

# MULTICOMFORT HOUSE

## WARSAW 2022

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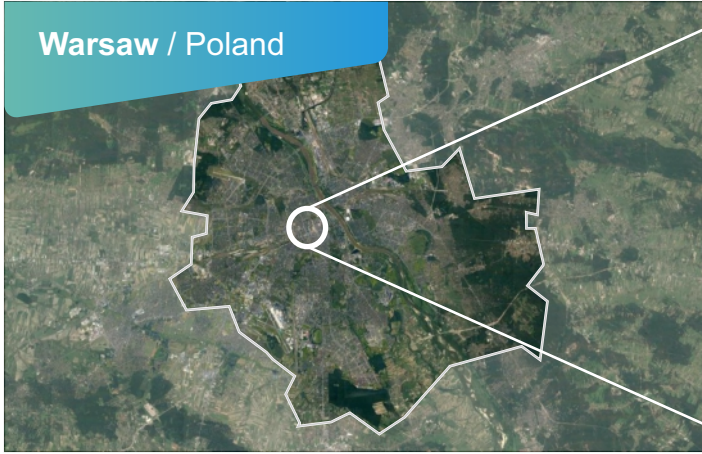
TEAM 33



UKRAINE  
ODESSA STATE ACADEMY  
OF CIVIL ENGINEERING AND ARCHITECTURE

ARCHITECTURE  
STUDENT  
CONTEST

### Warsaw / Poland



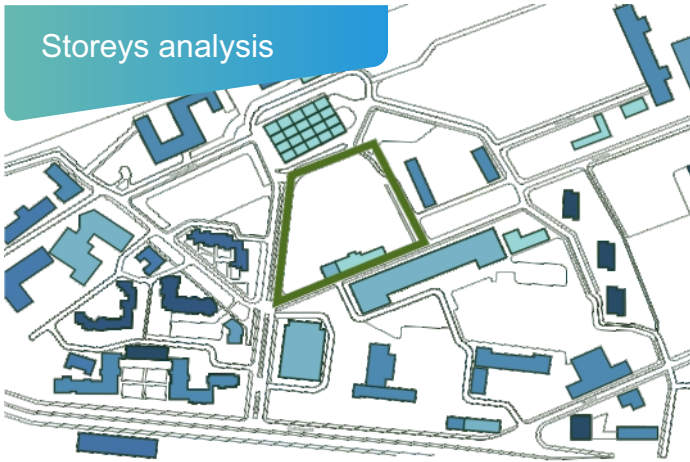
### Praga-Poludnie



### Green areas scheme

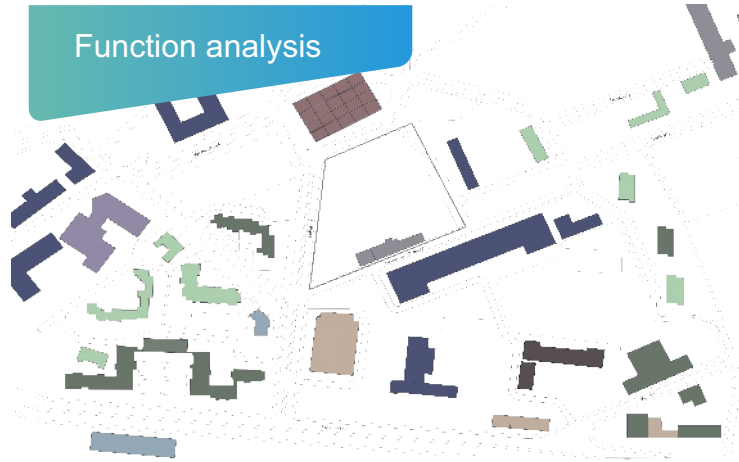


### Storeys analysis



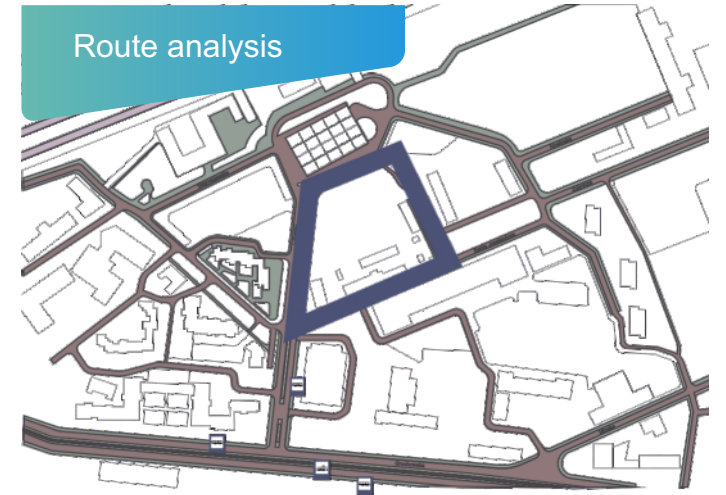
- |   |   |  |
|---|---|--|
|  1 storey  |  4 storeys |  8 storeys  |
|  2 storeys |  5 storeys |  10 storeys |
|  3 storeys |  6 storeys |  12 storeys |

### Function analysis

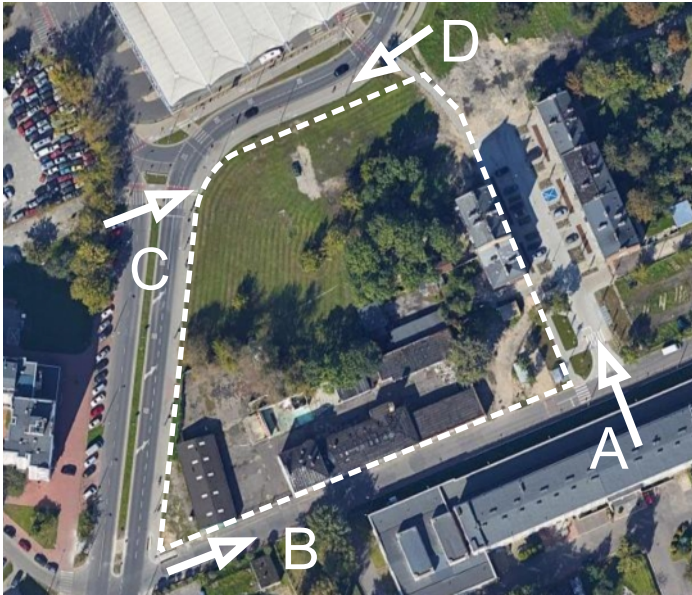


- |  |  |  |
|--|--|--|
|  OFFICES    |  RESIDENTIONAL            |  TRANSPORTATION |
|  COMMERCE   |  RESIDENTIONAL + COMMERCE |  RELIGION       |
|  INDUSTRIAL |  CULTURE + EDUCATION      |  MILITARY       |

### Route analysis



- |   |  |
|---|--|
|  Road routes   |  Tram station |
|  Hiking trails |  Bus stop     |
|  Railway       |  |
|  Tram rails    |  |



The district of Praga-Poludnie is divided into ten microdistricts, the largest of these is the village of Grochów (local from 1422 rubles). Industrialism began to develop here after 1945.

