical analysis is complemented by spatial interpretation aimed at identifying critical areas for potential interventions.

The anticipated outcome of the research is the development of a conceptual framework that proposes a sustainable alternative to dominant large-scale development models. This approach emphasizes the support of local actors, bottom-up initiatives, and mechanisms of local governance, while unlocking the socio-cultural and ecological potential of territories through spatial solutions grounded in principles of care and restoration.

Keywords:

Urban expansion, Natural territories, Fragmentation, Systems of care, Rights of nature, More-than-human urbanism, Moscow, Urban palimpsest, Morphodynamics, Environmental governance, Non-human actors, Spatial justice, Liminal spaces, Metropolitan regions.

Figure 0.1 Moscow from the ISS

personal motivation

Having lived and worked in Moscow for over ten years, I have observed the city's rapid transformation. During this time, new trends have emerged in urban development practice, including a focus on public space improvement and the creation of a comfortable, modern city, which has become one of the stated goals of municipal governance.

At the same time, in my professional experience, I observed that decision-making priorities are often given to a small number of large stakeholders. Under the banners of public good and short-term results, superficial project solutions are frequently approved, which in the long term lead to the loss of place identity, reduction of potential, and disregard for the interests of local communities and custodians of collective memory.

Within this thesis, it became important for me to address a type of challenge that is rarely feasible within standard project practice. Specifically, it involves working with territories that have complex legal status, multiple regulations, conflicting uses, and numerous historical, social, and functional layers. Such areas are often excluded from the project agenda due to their complexity, uncertainty, and associated risks. Therefore, it seemed significant to examine this topic at least at the level of theoretical analysis and hypothesis formation.

Moreover, an important part of my motivation was reflecting on my own position within the existing professional paradigm and attempting to distance myself from accumulated practical experience in order to approach the problem with a fresh and critical perspective.

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glossary

Key Concepts

Green Gradient — the spatial transition zone between a protected natural area and the surrounding urban fabric. Rather than a fixed boundary line, the gradient describes a continuous shift in ecological character, land use intensity, and built density from the forest core outward to the city. The width and composition of the gradient varies depending on context.

Buffer Zone — a defined spatial layer established around the ecological core of a protected area. The buffer zone absorbs pressure from adjacent urban development, mediates between natural and urban systems, and provides the spatial conditions for co-management, ecological restoration, and community stewardship. In this project, the buffer zone is the primary site of design intervention.

Forest Core — the interior area of a green patch sufficiently removed from the edge to be relatively free from edge effects. The viability of a forest core depends on patch size: patches below 10 ha are considered highly fragmented, 10–50 ha show moderate resilience, and patches above 50 ha begin to function as self-sustaining forest massifs.

Edge Effect — the ecological disturbance that occurs along the boundary between a forest patch and adjacent land use. Edge effects penetrate approximately 10–50 metres into the forest, reducing habitat quality and species diversity. Patches with no functional core consist entirely of edge zone.

Liminal Zone — a transitional or in-between territory that lacks a clearly defined spatial character, programme, or governance status. In this project, liminal zones refer to the undefined areas along protected area boundaries that become sites of conflict, informal use, and ecological degradation.

Ecological Connectivity — the degree to which the landscape allows or facilitates the movement of species, genetic material, and ecological processes between habitat patches. Connectivity depends on corridor width, patch size, matrix quality, and the absence of physical barriers.

Ecological Corridor — a strip of habitat that connects two or more green patches, enabling wildlife movement, species dispersal, and ecological exchange. Minimum effective width varies by species — typically 30 metres for generalist species, wider for larger mammals.

Stepping Stone — a small habitat patch located between larger green areas that provides a resting or foraging point for wildlife moving through an otherwise inhospitable matrix. Stepping stones are particularly important for bird movement in urban landscapes.

Patch–Corridor–Matrix Model — a foundational framework in landscape ecology (Forman, 1995) that describes the landscape as composed of three elements: patches of habitat, corridors connecting them, and the surrounding matrix of less suitable land. This model underpins the spatial analysis in this project.

Co-management — a governance model in which management rights and responsibilities for a natural territory are shared between public authorities and local communities. Co-management arrangements typically involve formal agreements, defined obligations, and mechanisms for community participation in decision-making.

Stewardship — the active care and responsible management of a natural territory by those who live alongside or depend on it. In this project, stewardship refers specifically to the role of local communities as representatives and guardians of the rights of the natural environment.

Rights of Nature — a legal and philosophical framework that recognises natural entities — rivers, forests, ecosystems — as subjects with their own rights to exist, regenerate, and be represented in institutional processes. The framework has been enacted in law in New Zealand, Ecuador, Colombia,

and India.

Ecosystem Services (ESS)

Ecosystem Services — the benefits that functioning ecosystems provide to people and to the broader ecological system. Following the Millennium Ecosystem Assessment (2005), ecosystem services are classified into four categories:

- Provisioning services — tangible outputs including food, water, raw materials, and genetic resources
- Regulating services — processes that regulate environmental conditions, including air purification, water filtration, flood prevention, pollination, and climate regulation
- Supporting services — foundational ecological processes including soil formation, nutrient cycling, photosynthesis, and habitat provision
- Cultural services — non-material benefits including recreation, aesthetic value, spiritual inspiration, sense of place, and historical and educational value

Institutions and Governance Bodies

Mospriroda — GPBU Mospriroda (State Nature Conservation Budget Institution), subordinate to the Moscow Department of Nature Management and Environmental Protection. Responsible for the management and maintenance of Moscow's protected natural areas.

DPrE — Department of Nature Management and Environmental Protection of the City of Moscow (Департамент природопользования и охраны окружающей среды города Москвы). The executive authority responsible for environmental policy and the governance of protected areas within the city of Moscow.

Mosoblkomprirody — Ministry of Ecology and Nature Management of the Moscow Region (Министерство экологии и природопользования Московской области). The regional authority responsible for protected natural areas and environmental management within the Moscow Oblast, distinct from the city of Moscow.

Moscow Region / Moscow Oblast / MO — the administrative region surrounding the city of Moscow. Used interchangeably in this project: Moscow Region, Moscow Oblast, and the abbreviation MO all refer to the same territory. The Moscow Oblast is governed separately from the city of Moscow and has its own regional authorities, budget, and planning jurisdiction. The boundary between the city of Moscow and the Moscow Oblast is administratively significant in this project as it determines which governance bodies — city or regional — have authority over adjacent protected areas and land use decisions.

Moscow Renovation Fund — the body responsible for implementing Moscow's urban housing renewal programme, managing developer contracts, design briefs, and construction phasing across designated renewal zones.

Moskomarchitektura — the Moscow City Architecture and Urban Planning Committee. Responsible for approving master plans, architectural designs, and spatial planning decisions across the city.

SPNA — Special Purpose Natural Area (*ООПТ — Особо охраняемая природная территория*). The legal designation for protected natural territories in Russia, equivalent to protected areas in international terminology. Includes national parks, nature reserves, natural monuments, and natural history parks.

SNT — *Садоводческое некоммерческое товарищество* — a horticultural non-commercial partnership; a legal structure governing collective dacha and garden communities in Russia.

TSJ — *Товарищество собственников жилья* — a homeowners association; a legal structure for the collective management of residential property and shared infrastructure.

part 1. introduction

problem statement

[1] There is a major systemic issue concerning the uncertain and increasingly alarming future of Moscow's Specially Protected Natural Areas (SPNAs[1]). At the core of this problem lies the absence of a long-term strategic vision, which has rendered these territories highly vulnerable and structurally unstable within the evolving urban fabric of the city.

[2] Despite the historical, cultural, ecological, and social value of Moscow's Specially Protected Natural Areas (SPNAs), as well as the undeniable benefits they provide to the city, these territories are under constant and increasing pressure driven by urban growth and expansion, which threatens their degradation and potential loss.

[3] These processes negatively affect not only current residents but also the quality of life of future generations, more-than-human communities, and ecological and biological cycles. Natural processes and animal habitats are highly vulnerable: they are easily disrupted and extremely difficult to restore. Such impacts lead to biodiversity loss and weaken the ecological resilience of these territories. Furthermore, the loss of significant urban natural spaces contributes to the erosion of local identity.

[4] This research hypothesizes that re-framing SPNAs as active urban actors rather than passive resources can enable more resilient, long-term strategies for their protection and integration.

[1] Specially Protected Natural Areas (SPNAs) are legally designated territories that possess special environmental, scientific, ecological, or recreational value and are subject to a specific protection regime. Their purpose is to preserve natural complexes, biodiversity, and unique ecosystems, as well as to support sustainable forms of human–nature interaction.

Figure 1.1 Khoroshevo-Mnevniki
residential development, 2017

context & scale

For a better understanding of the scale of my focus area, on this page I compare Moscow Oblast and Old Moscow with the Netherlands and the major cities of the Randstad. They are shown at the same scale, and their populations are compared for greater clarity.

As shown in the diagram, the area of Moscow Oblast (45,900 km²) is comparable to the total area of the Netherlands (41,865 km²). The population of Moscow Oblast with Moscow included (22,050,020 people) *(Federal State Statistics Service [Rosstat], 2025)* is 1.2 times larger than the population of the Netherlands (18,031,000 people) *(Statistics Netherlands [CBS], 2025).*

The population of Moscow (13,274,285 people) *(Federal State Statistics Service [Rosstat], 2025)* exceeds that of the Randstad (8,400,000 people) *(Statistics Netherlands [CBS], 2025)* by a factor of 1.5. In addition, the diagram allows for a comparison between the population of Moscow and the largest cities of the Randstad.

Russian Federation

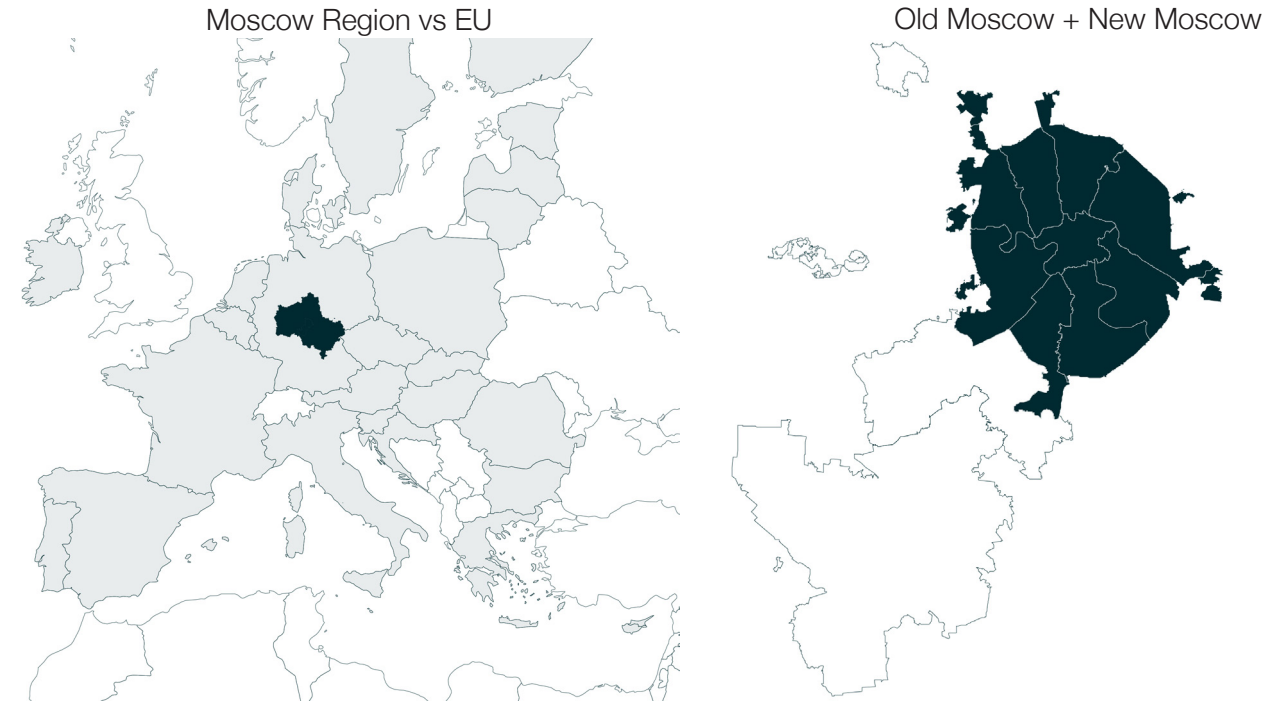


Figure 1.2 Moscow in Context and Scale

introduction to moscow's expansion

Moscow is the capital of Russia, the country's largest economic, political, and cultural center, and one of the largest cities in Europe and the world, ranking among the twenty largest global metropolises.

Over the past hundred years, Moscow has developed rapidly and continuously expanded its territory. The city's population has increased more than 6.5 times, while its area has grown nearly 11 times. *(Denisenko & Stepanova, 2016).* In 2012, a decision was made to expand Moscow by incorporating the territory of New Moscow — the Troitsky and Novomoskovsky Administrative Okrugs, which previously belonged to Moscow Oblast. This increased the city's area by 2.5 times.

Based on trends over the past thirty years, Moscow's population growth continues and is likely to persist. The main drivers are social and economic: the capital offers more opportunities for education, career development, personal growth, and family support. Economic, cultural, and social factors indicate that people moving to Moscow gain greater chances for self-realization. As long as the disparity in opportunities between the capital and the regions persists, population inflow to Moscow is expected to continue *(Krylov & Baier, 2025).*

Thus, Moscow continues to develop dynamically and expand, with no indications that this growth will slow in the near future.

Figure 1.3 Population statistics

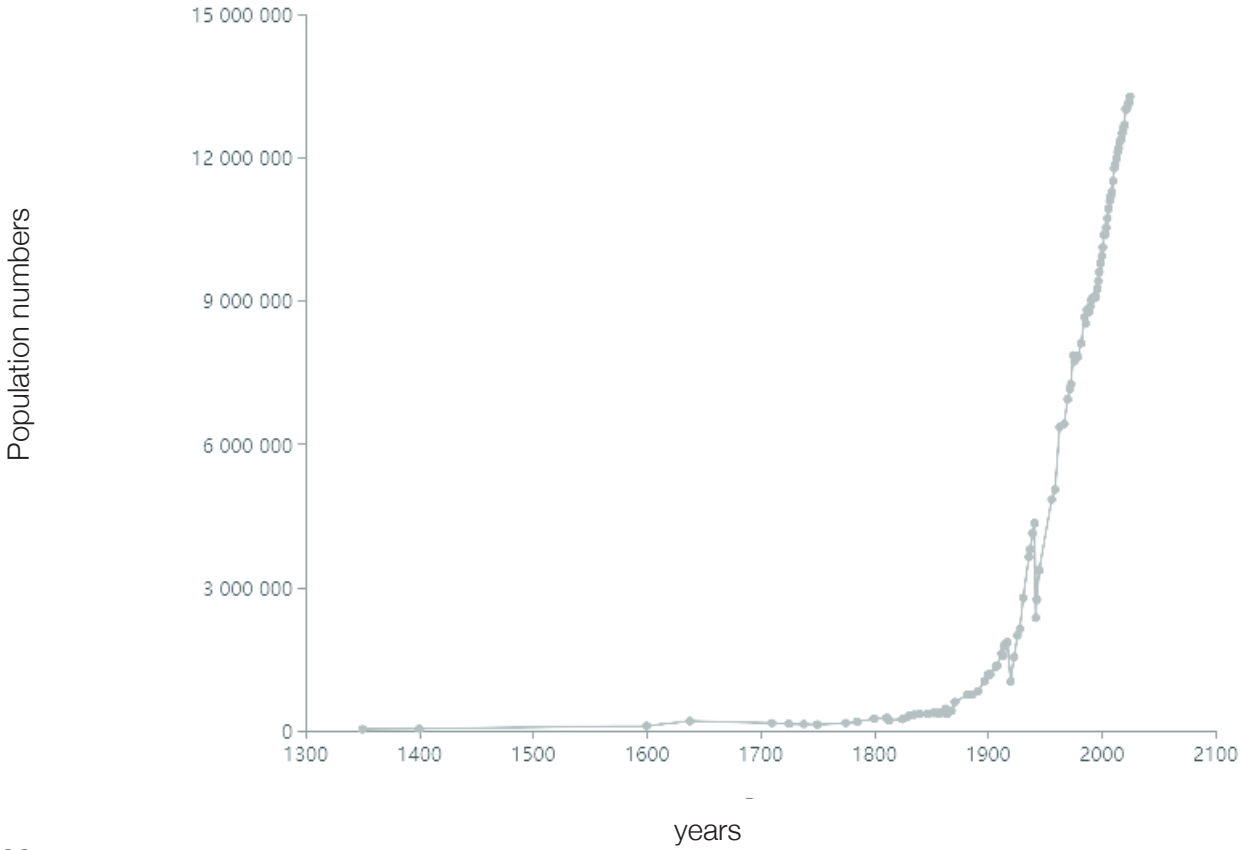
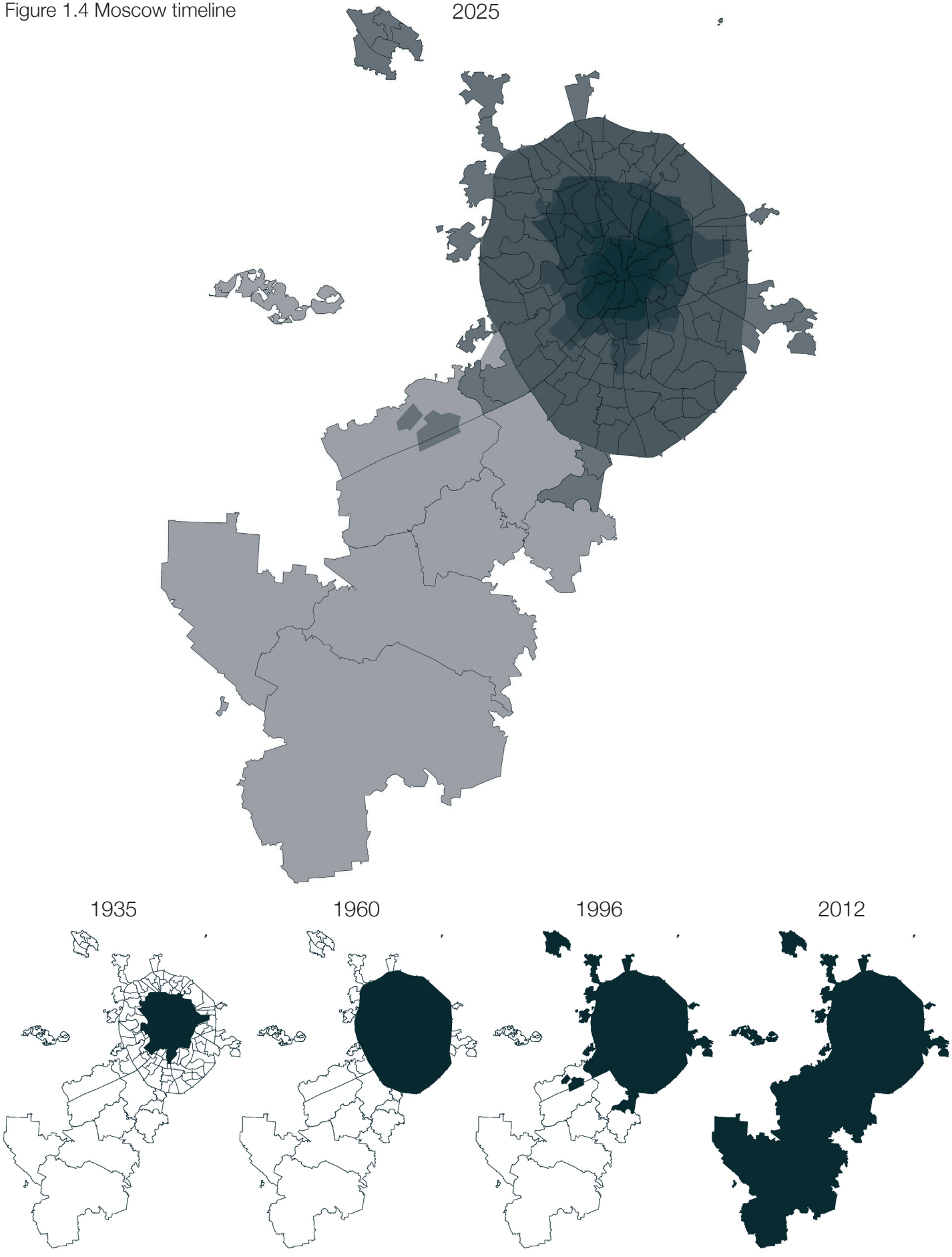


Figure 1.4 Moscow timeline



The adoption of the Gen-plan and the large-scale reconstruction of the city, including the construction of the first metro line

The Moscow Ring Road (MKAD) becomes the city's boundary

Expansion beyond the MKAD, incorporation of Zelenograd

Annexation of the New Moscow territory (TiNAO)

what is moscow exactly

What exactly do we mean by “Moscow” in this thesis, and why is it a question worth addressing?

Moscow is the capital of the country, its largest economic, political, and cultural center, the core of the Moscow agglomeration, and a separate federal subject. The city has a special administrative status and is not part of Moscow Oblast, although it effectively serves as its center.

Moscow has a complex administrative structure. Currently, the city is divided into 12 Administrative Okrugs (AOs), which together comprise 125 districts. Each administrative unit has its own governance structures, enabling localized management and territorial planning.

The city’s history and repeated boundary expansions have resulted in a complex situation regarding territorial limits. In contemporary understanding, several types of boundaries can be distinguished:

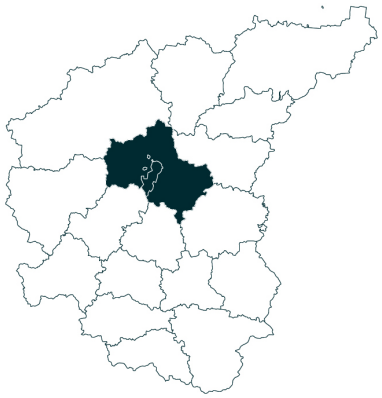
- Administrative boundaries of Moscow – the official borders of the city as a federal subject.
- Moscow Oblast boundaries – a separate federal subject, which Moscow is not formally part of, although it serves as its economic and transportation center.
- Old Moscow – the historical city territory, approximately bounded by the Moscow Ring Road (MKAD), including small areas beyond it. This zone reflects the de facto urban environment, with dense development, social and infrastructural integration.
- New Moscow – territory incorporated into the city in 2012 by decree of the President of the Russian Federation, previously part of Moscow Oblast. This expansion increased the city’s area 2.5 times and established a vector for future growth. However, currently, differences in infrastructure and population density between New Moscow and the adjacent Moscow Oblast are minimal.
- Moscow Agglomeration – a wider zone including Moscow and nearby satellite cities. Its boundaries are defined based on transportation accessibility and functional integration.
- Nearest cities of Moscow Oblast – areas that have effectively merged with Moscow’s urban environment, where administrative borders no longer match the real spatial interaction of population and infrastructure.

In this sense, all the above can be considered “Moscow,” as it forms a single, integrated system.

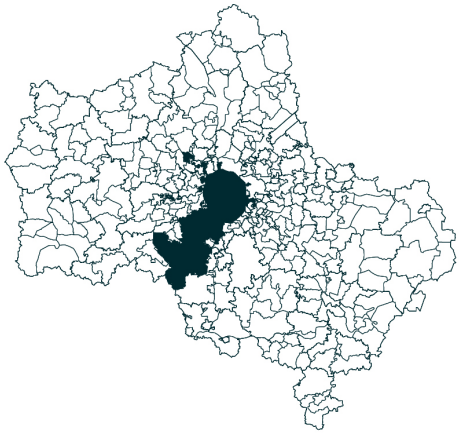
For the purposes of this project, the focus is on the boundaries of Old Moscow, primarily the MKAD and adjacent areas, because the study is concerned with the actual, de facto city limits rather than the legal ones. The boundaries of New Moscow are treated as strategic and prospective, setting the direction for city development, but currently there are no significant differences between New Moscow and nearby areas of Moscow Oblast in terms of urban infrastructure integration. Therefore, they are not a primary focus in this work (a more detailed analysis of this zone is presented in the section on Moscow’s master plans).

Russian Federation

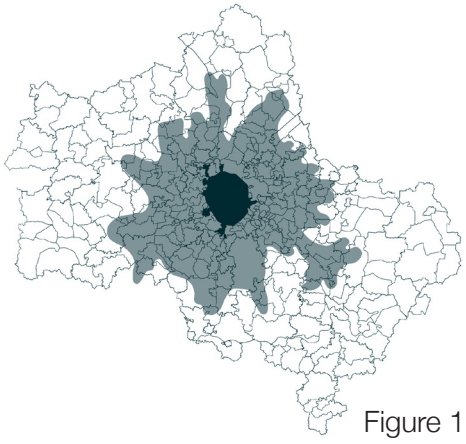
Central Federal District



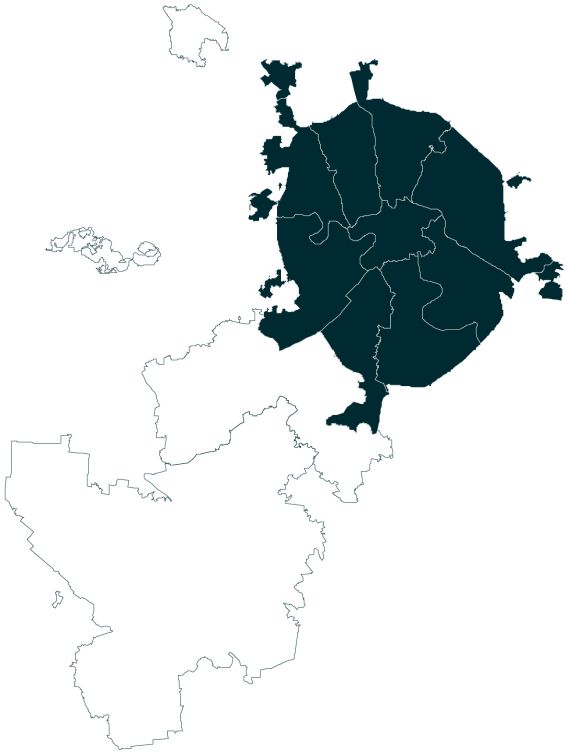
Moscow Oblast & Moscow



Moscow Agglomeration
according to G. M. Lappo, 1987



Old Moscow & New Moscow
Okrugs devision



Old Moscow & New Moscow
Districs devision

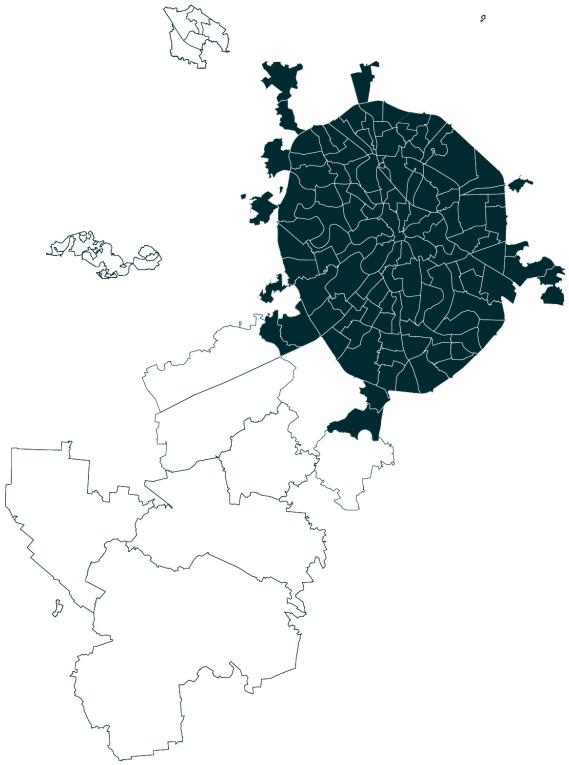


Figure 1.5 Administrative divisions

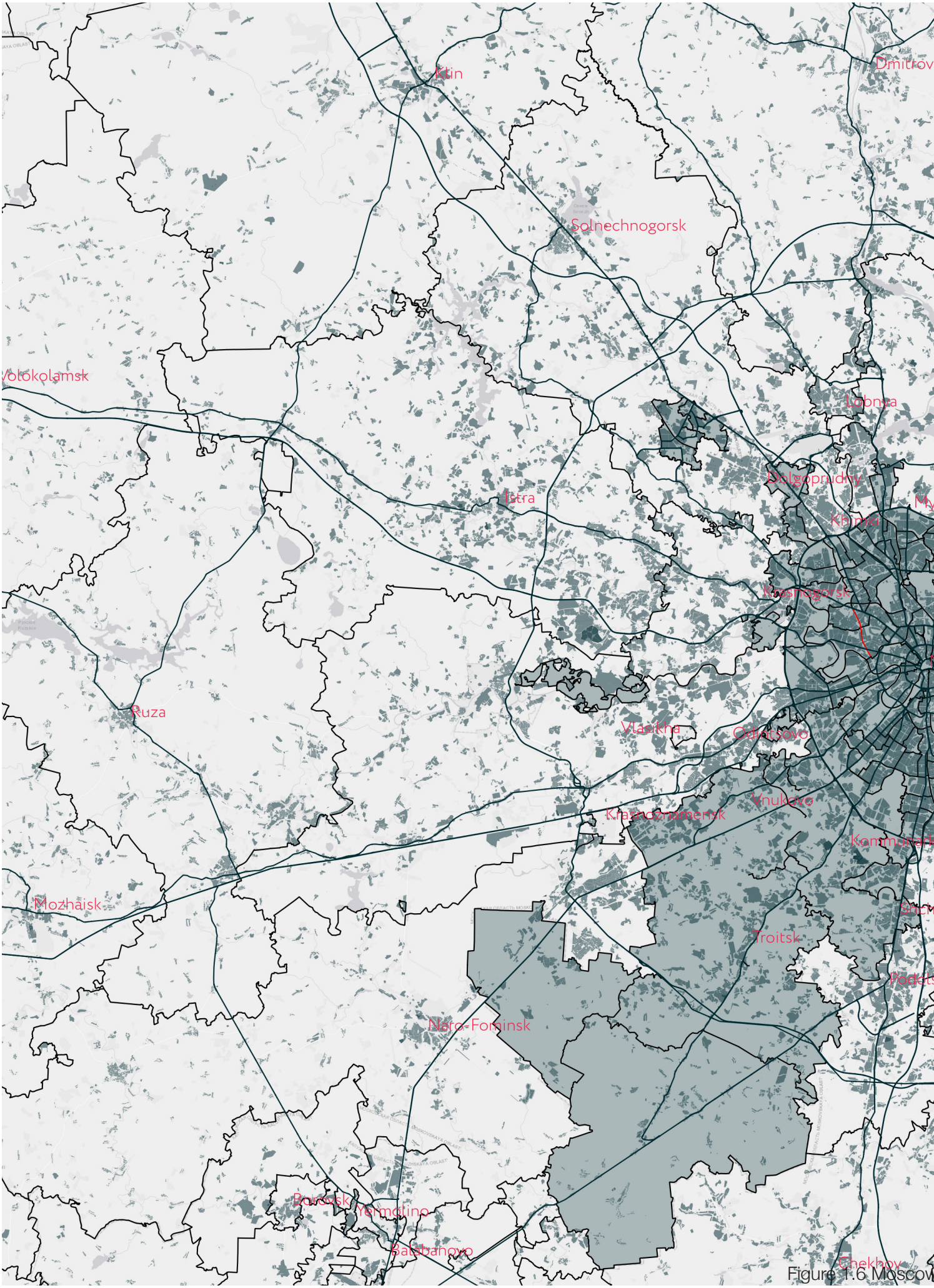
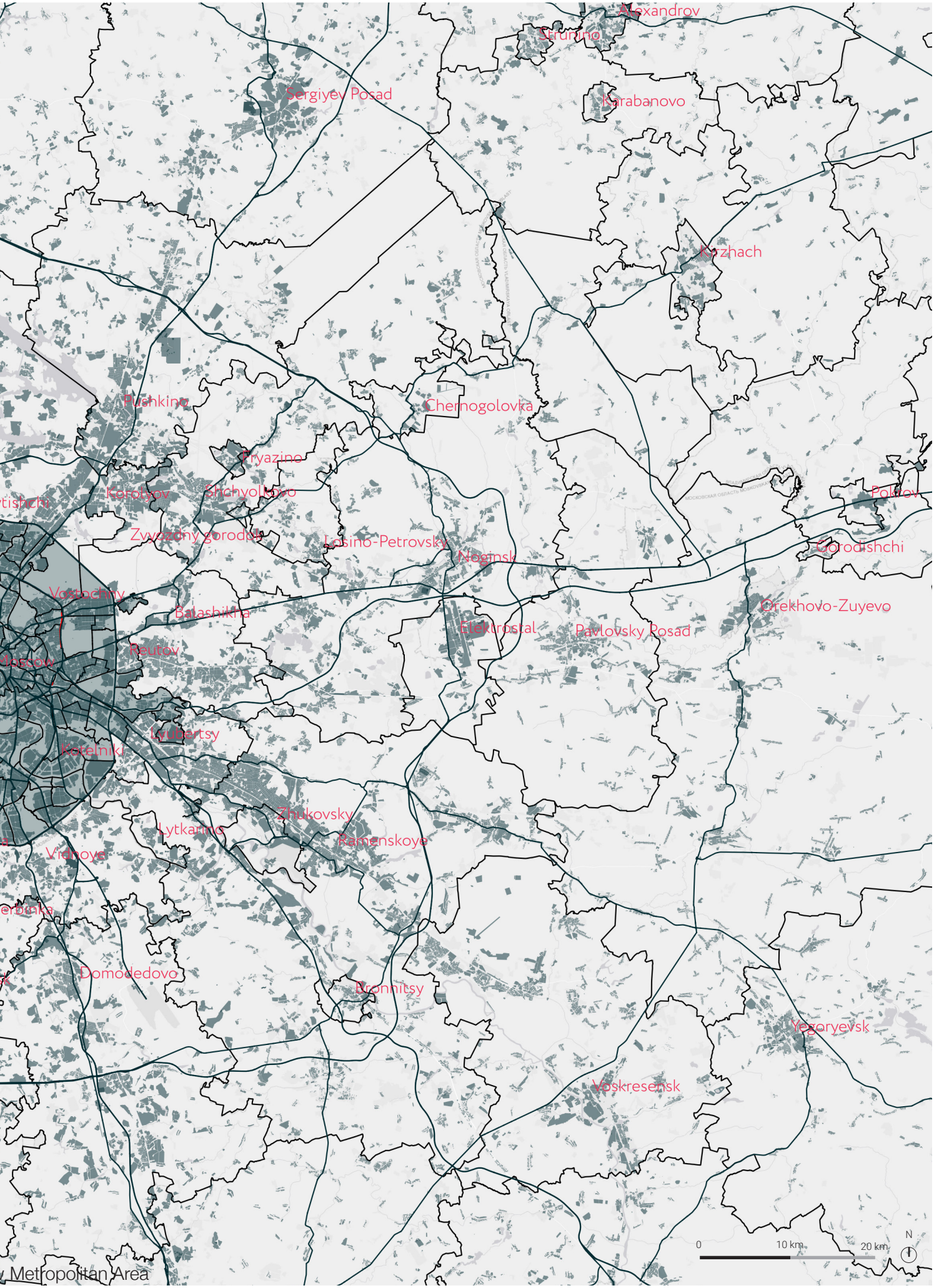


Figure 1.6 Moscow


Alexandrov
Strunino
Sergiyev Posad
Karabanovo
Kirzhach
Pushkino
Chernogolovka
Pryazino
Korolyov
Shchyolkovo
Zvyozdny gorodok
Losino-Petrovsky
Noginsk
Orekhovo-Zuyevo
Balashikha
Elektrostal
Pavlovsky Posad
Reutov
Lyubertsy
Kotelniki
Zhukovsky
Lytkarino
Ramenskoye
Vidnoye
Domodedovo
Bronnitsy
Yegoryevsk
Voskresensk
0
10 km
20 km
N
Metropolitan Area

A natural question arises: why is Moscow's growth often unstable, and why are the city's natural territories under threat? To answer this, it is necessary to examine the specifics of Moscow's urban planning and the institutional conditions of its development, which create a number of systemic problems.

One key feature is the tradition of master planning, established during the Soviet period. Under a planned economy, which allowed for long-term forecasts and centralized management of territorial development, this tool functioned relatively effectively. However, with the transition to a market economy, the intensification of globalization, and the backdrop of economic and geopolitical crises, it became evident that the possibilities for long-term spatial planning are significantly limited. This situation is characteristic not only of Moscow but also of most major cities worldwide.

Against this backdrop, the city is forced to constantly seek new territories for development. Population growth, high housing demand, and elevated real estate prices exert continuous pressure on urban space. Within the existing built-up area, Moscow has already largely utilized available reserves: former industrial zones are actively developed, existing neighborhoods are densified, infill projects are implemented, including in areas with historical buildings. At the same time, density is increased through the construction of high-rise residential complexes *(Kommersant, 2025).*

The logical next step in this sequence is the incorporation of natural territories into the urban development cycle. Within the dominant development paradigm, undeveloped spaces are increasingly perceived as potential resources to be exploited rather than as independent values of the urban environment.

It is in this context that the focus of this research shifts to urban areas most vulnerable to fragmented and unsystematic development. Specifically, the study addresses the following types of spaces:

- Natural territories, including specially protected natural areas (SPNAs, *rus. ООПТ*);
- Territories along water bodies, primarily along the Moscow River;
- Former industrial areas that have lost their original functional purpose.

The common factor for all these zones is their high urban value combined with increased vulnerability under real estate market pressures. In most cases, the dominant development scenario is residential construction, which often fails to consider the spatial, ecological, and social potential of these territories.

Thus, the key research question is the search for alternative, more constructive, holistic, and sustainable development scenarios for these spaces.

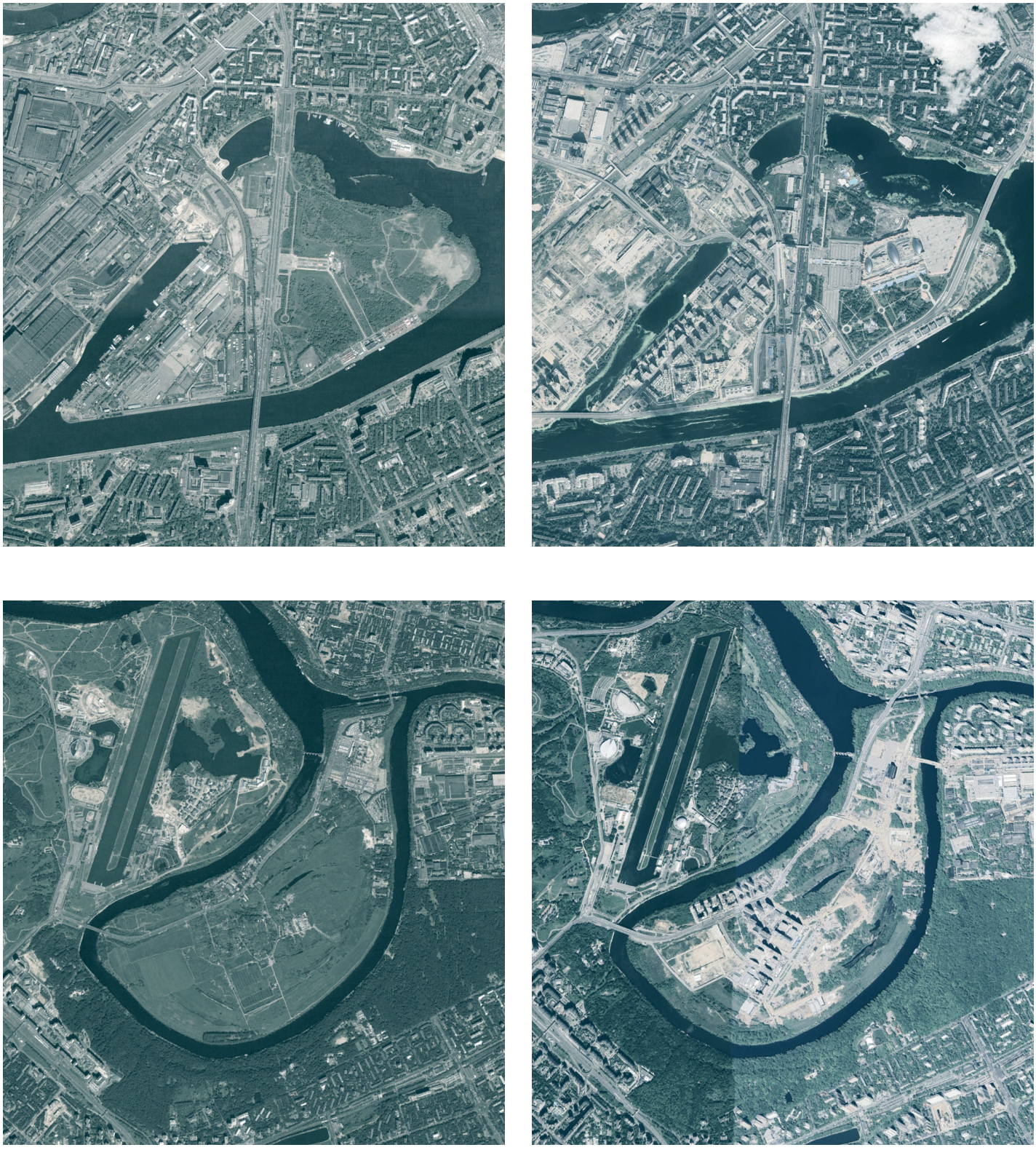


Figure 1.8 Khoroshyovo-Mnyovniki District (2003 – 2024)

What are SPNAs (ООПТ) and why are they at risk

Specially protected natural areas (SPNAs, ***rus. ООПТ***) are territories and objects of the natural complex designated under the legislation of the Russian Federation to conserve natural complexes and ensure favorable conditions for the habitat of living organisms. The federal definition of SPNAs is provided in the Federal Law "On Specially Protected Natural Areas," according to which these territories have special conservation regimes and include national parks, nature reserves, natural parks, wildlife refuges, natural monuments, and other natural objects of high ecological, scientific, historical, or aesthetic value *(Ministry of Agriculture of the Russian Federation, 2025).*

In the urban context of Moscow, SPNAs have traditionally functioned as highly valuable natural spaces, including forest parks, natural-historical parks, wildlife refuges, and natural monuments. By 2024, Moscow had more than 140 such territories, occupying a significant portion of the city's natural complex and performing important ecological and social functions *(Moseco.ru, n.d.; Rosreestr TO 77, n.d.).*

Legally, SPNAs have a specialized protection status that restricts economic activity, construction, and other interventions that could harm natural values. In Moscow, their protection and management were regulated by city laws and decrees, with oversight carried out by the executive authorities of the city, including the Department of Environmental Management and Protection.

SPNAs also have historical and cultural significance. Many were formed around old estate parks and historic landscapes, preserved as conservation areas for decades. Furthermore, SPNAs play a crucial role in the city's "green framework," ensuring air quality, biodiversity, habitats for plants and animals—including rare species—and providing recreational spaces for residents.

Until the end of 2024, the SPNA regime created a certain legal barrier to development: major construction in these zones required strict environmental compliance, which made them relatively protected from unauthorized building. However, by Moscow Government Resolution No. 3160-PP of December 27, 2024, all regional SPNAs were converted into Specially Protected Green Territories (OOST) of Moscow, effectively changing their legal protection regime and raising concerns among experts and residents. While the new OOSTs retain the "specially protected" designation, restrictions previously applied to SPNAs have been substantially weakened and are not fully detailed in regulations, creating legal uncertainty and potential loopholes for construction activities *(Vestnik Moskvy, 2025; MK.ru, 2025).*

Environmentalists and public organizations note that this change may allow major construction, infrastructure lines, parking lots, and other facilities that were previously prohibited in SPNAs. Such changes raise concerns about the future of Moscow's natural areas and their ability to perform key ecological functions. *(SocialCompass, 2021), (Institute of Geography, Russian Academy of Sciences, n.d.).*

Thus, SPNAs are not merely green patches on a map but territories with legally established protection regimes, significant ecological, historical, and social functions, now at risk of losing part of their conservation guarantees and becoming fragmented due to changes in status and current urban development trends.

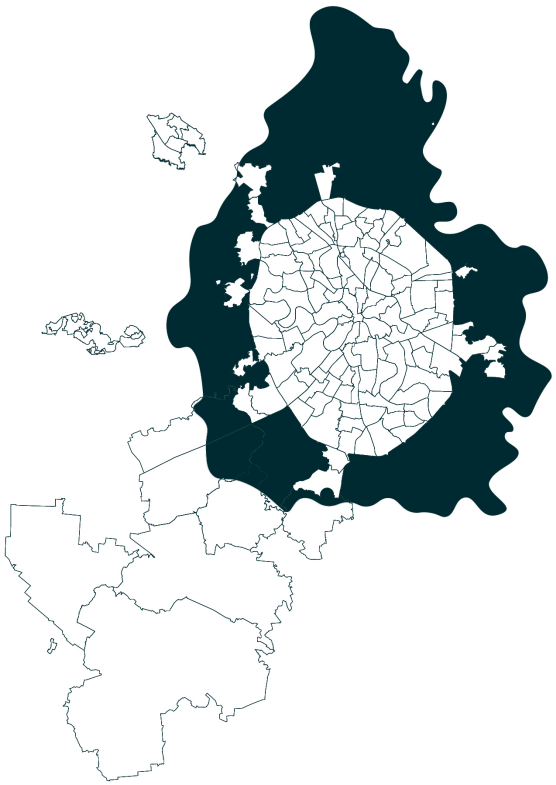


Figure 1.9 Green Belt of Moscow

Figure 1.10 SPNAs of Moscow

Figure 1.11 Bitsevskiy Forest Park

Figure 1.12 Tsaritsyno Landscape Park.

Figure 1.13 Losiny Ostrov National Park

relevance

Social Relevance

This study is aimed at achieving social and spatial justice in the context of contemporary Moscow, where local residents have virtually no real tools to influence large-scale urban planning decisions, even though these decisions directly affect the spaces of their daily lives. The existing model of city governance, based on centralized decision-making mechanisms, exacerbates the gap between the scale of planning and local interests.

The research is based on the premise that recognizing natural territories as active urban actors and granting them rights can serve as a mechanism to expand the agency and capabilities of local communities, public organizations, and grassroots initiatives, enabling them to act as representatives and defenders. Elevating the status of nature within urban governance is thus considered a tool for restoring citizen agency and participation in shaping the urban environment.

The work critiques the dominant logic of quantitative growth and proposes a shift in focus toward the quality of the urban environment, local identities, and constructive forms of interaction between residents, natural territories, and governance institutions. Participation, dialogue, and feedback are not viewed as secondary processes but as essential conditions for sustainable and just urban development. Respect for the natural context and the principles of more-than-human urbanism forms the foundation for establishing more balanced relationships in which natural territories and local communities mutually reinforce each other.

Scientific Relevance

From a scientific perspective, this research aims to test the applicability of the principles of rights of nature and the conceptualization of natural landscapes as active actors in a large, inert metropolis with a strong tradition of top-down governance, such as Moscow.

The study seeks to bridge the gap between long-term strategic planning, the inherent uncertainties of urban processes, and local, context-sensitive intervention tools. In this context, it emphasizes the importance of shifting focus from quantitative development indicators to the identification and engagement with qualitative, spatially expressed characteristics of green territories.

Additionally, the research is directed toward uncovering hidden ecological, socio-cultural, and temporal dynamics inherent in natural territories within the urban structure. The issues examined are not unique to Moscow and could potentially be scaled and adapted to other urban contexts, contributing to a rethinking of rigid hierarchical models of urban development and supporting alternative, more flexible, and resilient approaches.

objective and aim

Propose non-anthropocentric, ethically driven vision of the future.

The objective of this research is to develop a strategic framework for Moscow's Protected Natural Areas that enables their long-term resilience, self-sufficiency, and ecological viability while allowing them to meaningfully coexist with the urban environment. The study aims to explore how planning, design, and governance tools can support the integration of these territories into the city without compromising their natural qualities.

The motivation for this research stems from the growing need to rethink the role of protected natural areas within large metropolitan systems. In the context of increasing environmental uncertainty, climate pressures, and urban complexity, there is a critical opportunity to shift from treating these territories as passive or residual spaces toward understanding them as active ecological systems and stakeholders. This research seeks to contribute a strategic approach that can inform future decision-making and offer a transferable model for other urban regions.

research questions

[MQ] How can we address future uncertainty and develop a long-term vision for Moscow's Protected Natural Areas to ensure that their intrinsic values are embedded in future decision-making, enabling long-term commitments in favor of nature?

[SQ-A] Setting

How do SPNAs currently function and operate in practice?

Who are the key actors and decision-makers shaping their governance today?

What roles do SPNAs perform at different scales — both at the metropolitan and the local level?

[SQ-B] Assesing

What values (ecological, social, cultural, spatial) do Moscow's SPNAs embody?

Which systems are involved in the functioning of SPNAs?

Where do the main conflicts emerge?

What are the key vulnerabilities and critical points of fragility within SPNAs?

[SQ-C] Projecting

How can Moscow's SPNAs be reintegrated into the urban fabric in a way that avoids urban domination, enabling urban and natural systems to function in long-term balance and co-existence?

How can the ecological, cultural, and historical values of SPNAs be recognized as active agents in urban planning and design rather than treated as secondary constraints?

The project focuses on the intersection of specially protected natural areas (SPNAs), riverine zones, and former industrial sites as the most vulnerable yet potentially promising spaces within the Moscow metropolitan structure. The research progresses from an analysis of these territories at the metropolitan scale to a detailed study of a specific local fragment where these types of spaces converge and where spatial and regulatory conflicts are most evident.

This approach allows for a comparison between the top-down, centralized model of development and a context-sensitive local approach, assessing the potential for alternative, more holistic and sustainable development scenarios that go beyond conventional residential construction.

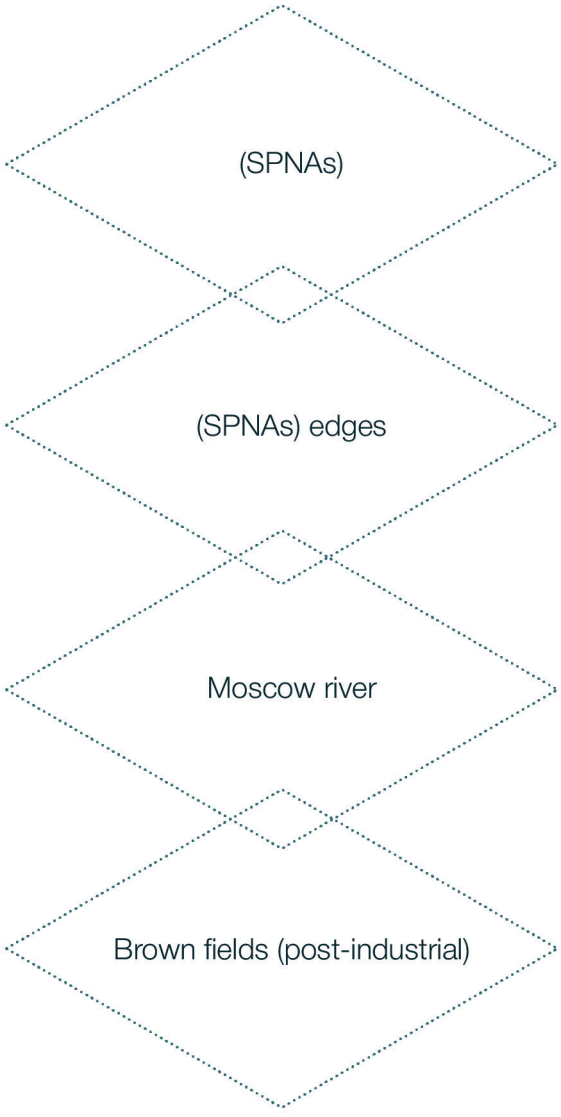
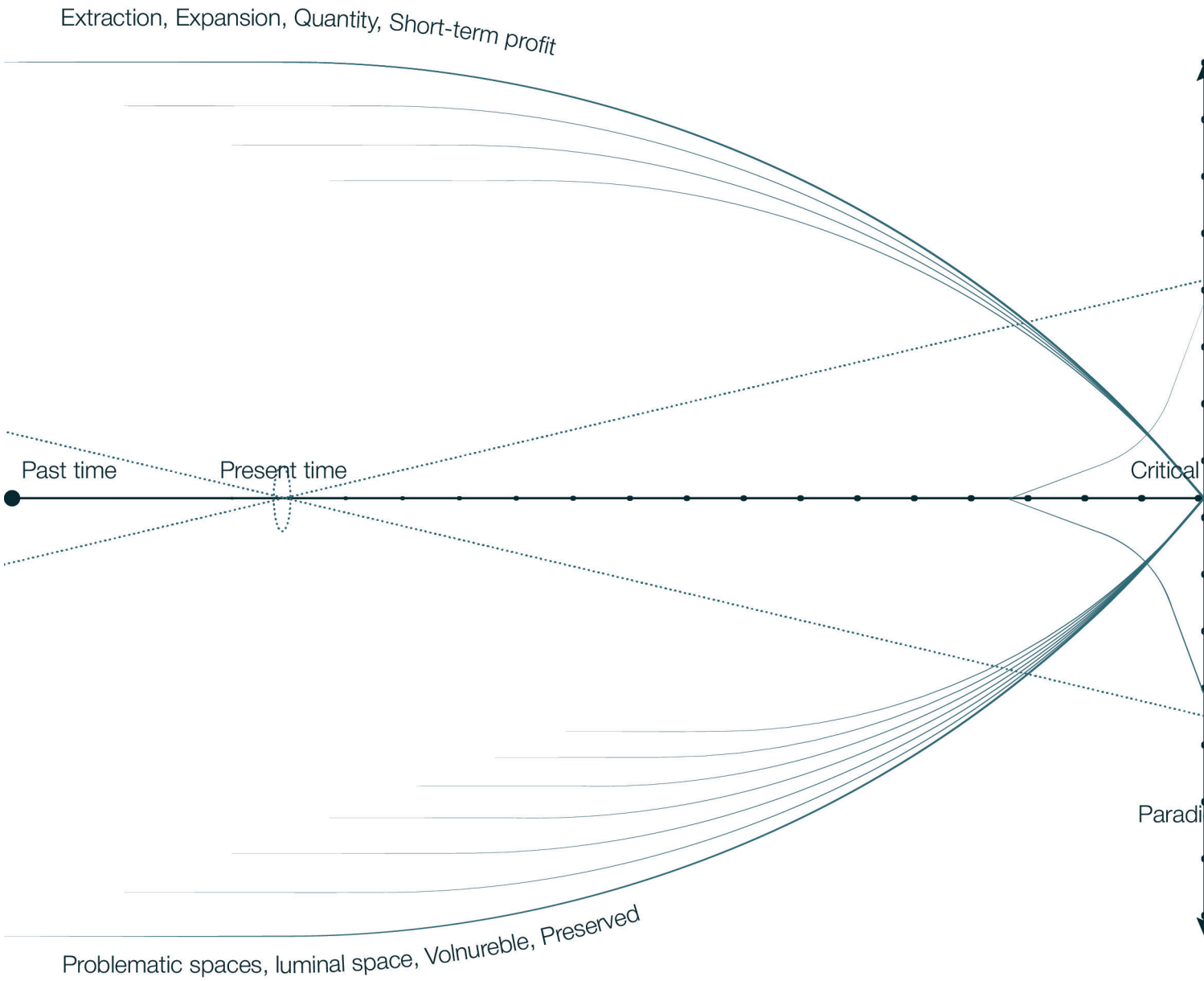
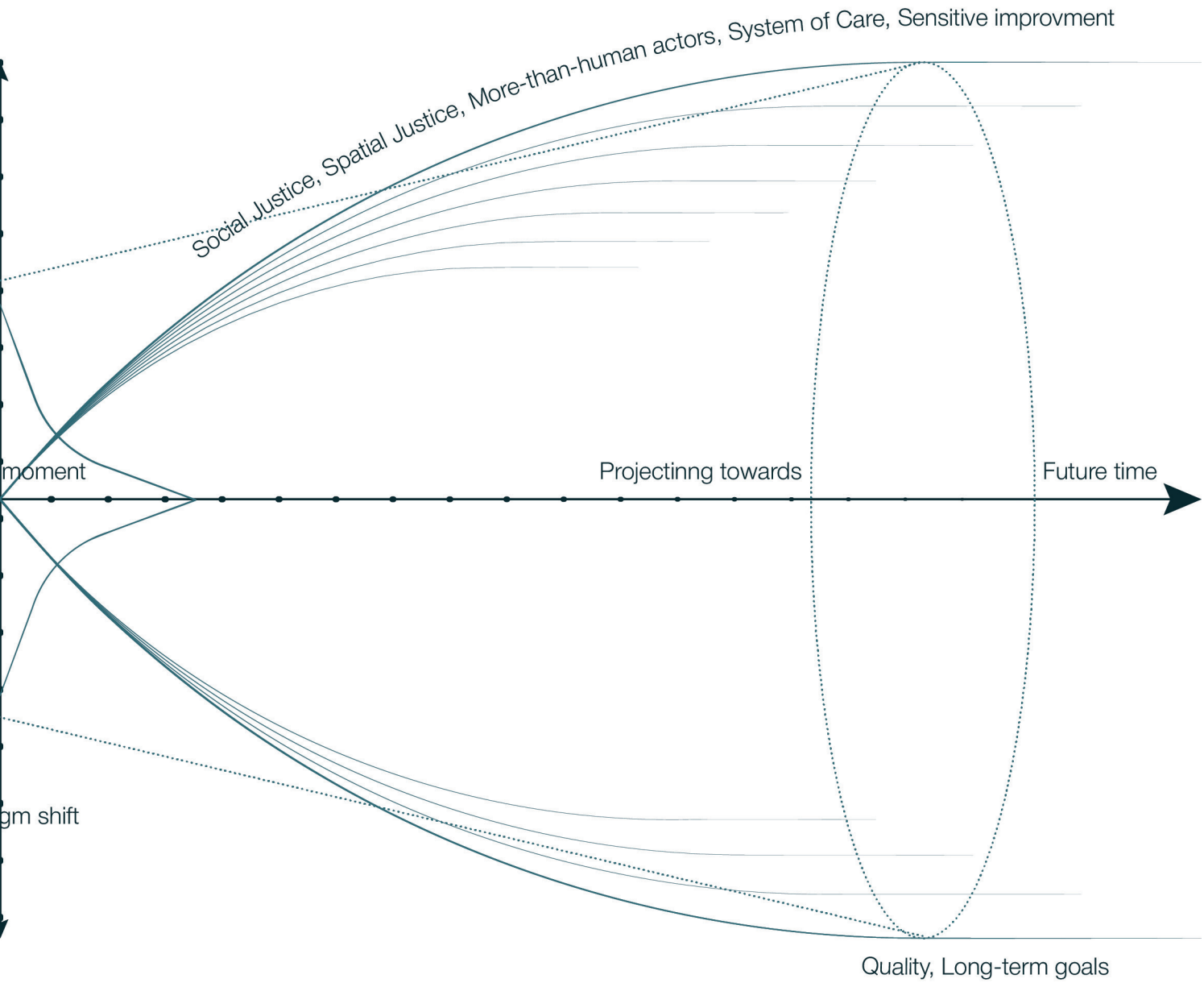


Figure 1.14 Vulnerability layers

preliminary conceptual framework



Figure


Social Justice, Spatial Justice, More-than-human actors, System of Care, Sensitive improvment
moment
Projectinng towards
Future time
gm shift
Quality, Long-term goals

e 1.15

final conceptual framework

A damped spiral projected onto three planes. Each projection shows something different — yet all three describe the same system.

In this project, the three projections represent three cycles operating across the same territory:

The spiral — the exponential growth of the city. Continuous, accelerating, consuming space without limit.

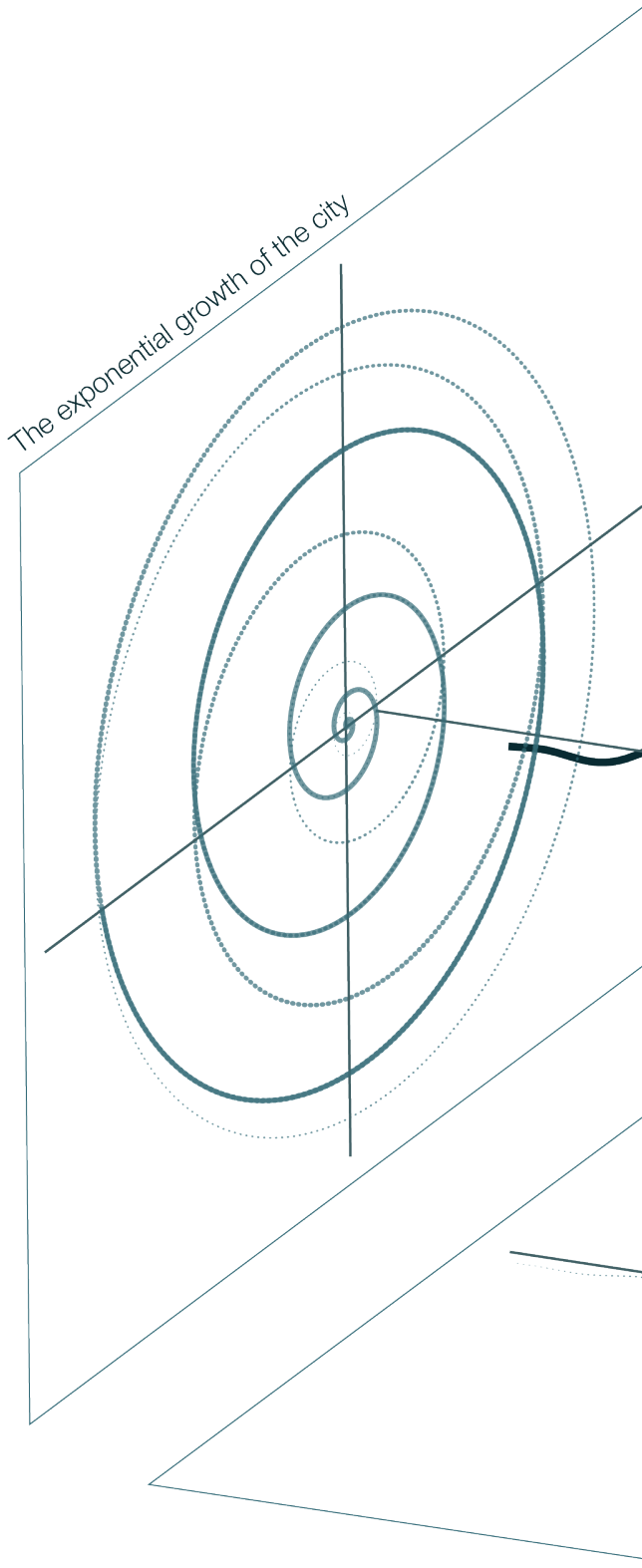
The right projection — the cycles of nature. Regenerative, operating on timescales entirely different from urban development.

The bottom projection — human cycles and footprint. The patterns of use, movement, and consumption imposed on the territory.

Each follows its own logic. But current planning looks at only one projection at a time — and misses the full picture.

The boundary between city and protected nature cannot remain a line. It must become a gradient where all three cycles are visible and can be negotiated together.

To slow the spiral and reduce the human footprint, the right projection must be expanded — recognising nature as a subject with its own rights, and redistributing governance toward those who live alongside it.



