

01 | (RE)-ENERGISING BURNLEY

THIRD YEAR ARCHITECTURE PROJECT ENERGY CENTRE FOR THE BURNLEY MARKET

The project of a biomass CHP power plant to provide with energy and heat for the Burnley Market aimed to resurrect the space that is a social hub and a main retail area for the residents of the city. By collecting and using biomass produced at the market a local energy cycle between the two buildings is created. Visitors' centre at the plant provides with information and education about clean energy production and offers a warm, energy-efficient space for social gatherings.

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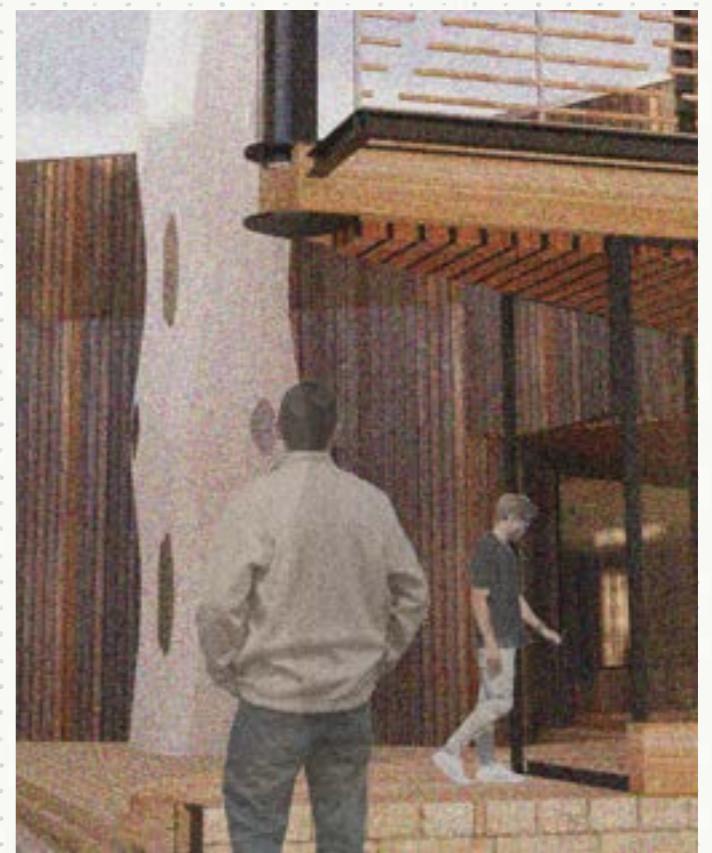
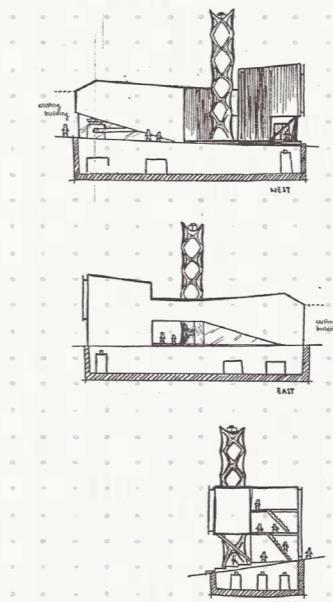
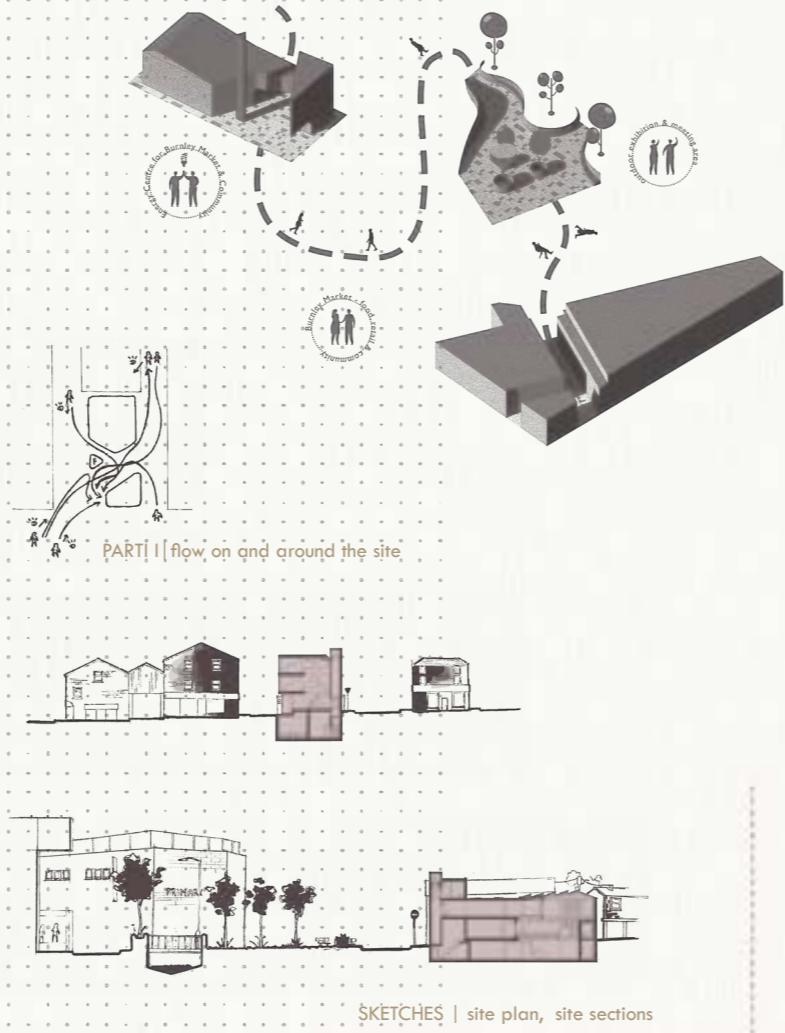
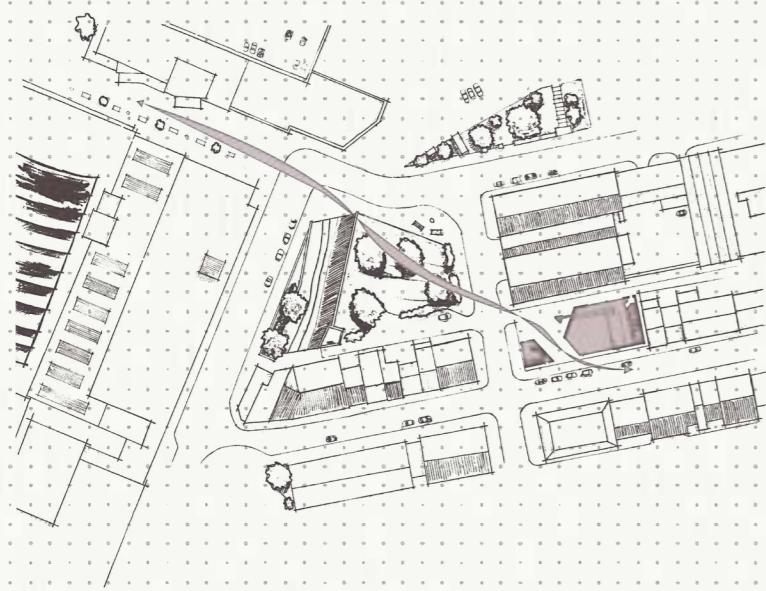
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MASTERPLAN | connection between the energy centre and the Burnley Market