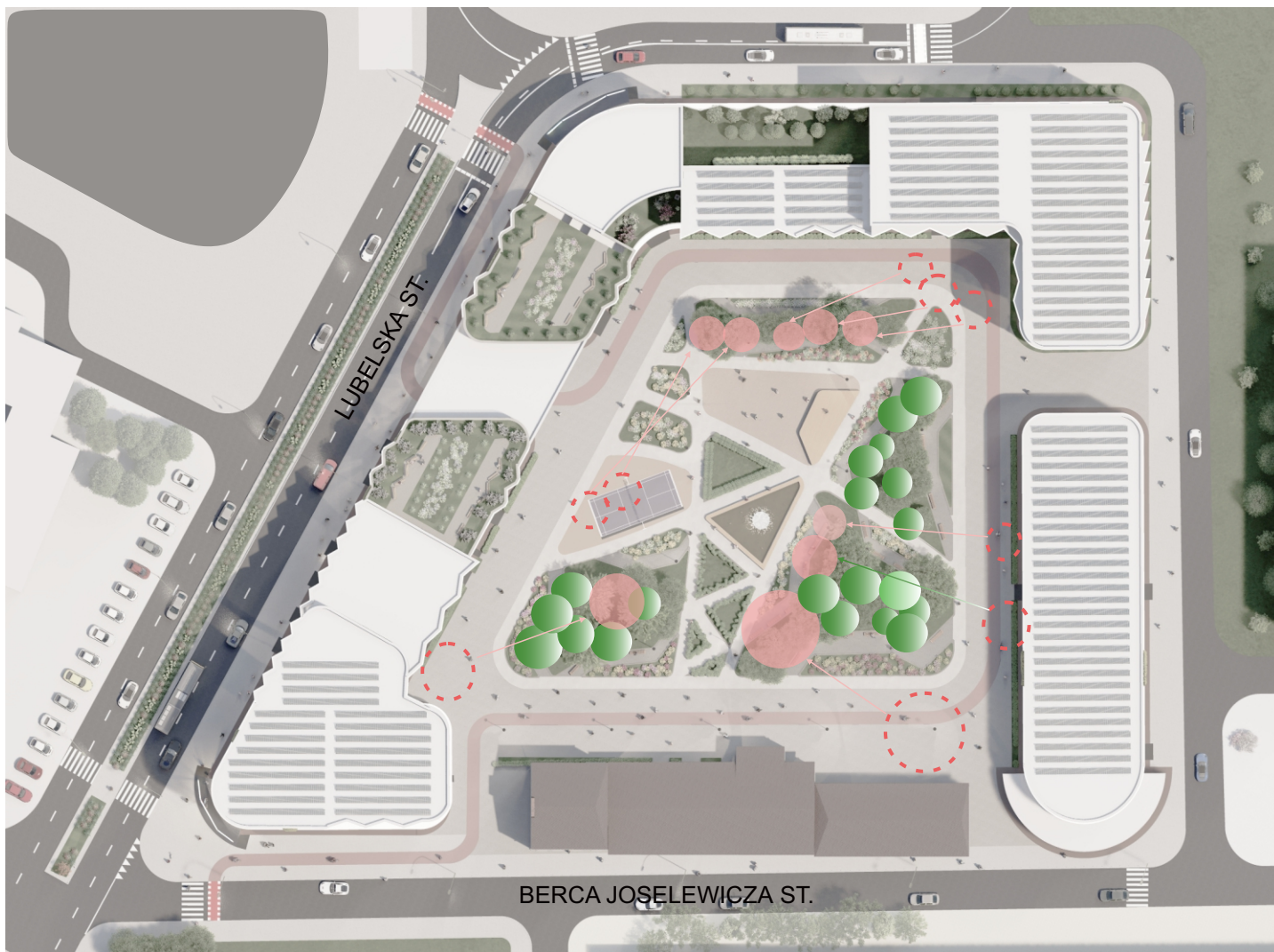
In addition, in the boundaries of the district there are if there is a professionally established historical settlement of Kamjonek, pre-war Silicon Valley.

Previously, there were numbers of military, technical (first Polish cars were taken from Kamjonek), electrical engineering enterprises and backwaters for the production of food products, as well as a farm.

The most important historical podieyu, as it has become here, have been the first in the world to choose what happened at the turn of the day and grass 1573 year.

Near Kamjonek, the largest (over 80 ha) green area has been planted in the area of Prague-Poludně – Skariszewski Park and historical place Kamionkowskie Błonia Elekcyjne. A confectionery factory was opened on the birch of Lake Kamjonek "E. Wedel" and theater «Teatr Powszechny w Łodzi». The university of social sciences humanities, and in the old days of the Veterinary Institute, there is a residence of the Polish Symphony Sinfonia Varsovia orchestra.

The biggest project, we will complete in the rest of the years at Kamjonek, becoming the National stadium named after Kazimierz Gursky



Transplanting is the term used to describe the digging and replanting of trees from one location to a new location. Due to the wide extent and morphology of tree root system, transplanting of trees usually involves substantial removal of roots

The whole transplanting process in particular for large trees is an engineering feat and requires substantial involvement of resources and time. A decision to transplant a tree should be based on a balancing consideration of its conditions (e.g. form, health and structure), size, species, conservation status, amenity value, suitability for transplanting, environmental and cultural factors, functional and engineering



