

GIZ Project
Strengthening of Urban Resilience in the Areas
of Supply Infrastructure and Housing in Ukraine

14.02.2025

EXPERT WORKSHOP

CASE STUDIES OF SUR PROJECT: Nizhyn, Poltava and Okhtyrka

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KNOWLEDGE TRANSFER FOR RESILIENT NEIGHBOURHOODS IN UKRAINE II



Urban Resilience | Selection of case studies

NUMBER OF CITIES AND THEIR POPULATION IN UKRAINE

in accordance with the categories defined by Ukrainian regulations

/as of 2020/

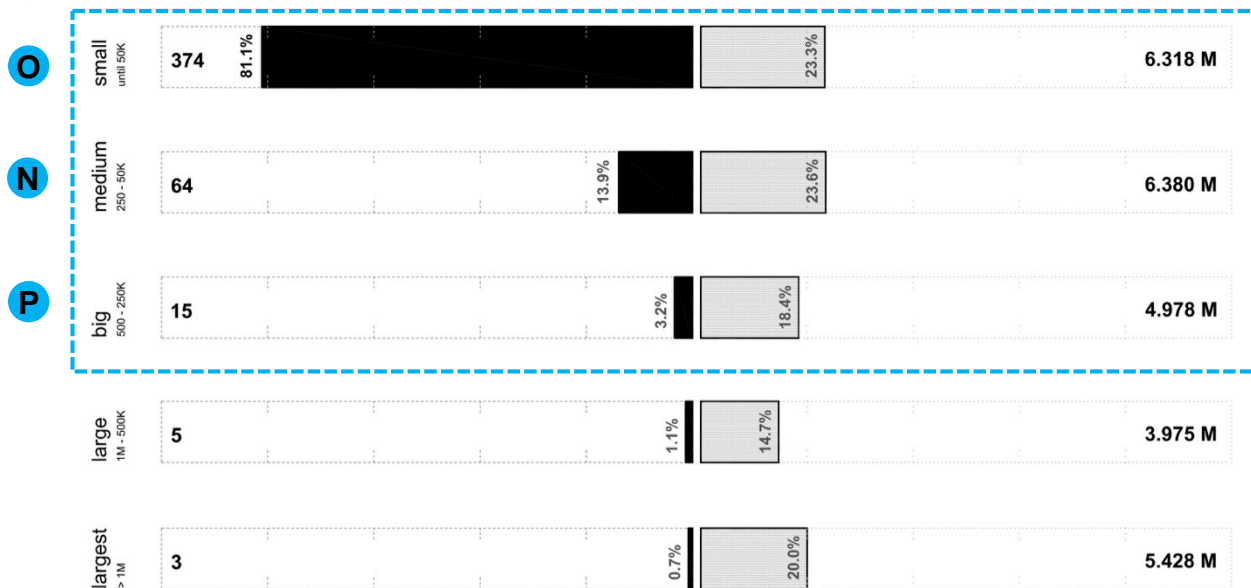


461 CITIES

[total number of cities in Ukraine]

27.080 MILLIONS CITIZENS

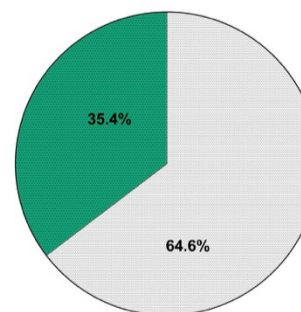
[total population in Ukrainian cities]



NUMBER OF POPULATION IN CITIES AND VILLAGES OF UKRAINE

/as of 2020/

14.822 M
in 29 254 villages*

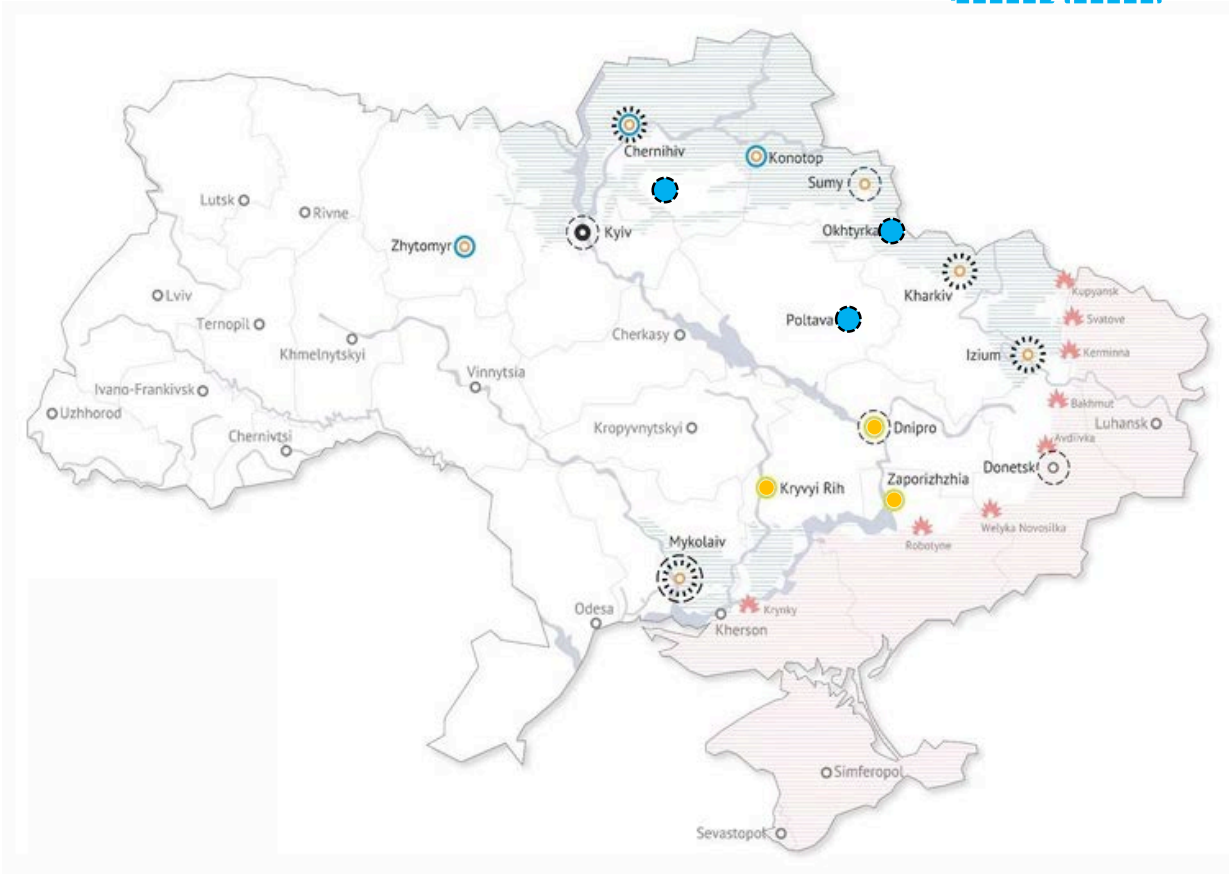
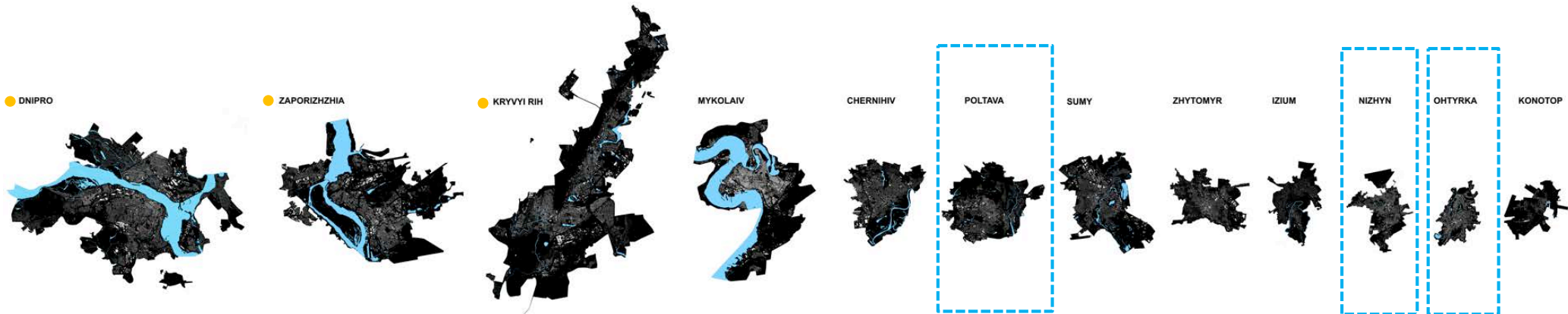


27.080 M
in 461 cities

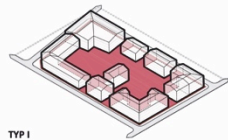
*
882 urban-type villages
[up to several tens of thousands of inhabitants];
28 372 villages
[often no more than a few thousand inhabitants]

as for 2020

Urban Resilience | Selection of case studies



Urban Resilience | Analysis of typologies

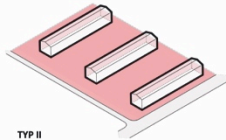


TYP I

Mixed-use city centers with block structure

[Development of the historic part of the city with a largely closed building structure and predominantly mixed use]

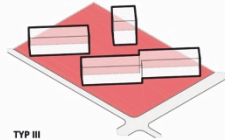
- Mostly closed block type with a variety of facades;
- clear differentiation between public and private space, public squares are formed by building, often not parcelled;
- high building density with medium population density;
- mixed functions of buildings with a high residential share;
- predominantly brick buildings up to 4 storeys, mainly supplied by the city's centralised utility networks.



TYP II

Multi-story residential complex up to 5 floors

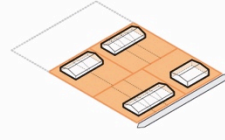
- Ordinary, multi-apartment buildings of up to 5 storeys and mostly homogenised facades;
- residential function with a slight inclusion of other functions;
- lack of parcelation of plots, with no differentiation between public, **commons** and public and private space;
- medium building density with high population density, with full supply from the city's centralised utility networks;
- active, standardised construction took place in the second half of the 20th century, mainly serial residential projects.



TYP III

Multi-story residential microdistricts, mostly 5 and more floors

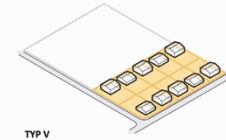
- Large areas of so-called "microdistricts" with predominantly multi-story residential building of from 5 floors with homogeneous facades, with no parcelation of plots;
- predominantly ordinary interconnected apartment buildings, rarely point buildings, framed by wide highways as central spaces and internal service driveways;
- lack of differentiation between public and private space;
- very high population density and medium building density;
- predominantly residential use and a small mix of functions on the ground floors, as part of the microdistricts, there are perimeter-fenced kindergartens and secondary schools;
- brick, panel houses, from the beginning of the 21st century - mainly monolithic iron and concrete frame with an elevator, garbage chute and mostly full supply from the city's centralised utility networks;
- construction started in the second half of the 20th century, often as mass-produced residential buildings.



TYP IV

City villa - duplex, triplex

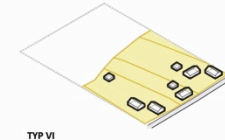
- Slightly densified development with low population density and predominantly residential use;
- consisting of two or more apartments, each with direct access to a private, sometimes shared, internal garden, a front yard often separated from the street by a fence;
- mostly a clear parcelation of plots with a clear differentiation between private and public space;
- brick buildings up to 3 storeys with partial supply from the city's centralised engineering networks.



TYP V

Single family house in a primarily orthogonal street grid

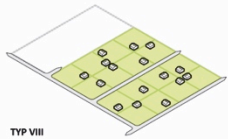
- [Individual one- or two-story residential buildings with a garden plot and outbuildings intended for the residence of a single household, mainly located in an orthogonal street grid **planned created**]
- Open one or two floors individual private houses with a small garden;
- clear plots parcelation organized in the form of a mainly orthogonal grid of streets, often present fencing;
- differentiated between public and private space;
- medium building and population density;
- predominantly residential use, partly with a fragmented mix of functions.



TYP VI

Single-family residential housing of mainly former separated settlements, naturally grown urban district, organically integrated into the landscape

- [Areas of low density and organically arranged predominantly single-storey residential development with private gardens]
- Mostly one-storey, individual housing with large gardens, located mostly within an organic street grid shaped by the natural landscape;
- areas in the past were often small, separate settlements with an open building structure, dominated by a mono-function of housing, with a weakly developed and defined local centre;
- fenced, parcelled plots, with a clear separation of the public and private space;
- low building and population densities;
- living with a high level of self-sufficiency.

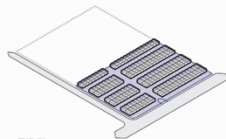


TYP VIII

Garden cooperative or garden house

[Areas of small gardens with private plots of land and adjacent estate buildings mainly for seasonal recreation]

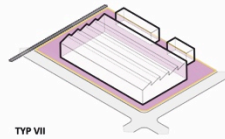
- Garden plots with a building for seasonal, temporary use;
- clear parcel fencing division with the average size of plots around 500 - 700 m²;
- very low building density with a clear division of public and private space;
- mostly one-storey, wooden and brick buildings;
- very high level of self-sufficiency.



TYP IX

Closed, ordinary, blocked, fragmented building structure with garage boxes and cellars

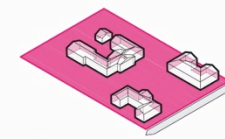
- a large, fenced closed area with a predominantly linear, high-density structure of garage boxes or land containers;
- high level of self-sufficiency



TYP VII

Industrial, commercial, warehouse building

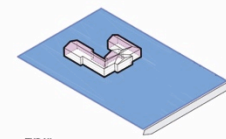
- Large structures with large-, medium- and small-scale industrial, manufacturing, warehousing and commercial buildings, mainly mono-functional buildings with homogenous facades;
- fencing, often in the form of a high wall separating the territory from the street and other spaces;
- highly variable building density, mainly with full supply from the city's centralised utility networks.



TYP X

Residential and campus

Other categories of well-defined large-scale building ensembles and campuses in the fabric of the city, such as civic, religious, medical, educational and sports complexes, military units, airports, etc. [...]



TYP XI

Detached building

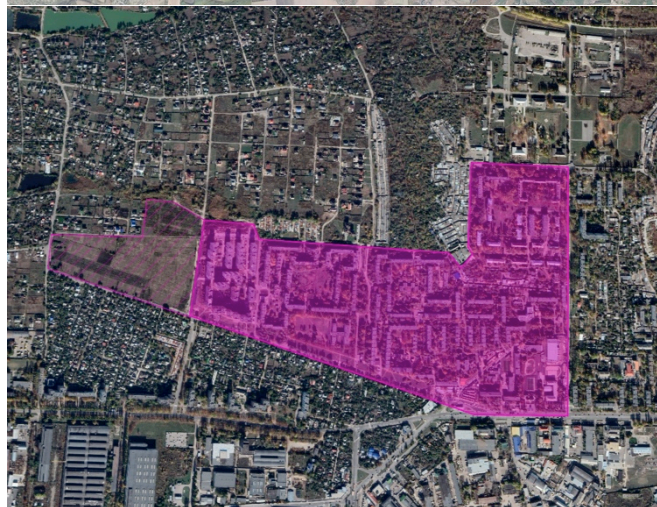
A special type of building that is unique to a particular city [...]