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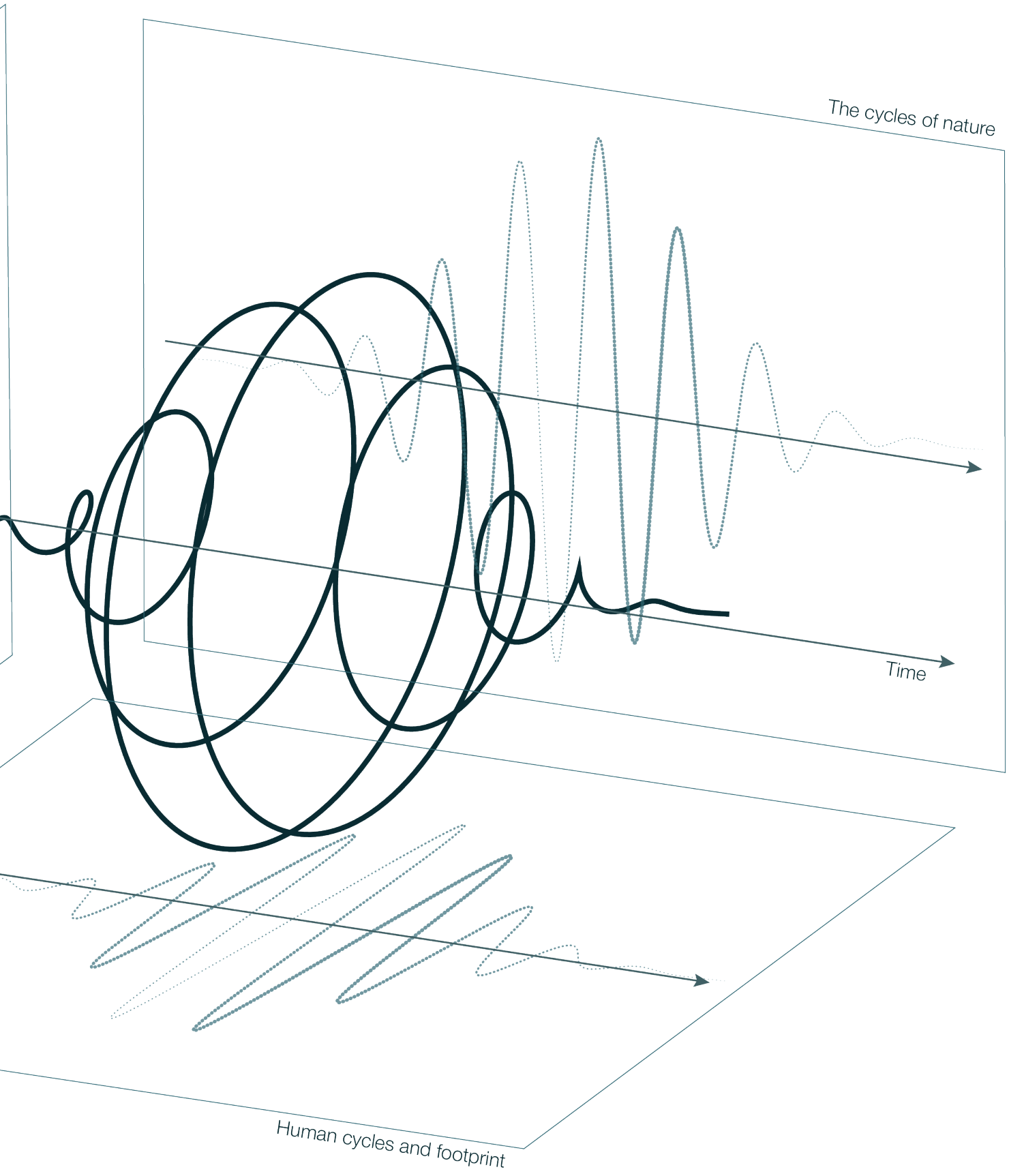


e 1.16

part 2. approach

Throughout this process of research by design, the projected outcomes will include a literature review, an assessment, and a design proposal, elaborated on below.

The research is based on a research-by-design approach, in which design itself is used as an analytical tool to identify spatial, ecological, and social processes within the urban environment. The theoretical foundation draws on interdisciplinary urban theory, including rights of nature, more-than-human urbanism, and critical urban theory, allowing natural territories to be considered as active participants in urban processes.

Analytical Methods

The analytical phase employs temporal and spatial analysis methods. Palimpsest and longue durée approaches are used to reveal historical layers and transformations of natural, riverine, and industrial territories. Morphodynamic mapping is applied to examine changes in urban structure, fragmentation, and connectivity, while actor-network analysis identifies key human and non-human actors, as well as institutional mechanisms influencing the development of these territories. Cartographic interpretation serves as a tool to compare regulatory, functional, and actual layers of urban reality.

Design Methods

The design phase relies on scenario-based design and field conditions methods, enabling work with uncertainty and treating the territory as a dynamic system rather than a fixed form. Seed interventions are used as tactical, localized actions capable of initiating long-term spatial and social change.

Evaluation

Project hypotheses are evaluated based on criteria of spatial justice, environmental resilience, and long-term adaptability. Special attention is paid to the ability of proposed solutions to respond to the local context, reduce conflicts along the boundaries between natural and urban territories, and foster more balanced interactions between nature, the urban environment, and institutional structures.

Methodological framework research clusters

Figure 2.1

Timeline of Moscow's green structure

As illustrated by the map and the timeline, most major parks and protected green areas in Moscow—particularly those located within the central parts of the city—have a long and layered history. Many of the largest park and forest complexes originated as royal hunting grounds, such as Losiny Ostrov *(Losiny Ostrov National Park, n.d.)* and Sokolniki. Others emerged from former country estates and their landscaped gardens, including Kuskovo *(Kuskovo Estate Museum, n.d.).*

This demonstrates that the foundation of many of Moscow's specially protected natural areas is not limited to ecologically valuable forests alone, but also includes significant historical and cultural landscapes.

At the same time, the timeline reveals a gradual process in which these green territories have been reduced, fragmented, and increasingly isolated as a result of urban growth and spatial transformations.

Figure 2.2*

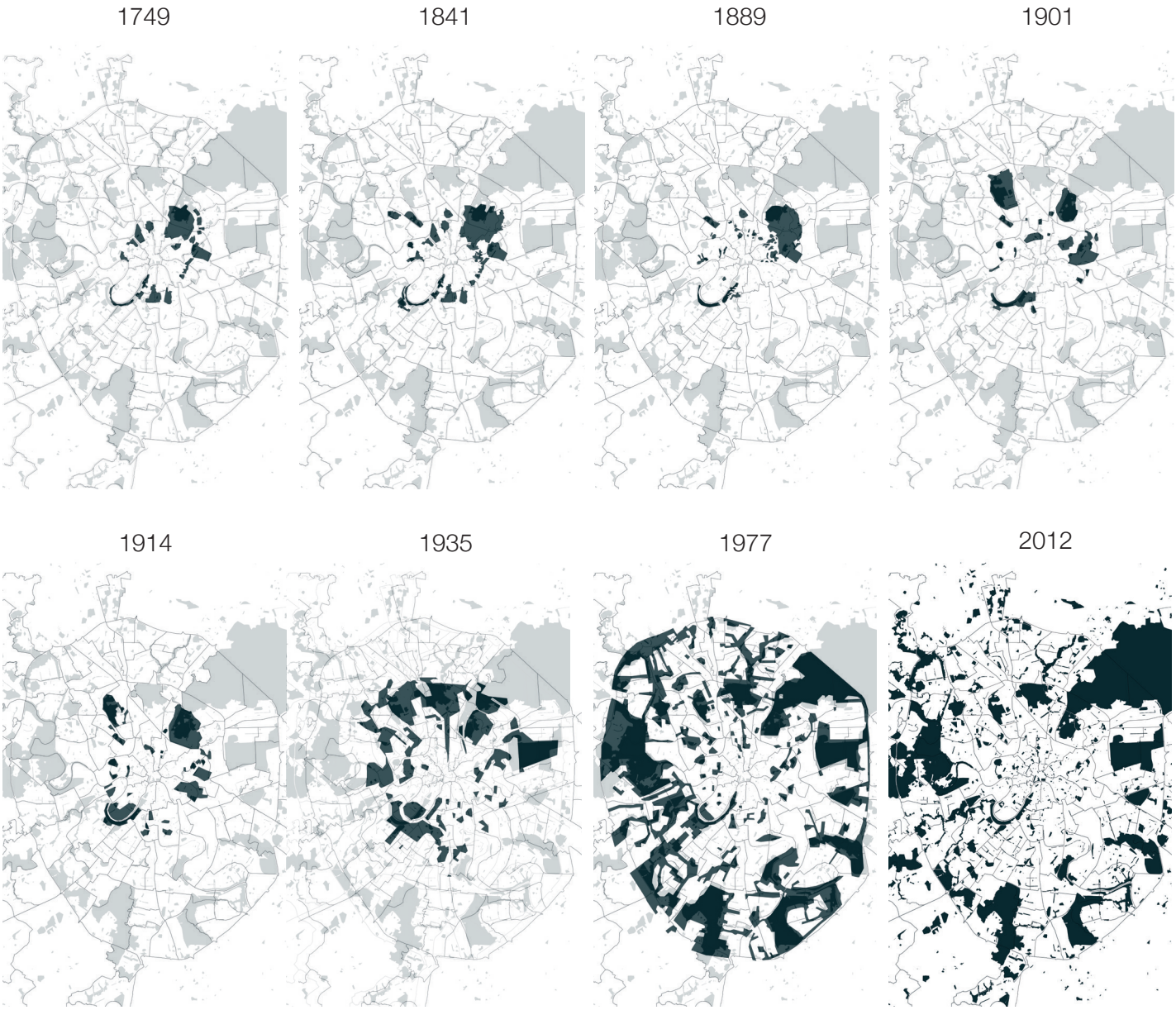


Figure 2.3

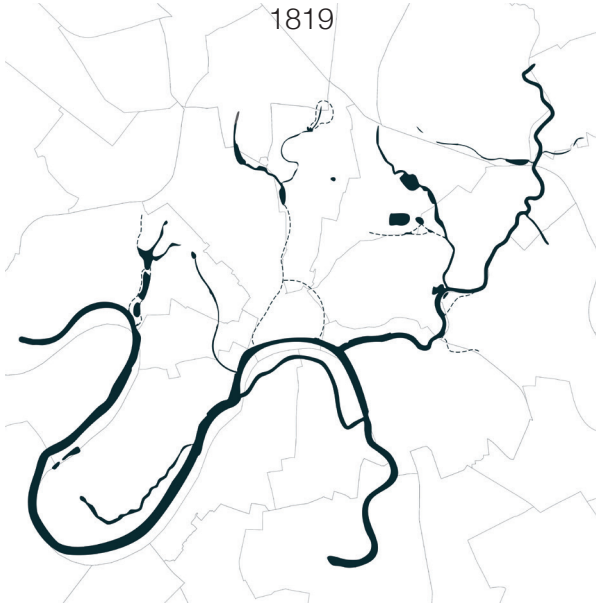
*Maps on this page based on: Detailed plans of Moscow. https://retromap.ru/

Timeline of Moscow's Blue Structure

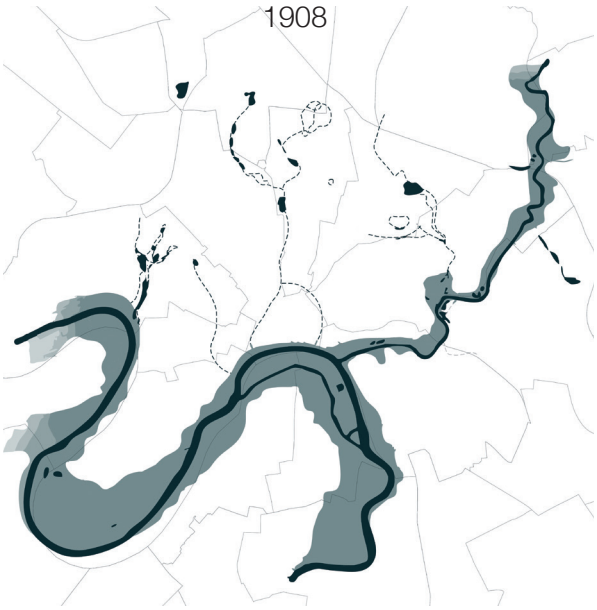
Today, only two rivers remain visible in Moscow: the Moskva River and the Yauza, while all other rivers and streams in the city center have been diverted underground. Following the 1935 water management plan, the Moskva River became largely enclosed by infrastructure. *(Strelka KB, n.d.)* As a result, Moscow's river system is highly regulated, leaving little space for natural, unaltered processes and reducing rivers to controlled urban infrastructure.

Figure 2.4*

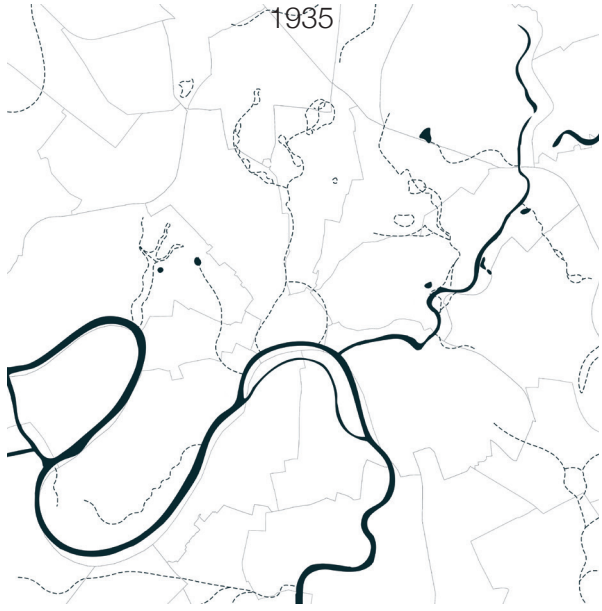
The first urban development plan. River corridors were preserved in their original form.



The first collector.
The Neglinka became one of the first rivers in Moscow to be enclosed in a collector.



The Great Moscow Flood.
In April 1908, due to the large volume of melting snow, the Moskva River rose by 8.9 meters. The districts of Dorogomilovo, Khamovniki, and Yakimanka were the most severely affected. *(Moscow Walks, 2012)*



The Plan for the Water Management of Moscow
In 1935, a comprehensive water-management plan for Moscow was adopted. During its implementation, several reservoirs, canals, and hydraulic structures were built to collect and retain water during spring floods.

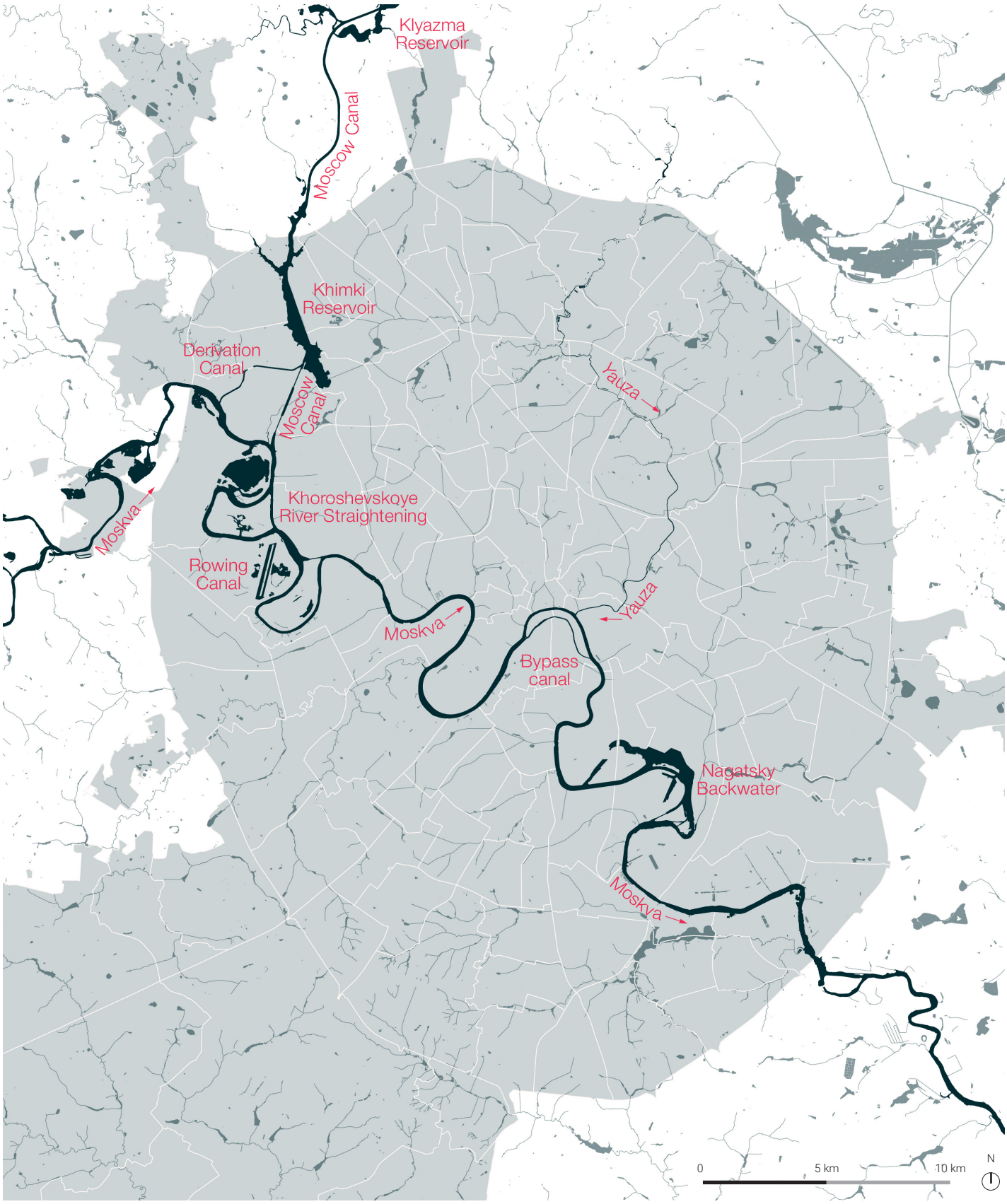


Figure 2.5

*Maps on this page based on: Strelka KB. (n.d.). Moscow rivers. https://media.strelka-kb.com/moscow-rivers

Brown fields (post industrial sites)

"New territories are required to improve urban infrastructure. In this context, both as the Head of the Moscow Department of Urban Planning Policy and as a resident of the city, I consider the reorganization of vacant and inefficiently used former industrial zones to be one of the key urban development priorities. These areas are often located in strategically advantageous locations, close to business districts or within central parts of the city" *(Ovchinsky, n.d.).*

17%

Urban areas within the former city boundaries

52%

Industrial zones occupied by active industrial and research facilities

18,800 hectares

Total area of all industrial zones in Moscow

Likhobory – Okruzhnaya
Khoroshyovskaya – Shelepikha
Yuzhny Port – Tekstilshchiki
Ochakovo – Ryabinovaya
Varshavskaya – Biryulyovo
0
5 km
10 km
N

Figure 2.6

a retrospective of moscow's vision and planning decisions

The General Plan for the Reconstruction of the City of Moscow (1935)

Key Provisions:

- The total population of Moscow was limited to 5 million people, in order to ensure full and high-quality services.
- Radical redevelopment of the existing urban fabric: small blocks, lanes, and narrow streets were to be eliminated and replaced with large urban blocks featuring spacious and comfortable residential buildings.
- High-rise residential development:buildings of at least six storeys, and 7–10 storeys or more along major avenues and thoroughfares.
- Preservation and development of the radial-ring urban structure, forming the basis of the street network and the Moscow Metro system.
- Creation of ceremonial avenues and public centers with monumental architecture reflecting Moscow's status as the capital.
- Development of public transport, with the metro as the backbone of urban mobility.
- Development of an integrated green system, including parks and the Forest Park Protective Belt, to limit urban sprawl and improve environmental conditions.

Conclusions:
The plans were only partially implemented due to the war. Much of the historical architecture and monuments were lost. Roads, bridges, the first metro line, the Moscow Canal, and city flood-control works were built. Unique structures were erected, the Forest Park Protective Belt (LPPB) was introduced, and efforts were made to create a continuous green framework for the city. *(Moscow Chronology, n.d.)*

The Second General Plan for the Development of Moscow (1971)

Key Provisions:

- Limiting the growth of Moscow's population through the relocation of industrial enterprises and the creation of satellite cities.
- Development of the city's planning structure while preserving the radial-ring scheme and strengthening transverse (cross-city) connections.
- Mass housing construction, primarily standardized residential microdistricts, to address the housing shortage.
- Development of the transport system, including the expansion of the metro network, major highways, and high-speed transport links.
- Functional zoning of the territory (residential, industrial, public, and recreational zones).
- Development of the green and recreational system, strengthening the city's green framework and preserving the forest park belt.
- Formation of public centers in peripheral areas in order to relieve pressure on the historic city center.

Conclusions:
Comprehensive development of new city territories was carried out, and a new district division was introduced. Large residential areas were built to provide housing. The city expanded to the MKAD and began to grow toward the surrounding region, including the creation of satellite towns. Special attention was given to greening residential areas and improving environmental conditions. *(Moscow Chronology, n.d.)*

The Third General Plan for the Revival of Moscow (1999 – 2005)

Key Provisions:

- Creation of attractive conditions for construction in order to attract investors to the city.
- Urban planning zoning of the territories of Moscow.
- Development of a program of priority urban planning measures.

Conclusions:
Since the plan was oriented toward attracting investment and the active construction of housing, offices, and shopping centers, many historic buildings were damaged or lost, leading

Figure 2.7 (1935)

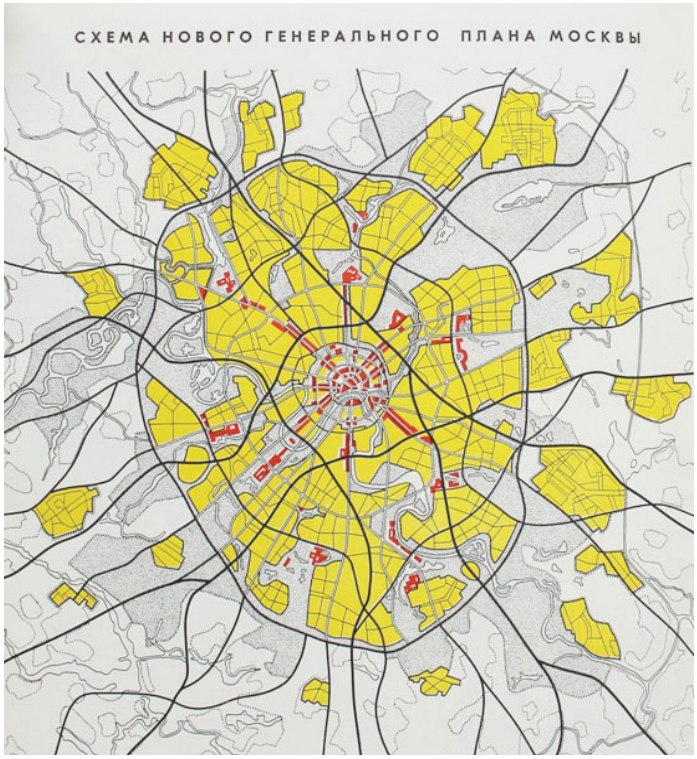


Figure 2.8 (1971)

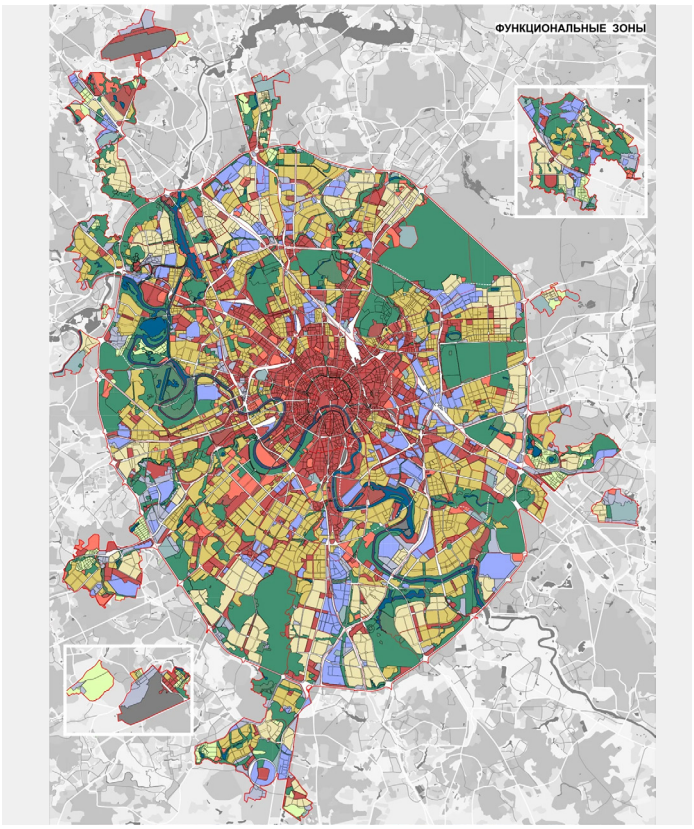


Figure 2.9 (1999-2005)

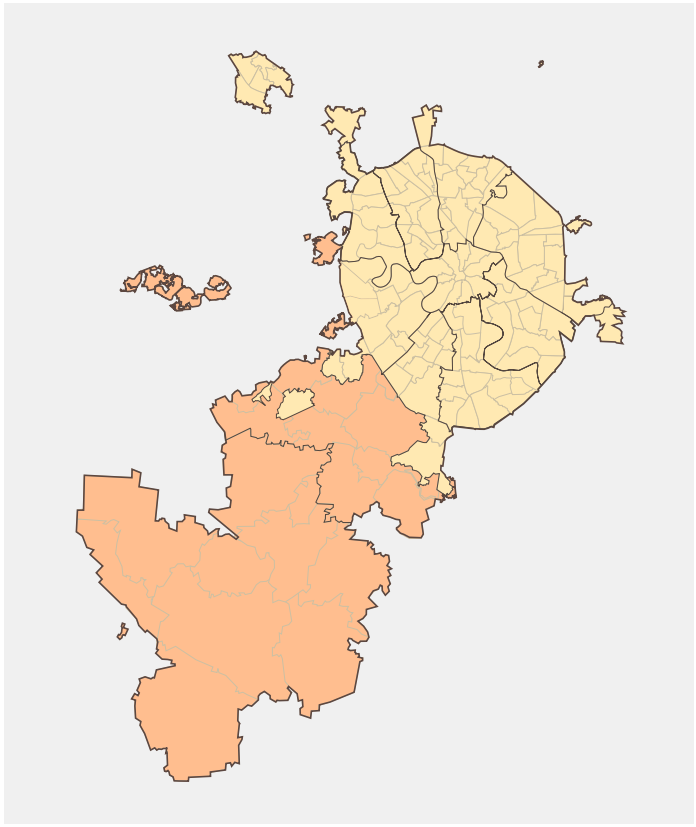


Figure 2.10 (2012)

to significant changes in the historical character of central Moscow. In addition, unauthorized construction began along the boundaries of green areas, as well as the rapid development of individual housing construction in the areas surrounding the city, which intensified urban sprawl and increased environmental pressure. *(Archi.ru, 2007); (Moscow Chronology, n.d.).*

The Expansion of Moscow's Territory (2011–2012)

Key Provisions:

- Expansion of the city's territory to the southwest.
- Decomposition of the monocentric structure of the metropolitan area and transition toward a more polycentric model.
- Reduction of transport pressure on the city center.
- Focus on development and construction beyond the MKAD.
- Creation of new economic, scientific, and educational clusters outside the MKAD.
- Relocation of government functions from the city center.
- Reduction of demographic pressure.
- Environmental and recreational land reservation.

Conclusions:
The annexation of New Moscow (TiNAO) was an attempt to address several systemic problems of the capital at once: land shortages, demographic pressure, overcrowding, and overloading of central areas, as well as to provide the city with opportunities for growth and development under new scenarios of polycentric and multicultural urbanism. However, since key measures—such as the relocation of government functions—were never implemented, the pressure on the city center was not alleviated. As a result, many of the plan's goals were not achieved, and it had a limited impact on Moscow's overall development.

General Conclusions from the Analysis of Moscow's Master Plans

Greater Moscow: evolution or revolution? A substantial part of the work carried out by the group is devoted to the analysis of the development of global megacities. Over the past two to three decades, a competition between two development paths has been observed: the evolutionary or natural path (New York, London, Hong Kong) and the revolutionary or project-driven path (Paris, Madrid, Dubai). Research shows that megacities following the first path develop in a more sustainable and dynamic manner. Therefore, a purely project-driven development path is undesirable for Moscow. Moscow's own experience confirms this: the 1935 Master Plan was implemented by only 40%, and the 1971 Master Plan by just 20%. *(Favorskaya, 2020)*

"Any megaprojects in Moscow lead to imbalance. The capital, due to its inertia of development, will override any project; therefore, a new urban planning policy is needed," *(Finogenov, 2012)*

The analysis of Moscow's master plans demonstrates that each of them was an attempt to address the challenges of its time and to forecast the city's future development. However, in practice, none of these plans was fully implemented. Master plans relied on quantitative projections of urban needs—housing, infrastructure, and green spaces—but these calculations repeatedly failed to withstand social, economic, and political change.

From the outset, the importance of ecology and the formation of a green framework was declared; however, green spaces were largely treated as a common good whose volume was determined in relation to construction output. As a result, greening consistently followed development and was implemented on a residual basis. Even under the planned economy of the Soviet period, long-term forecasting had clear limitations, while the transition to a market economy significantly increased uncertainty, rendering precise long-term calculations nearly impossible.

As a planning instrument, the master plan proved to be overly rigid, slow, and ill-suited to the dynamics of a rapidly changing city. Rather than focusing on qualitative transformation of existing territories, urban development increasingly relied

on territorial expansion and land annexation, postponing the resolution of structural problems.

The experience of the 2012 “New Moscow” project clearly illustrates the limitations of this approach. Despite its ambition and the attempt to radically redistribute urban functions, the project was undermined by political, economic, and geopolitical crises, as well as by a broader crisis of development paradigms. Many key measures, including the relocation of governmental functions, were never implemented. Planning remained predominantly top-down, limiting the system’s adaptability and neglecting local needs.

Over the past 30 years, Moscow’s master plans have largely lost their practical relevance and legal force, becoming declarative rather than operative documents. In response, the past decade has seen a shift toward smaller-scale instruments such as federal and regional programs and targeted territorial development projects. While these tools are faster and more flexible, they continue to be developed primarily through top-down processes and thus inherit many of the same shortcomings.

Overall, Moscow’s experience demonstrates that large-scale master plans and megaprojects perform poorly under conditions of uncertainty, complex urban systems, and long-term change. This highlights the need for alternative planning models—ones that prioritize environmental quality, local processes, and more adaptive and resilient forms of territorial governance.

Cultural Relevance

Natural territories have held different meanings at different historical moments. Their functions and the ways residents of Moscow perceived them have changed significantly over time. Broadly speaking, until the 17th century humans primarily struggled against what was perceived as a hostile natural environment, asserting their place within it. Surrounding forests were used mainly for hunting *(Sokolniki Park, n.d.)* and for the extraction of firewood.

Following the reforms of Peter the Great in the 18th century, Russia adopted many Western cultural influences, including the fashion for country estates with formal gardens, greenhouses, alleys, and flower beds. Parks and gardens came to be seen as a civilized, cultivated, and idealized world for humans, in contrast to the perceived chaos of wild nature and forests.

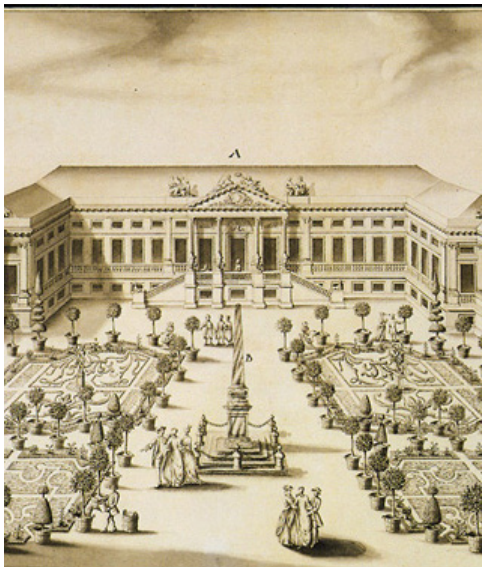
By the 19th century, the rise of Romanticism and later Realism shifted attention toward the natural, imperfect, and authentic. Interest grew in everyday life and in both natural and cultural landscapes. The Peredvizhniki (The Wanderers) art movement depicted urban and natural landscapes that conveyed atmosphere, emotion, and the unique character of place.

After the 1917 Revolution, the Soviet government sought a new visual language for the new social

Figure 2.11 before the 17th century

Nature is hostile to humans

Figure 2.12 the 18th century



Classicism ideas and the popularity of formal French gardens

Figure 2.13 the 19th century – early 20th century

Romanticism and the desire to reinterpret the natural landscape

order. Former aristocratic gardens and parks were opened to the public, and formal parks were transformed into parks of culture and leisure intended for everyday recreation. *(Kukher, n.d.)* New formats emerged, such as VDNKh, showcasing national achievements, along with a distinctive visual style and spatial elements.

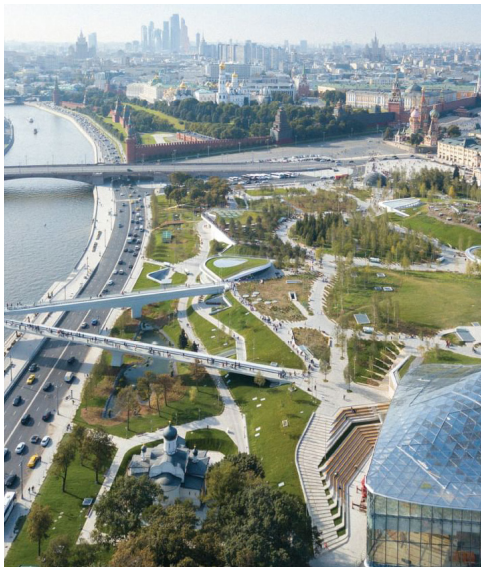
In the 2010s, Moscow experienced a major wave of rethinking and renovating public spaces, particularly in the city center. Programs such as *My Street (Strelka KB, n.d.)* modernized central streets, and international competitions were held, including the competition for Zaryadye Park *(Archcouncil of Moscow, 2013)*. This period marked a growing governmental focus on urban improvement and enhancing residents' comfort.

Following large-scale renovations of streets, public spaces, parks, and embankments, a new question gradually emerged: what comes next? Residents of Moscow no longer perceive any form of urban improvement as inherently positive and have become more critical of projects and their outcomes. Awareness of the value and fragile condition of urban natural resources has increased, and natural areas and forest parks are increasingly perceived by residents of Moscow as spaces for escape from urban intensity and for reconnection with nature.

Figure 2.14 the early and the second half of the 20th century

The search for new Soviet meanings: parks of culture and exhibitions of achievements

Figure 2.15 2010s



The rise of public space design

2025

A crisis of meanings and ideas

population density of moscow districts

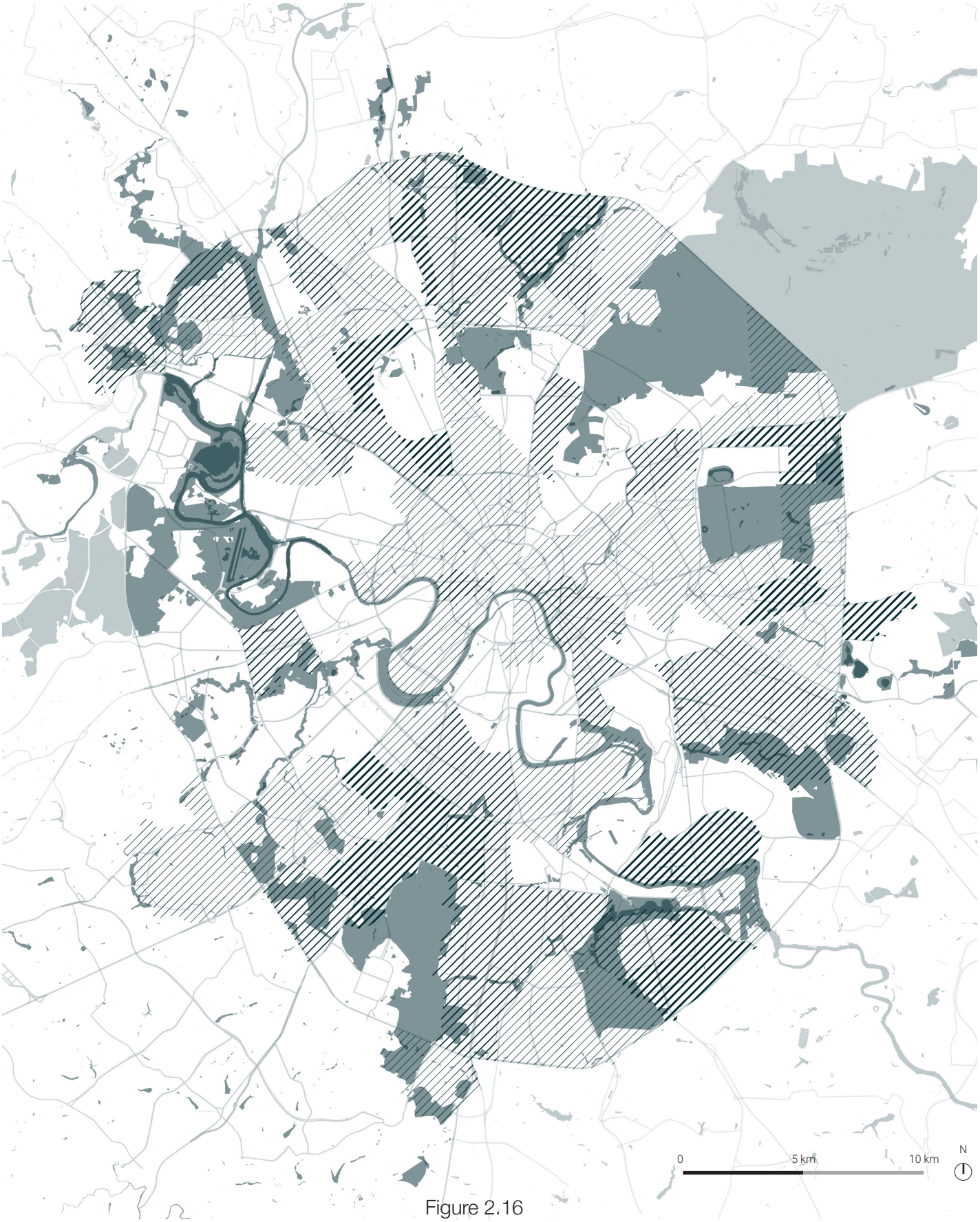


Figure 2.16

most pressured spna boundaries

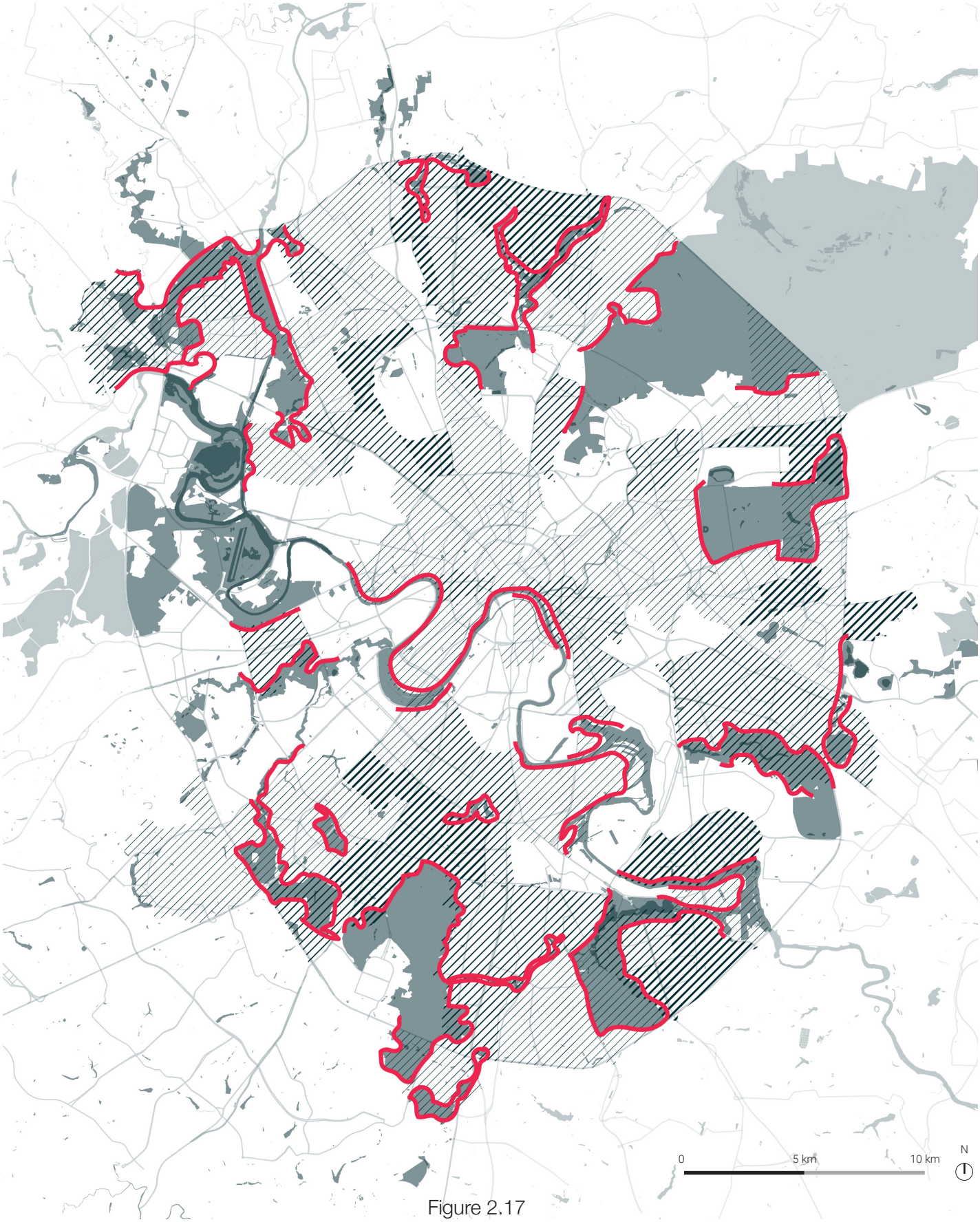


Figure 2.17

Spna and Moskva river influence zones

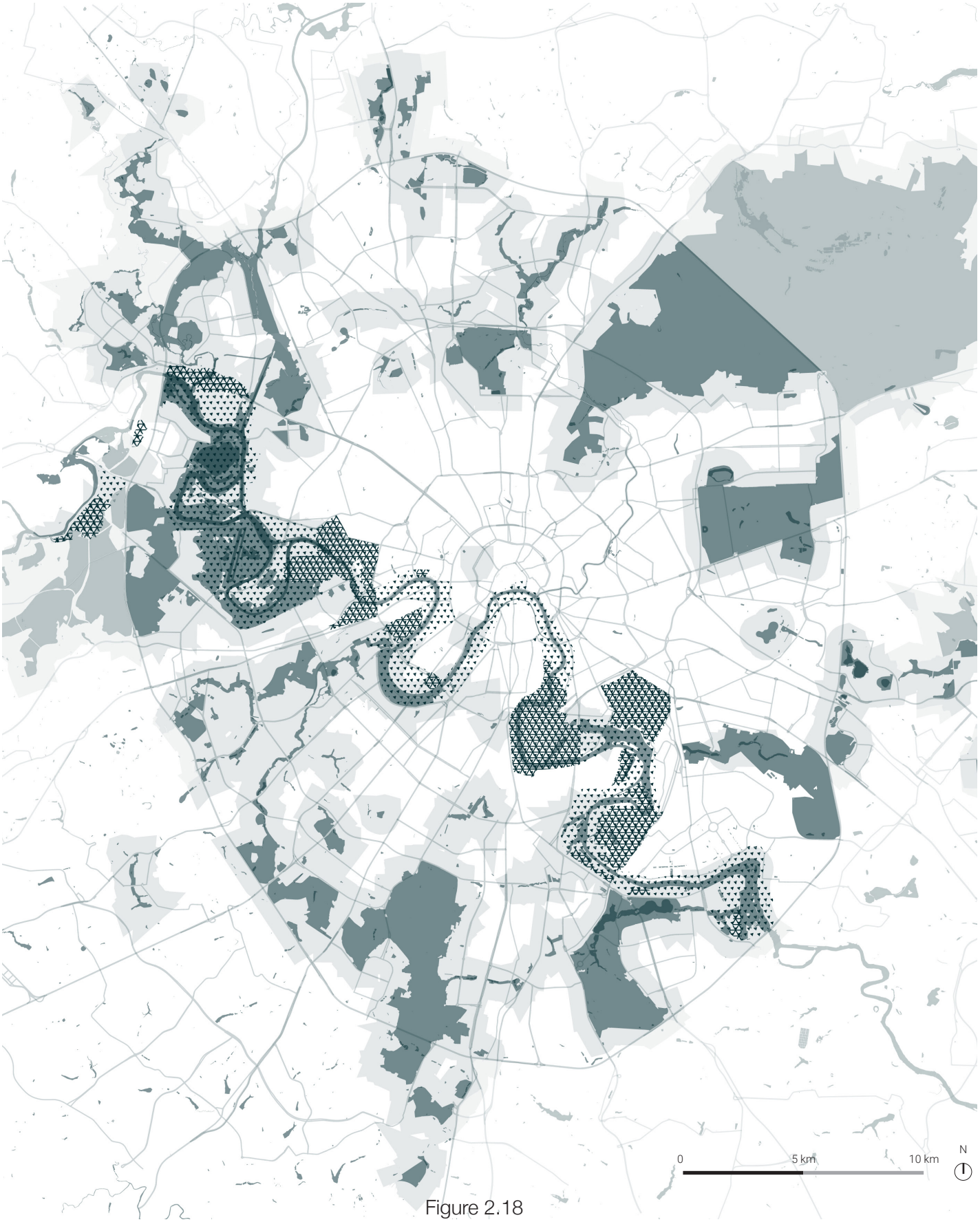


Figure 2.18

overlapping influence zones

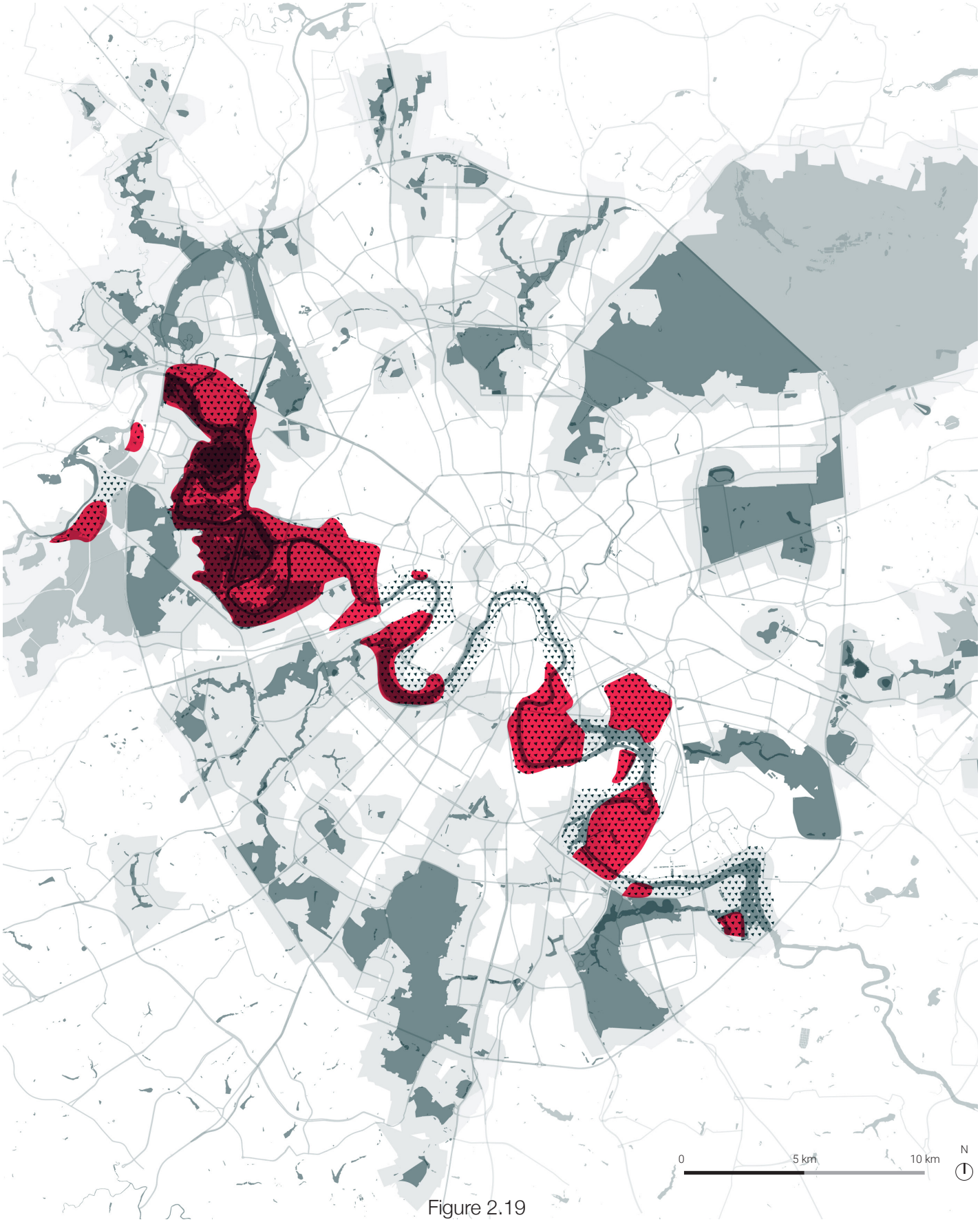


Figure 2.19

Industrial and post-industrial sites and future regeneration clusters

Figure 2.20

Regeneration clusters adjacent to the SPNA boundary

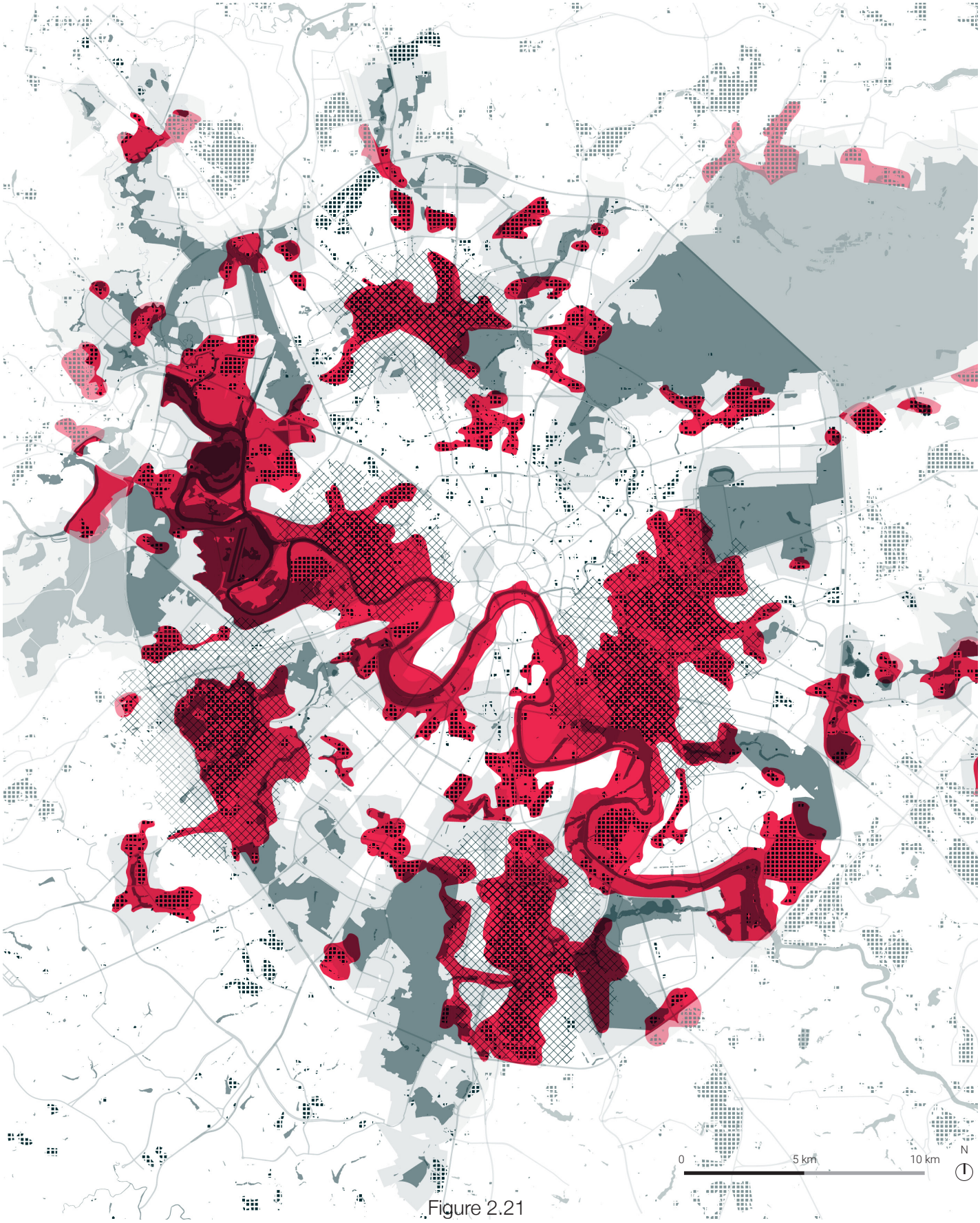


Figure 2.21

analytical synthesis map

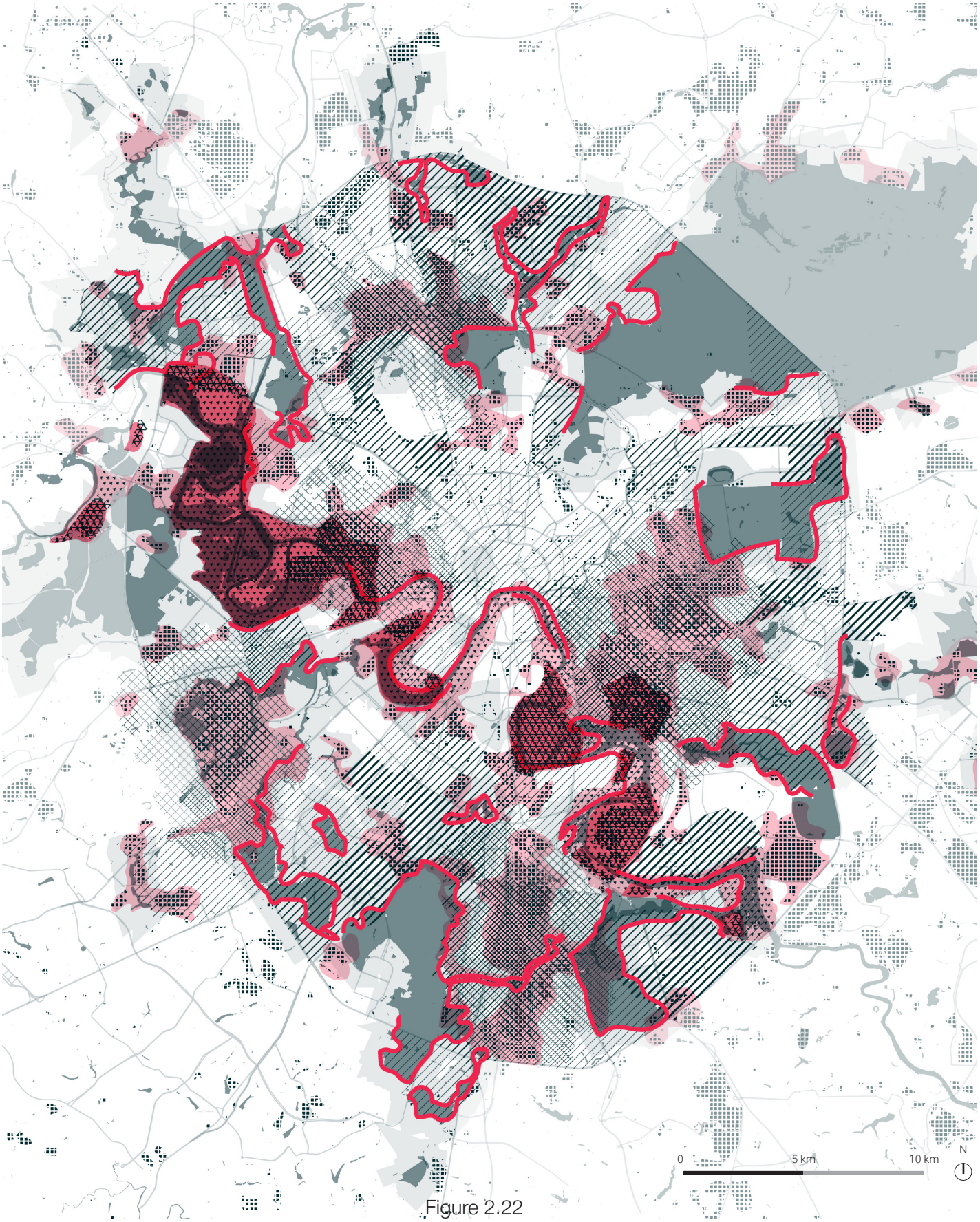


Figure 2.22

Key opportunity sites

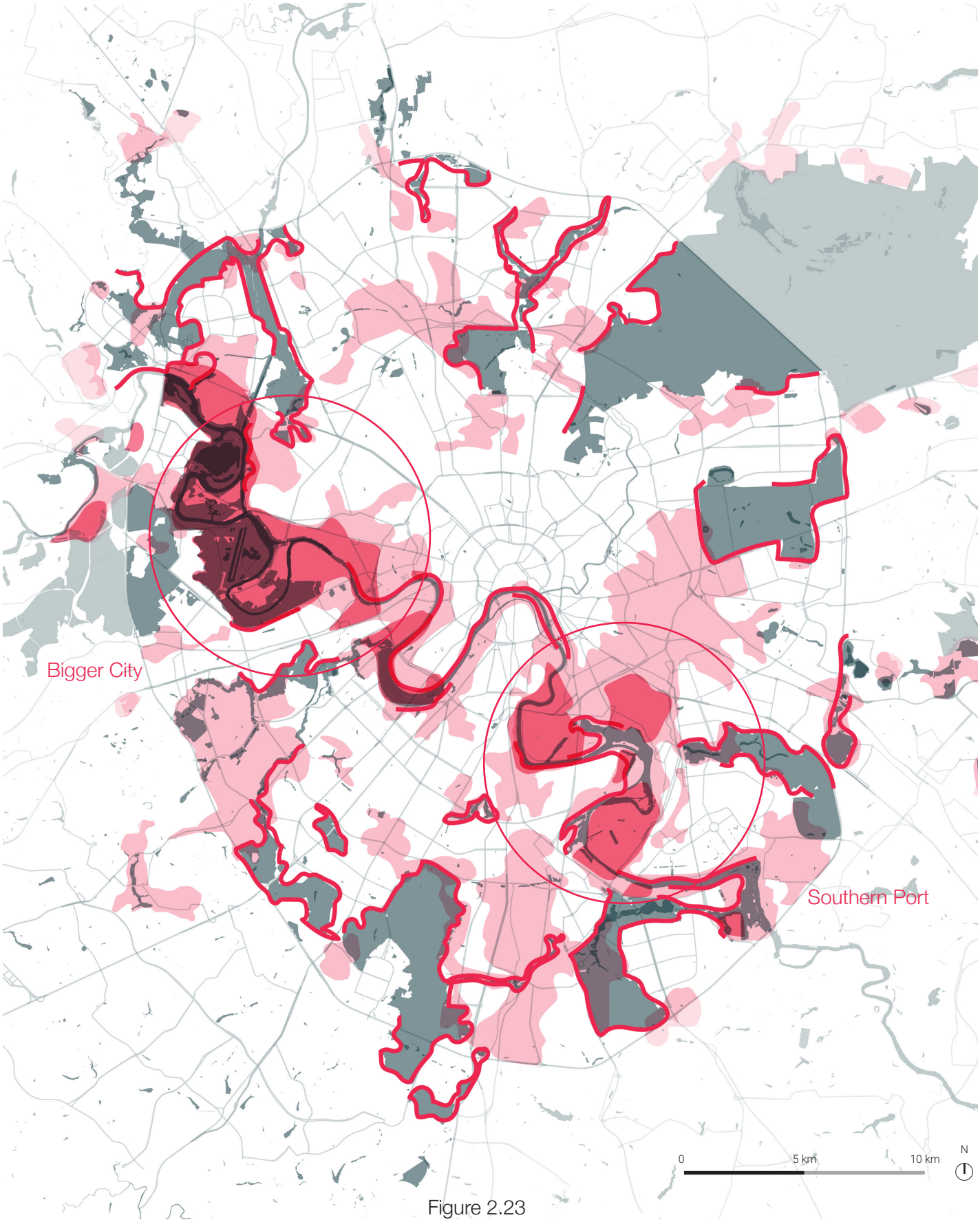


Figure 2.23

analytical synthesis map

This map presents a synthesis of analytical layers across the territory of southern Moscow, revealing zones of greatest potential and simultaneously greatest conflict of interest between the city's green-blue infrastructure framework and its key regeneration sites.

The map is composed of three analytical layers. The first is population density across Moscow's districts and its relationship to SPNA boundaries. Since natural territories perform an important recreational function for surrounding neighbourhoods, the higher the population density on any given side of an SPNA boundary — the greater the pressure that boundary experiences. This allows the most loaded and vulnerable sections of protected area boundaries to be identified.

The second layer is the influence zones of SPNAs overlaid with the riverside territories of the Moskva River. The intersection of these two zones reveals the territories of greatest potential for the formation of a coherent green-blue infrastructure framework — places where natural and riverine potential mutually reinforce one another.

The third layer comprises the city's industrial and post-industrial (brownfield) territories, as well as the major planned regeneration and redevelopment clusters. Their intersection with SPNA influence zones and the river corridor makes visible where development pressure and natural potential overlap — that is, where the conflict of interests is most acute and where the opportunities for transformation are most significant.

The synthesis of these three layers produces a map of key opportunity sites. Two clusters of equal prominence emerge with the greatest overall potential: the Bolshoy City project area and the Yuzhny Port project area.

For further investigation I selected the Bolshoy City territory. The Yuzhny Port area has been in active redevelopment since 2012 — detailed masterplans and design concepts exist for it, and several major fragments have already been completed or are close to completion. The ZILart project within this territory, for instance, is nearly fully realised. It therefore seemed significantly more relevant and timely to focus on the Bolshoy City territory — an area that is only now entering the redevelopment phase and where strategic decisions have not yet been finalised. It is precisely here that a genuine critical window of opportunity remains open — one where it is still possible to influence the character and logic of future development.

Figure 2.24 ZILART business-class residential complex

Theoretical framework

This work draws on an interdisciplinary theoretical framework combining urban theory, political ecology, and more-than-human philosophy, aiming to rethink the role of natural territories in the city and achieve social and spatial justice. The study critiques anthropocentric and technocratic models of urban development dominant in large metropolises and proposes alternative approaches that account for the ecological, social, and temporal complexity of urban landscapes.

Urban Palimpsest and Longue Durée

In this research, the city is understood as a palimpsest—a layered structure shaped by overlapping natural, social, and infrastructural processes that leave traces of past decisions and conflicts. This perspective moves beyond linear models of urban development and helps reveal latent spatial and temporal tensions, particularly within fragmented natural areas. *(Corboz, 1983; Lefebvre, 1991).*
The concept of longue durée is used to examine the mismatch between urban and natural temporal rhythms. While urban planning is driven by short-term political and economic cycles, natural systems operate on slower and more inert timescales. This temporal misalignment is identified as a key source of vulnerability for natural territories under conditions of rapid urban growth.
(Braudel, 1980; Allen, 1999).

Nature as an Actor and More-than-Human Urbanism

The research is grounded in an understanding of nature as an active actor rather than a passive resource. Within more-than-human urbanism, natural territories and ecosystems are treated as participants in urban processes, possessing their own agency and capacity to shape spatial and social change.
(Latour, 1993; Bennett, 2010).

This perspective broadens conventional notions of urban subjectivity by incorporating non-human actors and enables a more relational understanding of interactions between the city, its residents, and the environment. *(Stengers, 2015; Latour, 2005).*

Rights of Nature

The concept of rights of nature provides the normative framework for the study by recognising natural entities as rights-bearing actors. In an urban context, this approach functions as a tool for both environmental and social justice, enabling local communities and organisations to represent and defend natural territories within decision-making processes.
(Stone, 1972; Kauffman & Martin, 2018).

In a highly centralised governance system, rights of nature are explored as a means of redistributing agency and strengthening the role of the local level.
(Harvey, 2012; Lefebvre, 1996).

Systems of Care

Complementing legal and actor-oriented approaches, the research draws on the concept of systems of care, which emphasises long-term engagement, maintenance, and attentiveness to vulnerability. Care is understood as a spatial and institutional practice sensitive to local identities, ecological processes, and everyday human–nature interactions.
(Puig de la Bellacasa, 2017; Tronto, 2013).

This perspective supports a shift from isolated interventions toward more adaptive and context-specific development strategies.
(Allen, 1999; Hillier, 2007).