cutdown tree

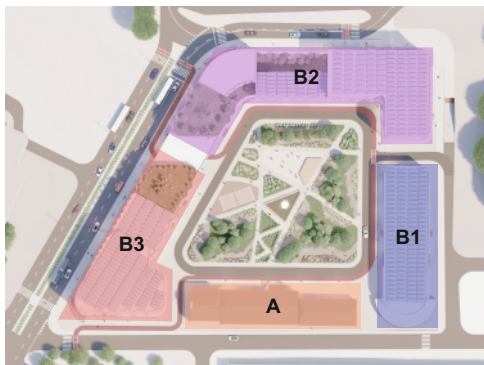


remaining tree



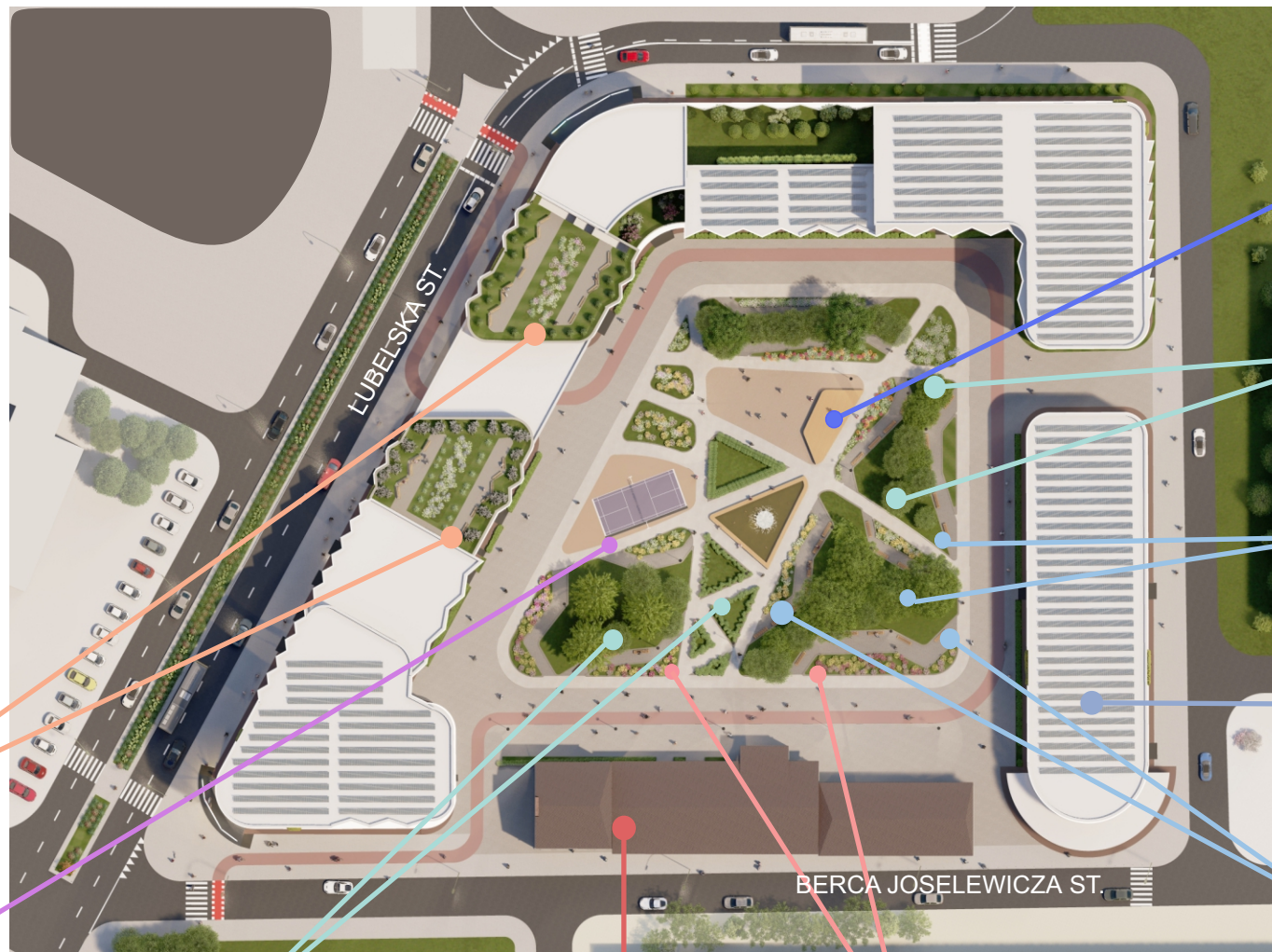
relocated tree





### TECHNICAL STATS

Construction site	11 800 sq.m.
Landscaping	2 020 sq.m.
Pedestrian zone	4 340 sq.m.
Building B1	1 208.8 sq.m.
Building B2	2 355.1 sq.m.
Building B3	1 513.6 sq.m.
Fabric	768 sq.m.



