ABSTRACT

The project wareHAUS is the transformation of an existing warehouse into a habitable social and living space that accommodates three residential unit typologies for students and retail spaces for the public. The main strategy of the wareHAUS is to deliver a hassle-free construction and this will be done in various stages of the project, described as following. First, by reusing the existing materials and the structure and introducing retail spaces within the existing envelope of the warehouse. Second, reinstating the existing roof to act as a floor structure that anchors the residential units placed above. Third, and the main concept of the project, using off-site prefabricated volumetric construction for the residential modules that will majorly reduce the disruption such as noise and dust pollution caused in the site by placing the units as a whole in their respective positions. The novel idea of the project is the use of a barge to transport the prefabricated units from the manufacturing factory to the site. The close proximity of the site to the river has been taken advantage of to employ such transportation technique with careful considerations of the under-bridge height clearance and the load. Thus, the project wareHAUS has eliminated most of the traditional construction techniques that has a great impact on the final cost and the time period of the entire construction.

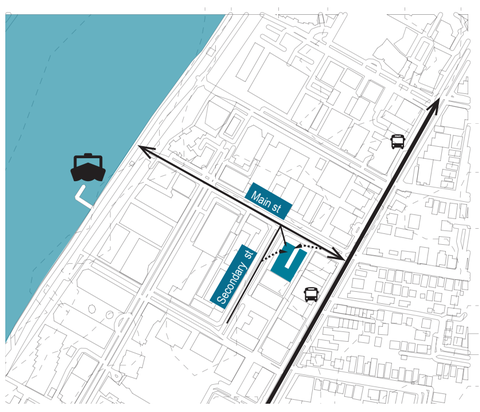
EXECUTIVE SUMMARY

The design solution tells the story of the transformation of an existing warehouse into the WareHAUS. The proposal is an adaptive re-use project of an existing warehouse that proposes an innovative approach towards circular design principles by adopting modular construction and articulating creative strategies to repurpose the existing structure in a cost-effective manner. The project WareHAUS comprises of mixed-use tenancies and residential units in a medium density neighbourhood. The site is located at the junction of two streets making it a corner plot that helps cater to the construction logistics without disrupting the day-to-day traffic flow. The project encapsulates a combination of volumetric and non-volumetric construction of modules that will be manufactured off-site. The double height of the existing warehouse is advantageous to create two levels of retail and social spaces within the outer shell of the warehouse and planning the residential units above the existing roof with respect to pertaining views and privacy. Taking advantage of the site's close proximity to the river, the modular units are transported to the site location via the river using a barge. Simultaneously on site, the existing warehouse will be refurbished by repurposing existing materials and structure to assist the design proposal. The key innovative strategy is to accommodate the required residential units by limiting the procurement of new materials on site and that is done by rotating the existing howe truss parallel to the ground forming a platform above which the residential units will be placed. The proposed wareHAUS acts as a social condenser enhancing public spaces, creating pockets of gatherings that goes well with the retail spaces such as markets and restaurants. The activities are distributed vertically with the commercial spaces taking up the ground and the first level of the building and the residential units have been placed above. The existing landscape on the secondary street has been continued into the building forming a secondary public entrance. The location of the

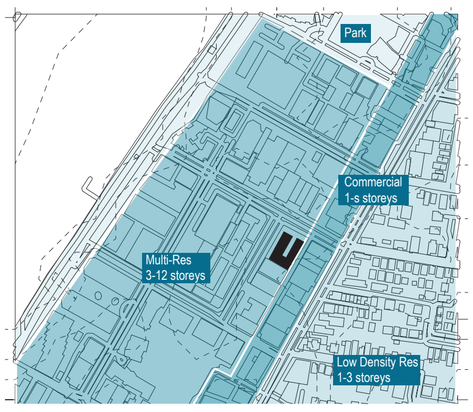
residential units provides opportunities to carry out volumetric modular construction without having to make changes to the existing warehouse building. The modular units have been designed in such a way that it has the possibility of creating a material store at the end of its life cycle. This is done by introducing these services at the roof of each modular units which enables the walls and other components to be reused in the future. To incorporate this methodology, a careful iteration has been done to assemble the modules on site. The design for assembly and disassembly has been carried out by adding rails on top of modules such that the modules are able to slide and lock into position. Considering the wind load and structure load, additional steel connections will be provided to the joints of each module. The ideas outlined above have been detailed out in individual sections in the report.