Synthesis

Together, these concepts form the basis for rethinking Moscow's natural territories as layered, temporally extended, and actor-rich spaces requiring alternative planning and governance approaches. The research prioritises quality, resilience, and justice over quantitative growth and standardised, large-scale solutions.
(Lefebvre, 1991; Latour, 2005; Bennett, 2010).

project structure framework

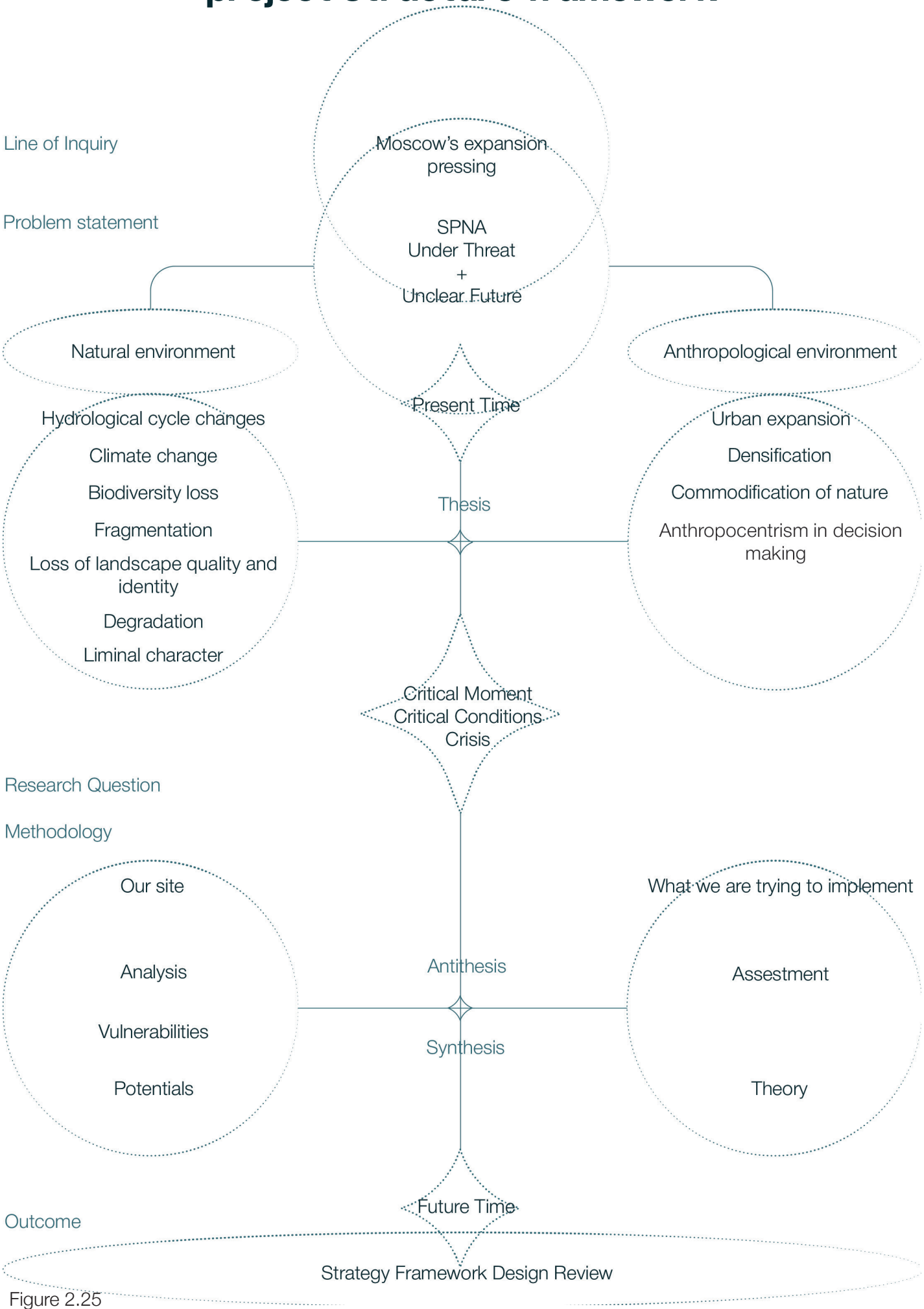


Figure 2.25

part 3. results

How do SPNAs currently function and operate in practice?

Specially Protected Natural Areas (SPNAs) of Russia are areas of land, water surface, and the airspace above them where natural complexes and objects are located that have special environmental, scientific, cultural, aesthetic, recreational, and health significance. These areas are withdrawn, fully or partially, from economic use by decisions of state authorities, and a special protection regime is established for them.
(ConsultantPlus, n.d.)

Types of SPNAs and their purpose
Taking into account the specific protection regime of SPNAs and the status of the conservation institutions located within them, the following categories of these territories are distinguished:

1. State Nature Reserves (including biosphere reserves);
2. National Parks;
3. Natural Parks;
4. State Nature Sanctuaries;
5. Natural Monuments;
6. Dendrological Parks and Botanical Gardens.

Some SPNAs are designated as UNESCO World Natural Heritage Sites, but there are none in Moscow.

Laws of the constituent entities of the Russian Federation may establish other categories of specially protected natural areas of regional and local significance.

Specially protected natural areas may have federal, regional, or local significance and may be administered respectively by federal executive authorities, executive authorities of the constituent entities of the Russian Federation, and local self-government bodies, and in cases предусмотренных Article 28 of this Federal Law, also by state scientific organizations and state higher education institutions.
(as amended by Federal Law No. 232-FZ, 2024)

State Nature Reserves and National Parks are classified as specially protected natural areas of federal significance. State Nature Sanctuaries, Natural Monuments, Dendrological Parks, and Botanical Gardens may be classified as specially protected natural areas of federal or regional significance. Natural Parks are classified as specially protected natural areas of regional significance.
(ConsultantPlus, n.d.)

Specifically in Moscow within the old boundaries, the following areas are of federal significance:

1. Losiny Ostrov National Park

Botanical gardens:

2. Main Botanical Garden named after N.V. Tsitsin
3. Botanical Garden of the All-Russian Scientific Research Institute of Medicinal and Aromatic Plants (VILAR) of the Russian Academy

Complex of gardens of the Moscow State Agroengineering University named after V. P. Goryachkin:

4. Dendrological Garden named after R. I. Schroeder
5. Botanical Garden named after S. I. Rostovtsev

There is also a complex of areas of local significance, but they are not included within the boundaries of old Moscow.

Thus, the majority of SPNAs (140 sites) within Old Moscow have regional status.
Federal SPNAs include:

- State nature reserves and national parks (automatically of federal significance),
- State nature sanctuaries, natural monuments, dendrological parks, and botanical gardens, which may be assigned federal significance by decision of the Government of the Russian Federation.
- Federal SPNAs are federal property and are administered by federal executive authorities.
- Objectives of Establishment and Legal Tasks
- The law regulates relations related to:
- The protection, use, and establishment of SPNAs,
- The conservation of unique natural complexes,
- The preservation of flora and fauna and their

spnas of moscow
status

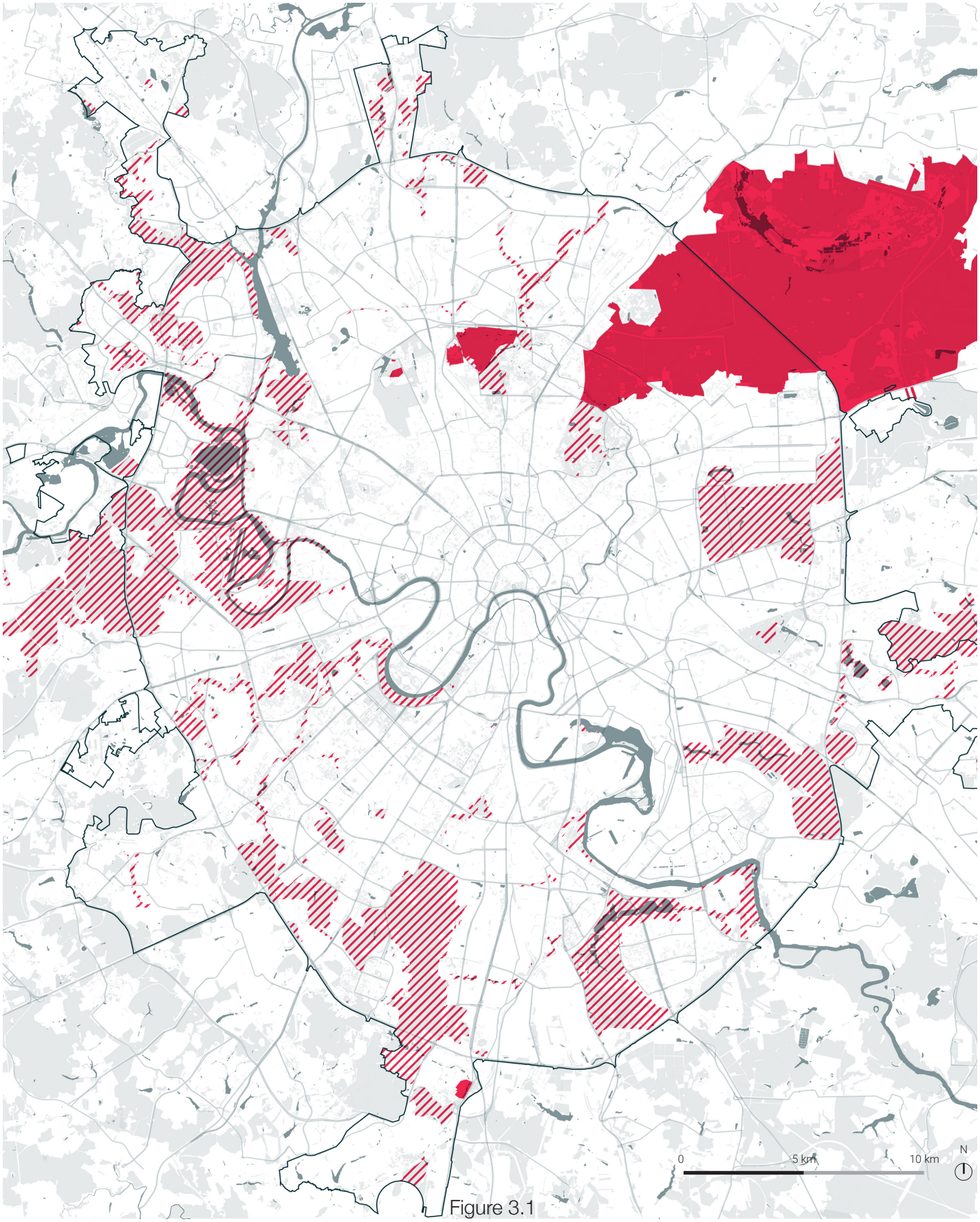


Figure 3.1

genetic resources,
- Environmental monitoring, scientific research, and environmental education.

Main Regulatory Restrictions

In federally significant SPNAs, a special protection regime is established, which may include:

Prohibition or restriction of activities:

- Full or partial withdrawal of the territory from economic use — activities that may disrupt natural complexes are prohibited.
- Prohibition of economic activities associated with altering the natural landscape, reducing or destroying ecological, aesthetic, and recreational qualities, and other violations of the protection regime.

Restrictions may apply to construction, mineral extraction, logging, hunting, fishing, and other activities, depending on the category and status of the territory (specific prohibitions are defined in special regulatory documents for each category — for example, a national park, reserve, etc.).

Conclusion

For Moscow:

The lands are in federal ownership (Russian Federation).

Such lands cannot be privatized, and their circulation is restricted.

All decisions regarding the regime of use and protection are made by federal authorities.

The main federal authority:

The Ministry of Natural Resources and Environment of the Russian Federation (Minprirody of Russia) is the federal executive authority responsible for state policy and legal regulation in the field of protection, use, and management of federally significant specially protected natural areas (SPNAs).

In particular:

- Minprirody of Russia is responsible for implementing state policy related to the establishment and functioning of federally significant SPNAs.
- Within the structure of the Ministry, the Department of State Policy and Regulation in the Field of Development of Specially Protected Natural Areas operates, developing regulatory acts and methodological documents concerning federally significant SPNAs.

Bodies subordinate to Minprirody

Several federal services and agencies operate within or under the supervision of Minprirody and participate in oversight and enforcement of environmental legislation:

- The Federal Service for Supervision of Natural Resources exercises control over compliance with environmental legislation, including protection regimes within SPNAs.
- Other subordinate structures of Minprirody (for example, the Federal Forestry Agency and the Federal Agency for Water Resources) participate in implementing environmental and natural resource functions; however, the primary responsibility for managing federally significant SPNAs is legally assigned to Minprirody of Russia.

Regional SPNAs:

- Specially protected natural areas of regional significance are the property of a constituent entity of the Russian Federation and are administered by the authorities of that constituent entity.
- Decisions on the establishment of such territories and on the introduction of their protection regime are made by the state authorities of the constituent entities of the Russian Federation.
- Objectives and Tasks of Regional-Level SPNAs
- SPNAs of regional significance are established for the purpose of:
- Preserving typical and unique natural complexes and objects,
- Protecting flora and fauna,
- Ensuring ecological balance,
- Developing environmental education and (depending on the category) recreation or scientific research.

These objectives are reflected in the regulations governing a specific SPNA, approved by regional authorities.

General Restrictions and Use Regimes

A special protection regime is established within SPNAs of regional significance, which is essentially analogous to the federal regime but is approved and enforced by regional legal acts. It may include the following prohibitions and restrictions (examples from regional regulations):

General prohibitions

spnas of moscow administrative division

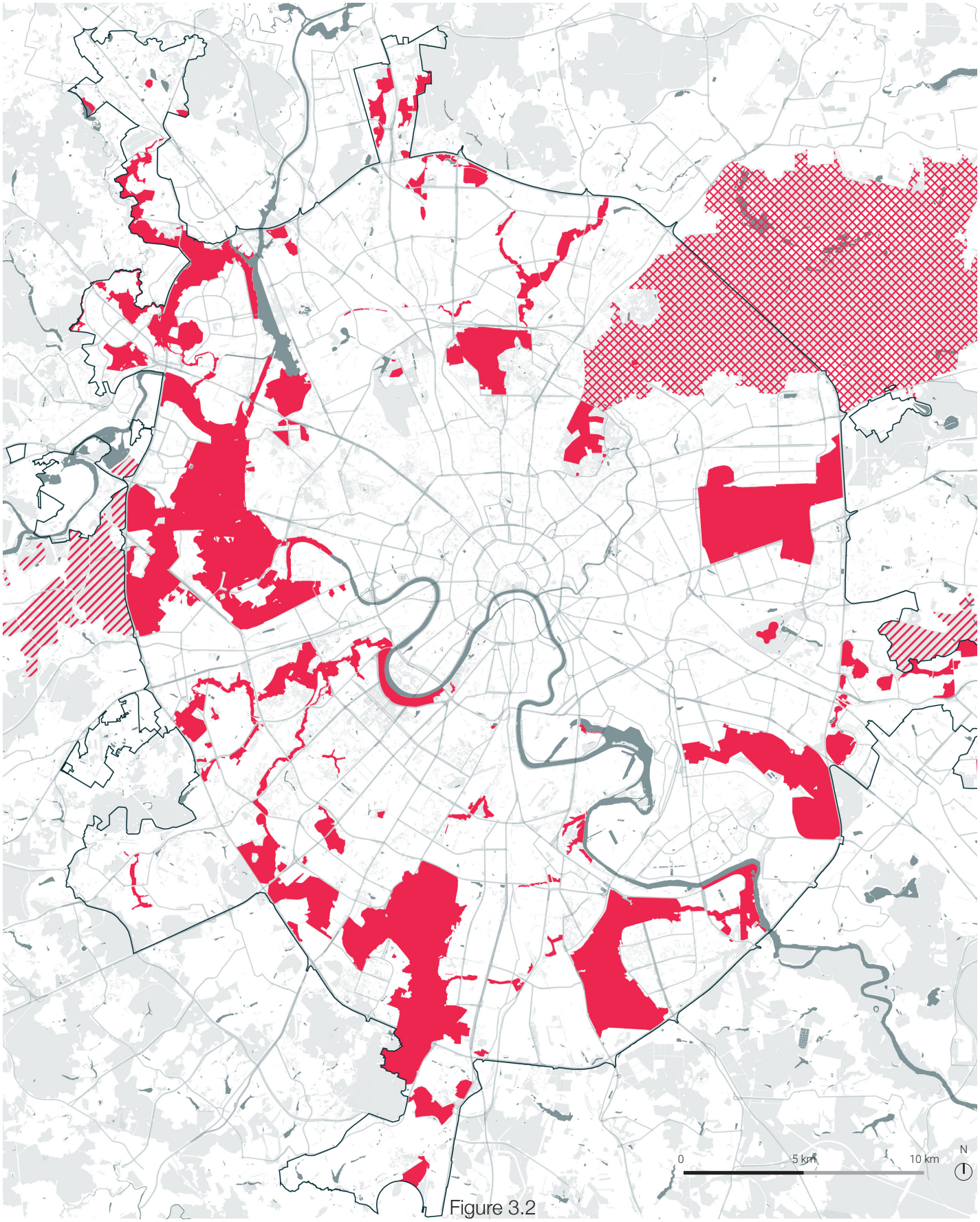


Figure 3.2

- Disturbance of the soil surface layer (for example, plowing or removal of turf), except in cases предусмотренных by the SPNA regime.
- Unauthorized activities without coordination with the regional SPNA management authority (for example, haymaking, earthworks).
- Washing and maintenance of motor vehicles outside specially designated areas.
- Lighting fires, mass gatherings, and setting up tents in unauthorized locations.

These restrictions apply within the boundaries of the territory and in buffer zones defined in the regional regulation governing the specific SPNA.

Approval Procedures and Administration

Regulations for each SPNA of regional significance (indicating boundaries, objectives, and protection regime) are approved by a normative legal act of the constituent entity of the Russian Federation.

At the same time, decisions on the establishment of regional SPNAs and on changes to their protection regime are coordinated with the authorized federal body in the field of environmental protection — the Ministry of Natural Resources and Environment of the Russian Federation or its representatives.

Conclusion

For Moscow:

The lands of regional SPNAs are the property of the constituent entity of the Russian Federation — the city of Moscow.

That is, they are owned by the city (as a constituent entity of the Russian Federation), not by private individuals or the federal government.

The executive authority of the city of Moscow authorized in matters related to the establishment, protection, and data collection concerning specially protected natural areas of regional significance is:

The Department of Nature Management and Environmental Protection of the City of Moscow.

This Moscow authority is responsible for all matters related to the registration, protection, and development of natural areas of regional significance.

Such powers arise on the basis of Federal Law No. 33-FZ "On Specially Protected Natural Areas," according to which SPNAs of regional significance are established, approved, and protected by the authorities of the constituent entities of the Russian Federation (in this case, Moscow).

Note on Status Changes (2024–2025)*

In December 2024, the Moscow Government adopted Resolution No. 3160-PP of December 27, 2024, which changes the status of most regional SPNAs in Moscow to "Specially Protected Green Areas" (SPGAs).

This transition was based on amendments to the city's environmental legislation *(the law "On the Protection and Use of the Green Fund in the City of Moscow," adopted by the Moscow City Duma in November 2024)* and the implementation of the relevant resolutions.

Practically all SPNAs of regional significance have been converted into SPGAs.

They remain protected, but under a different status with modified use regimes.

Federal SPNAs (for example, national parks and nature reserves) retain their federal legal status and are not subject to the Moscow amendments.

Within the city's legal framework, control measures and liability for violations in SPGAs have been strengthened.

Activists and experts express concern that it may now be easier to legalize capital construction, infrastructure development, and other activities within green areas. In their view, this could facilitate the development of natural zones, lead to the loss of their integrity, and create additional risks for habitats of animals and plants.

(The Insider, 2025)

Final Key Changes

- The range of permitted uses of the territories has been expanded: SPGAs now allow construction and placement of infrastructure-related facilities, whereas SPNAs previously effectively did not permit such development.
- Liability measures for damage to green areas have been strengthened (higher fines).
- The environmental protection regime remains in place, but it has been transformed in a way that provides greater opportunities for economic use and urban functions.

Who Is Responsible for SPNAs in the Moscow Region (Moscow Oblast)

The executive authority responsible for the establishment, registration, protection regimes, cadastral registration, and oversight of SPNAs of regional significance is the Ministry of Ecology and Environmental Management of Moscow Region.

This regional body exercises the powers of the constituent entity of the Russian Federation in the

field of SPNAs. It approves regulations governing specific territories, forms official lists of SPNAs, and ensures compliance with federal legislation and the laws of the Moscow Region.

Lands of specially protected natural areas of regional significance belong to the constituent entity of the Russian Federation — Moscow Region.

This means that such territories are owned by the Moscow Region and cannot be transferred into private ownership without a change in their legal status.

Characteristic	**SPNAs (before 2024)**	**SPGAs (after 2024)**
Level of environmental protection regime	Very strict, primarily conservation measures only	Protective regime retained, but infrastructure and recreational use permitted
Infrastructure construction	Prohibited	Permitted within certain limits
Scientific / educational functions	Permitted	Permitted
Recreational use	Restricted	Permitted
Administrative fines	Lower	Higher for violations of the use regime

*The Insider. (2025). Retrieved from https://theins.ru/en/society/280519

governance of protected natural areas (spnas) in russia / moscow

1. Federal Level

Legislative authority

Federal Assembly of Russia (State Duma + Federation Council)
adopts federal laws on SPNAs (e.g. framework legislation)

Executive authority

Ministry of Natural Resources and Environment of the Russian Federation
develops state policy and regulations

Federal Service for Supervision of Natural Resources (Rosprirodnadzor)
environmental control and enforcement

Implementation & control

Federal Forestry Agency

Federal Agency for Water Resources

2. Regional Level (City of Moscow)

Legislative authority

Moscow City Duma
adopts regional laws on SPNAs, land use, environmental protection

Executive authority

Government of Moscow + Mayor of Moscow

Department of Nature Management and Environmental Protection (DPrE)
key body responsible for SPNAs

Department of Urban Planning Policy / Architecture (Moskomarkhitektura)
integration into planning system

Implementation & control

Department of Nature Management and Environmental Protection (DPrE)
management of SPNAs, maintenance, monitoring

3. Local Level (Prefectures & Municipalities)

Legislative authority

Limited (mainly local regulations, no primary lawmaking power over SPNAs)

Executive authority

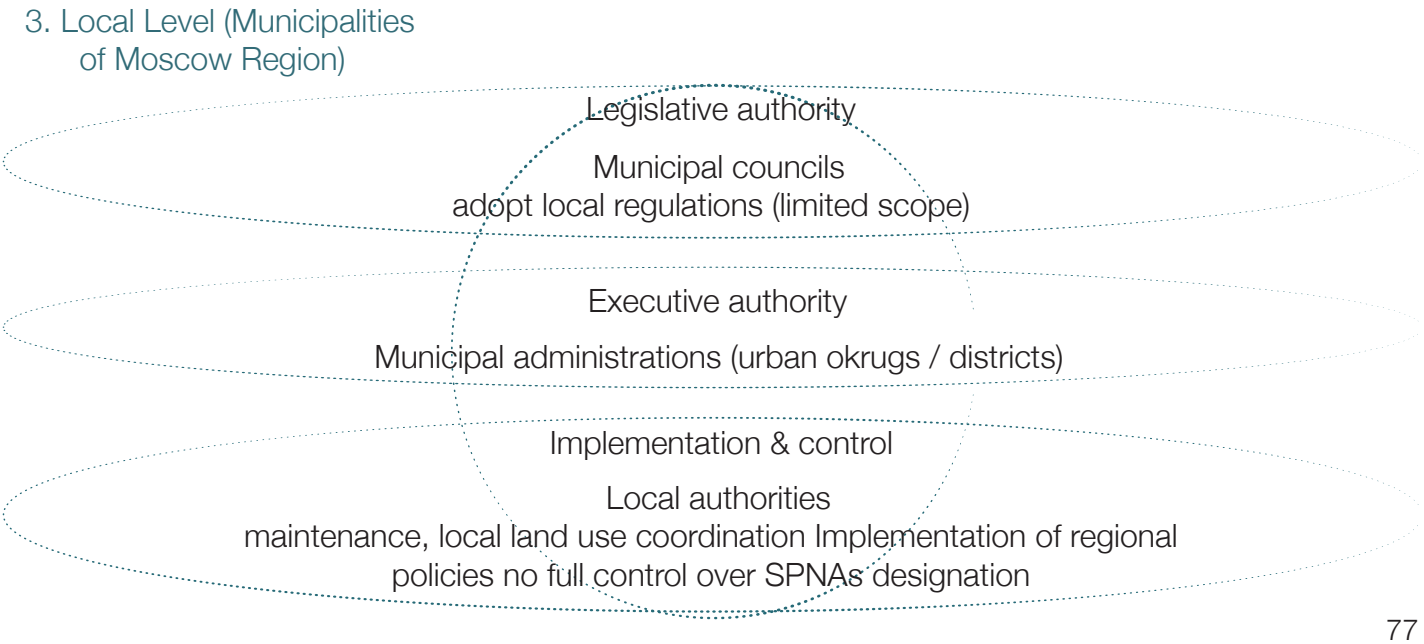
Prefectures of Administrative Okrugs Municipal administrations

Implementation & control

Local authorities
maintenance, local land use coordination Implementation of regional policies no full control over SPNAs designation

Figure 3.3

2. Regional Level (Moscow Region)
Legislative authority
Moscow Regional Duma
adopts regional laws on SPNAs, land use, environmental protection
Executive authority
Government of the Moscow Region+ Governor of the Moscow Region
Ministry of Ecology and Nature Management of the Moscow Region (key body)
designation, management, and policy for SPNAs
Committee for Architecture and Urban Planning of the Moscow Region (Mosoblarkhitektura)
spatial planning and integration
Implementation & control
Ministry of Ecology and subordinated institutions
management, monitoring, maintenance


3. Local Level (Municipalities of Moscow Region)
Legislative authority
Municipal councils
adopt local regulations (limited scope)
Executive authority
Municipal administrations (urban okrugs / districts)
Implementation & control
Local authorities
maintenance, local land use coordination Implementation of regional policies no full control over SPNAs designation

Moscow's SPNAs within a larger ecological matrix

In landscape ecology, the matrix refers to the most extensive and most connected landscape element — the background ecological system within which discrete habitat patches are embedded and connected through corridors *(Forman & Godron, 1986; Forman, 1995)*. Together, patches, corridors, and matrix constitute the fundamental structure of any functioning ecological landscape.

Moscow's Specially Protected Natural Areas are not isolated fragments. They are embedded within a much larger ecological matrix — the continuous forests, river valleys, and open lands of the Moscow Region that extend outward from the city into the regional landscape. It is this broader system that sustains the biodiversity, hydrological cycles, and species movement upon which the city's protected areas depend.

The ecological viability of individual SPNAs — their capacity to support stable wildlife populations, maintain biodiversity, and regenerate over time — is directly dependent on their connectivity to this regional matrix. Severing these connections through urban expansion, infrastructure development, or boundary fragmentation does not merely affect individual parks: it undermines the functioning of the entire system.

Any strategy for Moscow's SPNAs must therefore keep the regional scale in view. Since these territories are integral components of the broader ecological matrix of the Moscow Region, every intervention must aim to preserve and strengthen the connections that bind them to this larger system.

moscow & moscow region green structure matrix

Figure 3.4

spnas of moscow
τypes

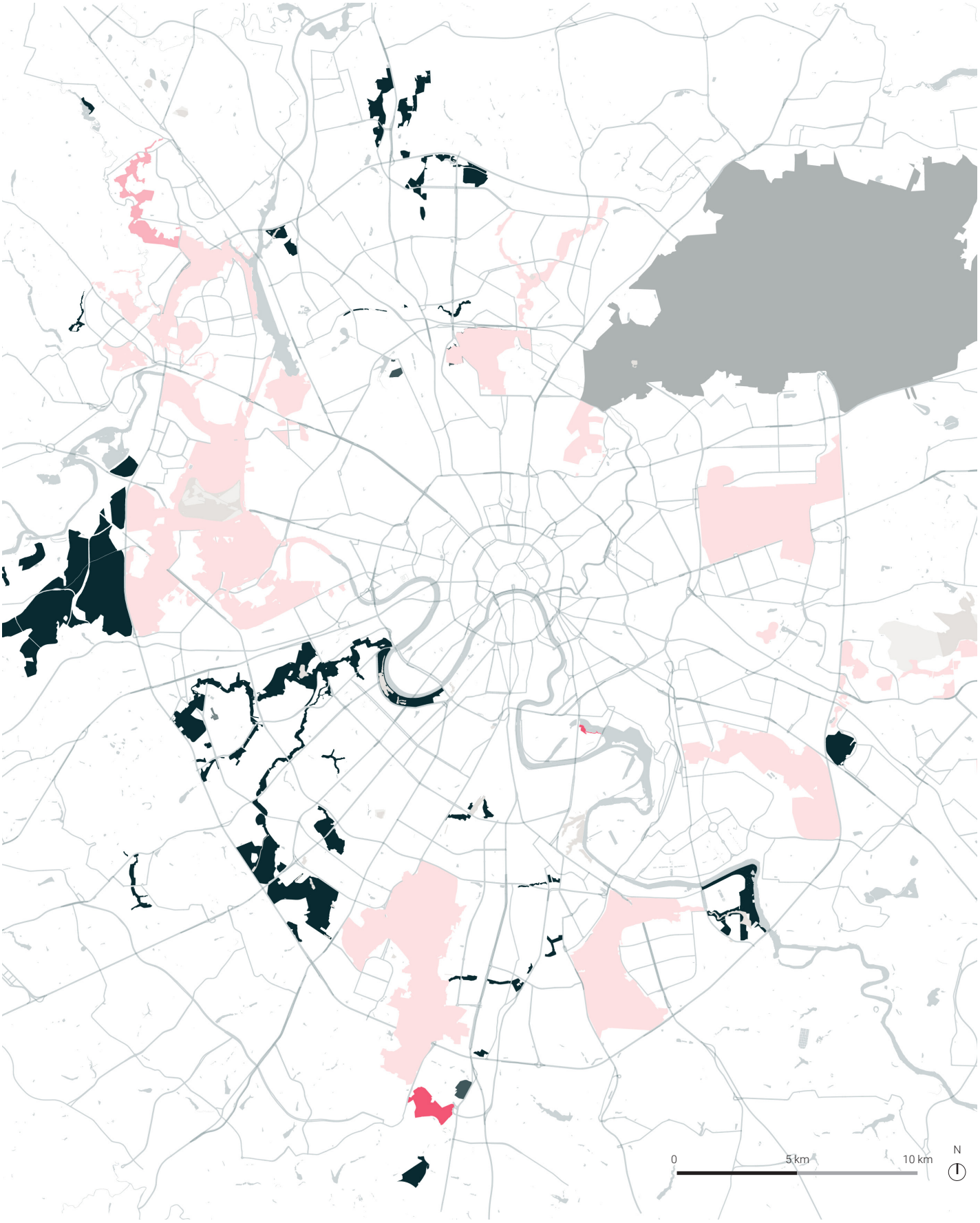


Figure 3.5

spnas of moscow
administrative division

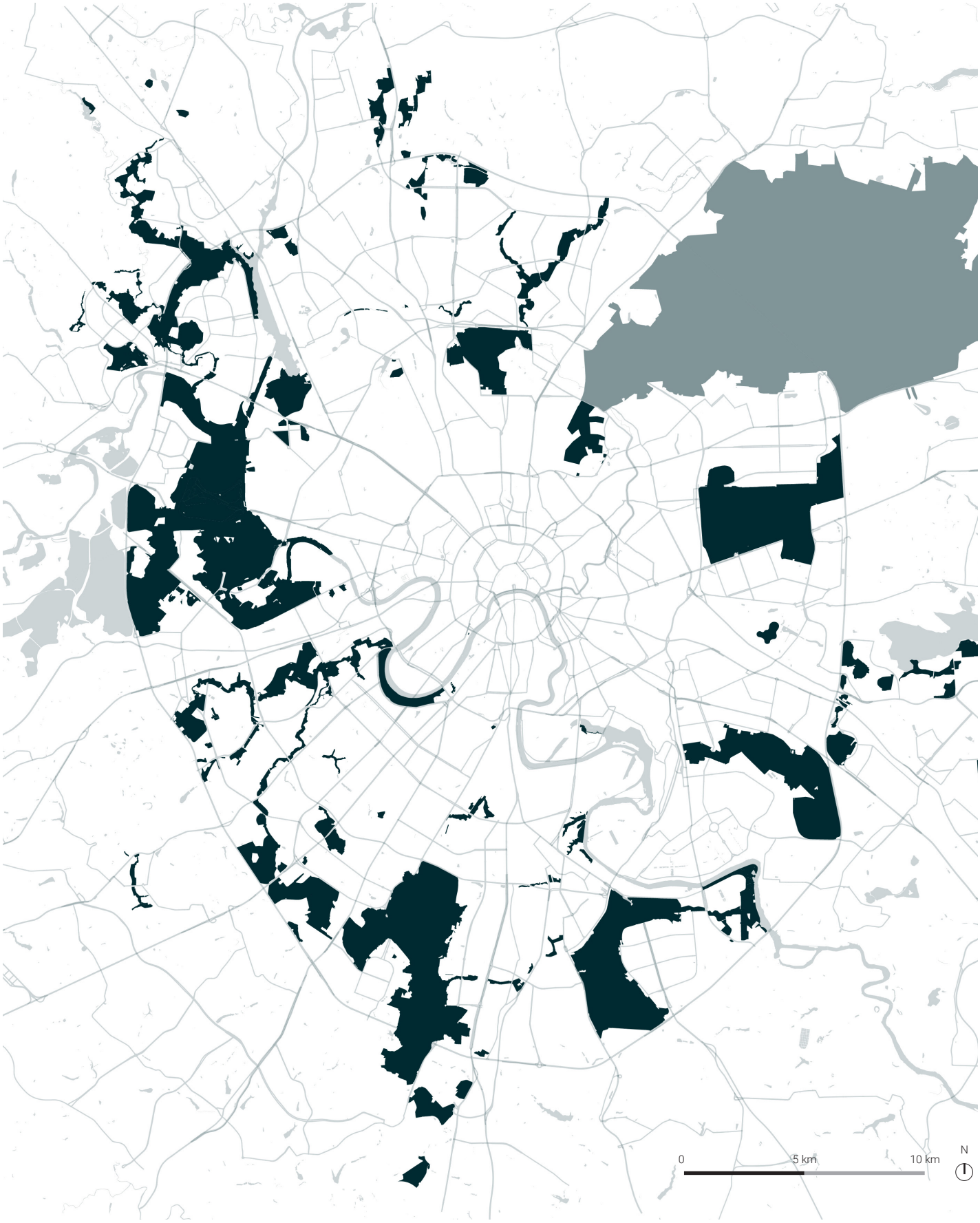


Figure 3.6

SNPA of Choice Moskvoretsky Natural History Park

The typology of SPNAs in Moscow is not straightforward at first glance. Working through this body of data, I divided all objects into two broad groups. The first comprises large territories that read as a single coherent patch and possess a significant area. The second consists of smaller objects located within or adjacent to larger territories — individual trees of cultural and historical significance, natural springs, and so on. When approached this way, it becomes apparent that more than half of the approximately 150 objects belong to the second group. Territories of meaningful size are few.

For more detailed analysis I focused on the largest SPNAs by area. I immediately excluded Losiny Ostrov — the only national park of federal significance in Moscow, which traditionally receives considerable attention and has no shortage of advocates. I ultimately selected the Moskvoretsky Nature and History Park — an SPNA of regional significance and the second largest in Moscow after Losiny Ostrov. At the same time, it is one of the most fragmented SPNAs in the city: its true scale is far from obvious at first glance precisely because of this fragmentation.

The choice of territory is also informed by the conclusions of the preceding analytical section, where the most promising zones for further investigation were identified as regeneration clusters based on former industrial sites — Bolshoy City and Yuzhny Port. For in-depth analysis I selected the Bolshoy City cluster, in close proximity to which the Moskvoretsky Park is located.

An additional layer of complexity is introduced by the fact that the territory borders not only urban SPNAs and green spaces within Moscow, but also the Serebryaborsky Forest District, which adjoins the site from the Moscow Oblast side.

The Moskvoretsky Park is situated across six city districts — Tushino, Strogino, Krylatskoe, Khoroshevo-Mnevniki, Kuntsevo and Filyovsky Park — which differ substantially in population density, social composition, income levels, and housing prices, both primary and secondary. An analysis of the electoral preferences of residents across these districts likewise reveals considerable heterogeneity. The context surrounding the SPNA is characterised by pronounced social contrasts: alongside traditional Soviet residential blocks, high-end high-rise developments are being actively constructed. Together, these conditions establish a rich and layered context for further investigation.

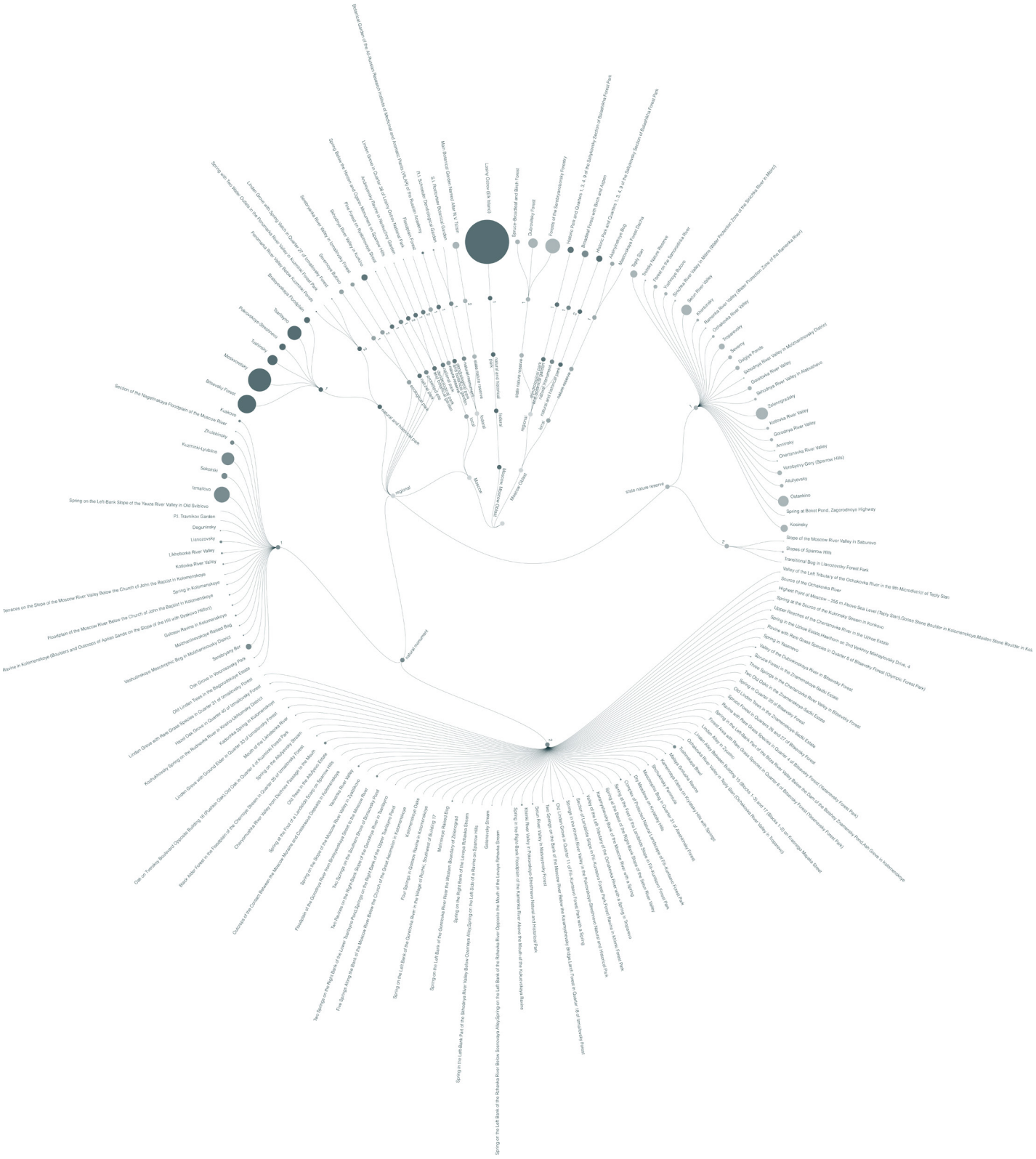


Figure 3.7 Typologies of Moscow's SPNAs

density by districts

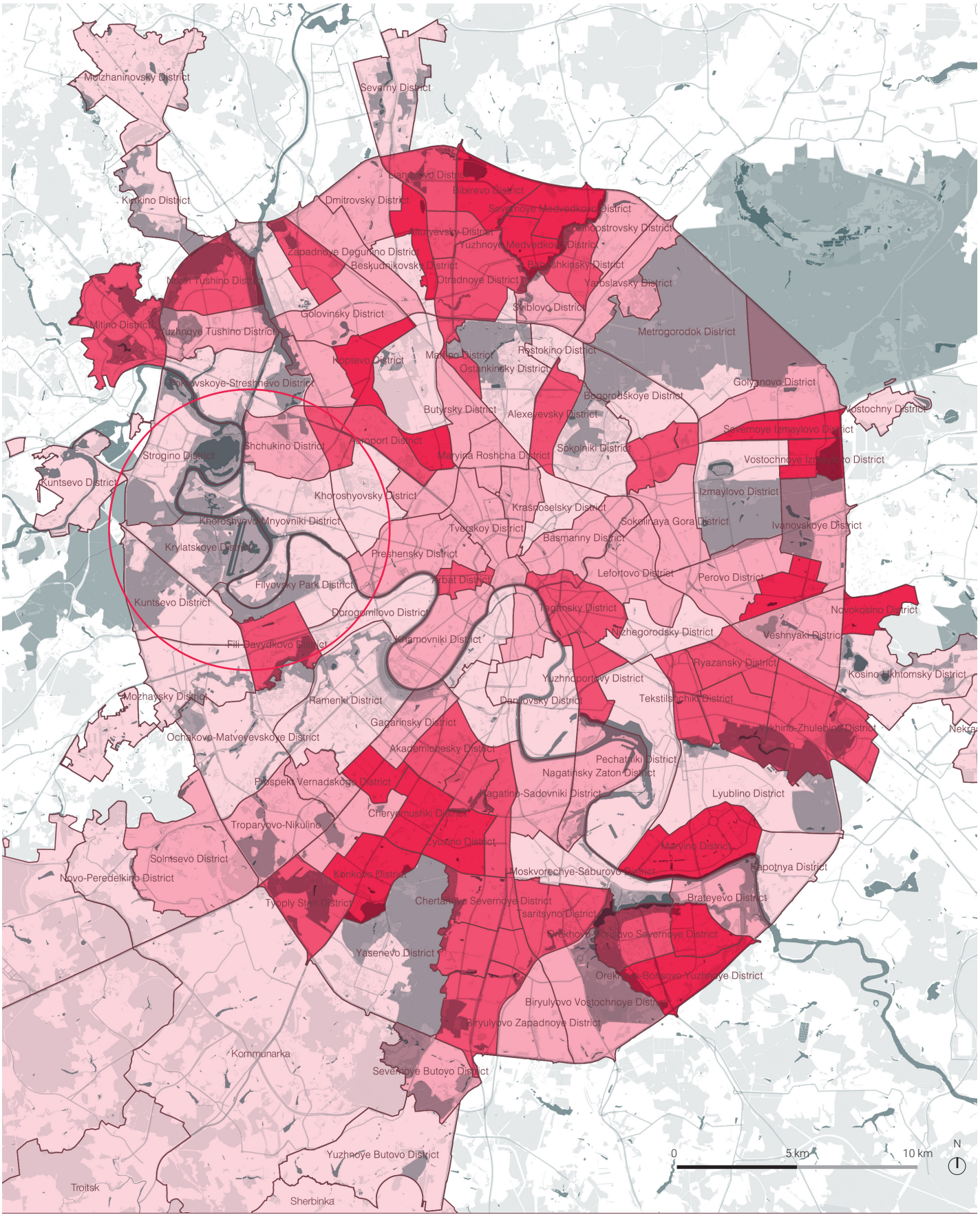


Figure 3.8

elections by districts

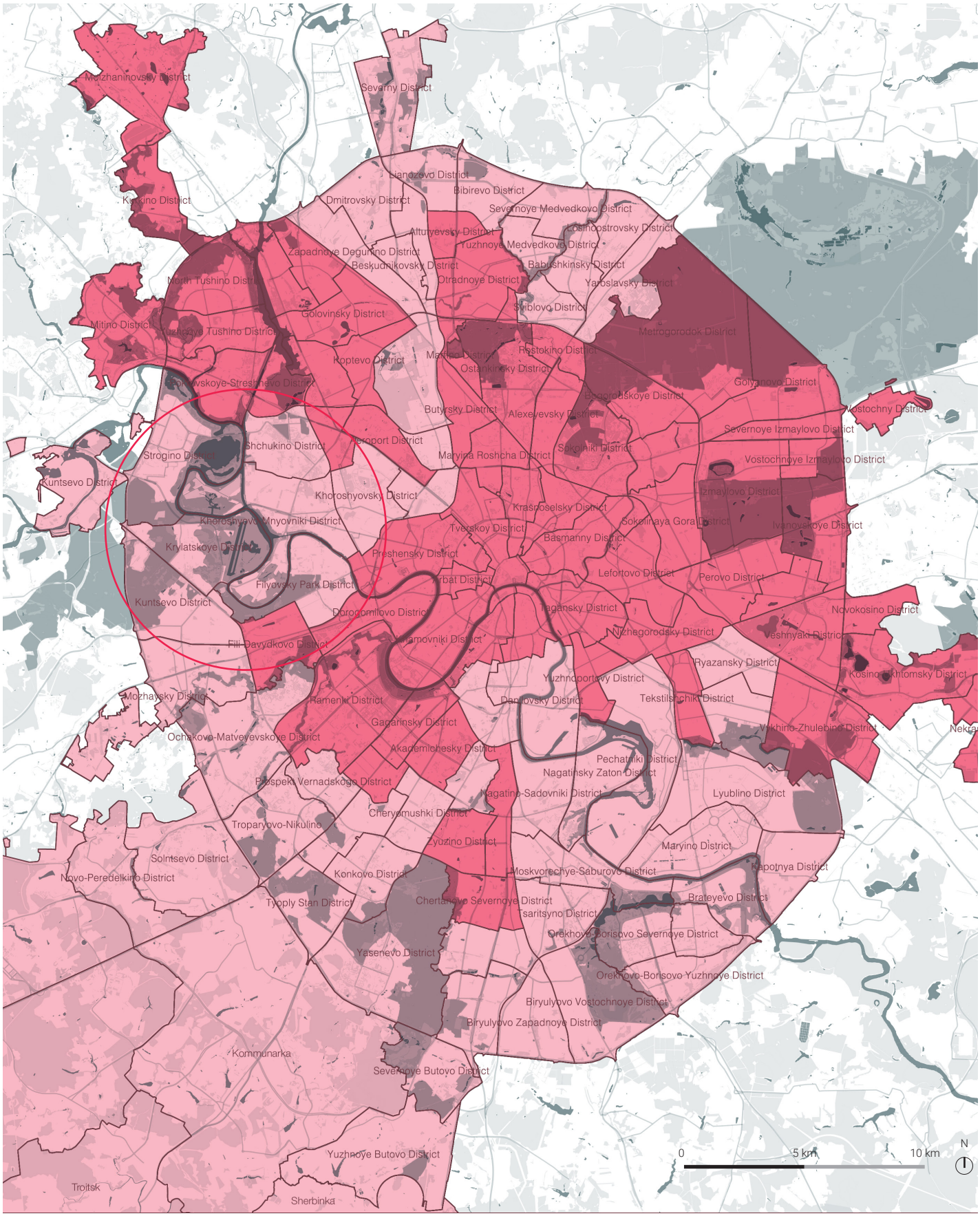


Figure 3.9

average price of new housing by district

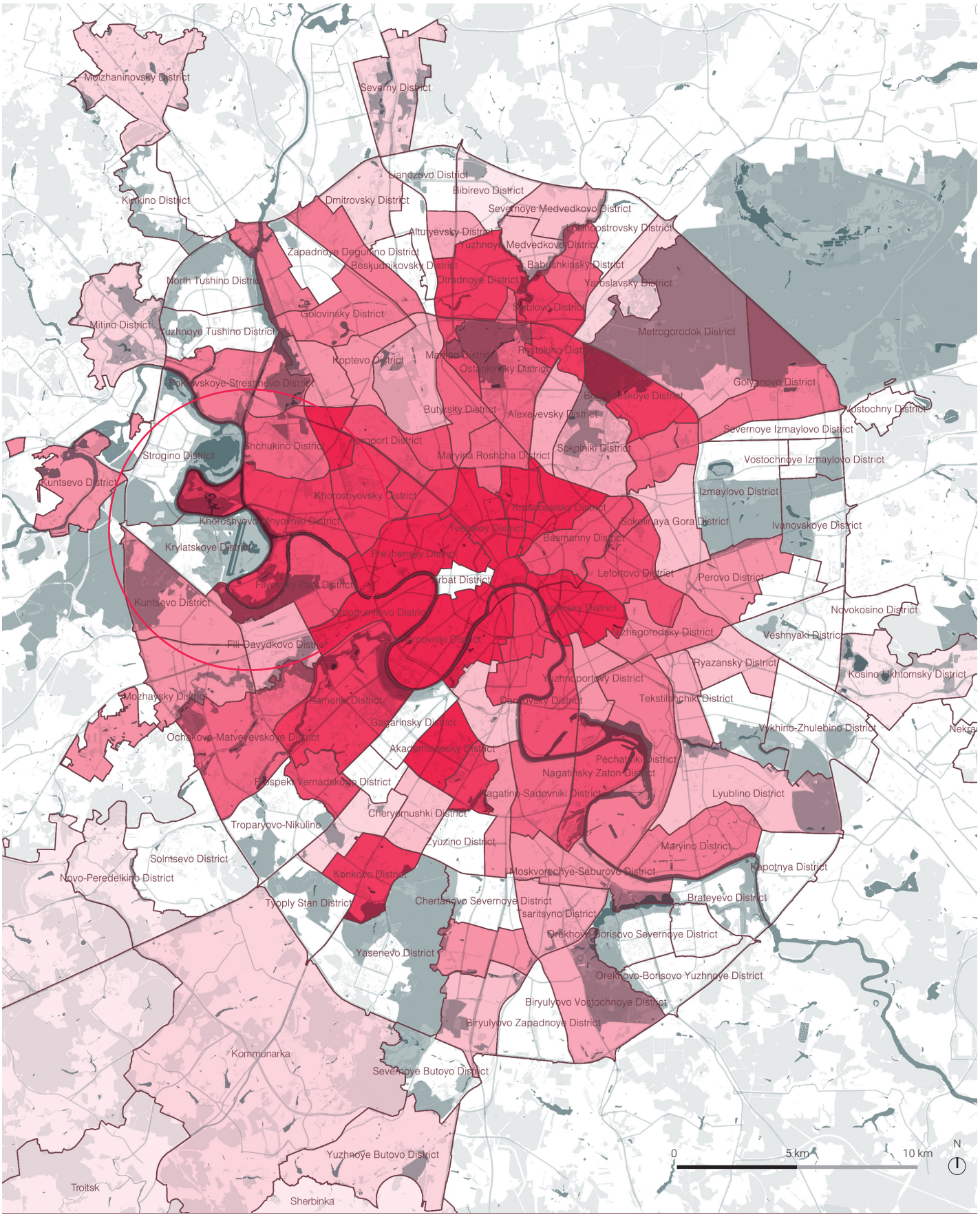


Figure 3.10

average price of secondary housing by district

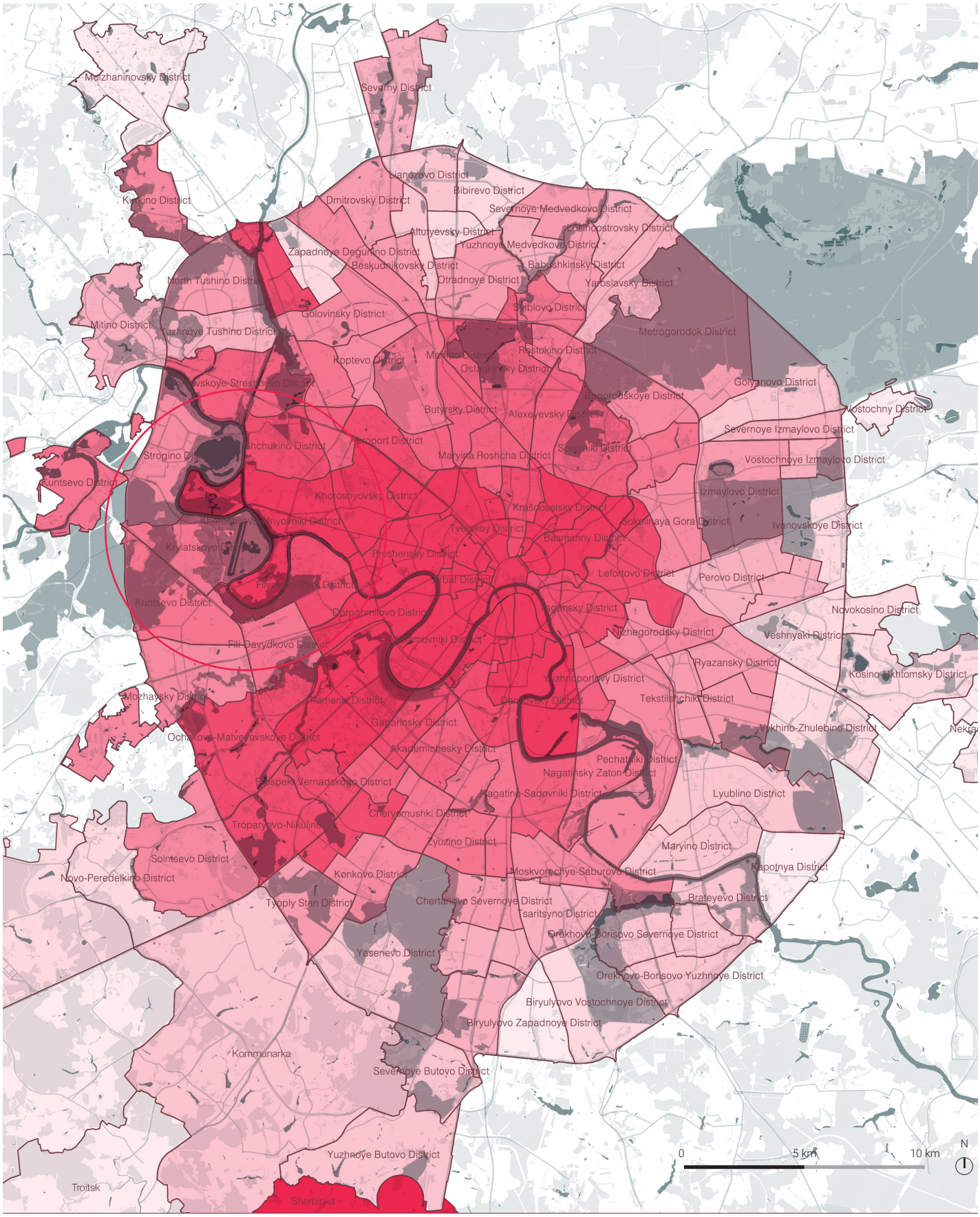


Figure 3.11

climate change — a note on scope

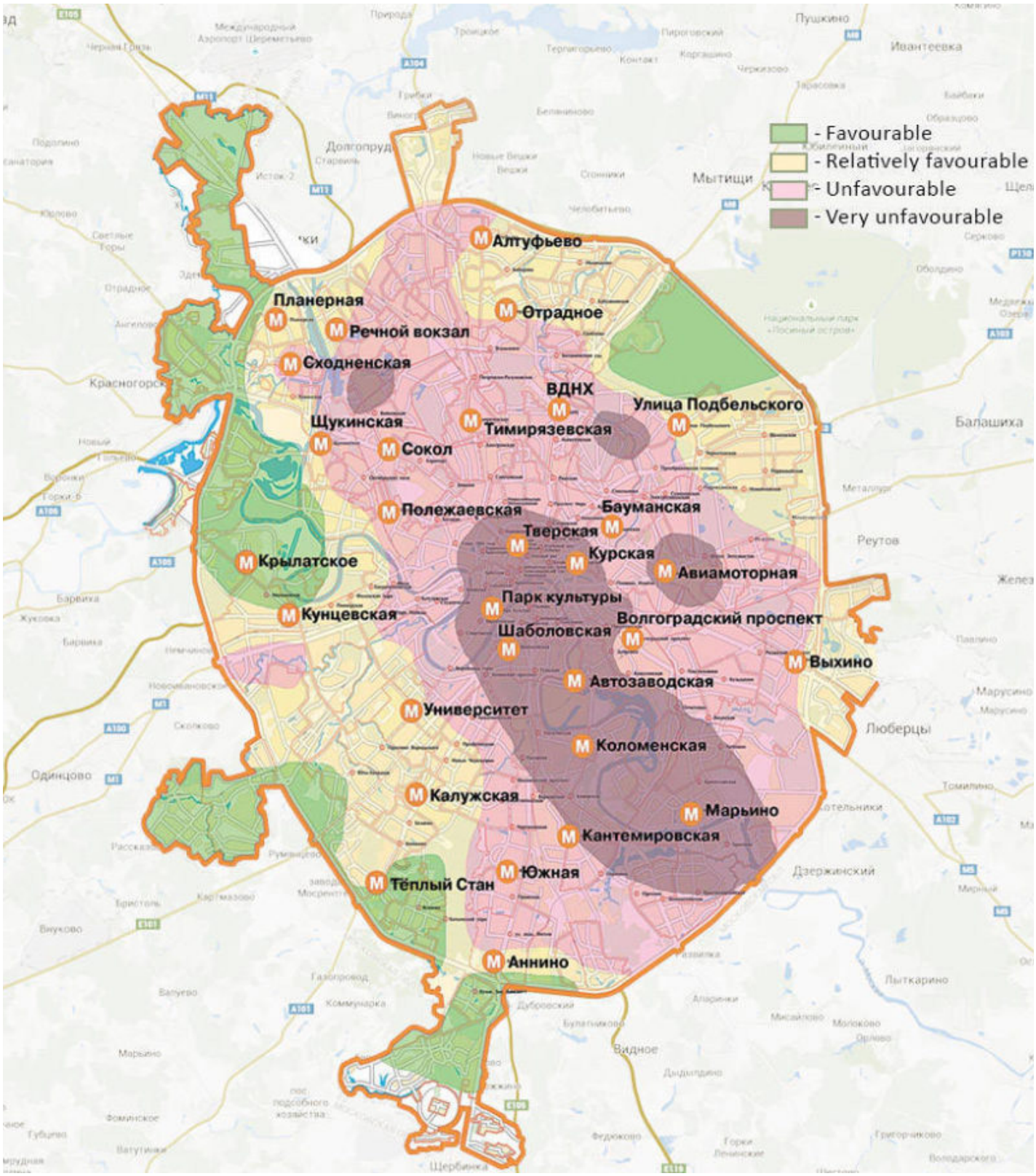
Climate change is frequently cited as the primary driver of environmental degradation in urban contexts. This project does not dispute the reality of global climate change — but it deliberately sets it aside as the main explanatory framework at this scale.

At the level of a single city and its protected areas, the most pressing environmental problems are not the product of global processes beyond anyone's control. They are the direct result of local decisions: the sealing of permeable surfaces, the elimination of green cover, the fragmentation of natural systems, the prioritisation of development over ecological function. Moscow's heat island effect, its flooding after heavy rainfall, its declining air quality and biodiversity loss — these are consequences of how the city has been built and managed, not primarily of forces acting from outside.

Protected natural areas play a critical role in regulating the urban climate — moderating temperature, absorbing rainfall, filtering air, and maintaining the ecological cycles that make a city liveable. When these areas are degraded or reduced, the city loses its own capacity for self-regulation.

Moscow faces the same urban climate challenges as every other major city in the world. What is required is not a separate climate framework, but a clearer understanding of how the city's own decisions are worsening its own conditions — and what can be done, at the scale of the city itself, to reverse that trajectory. This is the frame within which the project operates.

One local condition is nevertheless worth noting. The Moskvoretsky Natural History Park is located in the north-west of Moscow — historically considered one of the most ecologically favourable parts of the city. The prevailing winds blow from the north-west across the city toward the south-east, meaning that this part of Moscow receives relatively clean air before it passes through the urban fabric. The Moscow River follows the same logic: entering the city from the north-west, it remains relatively uncontaminated compared to its condition further downstream. The presence of the protected area and its green cover contributes further to the ecological quality of this part of the city — making the north-western corridor not only locally significant but structurally important for Moscow as a whole.