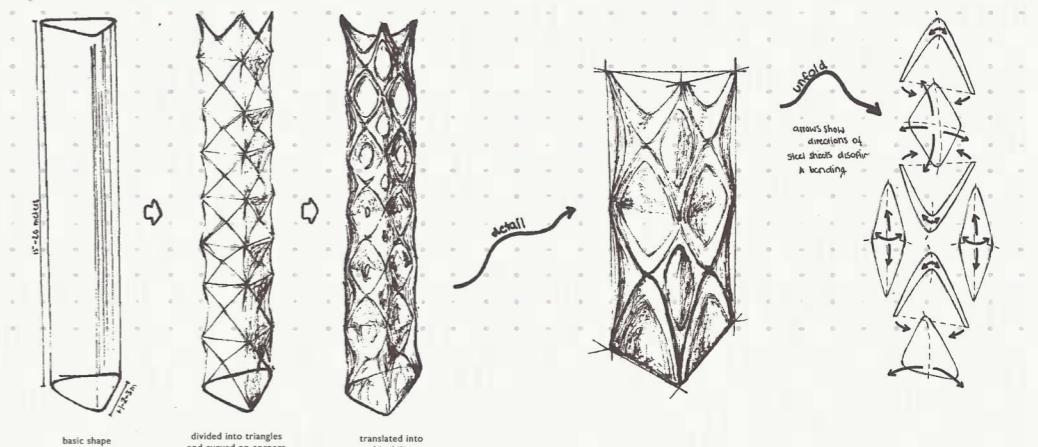
DESIGN STRATEGY | FLOW OF PEOPLE & ENERGY

