HUNGARY GREEN BUILDING COUNCIL

DESIGNING RETROFIT

CEU CAMPUS REDEVELOPMENT

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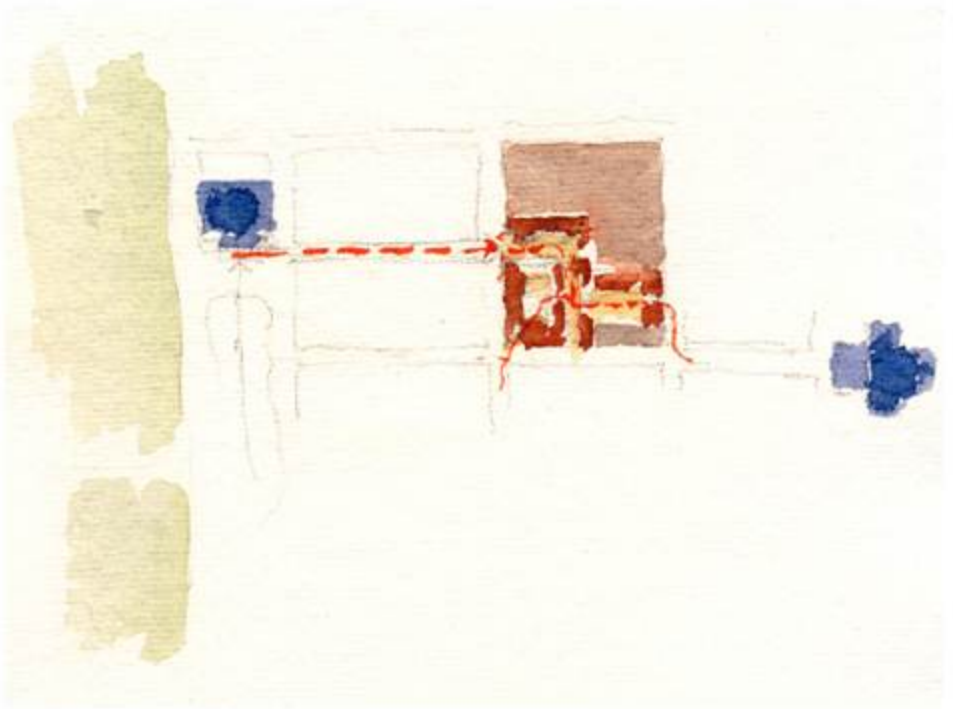
HuGBC elnök; campus fejlesztési projekt igazgató, CEU

PROJECT

Aim:

- To create a new CEU campus that is environmentally friendly and efficient, while creating a more comfortable, healthy and satisfying academic atmosphere.
- Create a communication framework between the architects, builders, CSAC, CREO, and the wider CEU community to promote transparency, accountability and engagement

DESIGN VISION



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LOCATION

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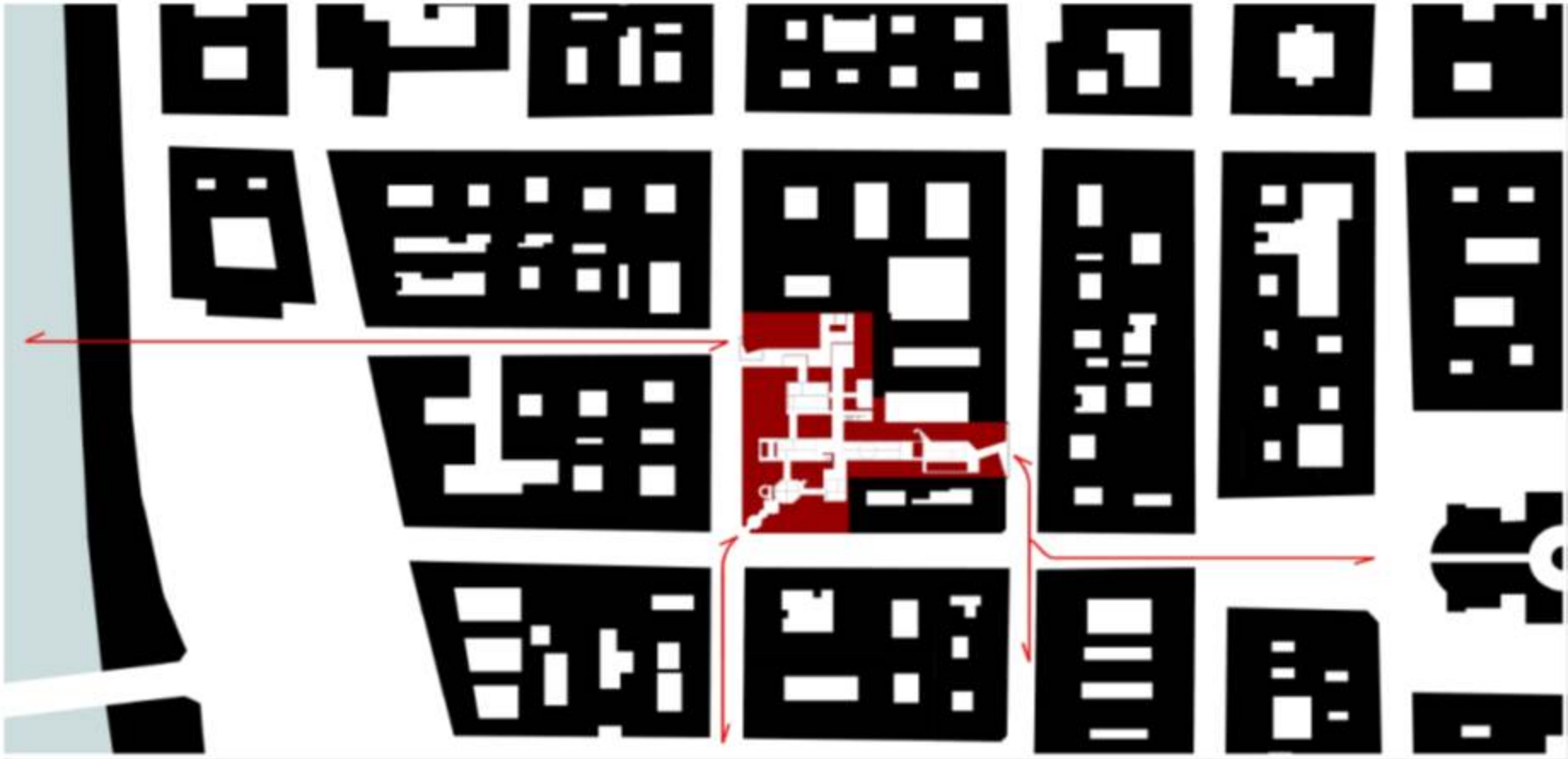
MAKING IT WORK



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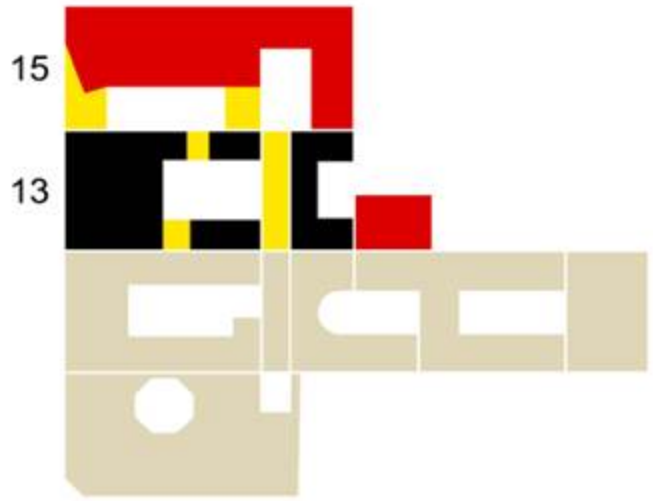
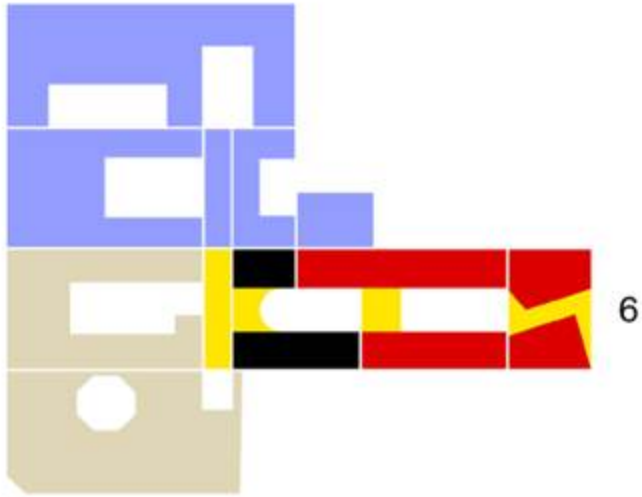
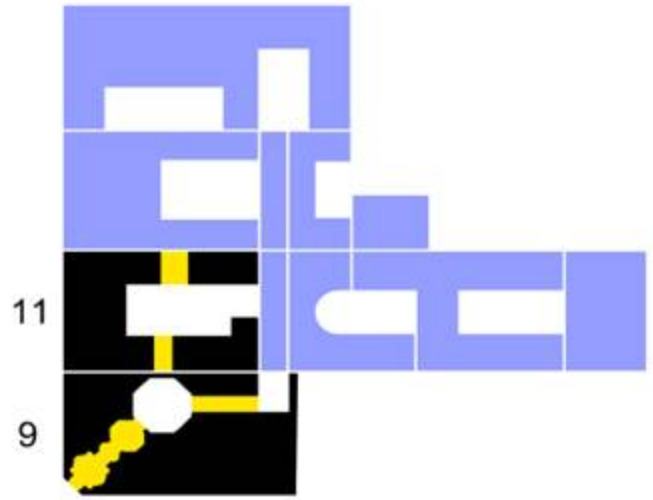
PHASING