The WareHAUS

SITE CHARACTER

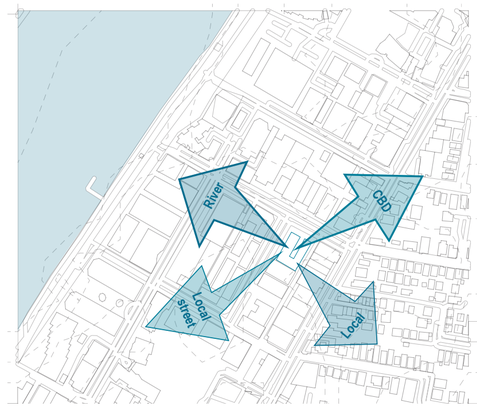


Connectivity



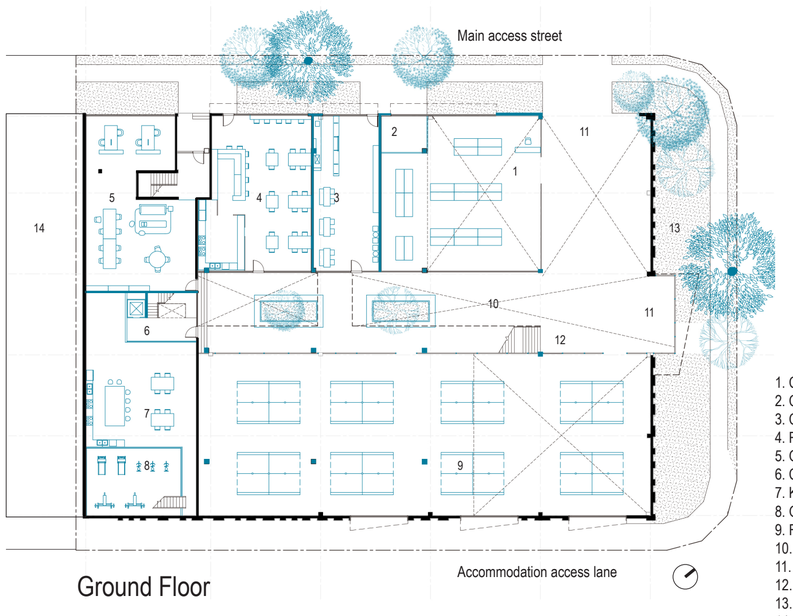
Development pattern

Opportunities



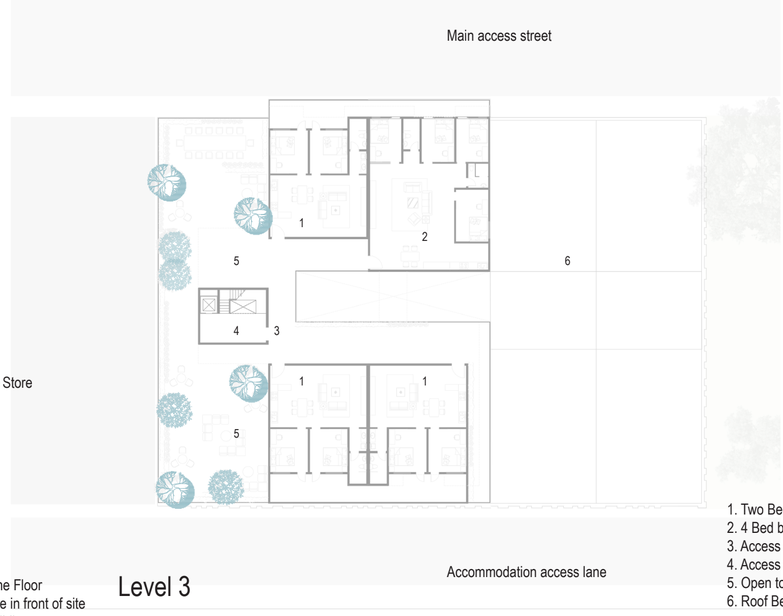
Primary View

PLAN



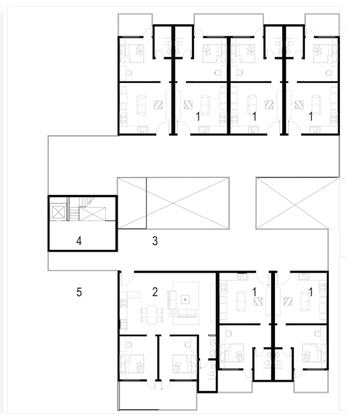
Ground Floor

1. Convenience Store
2. Collect & Go
3. Cafe'
4. Restaurant