Flow on and around the site has been one of the main focuses and creative drivers for the project's geometry. Since the building's function itself is about connecting it to and collaborating with the Market it was really important to preserve the visual and physical connection between the two.



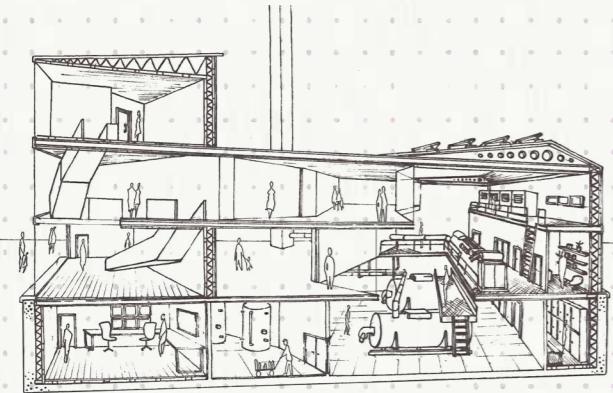
FEATURE | FLUE TOWER

A flue tower of the CHP power plant has been designed as a building's feature aimed to attract by-passers' attention and interest as well as break the taboo of situating a building with an industrial function in the very city center. Designed as a Shell Lace Structure it allows creating modern and eye-catching biophilic shape whilst remaining lightweight and structurally strong.

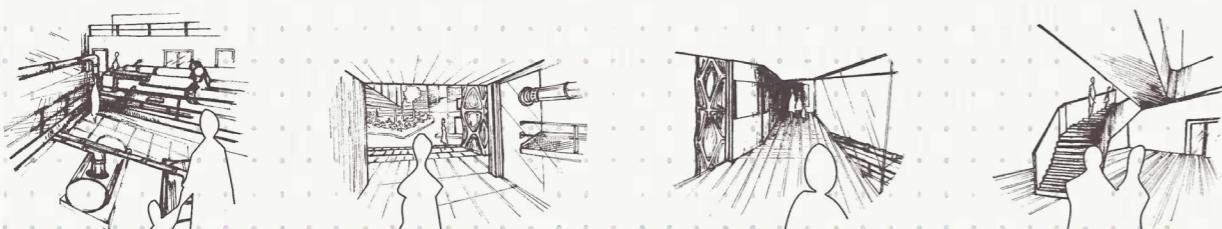


SKETCHES | feature flue tower design process

RENDERS | visual and physical connections between the energy centre and the Burnley Market, on the left: view to the Market from the inside of the visitor's centre, on the right: footpath connecting the Market's main street and the visitor centre.



SKETCHES | above: sectional perspective, below: vignettes of the spaces within the centre