Urban Resilience | Case study

Nizhyn Mikrodistrict "Kosmonavtiv"



Poltava Mikrodistrict "Brayilky"



Okhtyrka Historical city center



| | Level city | Level microdistrict |
|--------------------|---------------|--------------------------------|
| Area: | 50.25 | 0,55 km ² |
| P. density: | 1 310 | ~ 5 454 people/km ² |
| Population: | 65 830 | ~ 3 000 people |

| | Level city | Level microdistrict |
|--------------------|----------------|---------------------------------|
| Area: | 122 | 0,74 km ² |
| P. density: | 2353,3 | ~ 40 540 people/km ² |
| Population: | 287 100 | ~ 30 000 people |

| | Level city |
|--------------------|------------------------------|
| Area: | 31,86 km ² |
| P. density: | 1 550 people/km ² |
| Population: | 46 660 people |

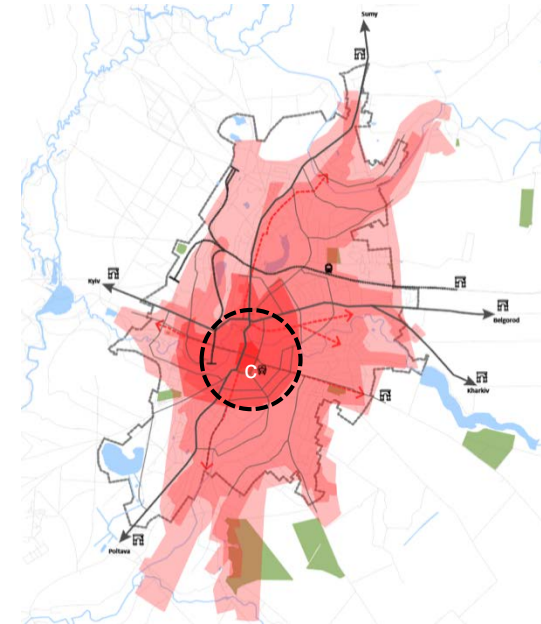
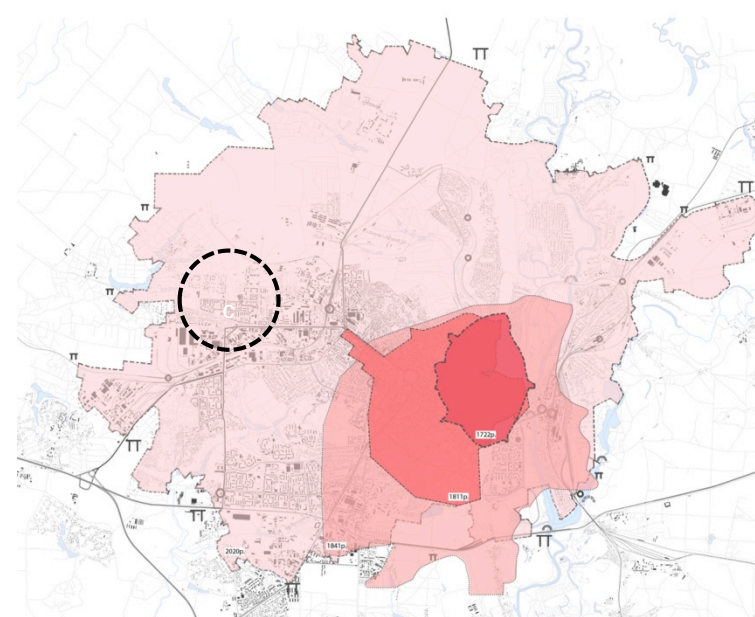
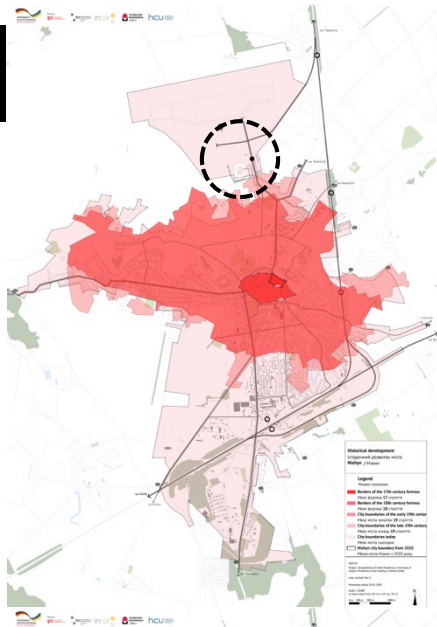
Urban Resilience | Case study

Nizhyn

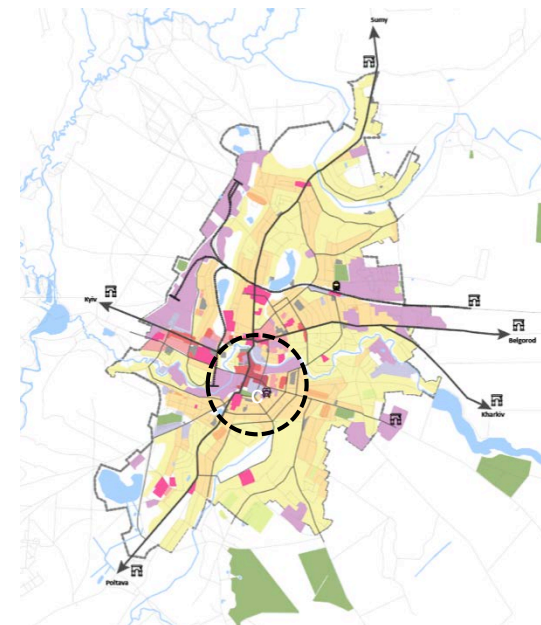
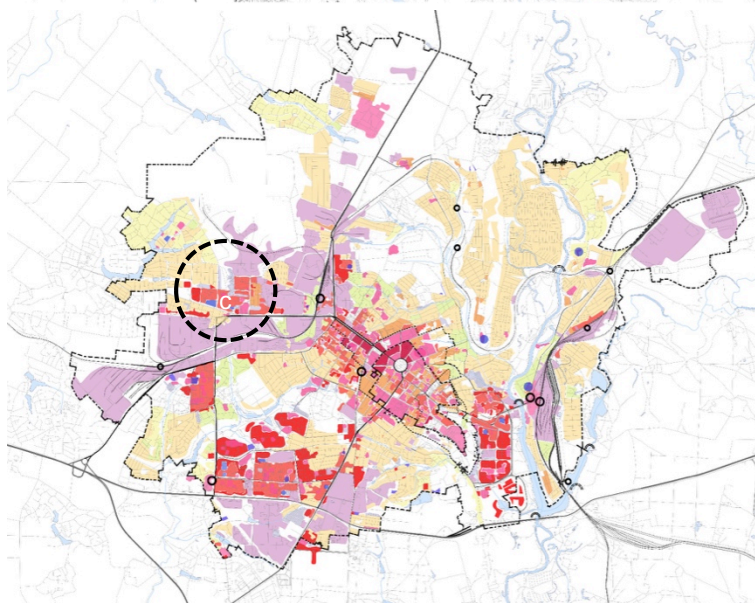
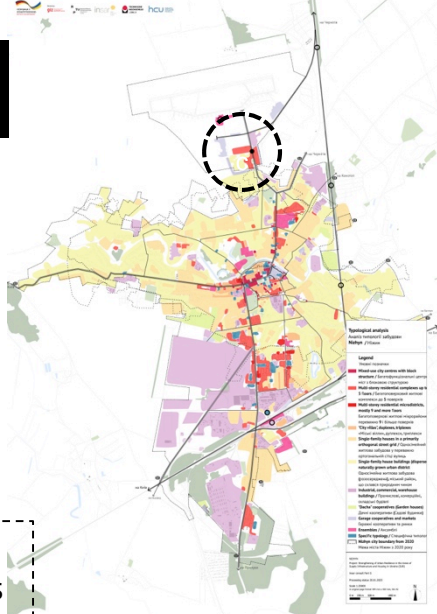
Poltava

Okhtyrka

Historical development

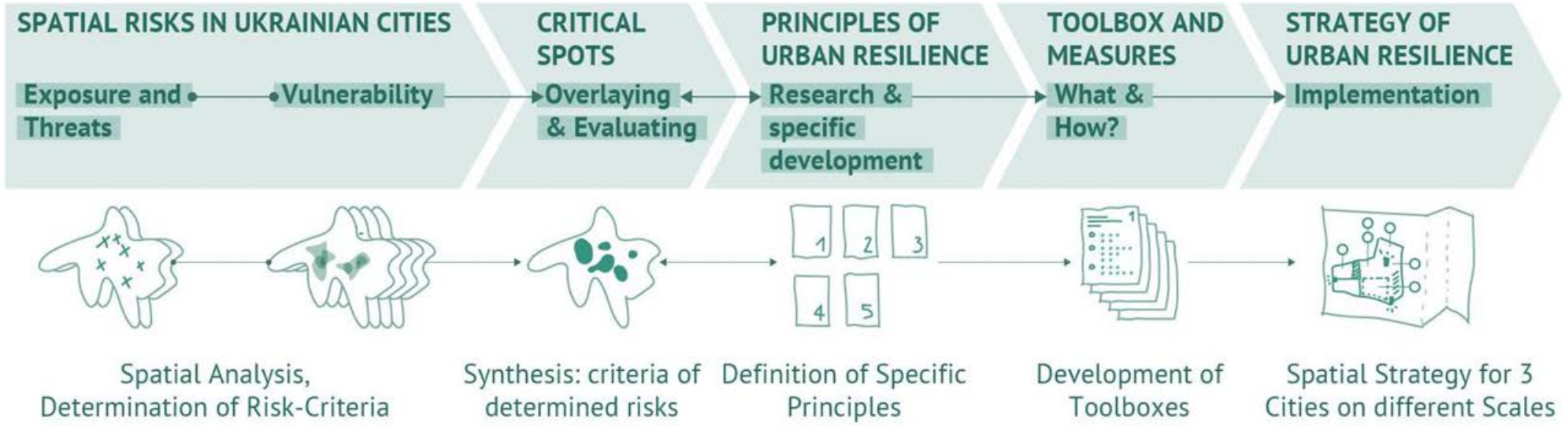


Typological analysis

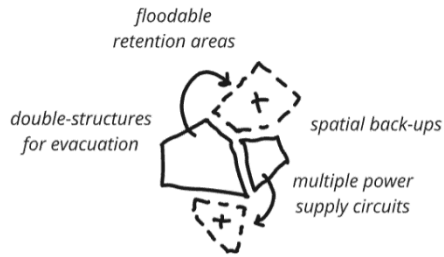


Resized files in different scales

Urban Resilience | Approach

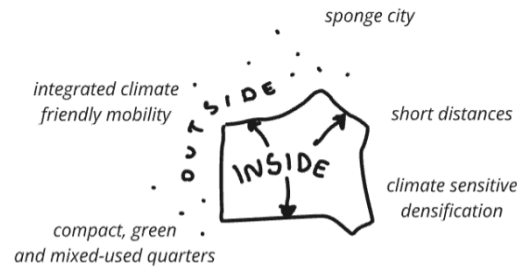


Urban Resilience | Principles of urban resilience



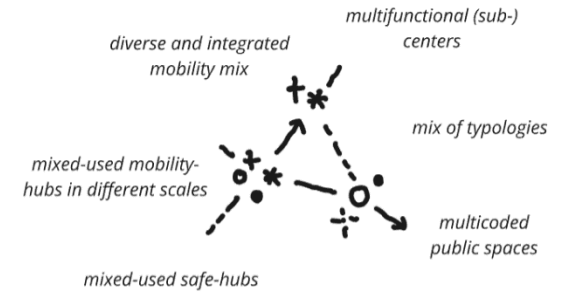
Redundancy

The same functions are provided multiple times, so that spare capacities (areas and infrastructures) are kept free to be able to react to unforeseeable risks and access them if necessary



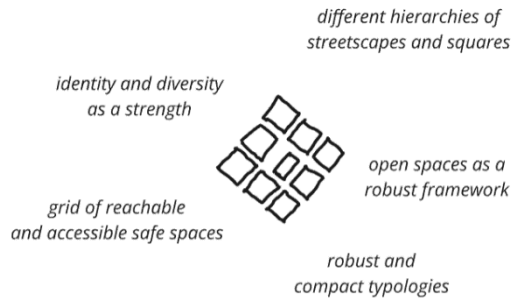
Efficiency

Spatial functions are planned in a space-saving manner or embedded in existing structures, resulting in efficient spatial structures



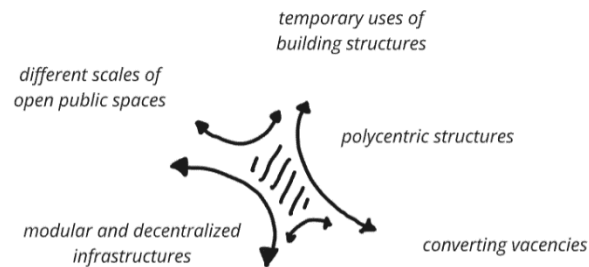
Diversity

Urban systems are less vulnerable to disruptions when different alternatives and choices are provided. Diversity enables a faster response to crises and the ability to adapt to new conditions.



Robustness

Robust systems take precautions, are self-sufficient in an emergency and overcome crises independently.



Flexibility

Flexible systems can change, evolve and adapt to changing circumstances

Urban Resilience | Case study

Nizhyn Ніжин



Area: 50.25 km²
Popul. density: 1 310 people /km²
Population: 65 830 people

Level [city]

50.25 km²

1 310 people /km²

65 830 people

Mikrodistrict "Kosmonavtiv" мікрорайон "Космонавтів"



Level [microdistrict]