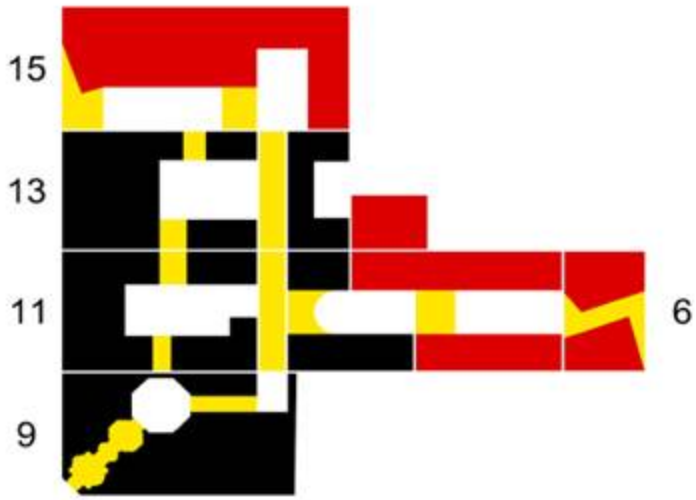
WORK PHASE 1



WORK PHASE 2

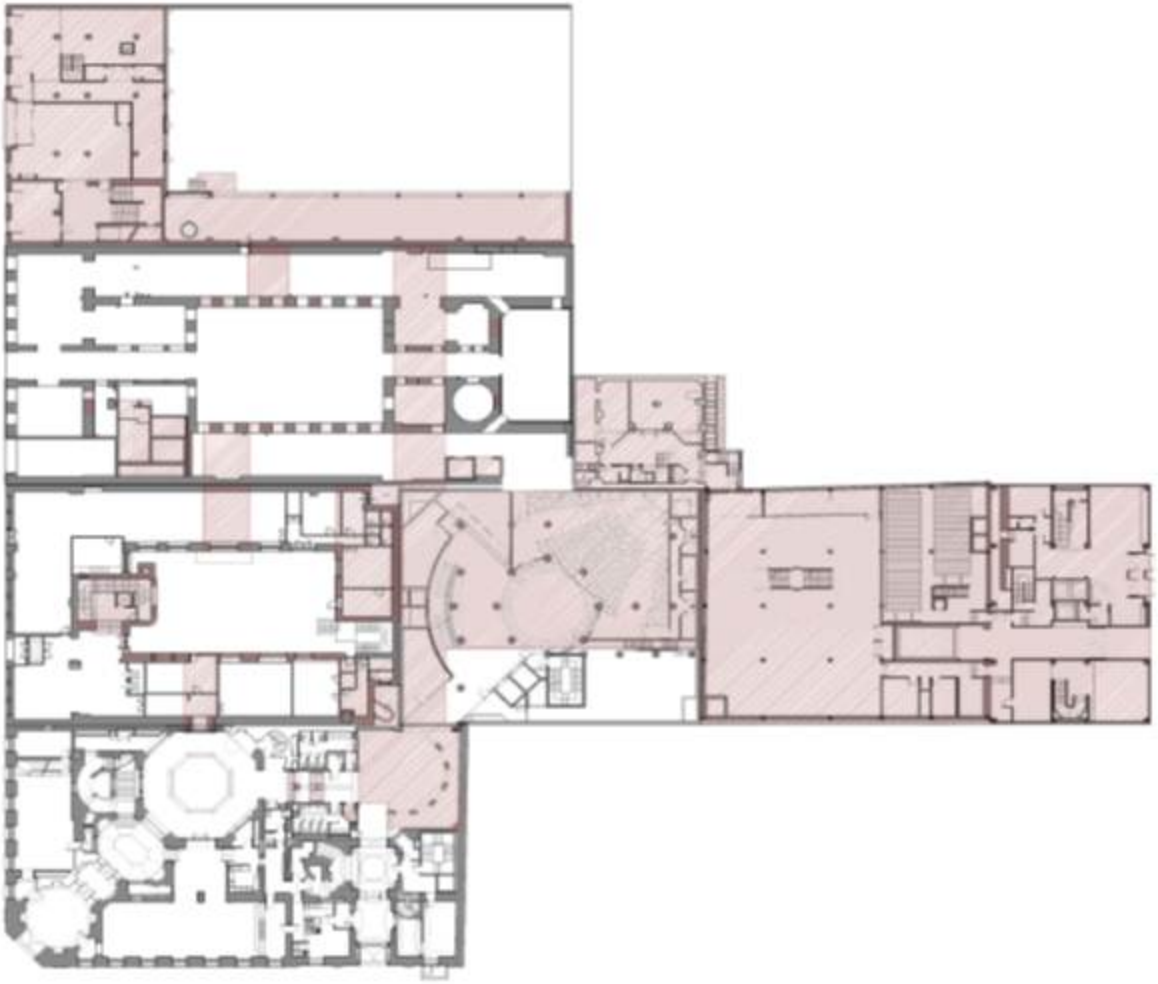


WORK PHASE 3



ALL PARTS CONNECTED

SELECTIVE DEMOLITION



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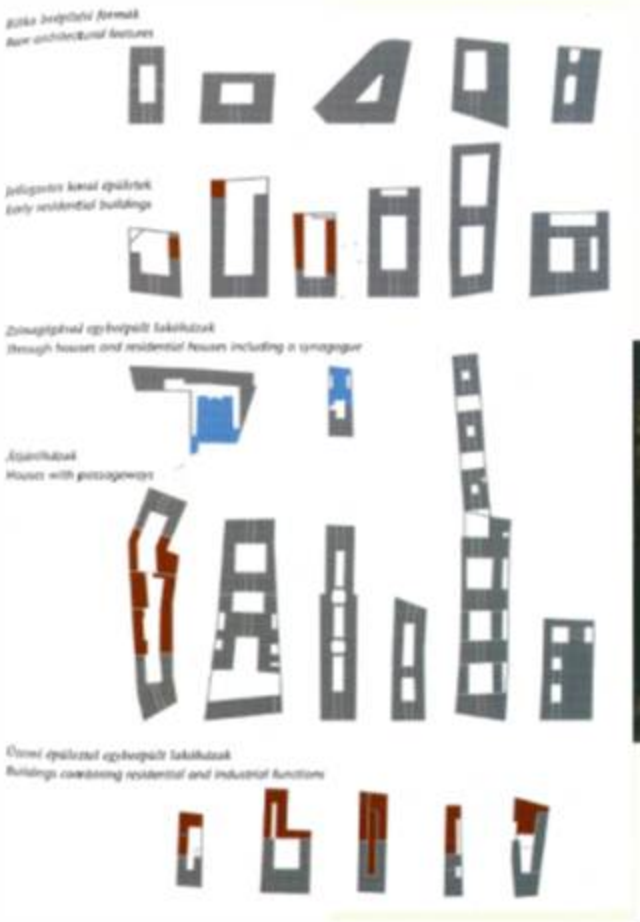
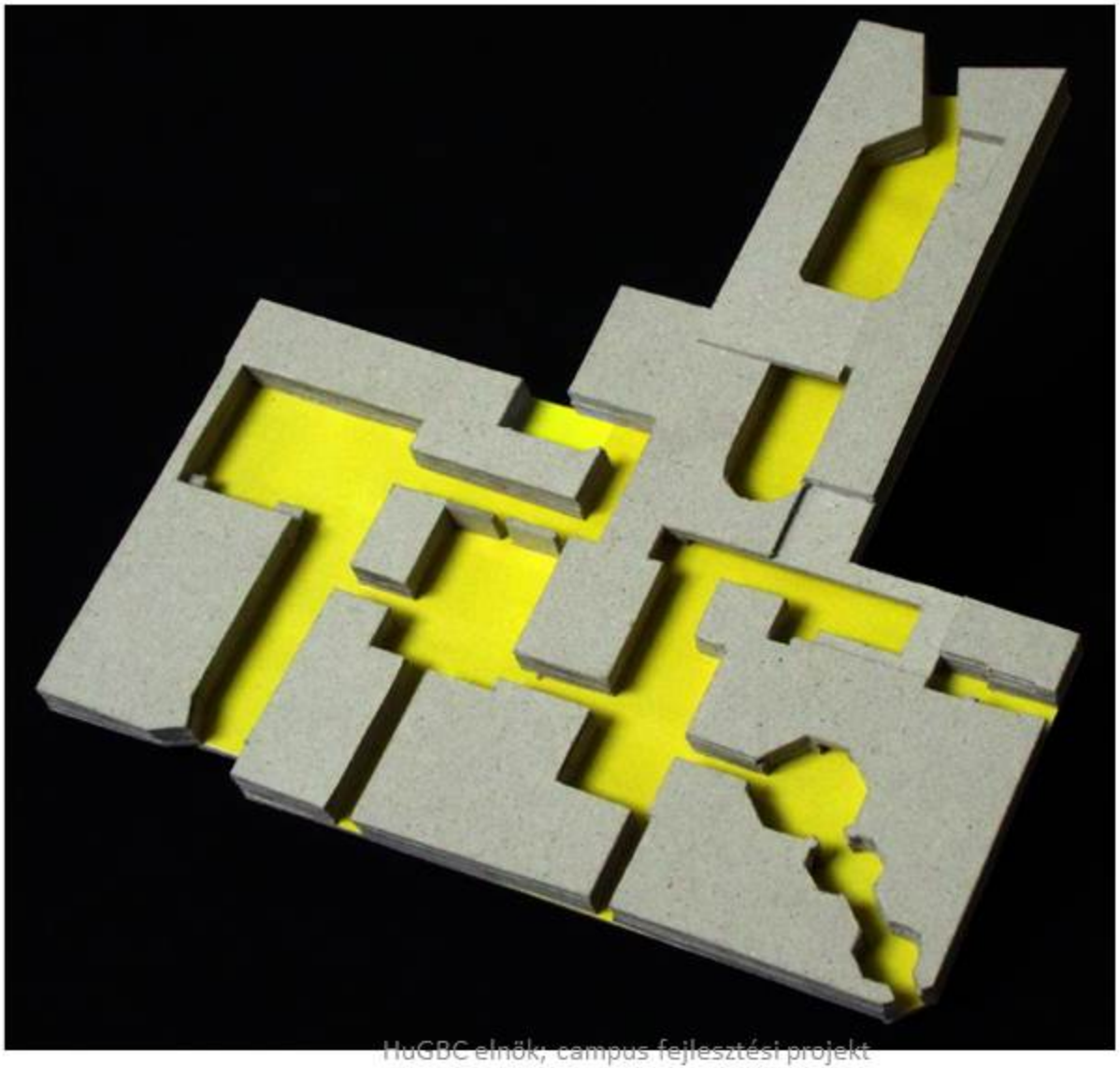
CONTEXTUAL REFERENCE