PERFORMANCE AREA

PARK AREA

RECREATION AREA

SOLAR PANELS

RECREATION AREA

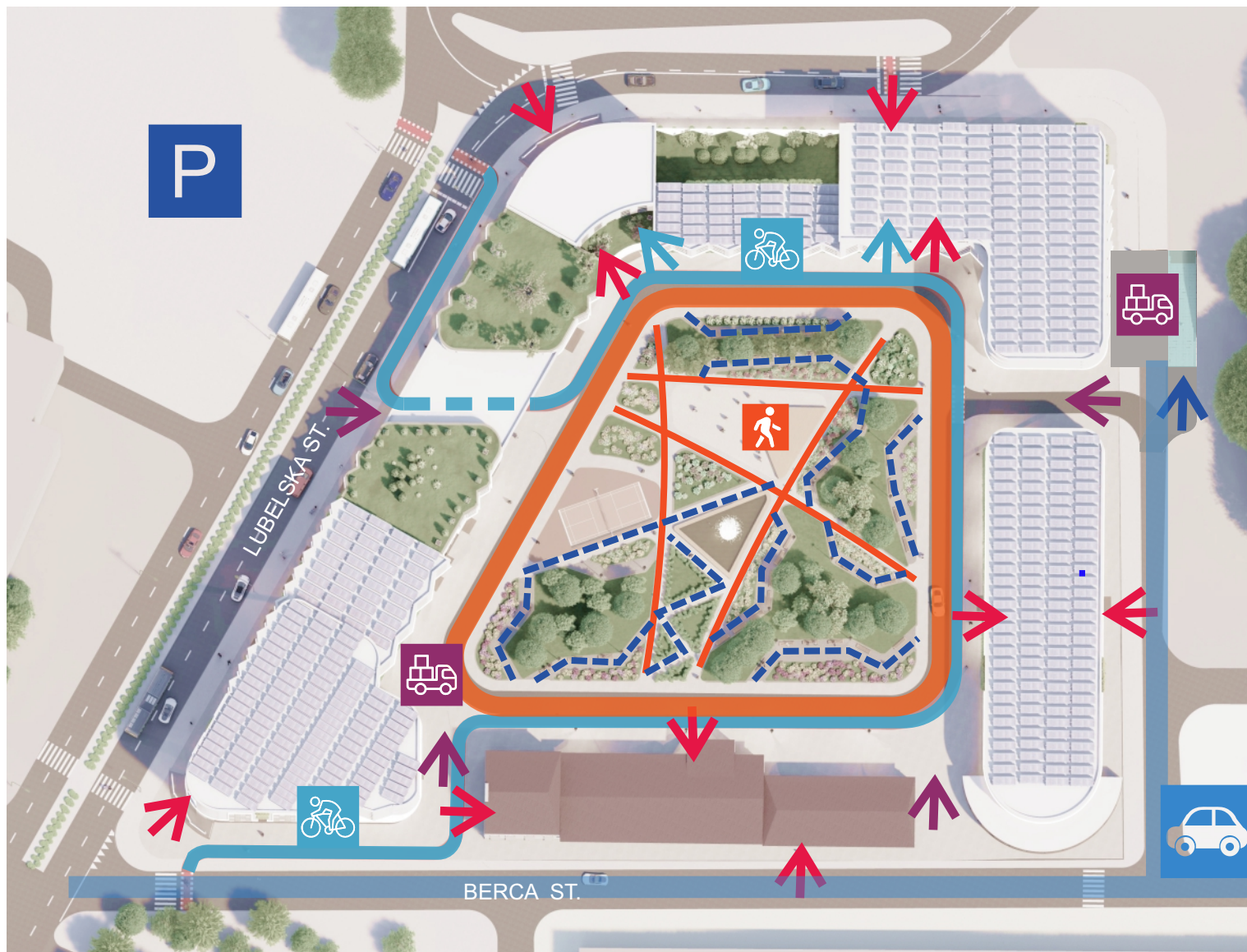
GREEN ROOF

ACTIVE RECREATION AREA

PARK AREA

COMMUNITY

FLOWERBED



CAR ROADS



BIKEPATHS



PEDESTRIAN AREA



LOADING AREA



PARKING



TRANSIT ROUTES



WALKING ROUTES

PEDESTRIAN / EMERGENCY /  
TECHNICAL TRANSPORT

BUILDING ENTRANCES



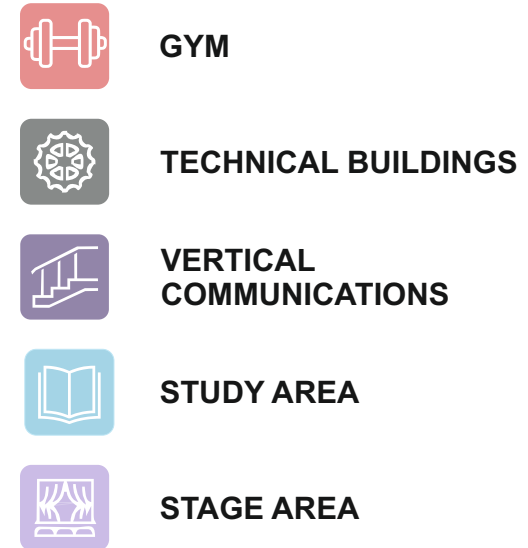
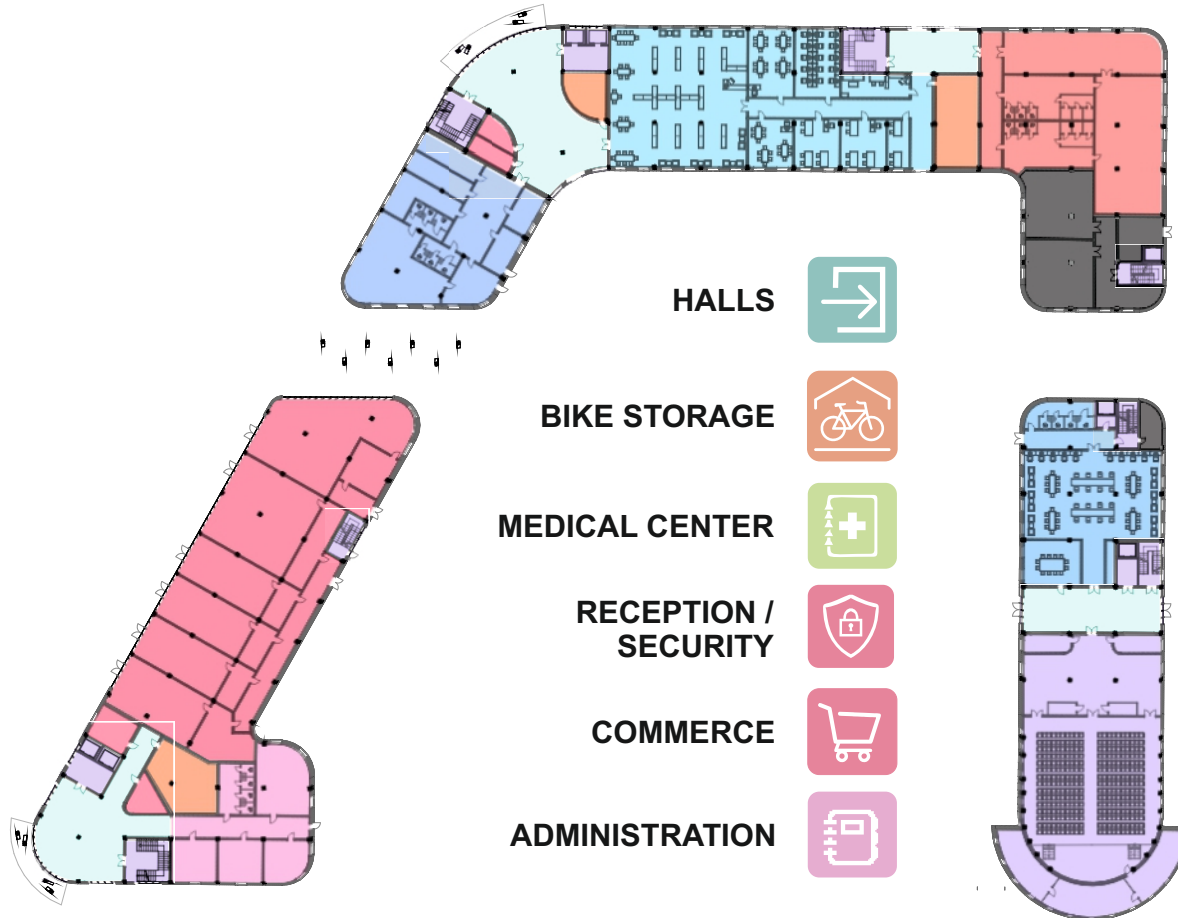
ENTRANCE TO THE SITE



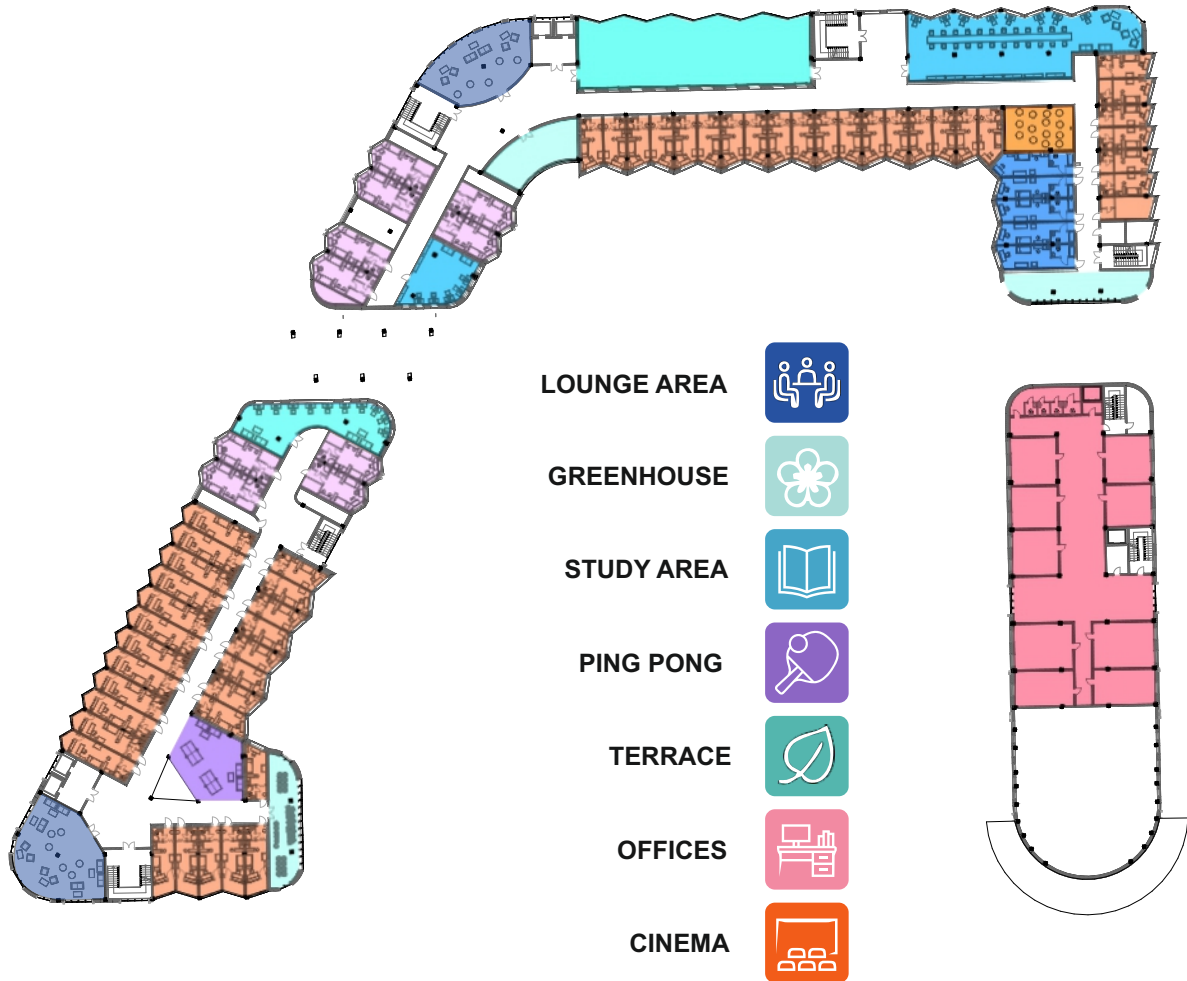
PARKING ENTRANCE

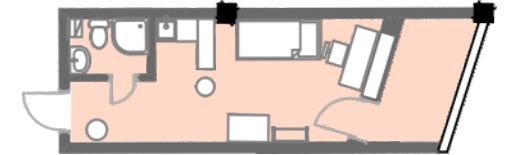


BIKE ENTRANCES

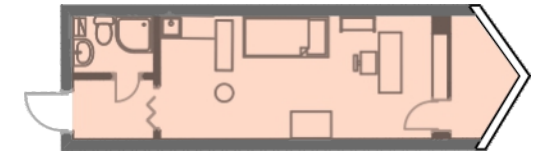
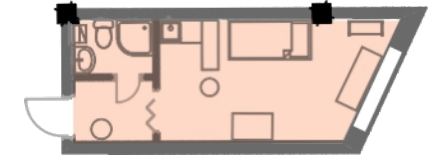
**TECHNICAL STATS**