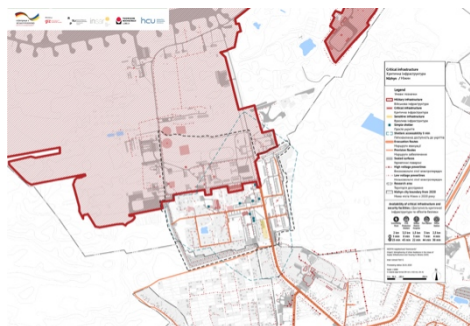
0,55 km²

~ 5454 people /km²

~ 3 000 people

Urban Resilience | Spatial analysis

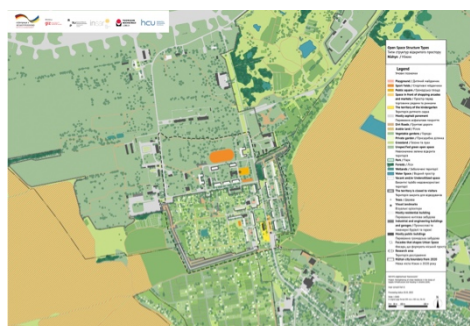
1. Critical infrastructure



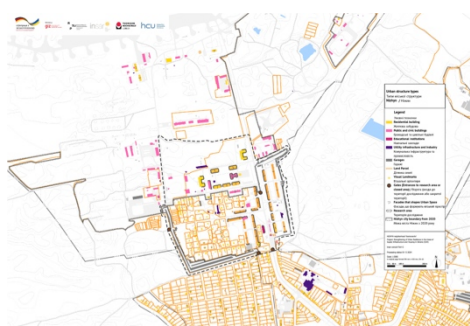
2. Mobility and accessibility



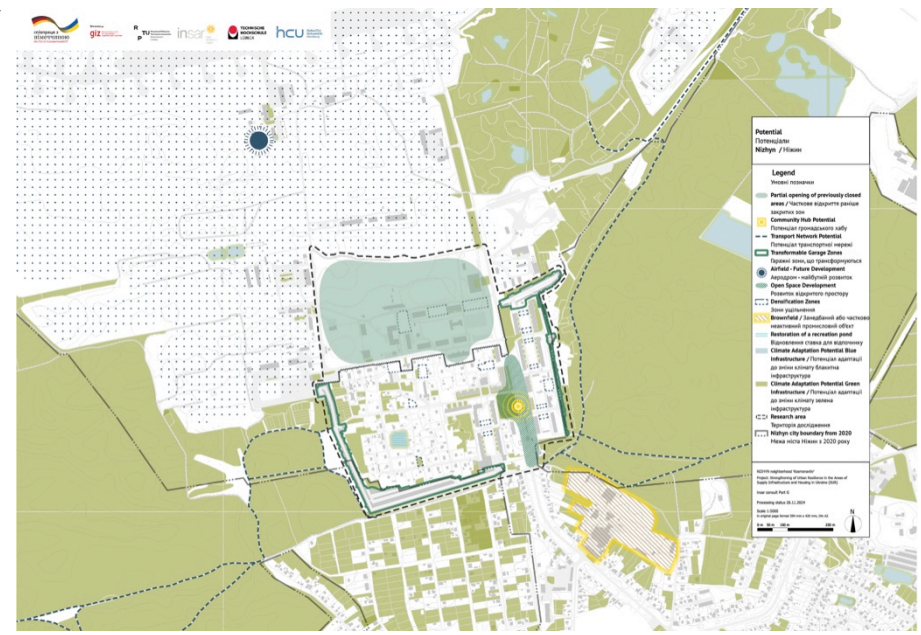
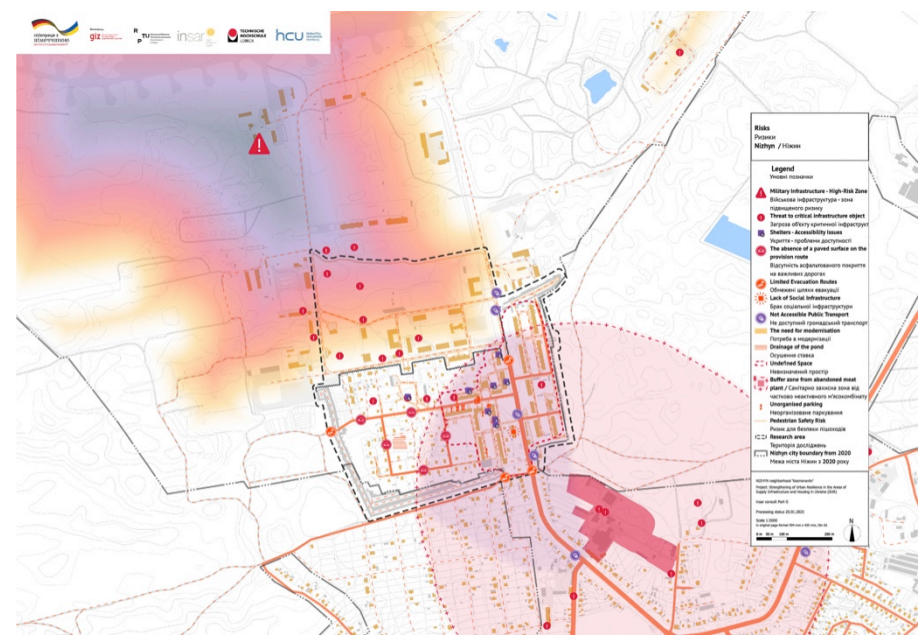
3. Open space structure types



4. Urban structure types



RISKS and POTENTIALS 'REACT & USE'



Urban Resilience | Current situation and challenges



Increase in living space by extending and glazing balconies with a ledge



Individual implementation of measures for facade insulation, as well as the installation of air conditioners and satellite dishes to enhance the comfort and functionality of housing

Individual solutions that reflect the needs



Public and recreation areas: park and pond

Urban Resilience | Current situation and challenges



Retail areas and shop
Торгові ряди та магазин



Outpatient clinic
Амбулаторія



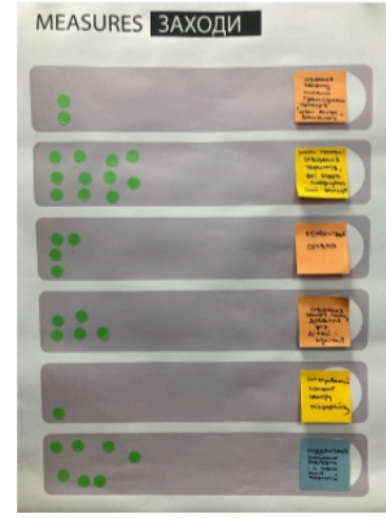
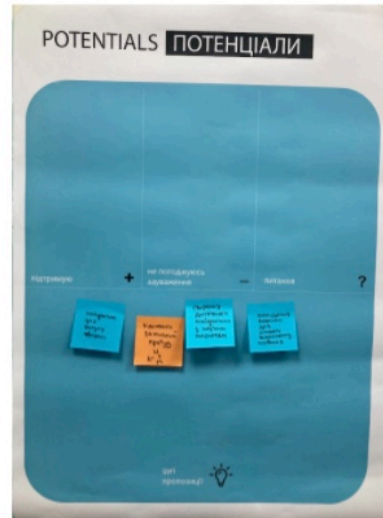
Kindergarten with a shelter
Дошкільний навчальний заклад з укриттям

Social and public infrastructure

Urban Resilience | Concept



Workshop 29.10.2024



Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"

Notes about the results, output and expected outcome (up date 19th Nov. 2024)

Site visit and workshop "Strengthening of Urban Resilience - neighbourhood 'Kosmonavtiv', Nizhyn, Ukraine":

Mission statement and goals for a resilient development of neighbourhood 'Kosmonavtiv':

Kosmonavtiv is to be stabilised and further developed as a green quarter that offers all the important functions of daily life, so that the quarter is more independent from services in other parts of the city. This also includes supplementary functions for workplaces of small-scale craft and service businesses. The quarter centre is to be strengthened and upgraded, including better public transport connections to the city centre. The characteristics of the green suburban quarter are to be strengthened in particular by upgrading the public and communal open spaces, so that the inhabitants find more recreation offers inside their quarter and do not need to travel to other places more far away. An orderly development is to be ensured for the individual house areas, within the framework of which additional new buildings can also be erected, but the typology of individual houses with gardens is to be preserved. Connected with a robust urban basic structure, with clear defined public streets, ways and spaces a further access street to the quarter should be established.

Projects and measures:

- A) Development of an open space concept to upgrade public spaces and to secure and further develop public and communal green spaces which leads to a robust and flexible basic urban structure
 - 1) Coordination and adoption of a plan that defines which areas are public (streets, squares, parks and infrastructure sites) and which areas are private (individual house plots and plots allocated to apartment blocks as communal land).
 - 2) Renaturalisation of the pond and its land within the single-family home area as a public park (including a bathing area; this would also give Kosmonavtiv a centre of attraction with significance for the entire city).
 - 3) Renewal of the centre's public space with a sheltered bus stop;
 - 4) Barrier-free design of public spaces
 - 5) Upgrading of playgrounds and integration of activities for young people
- B) Development of an urban development concept to strengthen the centre, including the integration of space for local food suppliers, cafés, restaurants and health services, which makes the quarter more independent
- C) Preparation of an urban development regulation plan to ensure the orderly further development and densification of the individual house area, including ensuring the accessibility of all properties by emergency vehicles, strengthening the diversity by offering different forms of housing / housing typologies
- D) Refurbishment and upgrading of the technical and social infrastructure, to stabilize the infrastructure for more resiliency and make the quarter more independent
 - 1) Extension and expansion of the kindergarten

- 2) Establishment of youth leisure facilities (also possible in dual use in a central shelter)
 - 3) Supplementing and expanding the range of shelters
 - 4) Establishment or reopening of a second access road to the quarter, which also connects the quarter with the city centre
 - 5) Rehabilitation of groundwater supply pipes and facilities to restore drinking water quality
 - 6) Renovation of the heating system, in particular underground installation of district heating pipes; installation of alternative energy and heat supply systems
- E) Improvement of local public transport, including inclusive, barrier-free services and, in particular, better services in the evening, to implement a more diverse and integrated mobility mix
 - F) Refurbishment and upgrading of apartment blocks, to make them sustainable and adaptable for changing needs and more energy efficient and save during conflicts
 - 1) Clear allocation of the plots to the houses (see A 1)
 - 2) Design enhancement of the plots with the allocation of front garden areas, car parking spaces, possibly private terrace gardens for ground-floor flats, communal green spaces with play and recreation areas and areas for growing fruit and vegetables
 - 3) Energy-efficient refurbishment of buildings
 - 4) Examination of the establishment of shelters
 - G) Complementary new buildings with apartment blocks, for strengthening the diversity by offering different forms of housing / housing typologies
 - 1) Identification of new building plots for densification
 - 2) Small-scale housing additions in the form of housing typologies for families and older citizens (barrier-free and with the integration of communal facilities), where possible by socially oriented property developers

Urban Resilience | Concept

Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"

Notes about the results, output and expected outcome (up date 19th Nov. 2024)

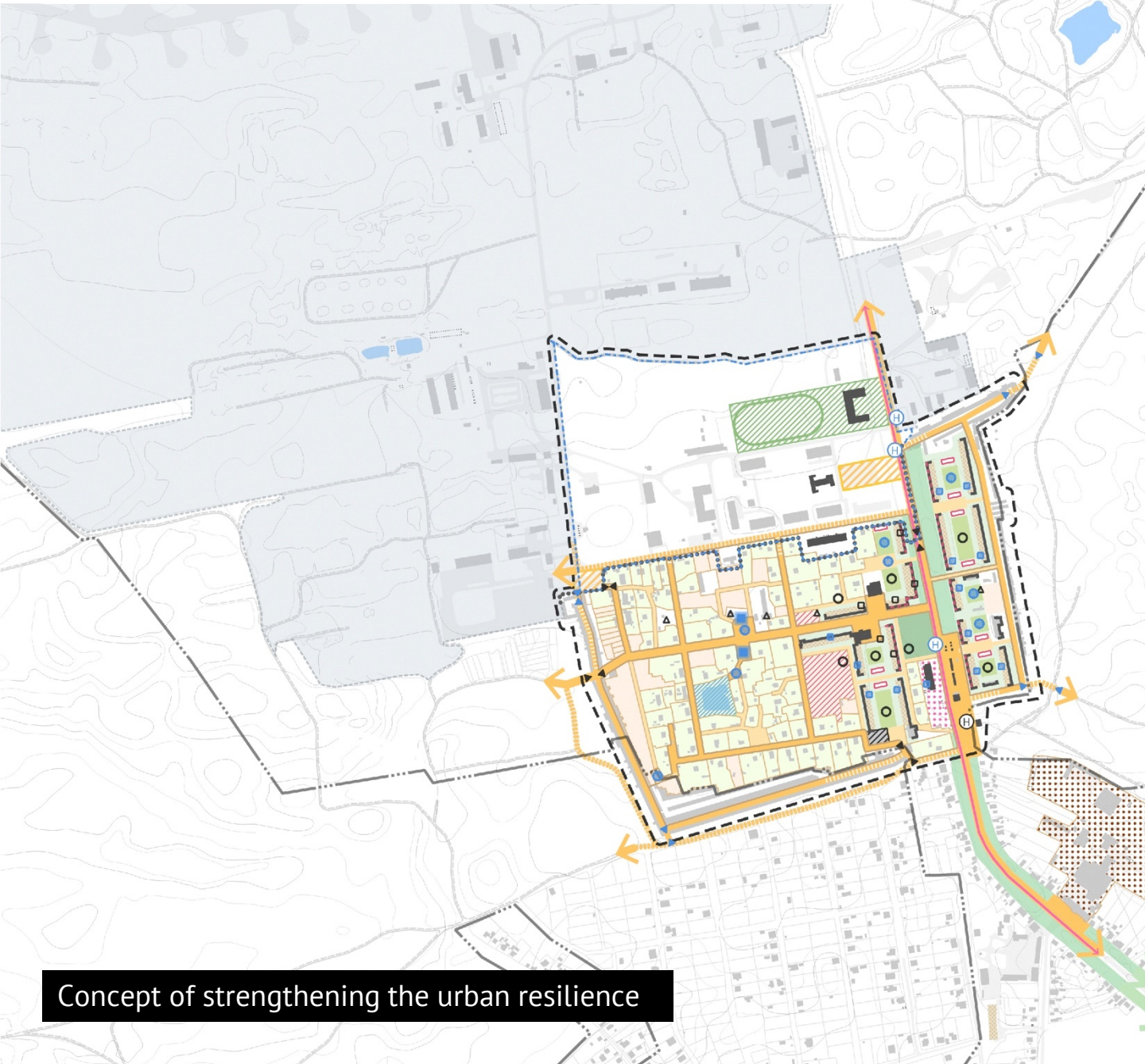
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Urban Resilience | Concept

Concept of strengthening the urban resilience of the 'Kosmonavtiv' neighbourhood / Концепція посилення міської стійкості мікрорайону 'Космонавтів' Nizhyn / Ніжин



Legend / Умовні позначки

Multifunctional grid of accessible public spaces on different scales / Багатофункціональна мережа доступних громадських просторів різного рівня

- Public space of district level and connector / Громадський простір районного рівня та сполучення
- Potential public space / Потенційний громадський простір
- Extension of public connector / Продовження публічного сполучення
- Space on neighborhood level and connector / Простір на рівні мікрорайону та сполучення

Climate-friendly and adaptable active green spaces / Кліматично сприятливі та адаптивні активні зелені простори

- Park / Парк
- Public green space / Зелена зона загального користування
- Revitalization of pond and green space around / Ревіталізація ставка та зелених насаджень навколо
- Sport hub / Спортивний хаб
- Common courtyard / Спільний двір
- Adjacent residential territory / Прибудинкова територія багатоквартирних житлових будинків
- The backyard area / Присадибна територія
- Existing playground / Існуючий ігровий майданчик
- New playground / Новий ігровий майданчик

Transformation, adaptation and diversification of building typology / Трансформація, адаптація та диверсифікація типології будівель

- Potential in reusing and developing existing empty public building / Потенціал перевикористання та розвитку існуючої порожньої громадської будівлі
- Modernisation of apartment building / Модернізація багатоквартирного житлового будинку
- New diverse building typology / Нова різноманітна типологія будівель
- Perspective of creating an active facade / Перспектива створення активного фасаду
- Important building / Важлива будівля
- Facade that shapes urban space / Фасад, що формує міський простір

Potentials for urban development / Потенціал для міського розвитку

- Vacant land plot / Вакантна земельна ділянка
- Vacant land plot for a special function / Вакантна земельна ділянка з особливими функціями
- Extension and expansion of the kindergarten / Розширення та збільшення дошкільного навчального
- Revitalisation of brownfield as a prospective economic development zone / Ревіталізація занедбаного або частково недіючого промислового об'єкту як перспективної зони економічного розвитку
- Implementation of a quarterly structure / Впровадження квартальної структури
- Partial opening of previously closed area / Часткове відкриття раніше закритої території
- Proposed redefinition of the restricted area boundaries / Пропозиція щодо перевизначення меж зони обмеженого доступу
- Land plot / Земельна ділянка

Provide a barrier-free, accessible, safe, decentralized and integrated mobility mix / Забезпечити безбар'єрну, доступну, безпечну, децентралізовану та інтегровану мобільність

- Opening existing entry/exit / Відкриття існуючого в'їзду/виїзду
- Creating new entry/exit / Створення нового в'їзду/виїзду
- Creation of cycling infrastructure / Створення велоінфраструктури
- Safe collection point integrated in public transportation stop / Безпечний пункт збору, інтегрований в існуючу зупинку громадського транспорту
- Establishing new public transportation stop as safe collection point / Створення нової зупинки громадського транспорту як безпечного місця збору
- Improvement of existing shelter / Вдосконалення існуючого укриття
- Arranging a shelter / Облаштування укриття
- Establishment of a safety hub / Створення центру безпеки
- Modernisation of an engineering infrastructure facility / Модернізація об'єкту інженерної інфраструктури

Spatial principles of resilience

- Redundancy / Редундантність (Резервність)
- Robustness / Міцність (Надійність)
- Efficiency / Ефективність
- Flexibility / Гнучкість (Адаптивність)
- Diversity / Різноманітність

Other symbols:

- Fence / Загорожа
- Research area / Територія дослідження
- Nizhyn city boundary from 2020 / Межа міста Ніжин з 2020 року

Project Information:

NIZHYN neighborhood 'Kosmonavtiv'
 Project: Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine (SUR)
 Insar consult Part G
 Processing status 14.01.2025
 Scale 1:5000
 in original page format 594 mm x 420 mm, Din A2

0 m 50 m 100 m 250 m

Concept of strengthening the urban resilience

Urban Resilience | Concept

Concept of strengthening the urban resilience of the 'Kosmonavtiv' neighbourhood /

