PASSIVHAUS
Student Competition

NUANSA ATIKA KUSUMASTUTI

in partnership with

TARMAC
A CRH COMPANY

Heart Valley Housings

PROJECT FACTS

Residential

Nottingham
Top Valley, Bestwood

467.9 m²
TFA

LIFETIME PERFORMANCE
heating demand 11kWh/m2/yr

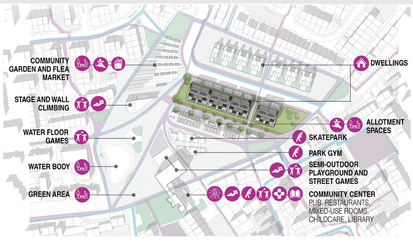
PASSIVE HOUSE
airtightness
using Mechanical Ventilation with Heat Recovery
passive solar gains

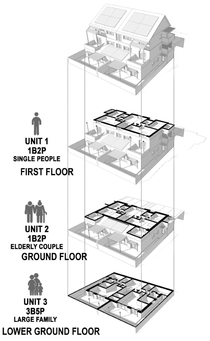
GOOD DAYLIGHT
living area 5.8-6.8% DF
bedroom 2.2-2.8% DF
*DF=Daylight Factor

DESIGN PHILOSOPHY

Heart Valley is a new urban development located in Bestwood, one of the deprived areas in Nottingham, UK. This development was designed to deal with the urban challenges by providing a connected, inclusive, healthy, and self-sufficient neighbourhood in which the people would feel vibrant and lively. The housings development are designed with passivhaus standards to maximise the occupants comfort as well as minimise the energy use. The housings are also designed to be lifetime homes.

Each house module is designed to be compact in order to have a good thermal performance. It is standing three levels high, consisting of six units, with three unit types. The three unit types were designed for different occupant types, which are single people, elderly couples, and families. This house module is hoped to create a social interaction between the children, teenagers, elderlies, and adults.





MAIN ISSUES

DISJUNCTION	INACTIVITY	HEALTH AND WELL-BEING DEFICIENCY	SOCIAL DEPRIVATION	INFRASTRUCTURE DEGRADATION
No connectivity with the surroundings Children, teenagers, adults, and elderlies are not socially connected	Economically Inactive Inactive community spirit	Vulnerable people living there Unsatisfatory environment	Crime Education & Skills Anti Social Behaviour	Underdeveloped infrastructure

CONCEPT **HEART VALLEY**

The main strategy to solve the issues is to create a SYSTEM that will integrate all the fragmented parts of the area. The SYSTEM works like a HEART. A HEART maintains the harmony and balance of a body. The heart keeps the other parts of the body alive by adding liveliness through the veins that connect the heart and the other parts of the body.

VISION

CREATING A CONNECTED, INCLUSIVE, HEALTHY, AND SELF-SUFFICIENT NEIGHBOURHOOD WHERE PEOPLE COULD FEEL VIBRANT AND LIVELY.

PV PANELS

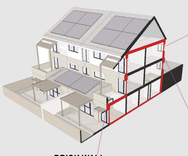
The generated electricity from the PV panels will help to fulfill the electricity demand of the houses. The generated electricity will also be transferred and stored in the community battery.

PREDICTED PERFORMANCE

U-Values
Walls 0.113
Floor 0.137
Roof 0.142
Windows 0.720

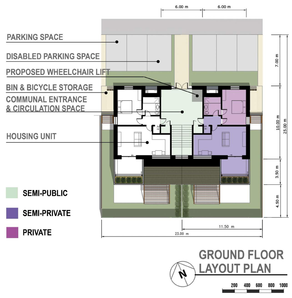
9 w/m² Heating Load

2.1 Form Factor



BRICK WALL
Thickness (mm)
-Lime Sand Brick 175
-OSB 9
-Isover Timber frame Roll Insulation 250
-Plasterboard 13
-Impact Sound Insulation 30

RENDER WALL
Thickness (mm)
-Exterior render 20
-OSB 9
-Isover Timber frame Roll Insulation 250
-Plasterboard 13
-Impact Sound Insulation 30



GROUND FLOOR LAYOUT PLAN

LOWER GROUND FLOOR

GROUND FLOOR

FIRST FLOOR

Acknowlegdements

MArch Environmental Design
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UK PASSIVHAUS STUDENT COMPETITION

designPH