5. Office
6. Core
7. Kitchen
8. Gym
9. Food Market
10. Lane
11. Entrance
12. To Mezzanine Floor
13. Green Space in front of site
14. Adjacent Building



Level 3

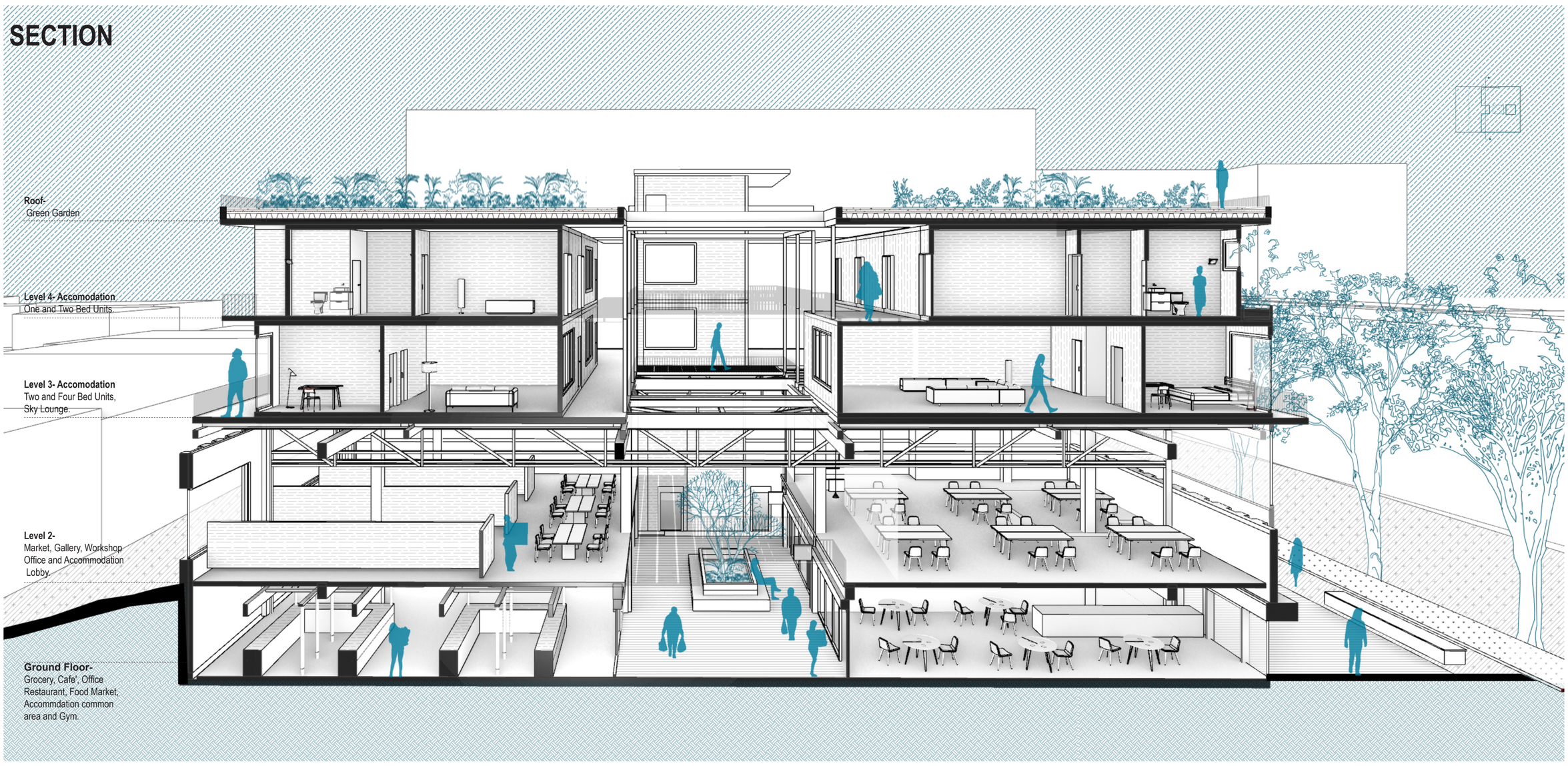
1. Two Bed Accommodation
2. 4 Bed build to rent cluster
3. Access Gallery
4. Access Lobby
5. Open to sky lounge
6. Roof Below