2nd floor

visitors' centre toilets
rooftop access

1st floor

visitor's centre exhibition
plant control room

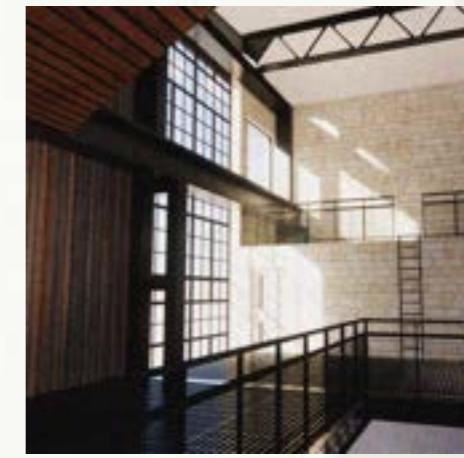
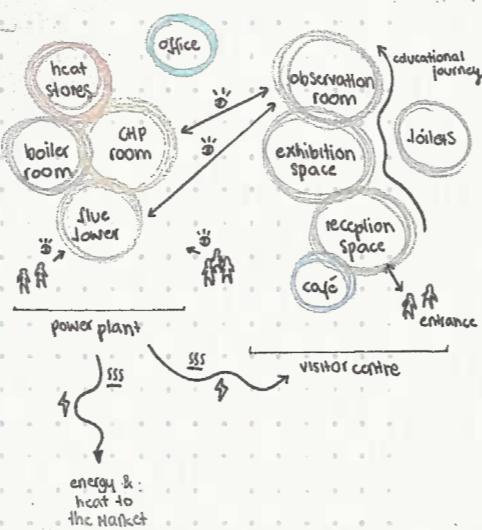
ground floor

visitor's centre reception
CHP room
office

basement level

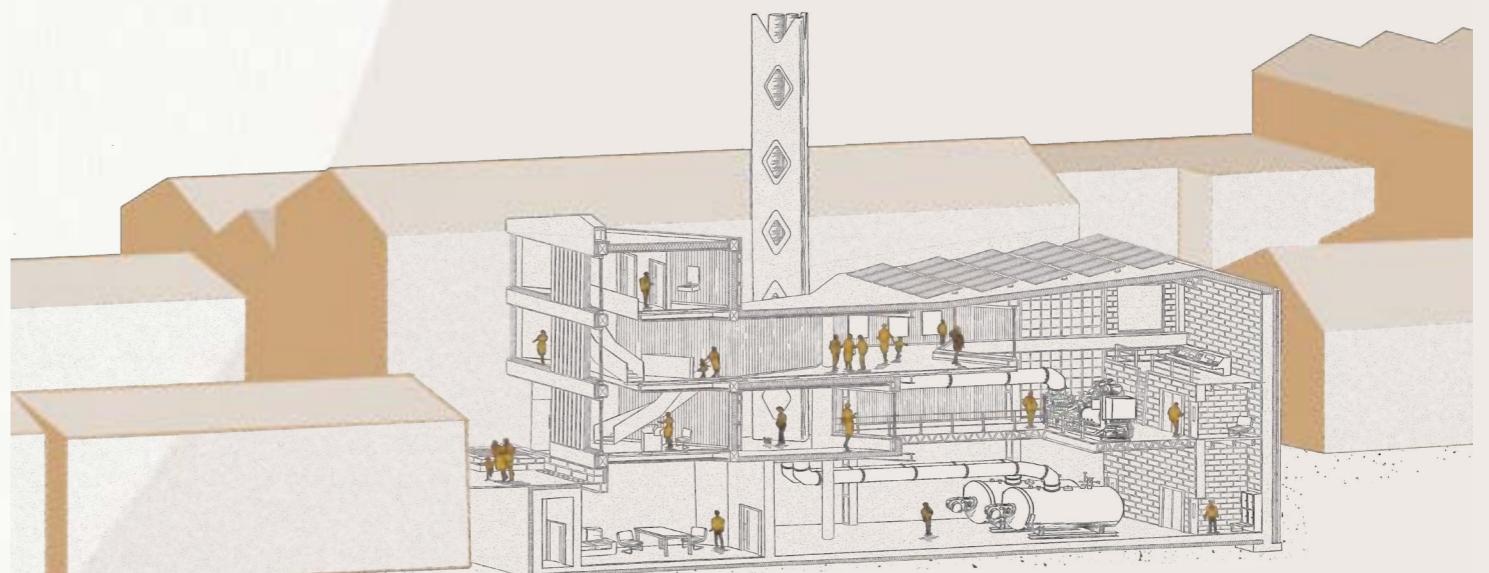
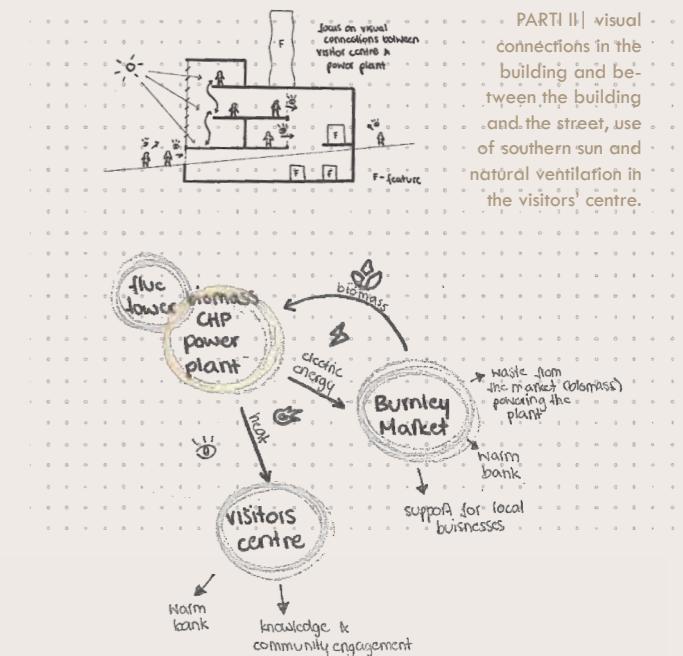
boiler room
heat storages
biomass storage
staff changing room
staff breakout room

