## 2. Details of the task

The subject of the competition is the design of a regeneration proposal and the creation of a sustainable neighborhood within this area. This should provide accommodation for 12-15 families, plus infrastructure, office areas, leisure and recreation, as part of the regeneration program, which is based on a new paradigm for sustainable post-industrial regeneration.


***Proposed site -air view 2***

All building will be designed considering the building physics performance of an ISOVER Multi-Comfort House.

Beside constructional, the social and economic aspects also have to be considered and respected and the buildings designed should give a new impulse in the existing urban area.

The architecture of the neighbourhood has to fit in the surrounding of the site. Urban space solutions for the immediate surroundings of the site will be proposed.

The overall scope of the task is to get actively involved in giving shape to future development of European cities.

### 2.1. Specifics of the context

Post-industrial bits of the City with empty buildings, but also some viable businesses, derelict land, but maybe also some homes. Not beyond hope but with unrealised and wasted potential. At the heart of the assignment are the needs of the community they are seeking to support and the creative talent of the architect to whom they look for solutions.

Architects are pivotal to help understand the genus loci – the heart and soul of a place. Before developing solutions you need to understand what makes a place tick, not just in terms of physical environment but also in terms of social, cultural and economic dimensions. You need to understand key attributes, both obvious and hidden amid key constraints.

For the actual project not only the building design phase is important but also the concept .

***Regeneration paradigm:***
Due to actual economic conditions, developers and the public sector seems to have lost interest in regeneration. But that is not the main issue; it is the uncertainty about how to ‘do’ regeneration anymore and even whether ‘doing’ regeneration is something that should be done anyway.



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***How one should set about healing/repairing a bit of the City.***

The pre credit-crunch approach in the UK has epitomised in hundreds of master plans, envisaged comprehensive land assembly; wholesale site clearance, extensive new infrastructure and mixed use development – although most of it ended up as new apartments.

From an environmental perspective, much infrastructure and many buildings, which could have been adopted and reused, were torn up. The approach was wasteful and denied the complexity of how Cities work.

Maybe the better solution is to proceed incrementally, adapting, reusing and renewing where possible, allowing time for communities to adjust to change allowing places maybe to find their own solutions.

A slower, more organic and more engaged strategy is likely to result in a better place, a more heterogeneous and interesting place to be.

***The challenge is how do we do this?***

Where and how do we make these changes that will act as a catalyst, for a better future, that start the gradual transition that will ultimately lead to transformation and healing. We need a new paradigm. The other big problem, moving from a macro to micro scale, is how to build efficiently and cost effective, sustainable housing.

In the UK there are currently around 100,000 homes built per year but there is some consensus that it we should be nearer 200,000 homes.

As a country, the UK has also committed itself to a legally binding target to cut carbon emissions by 50% by 2025. The problem is how to provide for all those extra homes, many of which need to be affordable (executive detached houses are not the priority) and which need to be zero or near zero carbon.

Status quo is not an option and new solutions need to be found. There is plenty of progress being made but it's still unclear whether the right combination of components has been found that will enable the delivery of what's needed.

It is a lot to do with design, with new methods of construction, with new cultures on site and also new models of funding tenure and management.

## 2.2. Site and Zoning Requirements

The site is located in the Trent Basin, Nottingham, UK, alongside the River Trent (Daleside road to North, Trent Lane to East, River Trent to South, and Poulton Dr to West) and is approximately 175m x 80m in dimension (11,700 $m^2$).

The site exists as part of a wider area (46,232 $m^2$), encompassing a number of depots and warehouses and the basin, and this larger area should be considered as part of the design masterplan (refer to site drawings).


***Site plan***

The neighborhood is expected to have a maximum height of 3 storeys, with a maximum 'percent of occupancy' (POT)' for the construction of buildings to be 60%, with the remainder of the site used for green spaces.

## 2.3. Space allocation

The new neighborhood should accommodate 12-15 families. The residential function is the only mandatory element of the brief, but participants are encouraged to investigate additional complimentary facilities.

Each single family house (whatever the typology – detached, semi-detached, terraced, apartments, etc) should be designed with a minimum usable area of 120m$^2$ and should be provided with some form of external space.

Each participant has the freedom to choose any additional functions that he/she considers as necessary for the development of a successful neighborhood. For example:

- Office space, or live/work functions
- Children's facilities such as day care or a kindergarten
- Communal / recreation facilities
- Others...