INTERCONECTEDNESS



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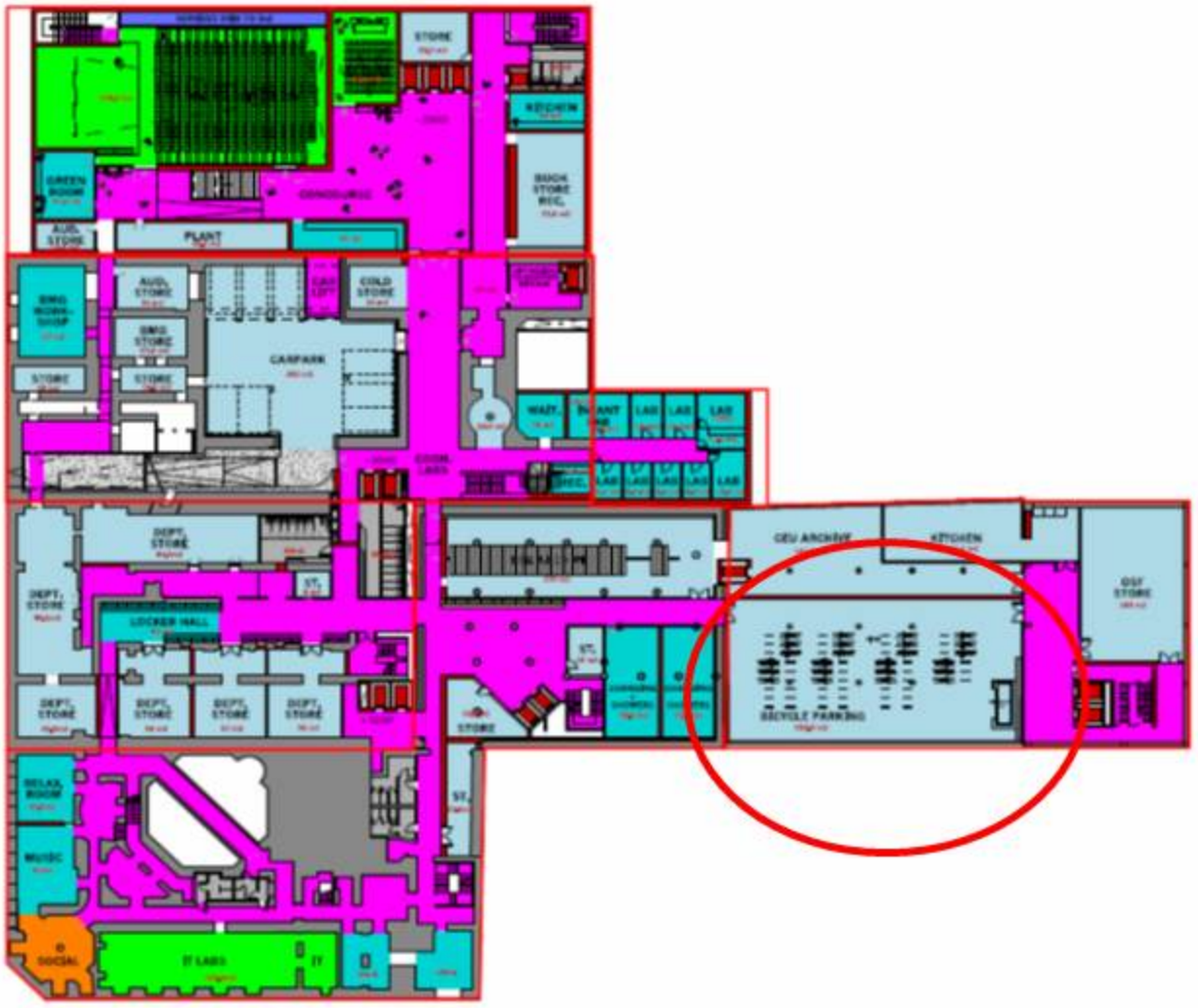
CONVERTING CAR TO BICYCLE PARKING