- Favourable
- Relatively favourable
- Unfavourable
- Very unfavourable
Алтуфьево
Отрадное
Планерная
Речной вокзал
Сходненская
ВДНХ
Улица Подбельского
Тимирязевская
Щукинская
Сокол
Полежаевская
Бауманская
Тверская
Курская
Крылатское
Авиамоторная
Парк культуры
Кунцевская
Волгоградский проспект
Шаболовская
Выхино
Автозаводская
Университет
Коломенская
Калужская
Марьино
Кантемировская
Южная
Тёплый Стан
Аннино
Пушкино
Ивантеевка
Мытищи
Долгопрудный
Красногорск
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Реутов
Люберцы
Одинцово
Видное
Дзержинский

Figure 3.12

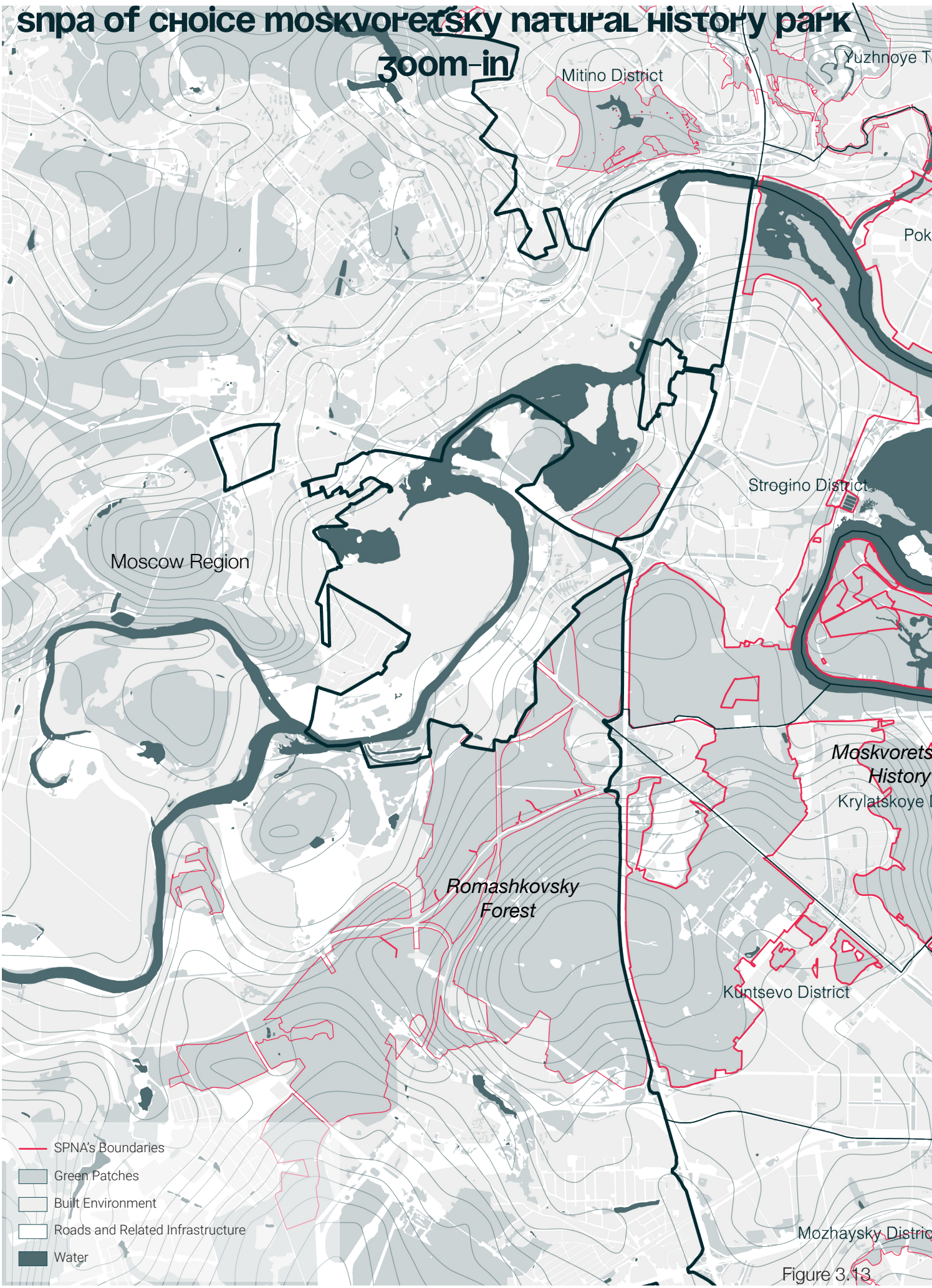
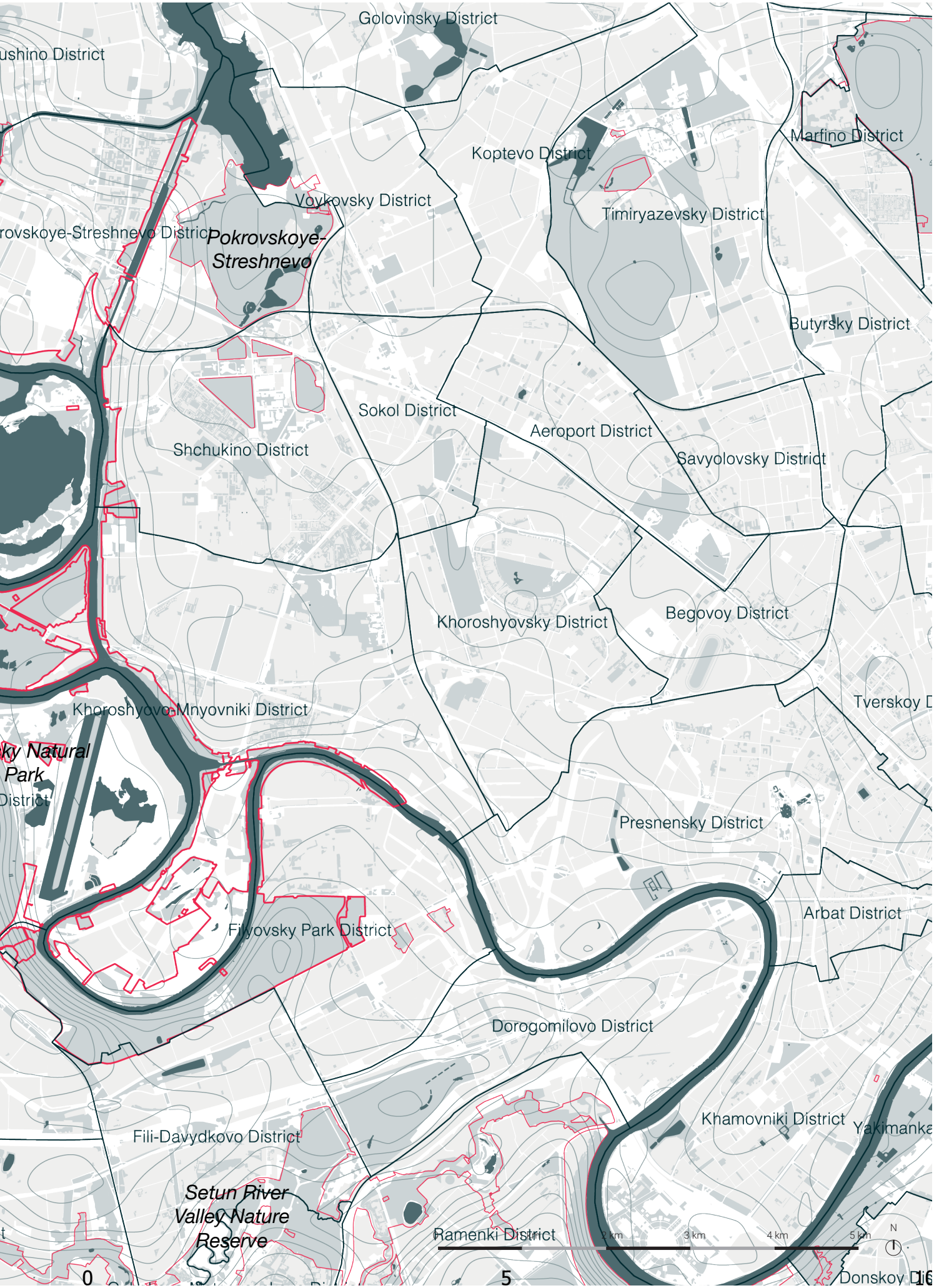

SNPA of choice Moskvoretsky Natural History Park
zoom-in
Mitino District
Yuzhnoye T
Pok
Strogino District
Moscow Region
Moskvorets
History
Krylatskoye
Romashkovsky
Forest
Kuntsevo District
Mozhaysky District
SPNA's Boundaries
Green Patches
Built Environment
Roads and Related Infrastructure
Water

Figure 3.13


Golovinsky District
ushino District
Koptevo District
Marfino District
Timiryazevsky District
Voykovsky District
rovskoye-Streshnevo District
Pokrovskoye-Streshnevo
Butyrsky District
Sokol District
Aeroport District
Shchukino District
Savyolovsky District
Khoroshyovsky District
Begovoy District
Khoroshyovo-Mnyovniki District
Tverskoy D
ky Natural Park
District
Presnensky District
Arbat District
Filyovsky Park District
Dorogomilovo District
Khamovniki District
Yakimanka
Fili-Davydkovo District
Setun River Valley Nature Reserve
Ramenki District
Donskoy D
2 km
3 km
4 km
5 km
N
0
5
10

functional zoning analysis

Only 17% of area is for protected nature, plus 3% for cultural site, the rest is for recreation, sport and other use

Figure 3.14

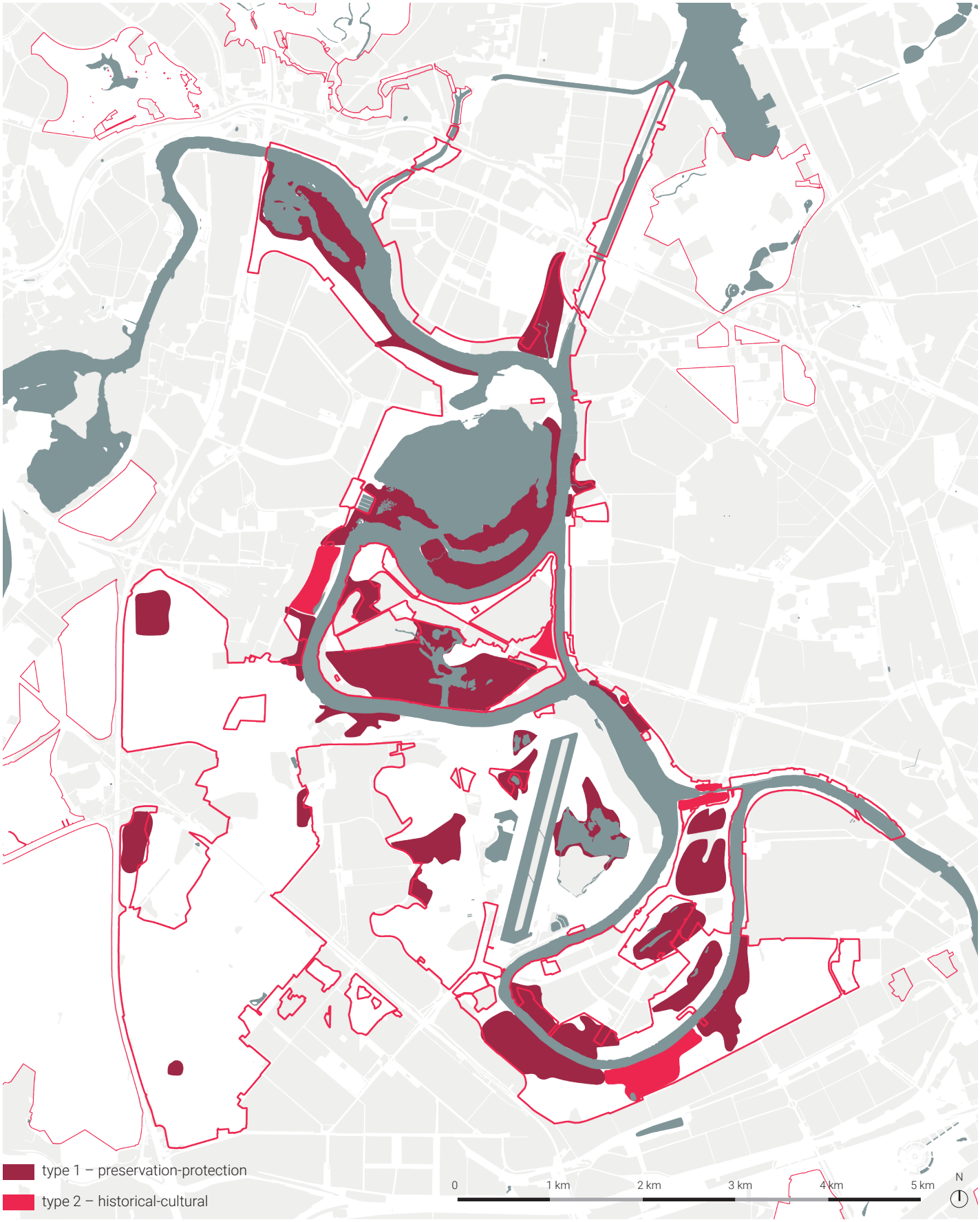

type 1 – preservation-protection
type 2 – historical-cultural
0
1 km
2 km
3 km
4 km
5 km
N

Figure 3.15

Figure 3.16 FZ Type 1

Figure 3.16 FZ Type 2

Combined functional zones:
— Protected areas, designated for environmental protection and scientific purposes, established to ensure the preservation and/or restoration of particularly valuable natural communities, rare and endangered plant and animal species, as well as other elements of living and non-living nature;

— Educational and excursion areas, intended for environmental education and public awareness, as well as for familiarization with the Park's natural and cultural features.

— Historical and cultural protection zones, designated for the preservation and restoration of cultural heritage sites, which may be used for scientific and educational purposes.

Figure 3.16 FZ Type 3

Figure 3.17 FZ Type 4

— Recreational and sports areas, designated for physical activity and sports, and specifically equipped for these purposes.

— Recreational centers, specially designed and equipped for mass public recreation;
— Walking areas (or strolling areas, depending on context).

Figure 3.18 FZ Type 5

— Administrative and maintenance zones, designated for the placement, construction, and operation of facilities;
— Land plots used by third parties.

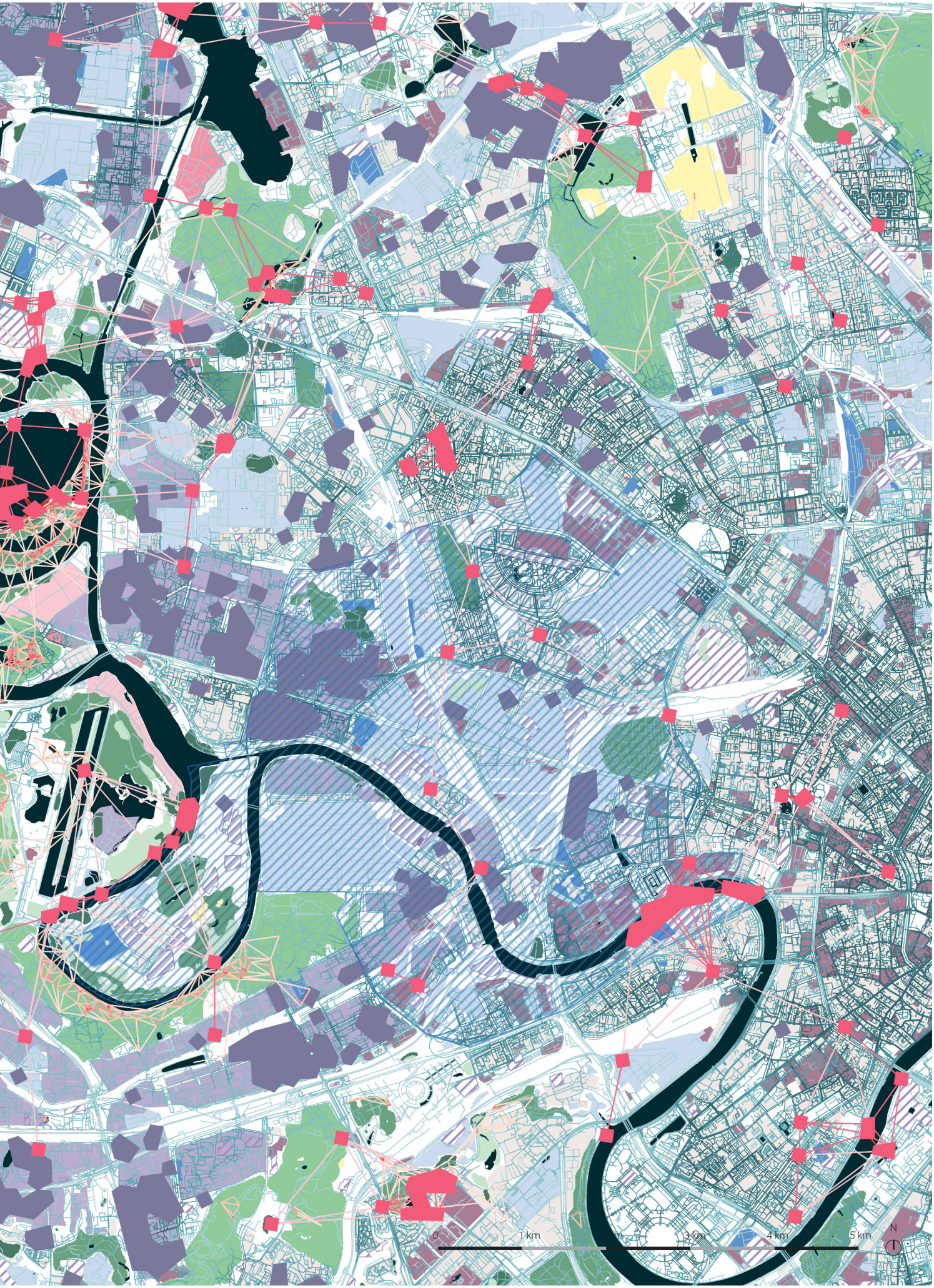
Functional Zoning — A First Diagnosis

The analysis begins with the official functional zoning document of the Moskvoretsky Natural History Park. Generalised and mapped, it reveals an immediate and striking finding: only 17% of the total area is designated for protected nature, with a further 3% allocated to cultural heritage sites. The remaining 80% is given over to recreation, sport, and other uses.

This means that at most 20% of the territory — officially designated as Moscow's largest protected natural area — is actually serving its primary ecological purpose. The rest has effectively been handed over to recreational and sports functions, or to uses that have little relation to nature protection at all.

This single finding sets the tone for everything that follows. Before examining pressures from outside the boundary, the analysis reveals a fundamental problem from within: the park is not fulfilling its core mandate. As a mechanism for protecting biodiversity, maintaining ecological function, and supporting natural systems — it is, in its current form, failing.

Figure 3.19


0
1 km
3 km
4 km
5 km
N

territorial conditions map

Analytical Map — Current Conditions

The Moskvoretsky Natural History Park and its surrounding territories constitute a complex, multi-layered system operating under simultaneous pressures from multiple directions. To make this complexity legible, the map is subsequently deconstructed into individual analytical layers, each isolating a distinct dimension of the territory. Together, these layers form the evidential foundation for all subsequent typological and design decisions.

Green Patches — The Starting Point

The analysis departs from a single foundational question: how much ecologically viable green cover actually exists? Green cover was extracted using Landsat Normalized Difference Vegetation Index (NDVI) data, which quantifies vegetation greenness and enables identification of all tree canopy across the study area. The resulting patches were assessed against widely used planning thresholds in landscape ecology literature *(Forman, 1995; Lindenmayer & Fischer, 2006)*:

Patches below 10 ha are considered highly fragmented with low ecological stability; patches between 10 and 50 ha show moderate resilience; and only patches above 50 ha begin to function as potentially self-sustaining forest massifs. These thresholds are indicative rather than prescriptive — ecological viability depends on species, forest type, and disturbance context — but provide a practical framework for comparative spatial analysis.

The picture that emerges is stark. Viable, self-sustaining green patches are extremely rare across the study area. Within the boundaries of the Moskvoretsky Natural History Park itself, fragmentation is severe — the majority of patches fall well below the threshold for ecological stability.

This finding is further reinforced by the edge effect. Research in landscape ecology indicates that forest edges are subject to significant ecological disturbance — with the edge zone extending approximately 10 metres from the boundary, strong edge influence penetrating 20–30 metres, and only areas beyond roughly 50 metres representing more stable core habitat. While exact values vary by species, forest type, and disturbance source, these thresholds provide a practical planning framework. Applied to the fragmented patches of the study area, the edge effect analysis reveals that the majority of green patches have no functional core at all — they consist entirely of edge zone. This constitutes the core ecological diagnosis of the territory.

Built Environment

The territory surrounding the protected area contains several distinct typologies of residential development: individual residential properties including cottage settlements and seasonal dacha communities; standard multi-storey apartment blocks; and active construction sites — particularly visible along the eastern bank of the Moscow River, where new residential development is proceeding at significant scale. A distinct sub-layer identifies buildings designated for demolition and replacement under the Moscow Urban Renewal Initiative — a substantial cluster of which sits in direct proximity to the protected area boundary. Industrial and warehouse land uses are also present throughout the territory, including areas designated for gradual relocation and redevelopment, among which the Bigger City redevelopment cluster is identified as a distinct zone of planned large-scale transformation.

Movement and Access

A network analysis of road infrastructure was conducted to establish a road demand index, identifying the most heavily used routes across the territory. Alongside this, movement data derived from Strava heatmaps provides a layer of popular pedestrian routes — revealing the most frequently used entry points into the protected area and the most trafficked paths within it. It should be noted that Strava data reflects the behaviour of active users of the platform and therefore represents a partial rather than complete picture of movement patterns across the territory.

Natural Systems

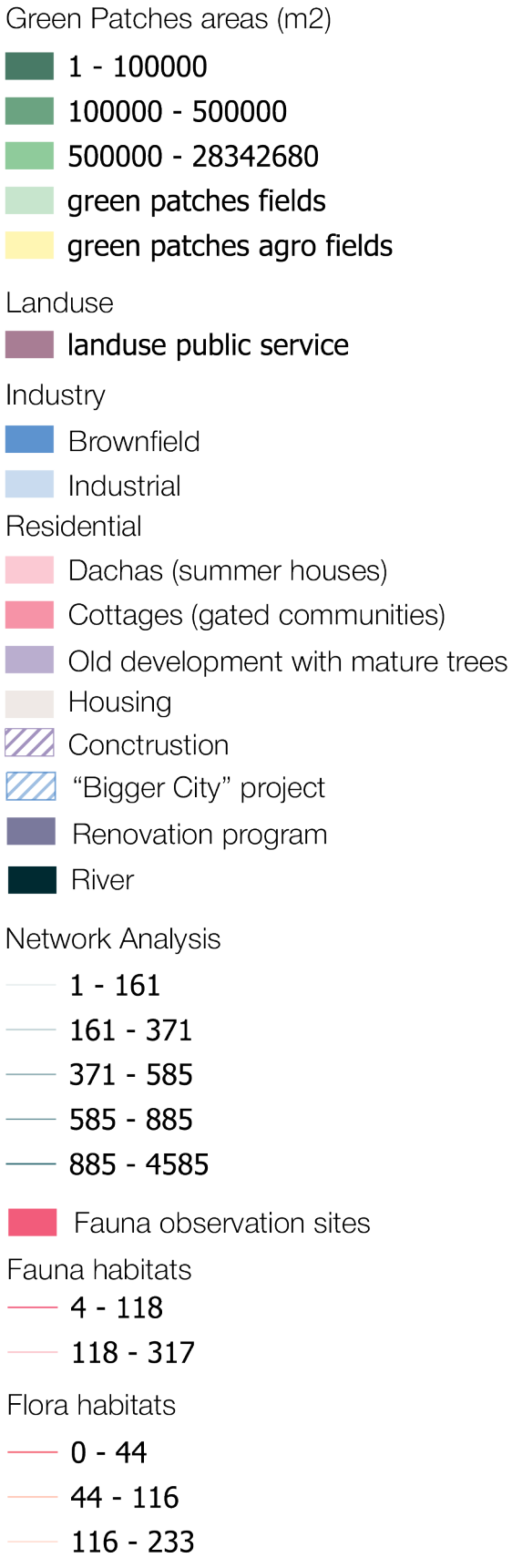
The analysis identifies former floodplain meadows

in the Moscow River valley — clearly visible in the terrain relief as significantly lower-lying areas. Their hydrological character makes them particularly sensitive to development pressure and demands careful attention in any planning decisions affecting the territory.

Flora and fauna observation points — contributed by citizen scientists through species recording platforms — were mapped across the territory. Shortest-path analysis between observation clusters provides an approximation of bird movement routes, foraging ranges, and habitat use patterns, adding a further dimension to the understanding of ecological function across the study area.

Synthesis

The combined reading of these layers reveals a territory of considerable complexity — one in which ecological, infrastructural, social, and developmental conditions overlap and interact across the same space. The study area is shaped by simultaneous pressures operating at different scales and through different mechanisms, none of which can be understood in isolation. This multi-layered analytical picture forms the evidential basis for all decisions and proposals that follow.



ndvi
forest coverage
Strogino District
Krylatskoye
Kuntsevo District
Built Area
Trees
Crops
Rangeland
Water

Figure 3.20

rovskoye-Streshnevo District
Shchukino District
Khoroshyovo-Mnyovniki District
istrict
Filyovsky Park District
Dorogomilovo District
Fili-Davydkovo District
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1 km
2 km
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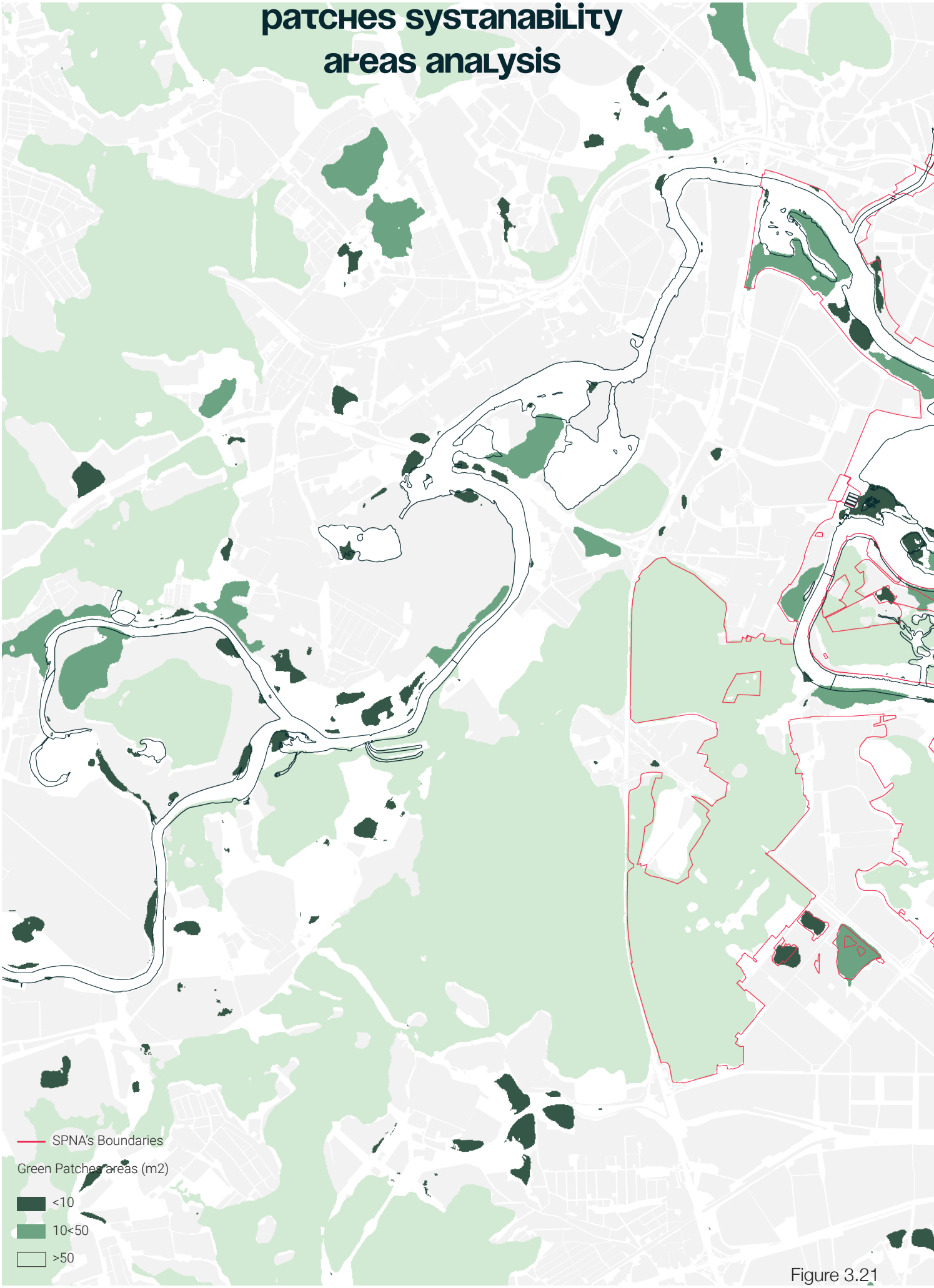
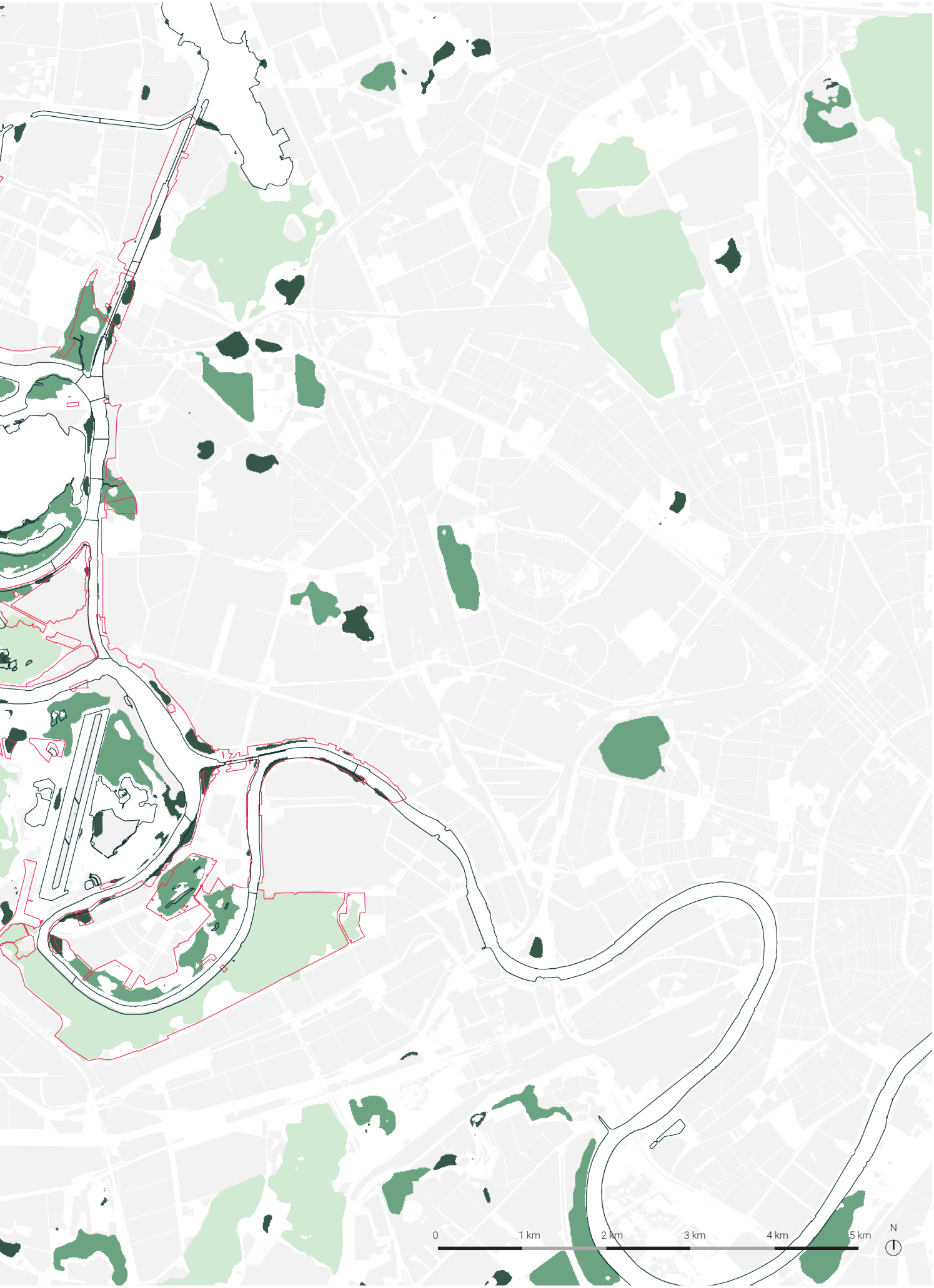

patches systanability
areas analysis
SPNA's Boundaries
Green Patches areas (m2)
<10
10<50
>50

Figure 3.21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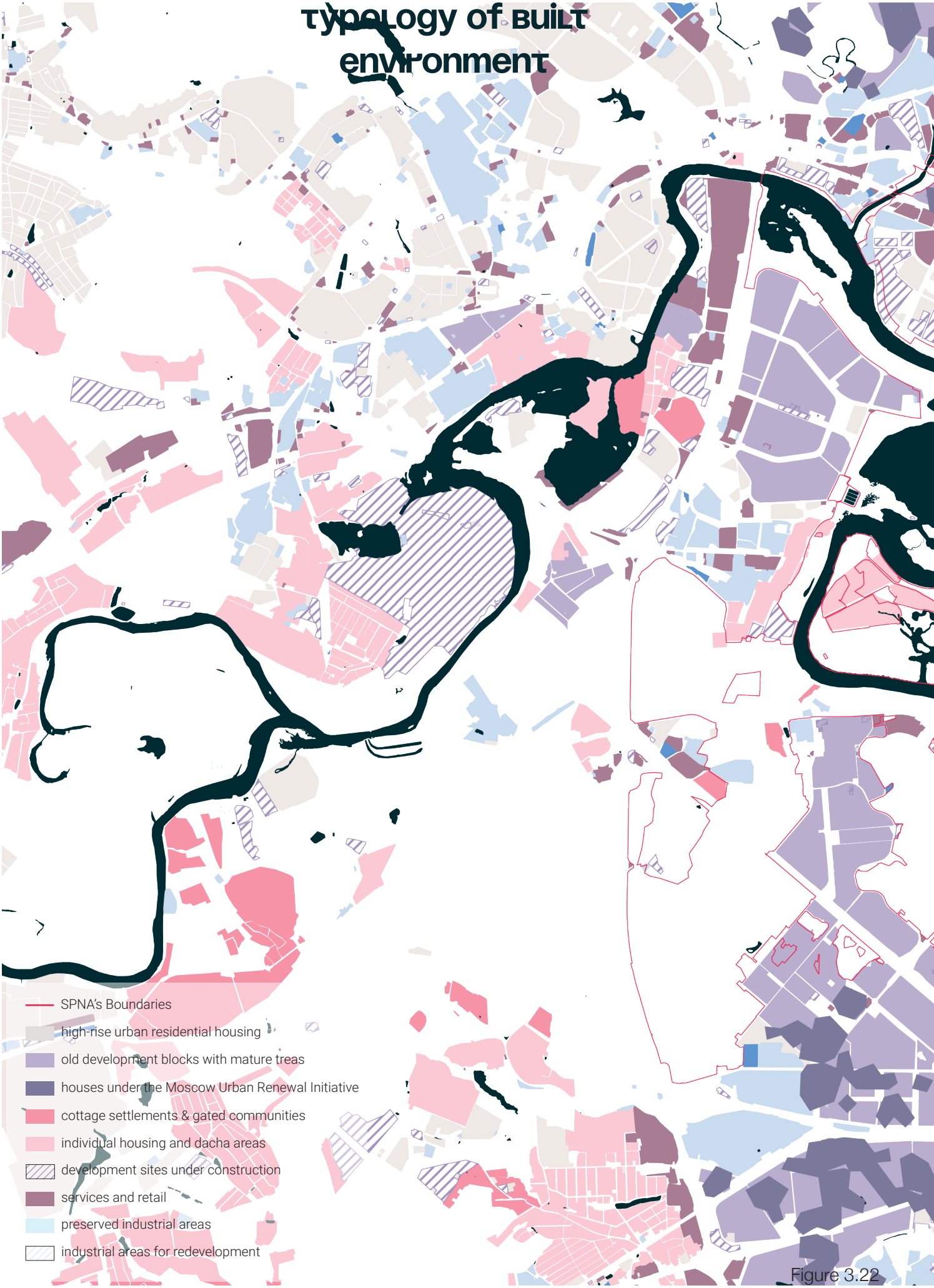

Typology of built environment
SPNA's Boundaries
high-rise urban residential housing
old development blocks with mature treas
houses under the Moscow Urban Renewal Initiative
cottage settlements & gated communities
individual housing and dacha areas
development sites under construction
services and retail
preserved industrial areas
industrial areas for redevelopment

Figure 3.22

0
1 km
3 km
4 km
5 km
N

angular integration
index
SPNA's Boundaries
Low Mobility Intensity
Medium Mobility Intensity
High Mobility Intensity

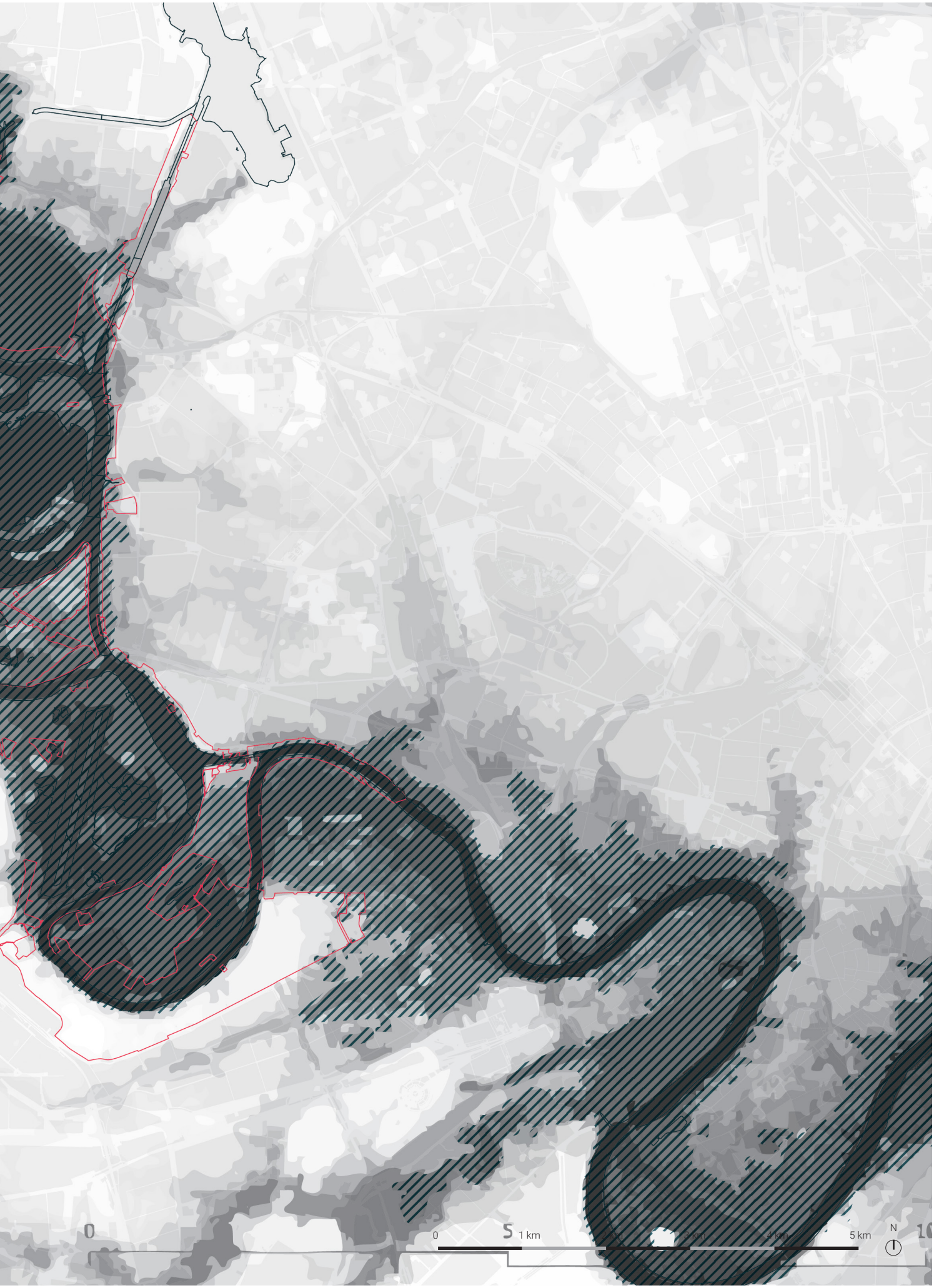
Figure 3.23

0
1 km
3 km
4 km
5 km
N

floadplains

This map shows the lowlands and former floodplain meadows of the Moskva River valley. Historically, these territories played a critical role in the local landscape — absorbing excess water during seasonal flooding and functioning as a natural buffer between the river and the surrounding terrain. Today, the Moskva River is regulated by infrastructure and no longer inundates these areas. However, their lower elevation and natural hydrological character remain, making them inherently vulnerable territories. Very few natural riverbanks survive along the Moskva River — the majority have been concretised or built over, severing the ecological connection between the river and its floodplain. These territories must be recognised as sensitive and irreplaceable components of the local landscape and treated with corresponding care in any future development decisions.

Figure 3.24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0
S
1 km
2 km
3 km
4 km
5 km
N

General Habitats

This map shows observation points recording the presence of flora and fauna across the study area, illustrating the remarkable biodiversity of the Moskvoretsky Park. Red List species are highlighted in a darker tone to distinguish them from other recorded species. The density of observations across the park reflects the richness and variety of wildlife present throughout the territory. Note that the distribution of observation points reflects the popularity of locations among visitors rather than the actual density of wildlife — areas such as Romashkovsky Forest show fewer points simply due to lower footfall, not a lack of fauna

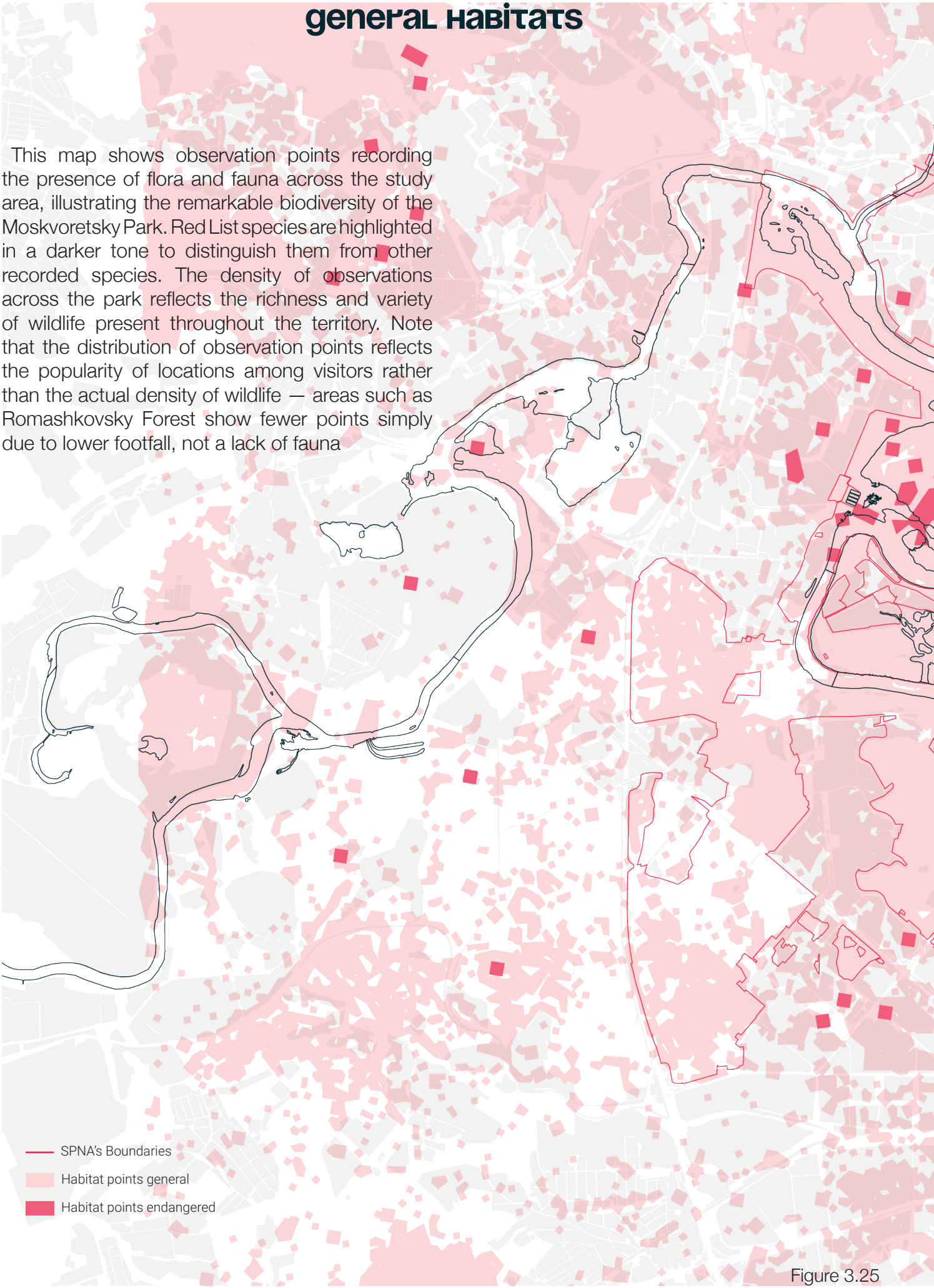
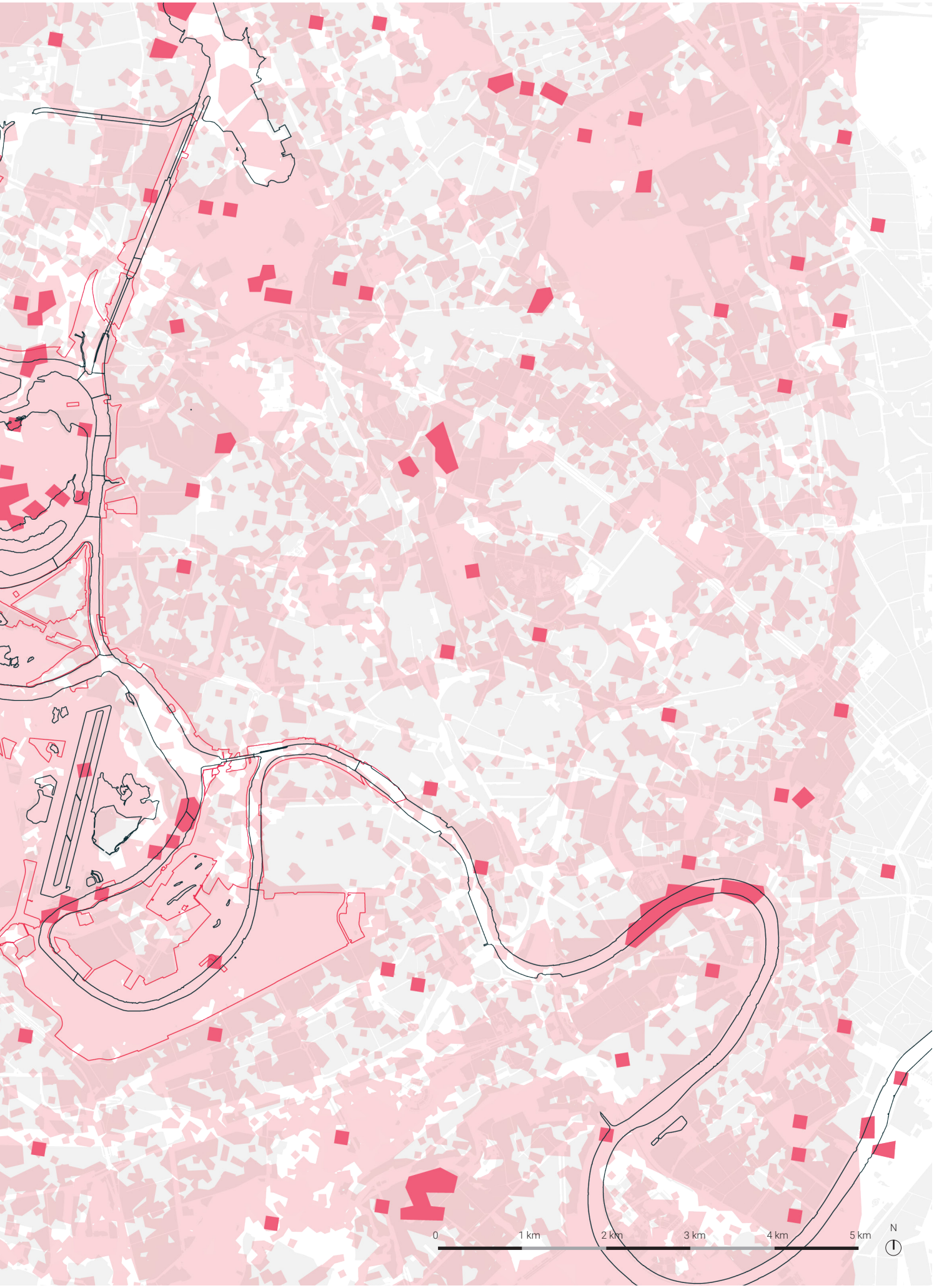


Figure 3.25


0
1 km
2 km
3 km
4 km
5 km
N

Red List species habitats

This map shows observation points where local residents have recorded the presence of fauna in the area. Only Red List species of flora and fauna — those most at risk and requiring priority attention and conservation — are represented, as they are considered the most critical indicators of ecological health in the study area. The shortest connections between bird observation points are drawn as lines, allowing you to visualise the approximate foraging and habitat ranges of bird species across the study area, as well as the movement corridors they form. Note that the distribution of observation points reflects the popularity of locations among visitors rather than the actual density of wildlife — areas such as Romashkovsky Forest show fewer points simply due to lower footfall, not a lack of fauna.

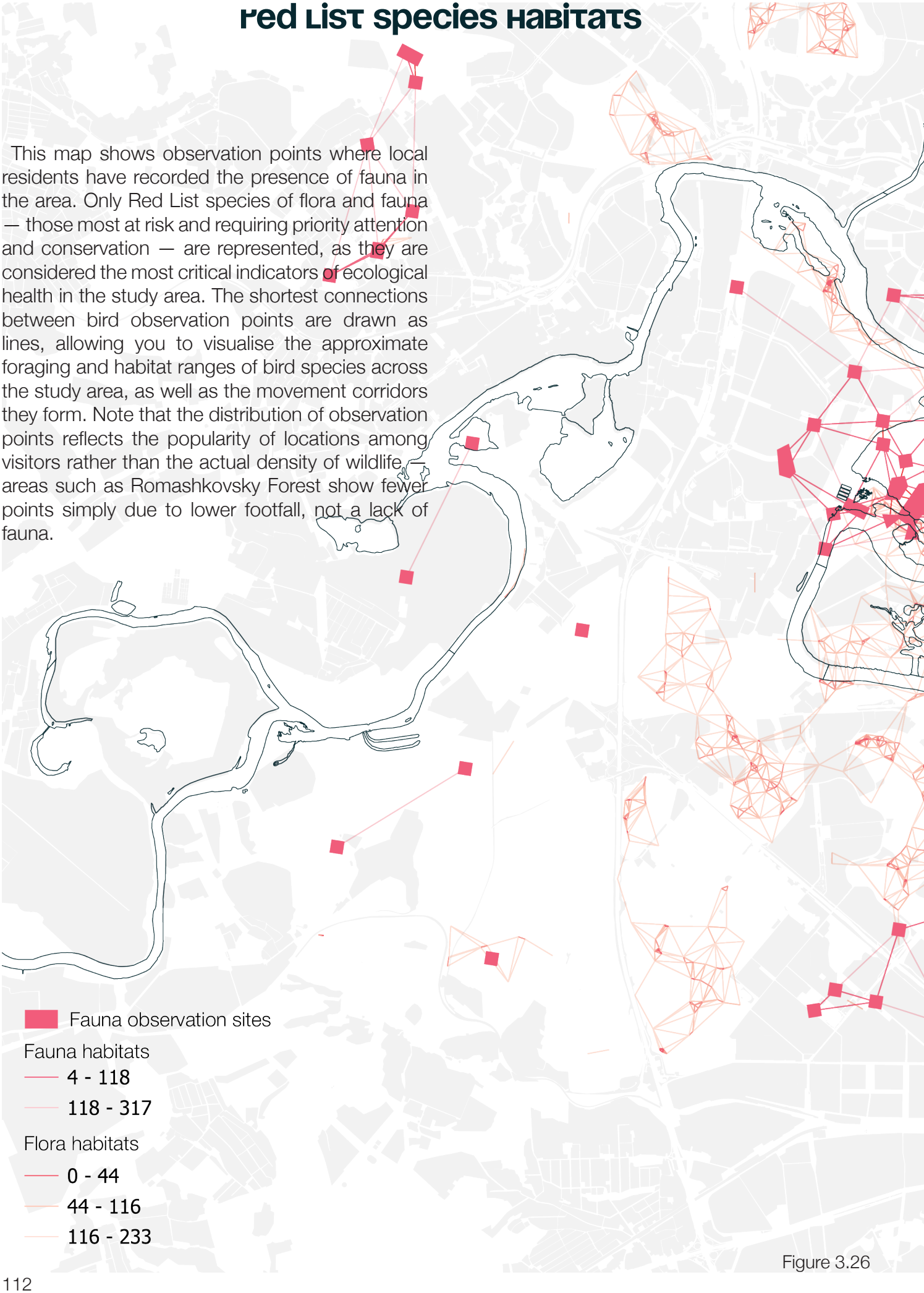
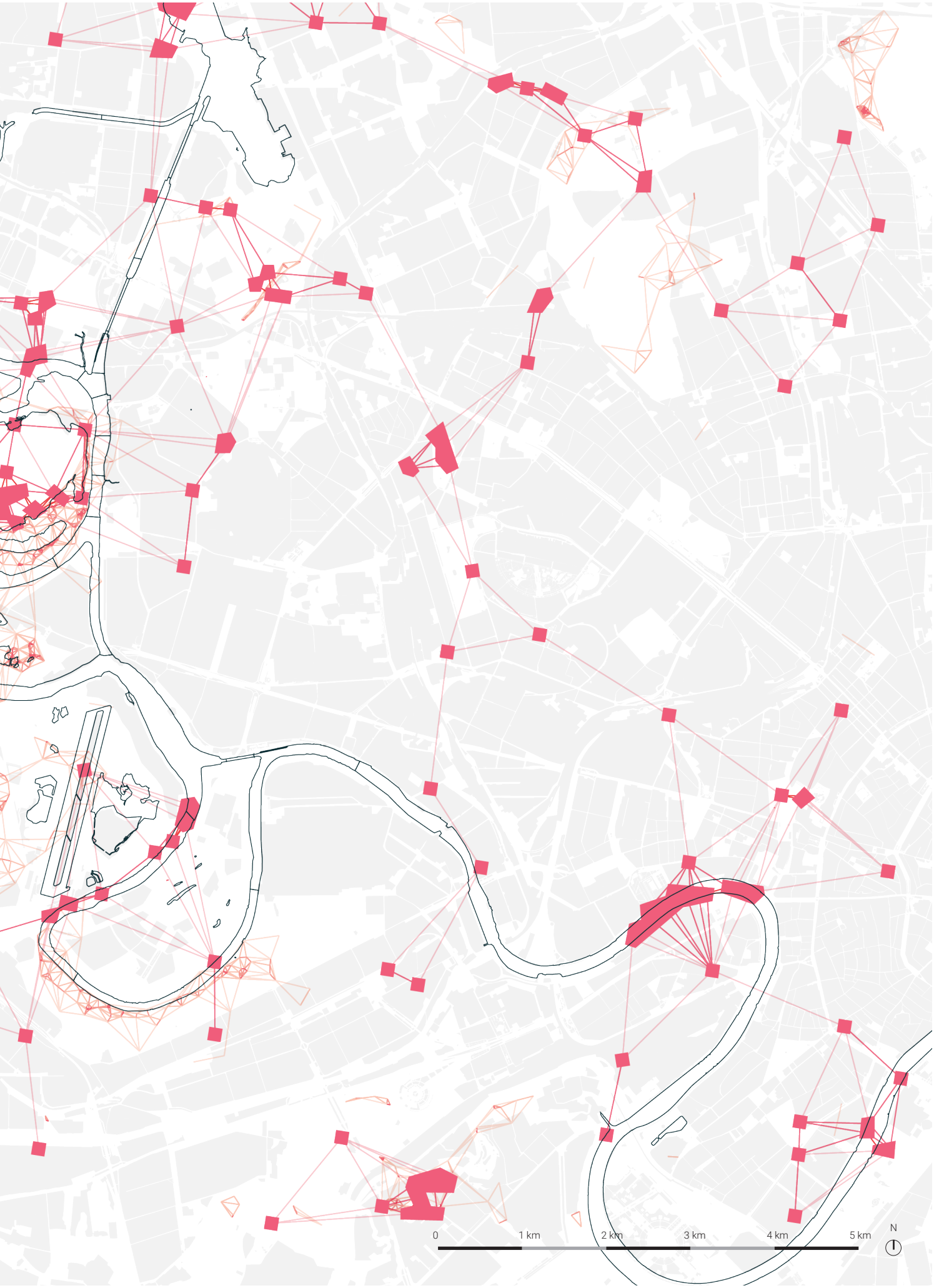


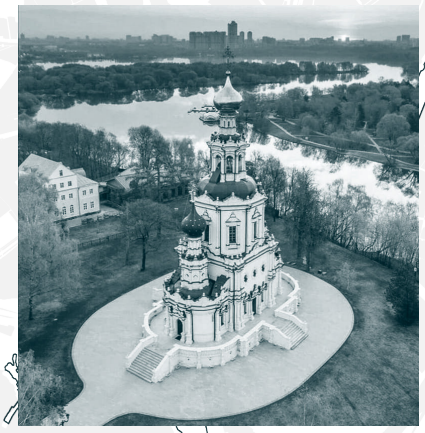
Figure 3.26


0
1 km
2 km
3 km
4 km
5 km
N

Key Landmarks in SPNA

Troitse-Lykovo Estate (17th–19th c.) — Strogino District

Church of the Holy Trinity at Troitse-Lykovo (early 18th c.)



Krylatskoye Sports Complex Velodrome — built in 1979 for the 1980 Summer Olympics.

Church of the Nativity of the Blessed Virgin Mary in Krylatskoye (1862)

Fili-Pokrovskoye Estate / Naryshkin Estate (17th–18th c.)

Church of the Intercession at Fili (1693–1694)

Krylatskoye Ice Palace (1979)

Krylatskoye Rowing Canal — constructed in 1973, hosted the 1973 European Rowing Championships and the 1980 Summer Olympics

Kuntsevo Estate (17th–19th c.) — Fili-Kuntsevsky Forest Park

Figure 3.27

territorial conditions map

Figure 3.28

0
1 km
2 km
3 km
4 km
5 km
N

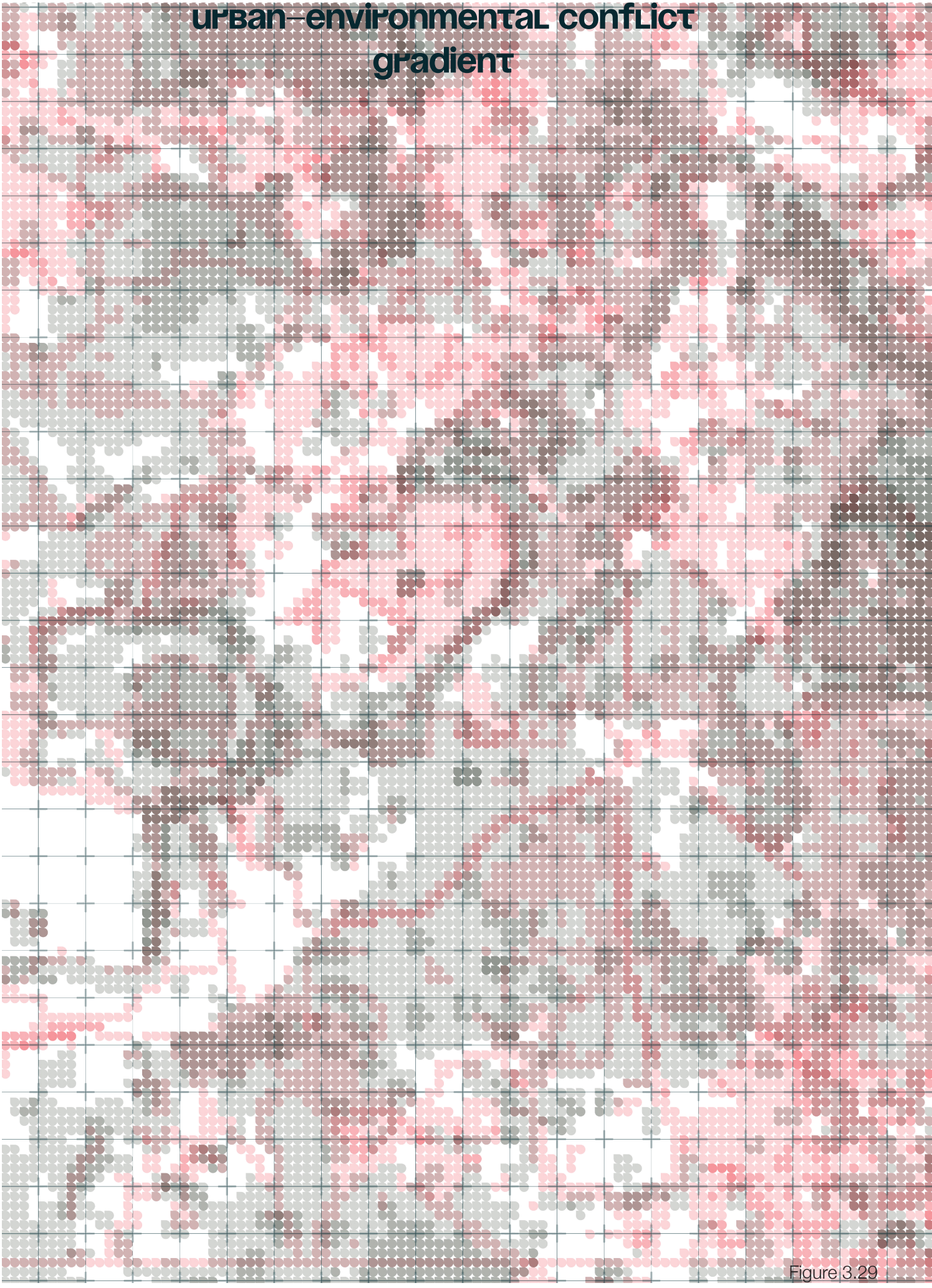


Figure 3.29

0
1 km
2 km
3 km
4 km
5 km
N

urban–environmental conflict gradient

This diagram shows where urban and natural fabric meet and compete across the study area. Red represents urban development pressure, green represents ecological value. The more saturated the colour, the stronger the condition. Where the two colours mix and intensify, conflict is highest.

The result makes one thing clear: the Moskvoretsky Natural History Park and the Moscow River embankment are the primary zone of conflict. This is where the city and nature are most directly in competition — and where the stakes of any intervention are highest.

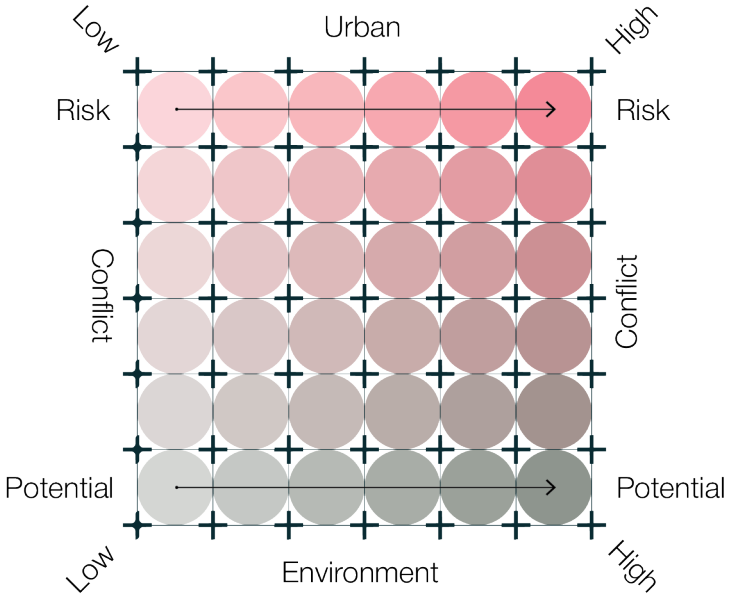

Low
Urban
High
Risk
Risk
Conflict
Conflict
Potential
Potential
Low
Environment
High

Figure 3.30

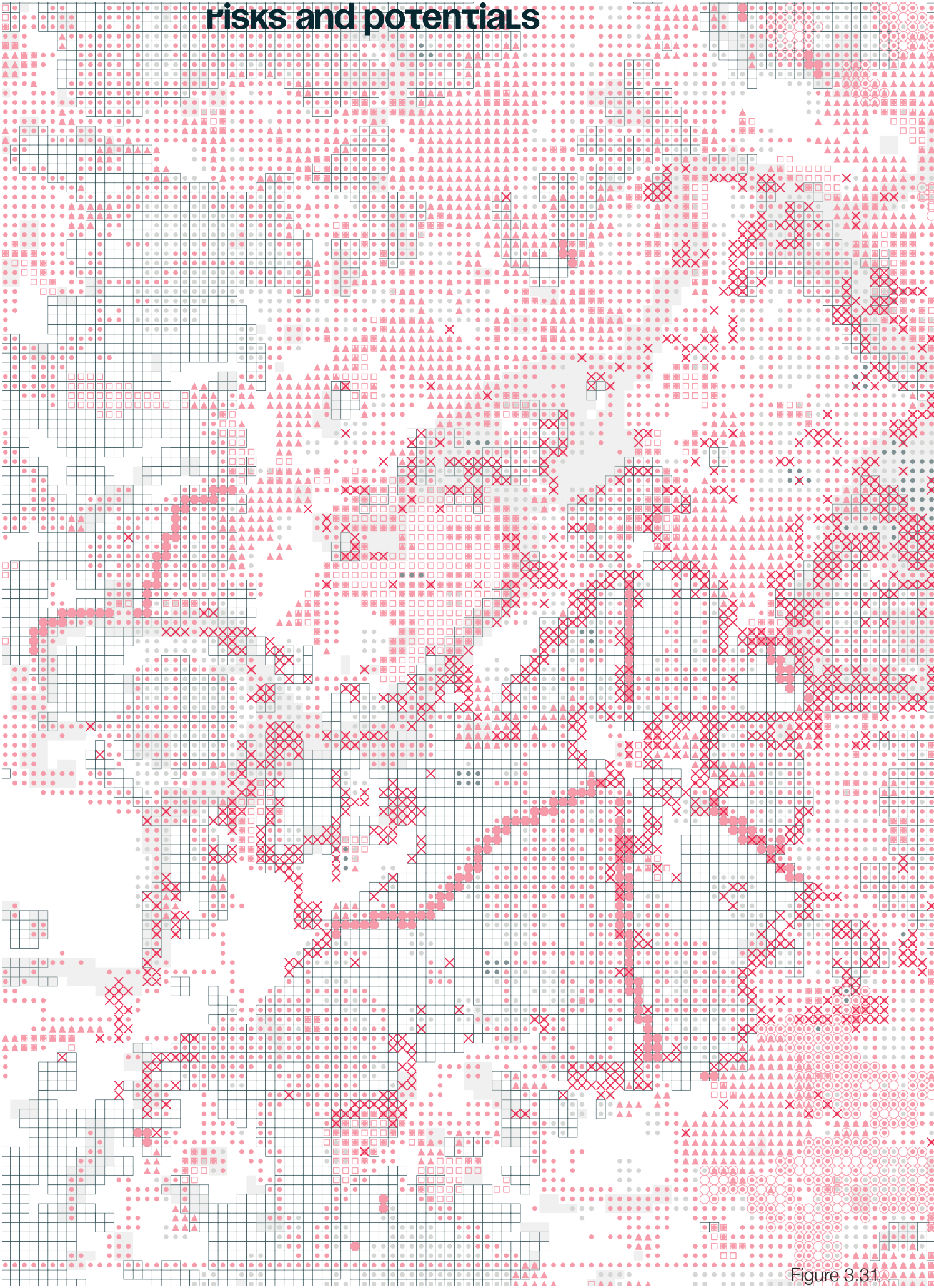
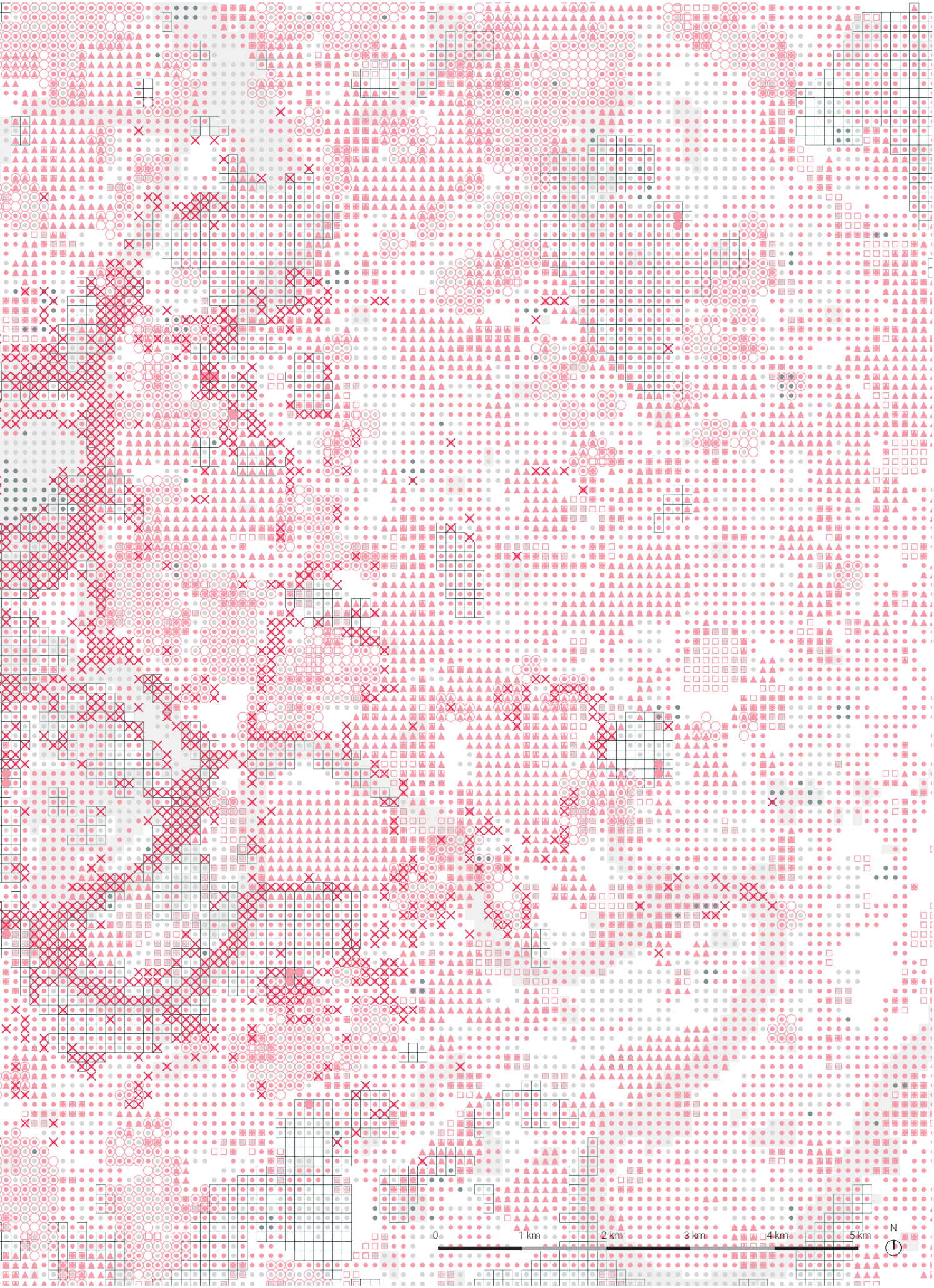


Figure 3.31


0
1 km
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3 km
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5 km
N

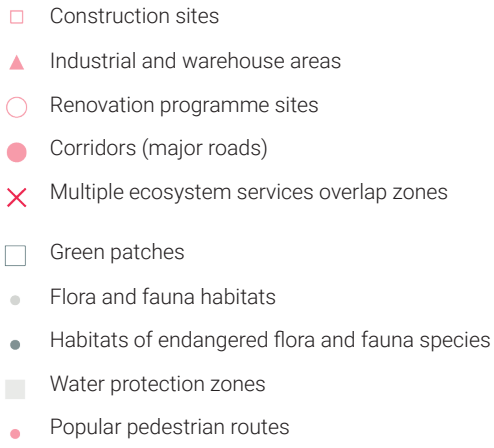
Risks and potentials

Where the previous diagram showed conflict as a gradient, this map deconstructs the same territory into its constituent conditions. Each layer is represented by a distinct symbol that can be read independently or in combination with others. Together they form a legible matrix of everything that is simultaneously present across the study area.