Commercial area	- 925 sq.m.
Gym area	- 484 sq.m.
Classroom area	- 923 sq.m.
Medical center	- 376 sq.m.
Multifunctional hall	- 1260 sq.m.
Bike parking	- 50 pcs



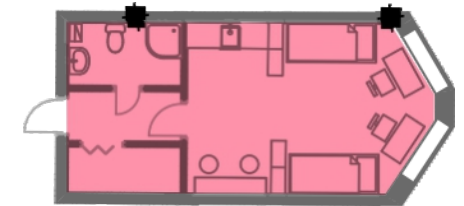
**SINGLE ROOM  
PLAN VARIATIONS**


TOTAL  
NUMBER  
**215**



**DOUBLE ROOM 28 sq.m.**

TOTAL  
NUMBER  
**30**



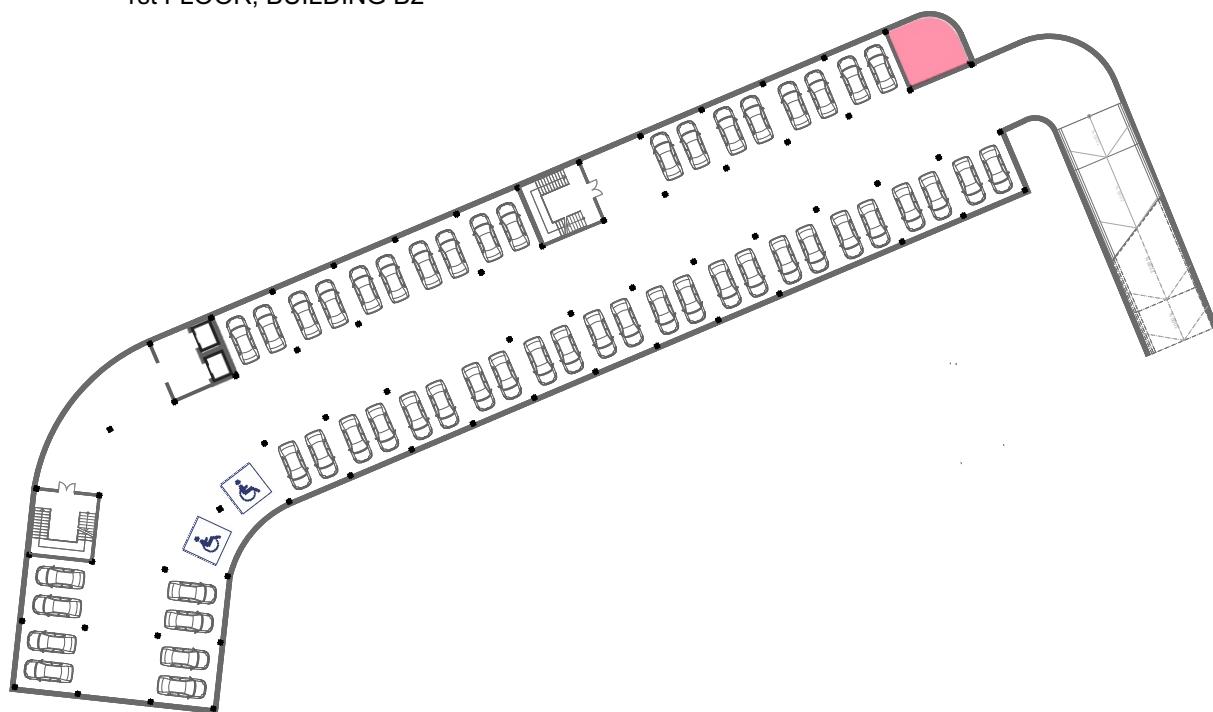
**ROOM FOR PEOPLE  
WITH LIMITED ABILITIES 22 sq.m.**