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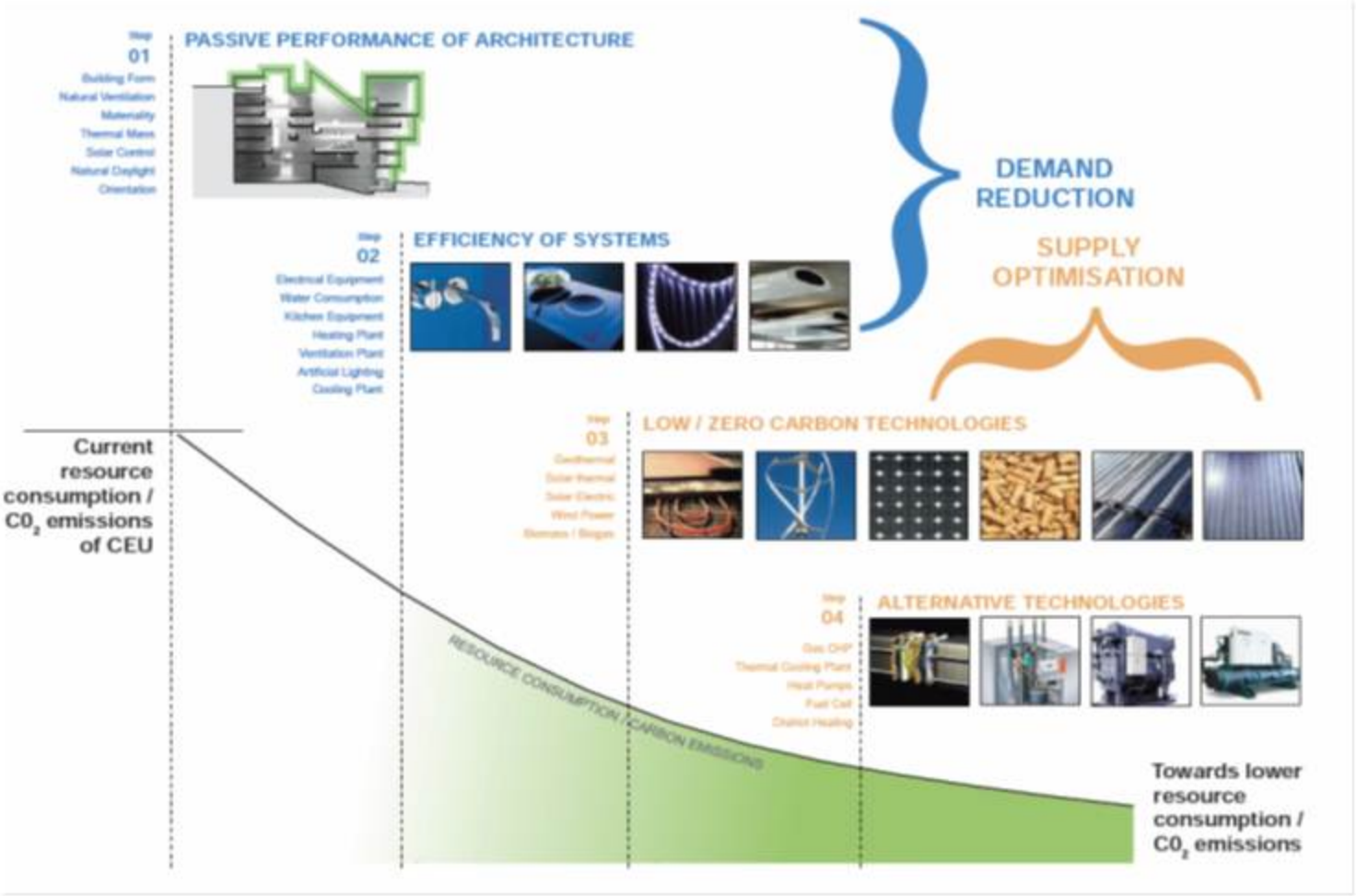
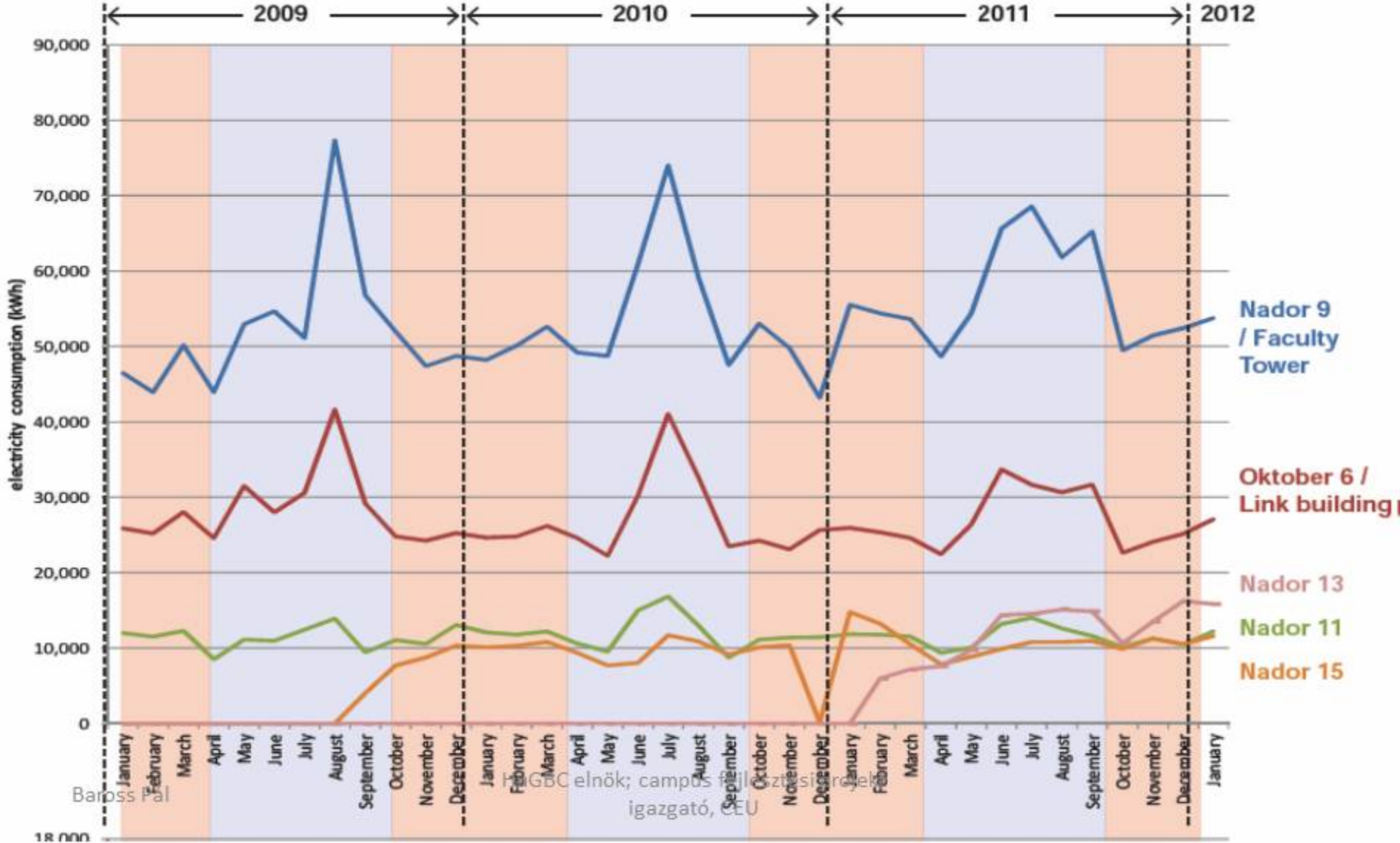
ENVIRONMENTAL STRATEGY



HISTORICAL DATA OF PERFORMANCE



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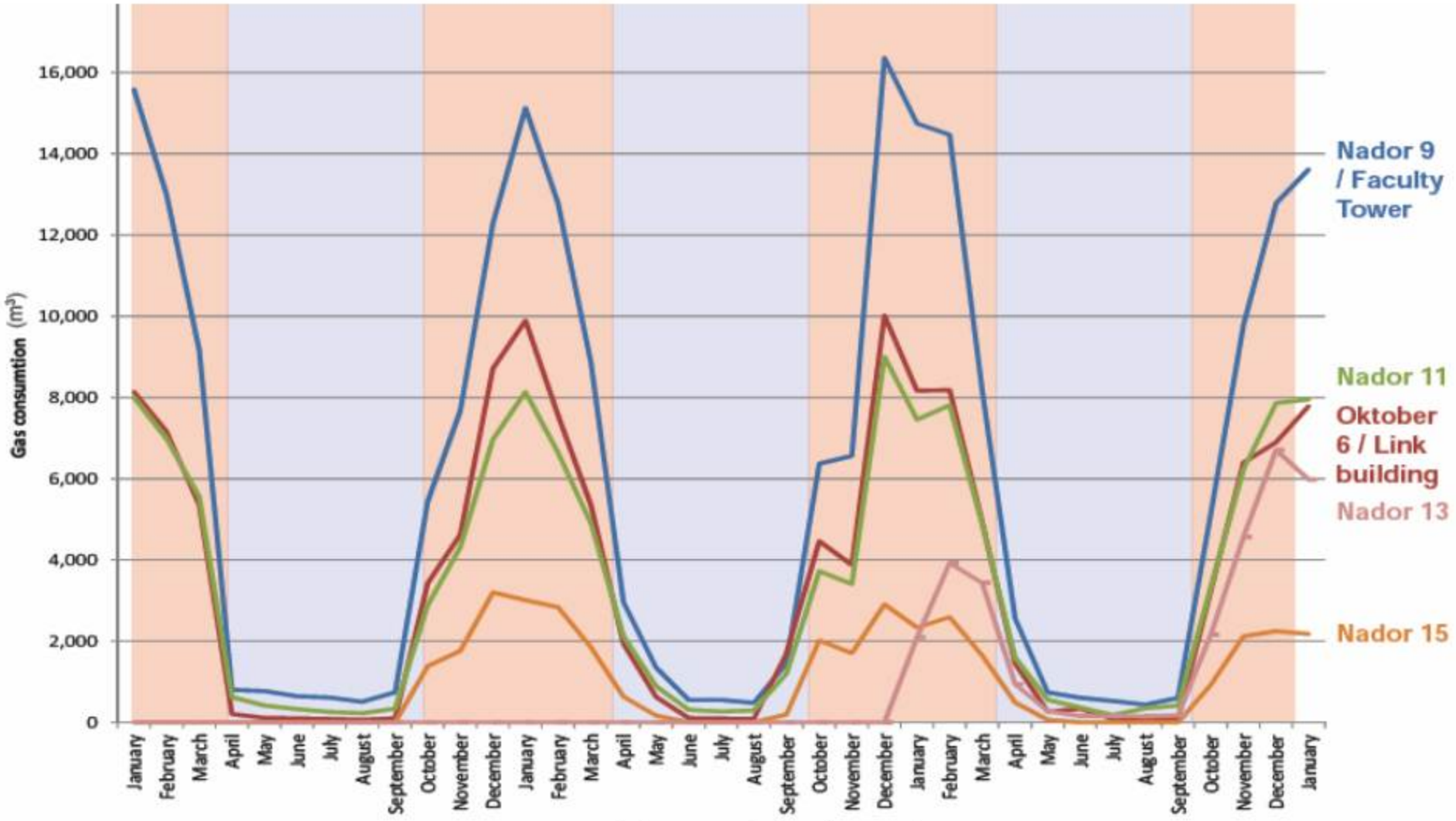
HISTORICAL DATA OF PERFORMANCE



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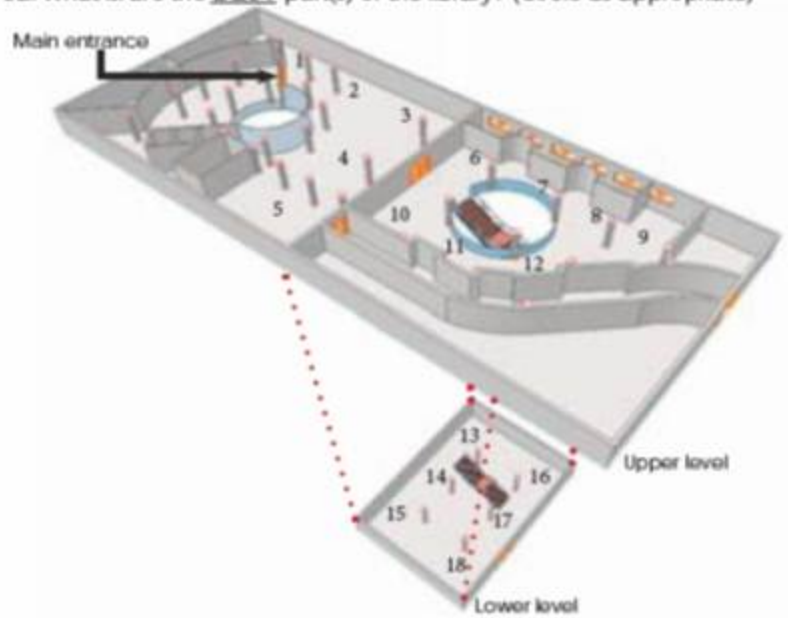
3a. What is/are the BEST part(s) of the library? (Circle as appropriate)



3b. Why is that?