Level 4

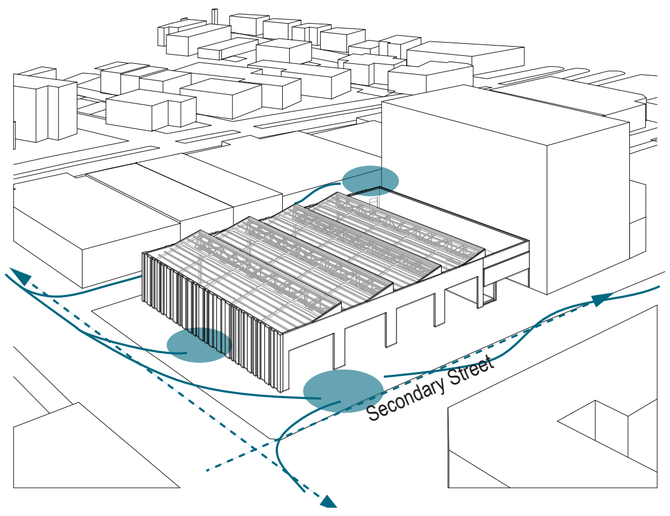
1. One Bed Accommodation
2. Two Bed Accommodation
3. Corridor
4. Access Lobby
5. Outdoor OTS Lounge below

SECTION

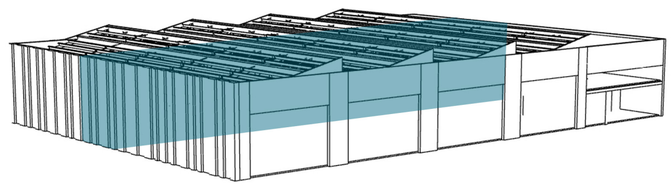


The WareHAUS

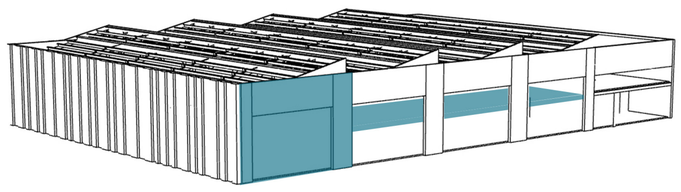
1. CREATING LANDWAY AND MASSING



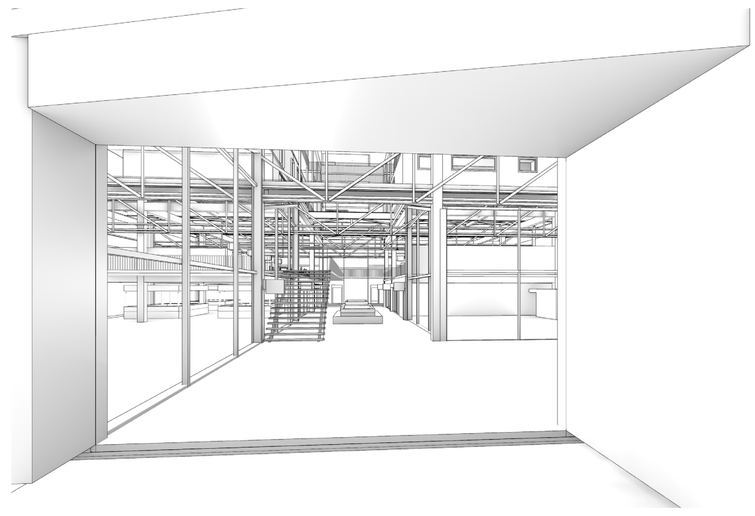
The existing warehouse is present in the corner of the junction of Kurilpa street and Bailey street with the former being the primary access road. The warehouse consists of brick walls and steel roof truss structure that forms the primary aspect of the design proposal.