The layers are organised into two broad categories. Risk layers — shown in red — include major road corridors, industrial and warehouse zones, active construction sites, and renovation programme sites. Potential layers — shown in green — include green patches, water protection zones, flora and fauna habitats, habitats of endangered species, and zones of multiple ecosystem services overlap. Some layers, such as renovation programme sites, carry both risk and potential simultaneously: they mark territories under threat of transformation but also open to the possibility of ecological integration.

What makes this map analytically powerful is not any single layer in isolation, but the density and combination of symbols across space. Where multiple symbols overlap, the conditions are most complex — and the need for differentiated response is greatest. Read this way, the map does not simply describe the territory: it begins to suggest where the boundary of the protected area is most contested, most fragile, and most open to change.

This layered reading of conditions forms the direct basis for the boundary typology that follows — each typology emerging from a specific combination of symbols found along the edge of the Moskvoretsky Natural History Park.



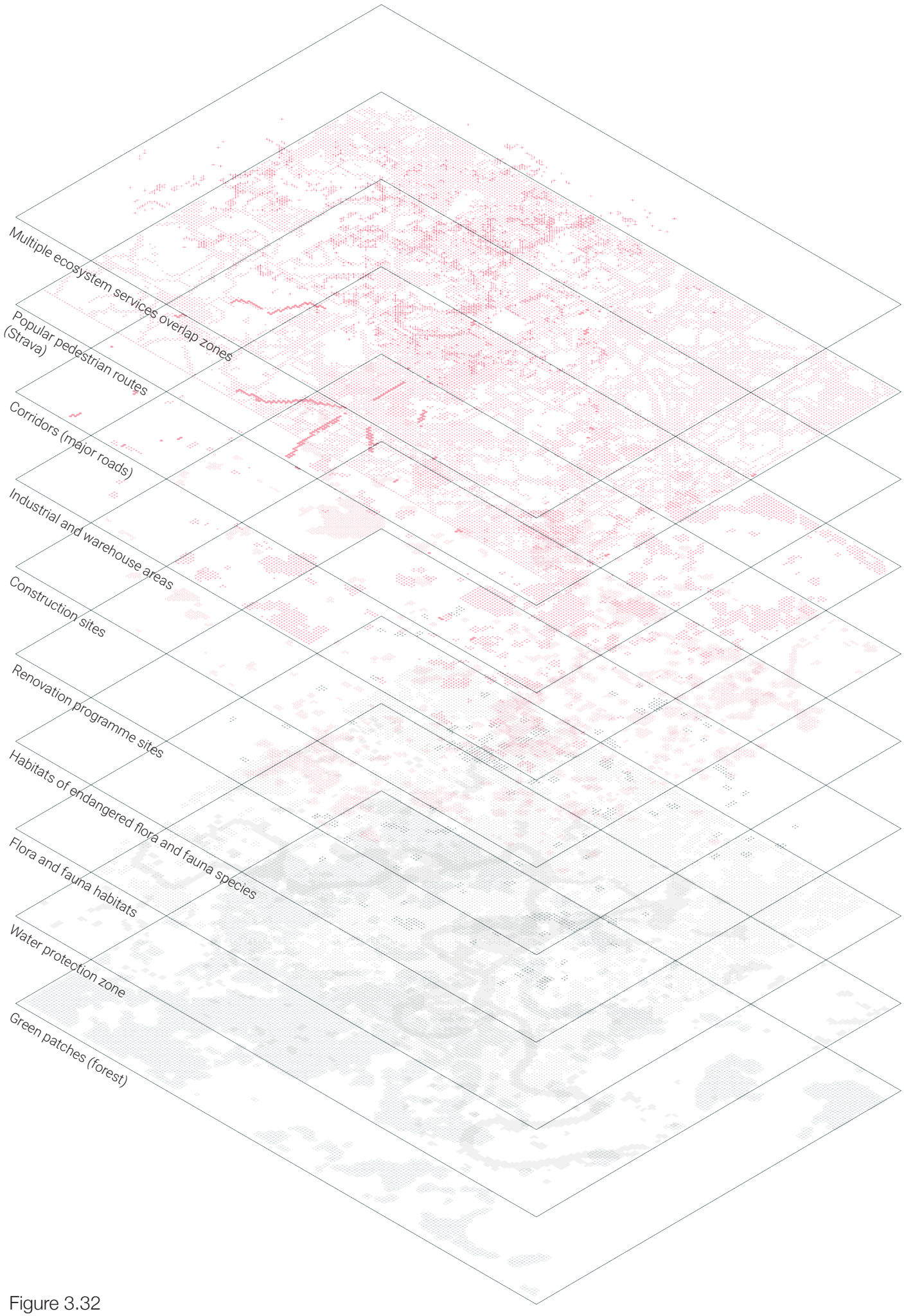

Multiple ecosystem services overlap zones
Popular pedestrian routes (Strava)
Corridors (major roads)
Industrial and warehouse areas
Construction sites
Renovation programme sites
Habitats of endangered flora and fauna species
Flora and fauna habitats
Water protection zone
Green patches (forest)

Figure 3.32

ecosystem services

Ecosystem services provide a framework for reading the ecological functions of the territory. Rather than treating the natural environment as a uniform whole, the ESS framework identifies the specific functions that ecosystems perform — provisioning, regulating, supporting, and cultural — and makes visible where these functions are present, degraded, or absent across the study area.

Ecosystem services are directly linked to human well-being — they are the mechanisms through which healthy natural systems support the communities that live alongside them. This connection is central to the project: the value of the Moskvoretsky Natural History Park is inseparable from its ecological capacity to provide and sustain these functions. Maintaining and restoring that capacity requires a socio-ecological approach — one where ecological resilience, design decisions, and territorial governance work together.

In this project, ecosystem services operate simultaneously as an analytical tool for understanding the current state of the territory, as a basis for governance and policy decisions, and as design targets we are working toward.

Four maps are presented here, each isolating one category of ecosystem services. Together they are synthesised into a single map showing the combined distribution and intensity of ecosystem services across the territory. The ecosystem services identified here will inform the design proposals developed in the following part of the project, where they will serve as ecological targets for specific spatial interventions.

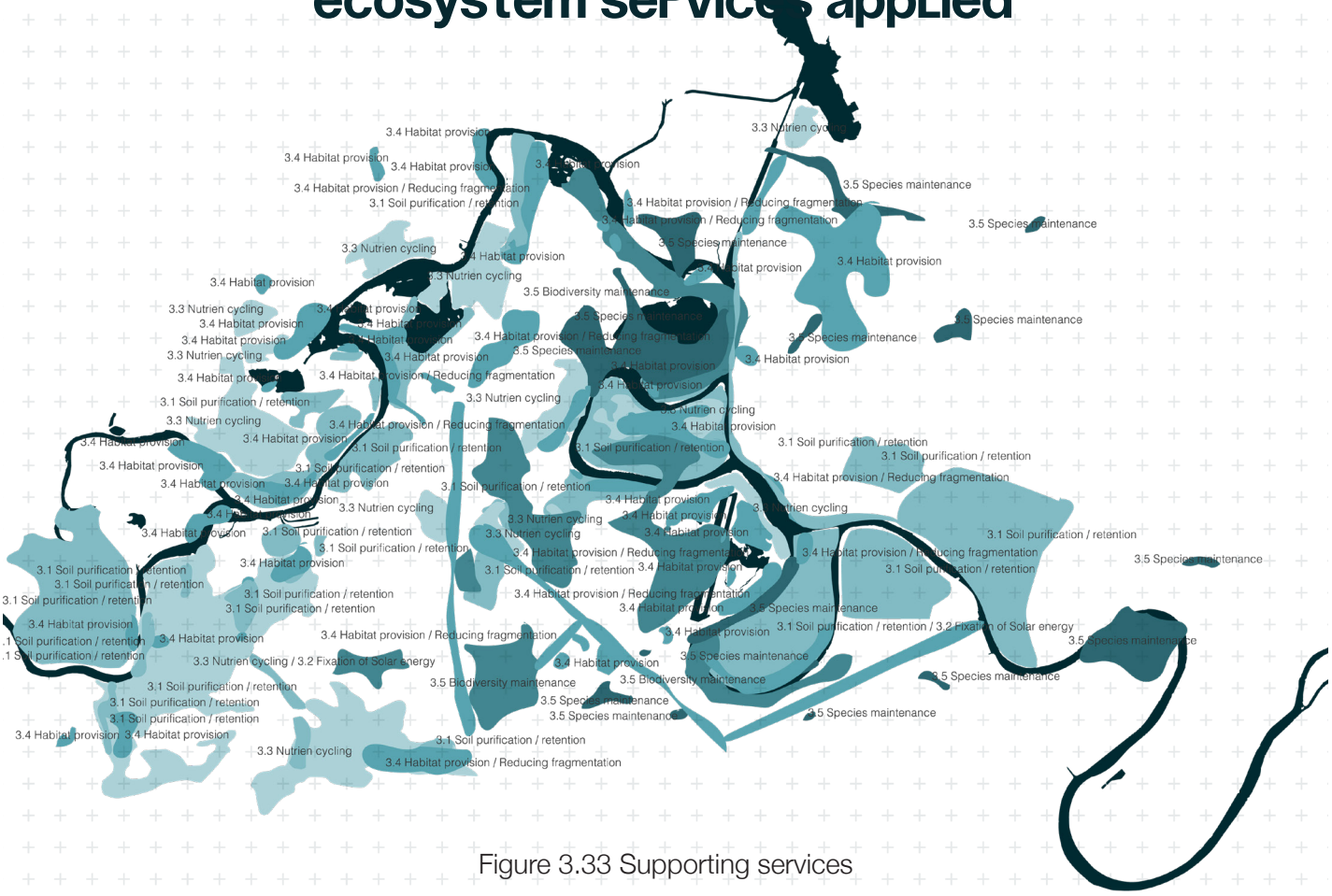


Figure 3.33 Supporting services

Figure 3.34 Regulating services

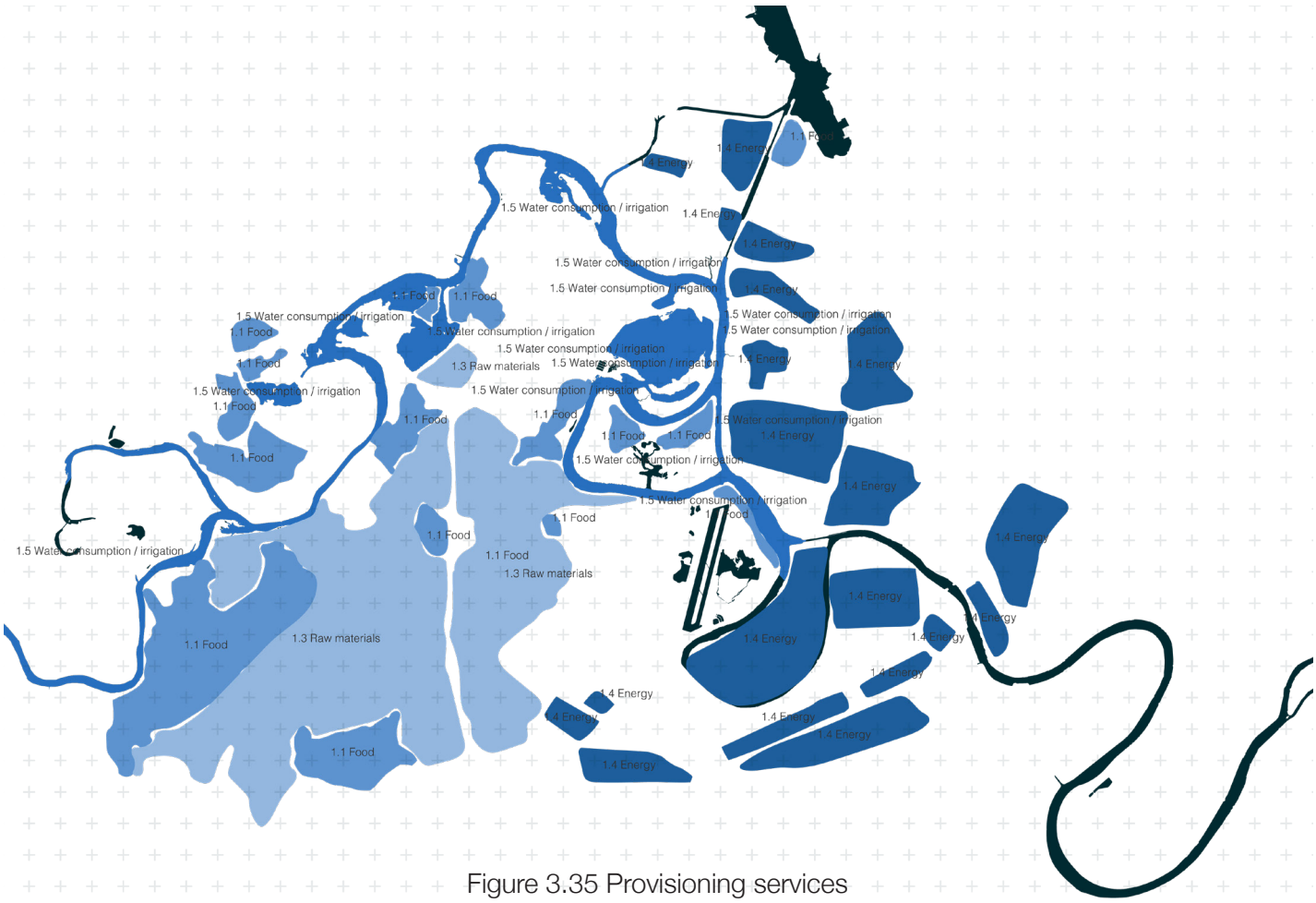


Figure 3.35 Provisioning services

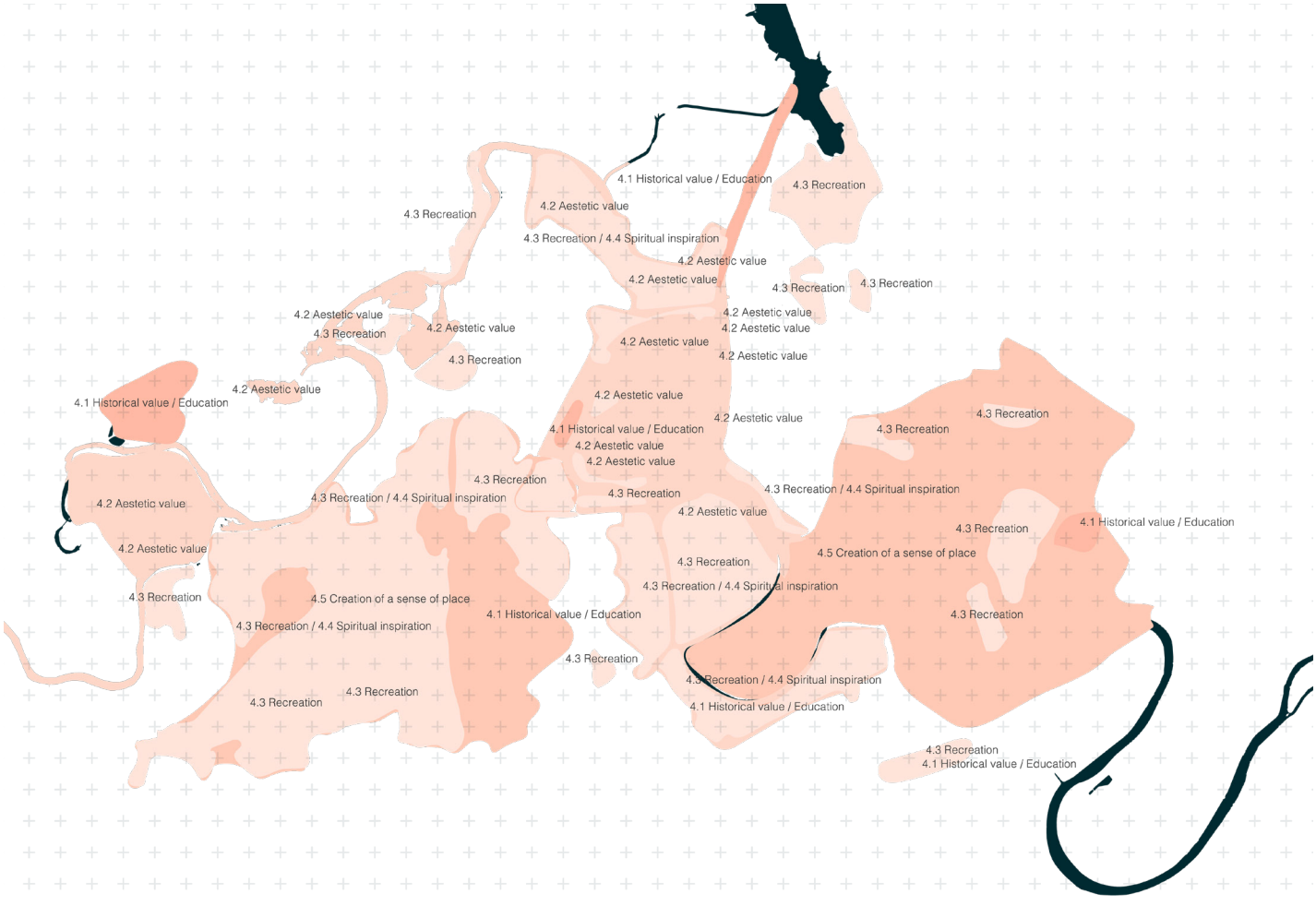


Figure 3.36 Cultural services

ecosystem services applied

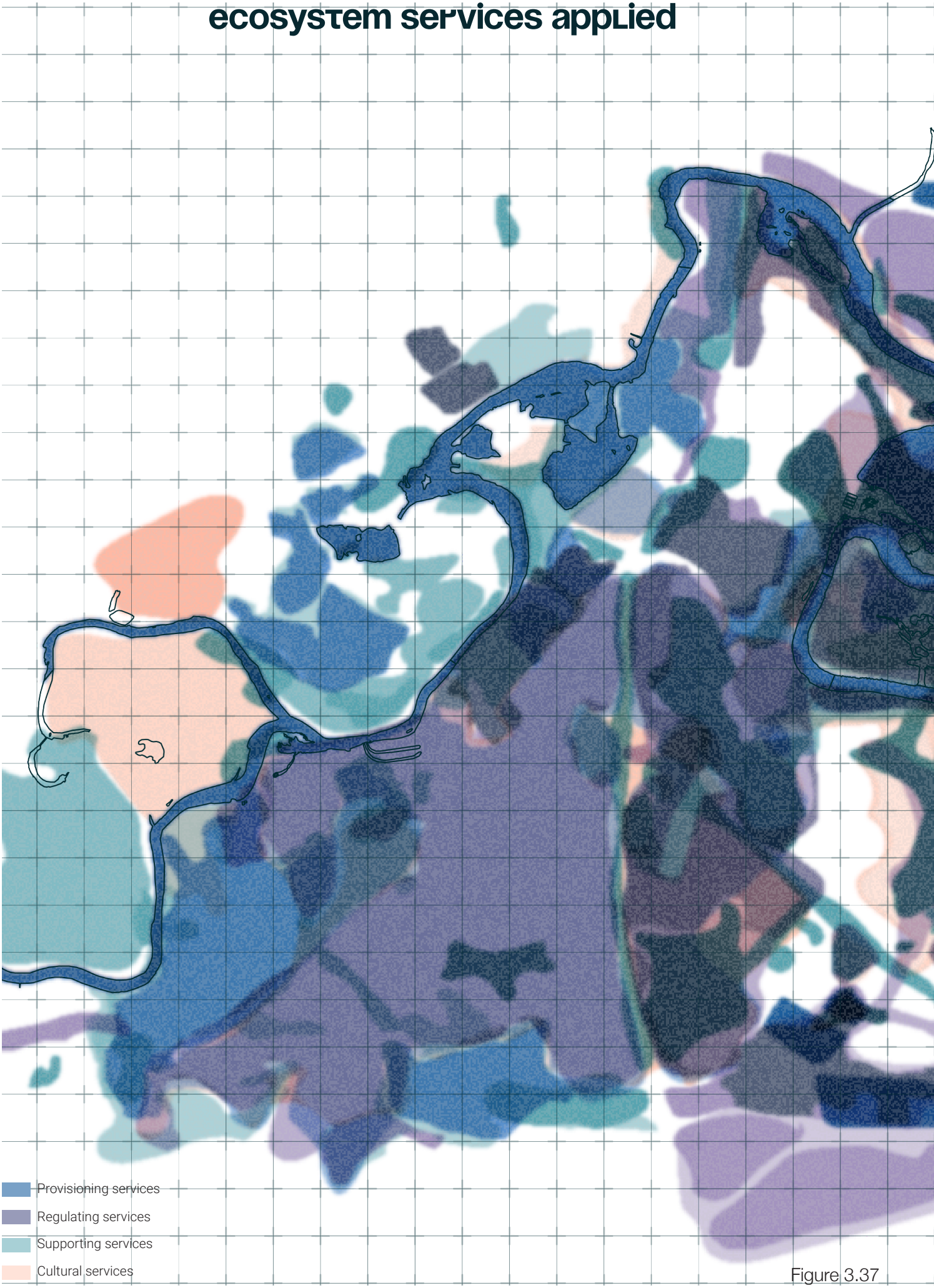
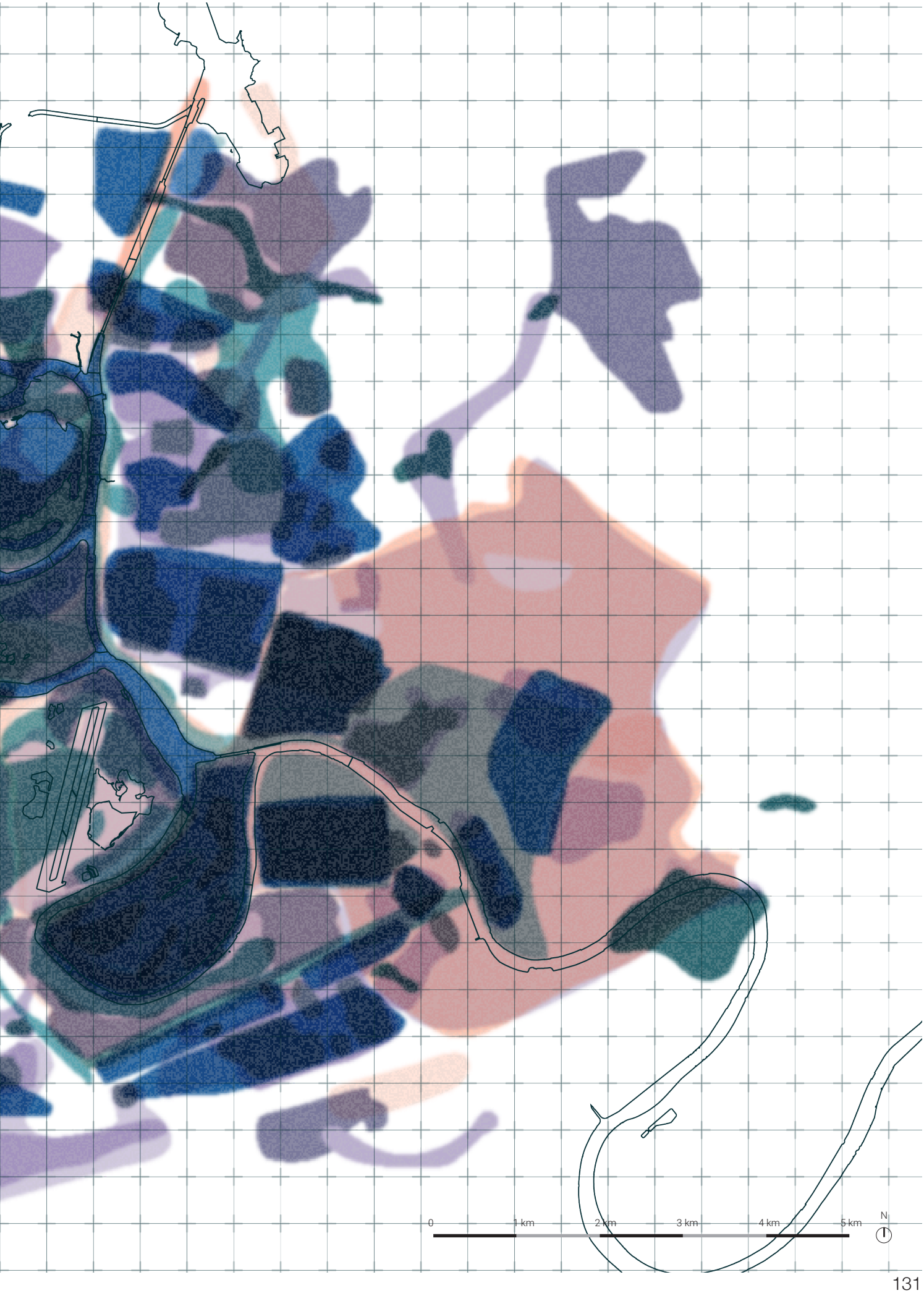


Figure 3.37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analysis of ecosystem service overlaps

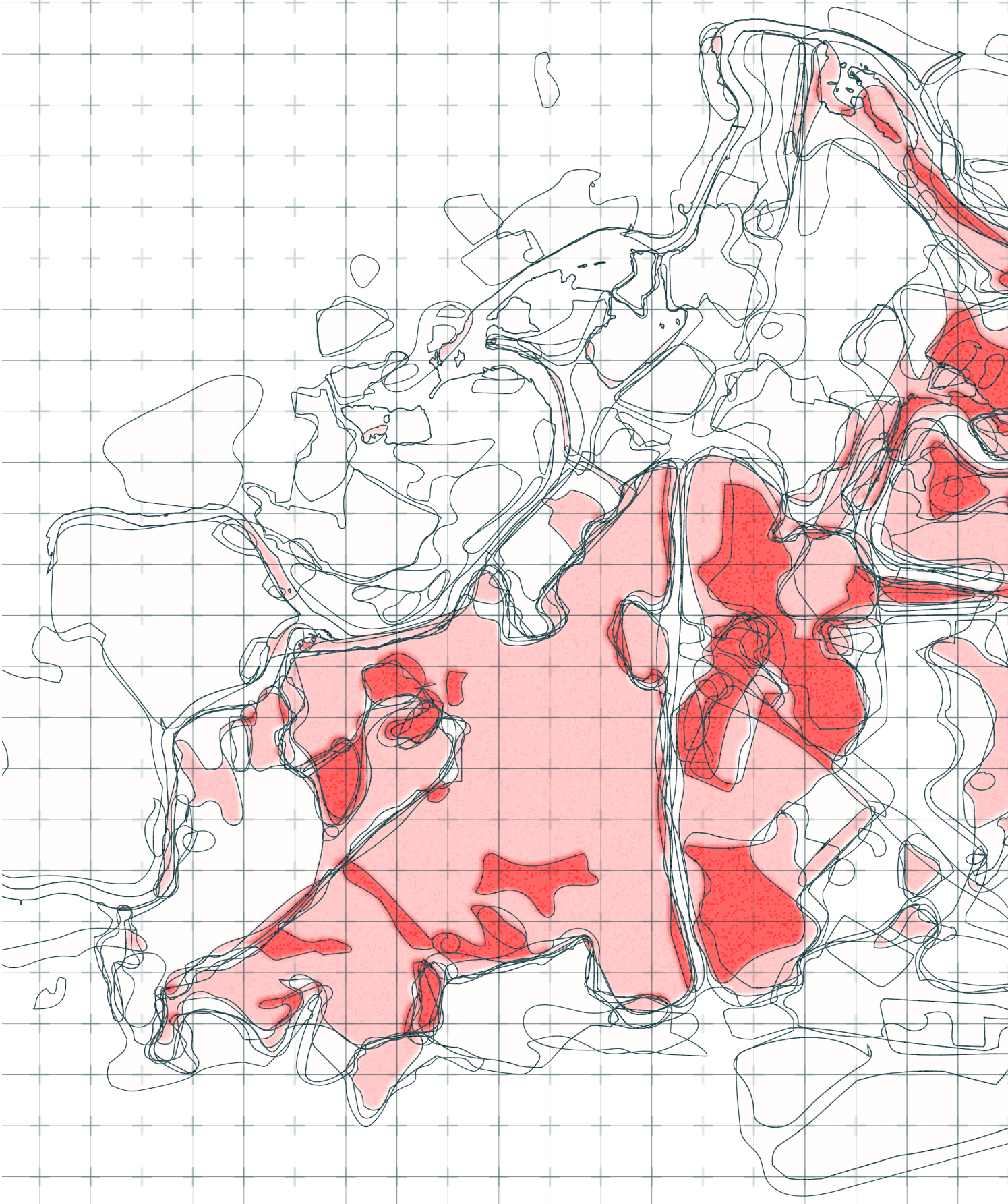
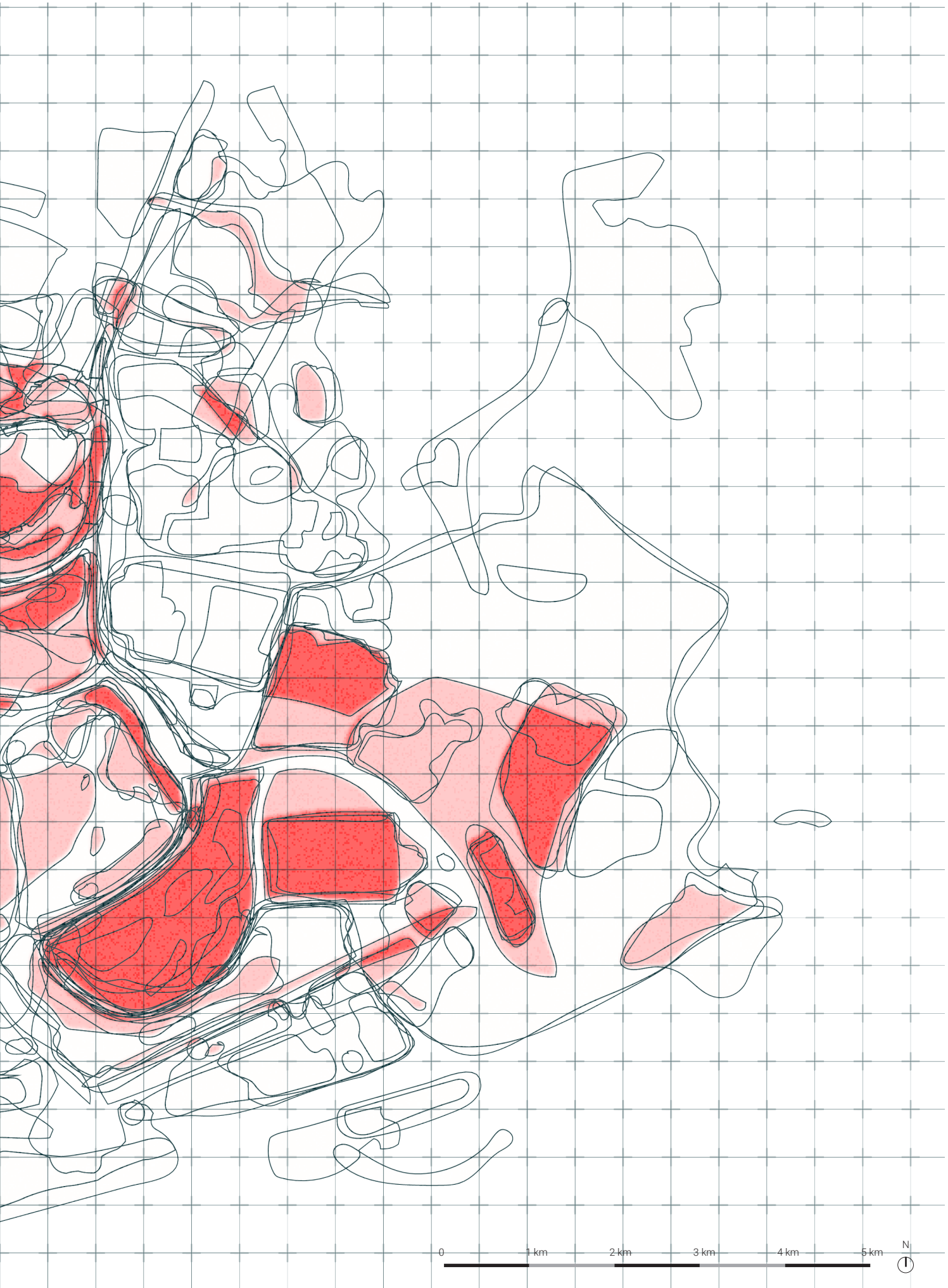


Figure 3.38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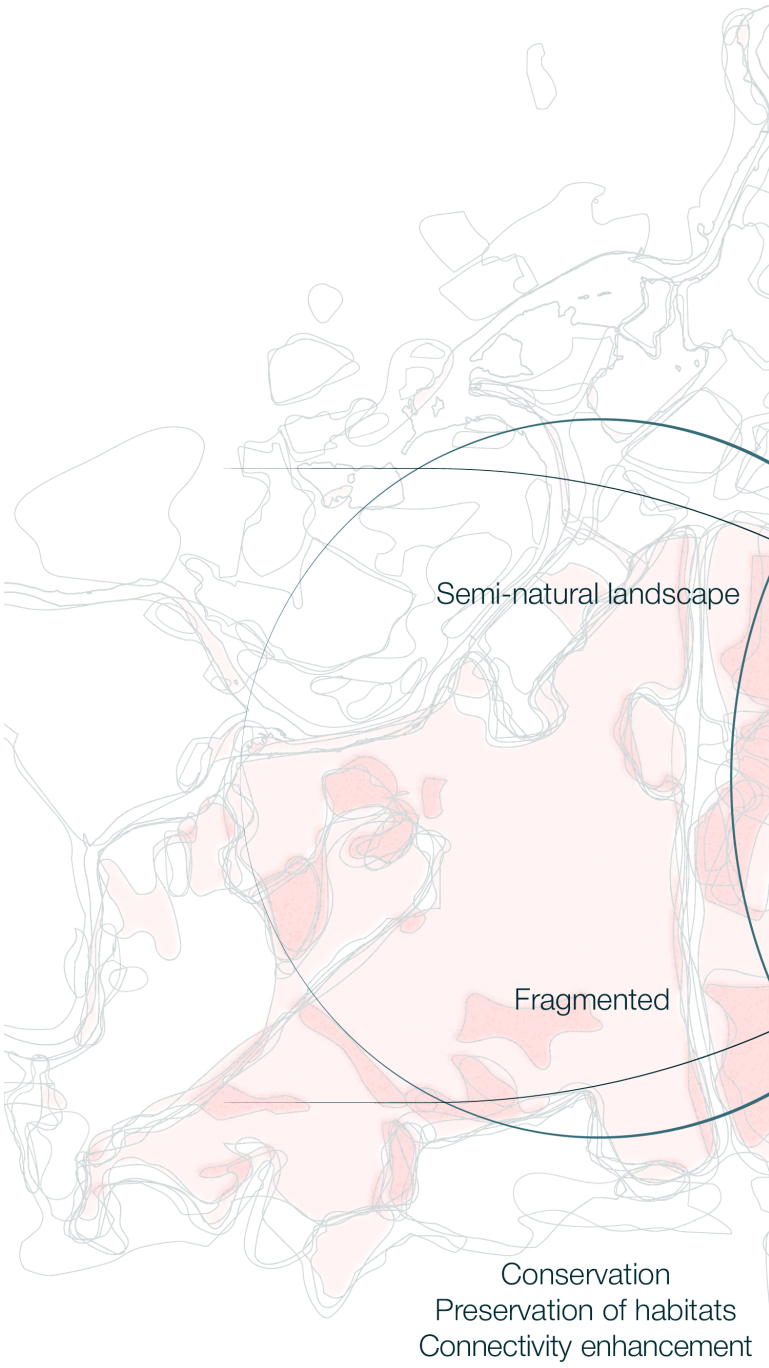
4 km
5 km
N

synthesis diagram

This diagram positions the study territory within a broader spatial and ecological gradient. Three overlapping zones define the landscape: the semi-natural landscape of the Moscow Region to the left — fragmented but ecologically significant; the dense urban fabric of central Moscow to the right; and the peri-urban in-between zone at the centre — the primary focus of this project. The two axes reveal the underlying tension. Moving toward the urban end, human well-being indicators — access, amenity, density of services — increase. Moving in the same direction, environmental conditions decline. The in-between zone is where these two trajectories meet and compete most directly. Each zone calls for a different response. The semi-natural landscape requires conservation, habitat preservation, and connectivity enhancement. The peri-urban zone — where the Moskvoretsky Natural History Park sits — requires stabilisation, systematisation, and integration of urban and ecological systems. The dense urban zone requires the introduction of sustainable practices, system reconfiguration, and the deliberate creation of spaces for nature within the city fabric.



Human well-being
Peri-urban
Urban
In-between
Dense
Environmental decline
Stabilization
Systematization
Integration
Sustainable practices
System reconfiguration
Spaces for nature

Figure 3.39

a new boundary: the buffer as a space for dialogue

The analysis of the territory reveals that the existing administrative boundaries of the Moskvoretsky Natural History Park — cadastral, legal, and planning — do not reflect the real spatial geometry of what they are meant to protect. These boundaries are formal in character and frequently acquire liminal qualities: they become zones of undefined programming and conflicting interests, negatively affecting both the condition of the protected area and the quality of the surrounding urban environment.

The response to this problem is the introduction of a new boundary typology — a buffer zone established from the actual ecological core of the protected area outward. The first step is to identify the real boundaries of the forest core, and from these to define a new buffer. The scale and character of this buffer will vary significantly depending on context and surroundings — which is precisely why the new boundary has its own typology.

The central idea of the new boundary is to create a space for dialogue and collaboration between the protected area and the city. Its primary function is the protection of the core. At the same time, it is a territory where urban actors are required to discuss alternatives and negotiate development scenarios. New rules apply here: any increase in pressure on the protected area requires mandatory compensation or the abandonment of construction. In this way the new boundary becomes an instrument for introducing a new approach to design and urban development — one more attuned to ecological needs and natural cycles. Ultimately it is intended as a starting point for broader urban transformation — one in which nature ceases to be a residual category and becomes a structuring element of the city.

The boundary typology is grounded in the analysis of the territory and the specific characteristics of each of its sections. Four primary zones have been identified:

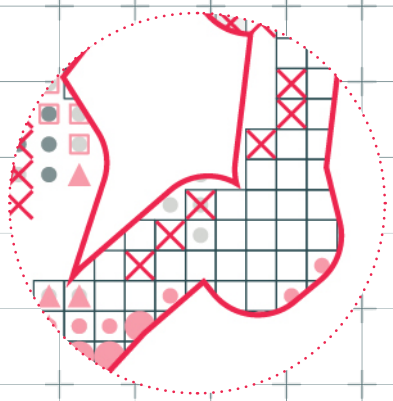
1. Residential clusters within a natural environment — cottage settlements and dacha communities surrounded by forest
2. Urban infrastructure at the boundary with nature — MKAD, industrial and warehouse zones
3. Zones in transformation — residential areas designated for renewal, with an established natural environment closely connected to the protected area
4. Large-scale redevelopment — the Bigger City project and the vector of urban development toward the city centre

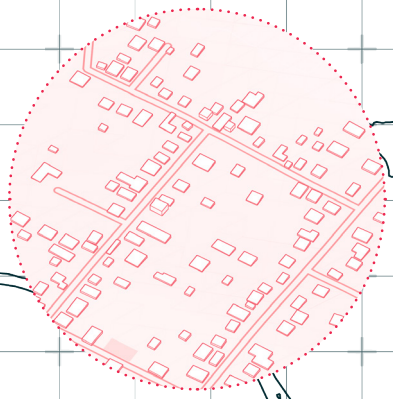
Each of these zones requires its own buffer model and its own approach to governance — which defines the structure of all subsequent design proposals.

Figure 3.40 Krylatskiye Holmy Park

preliminary boundary typology

Typology example 1
Individual housing + big forest cores

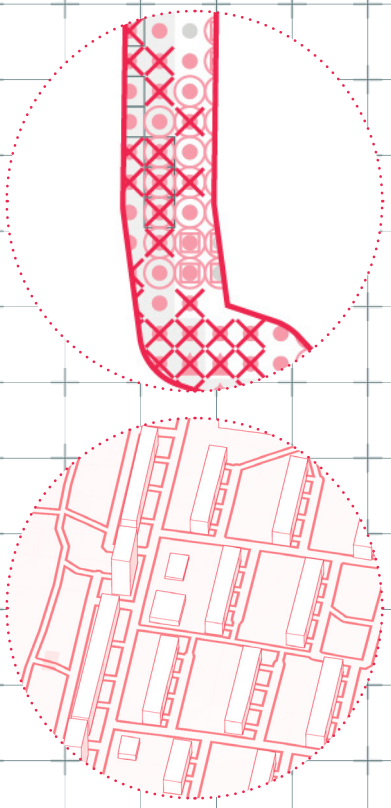




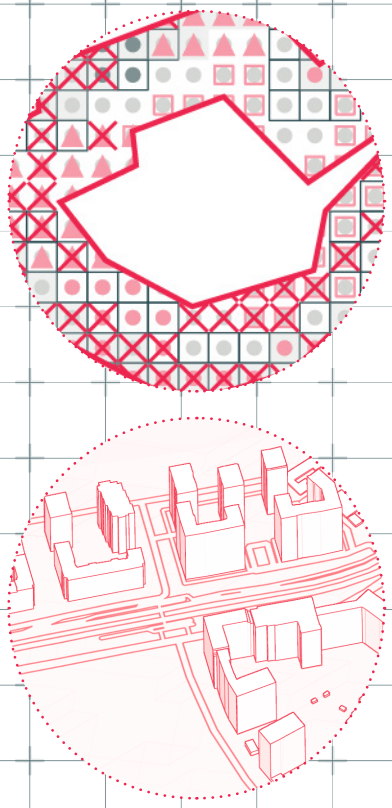
Typology 1

Figure 3.41

Typology example 2
Apartment blocks + smaller landscape patches



Typology example 3
New construction / Brown fields + smaller landscape patches



Typology 2

Typology 3

0 1 km 2 km 3 km 4 km 5 km N

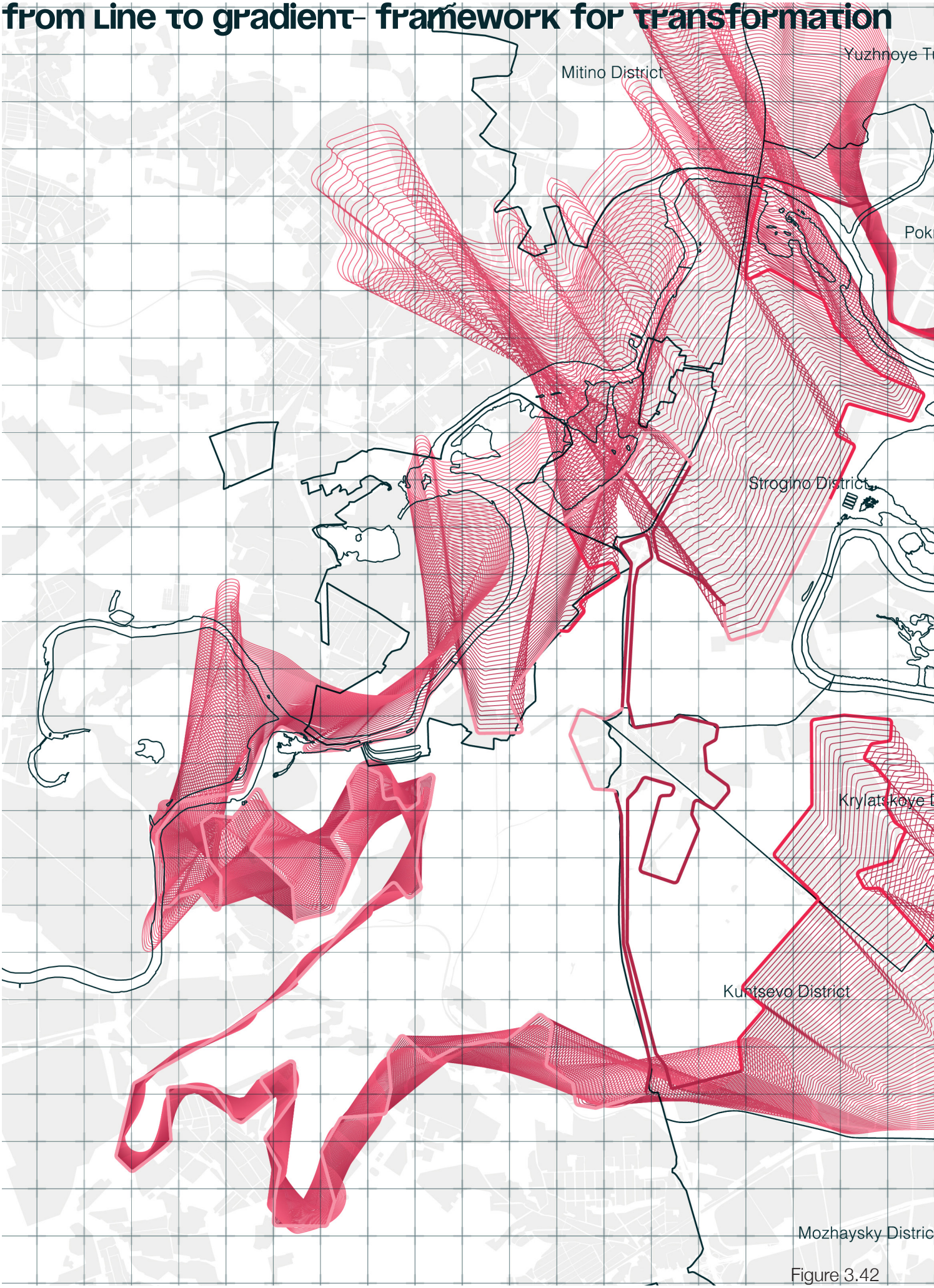
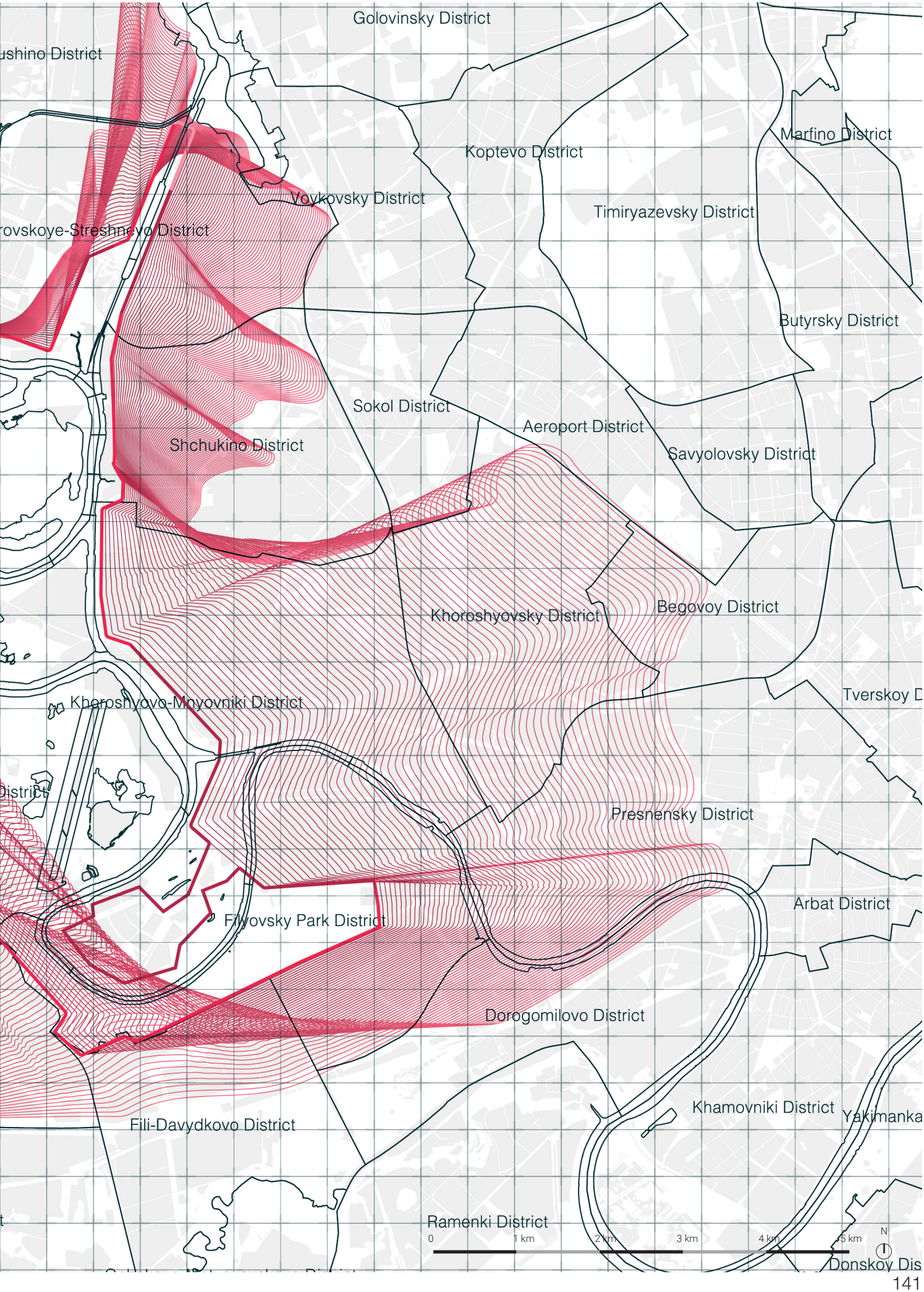


Figure 3.42


Golovinsky District
ushino District
Koptevo District
Marfino District
Voykovsky District
Timiryazevsky District
rovskoye-Streshnevo District
Butyrsky District
Sokol District
Aeroport District
Shchukino District
Savyolovsky District
Khoroshyovsky District
Begovoy District
Tverskoy D
Kheroshyovo-Mnyovniki District
Presnensky District
Arbat District
Filyovsky Park District
Dorogomilovo District
Khamovniki District
Yakimanka
Fili-Davydkovo District
Ramenki District
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Donskoy Dis

Boundary typology strategy

As a rule, the boundaries of protected natural areas exist as lines — administrative, cadastral, legal. But a line as a conceptual instrument is incapable of expressing the complex interaction between the social and the ecological that lies at the heart of this project. If we want the boundary to become a space for dialogue, collaboration, and transformation — it must acquire spatial expression.

This is why the line becomes a gradient, and the gradient becomes a buffer zone. This buffer zone is not uniform: its width, character, and spatial expression are always determined by context. In some places it is wider, in others narrower. In some places it encompasses existing infrastructure. In some places it presses tightly against the built fabric, in others it dissolves into the natural landscape. This is not determined arbitrarily — but on the basis of analysis: the condition of green patches, ecosystem services, the character of adjacent development, local communities and their capacities.

It is precisely this analysis that forms the basis of the typology. First, a conceptual gradient was established. Then it became a single ring around the entire study territory. Then, drawing on all the accumulated analytical material, this ring was divided into four typologies — each with its own theme, its own character, and its own design challenges:

Nature Enclave — clusters of development within a natural environment

Hard Edge — urban infrastructure at the boundary with nature

Legacy Canopy — zones in transformation with an established natural environment

Window of Opportunity — large-scale redevelopment and the vector toward the city centre

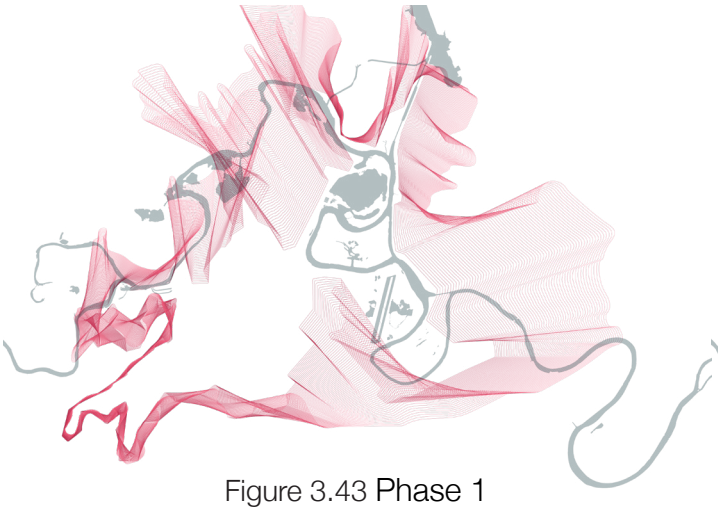

Figure 3.43 Phase 1

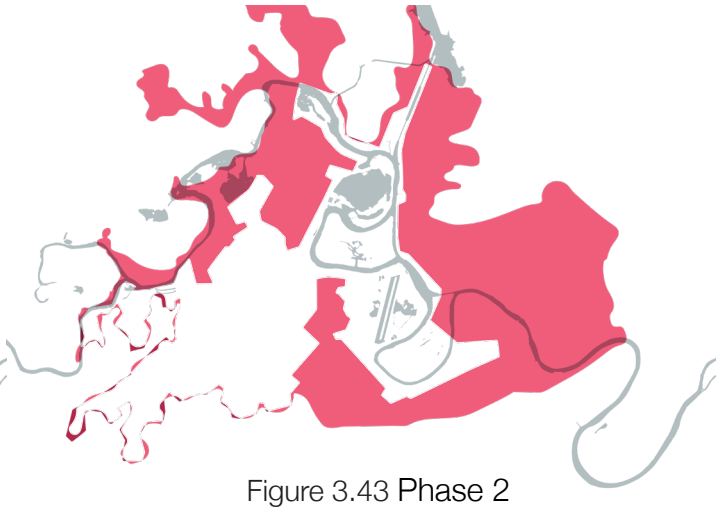

Figure 3.43 Phase 2

Each typology has clearly defined characteristics that read well visually. At the same time, each typology contains subtypes. For example, within Nature Enclave three distinct cluster types can be identified: a forest settlement — cottage development within a natural environment; a cultural and historical object — the Arkhangelskoye Estate; and an economic cluster — the SberCity project. All three are surrounded by nature, but each requires its own approach. An equivalent internal differentiation exists within all four typologies.

Within this project, the most characteristic examples have been selected for deeper examination — one fragment per typology. Once the themes and characteristics of each typology were defined, the boundaries were refined and detailed. The result is the final boundary typology diagram.

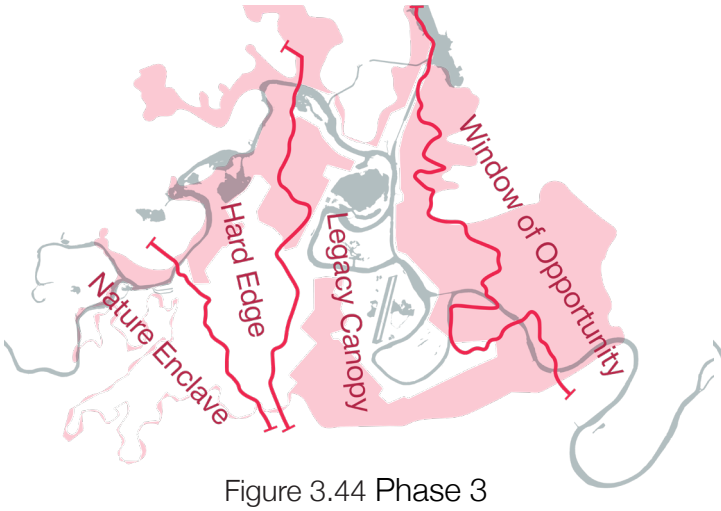

Figure 3.44 Phase 3

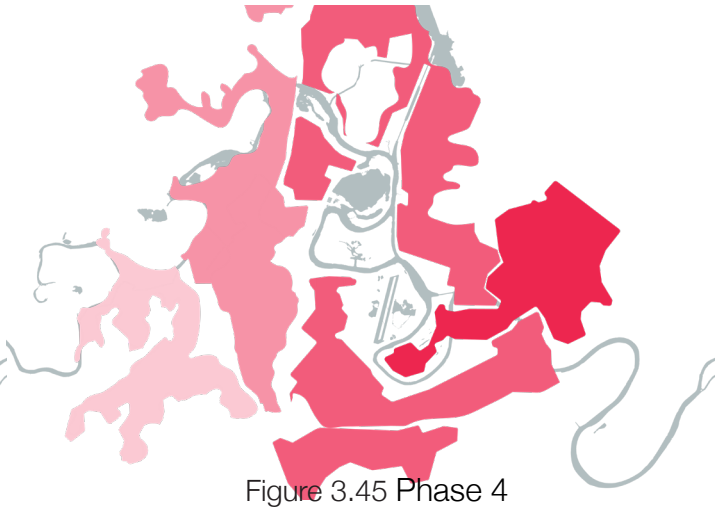

Figure 3.45 Phase 4

SPNA governance and local community participation strategy

The Problem

The governance of Moscow's protected areas is structurally top-down. The system — inherited from Soviet-era land nationalisation and consolidated in the mid-1990s — concentrates all decision-making authority in city and regional structures, with no formal mechanisms for local community participation. This is not incidental: it is the design of the system. And it is precisely this design that underlies the fragmentation, conflict, and ecological degradation observed at protected area boundaries.

The Theoretical Framework

Three theoretical frameworks structure the analysis:

Hardin's Tragedy of the Commons (1968) provides the starting point: the logic that shared resources require external control — either state regulation or privatisation — underpins most protected area governance globally, including in Moscow.

Ostrom's Governing the Commons (1990) empirically refutes this. Local communities can sustainably manage shared resources if given the right institutional conditions. Her eight principles of sustainable governance directly contradict the centralised model — particularly the requirements that rules correspond to local conditions, that affected communities participate in rule-making, and that external authorities recognise the community's right to self-organise.

Arnstein's Ladder of Participation (1969) provides the diagnostic tool: a typology distinguishing symbolic from substantive participation. Applied to Moskvoretsky, the evidence places existing mechanisms at the lower rungs — formal consultation without binding influence.

Together, these frameworks reveal not just a governance failure but a structural one: the system is designed to exclude.

Rights of Nature

Both Ostrom and Arnstein remain anthropocentric — nature is still an object of governance. The Rights of Nature framework *(Stone, 1972; Whanganui River precedent, 2017)* shifts the question: not who controls the resource, but who represents nature's interests. This reframes community participation — residents become not users but stewards and legal representatives of the natural environment they live alongside.

Diagnostic Analysis

The park is governed through a single vertical chain — Moscow City Government > Department of Nature Management > Mospriroda — with no institutional entry points for communities.

Cases* from 2024–2025 confirm the diagnosis: residents proposals were ignored in the Strogino landscaping works; permits for construction machinery were issued in violation of environmental law by the very body charged with enforcement; the only successful intervention — cancellation of a planned toll road — came through public protest, not through any participation mechanism.

Differentiated Co-management

The central argument is that governance models must follow the territory. Four typologies require four different models:

Typology 1 — Nature Enclave: Stewardship model. Residents take on monitoring and maintenance in exchange for formal rights and shared infrastructure. Precedents: Loch Arkaig (Scotland), Sletten (Denmark).

Typology 2 — Hard Edge: Regulated obligations model. Governance remains centralised but formalised accountability to nature and residents is mandated.

Typology 3 — Legacy Canopy: Embedded obligations model. Ecological responsibility built into community formation from the outset.

Precedent: Vauban, Freiburg.

Typology 4 — Window of Opportunity Large-scale redevelopment: Institutional partnership model. Ecological obligations embedded into investment decisions. Precedents: Clever Cities, Tempelhof (Berlin).

Conclusion

The governance model must follow the territory, not the other way around. Design acts as the instrument of institutionalisation — making typological differences visible, creating spatial conditions for participation, and embedding stewardship into the physical environment. Communities become not users of a protected territory but its representatives.

