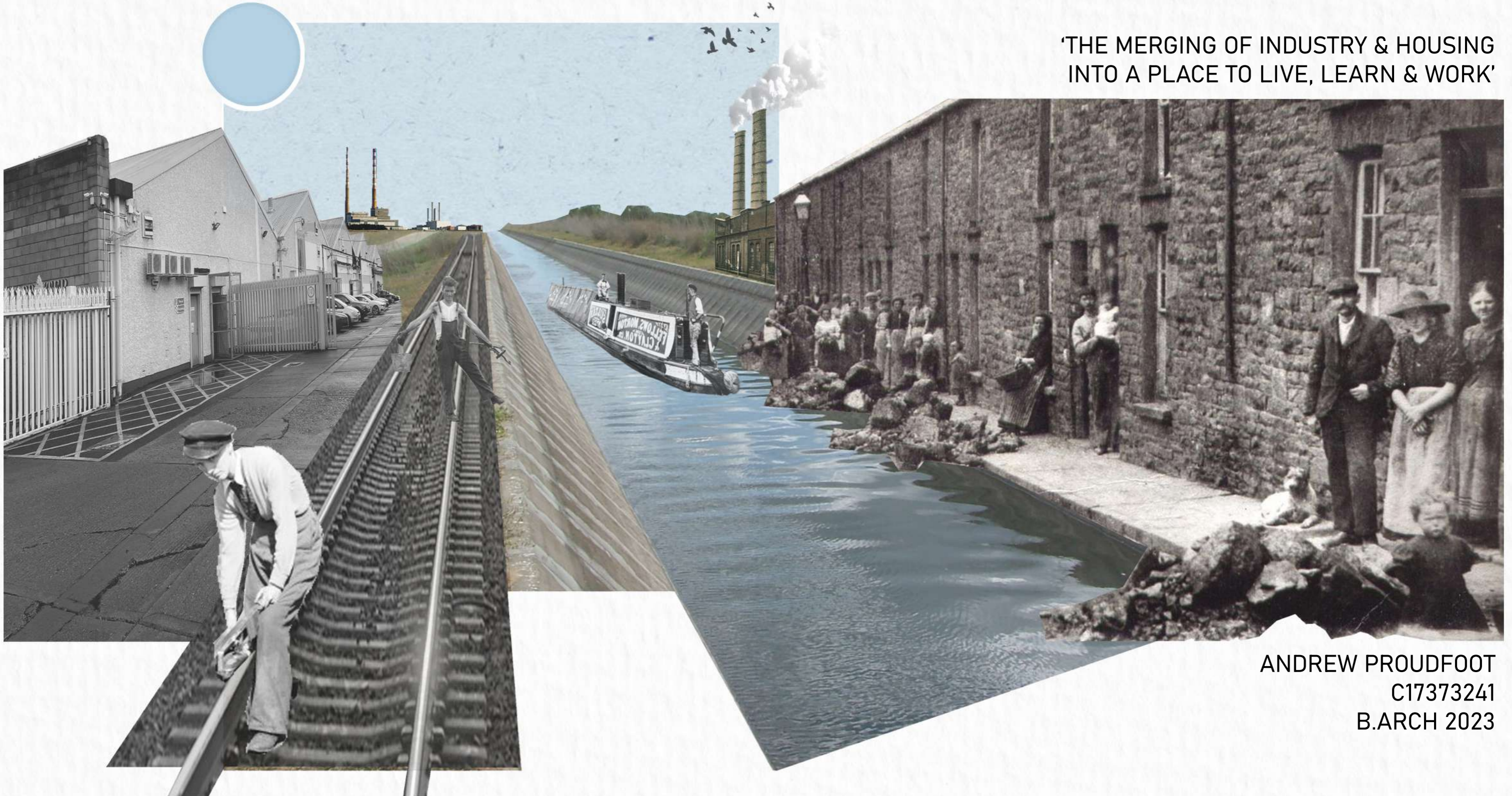


# CONSOLIDATE: LIVING IN THE INDUSTRIAL

'THE MERGING OF INDUSTRY & HOUSING  
INTO A PLACE TO LIVE, LEARN & WORK'



ANDREW PROUDFOOT  
C17373241  
B.ARCH 2023

## ACKNOWLEDGMENTS /

Sima Rouholamin & Martin Spillane: Thank you for the continued guidance and support throughout the year. Your enthusiasm and continuous patience enabled me to value and enjoy the year's work.

Friends & Classmates: Thank you for the memories, laughs, and endless support during the past 5 years. Our time spent in the college will not soon be forgotten.

Family: Thank you for the opportunities and support during my years at college. For this, I will always be grateful.