Концепція посилення міської стійкості мікрорайону «Космонавтів»

Nizhyn / Ніжин

Legend / Умовні позначки

Spatial principles of resilience

- RE** Redundancy / Редундантність (Резервність)
- RO** Robustness / Міцність (Надійність)
- EF** Efficiency / Ефективність
- FL** Flexibility / Гнучкість (Адаптивність)
- DI** Diversity / Різноманітність

Multifunctional grid of accessible public spaces on different scales / Багатофункціональна мережа доступних громадських просторів різного рівня

- Public space of distric level and connector /** Громадський простір районного рівня та сполучення
- Potential public space**
Потенційний громадський простір
- Extension of public connector**
Продовження публічного сполучення
- Space on neighborhood level and connector /** Простір на рівні мікрорайону та сполучення

Potentials for urban development / Потенціал для міського розвитку

- Vacant land plot**
Вакантна земельна ділянка
- Vacant land plot for a special function**
Вакантна земельна ділянка з особливими функціями
- Extension and expansion of the kindergarten /** Розширення та збільшення дошкільного навчального
- Revitalisation of brownfield as a prospective economic development zone /** Ревіталізація занедбаного або частково недіючого промислового об'єкту як перспективної зони економічного розвитку
- Implementation of a quarterly structure /** Впровадження кварталної структури
- Partial opening of previously closed area /** Часткове відкриття раніше закритої території
- Proposed redefinition of the restricted area boundaries /** Пропозиція щодо перевизначення меж зони обмеженого доступу
- Land plot /** Земельна ділянка

Climate-friendly and adaptable active green spaces / Кліматично сприятливі та адаптивні активні зелені простори

- Park /** Парк
- Public green space**
Зелена зона загального користування
- Revitalization of pond and green space around /** Ревіталізація ставка та зелених насаджень навколо
- Sport hub /** Спортивний хаб
- Common courtyard /** Спільний двір
- Adjacent residential territory**
Прибудинкова територія багатоквартирних житлових будинків
- The backyard area**
Присадибна територія
- Existing playground /** Існуючий ігровий майданчик
- New playground /** Новий ігровий майданчик

Provide a barrier-free, accessible, safe, decentralized and integrated mobility mix / Забезпечити безбар'єрну, доступну, безпечну, децентралізовану та інтегровану мобільність

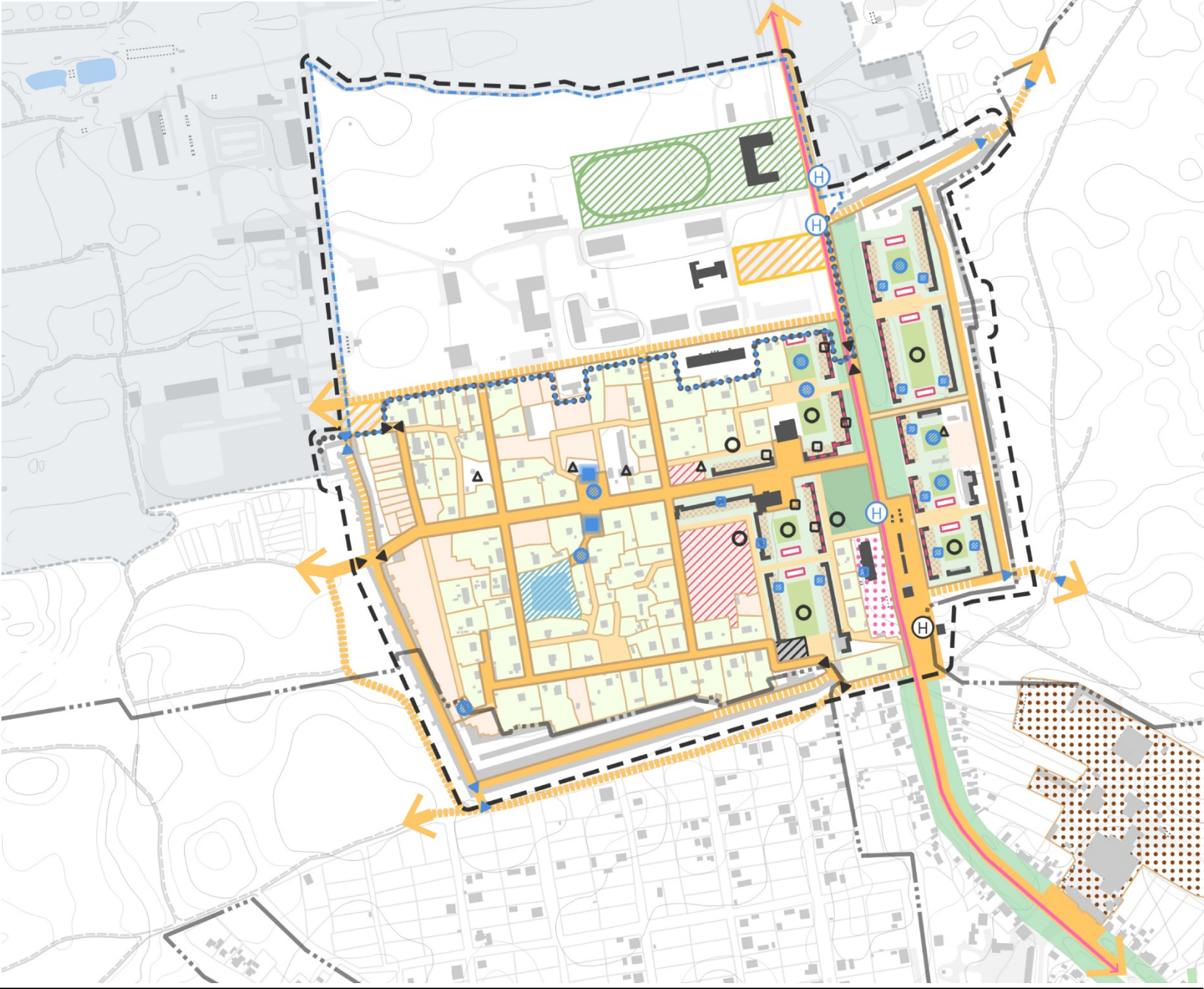
- Opening existing entrie/exit**
Відкриття існуючого в'їзду/виїзду
- Creating new entrie/exit**
Створення нового в'їзду/виїзду
- Creation of cycling infrastructure /** Створення велоінфраструктури
- Safe collection point integrated in public transportation stop /** Безпечний пункт збору, інтегрований в існуючу зупинку громадського транспорту
- Establishing new public transportation stop as safe collection point /** Створення нової зупинки громадського транспорту як безпечного місця збору
- Improvement of existing shelter /** Вдосконалення існуючого укриття
- Arranging a shelter /** Облаштування укриття
- Establishment of a safety hub /** Створення центру безпеки
- Modernisation of an engineering infrastructure facility /** Модернізація об'єкту інженерної інфраструктури

Transformation, adaptation and diversification of building typology / Трансформація, адаптація та диверсифікація типології будівель

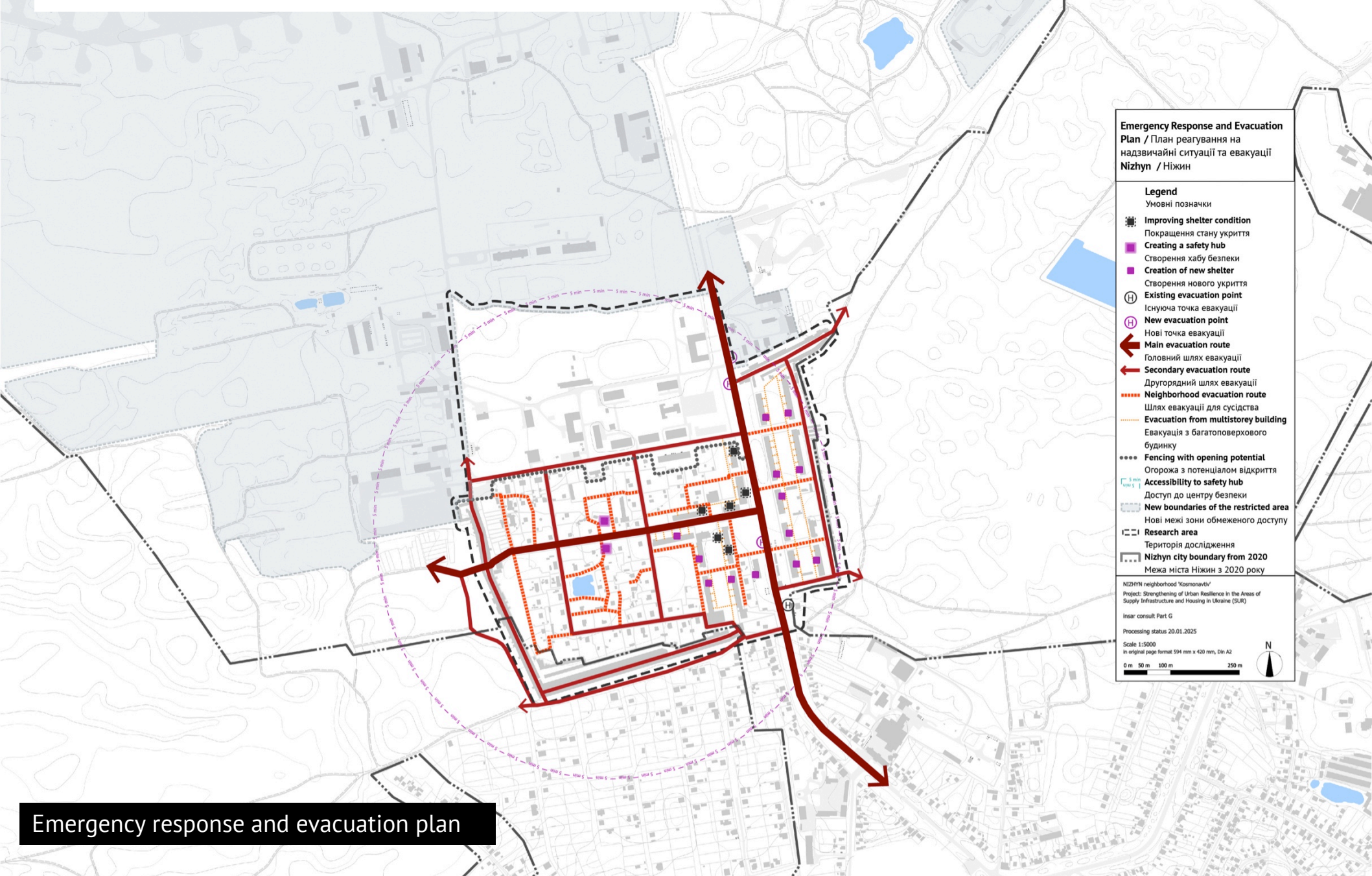
- Potential in reusing and developing existing empty public building /** Потенціал перевикористання та розвитку існуючої порожньої громадської будівлі
- Modernisation of apartment building**
Модернізація багатоквартирного житлового будинку
- New diverse building typology /** Нова різноманітна типологія будівель
- Perspective of creating an active facade /** Преспектива створення активного фасаду
- Important building /** Важлива будівля
- Facade that shapes urban space**
Фасад, що формує міський простір
- Fence /** Загорожа
- Research area**
Територія дослідження
- Nizhyn city boundary from 2020**
Межа міста Ніжин з 2020 року

Concept of strengthening the urban resilience

Urban Resilience | Concept



Urban Resilience | Concept



Emergency Response and Evacuation Plan / План реагування на надзвичайні ситуації та евакуації Nizhyn / Ніжин

Legend
Умовні позначки

- Improving shelter condition / Покращення стану укриття
- Creating a safety hub / Створення хабу безпеки
- Creation of new shelter / Створення нового укриття
- Existing evacuation point / Існуюча точка евакуації
- New evacuation point / Нові точка евакуації
- Main evacuation route / Головний шлях евакуації
- Secondary evacuation route / Другорядний шлях евакуації
- Neighborhood evacuation route / Шлях евакуації для сусідства
- Evacuation from multistorey building / Евакуація з багатоповерхового будинку
- Fencing with opening potential / Огорожа з потенціалом відкриття
- Accessibility to safety hub / Доступ до центру безпеки
- New boundaries of the restricted area / Нові межі зони обмеженого доступу
- Research area / Територія дослідження
- Nizhyn city boundary from 2020 / Межа міста Ніжин з 2020 року

NIZHYN neighborhood 'Kosmonaviv'
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Emergency response and evacuation plan

Urban Resilience | Case study

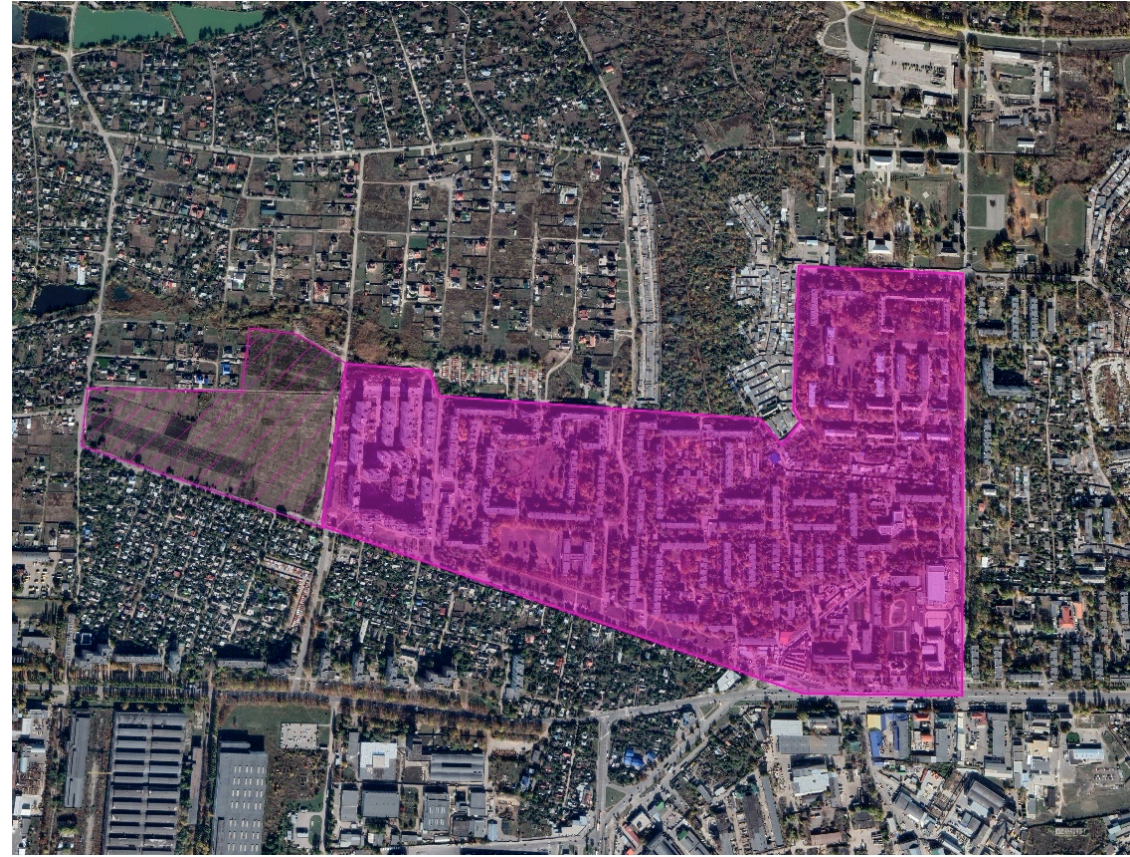
Poltava Полтава



Area:
Population density:
Population:

Level [city]
122 km²
2353,3 people/km²
287 100 people

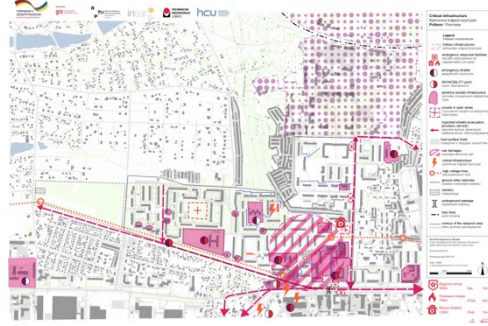
Mikrodistrict "Brayilky" мікрорайон "Браїлки"