TOTAL  
NUMBER  
**5**



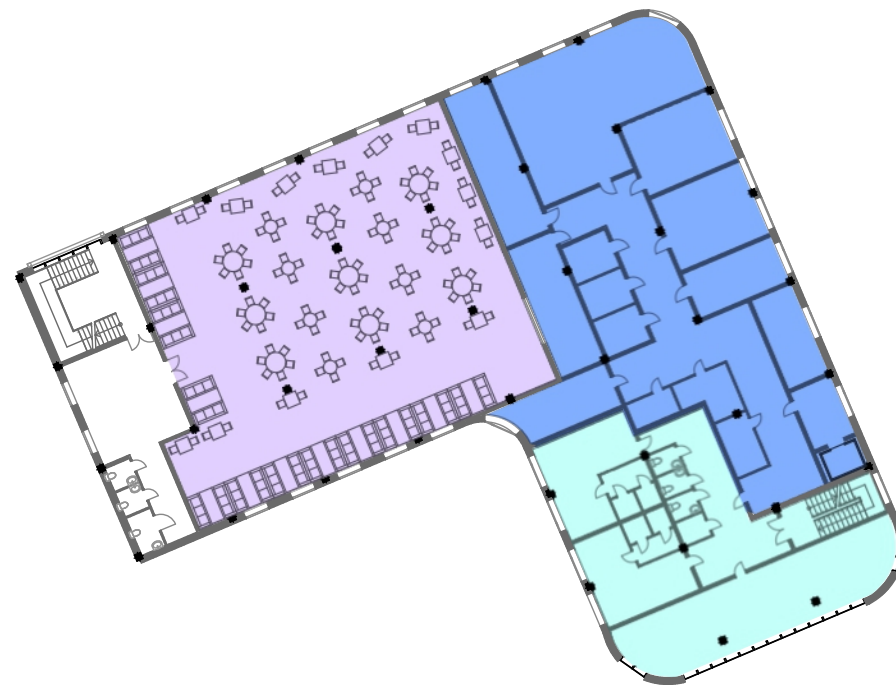
Underground parking for 50 places

-1st FLOOR, BUILDING B2



Café for 180 places

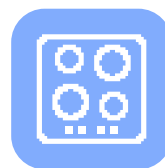
6th FLOOR, BUILDING B2



CHECKPOINT



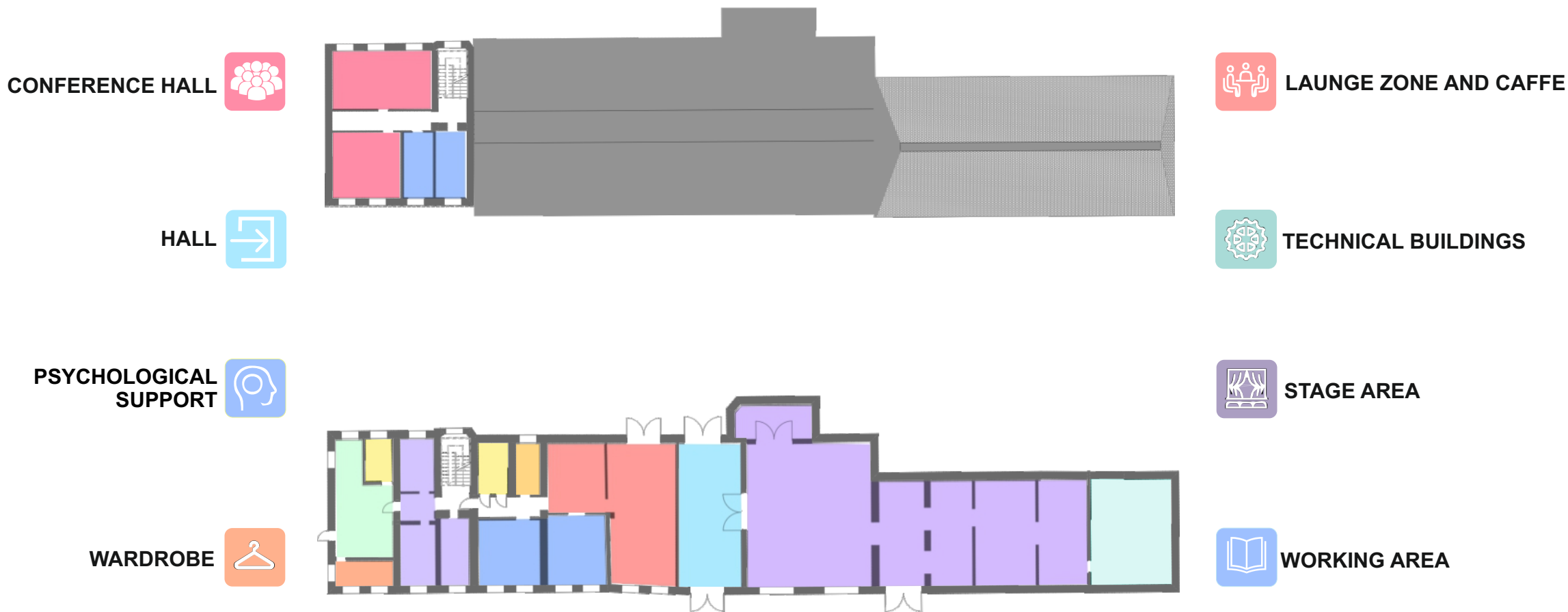
DINNING ROOM



KITCHEN



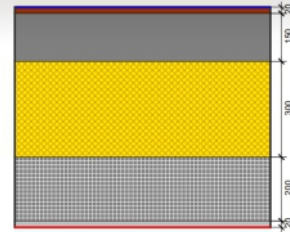
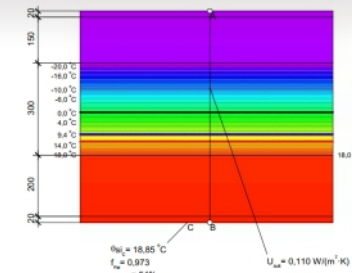
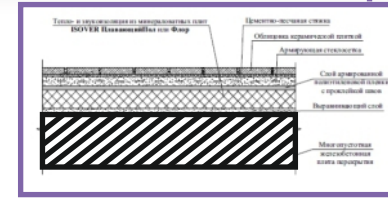
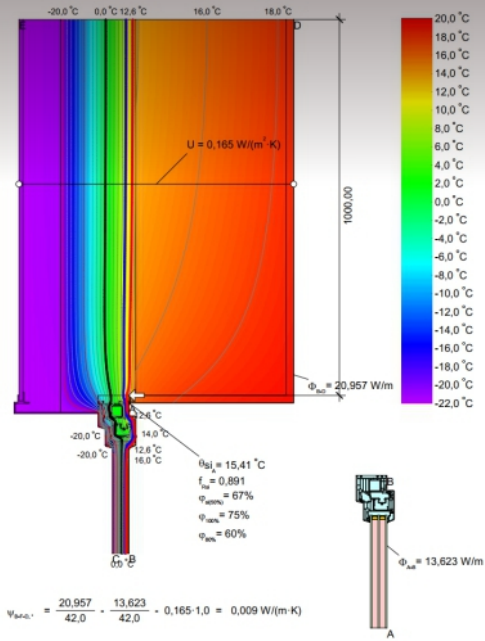
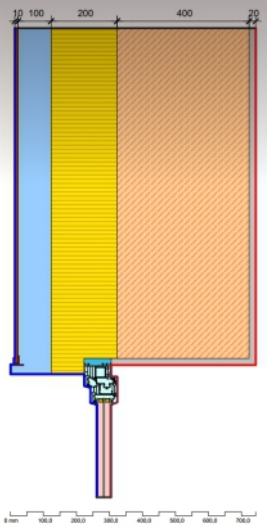
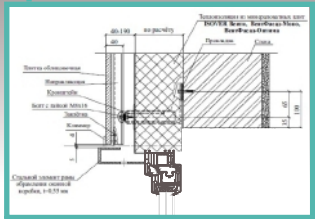
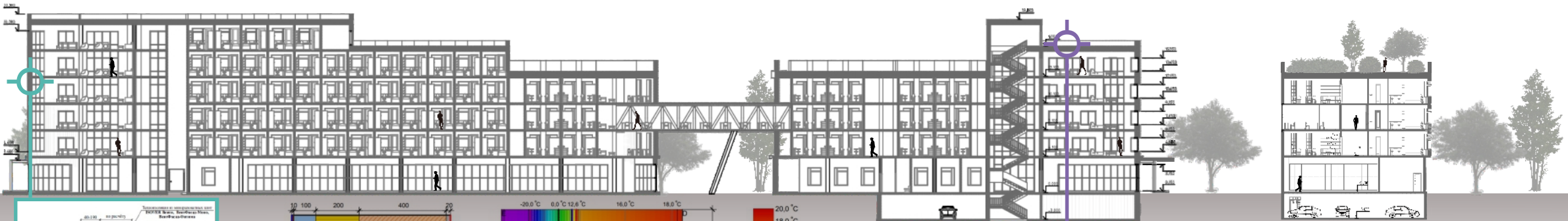
STUFF







### SECTION B3



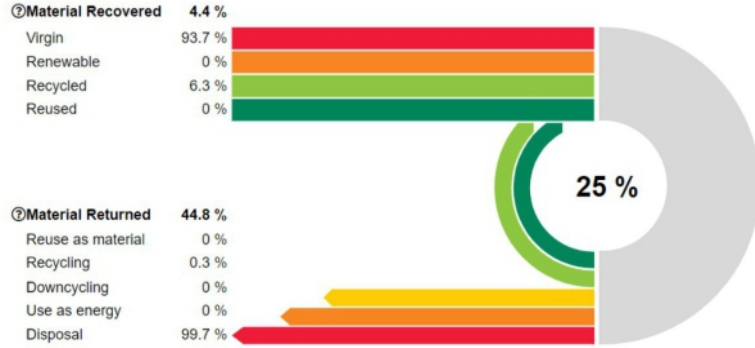
Material	$\lambda$ [W/(m·K)]	$\epsilon$
Argon	0,017	0,900
BRICK	0,620	0,900
NEOPOR BASF	0,040	0,900
PU (polyurethane) foam	0,050	0,900
Plaster, lime, sand	0,800	0,900
Polyamid (nylon)	0,250	0,900
Polyvinylchloride (PVC)	0,170	0,900
Rubber, natural	0,130	0,900
Silica gel (desiccant)	0,130	0,900
Slightly ventilated air cavity *		
Soda lime	1,000	0,900
Steel	50,000	0,900
Tiles (other), ceramic/porcelain	1,300	0,900
Unventilated air cavity *		