## CONSOLIDATE /

*verb*

1. To combine a number of entities into a single more effective or coherent whole.

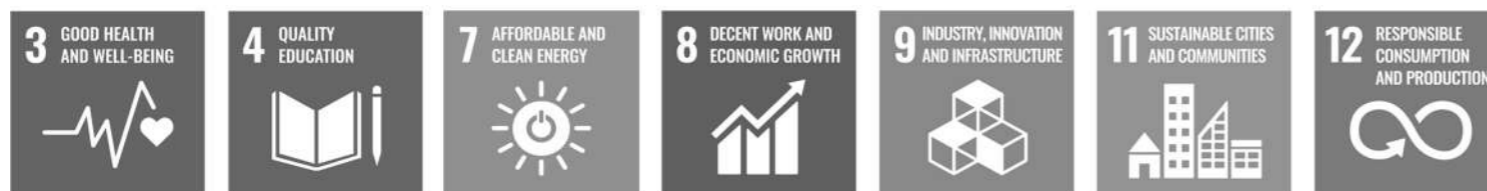
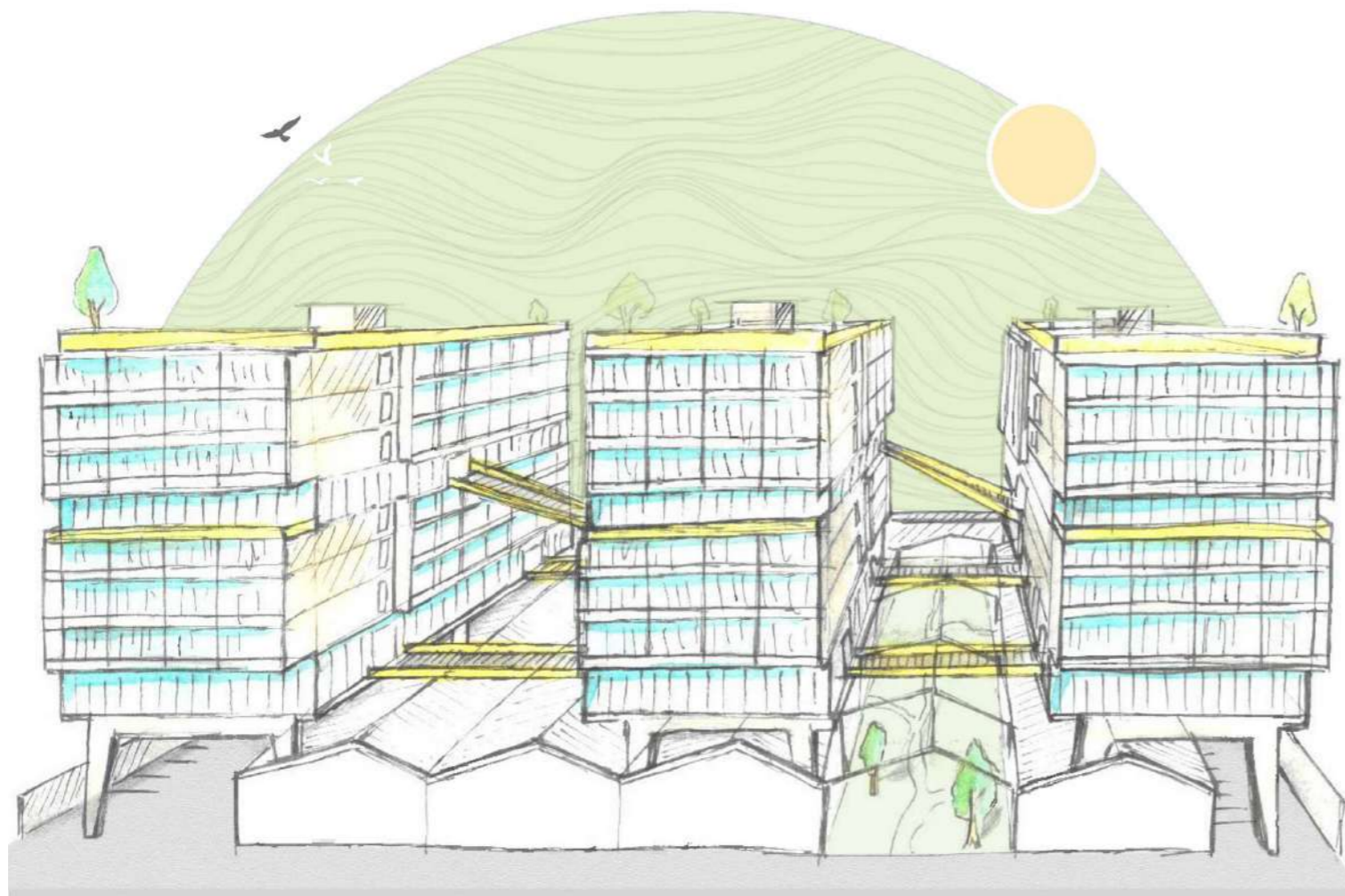
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## INTRODUCTION /