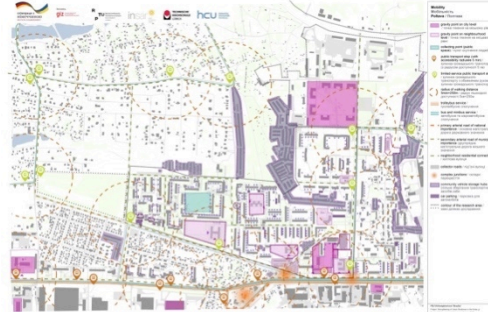
Level [mikrodistrict]
0.74 km²
~40 540 people/km²
~30 000 people

Urban Resilience | Spatial analysis

1. Critical infrastructure



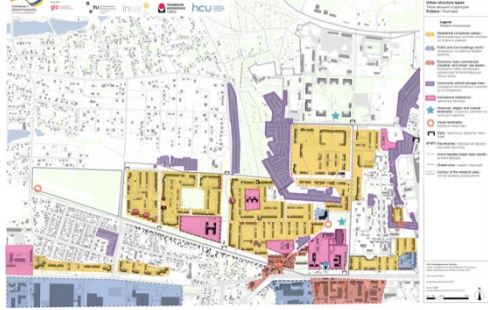
2. Mobility and accessibility



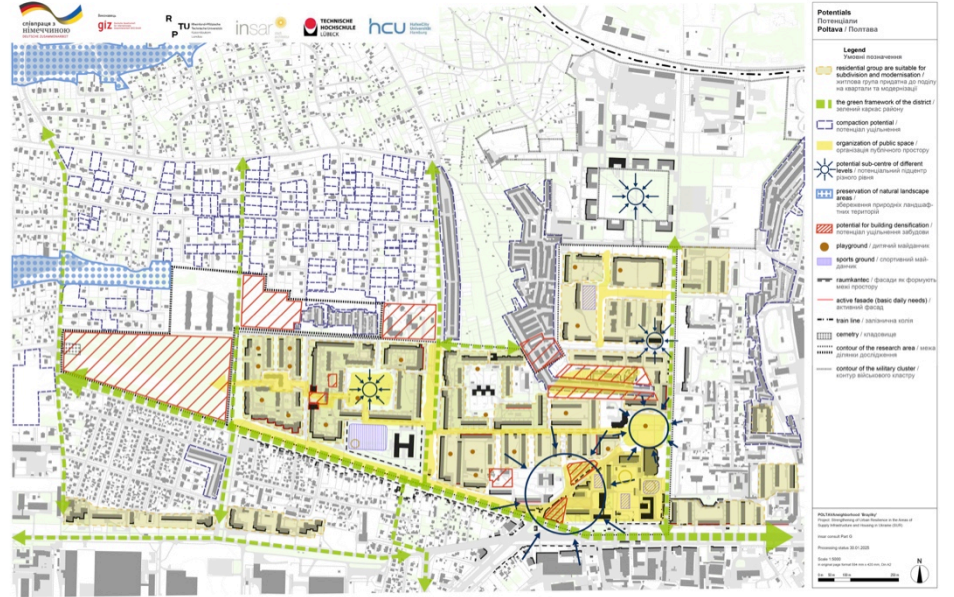
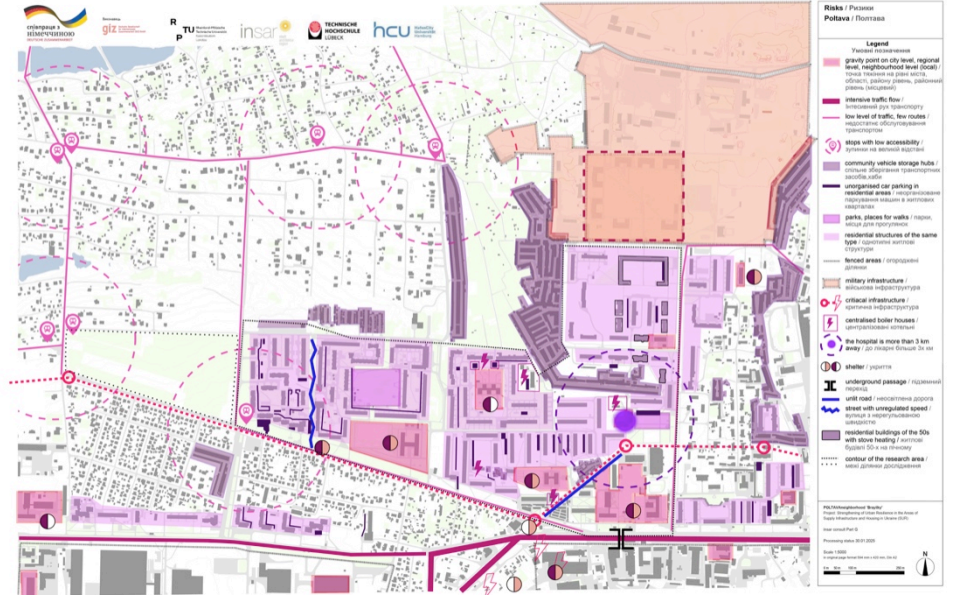
3. Open space structure types



4. Urban structure types



RISKS and POTENTIALS 'REACT & USE'



Urban Resilience | Current situation and challenges



Attack on 17 June, 2024

The buildings of 13 residential buildings, a kindergarten and a technical school sustained varying degrees of damage, but the impact wave mostly smashed windows and doors.



Missile attack in early 2025

Expert Workshop | 14.02.2025

Knowledge transfer for resilient neighbourhoods in Ukraine II



Urban Resilience | Current situation and challenges

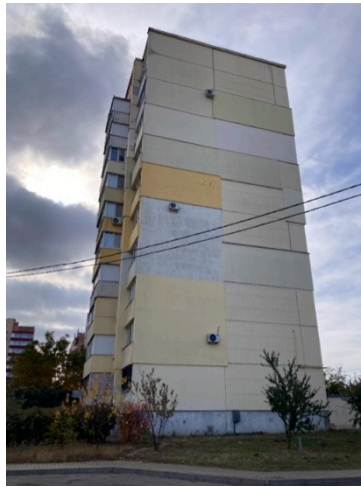


Λ
Above-ground network of centralised heat supply
Наземна мережа централізованого теплопостачання

Boiler house of the micro district
Високовольтна лінія електропередач

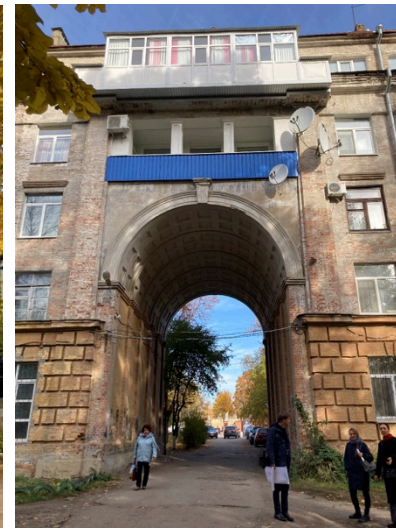
< **High-voltage power line**
Високовольтна лінія електропередач

Urban Resilience | Current situation and challenges



Individual implementation of measures for facade insulation, as well as the installation of air conditioners and satellite dishes to enhance the comfort and functionality of housing

Point active facades inside the district



Individual solutions that reflect the needs of residents

Increase in living space by extending and glazing balconies with a ledge

Urban Resilience | Current situation and challenges

Library No. 1
Бібліотека-філія № 1



Aquarena as a new city-level gravity point / Акварена, як нова точна тяжіння на рівні міста



Vocational school №23 / ДНЗ «ПВМПУ»
(Професійно-технічне училище №23)



Children's polyclinic department №3 / Дитяче поліклінічне відділення №3



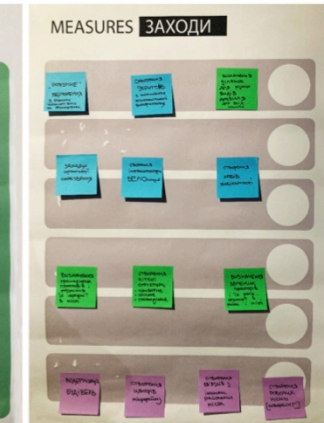
Market and active facades that form a 'shopping street', as a centre of a residential neighbourhood / Ринок та активні фасади, що формують «торгову вулицю», як центр мікрорайону

Modern Brailky Park, completion in 2021/ Сучасний парк Браїлки, завершення будівельних робіт 2021 рік

A new sub-centre inside the microdistrict is formed by a retail function / Новий субцентр всередині мікрорайону сформований за рахунок торговельної функції

Social and public infrastructure

Urban Resilience | Workshop outcomes



Workshop 30.10.2024

Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"
Notes about the results, output and expected outcome (up date 19th Nov. 2024)

Site visit and workshop "Strengthening of Urban Resilience - neighbourhood 'Brayilky', Poltava, Ukraine"

Mission statement and goals for a resilient development of Brayilky:

In the long term, Brayilky is to become a self-sufficient quarter with all the services required for daily and medium-term needs, in which living, working and leisure and recreation facilities are available, so that the quarter is getting more independent from services and infrastructure in other parts of Poltava. To this end, the centre is to be significantly strengthened and expanded and (two) sub-centres with local amenities are to be established. Public transport should also run within the quarter and a network of cycle paths should make cycling more attractive. The open spaces are to be developed in such a way that the overarching green corridor, as well as the quarter parks and open spaces and neighbourhood and community areas, become more attractive and include facilities for all generations, to strengthen the quality of the quarter as a vital qualified place to live and work.

ment will take place. The centre structure with a r
eir urban development is also part of this plan, as is th
ecture. The hierarchical organisation of public, comm
oy the upgrading of the footpath and cycle path ne
). A densification of the quarter must be developed in
ot suffer any disadvantages, but rather benefit fr
will be strengthened with this approach.

structural reorganisation of the market
ent of service and healthcare facilities on the ground
ets and locations
on of new construction areas for small-scale commerc
sustainable building typologies
ent of additional sports fields and sports facilities as

ent and upgrading of further quarter squares and p
various events should also be integrated, i.e. flexible bu
g and upgrading neighbourhood squares and c
oods to upgrade their courtyards and communal ope
of cycle paths, also in relation to the central, safe pe

of the superordinate green links into the master plan
the neighbouring single-family home areas

ie social and technical infrastructure; to stabilize the i
er more independent

young people both in open spaces and in buildings

- 3) Create shelters in all areas, especially in old buildings from the 1920s where there are no shelters; consider multiple use of shelters, e.g. also as youth centres
- 4) Renovation and stabilisation of the heating system (independent of the central power supply), underground laying of the district heating pipes; installation of alternative, decentralised heating options
- C) Development of a concept for rainwater management so that rainwater is collected, stored and only gradually infiltrated (as a contribution to the future prevention of flooding of the underground technical infrastructure)
- D) Develop and coordinate parking space concept for the entire quarter and implement pilot projects
- E) Development of a concept for the expansion of local public transport, which also includes fine-tuning services within the quarter.
 - 1) Installation of bicycle parking spaces at the central public transport stops
- F) Refurbishment and upgrading of apartment blocks, to make them sustainable and adaptable for changing needs and more energy efficient and save during conflicts
 - 1) Design enhancement of the plots with the allocation of front garden areas, car parking spaces, possibly private terrace gardens for the ground floor flats, communal green spaces with play and recreation areas
 - 2) Development and coordination of a concept for the renovation of the apartment blocks, energy refurbishment of the buildings, particularly necessary for the 1960s buildings
 - 3) Examination of the establishment of shelters
 - 4) Creation of inclusive, barrier-free flats
 - 5) Comprehensive refurbishment of the two-storey residential buildings from the 1920s (possibly utilising the potential for densification of the properties to financially support the refurbishment)

Urban Resilience | Workshop outcomes

Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"

Notes about the results, output and expected outcome (up date 19th Nov. 2024)

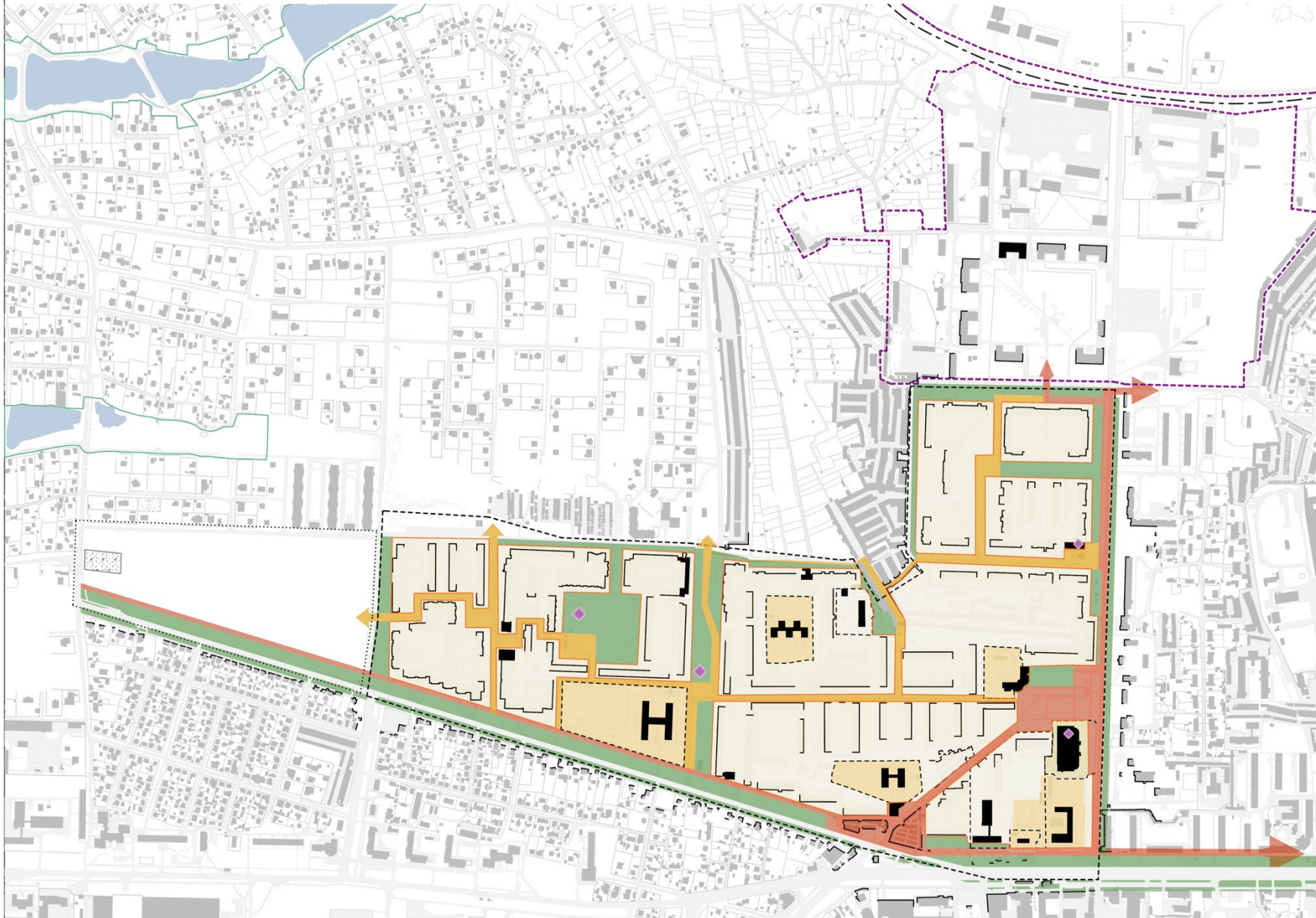
Site visit and workshop "Strengthening of Urban Resilience - neighbourhood 'Brayilky', Poltava, Ukraine"