Period	Reason	Location (Number)
Today	Which parts have the best lighting	
	Which parts are quietest?	
	Which parts are the most comfort-able in terms of temperature?	
	Which parts are light and airy?	
Last December	Which parts have the best lighting	
	Which parts are quietest?	
	Which parts are the most comfort-able in terms of temperature?	
	Which parts are light and airy?	
Last August	Which parts have the best lighting	
	Which parts are quietest?	
	Which parts are the most comfort-able in terms of temperature?	
	Which parts are light and airy?	

Today

18°C
Day

11°C
Night

Above is the prevailing weather condition for today. The questions that follow will be based on these conditions.

1. How would you rate your level of comfort within this space today?

1	2	3	4	5
Uncomfortable				*Very Comfortable*

2. Would you open the windows for ventilation today?

3. If 'yes'', then:
   a. Do you hear sounds from vehicles on the road or from adjacent offices/spaces?

4. Do you have control over the ventilation in this space?

5. If 'no', would you rather open the windows when it is possible to do so?

6. Can you work without the lights on today?

7. Any additional comments on the space in terms of light/heat/air for today?

33°C
Day

22°C
Night

Last August

This was the weather condition on the 16th of August last year. The questions that follow will be based on this typical summer condition.

11. Did your office ever get too hot because of the sun?

12. When this happened, how did you deal with it (Fans, air-conditioning, opening the windows)?

13. Did you have control over the Air-conditioning in this space?

14. If 'yes', at what temperature did you set the cooling to come on?

15. Any additional comments on the space in terms of light/heat/air for that day?

16. If given the choice, what would you change about the conditions within this space?

-7°C
Day

-10°C
Night

Last December

This was the weather condition last christmas (25th December). The questions that follow will be based on this typical winter condition.

8. Did you have control over the heating in this space?

9. If 'yes', at what temperature did you set the heating to come on?

10. Any additional comments on the space in terms of light/heat/air for that day?

16. If given the choice, what would you change about the conditions within this space? WOULD MOVE

Sample questionnaire from Nador 9, 3rd floor (East facing)

external temp **18.6°C**

temp at apex **48°C**

temp at ground level **27°C**

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ENVIRONMENTAL OPPORTUNITIES

The proposed redevelopment of the campus will be a unique opportunity to address the many deficiencies which have been observed and documented on the existing campus, both in terms of operational energy consumption and in terms of occupant comfort. Whilst the new build structures occupying the Nador 15, Oktober 6 sites will be built to best practice standards, it is equally important to address the deficiencies which have been noted in the existing buildings which are to be retained. In terms of energy and comfort, the key strategies which will be pursued throughout the campus redesign are as follows :

(i) Reduction of heat loss to minimise winter energy consumption for space heating, and to improve occupant comfort during the colder months.

(ii) Reduction of heat gain to reduce summer time electricity consumption for mechanical space cooling / dehumidification, and to improve occupant comfort during the warmer months.

(iii) Maximise daylighting, to reduce electricity consumption associated with artificial lighting and reduce internal heat gains which contribute to summer cooling demand.

(iv) Systems upgrade to replace out-dated and inefficient mechanical plant for heating, cooling and ventilation. A complete appraisal of existing mechanical systems can be provided by Temesvári Engineering.

The proposed campus redevelopment also offers a number of key benefits which will count toward achieving the environmental aspirations of CEU. These include :

03.02 Enclosing of existing and new courtyards with glazed roofs.

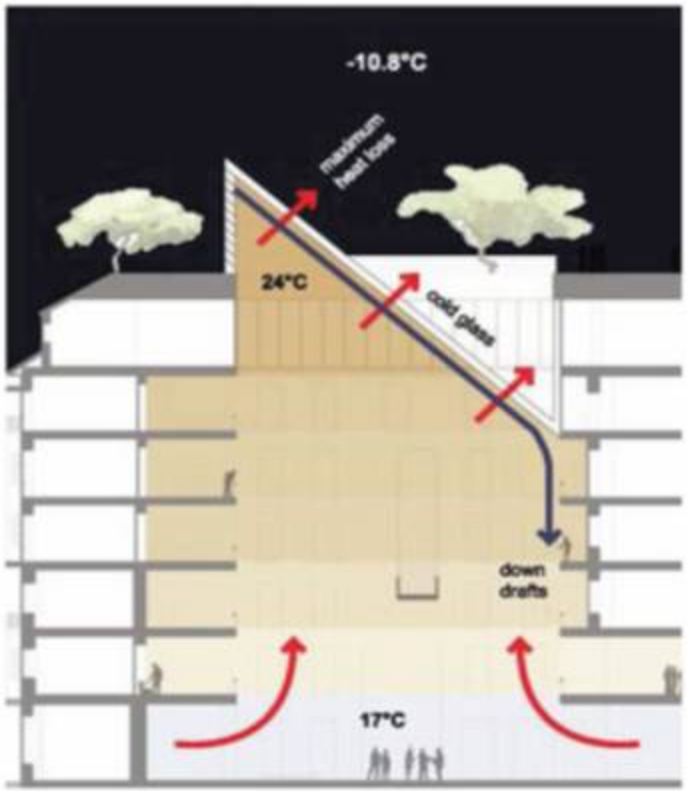
03.03 Interconnection of individual building plots

03.04 Roof level amenity space roof Garden

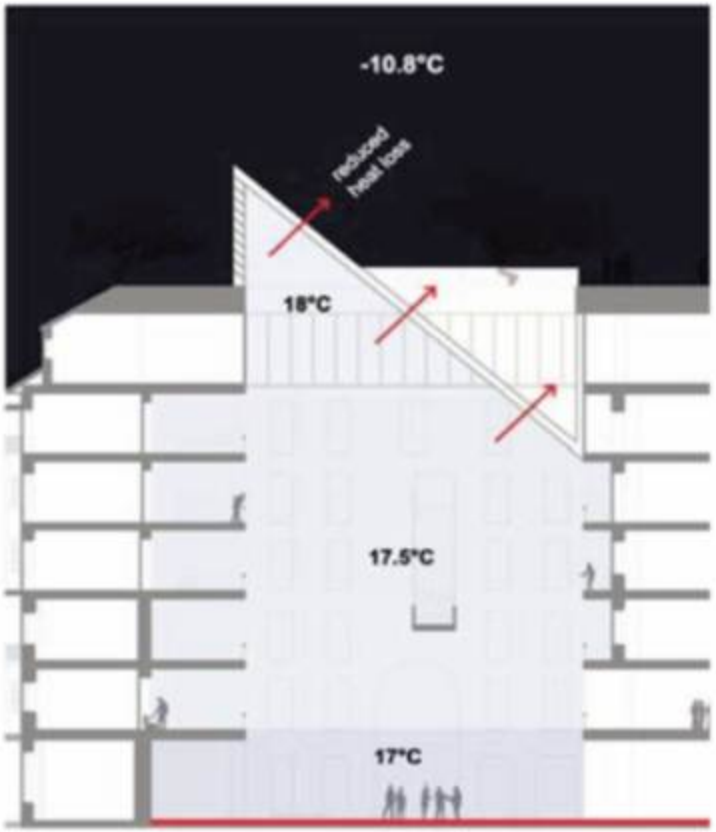
03.05 Toward carbon neutral through low/zero carbon energy supply