*Москвич Mag. (2025, February 24). Жители Щукино добились отмены строительства трассы через Москворецкий парк и пляжи Москвы-реки. https://moskvichmag.ru/gorod/zhiteli-shhukino-dobilis-otmeny-stroitelstva-trassy-cherez-moskvoretskij-park-i-plyazhi-moskvy-reki/

*МСК1.ру. (2024, August 1). Жители северо-запада Москвы выступили против строительства платной трассы над Москвой-рекой. https://msk1.ru/text/gorod/2024/08/01/73903952/

*МСК1.ру. (2024, August 14). Почему жители Северо-Запада Москвы против строительства магистрали. https://msk1.ru/text/gorod/2024/08/14/73954298/

*Magistralinet.ru. (2024). Парки, а не платные магистрали! Жители СЗАО объединяют усилия для защиты ООПТ. https://magistralinet.ru

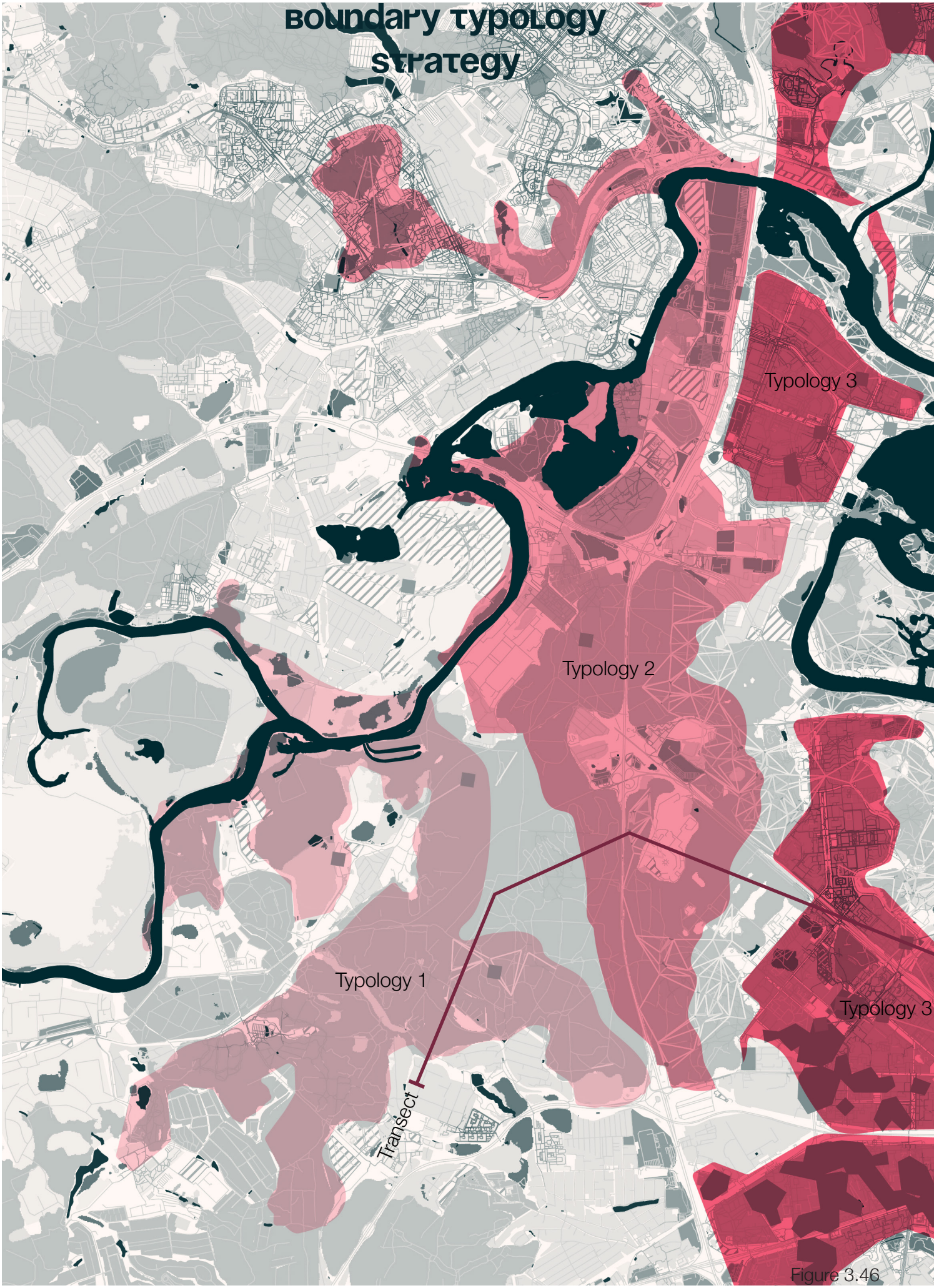
Boundary typology strategy
Typology 3
Typology 2
Typology 1
Typology 3
Transect

Figure 3.46

Typology 3
Typology 4
Transect
Transect
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1 km
2 km
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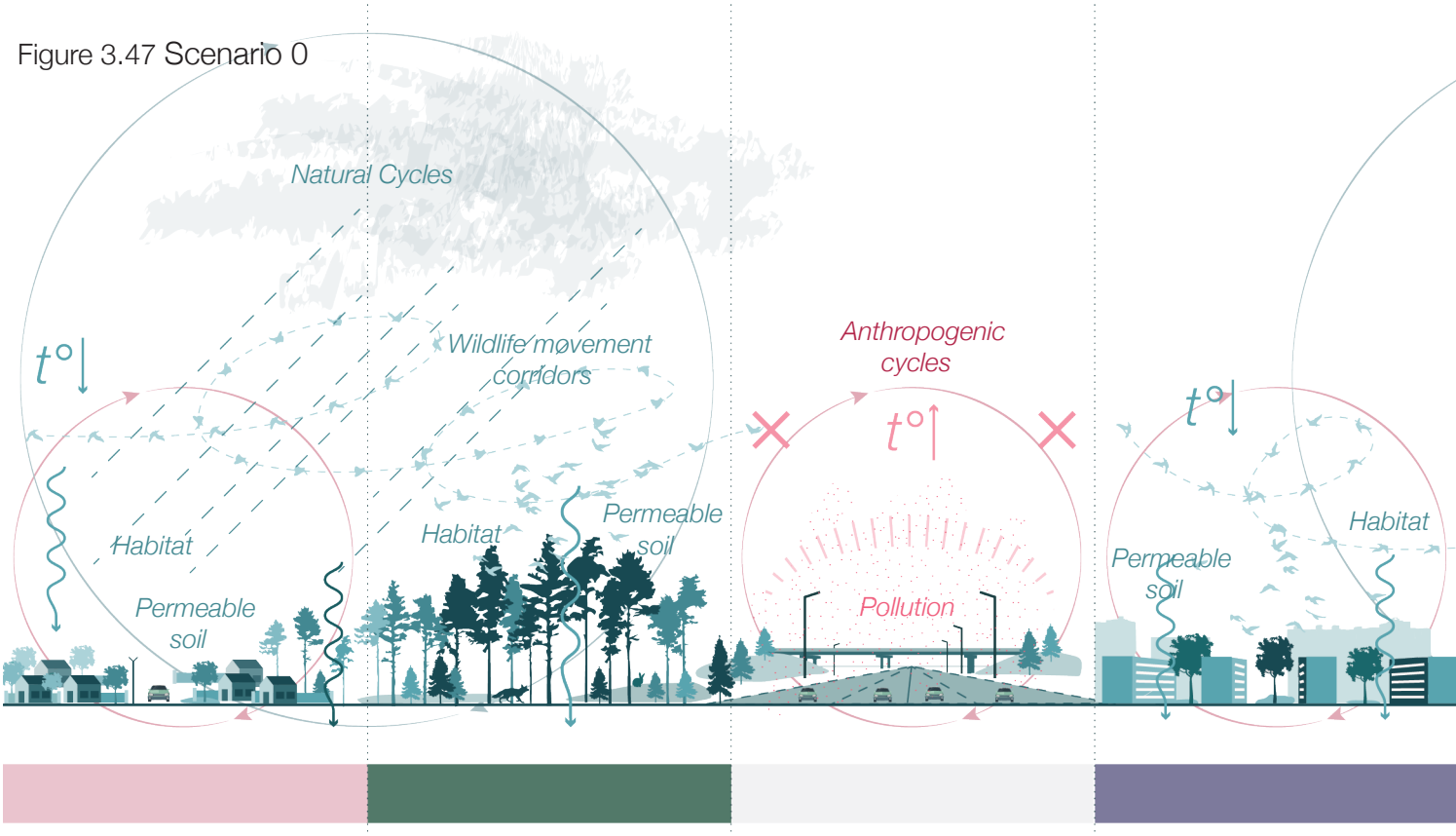
N

Figure 3.47 Scenario 0

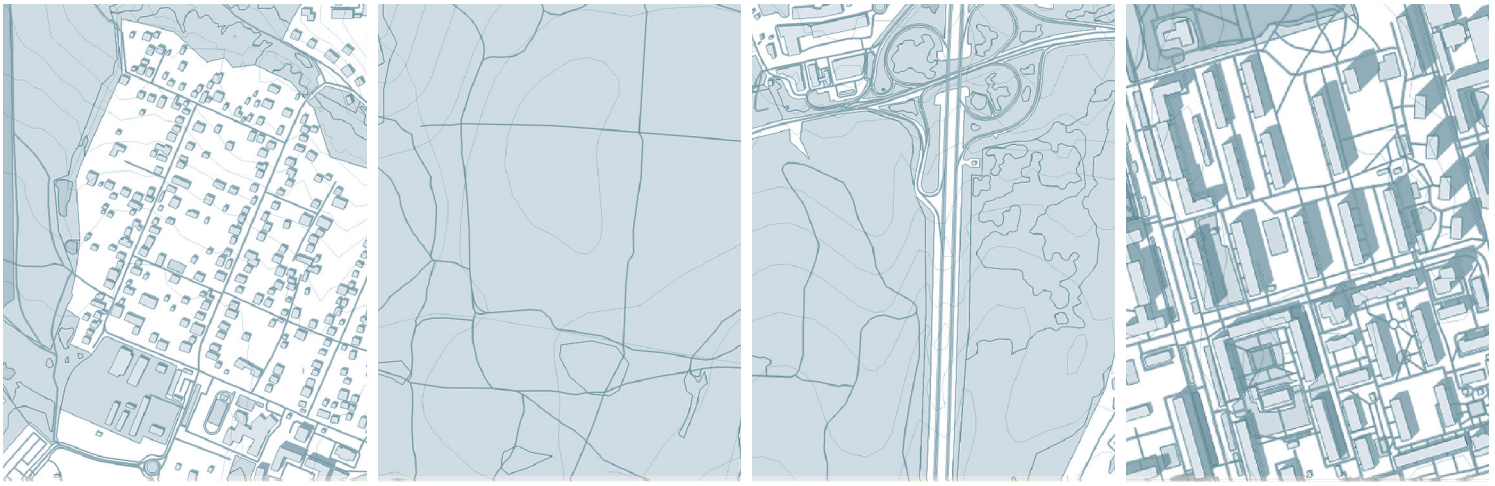


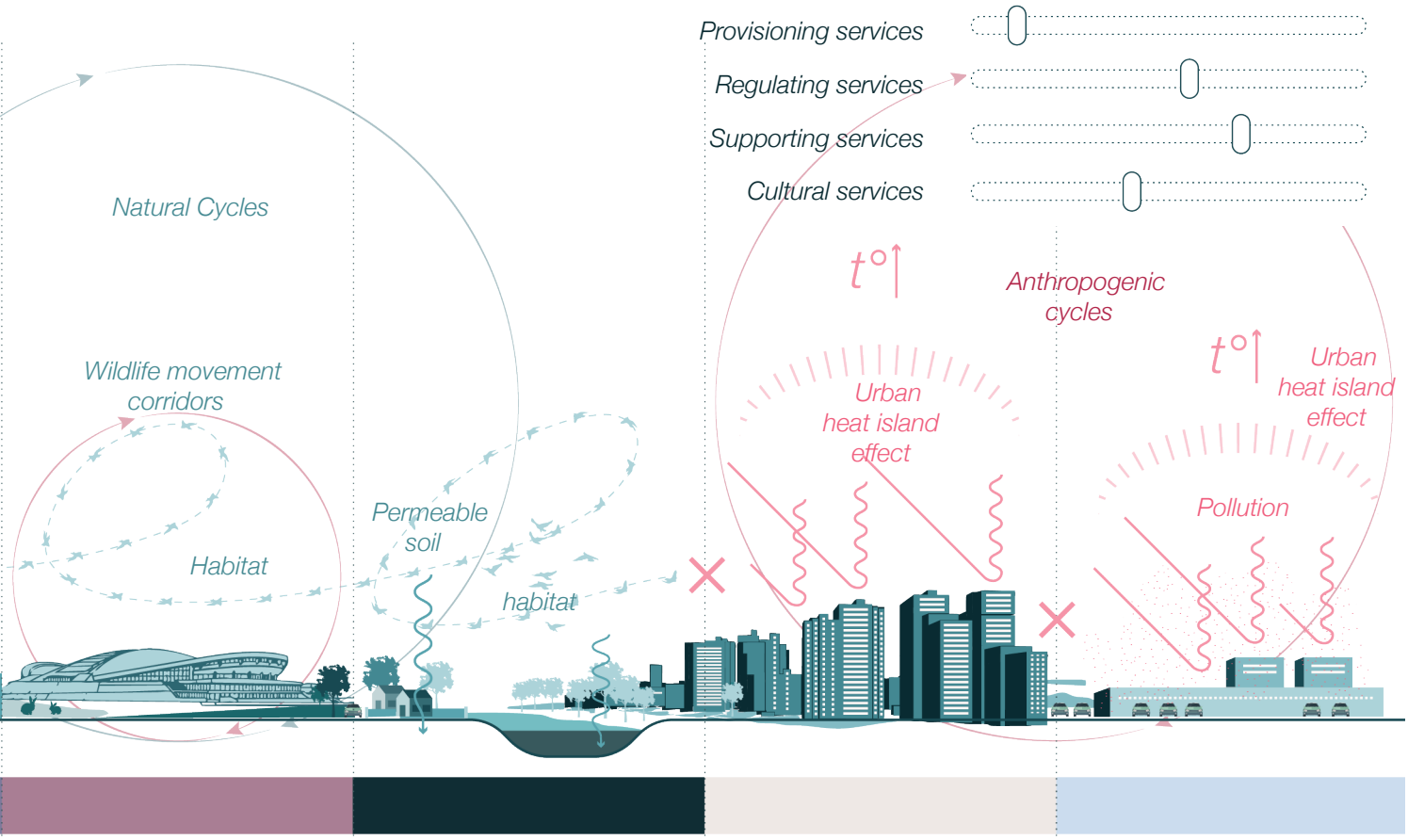
T1 – Low-rise residential within forest

T2 — Forest core

T3 — MKAD highway corridor

T4 — Residential renovation zone with mature greenery



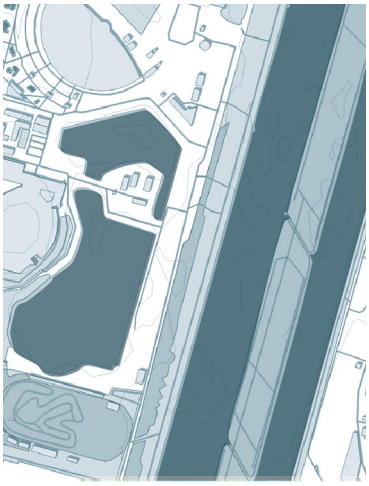


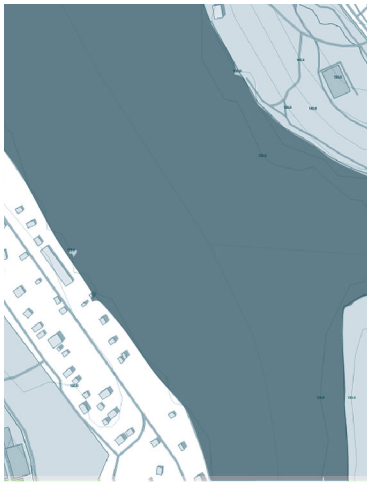
T5 — Protected area with major sports facilities

T6 — Riverside development and green space

T7 — High-rise riverfront residential

T8 — Industrial zone for Bigger City Project regeneration





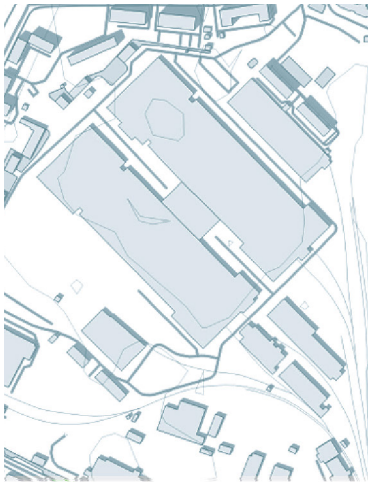
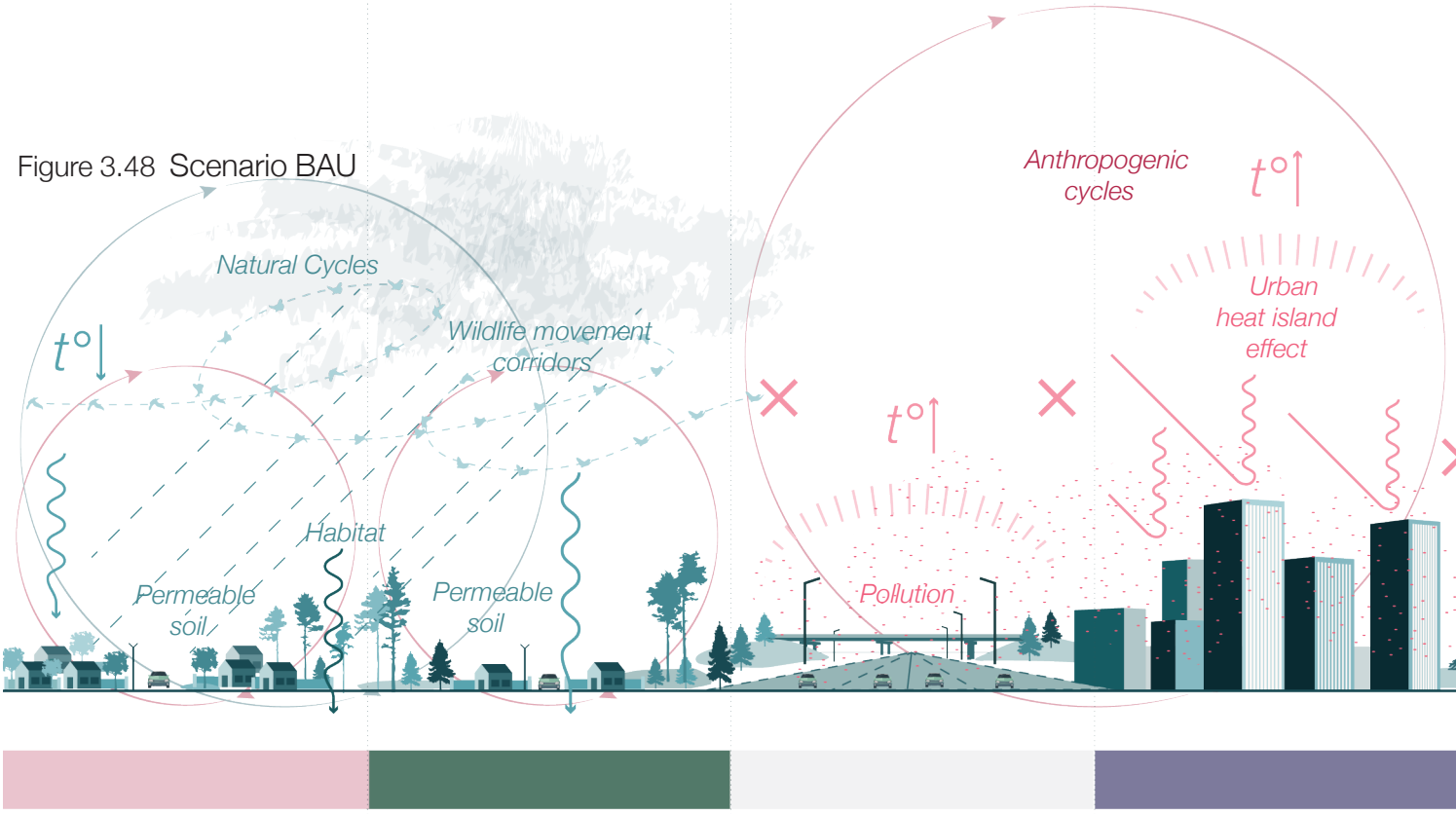
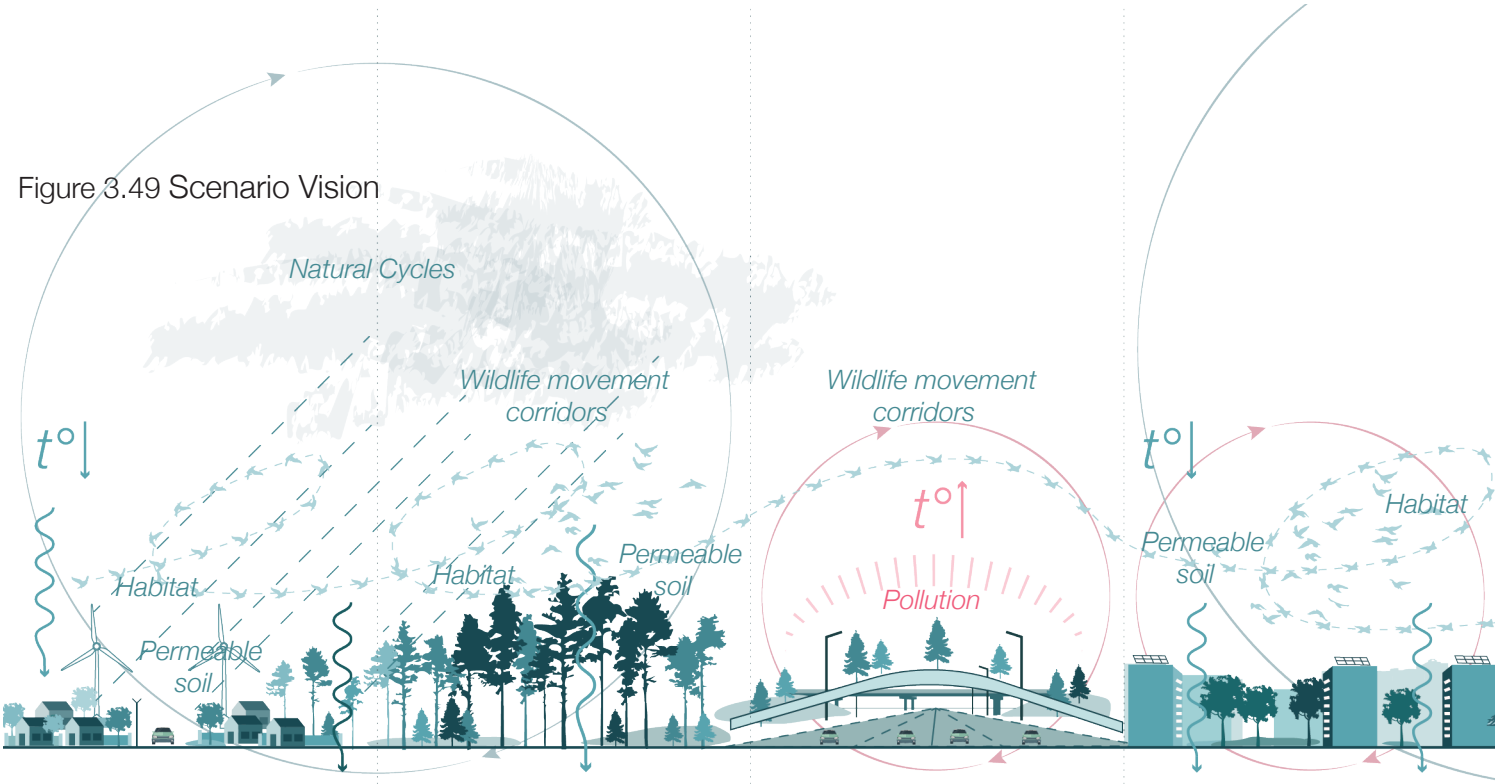


Figure 3.48 Scenario BAU

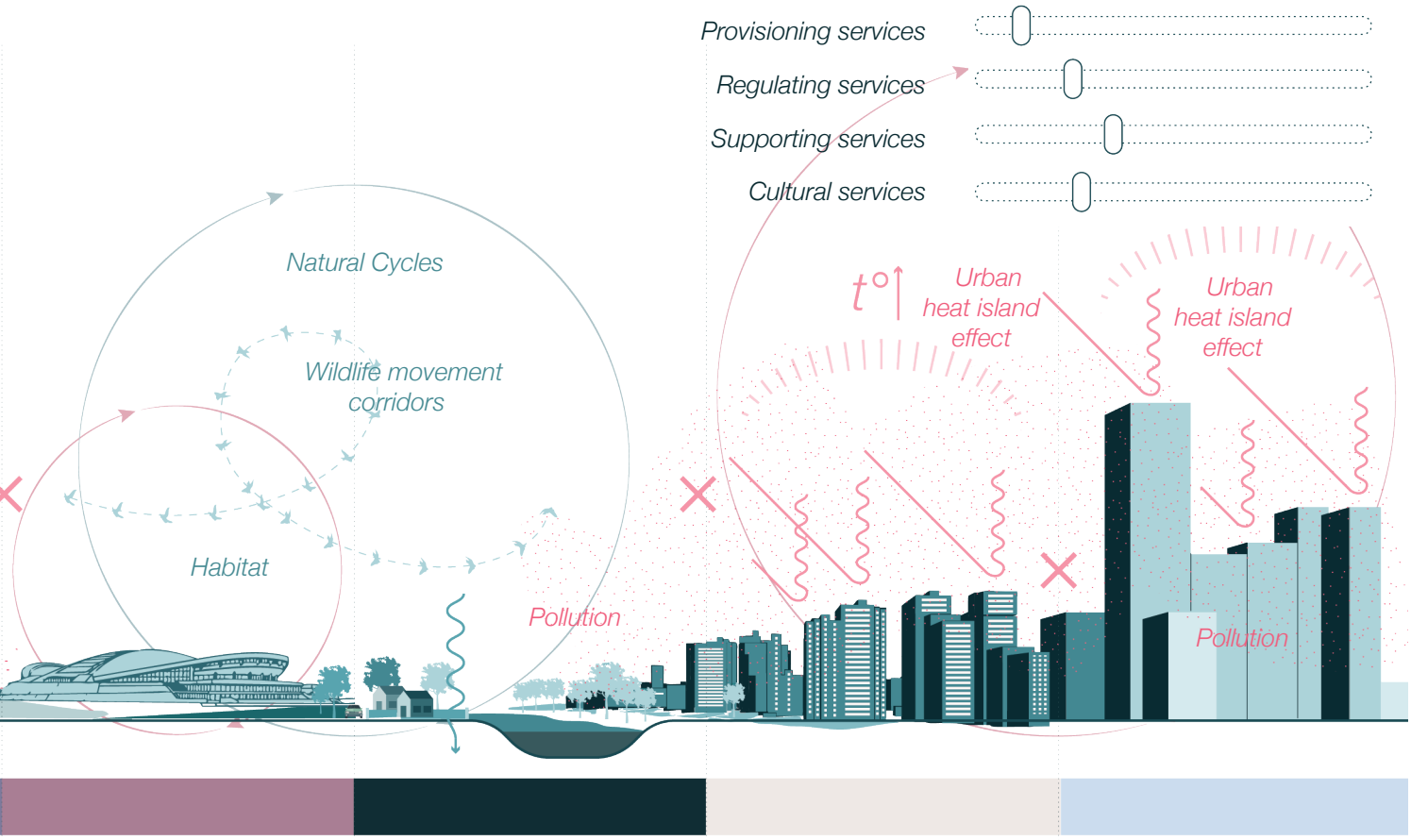


T1 – Low-rise residential within forest | T2 — Forest core | T3 — MKAD highway corridor | T4 — Residential renovation zone with mature greenery

Figure 3.49 Scenario Vision



T1 – Low-rise residential within forest | T2 — Forest core | T3 — MKAD highway corridor | T4 — Residential renovation zone with mature greenery

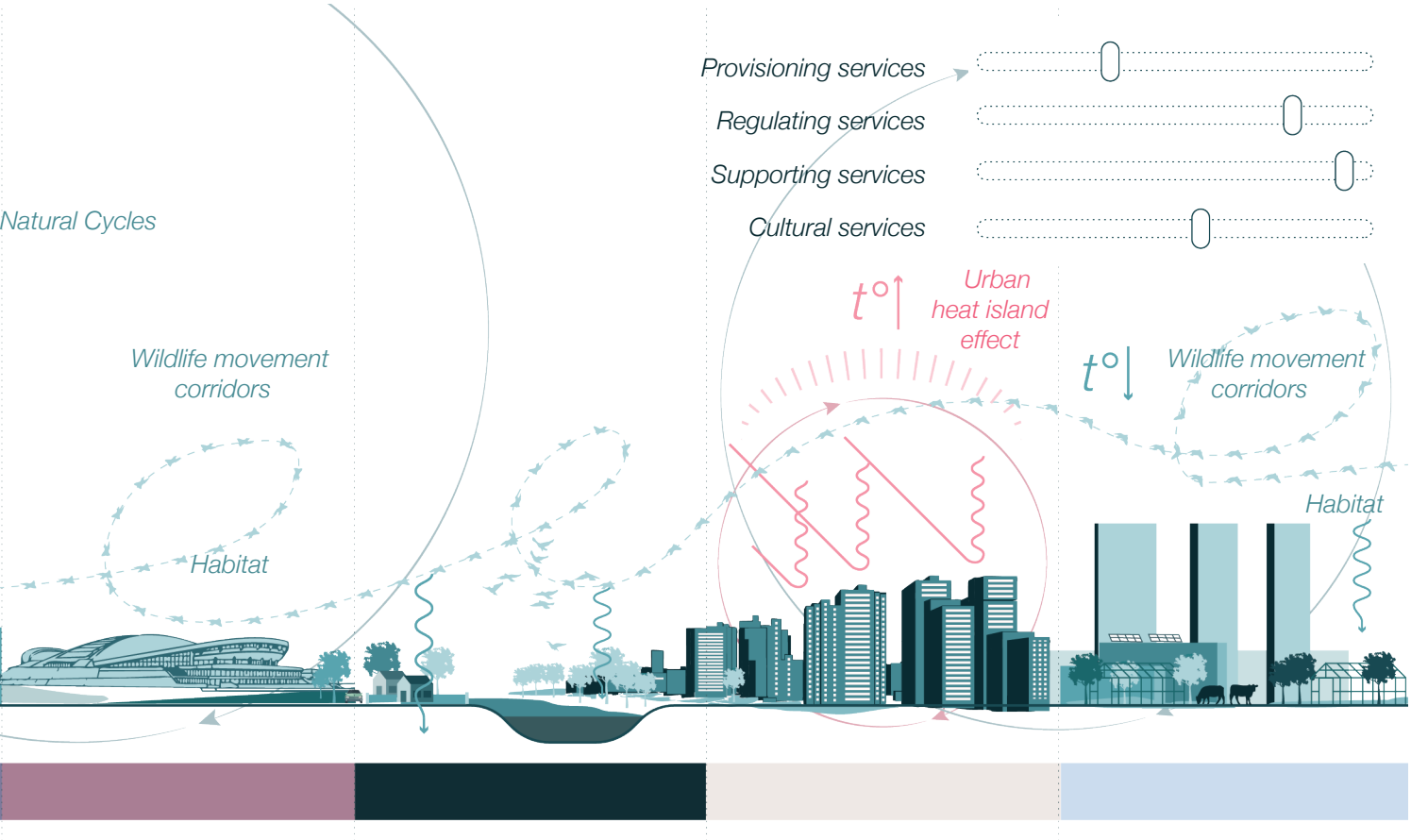


T5 — Protected area with major sports facilities

T6 — Riverside development and green space

T7 — High-rise riverfront residential

T8 — Industrial zone for Bigger City Project regeneration



T5 — Protected area with major sports facilities

T6 — Riverside development and green space

T7 — High-rise riverfront residential

T8 — Industrial zone for Bigger City Project regeneration

Risk and potential assessment across typologies

Figure 3.50

Belt Type 1

Risks:

Encroachment and new development leading to reduction and fragmentation of natural habitat. Declining resilience and regenerative capacity of natural biotopes. Loss of biodiversity. High recreational pressure as a popular destination for outdoor activity.

Potentials:

The largest remaining functioning natural core in the study area. Presence of an engaged local community providing a ready entry point for co-management. Strong attachment of residents to the natural environment. Strong sense of place and identity rooted in nature.

Belt Type 2

Risks:

Fragmentation of the natural environment, severing a large forest core into two smaller ones. Impassable barrier interrupting wildlife movement routes. Pollution of adjacent natural territories from road runoff, indus and contaminated drainage.

Potentials:

A single structural problem — the absence of ecological connectivity — that can be meaningfully resolved through targeted regulatory changes and precise spatial interventions. Addressing this one issue has the potential to significantly transform the ecological condition of the entire boundary.

Figure 3.51

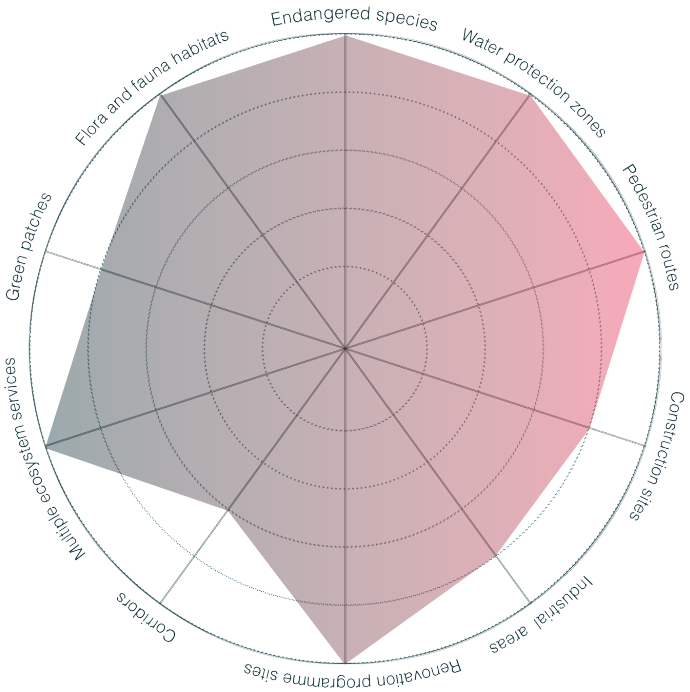
Belt Type 3

Risks:

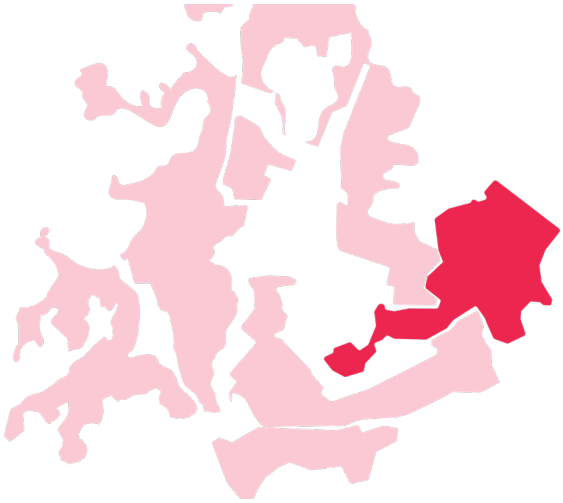
The existing natural environment is at risk of destruction during the renewal process. The adjacent protected area faces increased recreational and ecological pressure as population density rises after renewal. Wildlife movement routes — including bird corridors — risk permanent severance through standard renewal design.

Potentials:

A rare chance to embed ecological principles from the outset. Since most of the existing fabric will be demolished, existing problems can be corrected and the neighbourhood's relationship to the protected area redesigned from scratch.



Belt Type 4

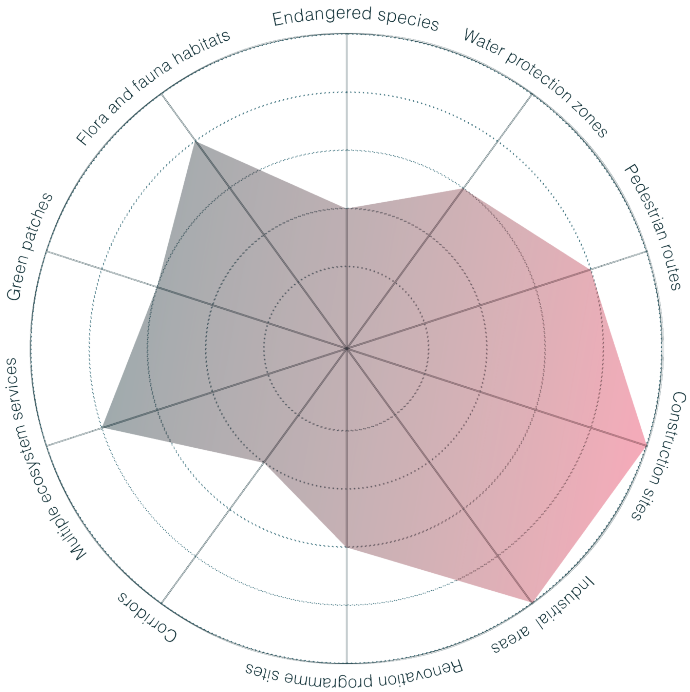


Risks:

Increased pressure on the adjacent protected area from higher development density and population growth, with no compensatory measures. Further sealing of the territory with impermeable surfaces. Contaminated brownfield soil left unaddressed.

Potentials:

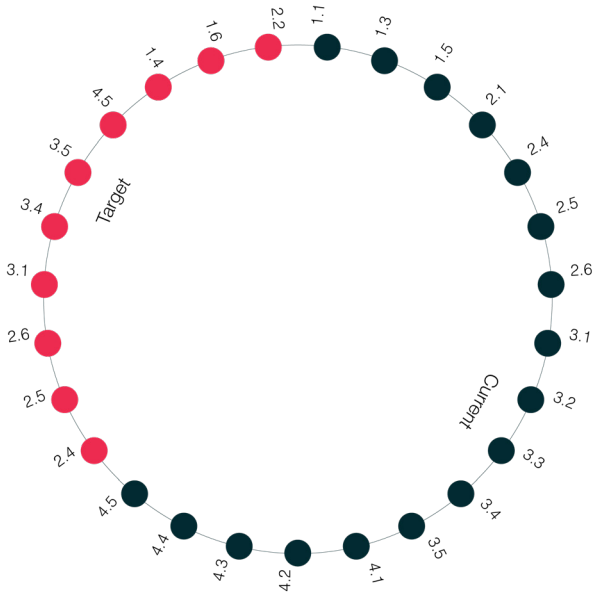
A rare chance to create something genuinely significant and unique at metropolitan scale — leveraging major institutional stakeholders, city resources, and the full potential of a large post-industrial territory. A unique opportunity to establish a new nature core almost in the centre of the city, connecting the existing protected area to the wider regional green network.



ecosystem services performance across typologies

Figure 3.52

Belt Type 1



Current situarion

1. Provisioning services
1.1 Food
1.3 Raw materials
1.5 Water consumption / irrigation

2. Regulating services
2.4 Prevention of disturbance
2.5 Decomposition / Waste removal
2.6 Purification

3. Supporting services
3.1 Soil purification / retention
3.2 Fixation of Solar energy
3.3 Nutrient cycling
3.4 Habitat provision / Reducing fragmentation
3.5 Biodiversity maintenance

4. Cultural services
4.1 Historical value / Education
4.2 Aesthetic value
4.3 Recreation
4.4 Spiritual inspiration
4.5 Creation of a sense of place

Target

Enhance:

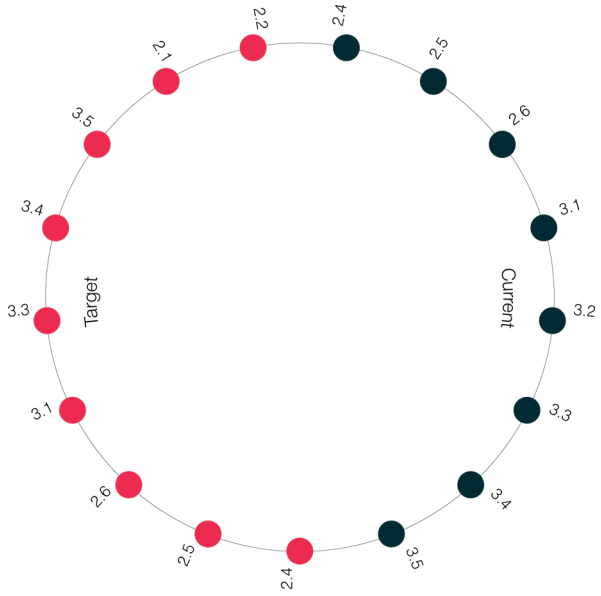
2. Regulating services &
3. Supporting services

Add:

1. Provisioning services
1.4 Fuel/Energy
1.6 Genetic information

2. Regulating services
2.1 Pollination and seed dispersal
2.2 Biological control

Belt Type 2



Current situarion

2. Regulating services
2.4 Prevention of disturbance
2.5 Decomposition / Waste removal
2.6 Purification

3. Supporting services
3.1 Soil purification / retention
3.2 Fixation of Solar energy
3.3 Nutrient cycling
3.4 Habitat provision / Reducing fragmentation
3.5 Biodiversity maintenance

Target

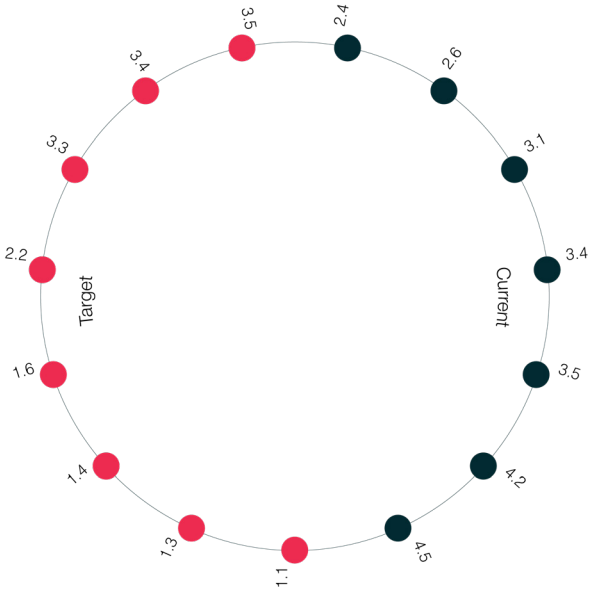
Enhance:

3. Supporting services
3.4 Habitat provision / Reducing fragmentation
3.5 Biodiversity maintenance

Add

2. Regulating services
2.1 Pollination and seed dispersal
2.2 Biological control

Belt Type 3



Current situarion

2. Regulating services

2.4 Prevention of disturbance

2.6 Purification

3. Supporting services

3.1 Soil purification / retention

3.4 Habitat provision / Reducing fragmentation

3.5 Biodiversity maintenance

4. Cultural services

4.2 Aesthetic value

4.5 Creation of a sense of place

Target

Enhance:

3. Supporting services

3.4 Habitat provision / Reducing fragmentation

3.5 Biodiversity maintenance

Add

1. Provisioning services

1.1 Food

1.3 Raw materials

1.4 Fuel/Energy

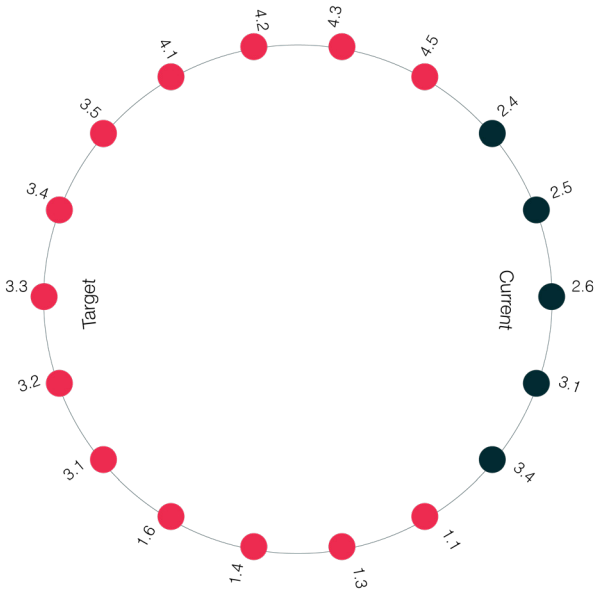
1.5 Water consumption / irrigation

1.6 Genetic information

3. Supporting services

3.3 Nutrient cycling

Belt Type 4



Current situarion

2. Regulating services

2.4 Prevention of disturbance

2.5 Decomposition / Waste removal

2.6 Purification

3. Supporting services

3.1 Soil purification / retention

3.4 Habitat provision / Reducing fragmentation

Target

Enhance:

3. Supporting services

Add

1. Provisioning services

1.1 Food

1.3 Raw materials

1.5 Water consumption / irrigation

3. Supporting services

3.1 Soil purification / retention

3.2 Fixation of Solar energy

3.3 Nutrient cycling

3.4 Habitat provision / Reducing fragmentation

3.5 Biodiversity maintenance

4. Cultural services

4.1 Education

4.2 Aesthetic value

4.3 Recreation

4.5 Creation of a sense of place

Belt 1
nature enclave

Description of Belt Type 1

This boundary typology consists of scattered, disconnected clusters embedded within a predominantly natural environment, with no continuous urban edge or direct connection between them. The clusters vary in character: singular objects of cultural and historical significance such as the Arkhangelskoye State Museum-Reserve — a palace and park ensemble of national importance; large-scale contemporary developments forming isolated urban enclaves such as SberCity in Rublevo-Arkhangelskoe — a major mixed-use smart city development by Sber; but, most commonly, low-rise cottage settlements and dacha SNT communities.

The territory is located in the Moscow Oblast and contains the largest remaining forest cores in the area, functioning as a transitional zone between the city and the broader regional green wedge. These cores constitute the most significant wildlife habitats in the study area and are critical to local biodiversity. The primary management priority for this typology is therefore the preservation of forest integrity and core habitat functionality.

Figure 3.53 Meso scale

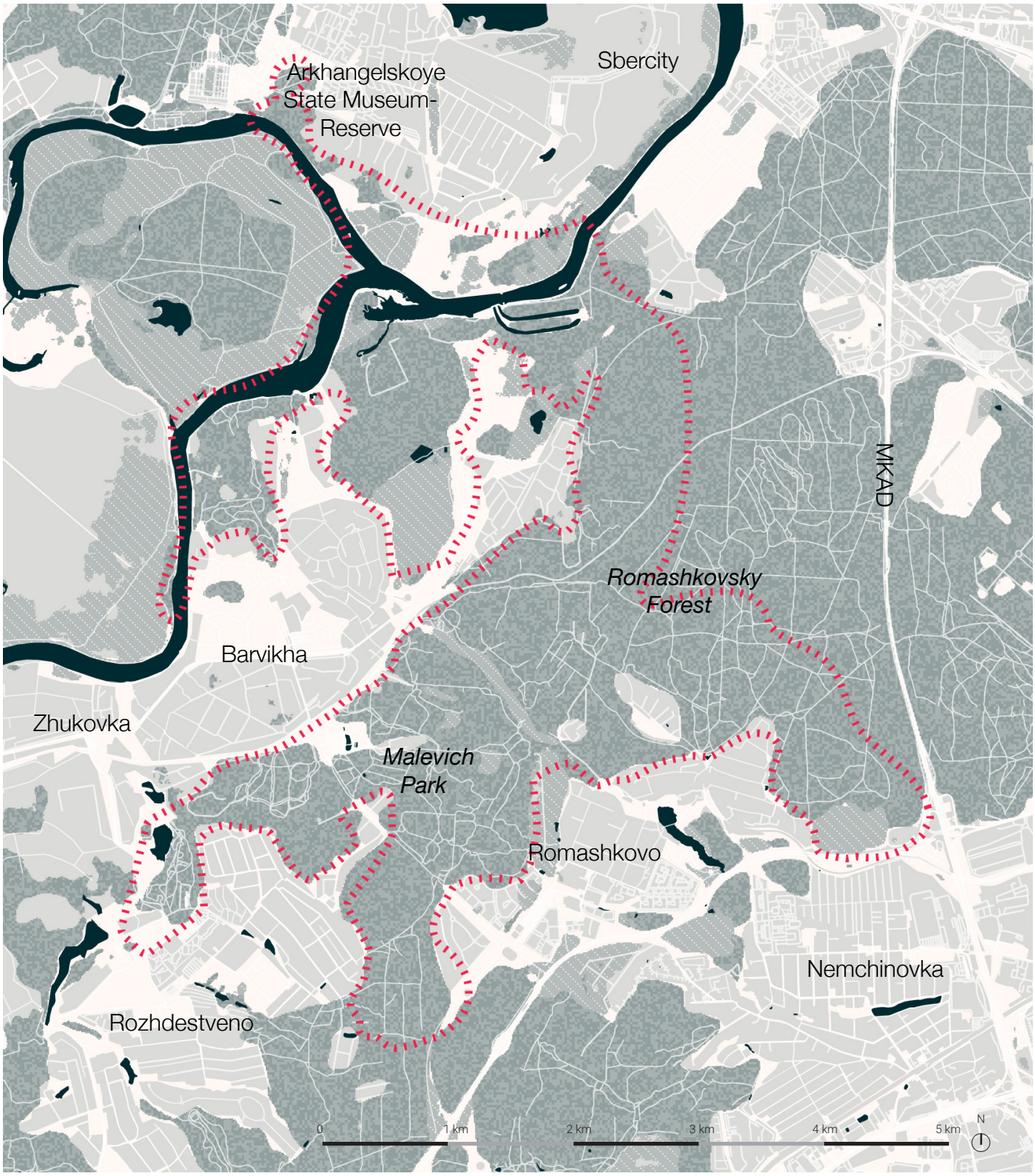


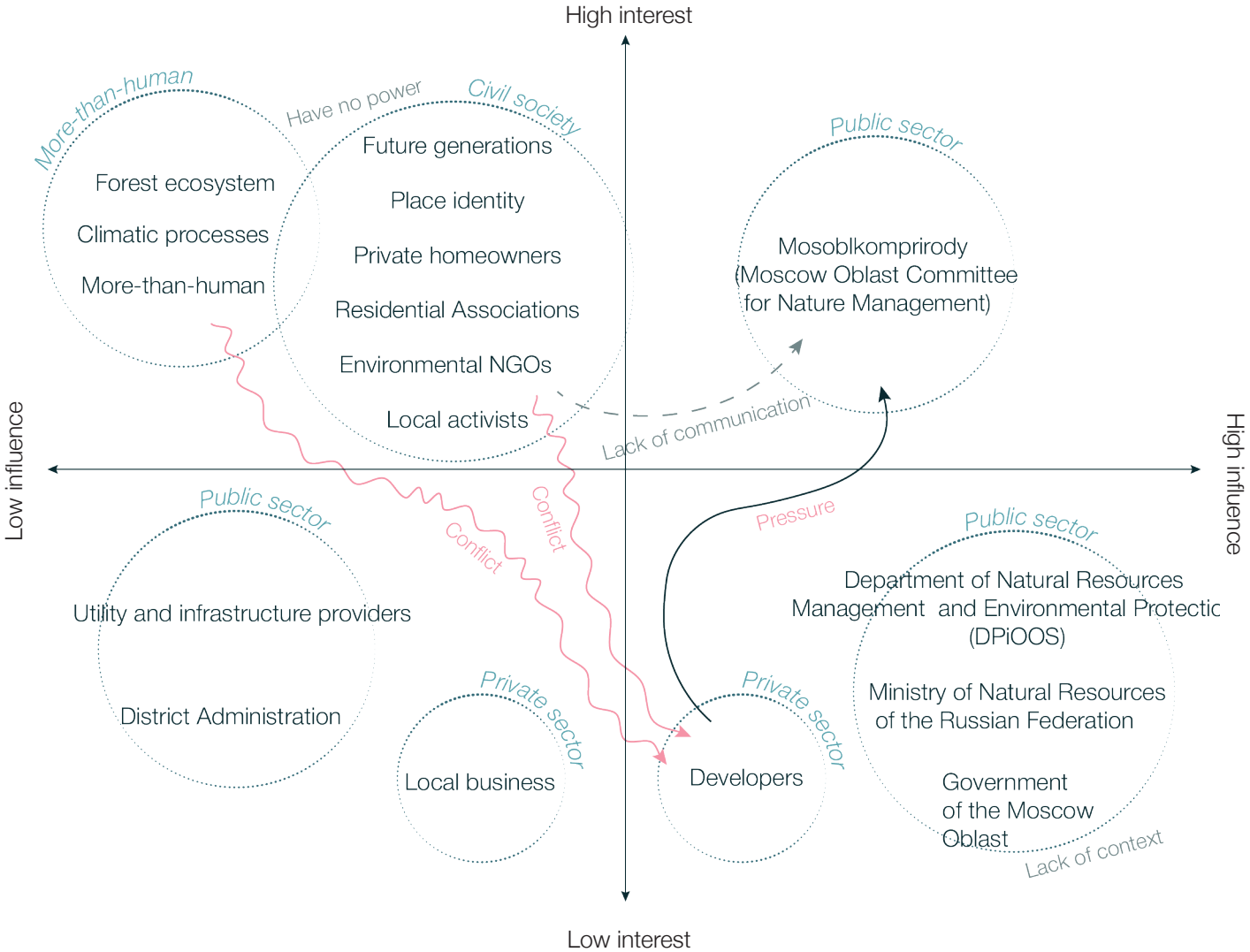
Figure 3.54 Moscow Region

Figure 3.55 Romashkovsky Forest

Existing Governance Model

Natural and green territories are managed by Mosoblkomprirody, which sets the regime of use and protection rules. Local prefectures and municipalities maintain shared infrastructure and public spaces. SNT and TSJ manage only their internal settlement infrastructure — natural territories fall outside their formal remit. The governance chain runs strictly vertically from regional level downward, with no mechanisms for local community participation in decision-making.

Figure 3.56 Power-Interest Analysis



	Key Stakeholders
S.1	Mosoblkomprirody — regional authority responsible for natural territory management
S.2	Government of Moscow Region — sets the protected area regime and controls budgets
S.3	District Administration — closest level of authority to residents, maintains local infrastructure
S.4	SNT / TSJ — organised settlement governance structures, potential entry point for co-management
S.5	Private homeowners — daily users of the territory, holders of local ecological knowledge
S.6	Cottage settlement developers — strong commercial interest in the territory, high influence
S.7	Local activists and environmental NGOs — territorial defence, ecological expertise, public pressure
S.mth	More-than-human actors — forest ecosystem, future generations, place identity, climatic processes
	Key Conflicts of Interest
C.1	Developers pursue maximum short-term profit from nature proximity — progressively destroying the very asset that makes the territory valuable
C.2	Moscow and Moscow Region operate with separate budgets, different jurisdictions, and different priorities — despite managing what is physically a single ecological system. No joint governance mechanism exists
C.3	Local residents use the natural territory daily and bear the full consequences of decisions made about it — yet have no voice or leverage in those decisions
C.4	Municipalities and prefectures maintain the territory but lack sufficient powers and resources for genuine ecological management
	Nature Representation
N.rep	Mosoblkomprirody and the Department of Nature Management are formally responsible for protecting natural territories. However, nature is treated exclusively as a set of functions and services — recreation, microclimate regulation, aesthetic value. Nature as a subject with its own rights to exist, regenerate, and persist is institutionally unrecognised and unrepresented by any actor in the existing governance system.
	Main Threats
T.1	Residential development encroaching on forest territory — reducing forest area and increasing fragmentation
T.2	Conversion of forest land into landscaped parks and recreational zones — shrinking forest cores and reducing ecological resilience
T.3	Severing of natural wildlife movement routes between city and region
T.4	Absence of long-term planning under sustained high market pressure on the territory
	Conclusions
CL.1	Top-down governance with no feedback mechanisms from local communities
CL.2	Insufficient understanding of local ecological context at ministerial level
CL.3	Insufficient powers and resources at municipal level
CL.4	High real estate demand creates constant development pressure on natural territories
CL.5	Local residents are excluded from decisions about the territory they live alongside
CL.6	Nature is treated as a set of functions and services rather than as an actor with intrinsic rights
CL.7	No joint governance mechanism between Moscow and Moscow Oblast creates an institutional gap in managing a single ecological system

Proposed Policy Model

	Proposed Model
P.1	Recognise nature as a subject with rights to exist, regenerate, and persist — and transfer the representation of these rights to local communities as the most invested and informed actors
P.2	Introduce a stewardship model: residents through SNT/TSJ take on monitoring and care of adjacent natural territories in exchange for formal rights, benefits, and privileges
P.3	Formalise this through a co-management agreement between SNT/TSJ and Mosoblkomprirody — a minimum first step requiring no legislative change
P.4	Establish direct and accessible communication channels between local communities and responsible authorities for more effective territorial governance
P.5	Develop a cross-regional coordination mechanism between Moscow and Moscow Region for managing the shared ecological system without institutional gaps
	Rights of Nature
	The following rights belong to the forest ecosystem as a subject with intrinsic value. The residential community assumes the role of their legal and moral representative, obliged to uphold and defend these rights in all planning, administrative, and civic processes.
RN.1	Right to Exist — the forest has the right to exist and be protected from destruction or degradation regardless of economic or development interests
RN.2	Right to Regenerate — the forest has the right to natural restoration of its ecological functions, including soil, water, plant communities, and wildlife populations
RN.3	Right to Persist — the forest has the right to continuity across time — maintaining its ecological character and biodiversity for present and future generations
RN.4	Right to Ecological Integrity — the forest has the right to function as a connected ecosystem, free from fragmentation, pollution, and disruption of natural processes
RN.5	Right to Representation — the forest has the right to be represented in all decisions affecting its condition, through the community acting as its formal steward and advocate
RN.6	Right to Restoration — where damaged or degraded, the forest has the right to active restoration including soil remediation, reintroduction of native species, and removal of invasive elements
RN.7	Right to Silence and Darkness — the forest has the right to protection from light and noise pollution disrupting the ecological rhythms of its inhabitants
RN.8	Right to Water — the forest has the right to clean and uninterrupted water flows protecting groundwater, wetlands, and hydrological cycles
	Obligations — Community Commitments
O.1	Regular monitoring of green patches condition: tree health, invasive species, illegal encroachment, wildlife activity
O.2	Maintenance of the buffer zone: removal of invasive plants, upkeep of ecological corridors, stormwater management
O.3	Maintenance of firebreak strips along the forest boundary
O.4	No use of pesticides or herbicides within 50 metres of the green patches edge
O.5	No introduction of non-native plant species into the buffer zone
O.6	No disturbance of known wildlife habitats and nesting sites
O.7	Transfer of ecological knowledge to new residents through seed banks, community mapping, and documentation

	Restrictions — Prohibited and Regulated Actions
R.1	New residential construction within the buffer zone and within 100 metres of the green patches boundary
R.2	Solid fences and impermeable barriers along the forest boundary — to be replaced with living hedgerows of native species within 5 years
R.3	Installation of fences within the green patches interrupting wildlife movement and ecological corridors
R.4	Installation of hard impermeable surfaces within the buffer zone
R.5	Any infrastructure fragmenting the green patche massif
R.6	Artificial lighting within 100 metres of the green patches boundary — subject to dark-sky standards
R.7	Logging and tree felling — subject to strict ecological assessment and regulation
	Incentives & Enablements — Community Benefits
B.1	Formal recognition as co-manager of the buffer zone and green patche boundary — legal standing to participate in planning processes and contest decisions threatening ecological integrity
B.2	Simplified permitting and subsidies for shared ecological infrastructure: solar panels, rainwater collection and filtration, collective wastewater systems, electric vehicle charging
B.3	Right to develop and use the buffer zone for shared community purposes: gardens, greenhouses, seed banks, gathering pavilions, beekeeping
B.4	Right to produce and sell food grown in community gardens through local markets and direct exchange
B.5	Priority access to ecological expertise, biodiversity monitoring support, and educational programmes
B.6	Mandatory consultative status in all planning decisions affecting territories within 500 metres of the green patche boundary
	Governance — How It Works
G.1	Co-management agreement between SNT/TSJ, Mosoblkomprirody, and the municipal administration — reviewed every 5 years
G.2	Community Forest Council established within each SNT/TSJ — an open coordination body including a representative of the NGO sector and a youth representative under the age of 25
G.3	Annual joint ecological assessment of the buffer zone — results published openly and accessible to all stakeholders
G.4	Graduated accountability for failure to meet obligations: remediation plan > suspension of subsidies and incentives > financial penalties proportional to the scale and severity of the violation > termination of the co-management agreement and revocation of all associated rights and incentives

Figure 3.57 Meso scale strategy

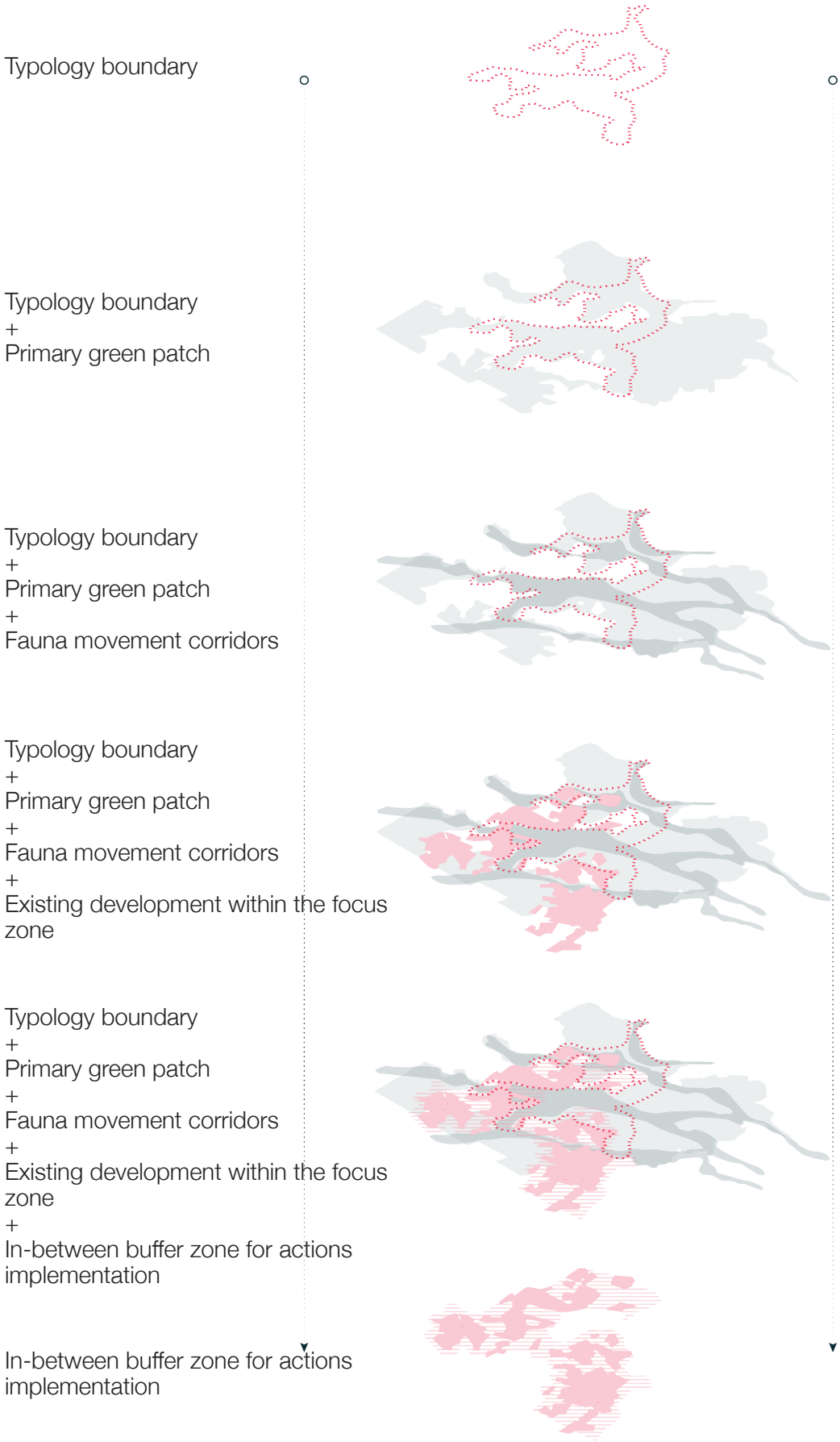
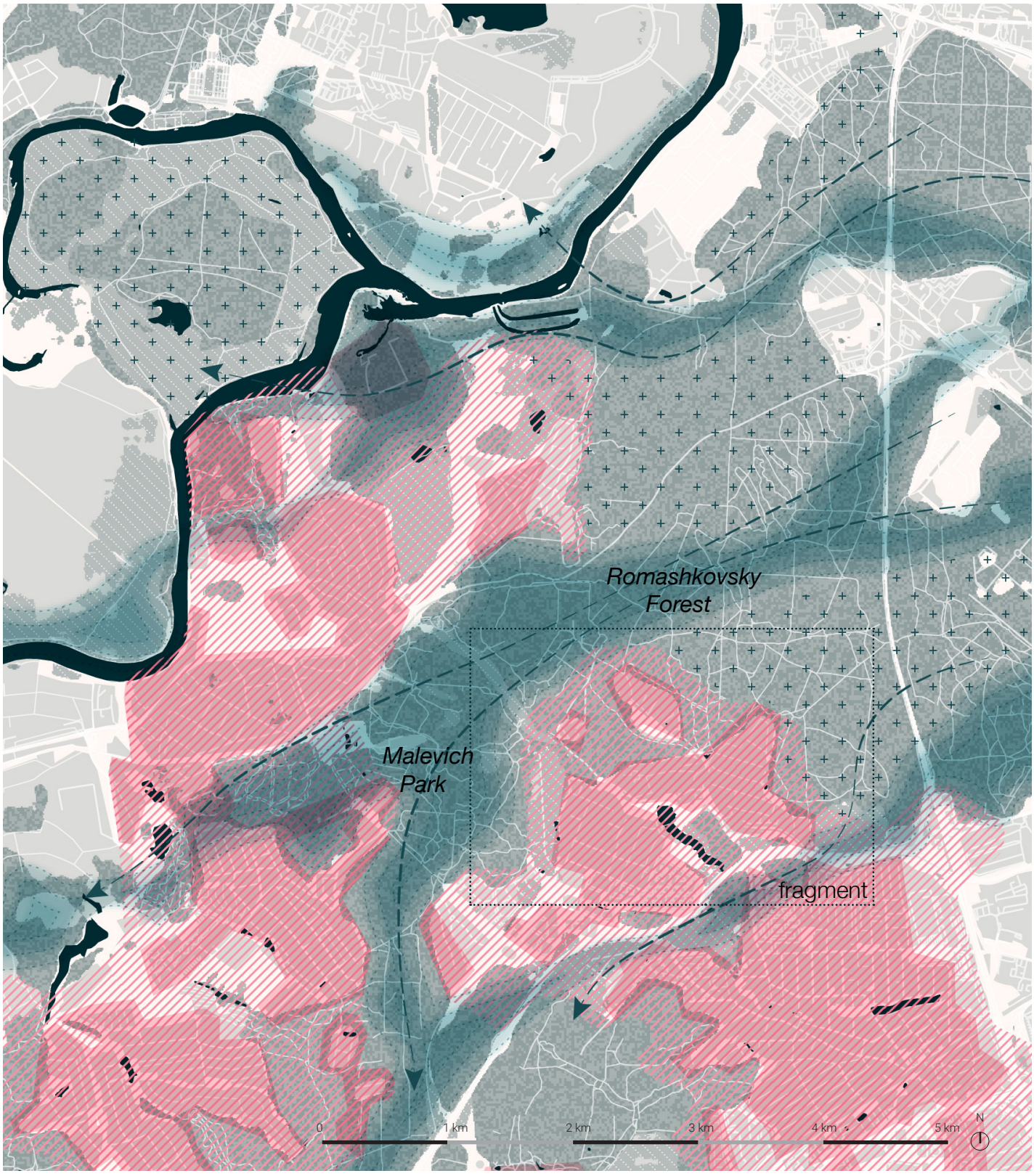
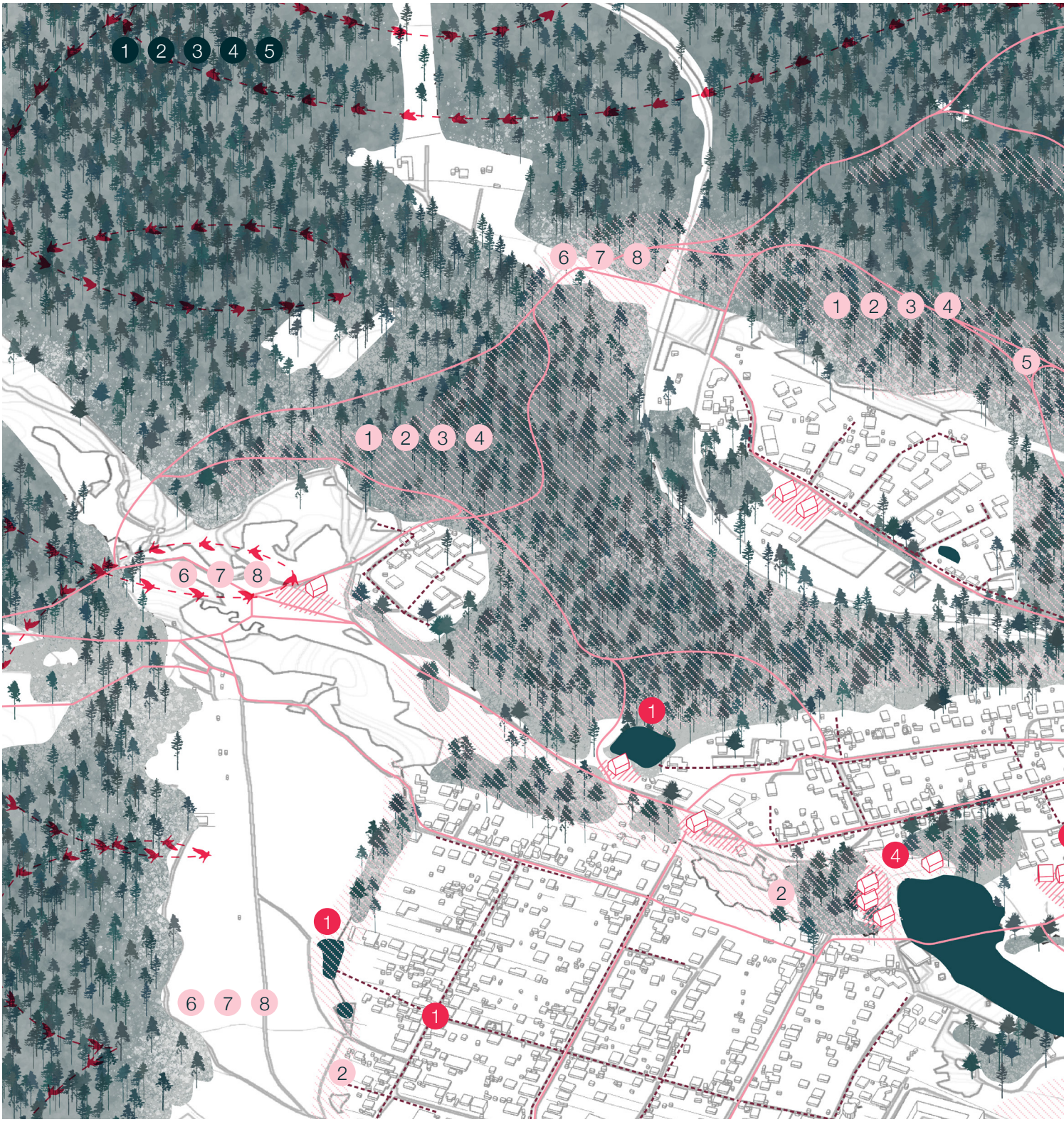