Mission statement and goals for a resilient development of Brayilky:

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Urban Resilience | Concept

Concept of structuring public spaces as a robust, inclusive safety grid
 Концепція формування громадського простору як надійної, інклюзивної та безпечної мережі
 Poltava / Полтава



- Legend**
 Умовні позначення
- Improving open public space at the district level as a safe and inclusive grid / **Покращення відкритого громадського простору районного рівня як безпечної та інклюзивної структури**
 - Improving open public space at the microdistrict level as a safe and inclusive grid / **Покращення відкритого громадського простору мікрорайонного рівня як безпечної та інклюзивної структури**
 - Improvement and development of public green spaces for climate change adaptation and quality of living conditions / **Покращення та розвиток громадських зелених просторів для адаптації до зміни клімату та покращення якості умов проживання**
 - Organisation of the existing structure into smaller units (through a network of public open spaces) / **Організація існуючої структури в менші частини (через мережу громадських відкритих просторів)**
 - Developing public buildings as multifunctional anchors of the neighbourhood that include a shelter/safety function among other uses / **Розвиток громадських будівель як багатофункціональних опорних пунктів району, що включають, серед іншого, функцію укриття/безпеки**
 - ◆ Establishment and/or integration of a security hub / **Створення та/або інтеграція хабу безпеки**
 - Territories of vulnerable infrastructure with limited access / **Території вразливої інфраструктури з обмеженим доступом**
 - Raumkante / **Фасади які формують межі простору**
 - Fenced area / **Огороджена територія**
 - Railway track / **Залізнична колія**
 - The territory of the cemetery / **Територія кладовища**
 - Research area / **Ділянка дослідження**

- SPATIAL PRINCIPLES OF RESILIENCE**
- RE Redundancy / **Редундантність (Резервність)**
 - RO Robustness / **Міцність (Надійність)**
 - EF Efficiency / **Ефективність**
 - FL Flexibility / **Гнучкість (Адаптивність)**
 - DI Diversity / **Різноманітність**

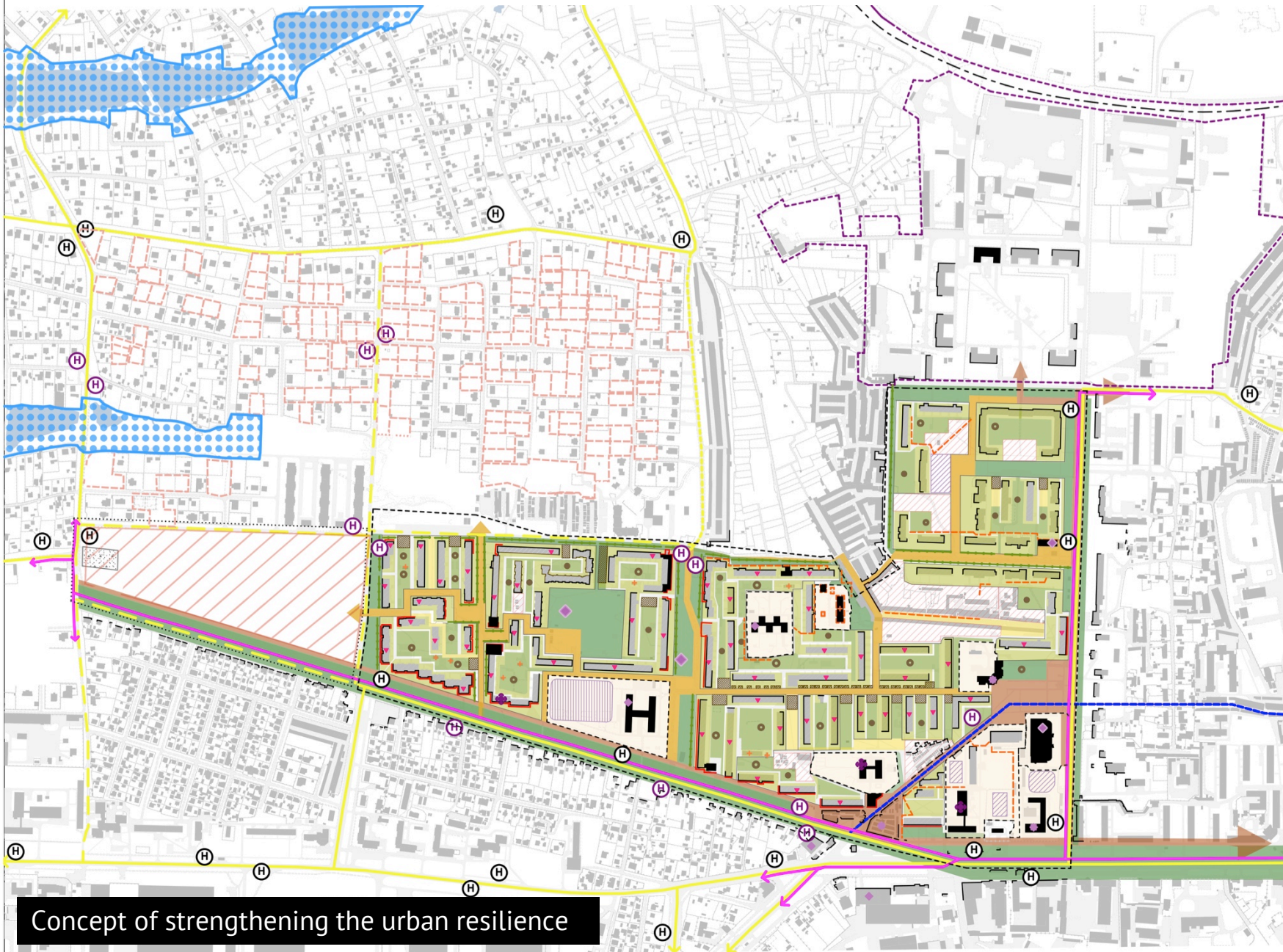
POLTAVAneighborhood 'Braylity'
 Project: Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine (SUR)

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 0 m 50 m 100 m 200 m

Concept of structuring public spaces as a robust, inclusive safety grid

Urban Resilience | Concept



Concept of strengthening the urban resilience

Concept of strengthening the urban resilience of the 'Barailky' neighbourhood

Концепція посилення міської стійкості мікрорайону "Барайлівка"

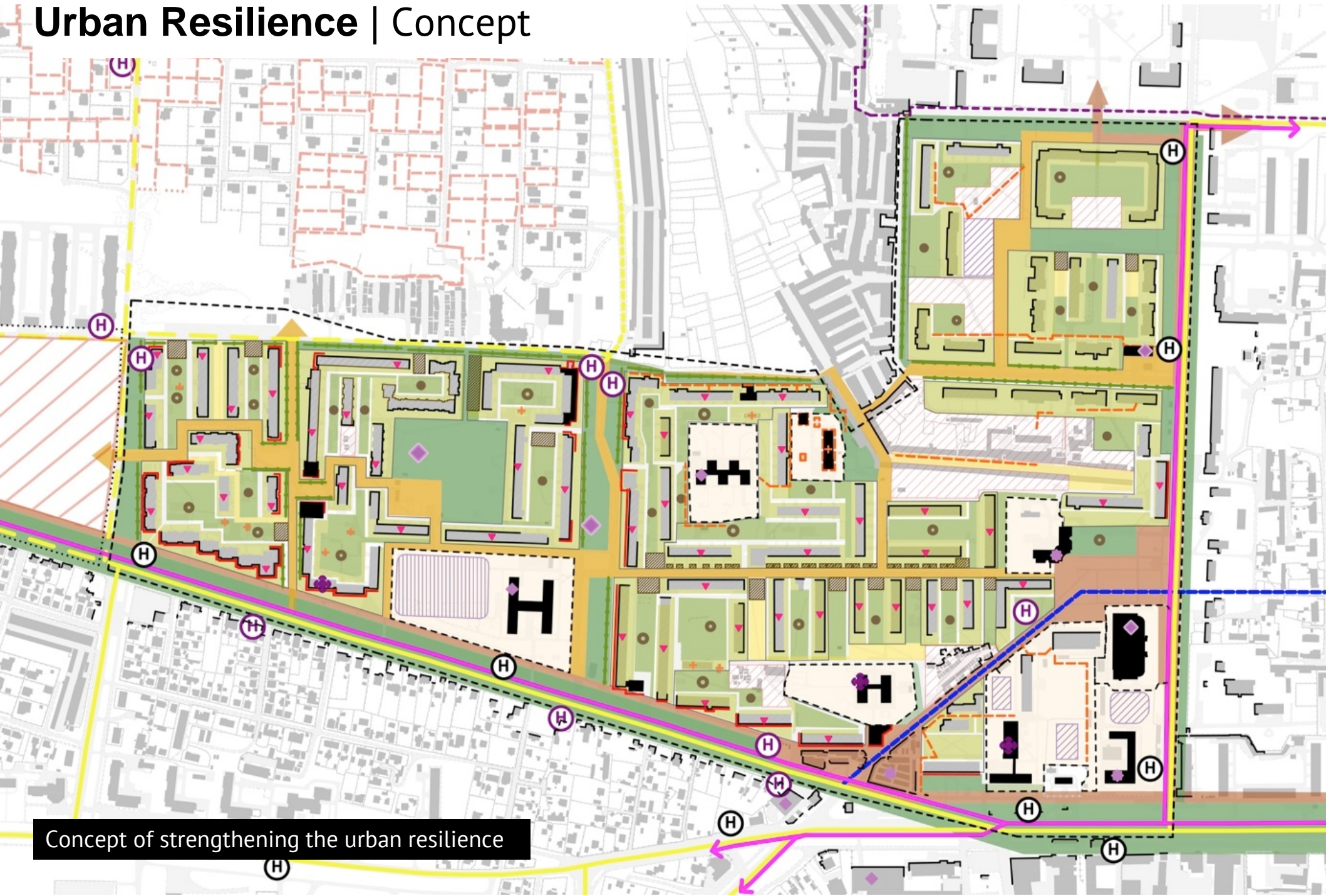
Полтава / Poltava

Legend

- Умовні позначення
- Public open space at the district level / Громадський відкритий простір районного рівня
 - Public open space at the microdistrict level / Громадський відкритий простір мікрорайонного рівня
 - Public greenery at the district level / Громадський зелений простір районного рівня
 - Common courtyard / Спільний двір
 - Connector road / З'єднувальна дорога
 - Parking place / Місце для паркування
 - Sport field / Спортивний майданчик
 - Land parcel with densification potential / Земельна ділянка з потенціалом ущільнення
 - Playground in need of renovation / Дитячий майданчик що потребує оновлення
 - Proposed playground for children / Запропонований дитячий майданчик
 - Raumkante / Фасади які формують межі простору
 - Active facade / Фасади з відмінною від житлової функцією
 - Territories of state public buildings / Території державних громадських будівель
 - External communications that need to be relocated or protected / Зовнішні комунікації, потребують перенесення або захисту
 - High voltage line that needs to be relocated / Високовольтна лінія що потребує перенесення
 - Modernisation of an engineering network facility / Модернізація об'єкту інженерної мережі
 - Safe collection point integrated in public transportation stop / Безпечний пункт збору, інтегрований в існуючу зупинку громадського транспорту
 - Establishing new public transportation stop as safe collection point / Створення нової зупинки громадського транспорту як безпечного місця збору
 - Existing shelter for vulnerable infrastructure / Існуюче укриття вразливої інфраструктури
 - Shelter for vulnerable infrastructure that need to be upgraded / Укриття вразливої інфраструктури, що потребує модернізації
 - Arrangement of new shelter for vulnerable infrastructure / Облаштування нового укриття для будівель вразливої інфраструктури
 - Creating a security hub / Створення хабу безпеки
 - Arrangement of new shelter for residential buildings / Облаштування нового укриття житлових будинків
 - Preservation of natural enriched landscape areas / збереження природних збагачених ландшафтних територій
 - Streets served by public transport / Вулиці, що обслуговуються громадським транспортом
 - Expanding the public transport network / Розширення мережі громадського транспорту
 - Creation of bicycle infrastructure / Створення велоінфраструктури
 - Fenced area / Огороджена територія
 - Railway track / Залізнична колія
 - The territory of the cemetery / Територія кладовища
 - Research area / Ділянка дослідження

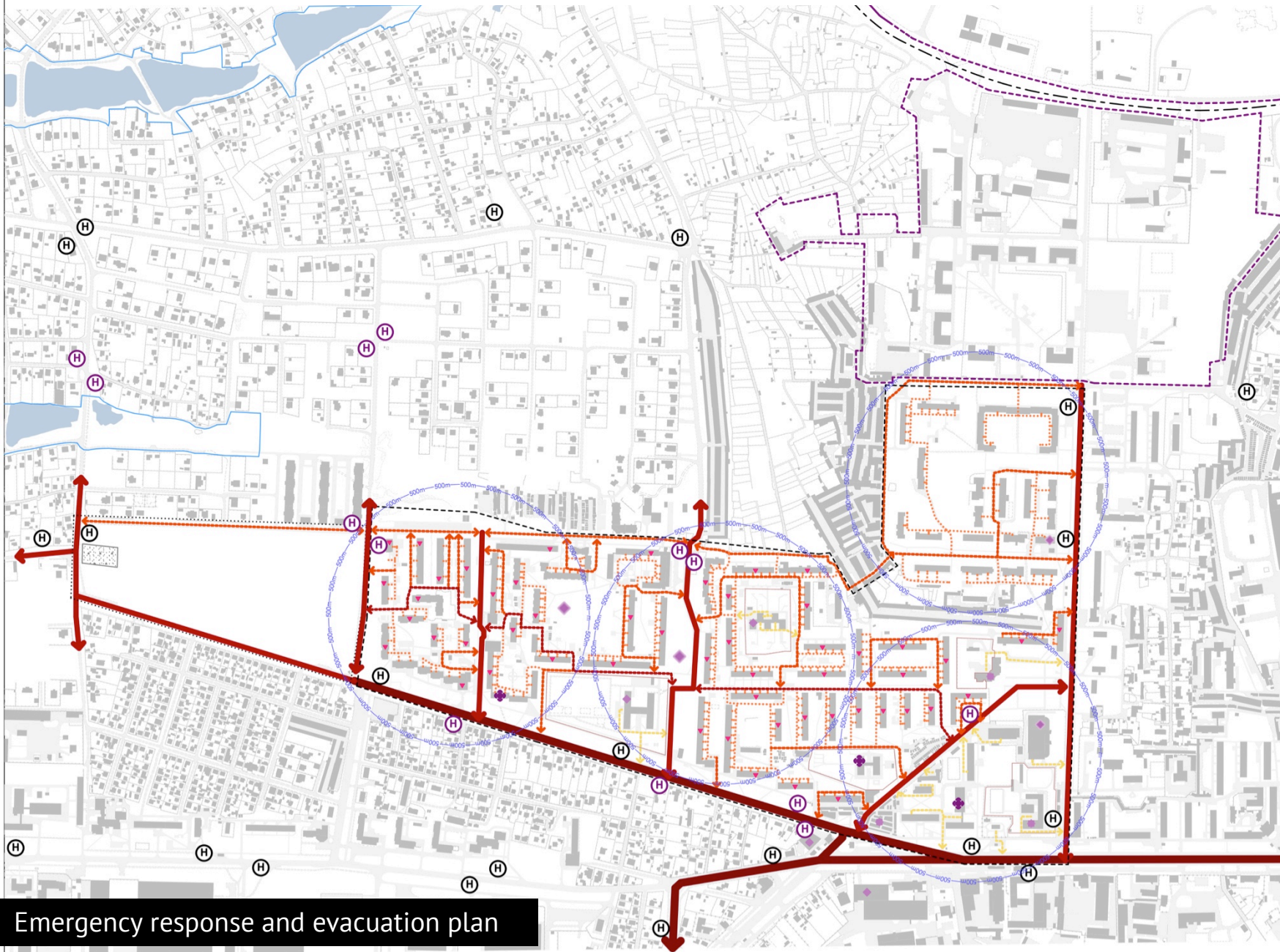
POLTAVA neighbourhood 'Barailky'
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Urban Resilience | Concept