bubble diagram:



PROGRAMME | USERS' EXPERIENCE

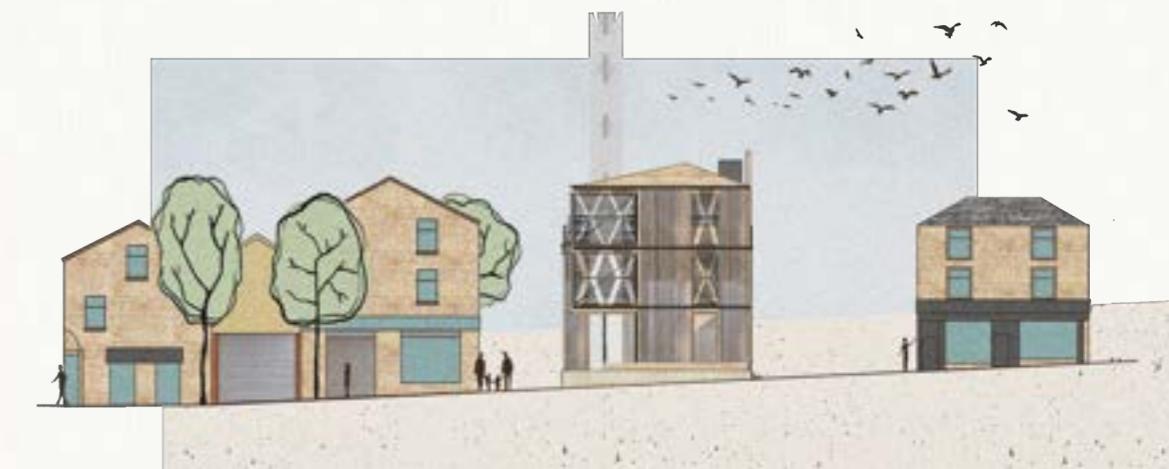
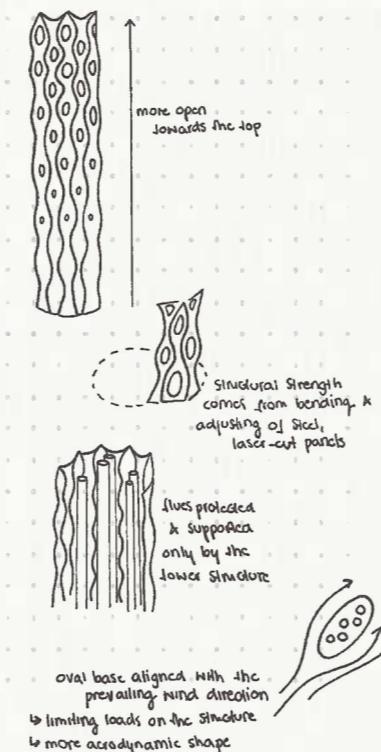
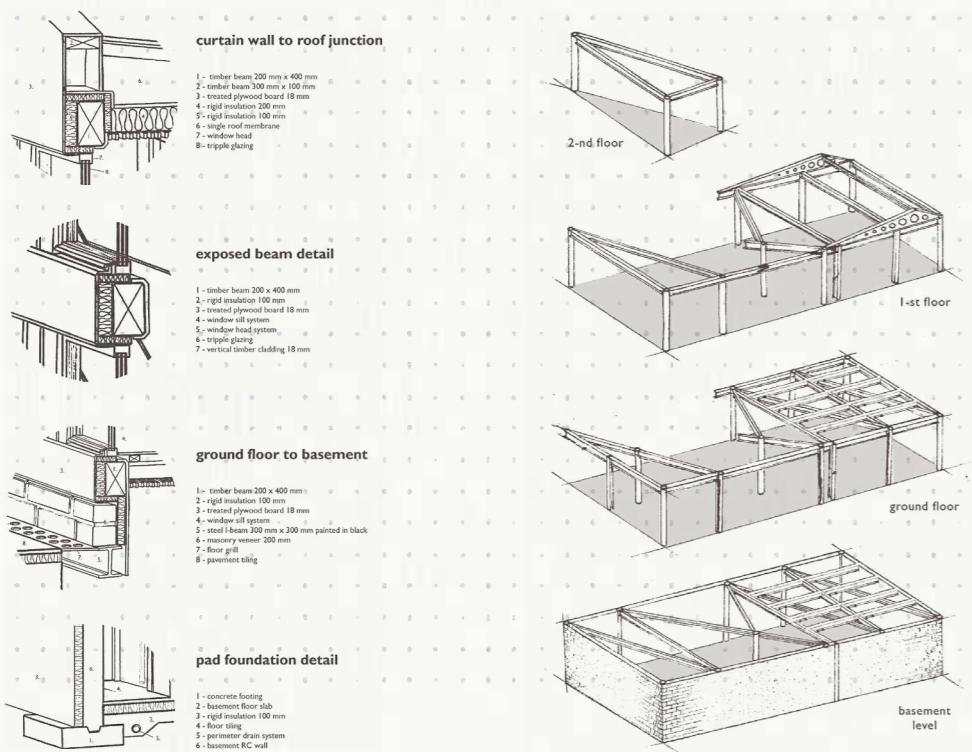
A layout of the particular rooms of the building has been designed with a thorough consideration in order to provide with all the previously established requirements for the views and connections within the energy center and around the site. Being a result of numerous iterations the arrangement ensures a maximum use of the site's features - like maximizing the daylight in and passive ventilation of the visitors' center - providing with the best possible user's experience of the building and minimizing its potential unfavorable impacts - like noise pollution or view obstruction - on the surrounding context.