Boundary Condition	$q$ [W/m <sup>2</sup> ]	$\theta$ [°C]	$R$ [(m <sup>2</sup> ·K)/W]	$\epsilon$
Exterior, normal -22°C	-22,000	-22,000	0,040	
Interior, window/door	20,000	20,000	0,130	
Interior, without window/door	20,000	20,000	0,250	
Symmetry/Model section	0,000			

Material	$\lambda$ [W/(m·K)]	$\epsilon$
Concrete, medium density 1800 kg/m3	1,150	0,900
Concrete, reinforced (with 2% of steel)	2,500	0,900
Plaster, lime, sand	0,800	0,900
Tiles (other), ceramic/porcelain	1,300	0,900
XPS BASF	0,035	0,900

Boundary Condition	$q$ [W/m <sup>2</sup> ]	$\theta$ [°C]	$R$ [(m <sup>2</sup> ·K)/W]	$\epsilon$
Exterior, normal -22°C	-22,000	-22,000	0,040	
Interior, without window/door	20,000	20,000	0,250	
Symmetry/Model section	0,000			

#### Building Circularity

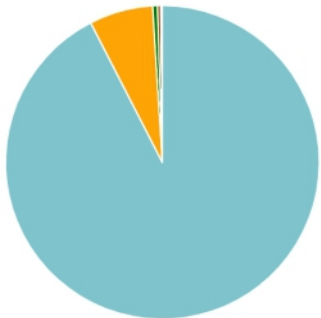


Result category	Total tons	Virgin tons	Renewable tons	Recycled tons
Construction Materials	32 689	30 761	0	1 929
Construction site - material wastage	1 405	1 308	0	97
Material replacement and refurbishment	1 204	997	0	206
<b>Total</b>	<b>35 298</b>	<b>33 066</b>	<b>0</b>	<b>2 231</b>

#### Total tons - Resource types

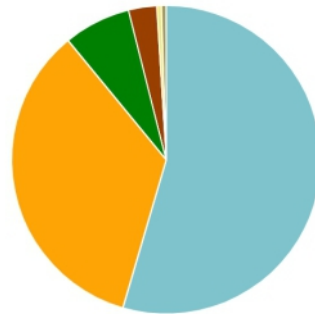
This is a drilldown chart. Click on the chart to view details

- Ready-mix - 92.5%
- Doors & windows - 0.5%
- Insulation - 0.1%
- Gypsum and plaster - 6.6%
- Metals - 0.3%
- Plastics, membranes & roofing - 0.0%



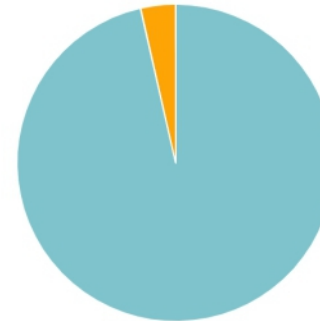
#### Total tons - Classifications

- External walls and facade - 54.5%
- Floor slabs, ceilings, roofing decks, beams and roof - 34.5%
- Internal walls and non-bearing structures - 7.0%
- Columns and load-bearing vertical structures - 3.0%
- Windows and doors - 0.5%
- Foundation, sub-surface, basement and retaining walls - 0.5%



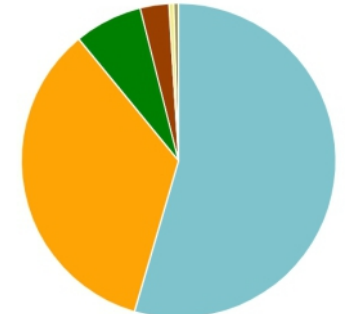
#### Total tons - Life-cycle stages

- A1-A3 Materials - 96.4%
- B4-B5 Material replacement - 3.6%

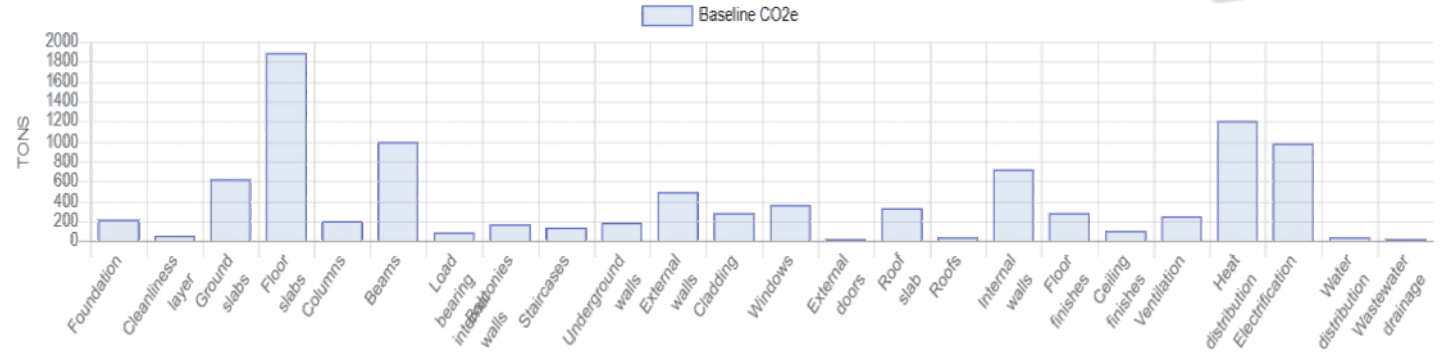


#### Mass tons - Classifications

- External walls and facade - 54.5%
- Floor slabs, ceilings, roofing decks, beams and roof - 34.5%
- Internal walls and non-bearing structures - 7.0%
- Columns and load-bearing vertical structures - 3.0%
- Windows and doors - 0.5%
- Foundation, sub-surface, basement and retaining walls - 0.5%

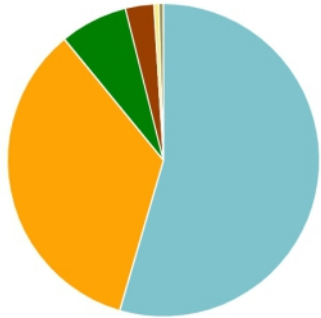


Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO <sub>2</sub> e/m <sup>2</sup>
( < 280 ) <b>A</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;"> <p><b>One Click LCA</b></p> </div> <div style="font-size: 2em; font-weight: bold;">240</div> </div>
( 280-360 ) <b>B</b>	
( 360-440 ) <b>C</b>	
( 440-520 ) <b>D</b>	
( 520-600 ) <b>E</b>	
( 600-680 ) <b>F</b>	
( > 680 ) <b>G</b>	



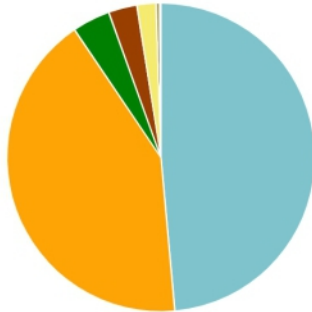
Mass kg - Classifications

- External walls and facade - 54.5%
- Floor slabs, ceilings, roofing decks, beams and roof - 34.5%
- Internal walls and non-bearing structures - 7.0%
- Columns and load-bearing vertical structures - 3.0%
- Windows and doors - 0.5%
- Foundation, sub-surface, basement and retaining walls - 0.5%