Concept of strengthening the urban resilience

Urban Resilience | Concept



Emergency Response and Evacuation Plan

Схема реагування на надзвичайні ситуації
Poltava / Полтава

- Legend**
Умовні позначення
- ← Main evacuation route / Головний шлях евакуації
 - ← Neighborhood evacuation route / Шлях евакуації для району
 - ← Evacuation from multistorey building / Евакуація з багатоповерхового будинку
 - ← Evacuation of public and educational buildings / Евакуація з території громадських та освітніх споруд
 - H Establishing new public transportator stop as safe collection point / Безпечний пункт збору, інтегрований в існуючу зупинку громадського транспорту
 - H Safe collection point integrated in public transportation stop / Створення нової зупинки громадського транспорту як безпечного місця збору
 - ◆ Existing shelter for vulnerable infrastructure / Існуюче укриття вразливої інфраструктури
 - Shelter for vulnerable infrastructure that need to be upgraded / Укриття вразливої інфраструктури, що потребує модернізації
 - ◆ Arrangement of new shelter for vulnerable infrastructure / Облаштування нового укриття для будівель вразливої інфраструктури
 - ◆ Creating a security hub / Створення хабу безпеки
 - 500m Accessibility to safety hub diameter 500m / Доступність до хабу безпеки діаметр 500м
 - ▲ Arrangement of new shelter for residential buildings / Облаштування нового укриття житлових будинків
 - Fenced area / Огороджена територія
 - Railway track / Залізнична колія
 - The territory of the cemetery / Територія кладовища
 - Fenced territory of vulnerable infrastructure facilities / Огороджена територія закладів вразливої інфраструктури
 - Research area / Ділянка дослідження

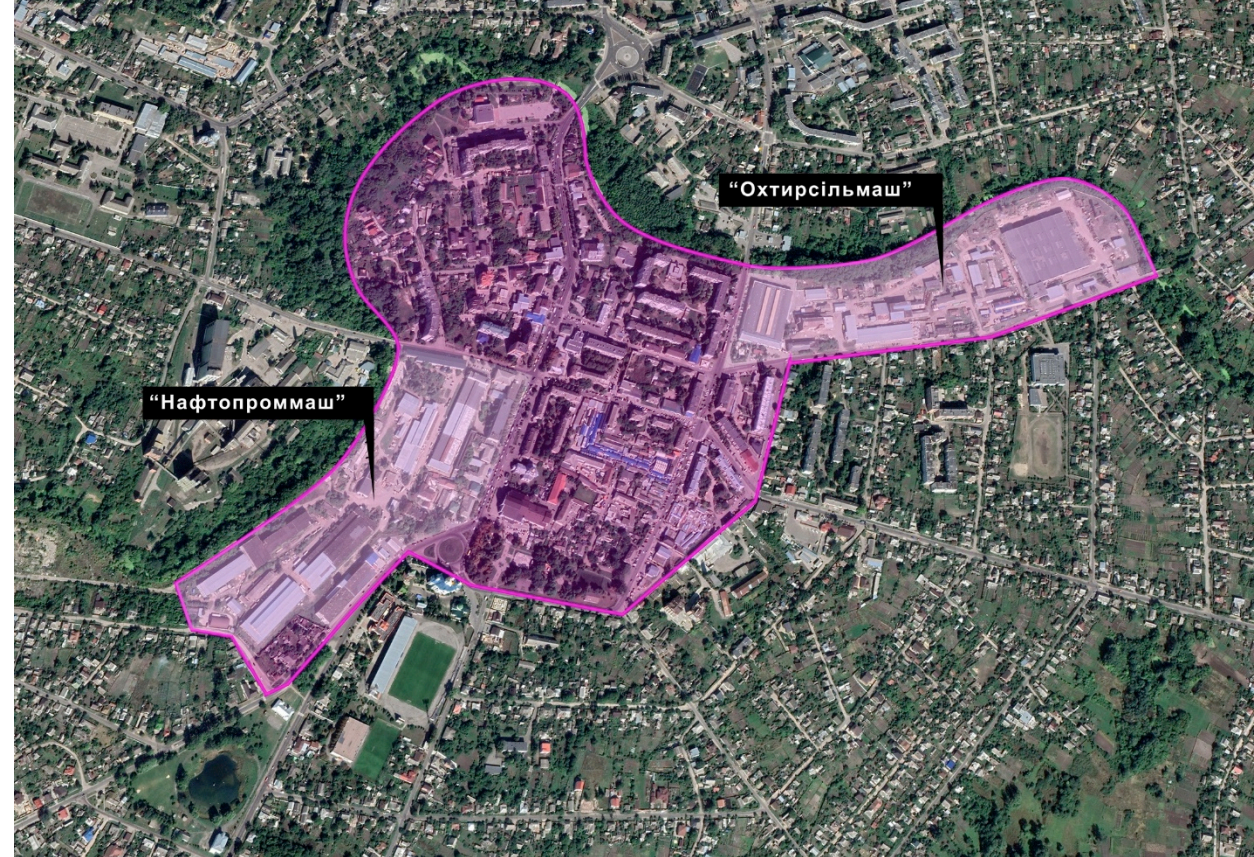
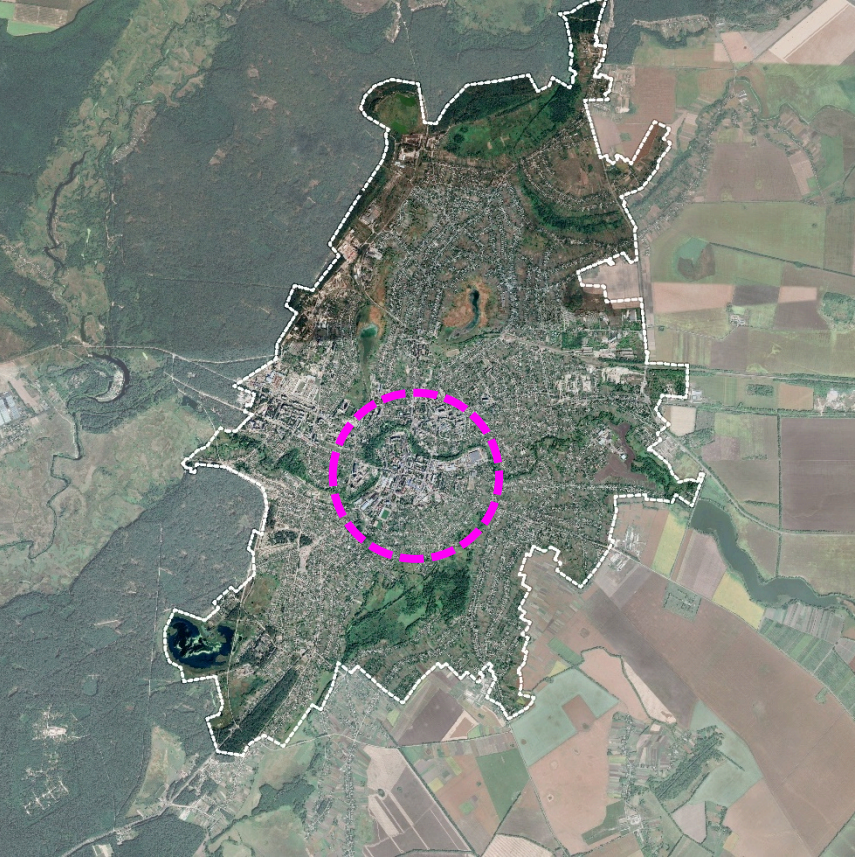
POLTAVA/neighborhood 'Braylky'
Project: Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine (SUR)
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Emergency response and evacuation plan

Urban Resilience | Case study

Okhtyrka Охтирка

Historical city center Історичний центр міста



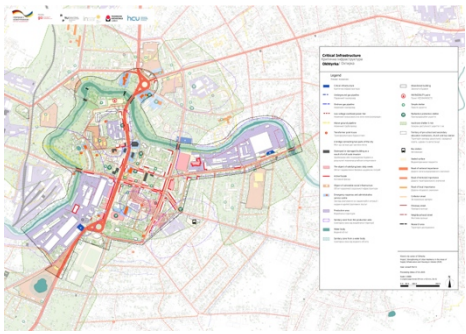
Area:
Population density:
Population:

Level [city]
31,86 km²
1550 people/km²
46 660 people

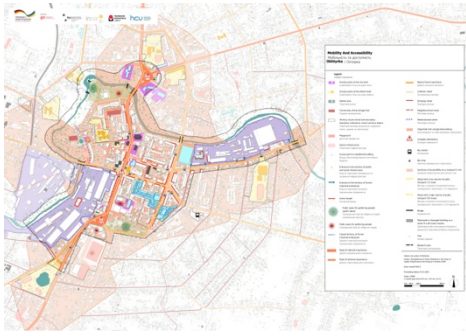
Level [center]
86.37 ha - research area
11.58 ha - former industrial sites «Naftopromash»
9.32 ha - former industrial sites «Okhtyrsilmash»

Urban Resilience | Spatial analysis

1. Critical infrastructure



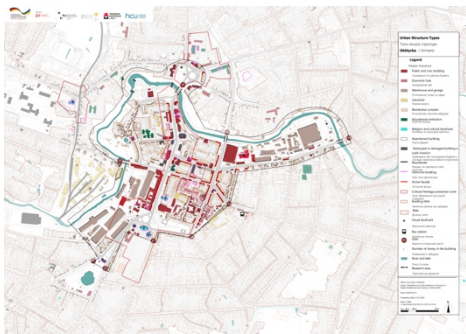
2. Mobility and accessibility



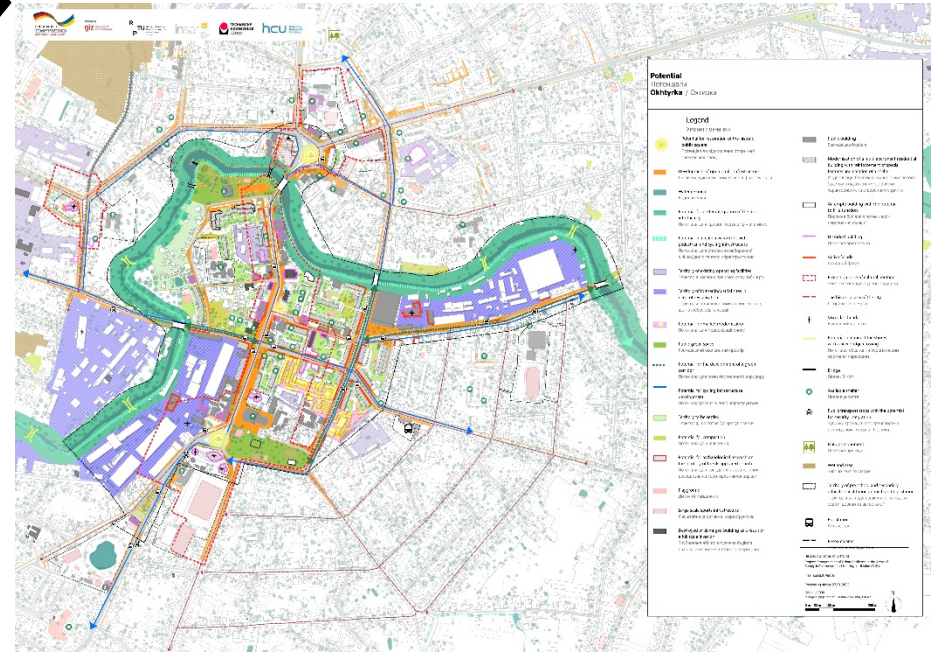
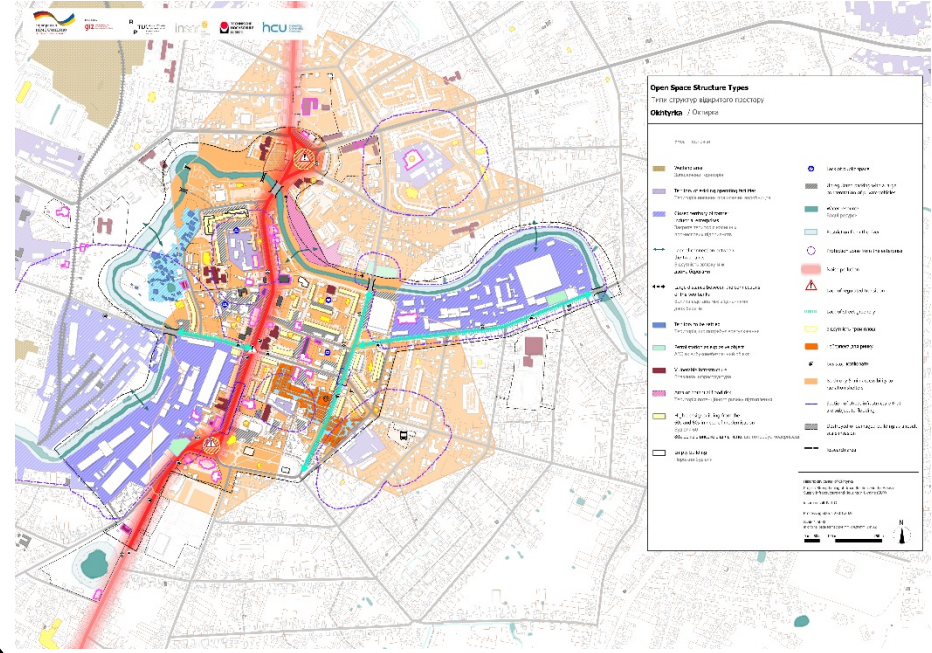
3. Open space structure types



4. Urban structure types



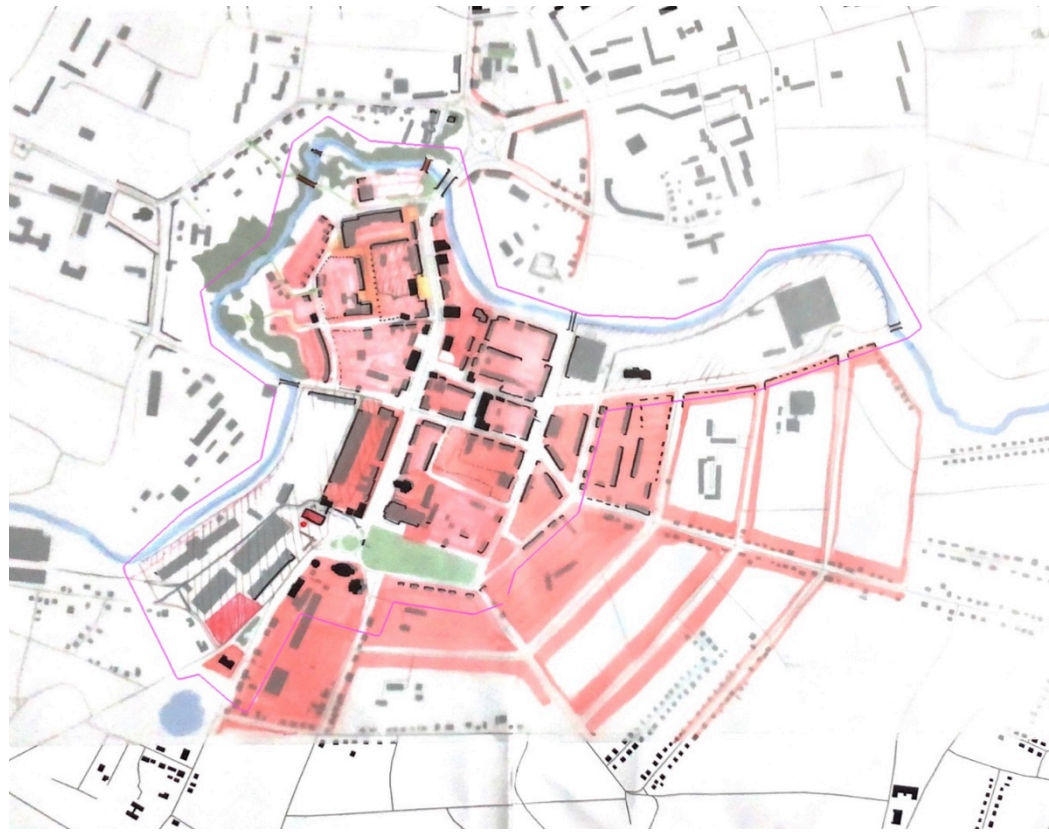
RISKS and POTENTIALS 'REACT & USE'



Urban Resilience | Spatial analysis



Analysis of the network of major historical open public spaces



Historical urban structure analysis

Urban Resilience | Destruction and challenges



Destruction of the historic city centre as a result of russian military aggression

According to the investigation, the Russian occupation forces shelled residential areas and the historic centre of Okhtryka with heavy artillery and dropped bombs for 30 days. Hundreds of residential buildings were damaged and destroyed, and critical infrastructure facilities were destroyed..