A number of existing buildings are present on the site, and these should be demolished as part of the design. However, a number of existing warehouse buildings and depots exist directly around the site and basin and these may be maintained as part of the overall site masterplan- (please refer to the site plan).

Any residential accomodation should be new-build, but additional community functions as outlined above may be integrated into existing buildings (or alternatively be new-build as well).

## 2.4. Type of construction, technical parameters

The high-performance thermal, acoustic and fire protection requirements have to be considered in order to achieve the ISOVER Multi-Comfort-House criteria. A presentation of the ISOVER Multi Comfort House criteria is available for download at ***www.isover-students.com***. In the course of the competition, lectures on the subject of "ISOVER Multi Comfort House planning and construction" will be held at the faculties.

Participants are expected to undertake calculations on **one single family house** to prove it achieves Multi-Comfort-House criteria (Annual heat demand < 15kWh/m$^2$) using ISOVER Multi Comfort House Designer calculation tool.

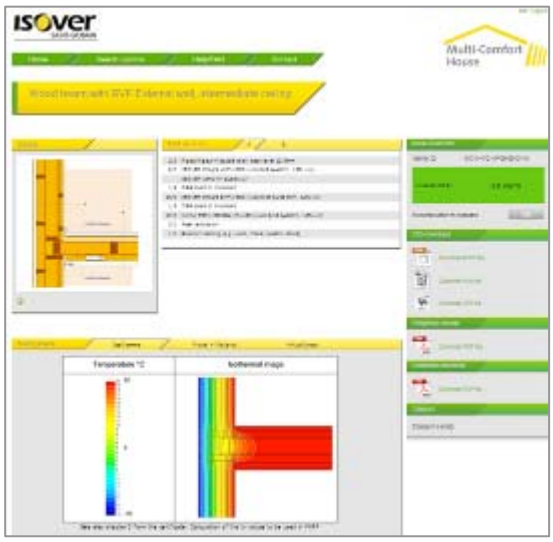
- Calculation can also be done using PHPP (Passive House Planning Package)
- Using a repetitive pattern (row or coupled construction design) can be easier to achieve the requested criteria due to a more favourable A/V ratio

### 2.4.1. Construction

The construction method (load-bearing, wood, steel construction, etc) can be chosen freely by participants, but the integration of ISOVER, CertainTeed and/or Izocam products is strongly encouraged to form part of the constuction build-up.

ISOVER shall provide free planning assistance in the form of:

- ***Construction CAD details online data base - [www.isover-construction.com](http://www.isover-construction.com)***
  - First data base in the world containing more then 150 joint construction details, thermal bridge free for 4 different construction systems
  - All these details have been certified by the Passiv Haus Institute and using it assures thermal bridge free construction.
  - The access is free and the application provides: CAD drawings with different download options, components and products, key figures, isotherms, model and materials, air tightness concept



***ISOVER Passive House Certified Details***

- ***Multi Comfort House website - [www.isover-multicomfort.com](http://www.isover-multicomfort.com)***
  - Concept approach website containing over 160 pages with: Literature, Movies, Reference projects

- ***Air tightness website – [www.isover-airtightness.com](http://www.isover-airtightness.com)***
  - All relevant information about the air tightness and it's importance

- ***MCH Designer tool, Brochures*** about Multi-Comfort House concept for new construction and renovations:***[www.isover-students.com/content/view/26/30/](http://www.isover-students.com/content/view/26/30/)***

The contact details for the local ISOVER, CertainTeed and Izocam organizations can be found on the official contest website ***[www.isover-students.com/content/view/137/161](http://www.isover-students.com/content/view/137/161)***

### 2.4.2. Technical parameters for thermal insulation

The main scope is to achieve an annual heat demand < 15kWh/m$^2$. The envelope components should have the following U-values:

- All opaque external constructions U ≤ 0.15 W/m$^2$K, or R > 38 (1/BTUITh-1 ft-2 $^o$F -1) for compact building shape
- All opaque external constructions U ≤ 0.10 W/m$^2$K, or R > 57 (1/BTUITh-1 ft-2 $^o$F -1) for non-compact building shape
- Windows and doors U $_W$ total ≤ 0.8 W/m$^2$K, or R > 7 (1/BTUITh-1 ft-2 $^o$F -1)



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### 2.4.3. Technical parameters for sound insulation