A central laneway has been created along the length of the building with retail spaces on either sides on the ground and the first level by making use of the double height space of the existing structure.

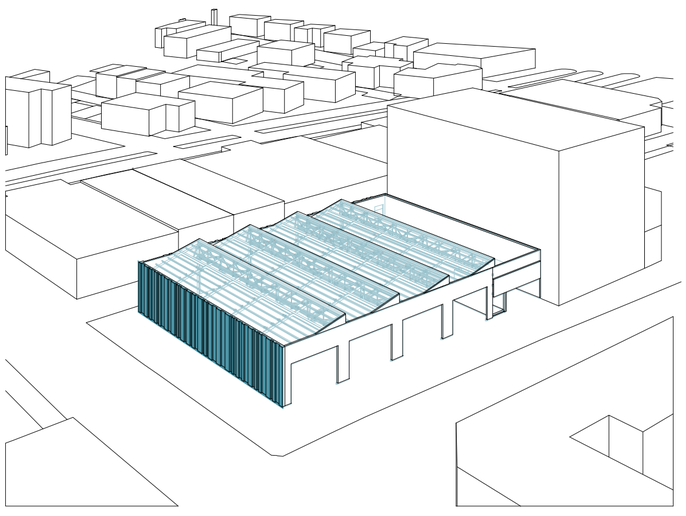


A courtyard opening along Bailey street has been introduced along the existing landscape that invites people into the building and act as a social space.

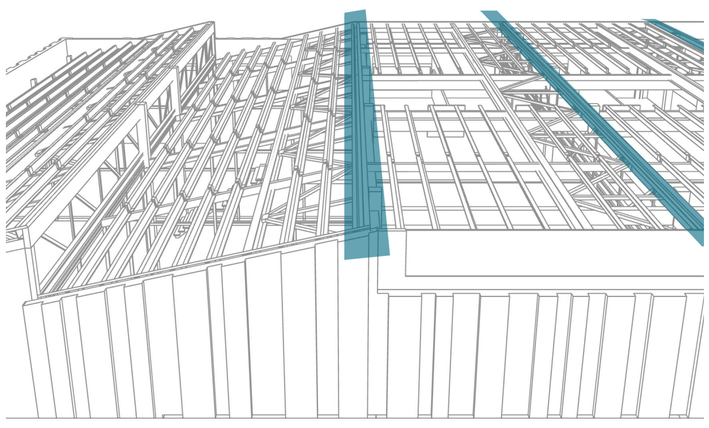


A view of the interior of the proposed building from Kurilpa street opening. The staircase takes visitors to the first level where there are meeting halls and few other retail spaces.
Towards the further end, a lobby that is limited for students to access their accommodations and private spaces.

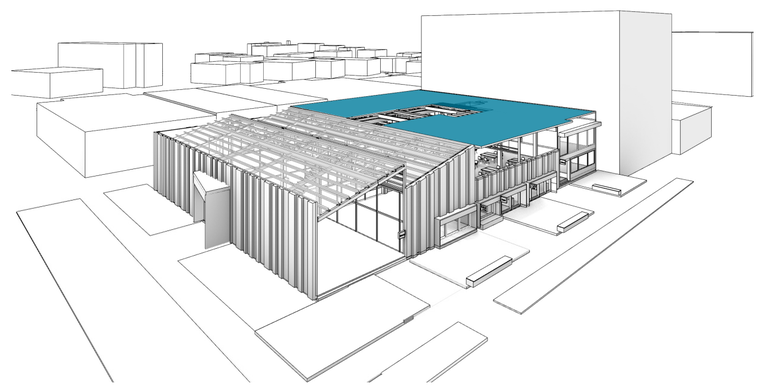
2. REINSTATING EXISTING ROOF AS A PLATFORM



The above diagram illustrates the existing saw tooth truss structure of the existing warehouse covered using a tranlucent asbestos sheet that limits the light that enters into the building. A flat roof towards the end, next to the adjacent apartment covers the office spaces below.