Urban Resilience | Current situation and challenges

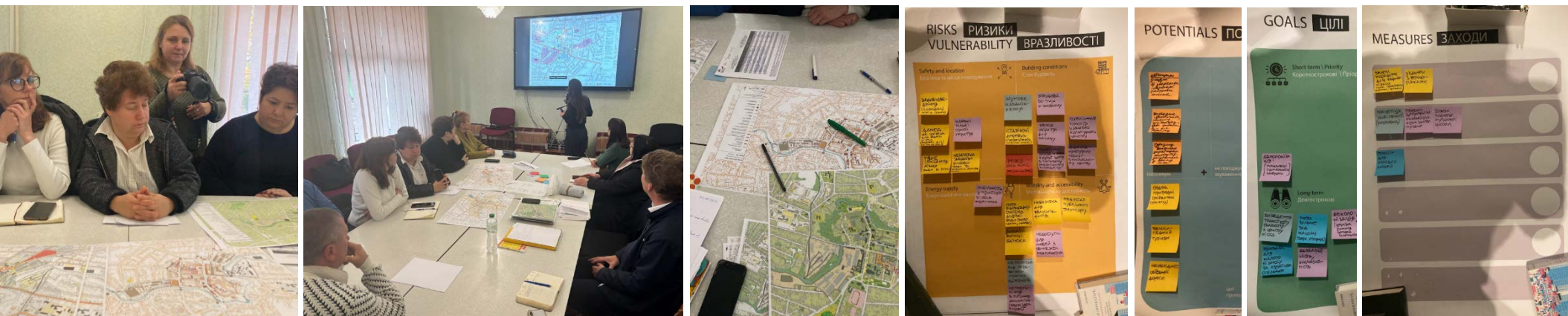


Valuable objects of former industrial sites



Several objects from the list of architectural monuments

Urban Resilience | Workshop outcomes



Workshop 31.10.2024

Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"

Notes about the results, output and expected outcome (up date 19th Nov. 2024)

Site visit and workshop "Strengthening of Urban Resilience - historical city centre of Okhtyrka, Ukraine"

Mission statement and goals for a resilient development of the historical city centre of Okhtyrka:

Okhtyrka is to be established and developed as a regional cultural centre, with the renewal and upgrading of the city centre being the driving force behind the entire urban development. Emphasising the history of the town's development and its defining public spaces and buildings is of paramount importance in order to preserve and strengthen the endangered, special identity and characteristics of Okhtyrka. Protecting the culture and keeping the identity is one of the most important goals of a resilient urban development. Okhtyrka is a city of commerce and this should continue to be experienced in the city centre through lively markets offering local products in particular, with which circularity and independency of the city and its society are subsidised. The river bordering the old town to the north-west forms the green-blue backbone and should be upgraded accordingly. In the long term, the city centre is to be freed from through traffic and the streets are to be primarily for cyclists and pedestrians, with which a more multi modal mobility structure will be strengthened. Okhtyrka wants to become a cycle-friendly city overall, with safe and comfortable cycle paths and special offers for cycle tourism. Flood management and the creation of more and better shelters should make the city centre safe.

Автоматично згенеровано

Projects and measures:

- A) Elaboration and coordination of an inner city revitalisation concept in accordance with the mission statement and objectives and in particular to preserve, maintain and further develop the local identity with its historical traces, spaces and buildings
 - 1) Construction of a new town hall in the city centre and determination that all city administration offices are located in the old town. Coordination of a suitable procedure for finding the best architectural solution for the new town hall building, on the basis of a qualified brief and project description
 - 2) Safeguarding the historic spaces and buildings in the old town centre through appropriate planning documents
 - 3) Renovation of important buildings in the historic city centre
 - 4) Upgrading of the public spaces in the old town, taking into account the historical development and prioritising pedestrians and cyclists; with inclusive and barrier-free design (also applies to B)
 - 5) Compatible integration of through traffic into the city centre until a bypass can be implemented
 - 6) Pilot project revitalisation of the central urban space
 - 7) Preparation of a regulatory plan for the historic city centre, which secures the most important priorities in terms of building law and becomes the basis for action for the permissibility of private buildings
- B) Upgrading and expanding the cultural centre, to stabilise the cities society and to strengthen the culture basis
 - 1) Integration of more offers for young people
 - 2) Examination of the utilisation of old commercial buildings for special cultural offerings as a second location for the house of culture
 - 3) Upgrading of the open space between the house of culture and the main street as a central cultural square with offers for all generations, in a design that is as open to use as possible and can be used flexibly for many different activities, events and city festivals
- C) Archaeological investigation of destroyed old buildings and preservation of archaeological traces
 - 1) Town hall location
 - 2) Location of the old church north-west of the river on the main road

- D) Development and coordination of an open space concept for the green area along the river and a watercourse concept to prevent flooding and including rainwater management (if the reservoir in front of the city were to be destroyed, parts of the city would be flooded)
 - 1) Establishment of flooding areas along the river
 - 2) Inspection and installation of flood protection installations on buildings in the lowland area
 - 3) Creation of play, sports and recreation areas within the green space and parks along the river
 - 4) Creation of a continuous walkway along the riverbank
 - 5) Develop a concept for rainwater management so that rainwater is collected, stored and only gradually infiltrated (including pilot and showcase projects); examine the extent to which the excessively wet ground in the historic city centre can be improved by a drainage system
 - 6) Realisation of a model project of a vertical garden as an example of better rainwater management
 - 7) Preparation of a study on dealing with invasive species and compilation of a planting list for the old town and green spaces in the city centre
- E) Traffic concept for the old town and city centre bypass
 - 1) Development of variants for the creation of a city centre bypass, evaluation of the variants and decision in favour of one variant, preparation of further planning and construction documents
 - 2) Inspection, securing and stabilisation of road bridges over the river so that they are safe to use even during floods
 - 3) Cycle path concept for the old town and for safe and convenient connections between the old town and other parts of the city
 - 4) Detailed path and recreation concept for pedestrians in the historic city centre, including a planting concept for more street trees
 - 5) Development of a concept for the further development and upgrading of local public transport
- F) Urban development concepts for the two old industrial and workplace areas in the historic city centre
 - 1) Securing the important old industrial buildings as part of the local heritage
 - 2) Refurbishment, continued use and new use of the old commercial buildings for crafts, trade, commerce, offices and other services and for cultural activities (south-western area primarily commercial, northern area primarily cultural, office, services)
 - 3) Complementing the commercial buildings with new buildings that take up the dimensions, characteristics and spatial references of the old buildings
- F) Clarification of how to deal with the monuments and other legacies of the Soviet era; proposal is to dismantle the Soviet monuments and collect them in a 'monument garden'

Urban Resilience | Workshop outcomes

Project "Strengthening of Urban Resilience in the Areas of Supply Infrastructure and Housing in Ukraine"

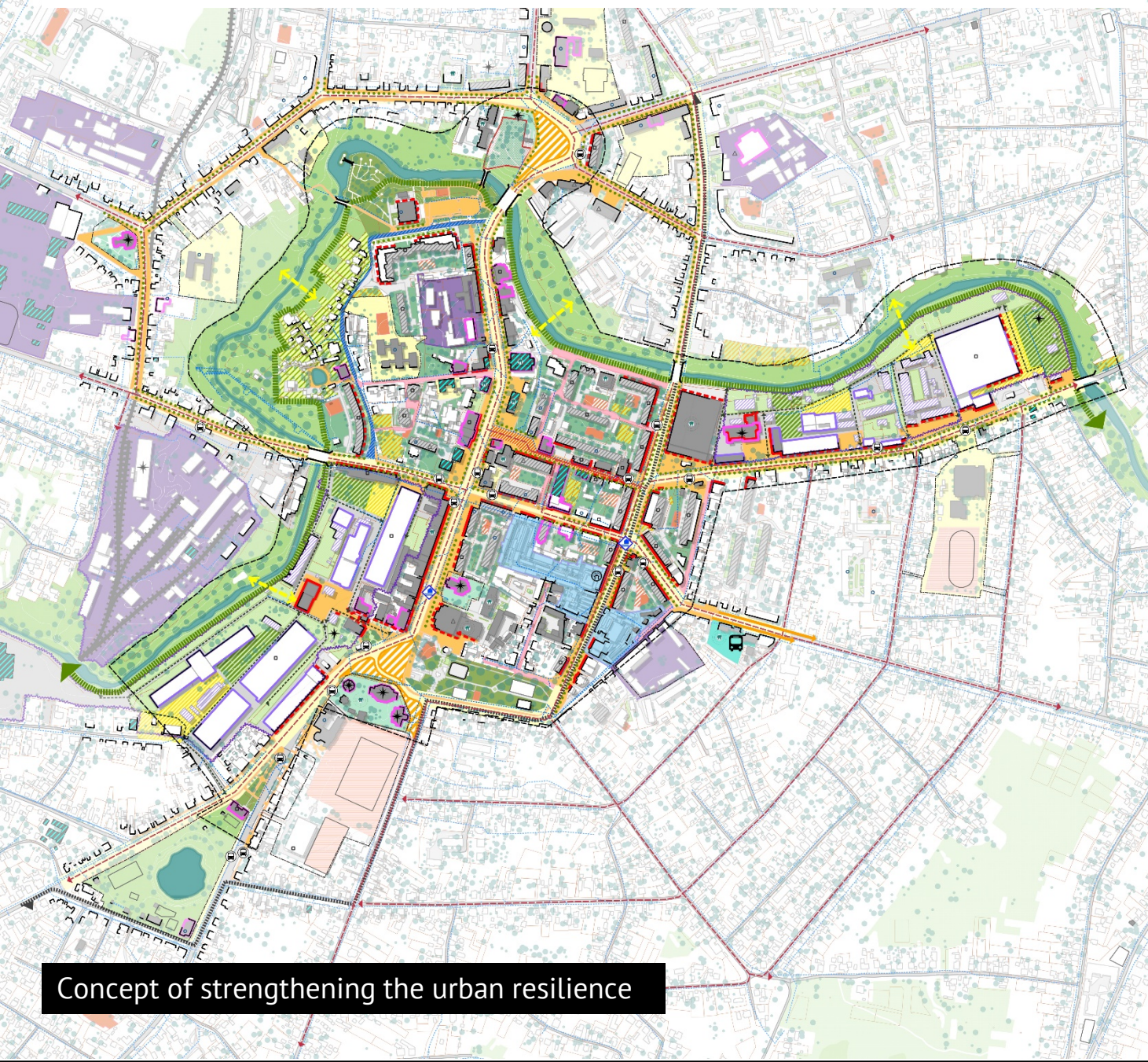
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Urban Resilience | Concept



Concept of strengthening the urban resilience

Concept of strengthening the urban resilience of the historic centre of Okhtyrka/ Концепція посилення міської стійкості історичного центру міста Охтирка/ Okhtyrka/Охтирка

Legend/ УМОВНІ ПОЗНАЧКИ

Security and critical infrastructure Безпека та критична інфраструктура

- Public buildings with a priority for rebuilding that were damaged by military aggression
Громадські будівлі з пріоритетною відбудовою, які зазнали руйнування від військової агресії
- Public building with a priority need for shelter for long term stay
Громадська будівля з пріоритетною потребою в облаштуванні укриттів для тривалого перебування
- Modernisation of apartment building
Модернізація багатоквартирного будівлюєк пріоритет через високу щільність населення
- Traffic calming zone
Зона заспокоєння руху
- Renovation of the roadway for effective evacuation if necessary
Оновлення проїзної частини дороги для ефективного евакуації за потреби
- Modernisation of existing overhead utility networks
Модернізація існуючої наземної інженерної мережі
- Architectural monument in need of renovation
Архітектурна пам'ятка, яка потребує санації
- Active facade
Наваннений активний фасад
- Activation of facades
Активізація фасадів
- Create a vertical layout
Створення вертикального планування

Restoring urban identity and strengthening social resilience/ Відновлення міської ідентичності та зміцнення соціальної стійкості

- Buildings and structures in former industrial zones that need to be rethought
Будівлі та споруди колишніх промислових зон, що потребують переосмислення
- Buildings that have no value
Будівлі які не мають цінності
- Opening fences that create obstacles to free access
Відкриття огорож, які створюють перешкоди для вільного доступу
- Area requiring archaeological excavations
Територія що потребує археологічних розкопок
- Mixed use street
Вулиця змішаного користування
- Renovation of the road space as a multifunctional area for pedestrians and vehicles
Оновлення простору дороги, як багатофункціональної території для пішоходів та транспортних засобів
- Restoration of areas: Assumption and Soborna Squares
Відновлення площі Успенської та Соборної площі
- Adapting to climate challenges and others changes
Адаптація до кліматичних викликів та інших змін

Improving the condition of simple shelter
Покращення умов простого укриття

Improving the conditions of radiation protection shelter
Покращення умов протирадіаційного укриття

Creating a safe shelter in an apartment building
Створення безпечного укриття в багатоквартирному житловому будівлюєк

Creation of safe shelters for long term stay
Створення безпечного укриття для тривалого перебування найбільш вразливих груп населення

Creation of shelters for market visitors and workers, protective structures for market roofs to protect against falling debris
Створення укриття для відвідувачів та працівників ринку, захисних конструкцій дахів ринкових рядів для захисту від падаючих уламків

Overhaul of existing bridge
Капітальний ремонт існуючого мосту

Redirecting transit traffic
Перенаправлення транзитного руху

Creating new connection with infrastructure for pedestrians and cyclists
Створення нової сполучення з інфраструктурою для пішоходів та велосипедистів

Renovation and improvement of the quality of public squares, parks and pedestrian areas
Оновлення та покращення якості громадських площ, парків і пішохідних зон

Creating new public spaces
Влаштування нових громадських просторів

Improvement of existing modern children and sport grounds
Облаштування наявного сучасного дитячого і спортивного майданчиків

Arrangement of a new modern children and sport ground
Облаштування нового сучасного дитячого і спортивного майданчиків

Raumkante
Фасад, які формують межі простору

Historical axes of the city
Історичні вісі міста

Basic street axis of former industrial areas
Лінійна вісь вулиць колишніх промислових зон

An area that requires a clear structure of land division and development rules
Зона, яка потребує створення чіткої структури поділу на земельні ділянки та правил забудови

Potential for building densification
Потенціал ущільнення забудови

Rethinking and modernising the existing market
Переосмислення та модернізація існуючого ринку

Territory of vulnerable social infrastructure facilities
Територія вразливих об'єктів соціальної інфраструктури

Territory of pre school and secondary education institutions, church and bus station
Територія закладу дошкільної, середньої освіти, церкви

Maintaining overview perspective
Збереження оглядової перспективи

Existing trees
Наявні дерева

New uses for abandoned building
Нові використання занятих будівлі

Bus station
Автовокзал

Research area
Територія досліджень

Historic city center of Okhtyrka
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Urban Resilience | Concept zoomed-in part



Urban Resilience | Online workshops

Nizhyn 23.01.2025



Poltava 31.01.2025



Okhtyrka 19.02.2025

[Thank you for your attention!]

Дякуємо за увагу!