03.06 Environmental upgrades of existing fabric

COURTYARD

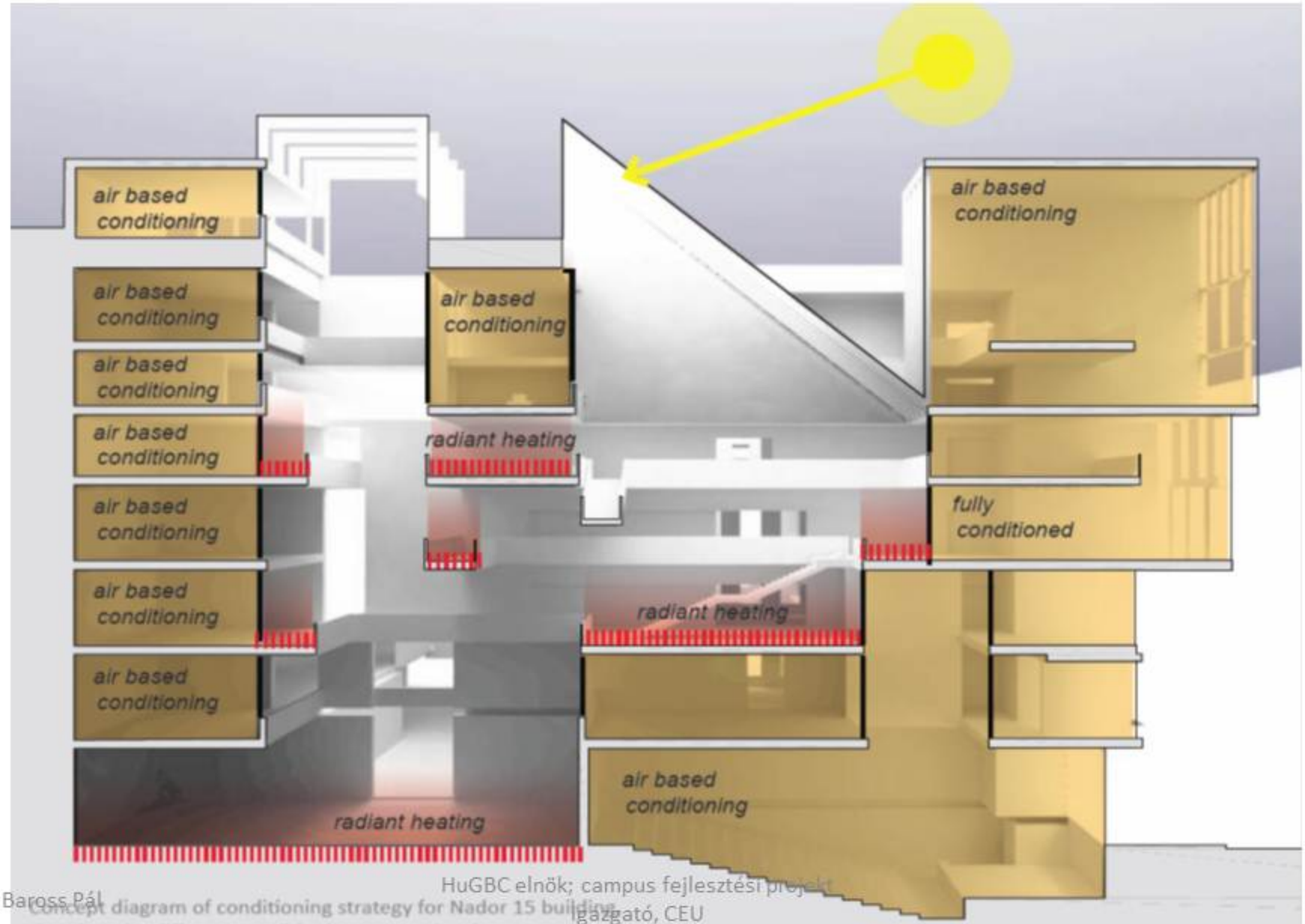


Excessive heat loss arising from conditioning of enclosed courtyards through air based systems. This is the approach currently used in the enclosed courtyards on campus, and results in significant thermal stratification, and discomfort due to down draughts encouraged through convection currents within the space.



Reduced stratification and heat loss by avoiding thermal stratification within space by achieving comfortable conditions through radiant systems.

DIFFERENTIATED CONDITIONING



Concept diagram of conditioning strategy for Nador 15 building showing the different conditioning approaches between circulation

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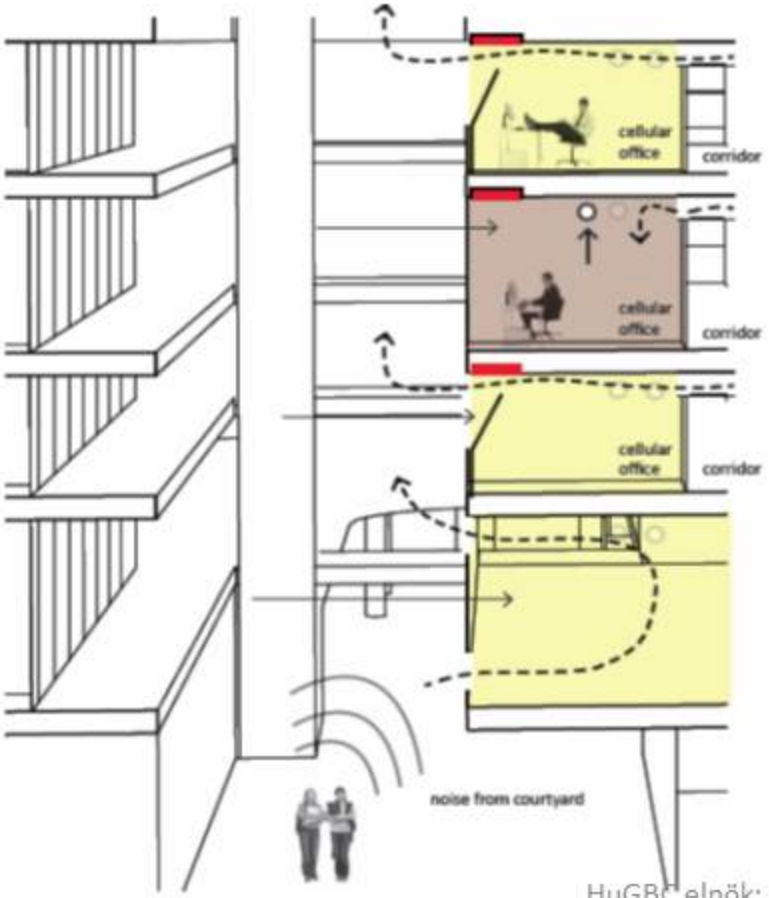
NATURAL VENTILLATION



Conceptual sketch for resolving natural ventilation, acoustic privacy in offices facing the courtyards. All occupants will have the choice between mechanical and natural ventilation based on their acoustic requirements, however the BMS would automatically default to natural ventilation. All windows would incorporate sound absorbing material in the soffit to attenuate noise.

natural ventialtion

mechanical ventilation

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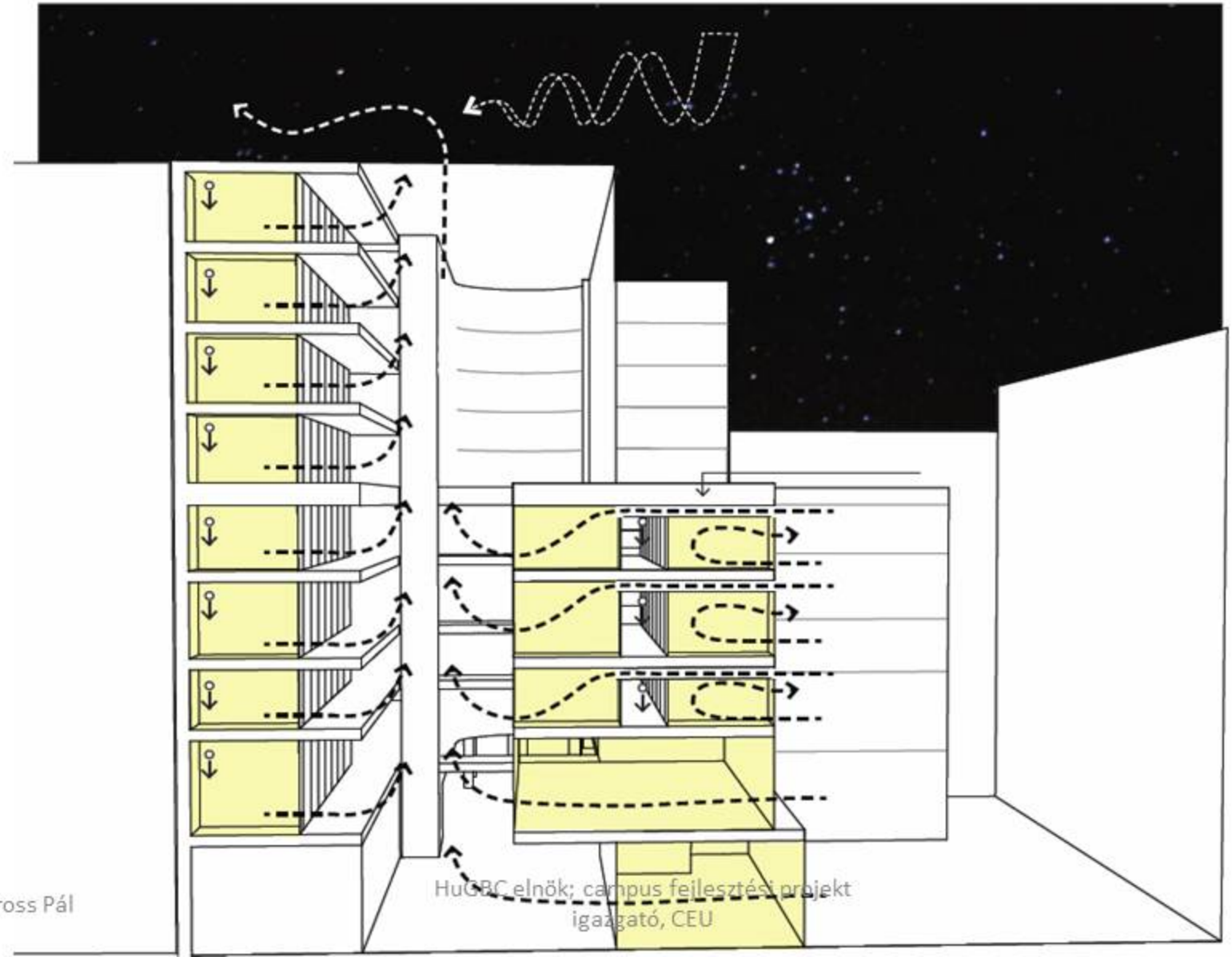
SUMMER OPERATION:NIGHT VENTILLATION