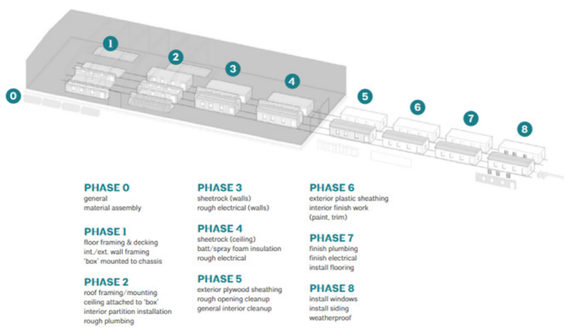


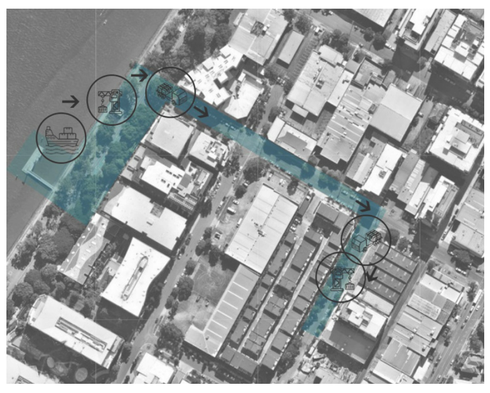
The proposal aims to retain the existing structure and materials and for this reason, a part of the existing roof has been reinstated by making it flat using additional supports and ties, thus forming a platform to host the volumetric residential units above.
The translucent cover will be replaced using a transparent sheet to maximise the amount of light that enters into the wareHAUS.



The resulting image illustrates the final iteration of the structure of the roof. The residential units will be placed above the tilted truss that becomes the platform. The design allows the flat roof towards the end as an offset buffer zone that gives sufficient gap between the residential units and the adjacent apartment with respect to light and ventilation.

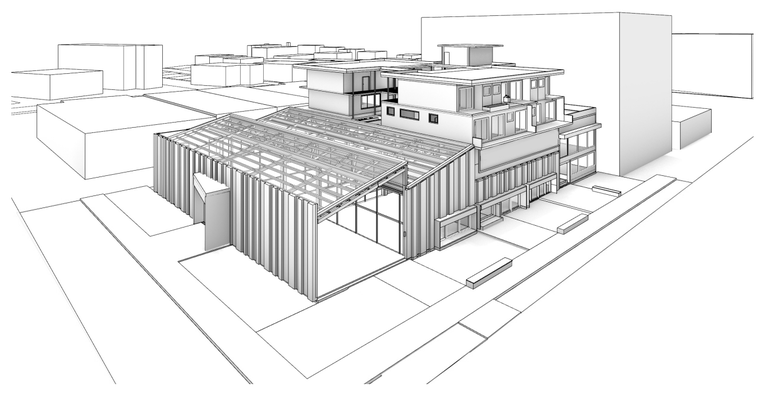
3. MANUFACTURING, TRANSPORTING AND INSTALLING VOLUMETRIC RESIDENT UNITS





The image above clearly explains the step process involved in manufacturing of volumetric modules off site. A similar approach will be used to manufacture the volumetric residential modules and have it ready for transportation and installation.

The novel idea with accordance to the challenge of the brief is the idea of transporting the volumetric modules from the factory to the site using a barge through the Brisbane river. The bridge clearance heights have been noted and the modules have been designed in such a way that it fits well on the transport.