Figure 3.58 Meso scale



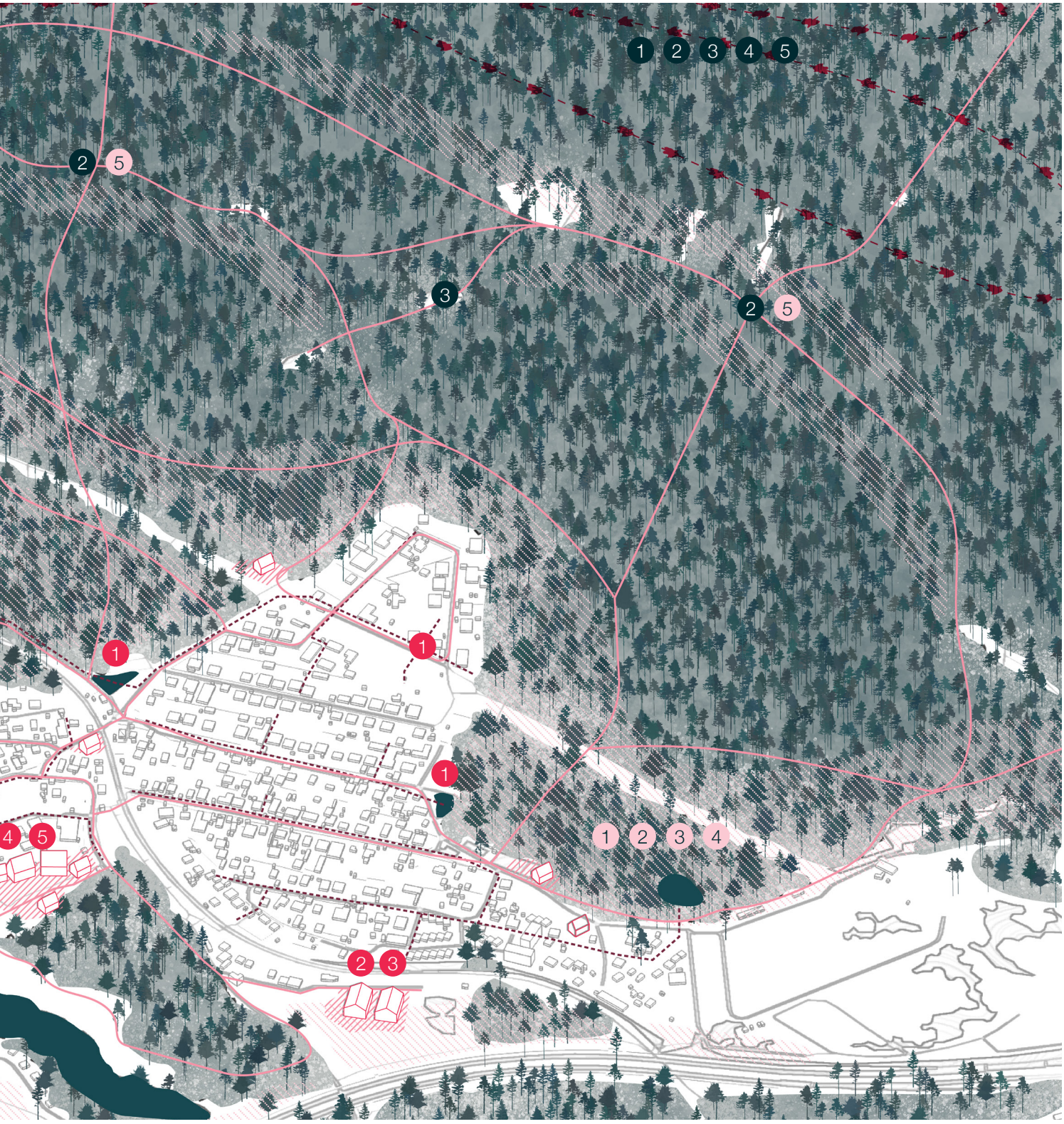


Built Environment

1. Implementing local rainwater harvesting and filtration systems — minimising environmental pollution and enabling water reuse
2. Installing shared renewable energy infrastructure: collective solar panels and heat pumps
3. Providing shared waste management infrastructure: separated waste collection and large-scale composting facilities
4. Creating community pavilions for gatherings and events — located within the built zone or at settlement entry points only
5. Establishing seed banks and shared community greenhouses

Buffer Zone

1. Maintaining regular clean-up of the buffer zone by the local community
2. Managing vegetation without the use of pesticides or herbicides
3. Prohibiting solid fences and hard surfaces throughout the buffer zone
4. Prohibiting new construction within the buffer zone
5. Routing pedestrian paths along the buffer zone — connecting settlements to the park and recreational areas while avoiding the forest core
6. Securing uninterrupted wildlife movement routes between the city and the region



7. Ensuring continuous connectivity between green patches — communities are obligated to provide passage for fauna across their territories
8. Installing ecological corridors and tunnels where wildlife routes intersect with infrastructure

Forest Core

1. Protected from any capital construction, hard surfaces, and utility infrastructure
2. Preserved as a no-disturbance zone — pedestrian routes are minimised and routed around the core
3. Permitted only non-capital small structures and birdwatching platforms made from natural materials
4. Maintained as the primary wildlife habitat — free from human intervention
5. Conserved in its maximum extent as an ecologically intact and self-sustaining system

Figure 3.59 Fragment Axonometry

Belt 2
Hard edge

Description of Belt Type 2

This boundary typology is defined by large-scale urban infrastructure forming a hard, largely impassable barrier between natural territories. It consists of two primary elements: the Moscow Ring Road — MKAD — a major federal highway that bisects a continuous green area into two separate patches, along with its associated infrastructure including service roads, petrol stations, and perimeter fencing; and industrial and warehouse facilities that line the highway corridor and press directly against the edges of adjacent green patches.

MKAD also marks the administrative boundary between Moscow and the Moscow Region, adding a layer of jurisdictional complexity that further complicates coordinated ecological management of the area.

The objects that make up this typology share a defining characteristic: they are impermeable. The highway severs wildlife movement routes, forming a barrier that most species cannot cross. Warehouse and industrial facilities compound this effect — large in footprint, fully sealed with hard surfaces, enclosed by fencing, and offering no ecological passage along or through their boundaries.

Figure 3.60 Meso scale

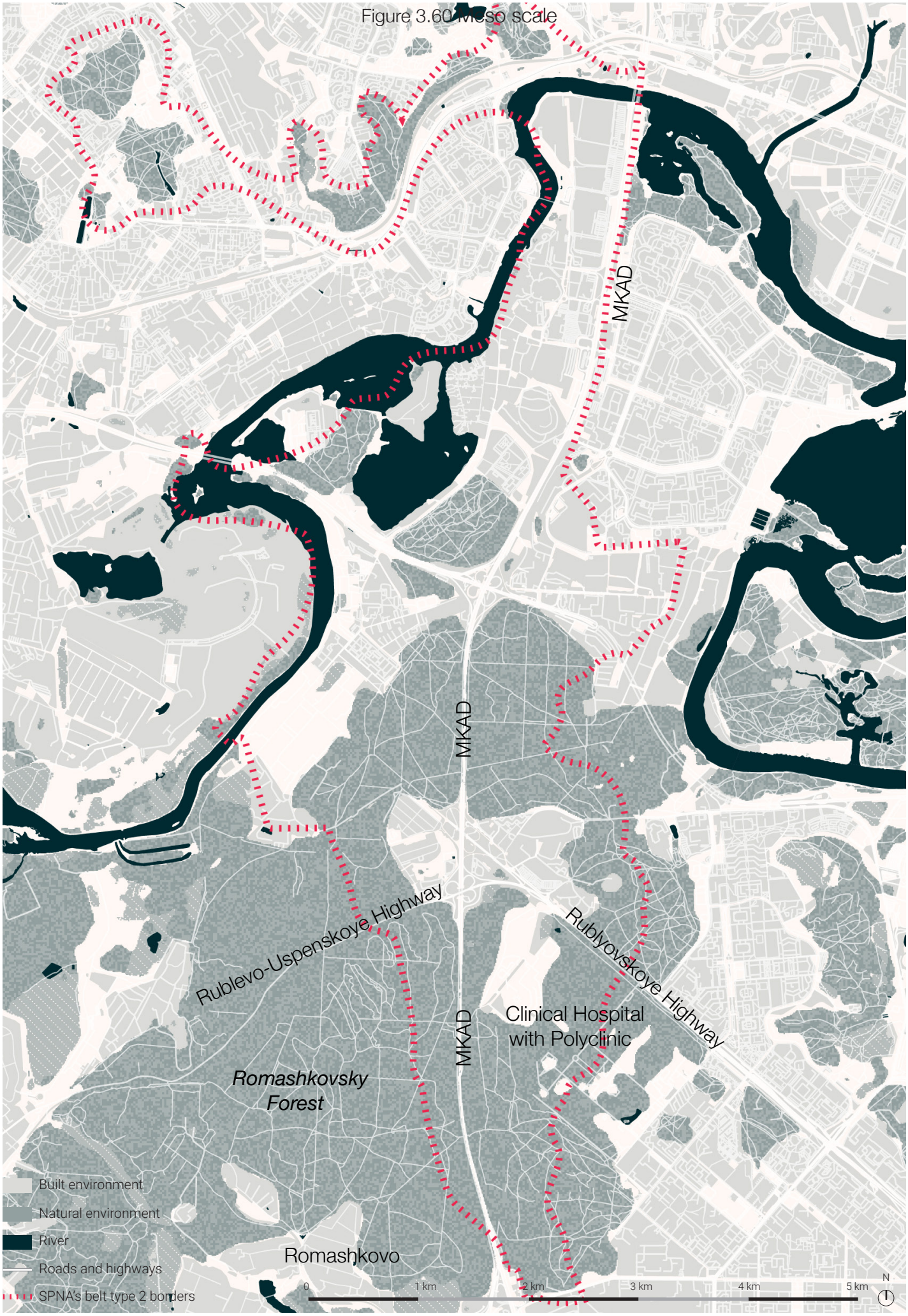


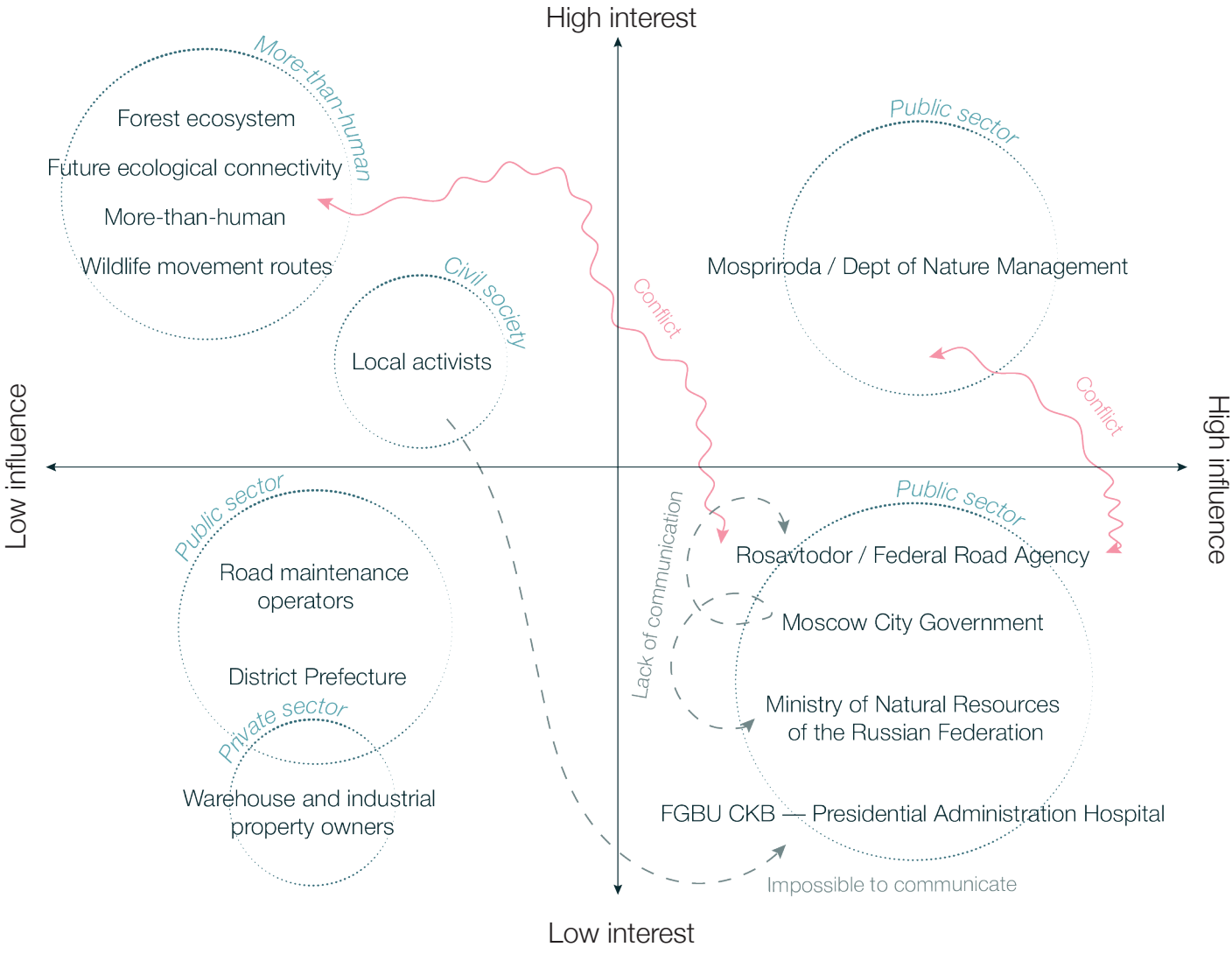
Figure 3.61 MKAD

Figure 3.62 MKAD

Existing Governance Model

Major road infrastructure — including MKAD — is managed at federal level by Rosavtodor. City roads and adjacent territories are managed by the Moscow City Government. Warehouse and industrial facilities are operated by private operators and owners under existing permits. The CKB hospital territory is managed by the Presidential Administration of the Russian Federation. None of these actors carries formalised responsibility for the ecological consequences of their activity on the adjacent protected area.

Figure 3.63 Power-Interest Analysis



	Key Stakeholders
S.1	Rosavtodor — manages federal road infrastructure including MKAD
S.2	Moscow City Government — manages city roads and industrial zones
S.3	Mospriroda / Department of Nature Management— protection of the adjacent protected area
S.4	FGBU CKB with Polyclinic — federal institution under the Presidential Administration, holds a significant forested park territory between two green cores
S.5	Operators and owners of road, warehouse, industrial infrastructure and petrol stations — including road maintenance operators, warehouse and industrial facility owners and tenants, petrol station and service facility operators
S.6	Local activists and environmental NGOs — documenting ecological damage, public pressure
S.mth	More-than-human actors — fragmented forest patches, wildlife movement routes, soil and groundwater, nocturnal wildlife, future ecological connectivity
	Key Conflicts of Interest
C.1	Road infrastructure is optimised for traffic flow with no obligations toward wildlife movement — these two logics have never been formally reconciled
C.2	Warehouse and industrial operators have no incentive to invest in green roofs, buffer planting, or dark-sky lighting
C.3	MKAD is federal infrastructure — neither the city of Moscow nor the Moscow Region can modify it unilaterally
C.4	The CKB is a critical node for the ecological corridor between two green cores — but as a federal institution under the Presidential Administration it is practically inaccessible for external partnership
	Nature Representation
N.rep	Mospriroda formally protect natural territories. However their jurisdiction ends at the SPNA boundary — the impact of road and warehouse infrastructure on adjacent ecosystems falls outside their effective control.
	Main Threats
T.1	Fragmentation of forest massifs by road and industrial infrastructure — forest patches are isolated and unable to sustain viable populations
T.2	Absence of wildlife crossings across MKAD — making the road an impassable barrier for most species
T.3	Loss of potential ecological connectivity at regional scale
	Conclusions
CL.1	The core problem is the absence of coordination and dialogue between the agencies responsible for this boundary: Rosavtodor, Moscow City Government, Mospriroda and infrastructure operators function in parallel with no joint decision-making mechanisms
CL.2	No formalised accountability exists for ecological damage — each actor is responsible for their own function, but no one is accountable for the cumulative harm their combined activity causes to the natural environment
CL.3	Unlike other typologies, there is no local community able to take on a stewardship or nature representation role — making institutional reform the only available instrument

Proposed Policy Model

	Proposed Model
P.1	Revise the regulatory standards for road infrastructure and warehouse development to include mandatory ecological requirements: minimising harm to adjacent natural territories, protecting wildlife movement routes, and limiting light and noise pollution
P.2	Formally assign ecological responsibility for each section of the SPNA boundary among existing agencies — ending the situation in which no one is accountable for cumulative harm
P.3	Introduce a transparent public ecological reporting system for all infrastructure operators adjacent to the SPNA — with real rather than formal compensation mechanisms for environmental damage
P.4	Establish a cross-agency coordination body for managing the ecological impact of infrastructure on the SPNA — including Mospriroda, Rosavtodor, and an environmental NGO as the voice of nature
P.5	Initiate engagement with the CKB and the Presidential Administration to establish a passive wildlife corridor through the hospital territory — framing this as aligned with the institution's own interest in preserving its forested environmen
	Rights of Nature
	The following rights belong to the forest ecosystem, wildlife populations, and ecological processes affected by infrastructure and industrial activity. In the absence of a local community steward, these rights must be formally represented by Mospriroda, environmental NGOs, and mandated through regulatory frameworks.
RN.1	Right to Exist — the forest has the right to exist and be protected from destruction or degradation regardless of economic or development interests
RN.2	Right to Regenerate — the forest has the right to natural restoration of its ecological functions, including soil, water, plant communities, and wildlife populations
RN.3	Right to Persist — the forest has the right to continuity across time — maintaining its ecological character and biodiversity for present and future generations
RN.4	Right to Ecological Integrity — the forest has the right to function as a connected ecosystem, free from fragmentation, pollution, and disruption of natural processes
RN.5	Right to Representation — the forest has the right to be represented in all decisions affecting its condition, through the community acting as its formal steward and advocate
RN.6	Right to Restoration — where damaged or degraded, the forest has the right to active restoration including soil remediation, reintroduction of native species, and removal of invasive elements
RN.7	Right to Silence and Darkness — the forest has the right to protection from light and noise pollution disrupting the ecological rhythms of its inhabitants
RN.8	Right to Water — the forest has the right to clean and uninterrupted water flows protecting groundwater, wetlands, and hydrological cycles
	Obligations — Mandatory Requirements for all Infrastructure and Industrial Operators
	The following obligations apply to all operators of road infrastructure, warehouse facilities, industrial sites, petrol stations, and service facilities within 500 metres of the SPNA boundary.
O.1	Install and maintain wildlife crossing infrastructure — underpasses and ecoducts — at all identified wildlife movement routes crossing road infrastructure Install directional fencing along road edges guiding fauna toward designated crossing points
O.2	Establish multi-layered native buffer planting along all facility perimeters facing the protected area. Install on-site rainwater collection and biofiltration systems preventing contaminated runoff from reaching forest soil and groundwater

O.3	Plant trees across all surface parking areas
O.4	Conduct annual ecological monitoring of buffer zones and submit results to Mospriroda for public publication Implement mandatory ecological compensation for any damage caused to the protected area — through equivalent habitat creation or restoration
	Restrictions — Prohibited Actions
R.1	Expand built footprint toward the protected area boundary without prior ecological assessment and Mospriroda sign-off
R.2	Install solid barriers or fencing interrupting identified wildlife movement routes
R.3	Discharge untreated surface runoff, industrial waste, or chemical pollutants into soil or water systems adjacent to the protected area
R.4	Create new impermeable surfaces without compensatory permeable surfaces or tree planting
R.5	Install outdoor lighting exceeding dark-sky standards within 500 metres of the SPNA boundary
R.6	Sever an identified ecological corridor without mandatory compensatory connectivity measures
R.7	Remove vegetation within buffer zones without ecological assessment and approval
	Change at Policy Level
PC.1	Revise acceptance standards for road infrastructure and industrial planning permissions to include mandatory ecological performance criteria as non-negotiable conditions Introduce binding ecological corridor protection zones in spatial planning documents — making severance of identified wildlife routes a prohibited action requiring federal-level approval
PC.2	Formally designate Mospriroda as the responsible body for ecological oversight of all infrastructure boundaries adjacent to SPNAs — with enforcement powers and budget
PC.3	Establish a cross-agency coordination body — Rosavtodor, Moscow City Government, Mospriroda, — with joint responsibility for cumulative ecological impact on the SPNA boundary
PC.4	Introduce graduated financial penalties for ecological violations proportional to the scale and duration of damage — replacing current nominal fines with meaningful deterrents
PC.5	Mandate real ecological compensation — not financial substitution — for any irreversible damage to natural systems
	Governance — Proposal
G.1	Joint ecological management protocol between Rosavtodor, Moscow City Government, Mospriroda — reviewed every 5 years
G.2	Mospriroda designated as formal representative of nature's rights in all infrastructure planning and modification processes affecting the SPNA boundary
G.3	Environmental NGO with formal observer and advisory status in all cross-agency coordination processes — serving as independent voice of more-than-human actors
G.4	Annual public ecological report covering the condition of the SPNA boundary, compliance levels of all adjacent operators, and status of compensatory measures

Figure 3.64 Meso scale strategy

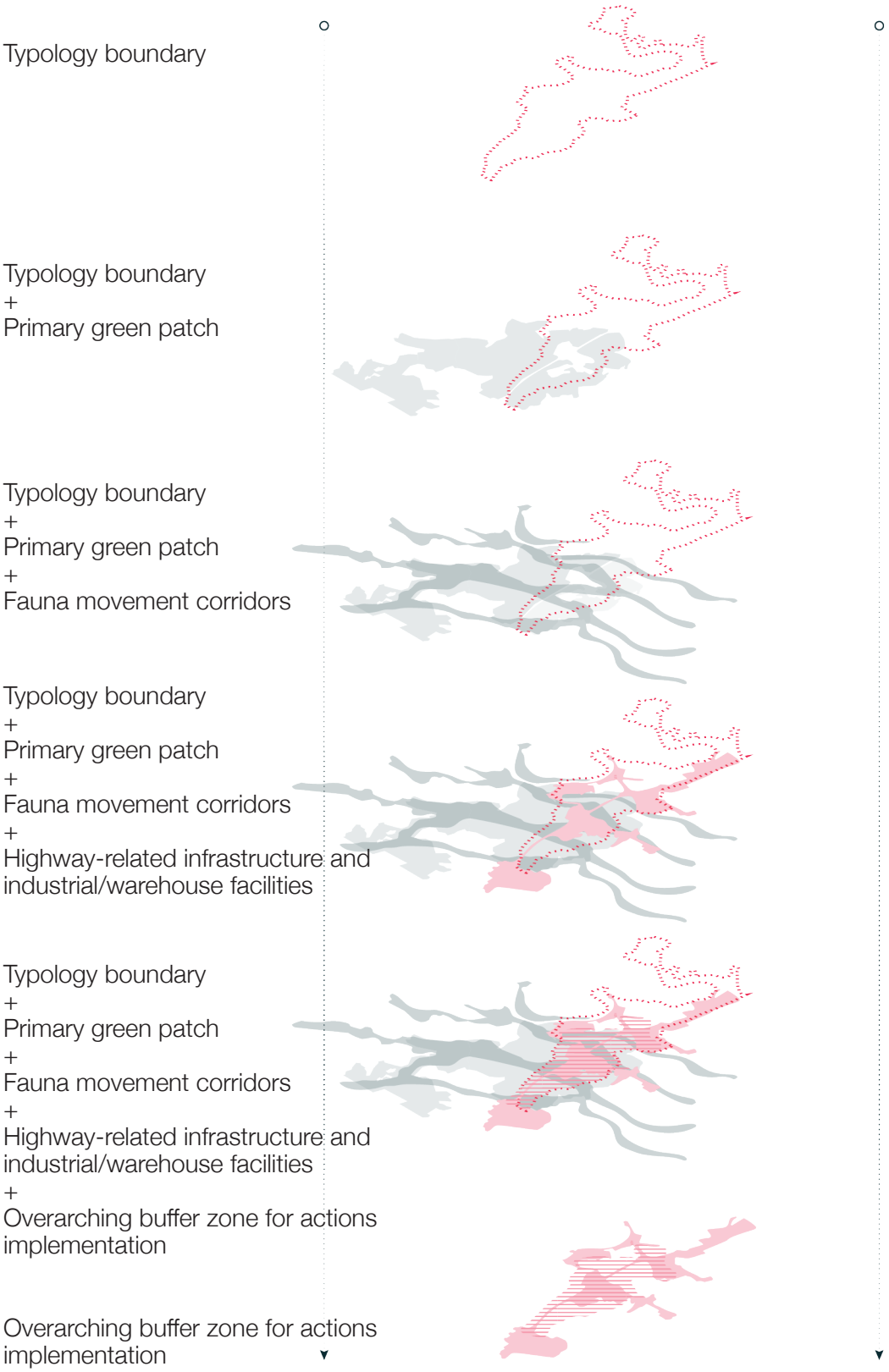
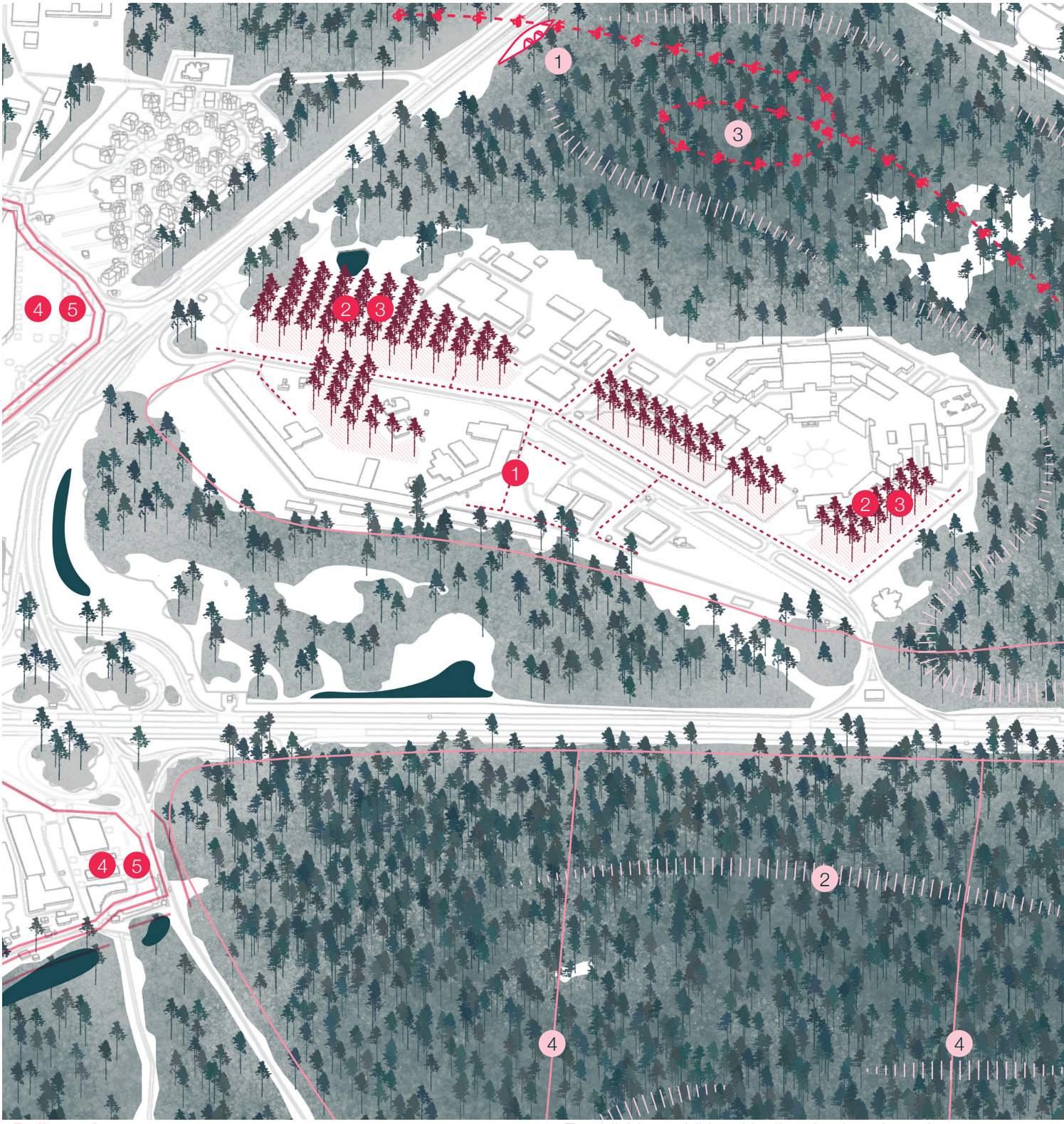
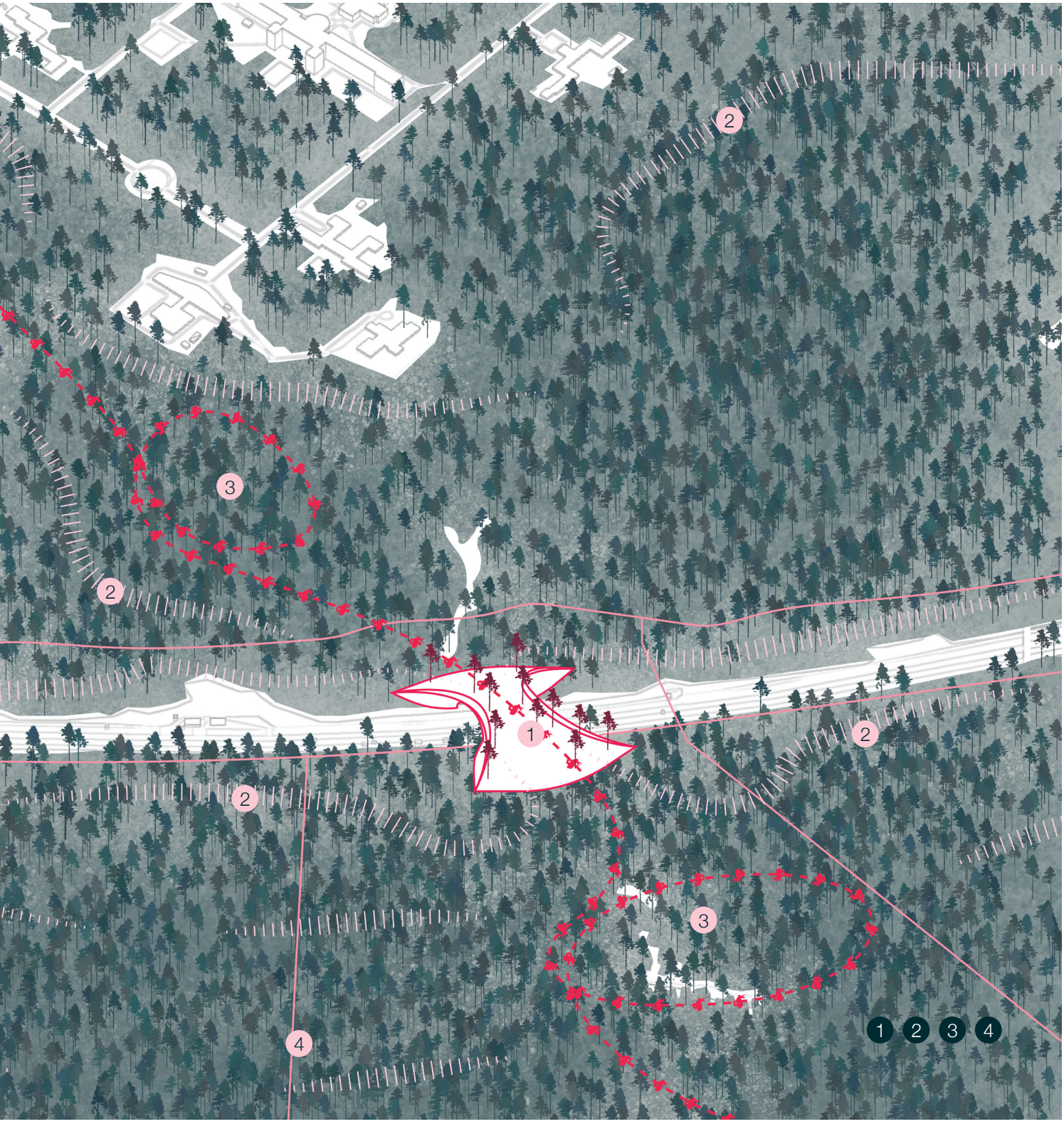


Figure 3.65 Meso scale



Built Environment

1. Implementing local rainwater harvesting and filtration systems — minimising environmental pollution and enabling water reuse
2. Greening and de-sealing large impermeable surfaces — introducing planting across parking lots, retail and warehouse forecourts to reduce the urban heat island effect
3. Planting native tree species across all greening interventions to support and maintain the local forest biotope
4. Installing renewable energy equipment — solar panels and green roofs — on warehouse and retail rooftops
5. Establishing additional buffer planting along the boundaries of industrial and warehouse sites to reduce pollution spread and improve air filtration



Buffer Zone

1. Implementing ecological corridors and ecoducts across major roads — both above and below ground — to ensure continuous connectivity between green patches
2. Installing directional buffer planting to guide fauna toward ecological corridors and away from hazardous infrastructure
3. Protecting existing movement routes from further fragmentation by infrastructure or developmen
4. Systematising and standardising pedestrian routes within the forest into a structured grid with equal spacing between paths — enabling dual use as both recreational access and firebreak infrastructure for forest fire prevention and management

Forest Core

1. Protected from any capital construction, hard surfaces, and utility infrastructure
2. Preserved as a no-disturbance zone — pedestrian routes are minimised and routed around the core
3. Maintained as the primary wildlife habitat — free from human intervention
4. Conserved in its maximum extent as an ecologically intact and self-sustaining system

Figure 3.66 Fragment Axonometry

Belt 3
Legacy canopy

Description of Belt Type 3

This boundary typology consists of residential quarters directly adjacent to the Moskvoretsky Natural History Park, forming the immediate buffer zone between the city and the park boundary. It includes a large cluster of Soviet-era apartment buildings designated for demolition and replacement under the Moscow Urban Renewal Initiative — a city-wide programme launched in 2017 targeting the phased replacement of prefabricated housing stock from the 1950s and 1960s.

The defining ecological characteristic of this typology is its mature tree cover. Decades of growth have transformed the courtyards and green spaces of these quarters into a functioning ecological layer that extends the habitats of the adjacent protected area and supports local bird populations.

The primary challenge is the threat of irreversible loss: the renewal programme will result in the demolition of most existing buildings and the mature tree cover that has become an integral part of the local habitat structure.

Figure 3.67 Area scale

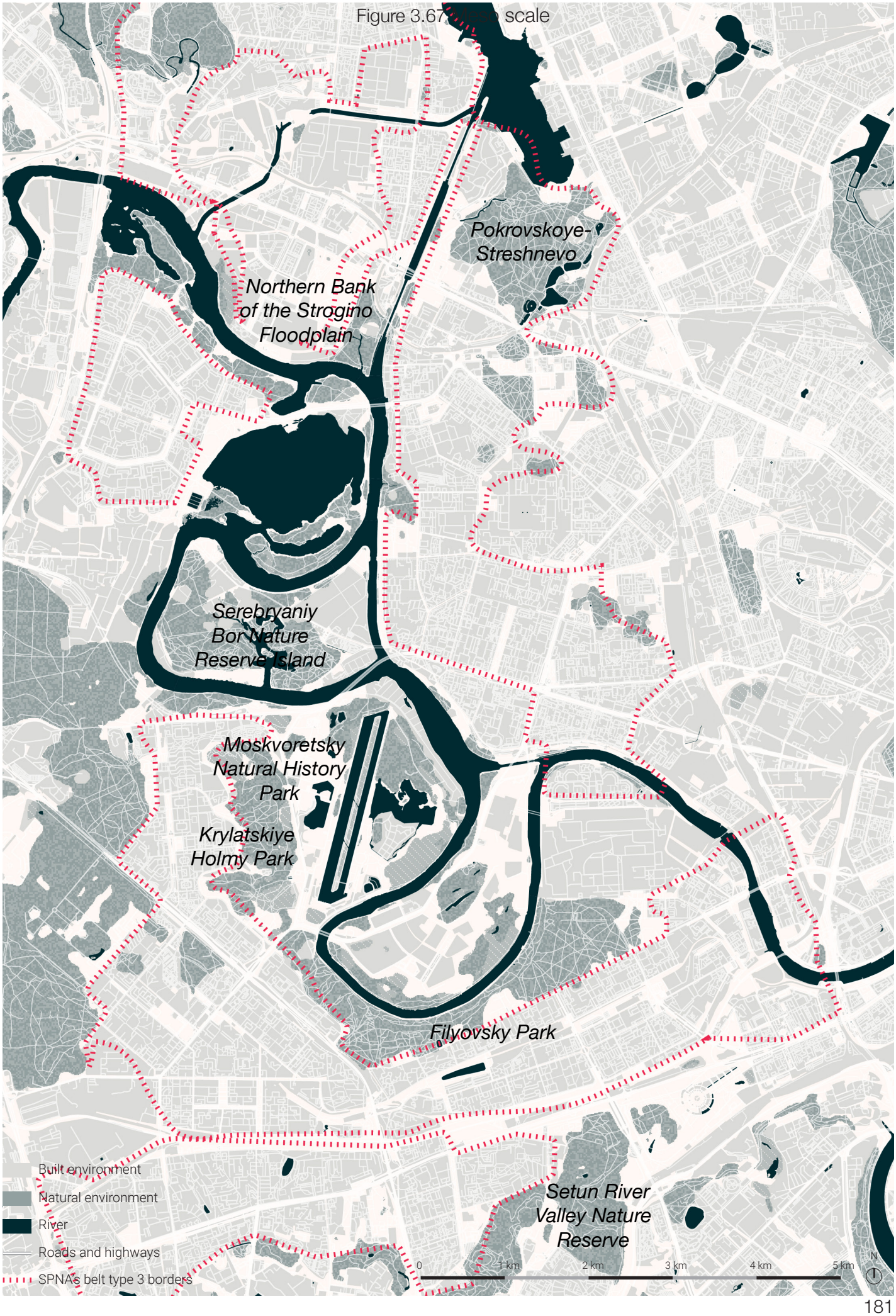


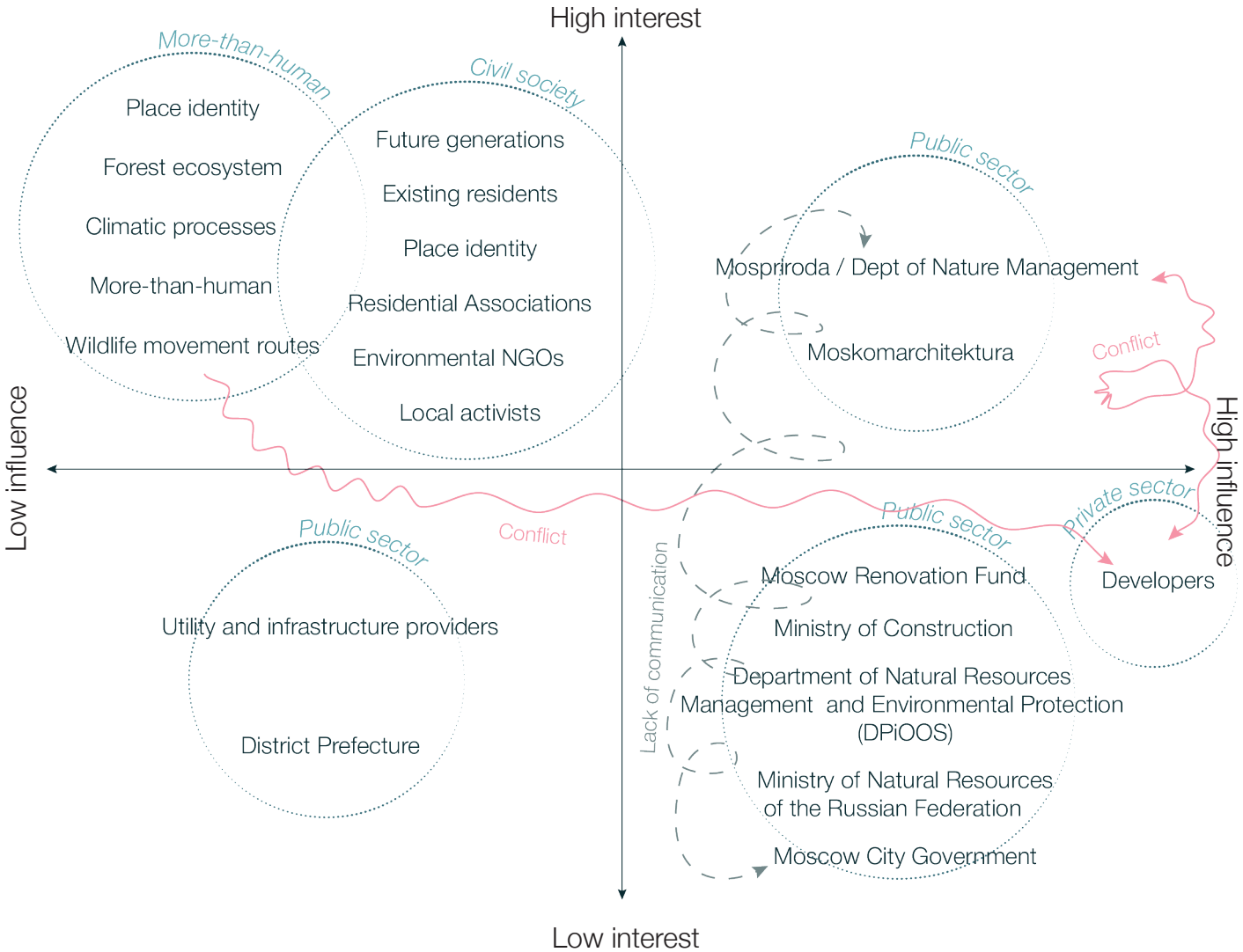
Figure 3.68 Krylatskiye Holmy Park

Figure 3.69 District near Filyovsky Park

Existing Governance Model

Moscow Urban Renewal Initiative in Moscow is managed and implemented by the Moscow Renovation Fund on behalf of the Moscow City Government. The Fund controls design briefs, developer contracts, and construction phasing. Moskomarchitektura approves all architectural and planning decisions. Mospriroda manages the adjacent protected area but has no formal role in the renewal planning process unless explicitly required. District prefectures coordinate locally between residents and city structures but have limited powers to influence renewal design decisions.

Figure 3.70 Power-Interest Analysis



	Key Stakeholders
S.1	Moscow City Government — primary decision-maker for the renewal programme, sets all conditions
S.2	Moscow Renovation Fund — implements renewal on behalf of the city, controls developer contracts and design briefs
S.3	Moskomarchitektura — approves all renewal designs and master plans
S.4	District Prefecture — local coordination between residents and city structures
S.5	Renewal developers — design and construct new housing, control over ecological outcomes within the design process
S.6	Existing residents — current occupants with legal participation rights, holders of local ecological knowledge about the neighbourhood
S.7	Future residents — incoming community whose ecological values and engagement determine the long-term stewardship capacity of the new neighbourhood
S.8	Local activists and residents' associations — defending existing green spaces and mature trees from demolition
S.mth	More-than-human actors — mature trees and existing vegetation, adjacent SPNA ecosystem, urban wildlife using neighbourhood corridors, place memory and neighbourhood identity
	Key Conflicts of Interest
C.1	Renovation Fund prioritises delivery speed and cost efficiency — ecological conditions slow construction and raise costs
C.2	Existing vegetation is treated as a construction obstacle rather than established ecological infrastructure
C.3	Existing residents want to preserve mature trees and neighbourhood character but have no binding mechanism to enforce this
	Nature Representation
N.rep	Mospriroda formally protects the adjacent SPNA but has no jurisdiction over the renewal site itself. Mature trees, existing vegetation, and wildlife corridors within the renewal zone have no institutional representative.
	Main Threats
T.1	Demolition of mature trees and established vegetation — an irreversible loss on meaningful timescale
T.2	Increased impermeable surfaces raising runoff and reducing groundwater recharge
T.3	Severance of existing wildlife corridors between the neighbourhood and the adjacent protected area
T.4	Increased population density raising pressure on the SPNA without a designed ecological transition
T.5	Formation of a new community without ecological identity or stewardship commitment
	Conclusions
CL.1	Renewal governance prioritises speed and housing delivery — ecological outcomes are addressed only where legally required The moment of renewal is simultaneously the greatest threat and the greatest opportunity — decisions made now are largely irreversible
CL.2	Existing residents hold local ecological knowledge but have no binding mechanism to translate it into renewal outcomes
CL.3	Nature has no formal representative in the renewal process — mature trees and wildlife corridors are treated as obstacles rather than assetsthan creating a buffer that protects it

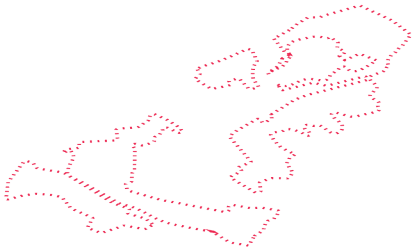
Proposed Policy Model

	Proposed Model
P.1	Require Mospriroda sign-off as a mandatory condition of all renewal planning permissions within the SPNA boundary
P.2	Mandate a full tree inventory and preservation plan before any demolition permit is issued — making mature tree protection a non-negotiable precondition of renewal
P.3	Position the neighbourhood from the outset as ecologically defined — attracting future residents who share these values and will become active stewards and advocates for nature's rights
P.4	Establish a Community Ecological Council before the first new residents move in — a formal body with consultative status in all subsequent planning decisions affecting the neighbourhood and its relationship to the protected area
P.5	Embed an ecological charter into community formation documents for all new residents — formalising their role as representatives and stewards of the adjacent natural environment
P.6	Use the renewal process as an opportunity to increase ecological connectivity — requiring ecological gradient planning, wildlife corridor preservation, and permeable surface standards as conditions of all renewal approval
	Rights of Nature
	The following rights belong to the existing and future natural environment of the renewal zone and its relationship to the adjacent protected area. The incoming community assumes the role of their active representatives and stewards.
RN.1	Right to Exist — mature trees and established vegetation have the right to exist and be protected from demolition regardless of construction convenience
RN.2	Right to Continuity — existing wildlife corridors and ecological connections between the neighbourhood and the protected area have the right to be preserved and strengthened through the renewal process
RN.3	Right to Regenerate — soils, vegetation, and habitats disrupted by construction have the right to active restoration as part of the renewal programme
RN.4	Right to Representation — nature has the right to be represented in all renewal planning decisions through Mospriroda, environmental NGOs, and the Community Ecological Council
RN.5	Right to Ecological Integrity — the adjacent protected area has the right to protection from increased pressure generated by the new development through designed ecological transitions and buffers
RN.6	Right to Memory — the ecological character and place identity accumulated over decades have the right to be carried forward into the new neighbourhood rather than erased
	Obligations — Developer and Community Commitments
	Developers:
OD.1	Full tree inventory and preservation plan submitted before any demolition permit is issued — mature trees are preserved by default unless individual assessment proves otherwise
OD.2	Ecological gradient planning — lower density and higher green coverage toward the SPNA boundary
OD.3	Permeable surfaces across the entire renewal site
OD.4	Wildlife corridor preservation and enhancement as a mandatory design condition
OD.5	On-site rainwater collection and management systems integrated into all new buildings
OD.6	All new buildings designed to passive house or equivalent energy standard
OD.7	Mandatory provision of shared renewable energy infrastructure, electric vehicle charging points, bicycle charging and storage facilities
OD.8	Shared ecological infrastructure provided as part of the development: community greenhouses, gardens, composting, tool storage, workshops, coworking spaces

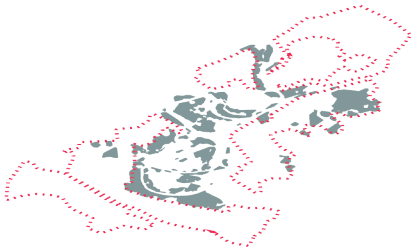
	Community — ongoing obligations from day one:
OC.1	Active participation in the maintenance and stewardship of shared green spaces, courtyards, and the buffer zone toward the protected area
OC.2	Monitoring and reporting of ecological condition of the neighbourhood boundary with the SPNA — submitted to the Community Ecological Council
OC.3	Compliance with the ecological charter embedded in all residency agreements
OC.4	Participation in Community Ecological Council governance
	Restrictions — Prohibited Actions
	Developers:
RD.1	No demolition of mature healthy trees without individual ecological assessment and Mospriroda approval
RD.2	No uniform high-density development across the entire renewal site — density gradient toward forest edge is mandatory
RD.3	No large continuous impermeable surfaces — maximum threshold applies across the site
RD.4	No severance of identified wildlife corridors without mandatory compensatory connectivity
	Community:
RC.1	No introduction of non-native plant species into community green spaces adjacent to the protected area
RC.2	No solid fencing or impermeable barriers along the boundary with the protected area
RC.3	No private car parking within courtyards — car-free courtyard design is mandatory
	Incentives & Enablements — City Support for the Community
SC.1	Subsidies for shared renewable energy infrastructure: solar panels, heat pumps, collective energy storage
SC.2	Subsidised or free access to shared mobility infrastructure: electric vehicle charging, bicycle storage and repair, car-sharing
SC.3	Simplified permitting and financial support for shared ecological spaces: greenhouses, community gardens, seed banks, composting
SC.4	Subsidised coworking spaces, workshops, and third places within the neighbourhood during the initial settlement period
SC.5	Priority access to ecological expertise, biodiversity monitoring support, and educational programmes
SC.6	City-backed communication and community-building support during the first years — helping new residents form identity around the neighbourhood's ecological character
SC.7	Formal recognition of the Community Ecological Council with mandatory consultative status in all planning decisions affecting the neighbourhood within the SPNA
	Governance — Proposal
G.1	Mospriroda sign-off required as a mandatory condition of all renewal planning permissions within the SPNA boundary
G.2	Ecological chapter embedded in all residency agreements — signed by every incoming resident as a condition of moving in
G.3	Community Ecological Council established before first residents move in — open body including a representative of Mospriroda, an environmental NGO
G.4	Annual joint ecological assessment of the neighbourhood boundary and buffer zone — results published openly
G.5	Graduated accountability for failure to meet community obligations
G.6	Developer ecological performance bond held by the city — released only upon verified delivery of all ecological conditions at project completion

Figure 3.71 Meso scale strategy

Typology boundary

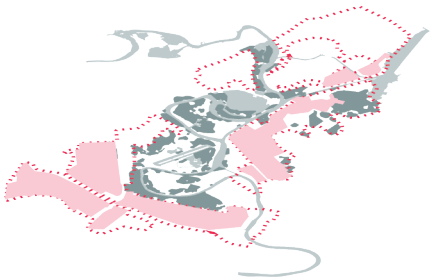


Typology boundary
+
All green patches



Typology boundary
+
All green patches
+
Moscow river

Typology boundary
+
All green patches
+
Moscow river
+
Blocks under the Moscow Renovation Programme within the focus zone



Overarching buffer zone

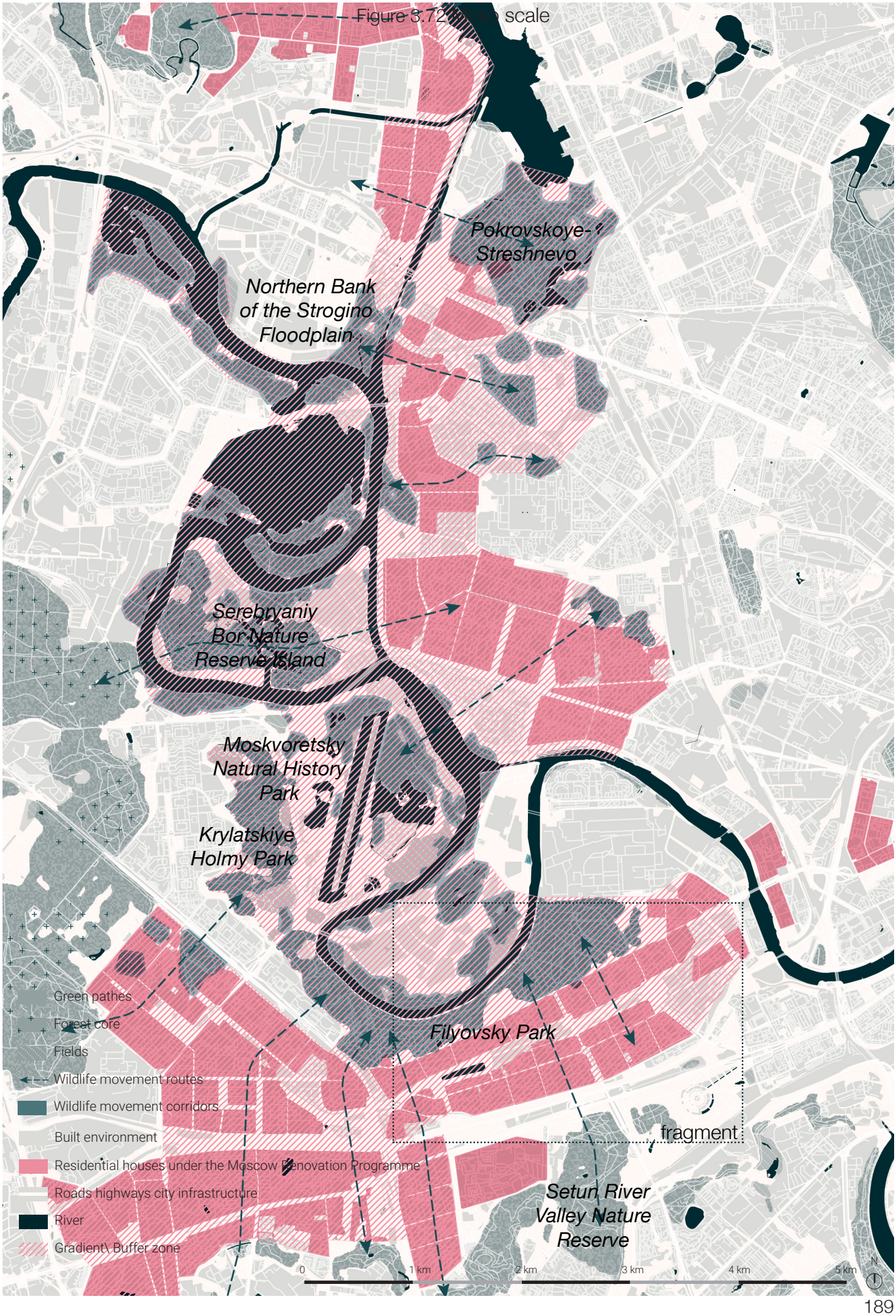
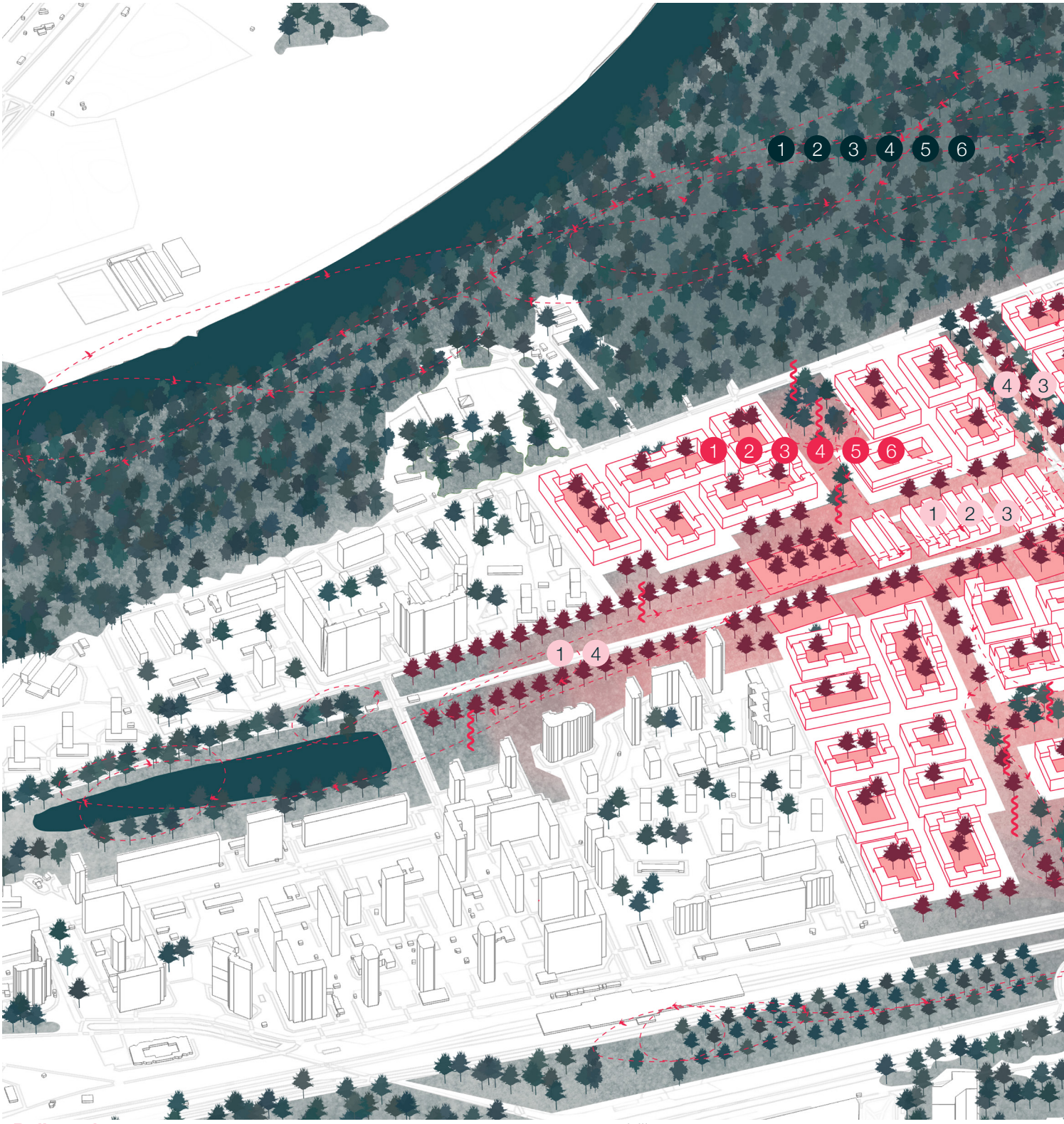


Figure 3.72 Micro scale

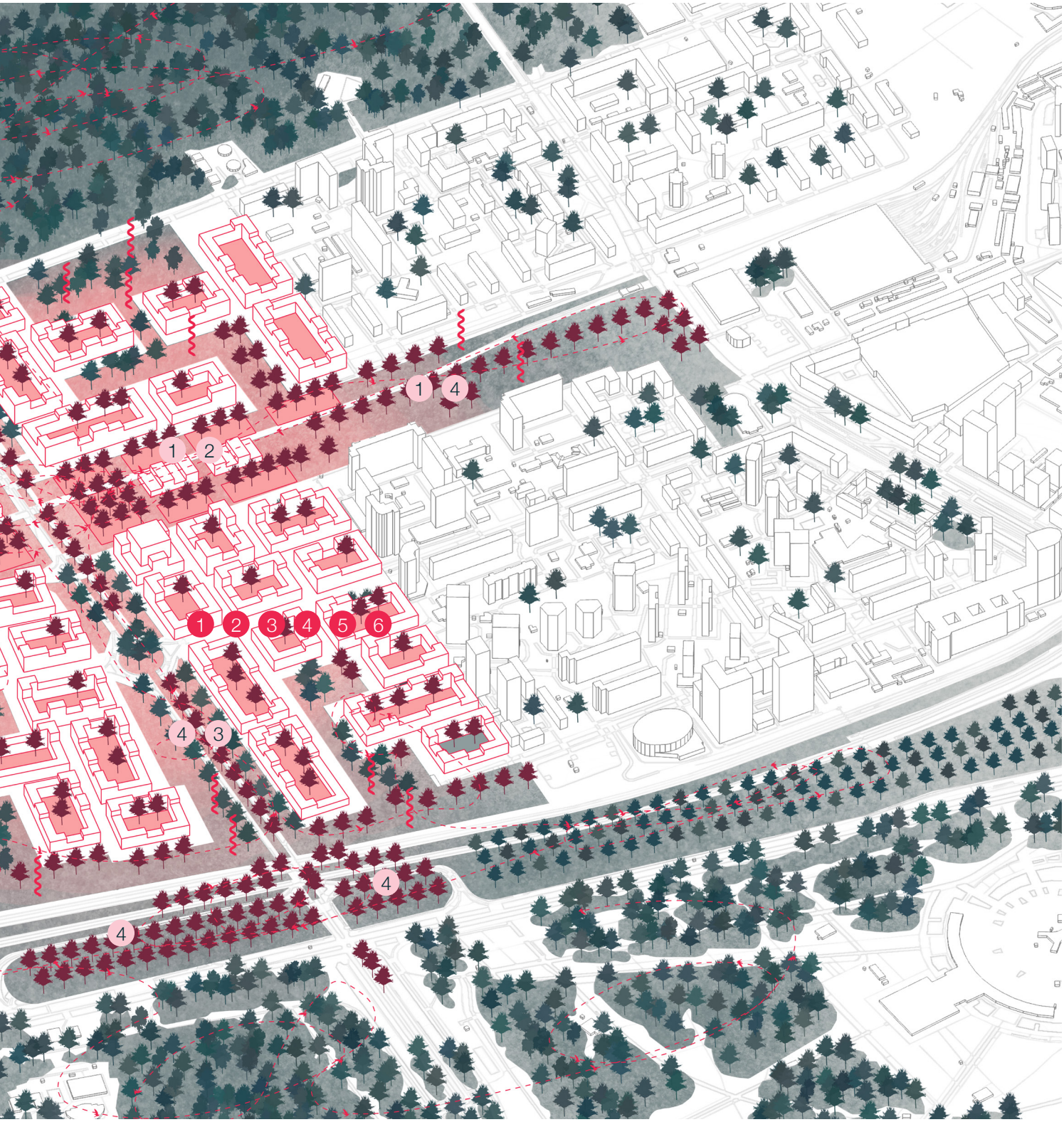


Built Environment

1. Applying a density gradient in new residential development — lower density toward natural areas, higher density toward the existing urban fabric
2. Positioning new housing on renewal sites as sustainable, green and energy-efficient from the outset — attracting and forming communities that share these values
3. Installing shared sustainable living infrastructure in all new development: solar panels, collective energy storage, heat pumps, waste sorting and composting, electric vehicle charging
4. Designing car-free courtyards with rain gardens and sustainable drainage systems — minimising load on urban stormwater infrastructure and restoring soil permeability
5. Preserving all existing mature healthy trees on renewal sites
6. De-sealing existing impermeable surfaces and replacing with permeable alternatives

Buffer Zone

1. Removing derelict warehouse buildings and informal garage cooperatives that create liminal and degraded urban edges — opening these areas back to the city and replacing with public space
2. Creating new types of community-oriented public spaces — including shared greenhouses, community workshops, and spaces for collective ecological practice



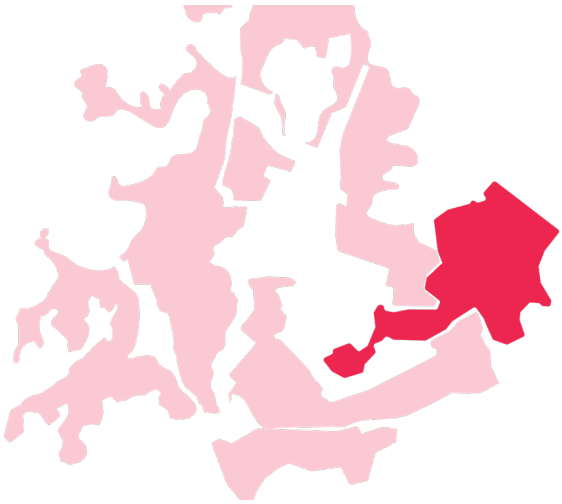
3. Connecting parks and green areas into a continuous green network — enabling both human movement and fauna migration between patches
4. Intensifying street tree planting along wide roads to strengthen the green network and reduce heat island effect

Forest Core

1. Protected from any capital construction, hard surfaces, and utility infrastructure
2. Conserved in its maximum extent as an ecologically intact and self-sustaining system
3. De-sealing existing hard surfaces within the forest and replacing with permeable natural ground cover
4. Cleared of all illegal structures and encroachments
5. Replacing solid perimeter fencing with native hedgerow planting — opening the forest edge to ecological processes
6. Transitioning from a recreation and entertainment ideology toward a philosophy of ecological stewardship and nature protection — recognising nature as a value in itself
7. Connecting fragmented green patches into a unified ecological structure — restoring linkages to strengthen biodiversity
8. Auditing all non-compatible uses within the park and developing a phased relocation strategy
9. Relocating non-compatible recreational and sports infrastructure from the park into the buffer zone

Figure 3.73 Fragment Axonometry

Belt 4
window of opportunity



Description of Belt Type 4

This boundary typology encompasses the eastern boundary of the Moskvoretsky Natural History Park, where it borders the development zone of the Bigger City project — a large-scale redevelopment of former industrial land and renewal of areas adjacent to Moscow-City, the existing international business district. Bigger City represents the horizontal expansion and institutional consolidation of a new business belt for the capital — planned to include commercial, office, and residential development across a territory of significant scale.