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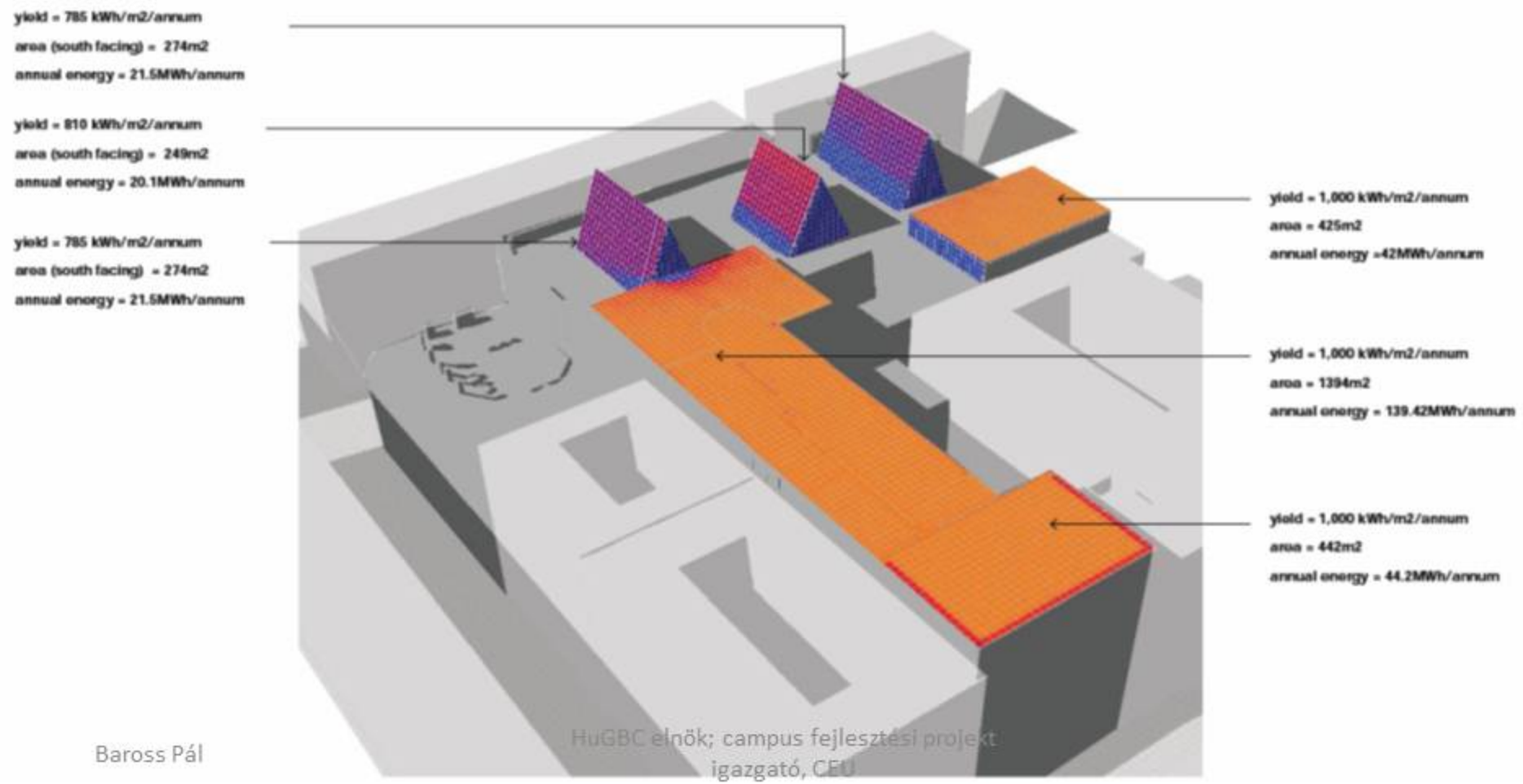
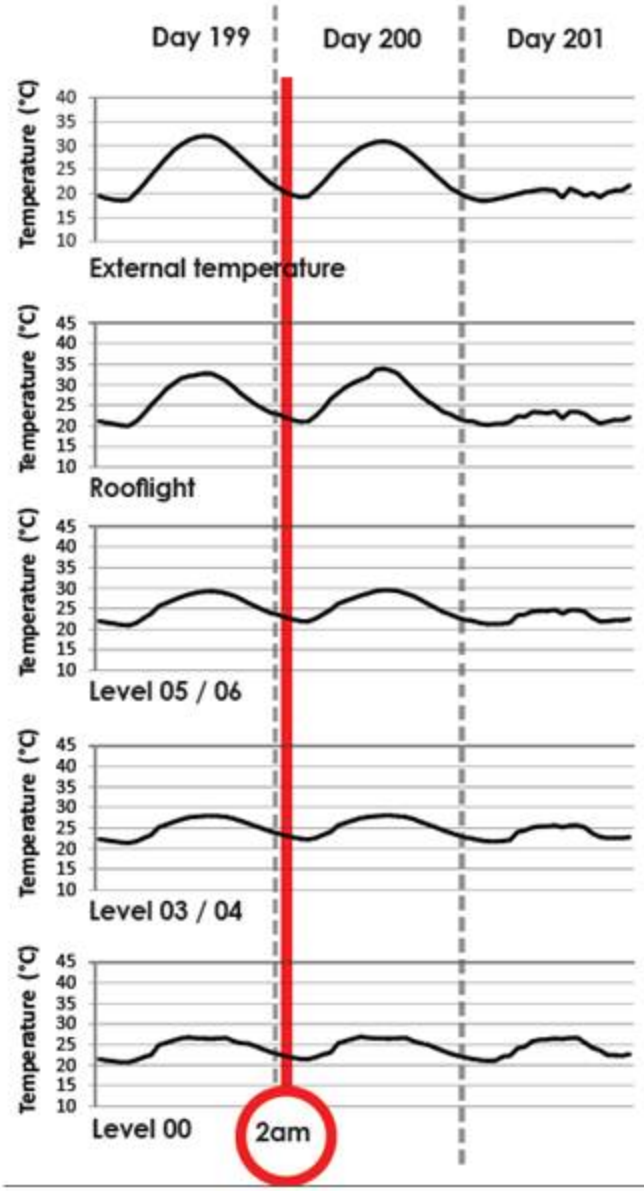
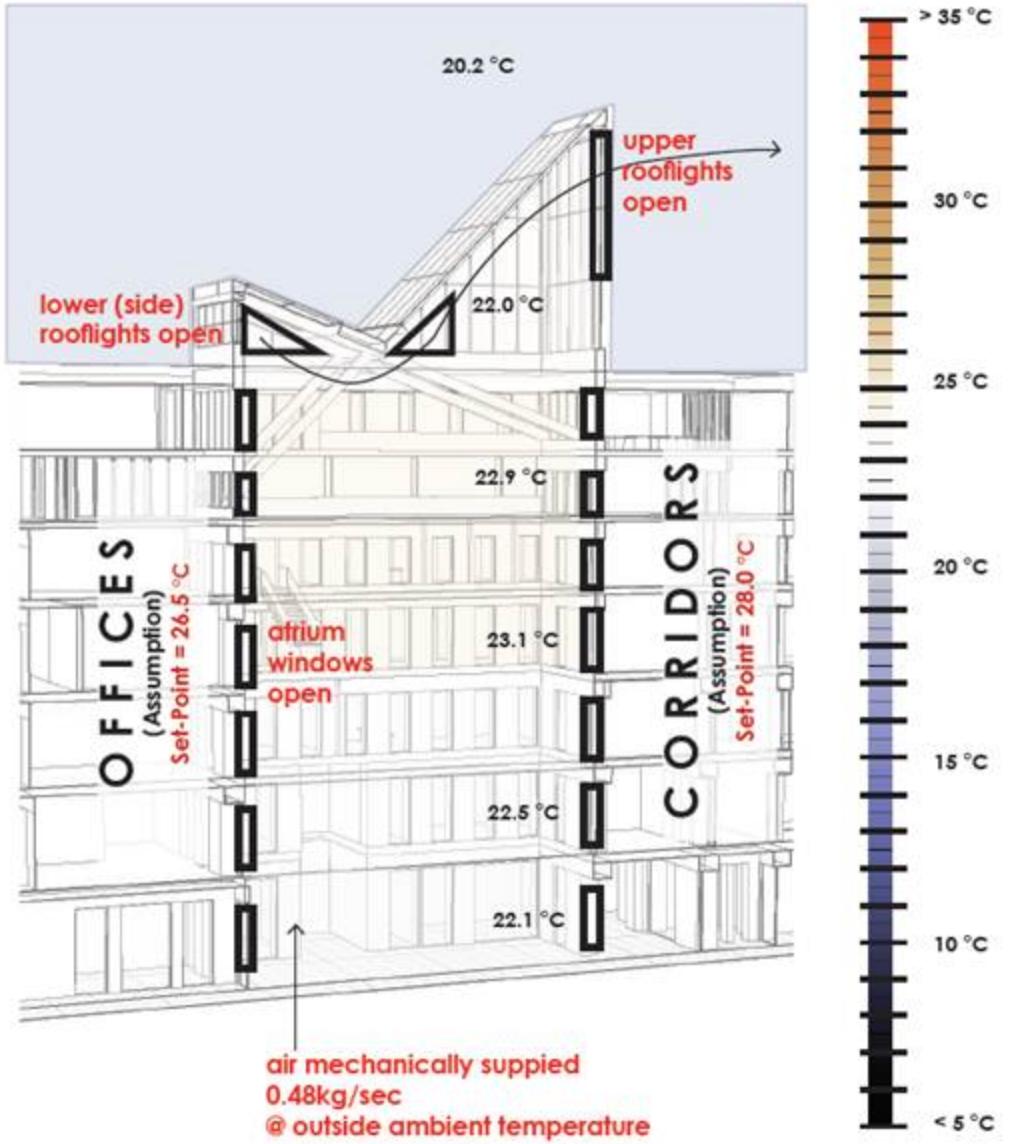
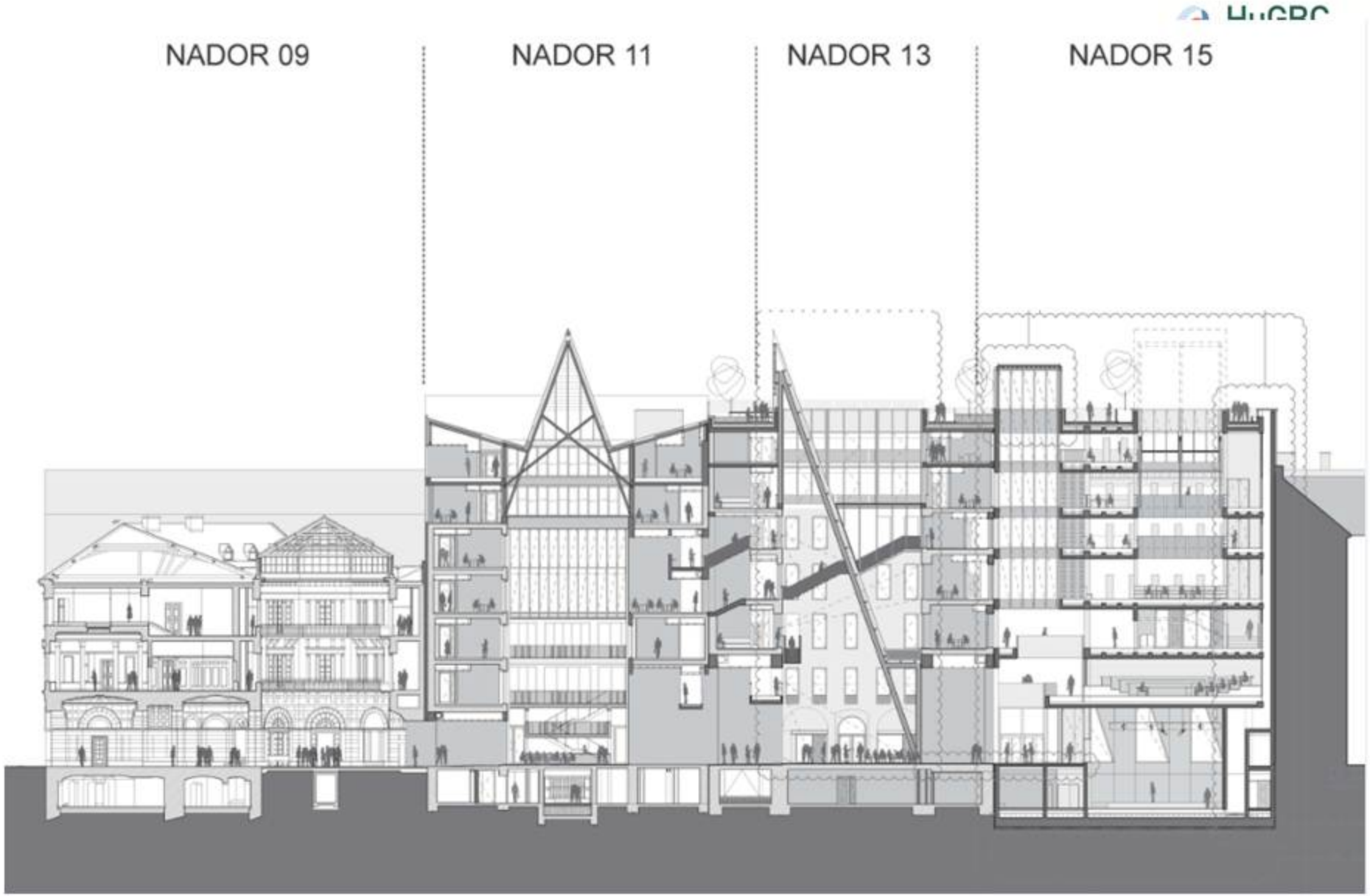
CARBON NEUTRAL SUPPLY(NOT IMPLEMENTED)