Depending on the future function of the building parts the sound protection concept has to be considered. The airborne and impact sound insulation of the residential and non-residential building elements have to be planned according to ISOVER Acoustic Comfort Classes. For more details click***: ISOVER Acoustic Comfort Classes***

The following acoustic criteria shall be achieved

**Between dwellings (houses):**

- Airborne sound insulation between dwellings DnT,w ≥63 dB
- Impact sound insulation between dwellings: LnT,w ≤ 40 dB

**Inside dwellings (inside the house)**

- Airborne sound insulation between the rooms in the dwelling (without the doors) DnT,w ≥48 dB
- Impact sound insulation in the dwelling: LnT,w ≤ 45 dB

In practice, sufficient sound insulation for windows and doors, as well as for sanitary installation and ventilation systems should be considered for residential and non-residential usage.

### 2.4.4. Other technical parameters

**Protection against overheating in summer**
Sufficient sun protection needs to be planned to reduce summer overheating. The ratio of transparent to opaque components also needs to be taken in account. Furthermore the frequency of overheating of more than +25°C or +77°F indoor temperature must be less than 10%.

**Fire protection**

- All bearing internal and external walls have to achieve at least REI 60 according to ISO standards,
- The roof and ceilings have to achieve at least REI 60 according to ISO standards,
- All non-bearing internal walls between different functions (depending on the function) have to achieve at least REI 30 according to ISO standards.

**Natural daylight autonomy**
Natural daylight autonomy should be achieved for at least 60%, on a yearly basis.



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## 2.5. Competition requirements

### 2.5.1. Minimum requirements (obligatory)

The following minimum requirements for descriptions and plans must be considered. Please note, participants are advised to choose appropiate scales for all drawings based on the poster sizes outlined in section 3.1 and 3.2 and the participant's individual design ideas and directions. Participants are advised to choose scales that allow appropiate detail and clarity to be reviewed by the judges.

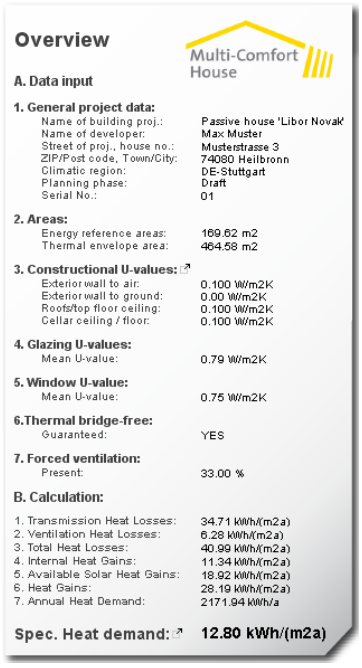
***Masterplan***

- Plan of the site with urban space solutions for the immediate surroundings (including Trent Basin)
- Visualisations of the experience of living in the proposed neighbourhood

***Residential function***

The following information should be presented based on **at least one** single-family house

- Typical floor plan(s)
- Cross-section(s)
- Views, perspectives and/or photographs of physical models
- Construction details:
    - Horizontal facade cross-section (suggested scale 1:50)
    - Vertical facade cross-section (suggested scale 1:50)
    - Roof, external wall and ground floor interface details (suggested scale 1:20 / 1:10) including the thermal acoustic and fire characteristics of the detail.
    - Other details can be presented if required.
- Multi-Comfort House calculations
    - The overview specific heat demand (as outlined in the picture on right) as taken from the ISOVER Multi Comfort House Designer should be included in the presentation to prove the residential elements meets the thermal requirements
- Sections
- Perspectives / views
- Any additional information as deemed neccesary by the participants



**Overview**

Multi-Comfort House

**A. Data input**

**1. General project data:**

| | |
|---|---|
| Name of building proj.: | Passive house 'Libor Novak' |
| Name of developer: | Max Muster |
| Street of proj., house no.: | Musterstrasse 3 |
| ZIP/Post code, Town/City: | 74080 Heilbronn |
| Climatic region: | DE-Stuttgart |
| Planning phase: | Draft |
| Serial No.: | 01 |

**2. Areas:**

| | |
|---|---|
| Energy reference areas: | 169.62 m2 |
| Thermal envelope area: | 464.58 m2 |