AXONOMETRIC SECTION | user's experience of the spaces within the building

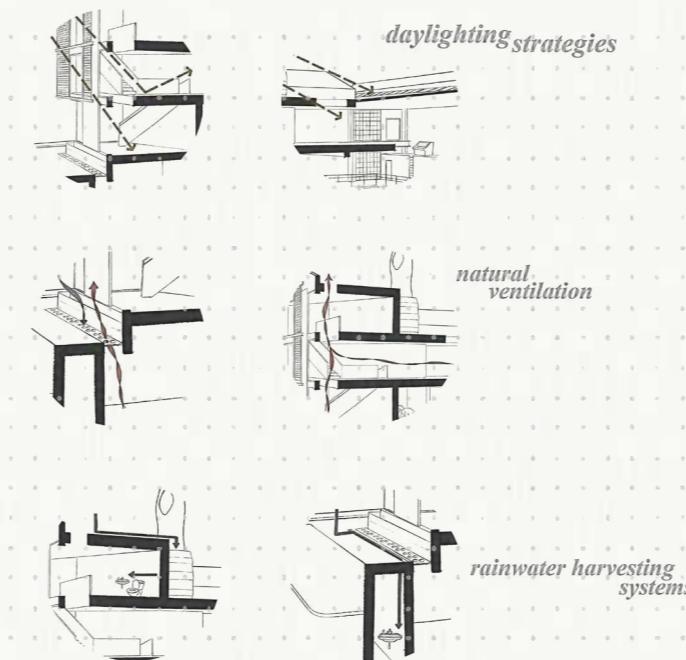
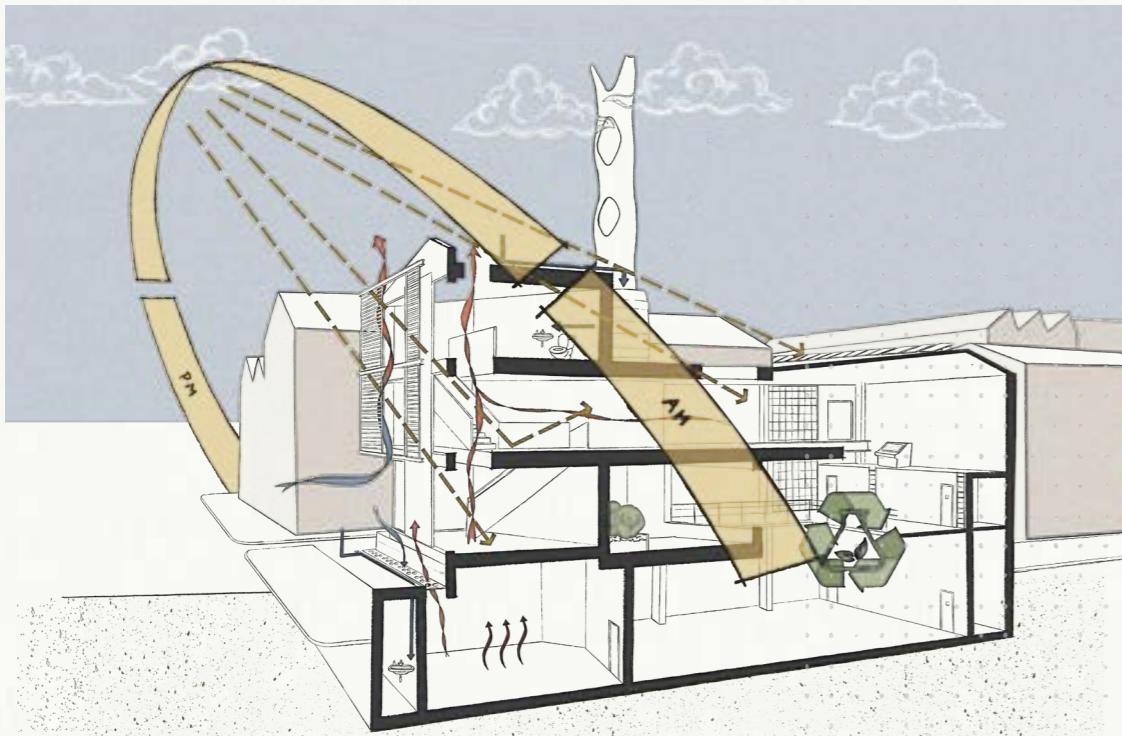
STRUCTURAL STRATEGY | TECHNICAL DETAIL & MATERIAL SELECTION

Building's structure includes reinforced concrete basement foundation and a combination of steel and timber frames. The materials for both - interior and exterior finishes - have been carefully considered in order to ensure their maximum performance and for their functions whilst fulfilling assumed design aesthetics and aims.



SKETCHES / RENDERS | building's elevations in context

SKETCHES | technical detail, buildings' primary structure and an analysis of feature flue tower precedent



ENVIRONMENTAL EMERGENCY | SUSTAINABLE DESIGN STRATEGIES

Environmental diagrams on the left visualize the environmental strategies implemented in the building's design. From using solar panels to generate electrical energy for some of the power plant's operations, through natural day lighting and natural ventilation of the visitors' center to water harvesting systems and using the building's concrete basement foundation as a thermal mass - all the features are aimed to ensure building's low-energy use and carbon neutral operations as a response to the environmental emergency and 2050 environmental goals.

ENVIRONMENTAL DIAGRAM | sustainable design strategies