Day 199
Day 200
Day 201
Temperature (°C)
External temperature
Rooflight
Level 05 / 06
Level 03 / 04
Level 00
2am


20.2 °C
upper rooflights open
lower (side) rooflights open
22.0 °C
22.9 °C
OFFICES
(Assumption)
Set-Point = 26.5 °C
atrium windows open
23.1 °C
CORRIDORS
(Assumption)
Set-Point = 28.0 °C
22.5 °C
22.1 °C
air mechanically suppied
0.48kg/sec
@ outside ambient temperature
> 35 °C
30 °C
25 °C
20 °C
15 °C
10 °C
< 5 °C



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NADOR 11 NADOR 13 NADOR 15

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ROOF GARDEN

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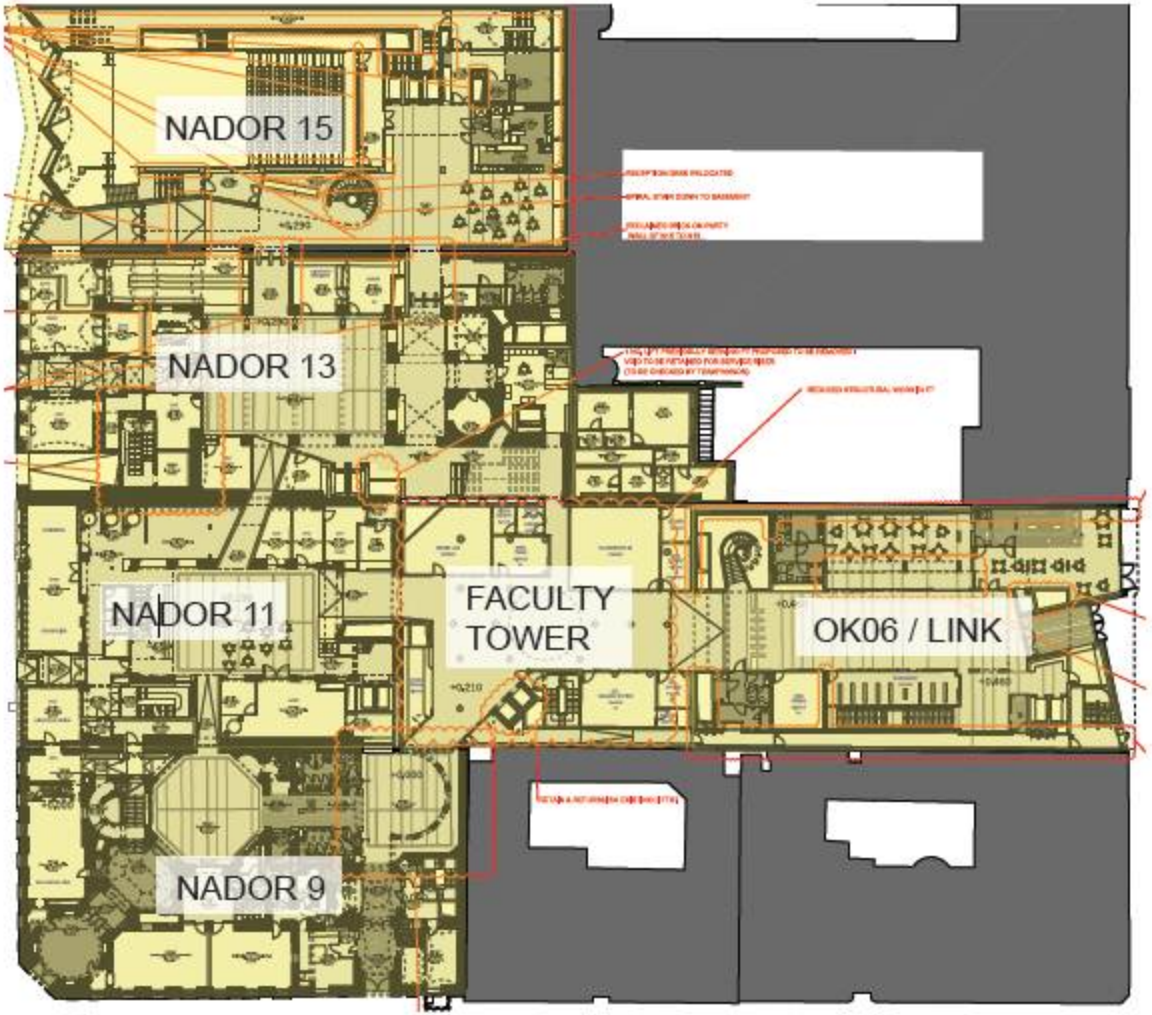
A PROJEKT BREEAM MINŐSÍTÉSI ELVEI

BREEAM INTERNATIONAL BESPOKE

Tervezési fázis minősítése:
- **ÖSSZES FÁZIS**

Kivitelezés utáni állapot minősítése:
- **ÚJÉPÍTÉSŰ, VAGY JELENTŐSEN ÁTÉPÍTÉSRE KERÜLŐ ÉPÜLETEK (Nádor u. 11., 13., 15., Október 6. u. 12. / Linkage building)**

Használat közben állapot minősítése:
- **FELÚJÍTANDÓ ÉPÜLETEK (Nádor u. 9., Faculty Tower)**



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HuGBC

Magyar Környezettudatos Építés Egyesülete

Hungary Green Building Council

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