**3. Constructional U-values:**

| | |
|---|---|
| Exterior wall to air: | 0.100 W/m2K |
| Exterior wall to ground: | 0.00 W/m2K |
| Roofs/top floor ceiling: | 0.100 W/m2K |
| Cellar ceiling / floor: | 0.100 W/m2K |

**4. Glazing U-values:**

| | |
|---|---|
| Mean U-value: | 0.79 W/m2K |

**5. Window U-value:**

| | |
|---|---|
| Mean U-value: | 0.75 W/m2K |

**6.Thermal bridge-free:**

| | |
|---|---|
| Guaranteed: | YES |

**7. Forced ventilation:**

| | |
|---|---|
| Present: | 33.00 % |

**B. Calculation:**

| | |
|---|---|
| 1. Transmission Heat Losses: | 34.71 kWh/(m2a) |
| 2. Ventilation Heat Losses: | 6.28 kWh/(m2a) |
| 3. Total Heat Losses: | 40.99 kWh/(m2a) |
| 4. Internal Heat Gains: | 11.34 kWh/(m2a) |
| 5. Available Solar Heat Gains: | 18.92 kWh/(m2a) |
| 6. Heat Gains: | 28.19 kWh/(m2a) |
| 7. Annual Heat Demand: | 2171.94 kWh/a |

**Spec. Heat demand: 12.80 kWh/(m2a)**

***Overview MCH Designer***

**Descriptions**

Participants are advised to furnish the neccesary text/diagrams on submissions to allow judges to understand the scheme properly. This may include;

- Functional solution
- Design concept
- Energy supply and overall sustainable concept
- Description of construction
- U-values



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### 2.5.2. Optionally documents

In addition, the following may also be submitted (optionally)

- Energy and ecology estimation (energy-pass, eco-pass, etc)
- Usage of renewable energy systems
- Site / Building accessibility

Students may choose to include additional drawings to explain their scheme as they see fit.

## 3. Formalities for submission

The folowing formalities have to be fulfilled for the participation to the national and international stage of ISOVER Multi-Comfort-House Students competition 2012

### 3.1. Formalities for submission - National stage

The participation to national stage will be permitted based on the online registration : ***www.isover-students.com/students/***

For the national stage of the contest the team should be submitted in:

- maximum 3 posters,
- format measuring 7*0 x100 cm,*
- in project in digital form on a CD.

The poster should be clear and legible and show the project title.

The contact details for the local ISOVER, CertainTeed and Izocam organizations can be found at ***www.isover-students.com/content/view/91/133/***

### 3.2. Formalities for submission - International stage

The formalities for the international stage shall be finalized by latest May 14, 2012. Each of the participant teams shall submit to the ISOVER contact person in their country a CD containing the folowing information:

***1. Project in electronic format with the following characteristics:***

- PDF file version 8 or lower
- Resolution 300 dpi
- Dimensions of the poster 180cm x 80cm (height 180cm, width 80 cm).

Maximum number of posters that can be submitted for each team 1 (one). The poster of each project will contain the following data:

- Team country ( Ex : Austria)
- University (ex : University of Ljubljana)
- Name of the drafter (or all names in the case of a team submission)

- National stage prize (ex 1st Prize)

This data will be used by the local ISOVER organization to print and prepare for each team a roll-up display for exposure of projects during the international stage

***2. An electronic presentation of the project. The file will have the following characteristics:***

- A Power Point Presentation file, version 2003 or lower, extension PPT. Other file types will not be accepted (PDF, PPS, others).
- The file name should be :Country X_Y Prize, Name1_Name2_Name 3 (example: Serbia, 2nd Prize, Ilian Dragutinovici_Igor Pancic
- Maximum dimension for the file 15 Mb. All presentations that are bigger will be cut until required dimension.
- In case the presentation contains external animated files:
    - the format has to be suported by Microsoft Power Point version 2003
    - the final dimension of all submited files, not archived, has to be lower than 15MB
- This file(s) will be used during the international stage for the official presentation of the project in front of the jury.

***3. Individual pictures with each member of the team in tiff format, colour scheme CMYK, resolution 300 dpi.***

***4. Three tiff files containing pictures or details of the project in 300 dpi resolution:***

- Fist picture: building's preview (usually 3D model)
- Second picture: architectural plans (graphics, sections, drawings, models others.)
- Third picture: insulations (ideas, drawings etc.)

This data will be used for the edition of the book “ISOVER Multi-Comfort House Students Competition - Best of the Projects 2012”.

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