



THOMAS NEWTON

Regenerare

in partnership with



PROJECT FACTS

Function	Location	TFA
Mixed used	Crescenzago, Milan	859m <sup>2</sup>

PASSIVHAUS STRATEGY

The design process started by considering the local climate, which is temperate and characterised by warm dry summers and cold wet winters. The building form is compact to reduce SA/V ratio and elongated along the E-W axis. This provides a larger exposed surface for passive heating on the south side during spring/winter. Winter heat gains are high due to the high glazing/wall ratio which provides almost 50% of the internal heat gains. In summer, initial design iterations struggled with overheating. To account for this, the glazing/wall ratio was reduced and cantilever balconies were extended to create extra shade. In summer, residents can actively cool the space by opening windows for less than an hour to prevent overheating. For the rest of the year, the MVHR system maintains adequate humidity/air quality whilst recovering >75% of the energy already used to heat the building. The roof has Solar PV and green living areas to reduce the buildings carbon footprint and improve biodiversity. DesignPH has been used to assess the thermal envelope of a chosen block, which shows that the final design iteration can achieve PH standards.

DESIGN PHILOSOPHY

**Regenerare** is a rejuvenation and urban reconnection of the Crescenzago metro station, located 7km from the centre of Milan. The intention is to create a vision for the future; developing the site in a sustainable way that integrates the urban space and meets the Milan2030 goals: **1. Resilient green neighbourhoods, 2. Community regeneration, 3. Inclusive spaces.** To meet these objectives, the site implements Urban Agriculture, offering one of the best ways to empower sustainable urban development through food security, nutrition, and new revenue streams. creates an ethos of nature and community, benefiting the lives of individuals. The site will provide affordable homes to new and existing residents, renew the urban economy by facilitating new industries and provide inclusive spaces in the belief that "growth has to be for everyone, and that nobody should be left behind".

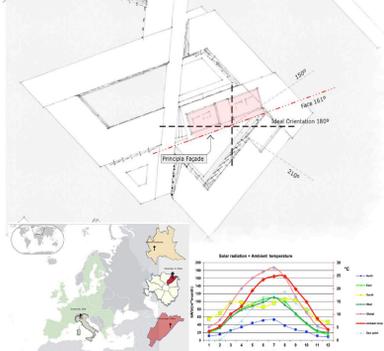
Site Context



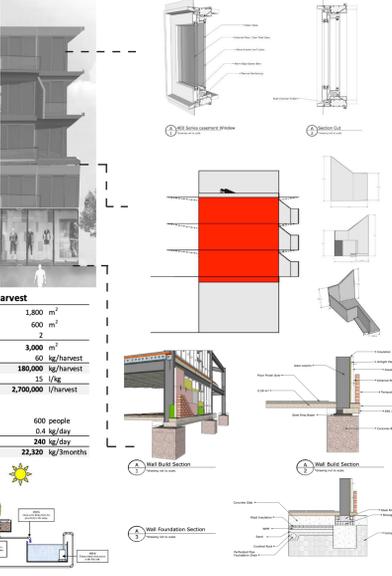
Passivhaus Envelope



Orientation



Section Cut



MATERIALS

Slab foundation with a steel skeleton frame. Insulated slab and steel ringbeam. Kingspan Building memberane with rockwool, breathable membrane and terracota cladding.

Area Group	U-Value (W/m <sup>2</sup> K)
External Door	0.5
External Wall Ambient	0.13
Roof/Ceiling - Ambient	0.12
Temperature Zone X	0.15
Partition to neighbour wall	0.25
North Windows	1.13
South Windows	0.72

Performance

Form Factor	1.98
Heating Demand	11 kWh/m <sup>2</sup>
Cooling Demand	10.1 kWh/m <sup>2</sup>

Urban Farming



**Urban Farm - Harvest**

Floor Area Outside	1,800 m <sup>2</sup>
Floor Area Farming Centre	600 m <sup>2</sup>
Num. Floors	2
<b>Total Floor Area</b>	<b>3,000 m<sup>2</sup></b>
Harvest per sqm	60 kg/harvest
<b>Total Harvest</b>	<b>180,000 kg/harvest</b>
Water Usage	15 l/kg
<b>Total Water Usage</b>	<b>2,700,000 l/harvest</b>
* Harvest - 2-3 months	
Food Intake	600 people
Building Occupants	0.4 kg/day
Food Intake person	240 kg/day
Building Occupant Intake/day	240 kg/day
Intake/harvest	22,320 kg/3months

Acknowledgements

Course name: K14  
 Principle Tutor: Guillermo Guzman Dumont  
 Supported by: Shakti Gite



UK PASSIVHAUS STUDENT