Global warming kg CO<sub>2</sub>e - Classifications

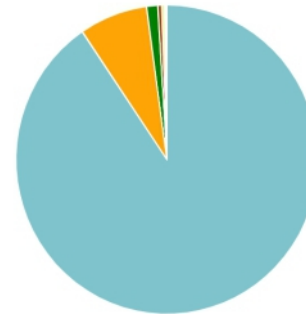
- Electricity use - 48.6%
- District heat use - 42.0%
- Floor slabs, ceilings, roofing decks, beams and roof - 4.0%
- External walls and facade - 3.0%
- Internal walls and non-bearing structures - 2.0%
- Columns and load-bearing vertical structures - 0.3%
- Windows and doors - 0.1%
- Foundation, sub-surface, basement and retaining walls - 0.1%



Global warming kg CO<sub>2</sub>e - Resource types

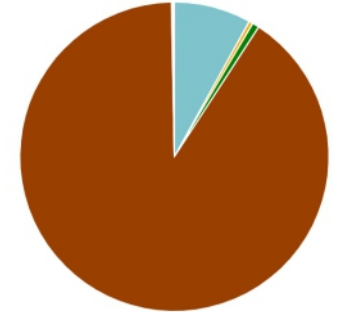
This is a drilldown chart. Click on the chart to view details

- Utilities - 90.5%
- Ready-mix - 7.3%
- Gypsum and plaster - 1.2%
- Metals - 0.4%
- Insulation - 0.3%
- Plastics, membranes & roofing - 0.2%
- Doors & windows - 0.1%



Global warming kg CO<sub>2</sub>e - Life-cycle stages

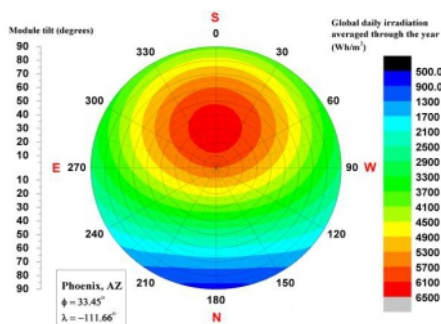
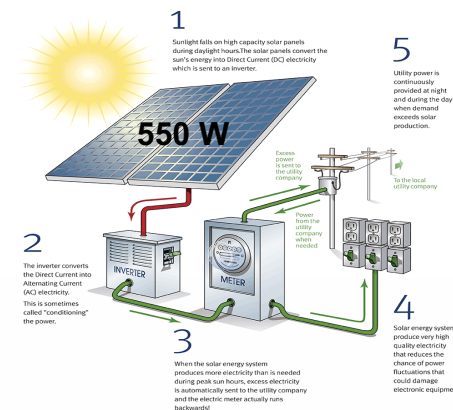
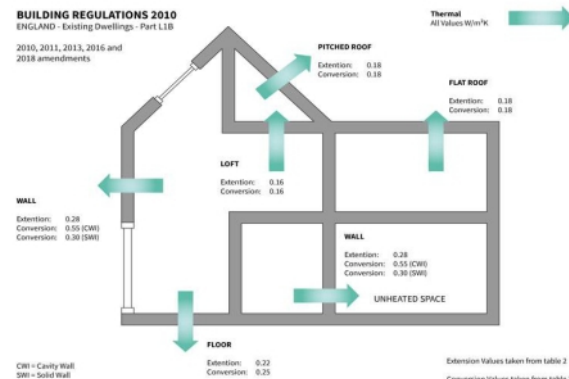
- A1-A3 Materials - 8.1%
- A4 Transportation - 0.4%
- B1-B5 Maintenance and replacement - 0.7%
- B6 Energy - 90.5%
- C2 Waste transportation - 0.2%
- C3 Waste processing - 0.0%
- C4 Waste disposal - 0.1%



## Insolation



### BUILDING REGULATIONS 2010 ENGLAND - Existing Dwellings - Part L1B 2010, 2011, 2013, 2016 and 2018 amendments



1589 hours

1540 hours

1988 hours

Power plant performance

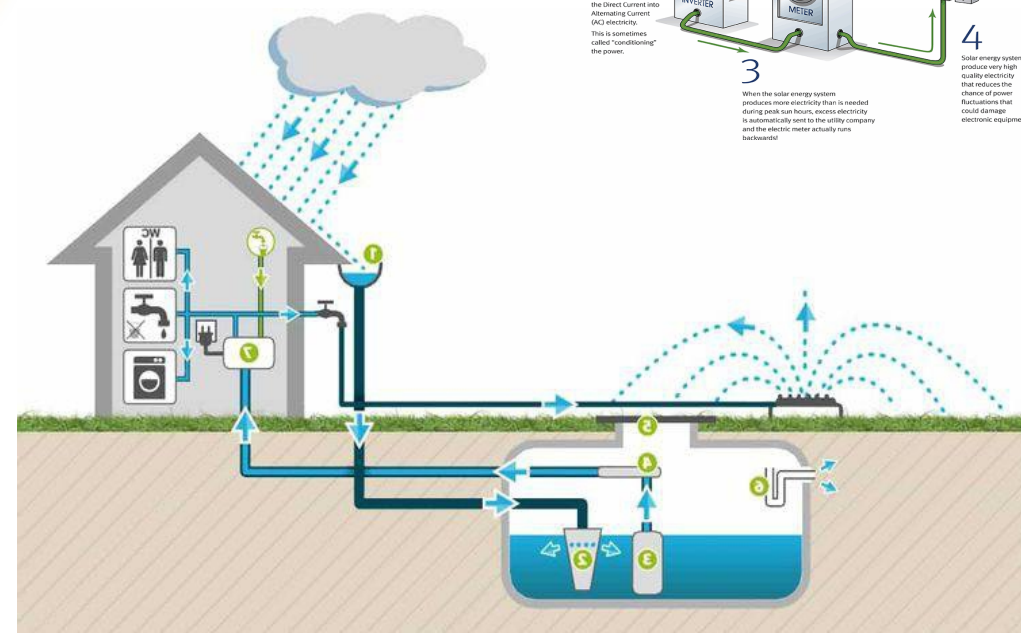
634 160 kW

Power consumption of the complex

2 315 150 kW

Percentage of self-produced energy

27.4 %



## EASTERN ELEVATION



### BUILDING B1

Length 68.6 m  
Width 18 m  
Floors 3  
Heigh 10.7

### BUILDING B2

Length 93 m  
Width 36 m  
Floors 6  
Heigh 20.1

## NORTHERN ELEVATION



### BUILDING B3

Length 75 m  
Width 36 m  
Floors 6  
Heigh 20.1

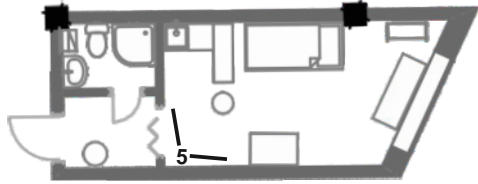
## WESTERN ELEVATION



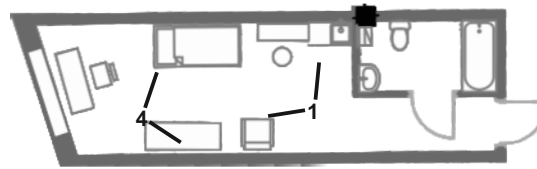
## SOUTHERN ELEVATION



SINGLE ROOM 18m



INCLUSIVE ROOM 28m



DOUBLE ROOM 24m