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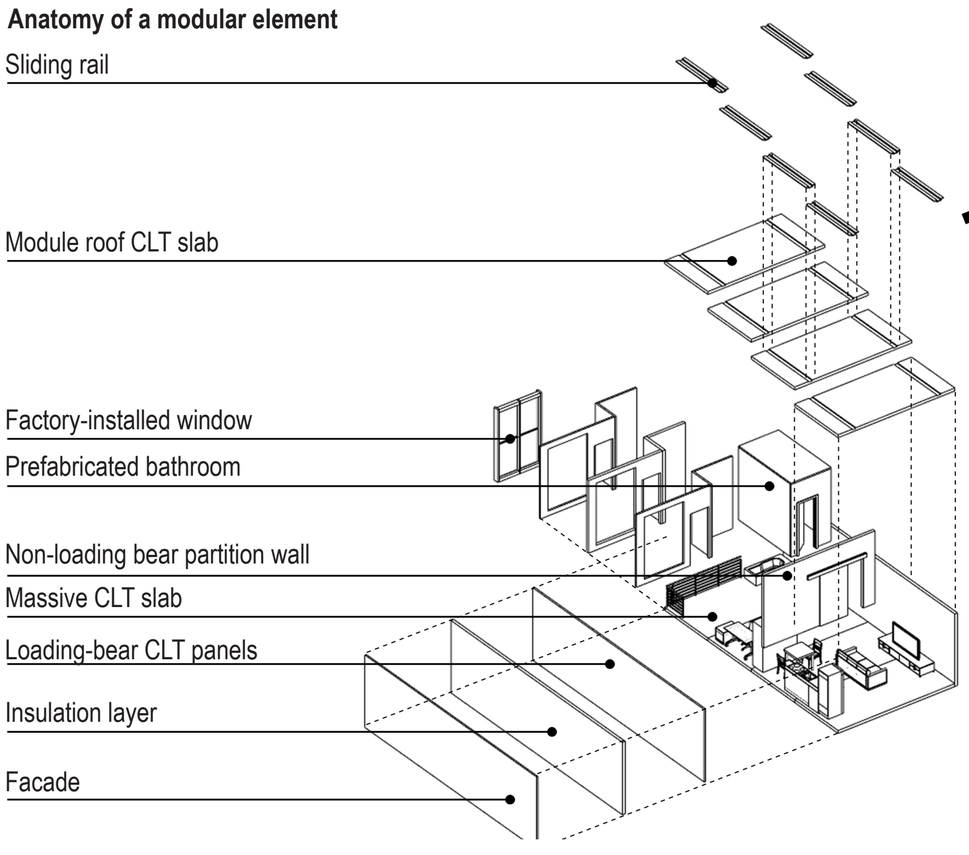
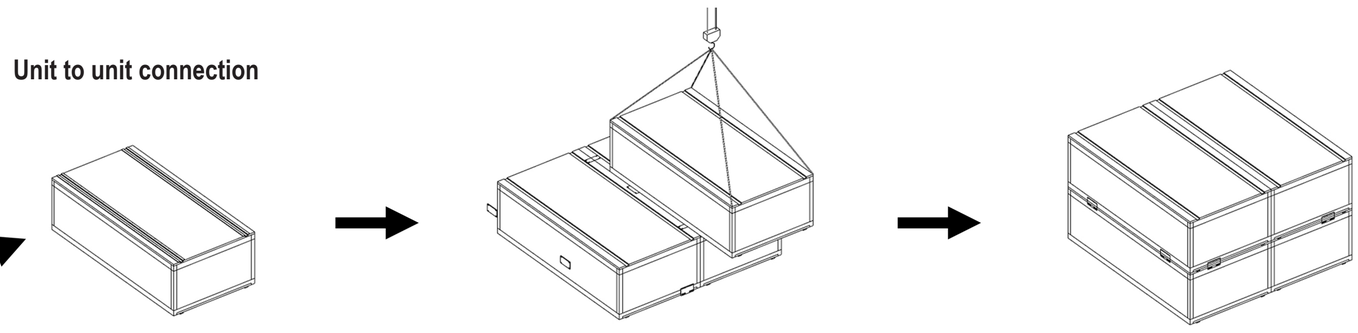
4. MODULAR APPROACH