The typology also includes active residential construction sites currently being built in immediate proximity to the eastern edge of the park, including developments in the Mnevniki floodplain area.

The primary challenge of this typology is the substantial increase in population density that the new development will generate directly adjacent to the protected area. The Bigger City project currently does not provide for green or recreational infrastructure within its boundaries — meaning that the recreational demand of the incoming population will fall entirely on the Moskvoretsky Natural History Park, significantly increasing pressure on the protected area and its ecological systems.

Figure 3.74 Meso scale

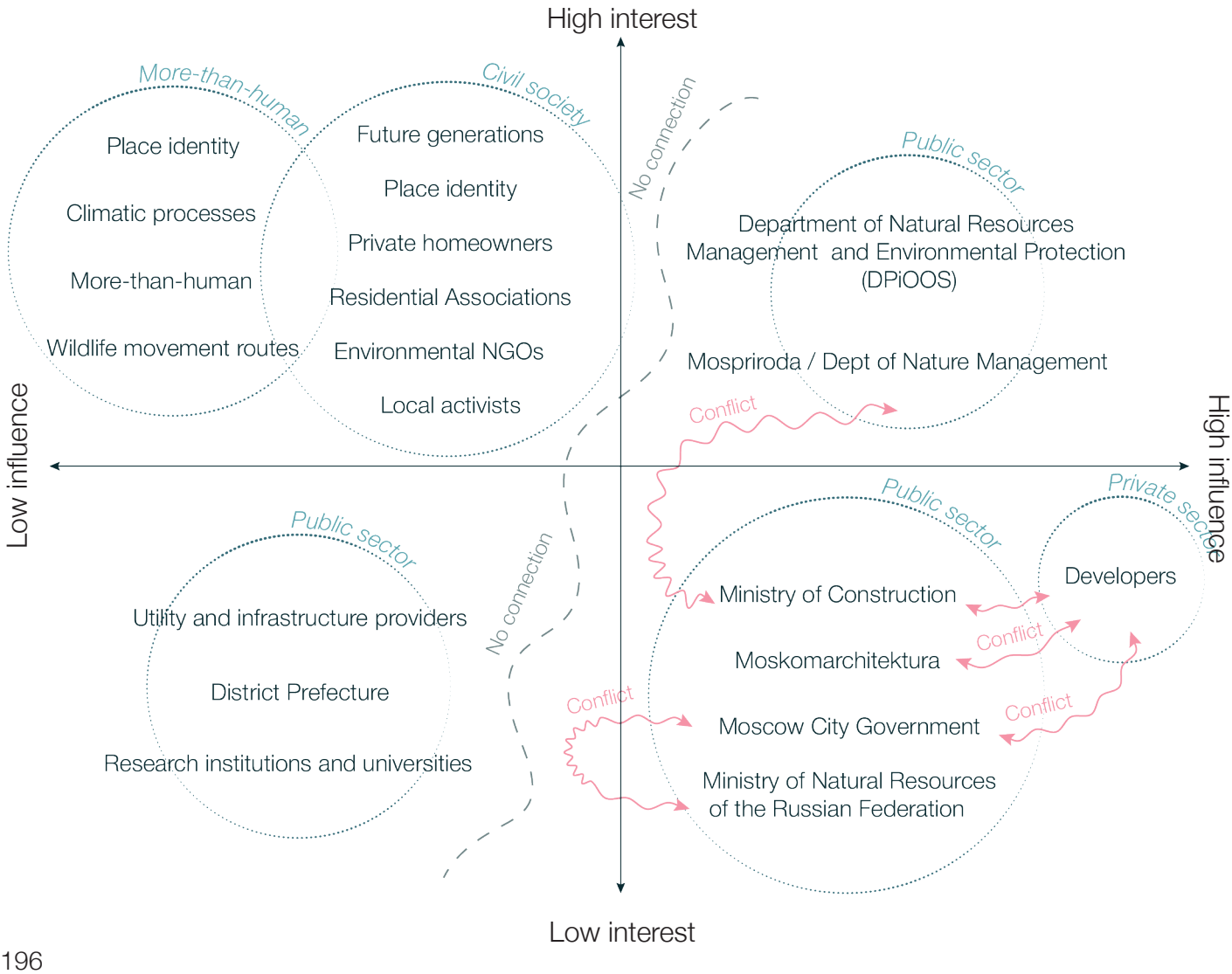
Figure 3.75 Shelepikhinskaya Embankment

Figure 3.76 Shelepikhinskaya Embankment

Existing Governance Model

Bigger City is a large-scale project conceived as an expansion of Moscow-City into a multifunctional district of metropolitan scale, covering a territory of over 3,000 hectares. The project focuses on the redevelopment of former industrial zones with new residential complexes, offices, roads, and metro stations planned within the next 6–7 years. Planning authority rests with the Moscow City Government. Development decisions are made through Moskomarchitektura and the city planning committee. Mospriroda manages the adjacent protected area but has no formal role in the redevelopment planning process. No active ecological governance exists on the territory. The zone is not a blank slate — it contains existing residential quarters alongside newly built and under-construction developments.

Figure 3.77 Power-Interest Analysis



	Key Stakeholders
S.1	Moscow City Government — primary decision-maker and planning authority for the Bigger City zone
S.2	Moskomarchitektura — approves master plans and architectural designs
S.3	Mospriroda / Department of Nature Management — manages adjacent SPNA, must be formally integrated into redevelopment governance
S.4	Large-scale developers — design and deliver mixed-use development across the zone, primary drivers of ecological and social outcomes
S.5	Institutional investors and banks — finance the redevelopment
S.6	Environmental NGOs — ecological monitoring, advocacy, formal representatives of nature's interests
S.7	Existing residents of affected districts — living in established neighbourhoods facing gentrification pressure, rising costs, and loss of access to familiar public and green spaces
S.8	Future residents of new developments — primary long-term community, currently non-existent, whose values and engagement will determine stewardship capacity
S.mth	More-than-human actors — contaminated brownfield soil, pioneer ecosystems on brownfield, adjacent SPNA, bird and fauna populations, hydrological cycles, future ecological core
	Key Conflicts of Interest
C.1	Developers plan and deliver individual projects within a 5–10 year horizon — ecological restoration of brownfield soil and emergence of a functioning ecosystem requires 20–30 years. These timescales must be formally reconciled in development agreements
C.2	Without binding conditions the default outcome is generic premium development that increases pressure on the adjacent SPNA rather than buffering it
C.3	New developments built alongside existing lower-income neighbourhoods create social stratification and unequal access to green and recreational infrastructure
	Nature Representation
N.rep	The Bigger City territory currently has no ecological governanc — it is treated exclusively as a development opportunity. The adjacent SPNA has no formal mechanism to assert its interests in the redevelopment planning process.
	Main Threats
T.1	Loss of ecological potential of brownfield territory
T.2	Increased pressure on the adjacent SPNA from new population density
T.3	Decorative rather than functional greening — green washing without genuine ecological performance
T.4	Gentrification pressure on existing communities
T.5	Loss of the opportunity to create a new ecological core
	Conclusions
CL.1	The highest-stakes typology — the scale of intervention creates both the greatest ecological risk and the greatest regenerative opportunity
CL.2	Without binding ecological conditions from the outset, the default outcome is generic premium development increasing pressure on the adjacent SPNA

Proposed Policy Model

	Proposed Model
P.1	Establish a joint ecological working group — Moscow City Government, Mospriroda, and one environmental NGO — with mandatory sign-off authority on all master planning decisions for the Bigger City zone
P.2	Require full brownfield ecological survey before any demolition or construction begins — documenting existing pioneer ecosystems and soil condition as a baseline
P.3	Mandate ecological performance targets — soil health, biodiversity indicators, water cycle closure, energy self-sufficiency — as binding conditions of all planning permissions with annual public reporting
P.4	Mandate public accessibility of all green and recreational infrastructure within the Bigger City zone — no private or gated green spaces permitted
P.5	Require social infrastructure planning as a condition of all planning permissions — new developments must demonstrate contribution to shared public amenity accessible equally to all district residents
P.6	Collaborate with Moscow's leading scientific and academic institutions — including Russian State Agrarian University (RSAU-MTAA) and the Botanical Garden of the Faculty of Biology of Lomonosov Moscow State University — to define ecological goals and the green framework from the outset rather than deferring these to later project phases. These institutions can also propose genuinely scientific, experimental, and radical methods and technologies that can be jointly tested with the city
P.7	Position the Bigger City as an open model and living laboratory — publishing real-time ecological and resource performance data publicl
	Rights of Nature
	The following rights belong to the existing and future ecological systems of the Bigger City territory and its relationship to the adjacent protected area. These rights are formally represented by Mospriroda, RSAU-MTAA, the Botanical Garden of MSU, environmental NGOs, and existing residents of adjacent districts — who are already present and must be formally included in governance from the outset.
RN.1	Right to Exist — pioneer ecosystems, soil communities, and existing vegetation on the brownfield site have the right to be surveyed, recognised, and incorporated into design rather than erased
RN.2	Right to Regenerate — contaminated and degraded soils have the right to active restoration before any development begins
RN.3	Right to Connectivity — the territory has the right to ecological connectivity — functioning as a stepping stone network linking the adjacent SPNA to the wider regional green network
RN.4	Right to Continuity — ecological processes established through restoration have the right to continuity across all development phases
RN.5	Right to Clean Water and Soil — natural systems have the right to protection from further contamination through mandatory remediation and closed-loop water management
RN.6	Right to Representation — nature's interests must be formally represented in all master planning, investment, and development decisions through designated institutional actors with binding authority
RN.7	Right to Become — the territory has the right to develop into a new ecological core over time — this long-term potential must be protected from short-term development logic
	Obligations — Developer and Community Commitments
	Developers:
OD.1	Design the district as a self-sufficient closed-loop system — energy, water, and waste managed on-site with minimal load on existing city infrastructure
OD.2	Mandatory soil remediation, de-sealing of hard surfaces, and material recovery from demolished structures before any new construction begins

OD.3	Design green spaces as dynamic systems — ecological restoration as public identity of the district, not decorative afterthought
OD.4	Establish a unified green framework on former brownfield land before residential occupation — connecting fragmented patches into a stepping stone network accessible equally to new and existing residents
OD.5	Publish real-time ecological and resource performance data publicly — operating as an open model for other developers
	Institutional partners:
OI.1	Define ecological goals and green framework from the earliest planning stage — not deferred to later phases
OI.2	Lead ecological monitoring, research, and experimental technology testing across the territory
OI.3	Provide public ecological education open to all district residents
	Community — existing and future residents:
OC.1	Participate in shaping the evolution of green spaces at each development stage
	Restrictions — Prohibited Actions
R.1	No construction without completed brownfield ecological survey and soil remediation approved by Mospriroda
R.2	No decorative-only greening — all planted areas must meet minimum biodiversity standards
R.3	No encroachment on or severance of ecological corridors connecting the district to the adjacent SPNA
R.4	No private or gated green and recreational spaces — all amenity publicly accessible to existing and new residents equally
R.5	No development phase leaving remediated land without ecological cover
	Incentives & Enablements — City Support for the Community
SC.1	Density bonuses and planning permissions conditional on verified ecological performance
SC.2	City co-investment in shared green framework, stepping stone network, and public ecological spaces
SC.3	Long-term institutional partnerships with RSAU-MTAA, Botanical Garden of MSU,
SC.4	Model district status with city-backed promotion as a benchmark for sustainable redevelopment
SC.5	ESG-linked financing for developers meeting ecological performance targets City-subsidised shared mobility, energy, and ecological infrastructure for all residents during initial settlement period
	Governance — Proposal
G.1	Joint Ecological Working Group — Moscow City Government, Mospriroda, RSAU-MTAA, Botanical Garden of MSU, environmental NGO — with mandatory sign-off on all master planning decisions
G.2	Ecological performance bond per developer — released in phases upon verified delivery of ecological conditions
G.3	Annual public ecological report covering soil health, biodiversity, water cycle, energy performance, and green framework development
G.4	Community Ecological Council from the outset — seats reserved for existing adjacent neighbourhood representatives alongside new residents
G.5	Ecological targets reviewed every 5 years in response to actual performance data

Figure 3.78 Meso scale strategy

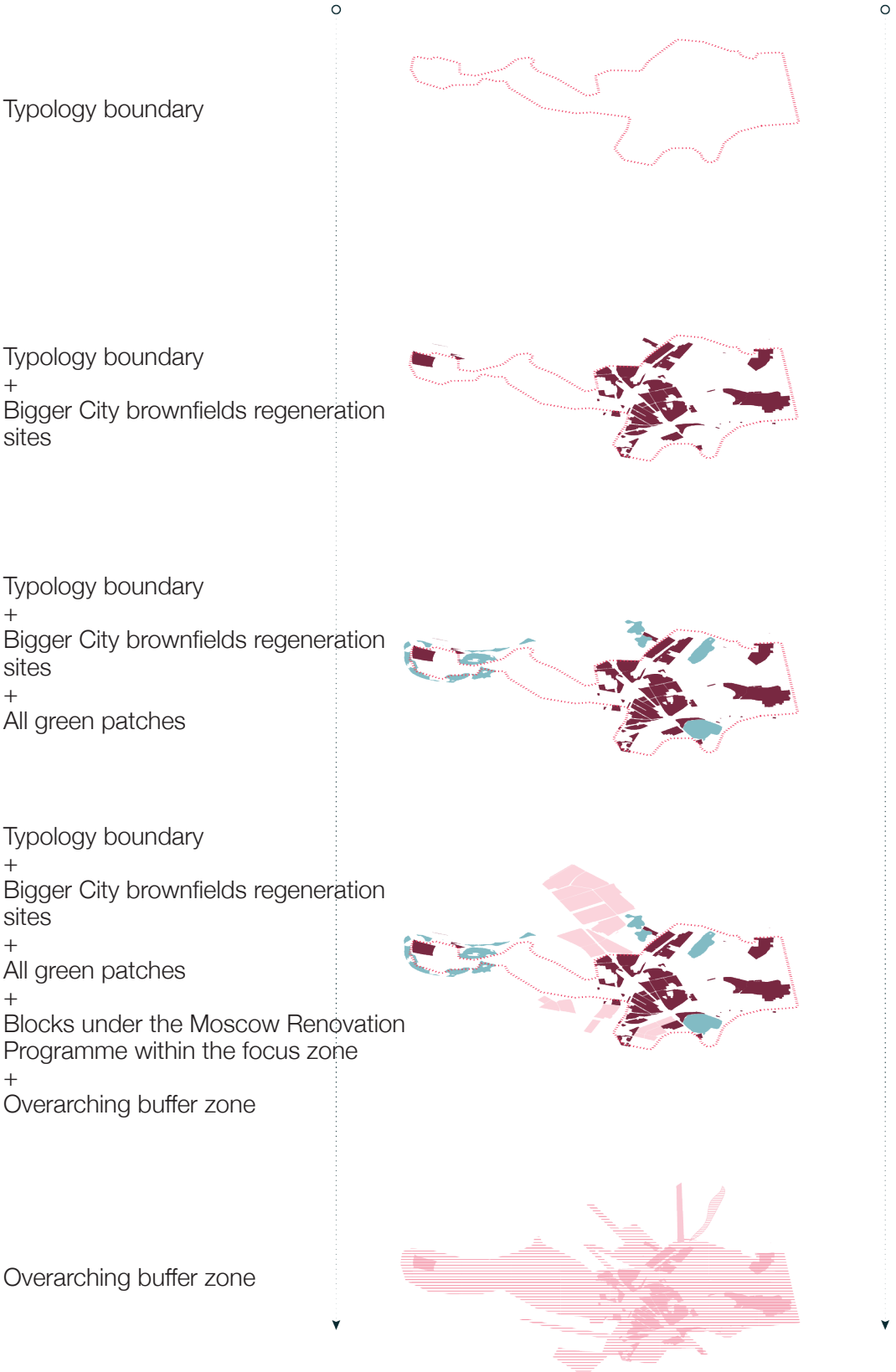
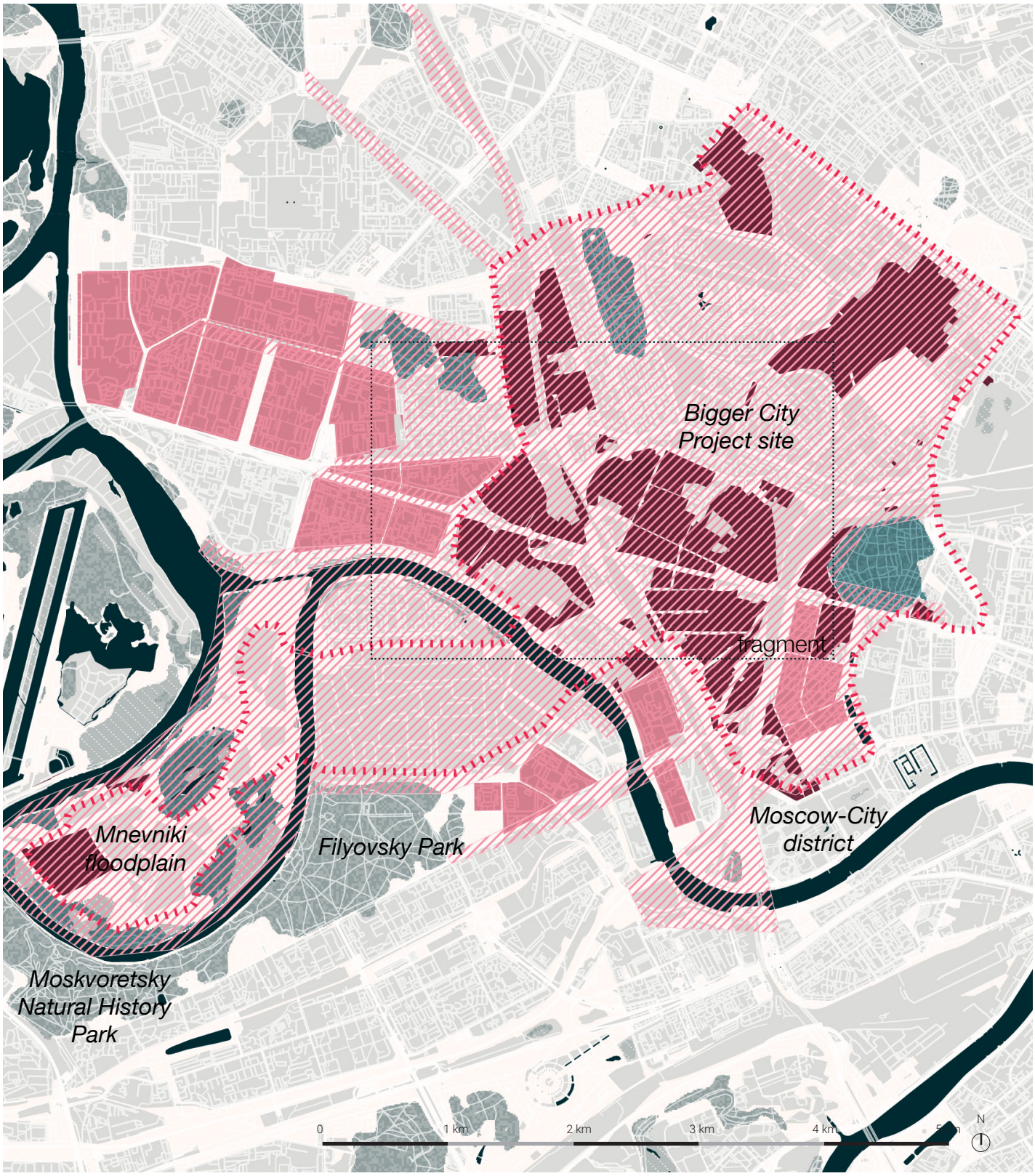


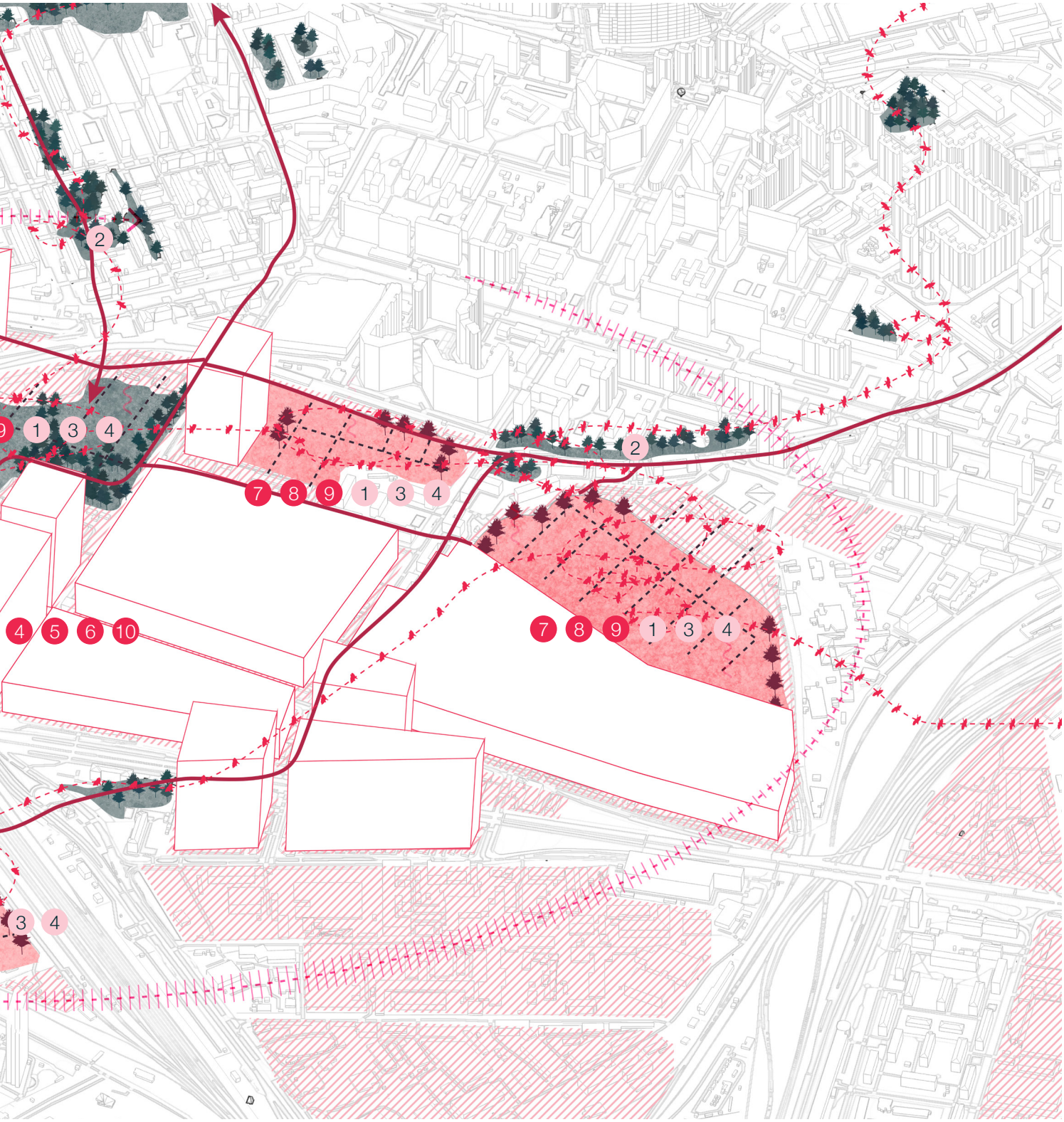
Figure 3.77 Meso scale



Green pathes
Built environment
Residential houses under the Moscow Renovation Programme
Bigger City brownfields regeneration sites
River
Roads highways city infrastructure
River
Gradient\ Buffer zone

Built Environment

1. Designing as a self-sufficient closed-loop district — minimising load on existing city infrastructure
2. Implementing on-site water harvesting, purification and reuse; passive climate solutions minimising energy consumption
3. Implementing decentralised waste processing: anaerobic digestion and alternative technologies
4. Demolishing existing structures with mandatory material recovery, de-sealing of hard surfaces, and soil restoration before new construction
5. Creating shared experimental spaces for radical technological solutions — co-operated by academic institutions, developers, and investors
6. Installing shared public infrastructure for sustainable practices: permaculture, greenhouse rentals, urban farming
7. Designing green spaces as dynamic systems evolving with the neighbourhood — recovering soils and emerging biodiversity as part of the district's identity
8. Replacing decorative landscaping with real ecological restoration as public value and educational resource
9. Introducing temporary adaptive uses at early stages — dog parks, horse trails, allotments — transitioning to richer ecosystems as landscape matures
10. Positioning the district as an open model for other developers: publishing real-time resource and ecological performance data publicly



Buffer Zone

1. Opening new green spaces on former brownfield sites — establishing a green framework on previously degraded land
2. Connecting fragmented green patches and new brownfield spaces into a unified green framework — meeting residents' recreational needs and reducing pressure on the protected area
3. Designing the green framework as a stepping stone network along bird movement routes — reinforcing existing patches into a self-sustaining ecological system supporting wildlife populations and habitats
4. Designing green spaces as dynamic systems evolving from open restoration territories toward mature biodiverse landscapes over time

Implementing closed-loop stormwater collection and natural filtration across all open spacesDe-sealing hard surfaces and bioremediation of all brownfield areas before new use is introduced

Forest Core

1. Protected from any direct encroachment or infrastructure extension from the redevelopment zone
2. Pressure minimised by saturating the district with its own green and recreational infrastructure
3. Conserved as long-term ecological anchor — as the district's green framework matures, it is expected to form a new ecological core joining the city's wider green network

Figure 3.78 Fragment Axonometry

development process for green infrastructure

This section provides an overview and explanatory text for the subsequent diagram, describing the transition process from Belts to Green Infrastructure, which consists of several sequential phases.

Phase 1 — Regeneration phase.
In this phase I clarify and assess the situation. My starting point is always a green patch — it serves as the foundation for the entire subsequent process. Having identified and evaluated it, the next step is to determine which Rights of Nature need to be designated to this green patch in order to ensure its resilience.

Phase 2 — Stabilisation phase.
I analyse the stakeholders of the given territory and identify the Actors who will subsequently take responsibility for this green patch and represent its Rights of Nature throughout the further development process. In this phase I also evaluate which ESS the territory provides and decide which Ecosystem process direction will be the primary one — that is, which ecosystem strategy I consider most important and optimal for this particular context. For instance, in typology 1, where the green patch is a forest, I would more likely choose strategies that promote its conservation and enhancement. In typology 4, where green patches are extremely small in area and heavily fragmented, the strategy would more likely focus on creating a new core — adapting to existing conditions and evolving alongside them.

Phase 3 — Diversification phase.
In this phase I develop a list of actions for the specific territory. Actions may imply different levels and vectors of territorial development in order to enhance its resilience, regeneration and biodiversity. This ultimately leads to the designation of a buffer zone where these actions and rules will be applied. The rules of the buffer zone will differ slightly across typologies, as they depend on context. For example, in typology 1 the buffer zone sits between the forest and existing settlements, functioning as a mitigation zone — a space of contact and co-management where both people and forest benefit mutually. In typology 2 the buffer zone is oriented towards creating connections between two large natural cores and maintaining their continuity. The buffer zone of typology 3 operates as a gradient, enabling the return of more territory back to green patch and integrating more green infrastructure directly into new development. The buffer zone of typology 4 extends across the entire Bolshoy City regeneration project area, proposing that in order to minimise its negative impact, a new green core must be established to connect existing patches into a unified framework.

The diagram on the following page illustrates how this process unfolds over time — from initial assessment to the formation of a resilient green infrastructure, adapted to the context of each typology.

development process for green infrastructure

Figure 3.79 Typology 1
Forest-Adjacent Residential Clusters

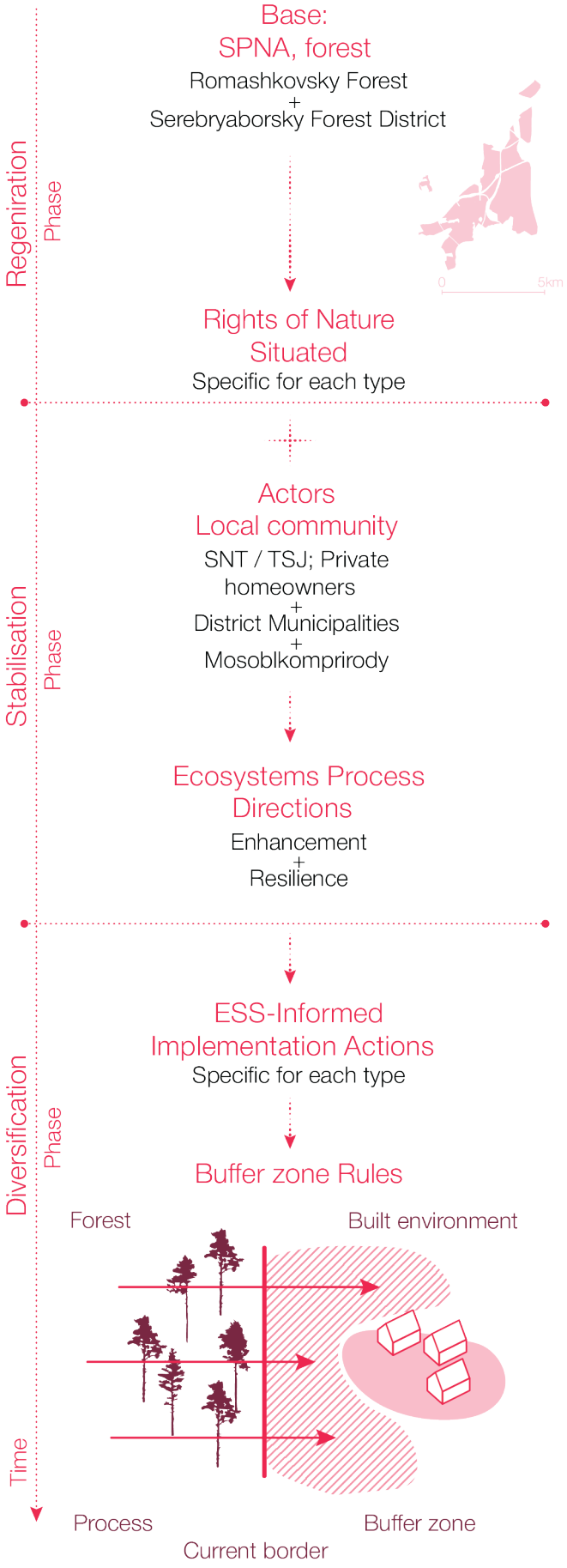


Figure 3.80 Typology 2
Infrastructure and industrial boundary

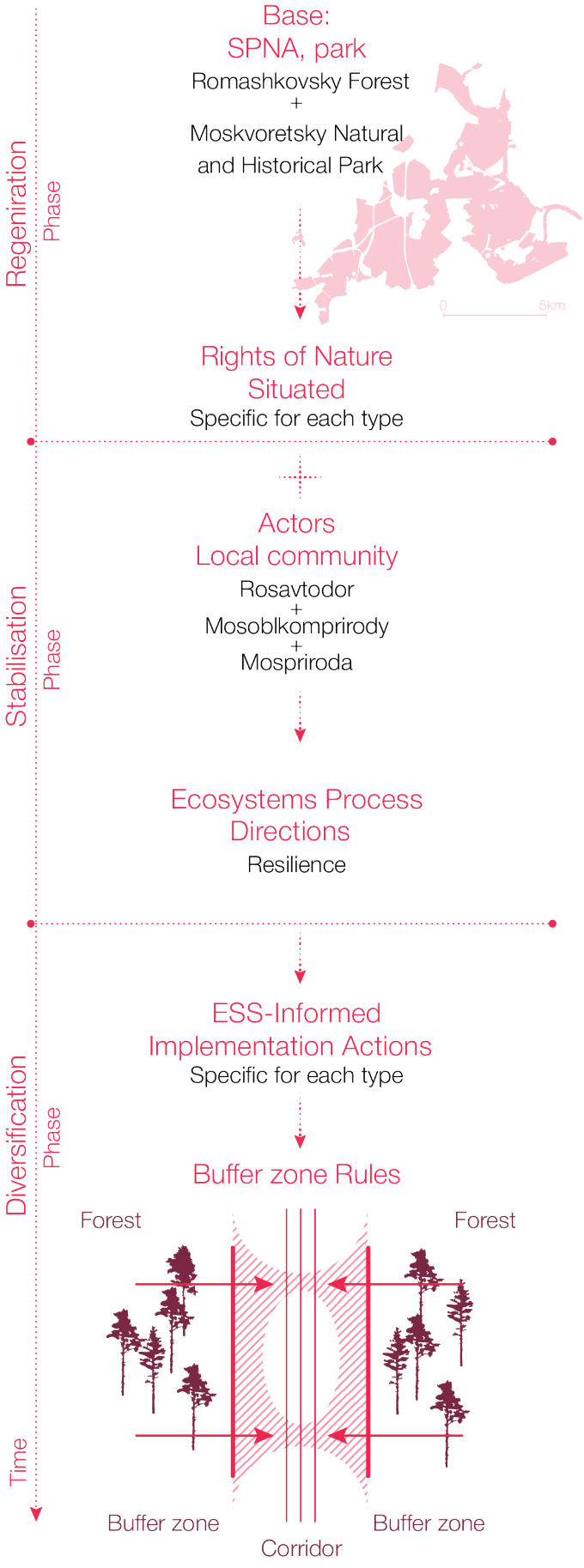


Figure 3.81 Typology 3
Renovation zones

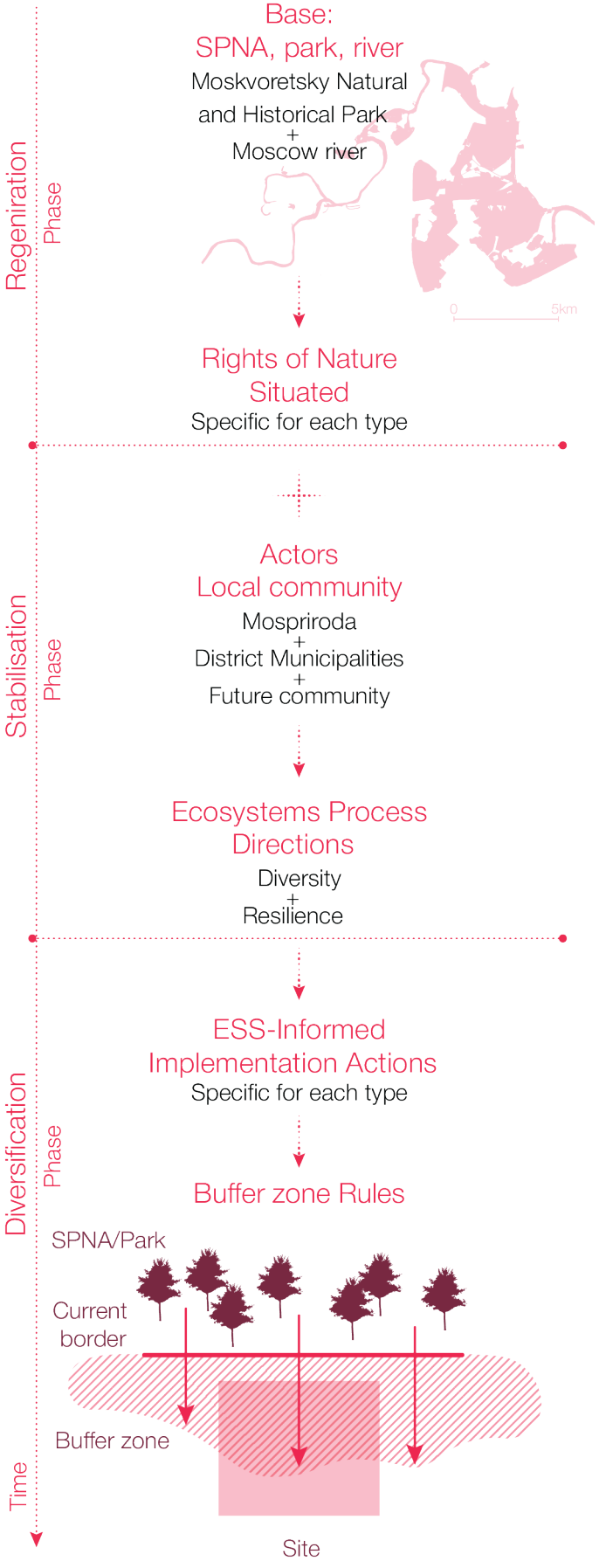
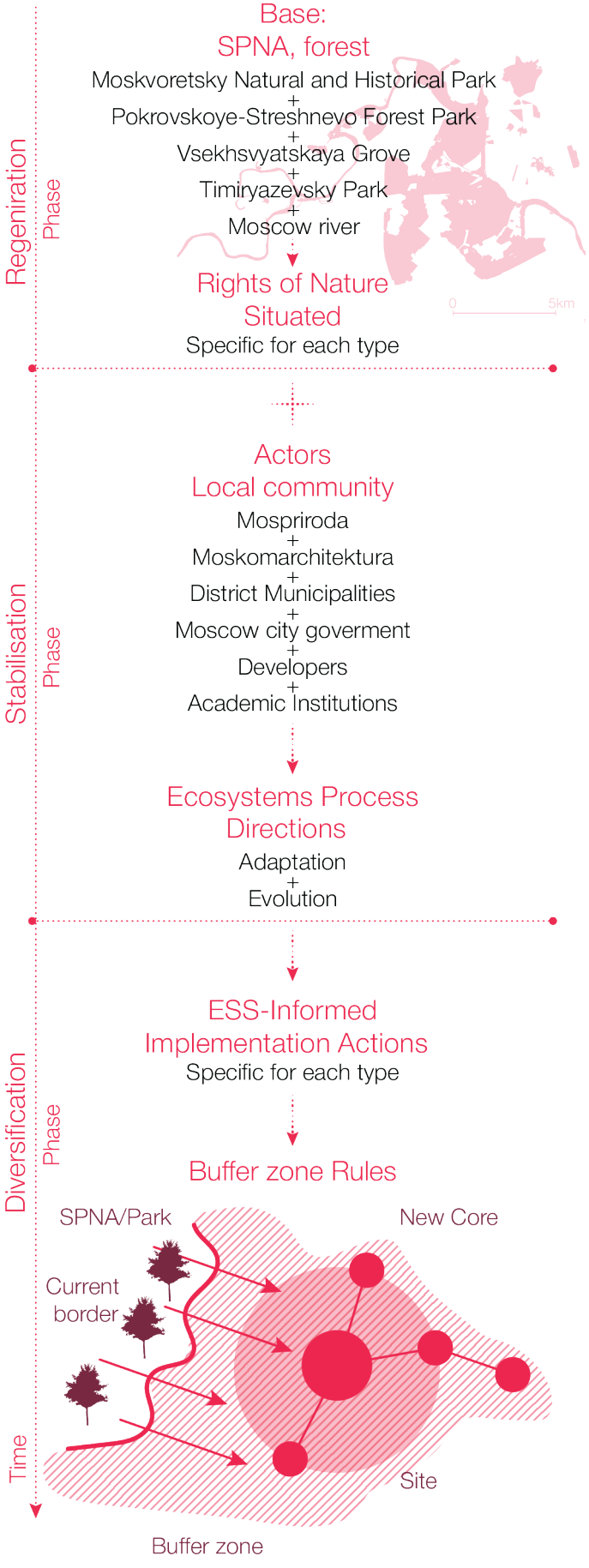


Figure 3.82 Typology 4
Large-scale redevelopment / Bigger City

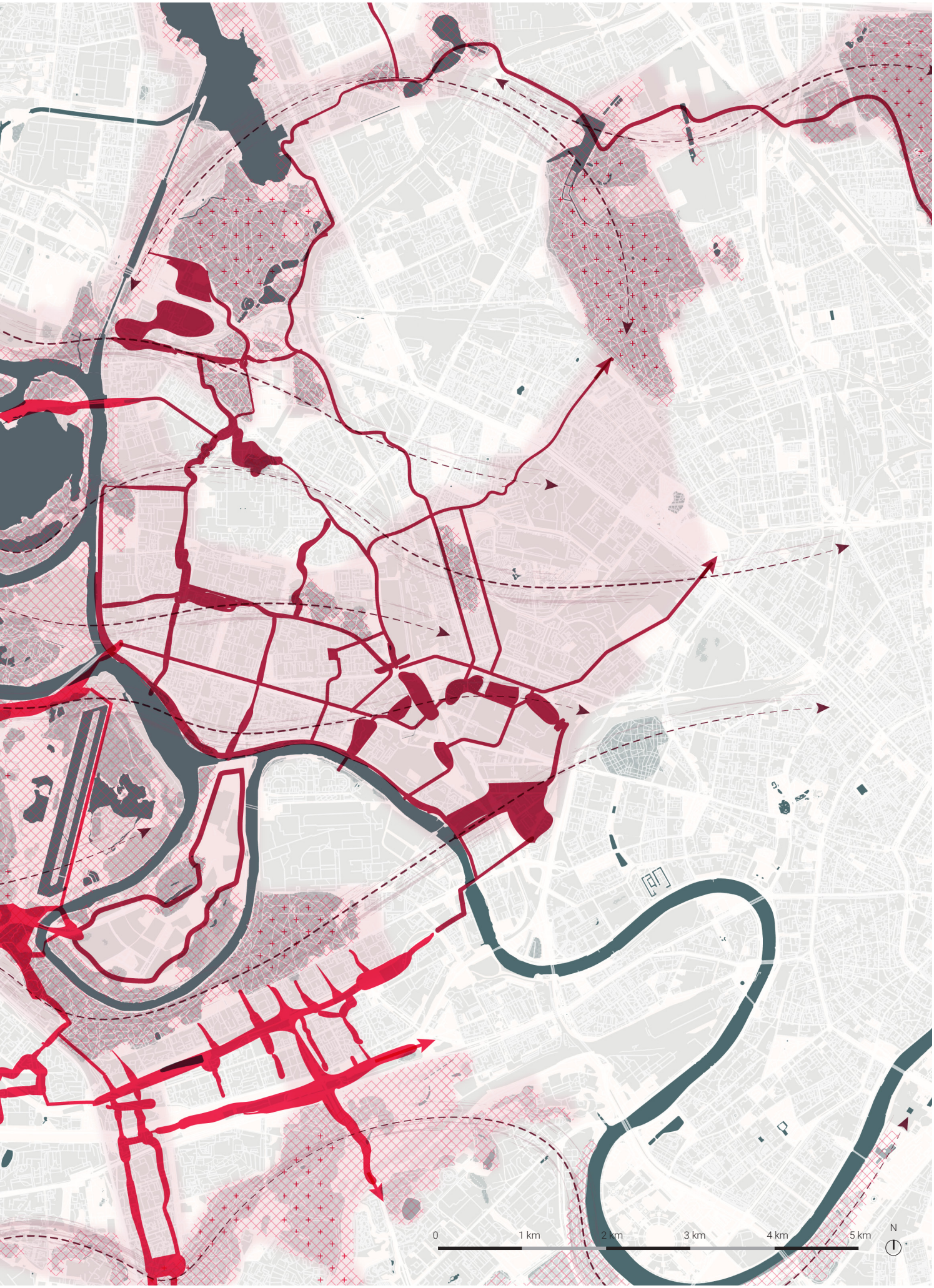


vision map

The buffer zones form a continuous protective infrastructure across the territory. Together they grow into a new ecological backbone — connecting fragracted green patches and integrating them into a single, supported natural framework.

What was previously a series of isolated protected areas becomes a coherent system. The buffer is not peripheral — it is the new centrality.

Figure 3.83


0
1 km
2 km
3 km
4 km
5 km
N

part 4. conclusion

conclusions

This work set out to answer the question of **[MQ] How can we address future uncertainty and develop a long-term vision for Moscow's Protected Natural Areas to ensure that their intrinsic values are embedded in future decision-making, enabling long-term commitments in favor of nature?**

The analysis of the current state of SPNAs **[SQ-A]** revealed that despite their formal protected status, these territories are effectively deprived of functioning governance, systemic support, and strategic vision. Official protection exists on paper, yet in practice neither the conservation, maintenance, nor development of these territories functions as it should. It is precisely this systemic contradiction between declared status and actual conditions that constitutes the primary threat to their future existence.

The assessment of values and vulnerabilities **[SQ-B]** identified a deep structural paradox: natural territories provide the city with an enormous volume of ecosystem services free of charge — from temperature regulation and air filtration to stormwater absorption and biodiversity support. At the same time, it is these very qualities that make adjacent areas attractive for development, driving intensive construction that gradually destroys the natural values upon which demand is based. SPNAs thus become victims of their own worth — a mechanism that, if the current logic is maintained, inevitably leads to their degradation.

The design component **[SQ-C]** proposed an alternative approach: rather than continuing to encroach upon natural territories, the work raises the question of how to find ways to give back what has been taken, integrate green infrastructure into the urban fabric, and identify spatial zones where a mutually beneficial dialogue between the city and nature becomes possible. The developed strategy — encompassing the identification and typology of buffer zones, proposals for governance reform, and actions grounded in ecosystem services — constitutes not merely a design proposal, but an operational framework that can be applied and scaled.

The hypothesis formulated at the outset of the research — that reframing SPNAs as active urban actors rather than passive resources can open the path to more resilient and long-term strategies for their protection — has been confirmed. The key instrument of this reframing is the concept of Rights of Nature: recognising natural territories as subjects rather than objects, as bearers of their own right to exist. Only through this shift — from the logic of exploitation to the logic of co-existence and dialogue — does it become possible to establish long-term commitments in favour of nature, embed its values into decision-making processes, and build a new governance model rooted in local communities and capable of representing the interests of nature where existing institutions fall short.

Attempts to engage with the problem of SPNAs in Russian urbanistic discourse do exist, yet they tend to remain at the level of tactical and operational solutions — how to survive financially, how to minimise conflicts, how to adapt to existing constraints. This work attempts to approach the subject systemically, proposing not adaptation to existing constraints, but a reconceptualisation of the very logic of the relationship between city and nature. In a broader context, the application of the Rights of Nature framework within the highly centralised governance system of a post-Soviet city represents a new combination that may prove relevant for other cities with similar institutional structures and similar pressures on natural territories. Methodologically, the work draws on the principles of landscape ecology and the concept of Rights of Nature, translating them into a spatial dimension through strategy, typologies, and design tools — an approach that remains fragmentarily represented in existing literature.

implications and recommendations — next steps

I regard this project not as a finished statement, but as a starting point — a first step in a conversation that, in my view, has long been overdue, yet in the Russian urbanistic context has never been fully initiated.

The most immediate next step I envision is the realisation of pilot projects for each of the typologies — small but strategically precise interventions that could prove the concept in practice. In typology 1, this could be a single cottage settlement or village located at a critically important position on the forest edge. In typology 2 — one or two eco-crossings at the most vulnerable points of discontinuity between green patches. In typology 3 — a single residential block within the renovation programme, where new development is designed from the outset within the logic of the green buffer. In typology 4 — a single pilot redevelopment unit: a browfield site that is already naturally being reclaimed by vegetation, located in a strategically significant place. A full mixed-use project on this site would secure the key territories for recultivation and lay the foundation of a new green core — to which subsequent units would gradually be added. The axonometric drawings in the design section of this work illustrate what such a pilot unit might look like for each typology — it is precisely from such targeted yet conceptually coherent steps that systemic change can begin.

The next horizon is scaling to the level of the entire city. The typological logic is universal and applicable to any SPNA in Moscow. Typology 1 is always about connection with the periphery and the Moscow Region. Typology 2 is always about disrupted corridors and restoring continuity between green patches. Typology 3 is about fragmentation pressure and integrating green infrastructure into new development. Typology 4 is about unique situations of high urban pressure, where a green patch needs to be created. The developed framework can therefore be applied to all of Moscow's specially protected natural areas — which ideally should form the basis for a unified city-wide strategy, adopted at the municipal level and supported by the corresponding political will.

The long-term ambition of this project extends beyond Moscow. I believe that through changes in the city — through growing public awareness, through a revaluation of priorities within the professional community, and through a gradual shift in attitude among decision-makers — it will become possible to extend a similar logic of buffer gradients to the natural territories and forests of the Moscow Region. The Region has significantly fewer resources and capacities than the city, yet the pressures on its natural environment are not lesser. Moscow, in this sense, could serve as a point of departure and a model.

And finally — the largest and most important goal I would ultimately hope to reach: the recognition of Moscow's and the Moscow Regions forests as subjects of law. The recognition that a forest is not simply a resource or a backdrop, but a distinct and complex system — a biotope with its own logic, its own cycles, and its own value, which exists independently of whether it is needed by human beings at any given moment — and which has the right to exist on those terms.

On the graduation process: How did the research and design process work out (or not) according to the original plan (and why or why not)?

I will begin with a thought that stayed with me throughout the entire work.

The way we currently treat nature in the city is a very serious problem. Most people — and unfortunately many of those who make decisions — do not fully grasp that the cycles of human beings, the cycles of the city, and the cycles of nature are fundamentally different. For a tree to grow, it needs on average between 20 and 40 years, depending on the species. If a person plants a tree today, they will only see it fully grown in old age, if at all. The way trees and natural territories are currently treated — how little they are valued — is not simply sad. In my view, it is also a profound disrespect toward those who came before us.

Let me explain. Soviet panel housing is commonly described as bleak and depressing. Perhaps. But it was always designed together with greenery. Every such neighborhood had a square, a park, or a boulevard — often dedicated to the memory of important events or heroes. On our study area alone, adjacent to the SPNAs, there are several of them. All these trees and shrubs were planted with the future in mind — with the thought that the next generations would live in a more beautiful city. And they grew. In the courtyards of panel housing there is shade and coolness in summer, trees rustle in the wind, birds sing in the mornings, lilac and mock orange bloom in spring. All of this — small pieces from which a sense of place is built, an attachment to one's courtyard, block, neighborhood. And if one considers the historically and culturally significant parks and forests that reach deep into history — how much memory and how many human stories they hold.

If all of this were demolished and rebuilt — even with the most modern and high-quality public realm — what has been lost cannot be recovered. By building over forests and felling old trees that inconvenience new development, we rob ourselves: we deprive ourselves of history, of something real and valuable, and we disregard the care and labour of those who were here before us. It is precisely this feeling — that something important is disappearing and cannot be brought back — that became my starting point.

As for the process of the work itself — I generally moved in the direction I had set out from the beginning. My primary goal was to convey the idea that SPNAs carry an undeniable value and qualities that cannot be compensated for by infrastructure — and that these territories can and should be approached differently.

One significant shift did occur along the way. Initially I intended to place a stronger emphasis on the city scale and engage with it more extensively. However, it quickly became clear that it is impossible to speak meaningfully about such a scale without going deeper — without a detailed understanding of how these territories function, what is happening to them, and why. I therefore made the choice to prioritise depth, and I stand by that decision.

There are also things I did not manage to realise — largely due to time constraints and the necessity of making choices. Two layers I would have liked to develop further, had the work continued.

The first is the biological dimension. I chose a more urbanistic approach and worked with space. But it would have been very interesting to collaborate with landscape ecologists and biologists and add a layer in which spatial decisions are directly shaped by the composition and condition of each specific forest. Every forest is a complex and often heterogeneous system. There are forests with valuable tree species that have formed naturally; there are forests that grew on cleared land, where pioneer species predominate — these will eventually give way to more stable compositions, but their biological value and biodiversity are fundamentally different in the meantime. In this work I was guided by a general understanding of the composition of the forests and parks on the territory, but a more in-depth analysis would have been very valuable. This layer would have added an important further dimension to the project.

The second is the cultural dimension and the sense of place. At the beginning of the work I laid a small foundation in this direction, but ultimately had to make a choice. The cultural layer, in my view, should be equal in weight to the green buffer — with

its own logic and the same depth of development. I had an idea that alongside the existing green patches, the lost ones should also be considered — those historical and cultural landscapes whose echoes are still felt in the city-as-palimpsest. The traces and fragments that remain from significant historical layers deserve their own typology and their own actions. This is something I would like to explore further.

On the methodology: How are research and design related in your project?

One of the most important methodological decisions I made was to place the environmental component at the foundation of the project from the very beginning — rather than treating it as a backdrop or a constraint. In standard professional practice it is very easy to fall into a trap: you start with zoning regulations, red lines, cadastral boundaries — and behind all these constraints you lose sight of the fact that it is possible to look at the urban fabric from an entirely different angle. It was important to me to try designing not from the familiar logic of construction, but from the possibilities and morphology of natural ecosystems. Why is the environmental component in projects almost always treated as an afterthought — yet almost no one designs as though the environmental part is the primary subject? This question was my point of departure.

Research directly underpins the design decisions — nothing in my project emerges from thin air. At the foundation of every design decision lie the characteristics of a specific green patch, the findings from the territorial analysis, and the principles of landscape ecology. I consciously aimed to make the strategy as realistic as possible: if one imagines it being adopted at the city level, all stakeholders — planners, ecologists, local communities, and representatives of government — should be able to understand its logic and participate in the process.

What is the main value of your project and what are limitations of your work?

The main value of the project, in my view, lies in the fact that it is logical, clear, and straightforward — and at the same time offers a systemic perspective on a problem that in the Russian context has until now been addressed in a piecemeal and situational manner. It was important to me to produce not simply a visual vision, but a strategy with an internal logic within which all participants in the process can move in the same direction.

As for the main limitations of the project — they lie not in the design, but in the governance dimension. A strategy of this type must be comprehensive and adopted at the city level. It cannot function in isolation or as a one-off intervention — decisions extracted from their context will bring no benefit. Its implementation requires political will, the possibility of strengthening local self-governance, and the building of cross-institutional connections between departments and ministries. In this sense, the primary challenge of the project is not spatial — it is institutional.

back matter

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Figure 3.76 Shelepikhinskaya Embankment
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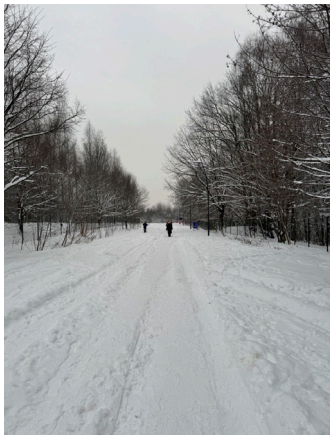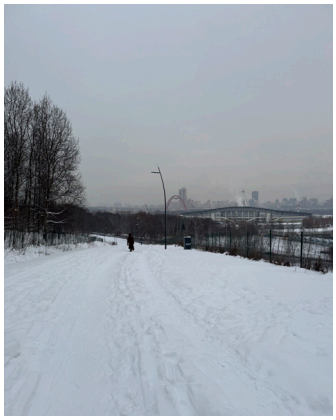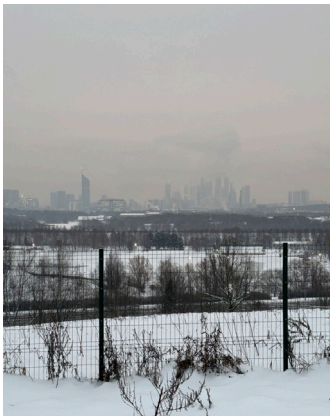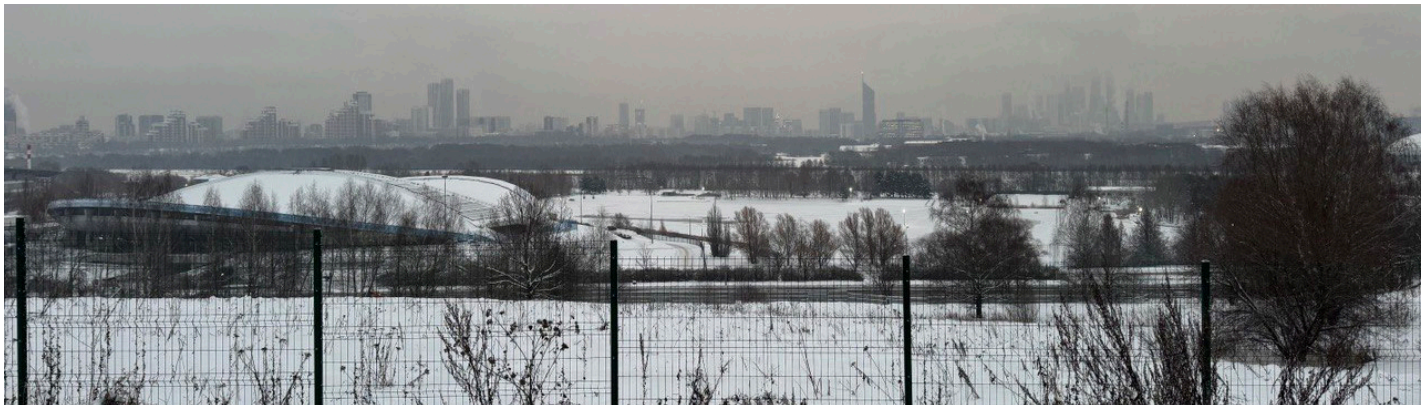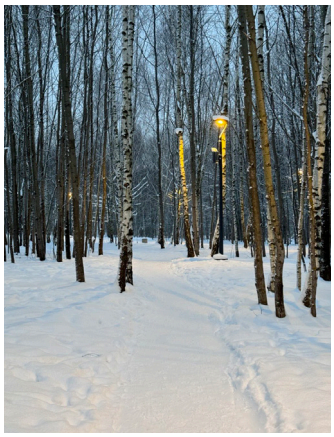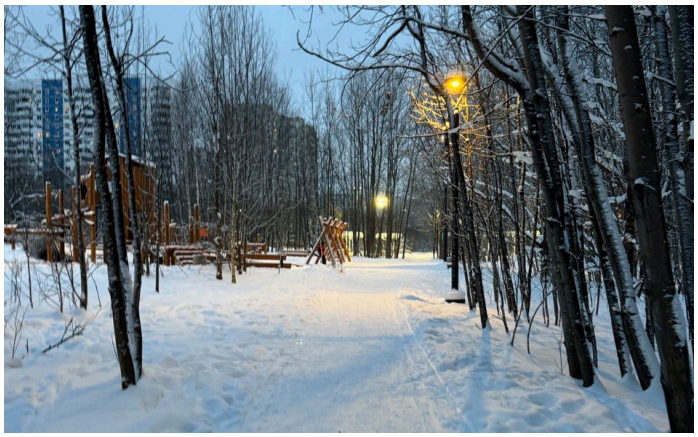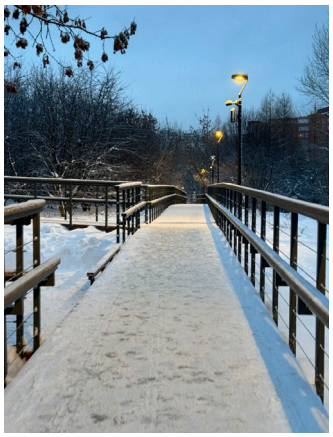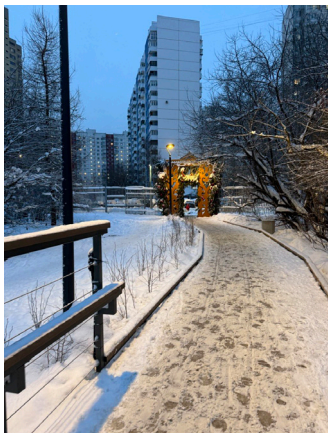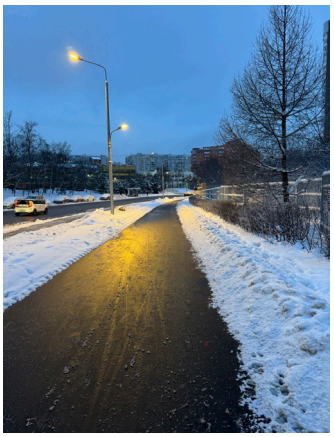
Field work January 2026