Anatomy of a modular element

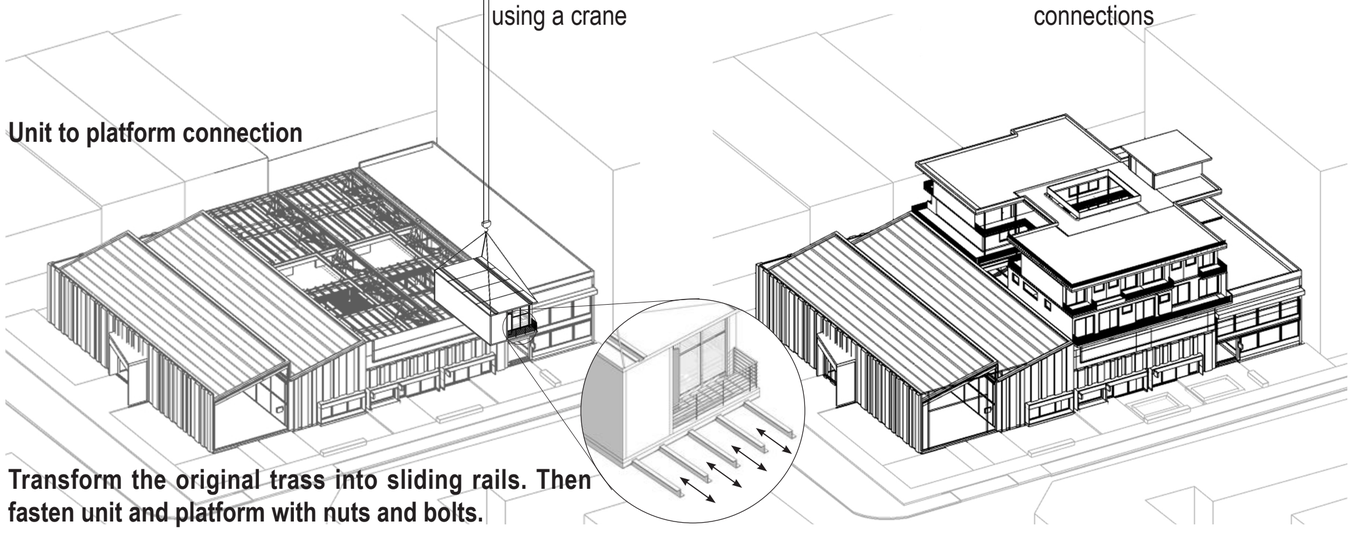


Unit to unit connection



1. Completed modualr element
2. Each unit is assembled along the slide rail using a crane
3. Bracing each unit with steel connections

Unit to platform connection



Transform the original trass into sliding rails. Then fasten unit and platform with nuts and bolts.

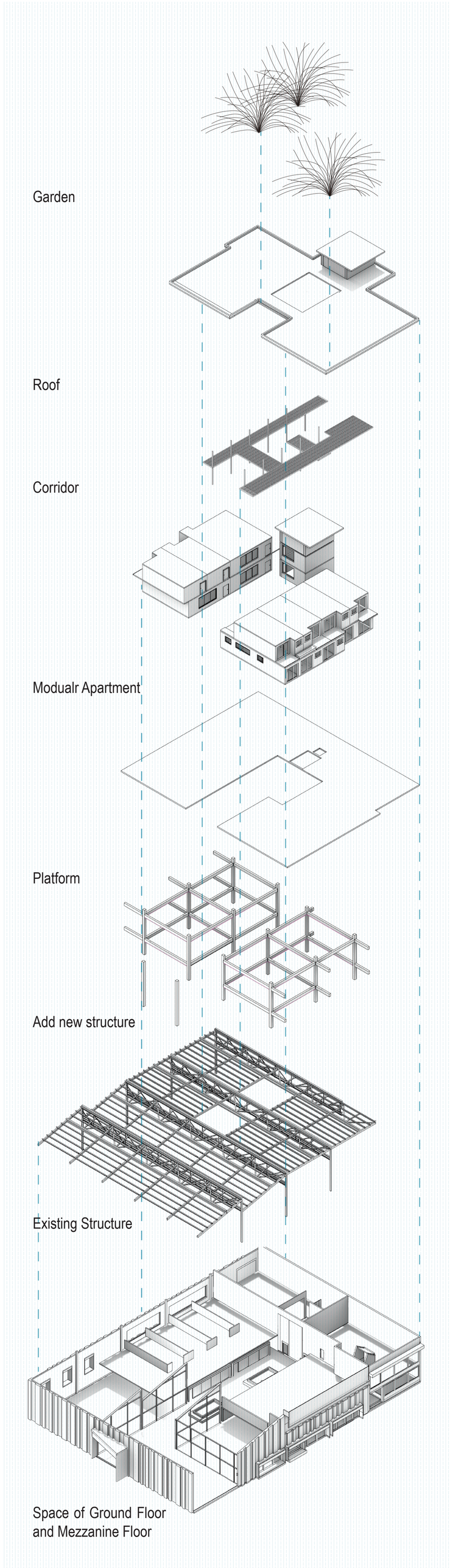
The WareHAUS

Accommodation View

Laneway in the Site

Open Plaza in the Corner of the Site

PRESPECTIVE



AXONOMETRIC VIEW