This thesis stems from the belief that industrial estates are imperative to the way we live. The amenities within provide communities with the resources needed for everyday life. Dublin City Council's former head of housing, Brendan Kenny, has said that Dublin will "run out" of residentially zoned development land by 2025 and that we must focus our attention on industrial estates as a source of new housing land (Kelly, 2021). With Dublin City's population expected to rise between 20,000 to 30,000 people by 2028 the demand to deliver quantitative homes is urgent. As residentially zoned land runs out, the emphasis to consider underutilized sites such as the Dublin Industrial Estate becomes imperative.

Historically, architects have often explored the concept of industrial urbanism, with designs such as the 'Ideal City of Chaux' exploring the relationship between cities and places of production. Despite good moral conviction, these plans often developed into systems of control for those in power. In the mid-20th century, suburban developments were built with industry to provide local employment and economy for those migrating from tenement Dublin. By the end of the 20th century, the relationship between the workplace and the living space had become dissociated. Those who worked within industrial estates were no longer able to afford housing nearby. Today, that which remains of industrial urbanism is the practice of demolishing existing infrastructure and building 'high-rise, high-density, high-priced build-to-rent apartments, or student accommodation' in its place (Tranum, 2020).



Above; Initial Concept Sketch & Relevant Sustainable Development Goals.

The DCC Development Plan for 2022-2028 proposes the rezoning of the lands at Dublin Industrial Estate for ‘high-quality new housing and commercial development’ (Dublin City Council, 2022). As the focal point of Tolka Valley, the removal of the amenities, employment, and local economy would be detrimental to both existing and new communities. However, the demand for urgent housing must be recognized. To do so, we as architects must take a moral standpoint to protect that which remains, but search for new solutions regarding our cohabitation with industry.

Therefore, this thesis opposes the removal of industry, instead adapting the existing structures and services to facilitate their consolidation with housing. Proposing a competitive alternative to existing planning in terms of units and beds per hectare. Whilst creating a place to live, learn & work with reference to the listed Sustainable Development Goals.

## THE HISTORY /

Fig 1.1 & 1.2; Pre-Functionalism Dublin. Families lived in dense inner-city tenements where the workplace & living space were closely intertwined.

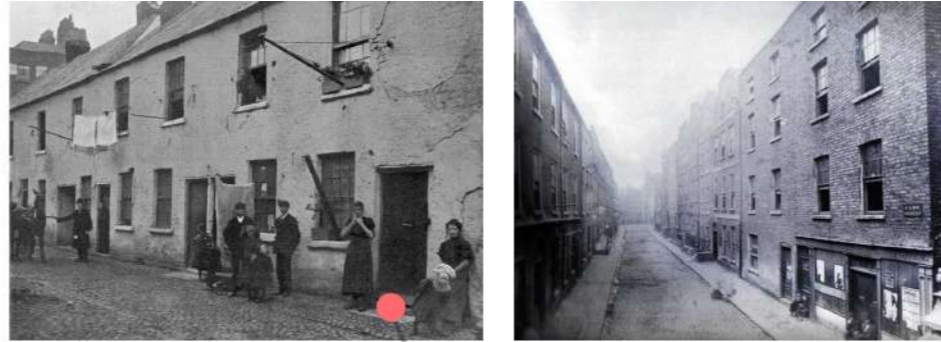


Fig 1.3; St. James' Gate Brewery.

To give context to my thesis topic, the research is divided into several relevant headings. Starting with a brief history of industry in Dublin City and exploring how places of production have developed over the last century into what we know today.

The relationship between industry and the city has changed dramatically over the past 100 years. In the early 20th century, we saw mass food and drink production in the city centre, providing both sustenance and employment for those living within. At a time before 'functionalism' people lived in houses divided into tenements with entire families living in a single room. The relationship between the workplace and living space was closely intertwined as the men would cross the street to work every morning.

The predominant places of production were at St. James Gate and the Grand Canal Docks. However, at this time the docks were already falling into a state of decline as they became dominated by heavy industries such as 'chemical and bottle factories, tar pits and iron foundries' (Bunbury, 2009).



Fig 1.4 & 1.5; Bolands and Odlums Mills provided those living in inner city Dublin with food and employment throughout the early 20th century.

Fig 1.6; The Cabra Housing development (1940's) was built with industry along to Royal Canal to provide employment and boost the local economy. Industry such as the Batchelors Factory remain today.

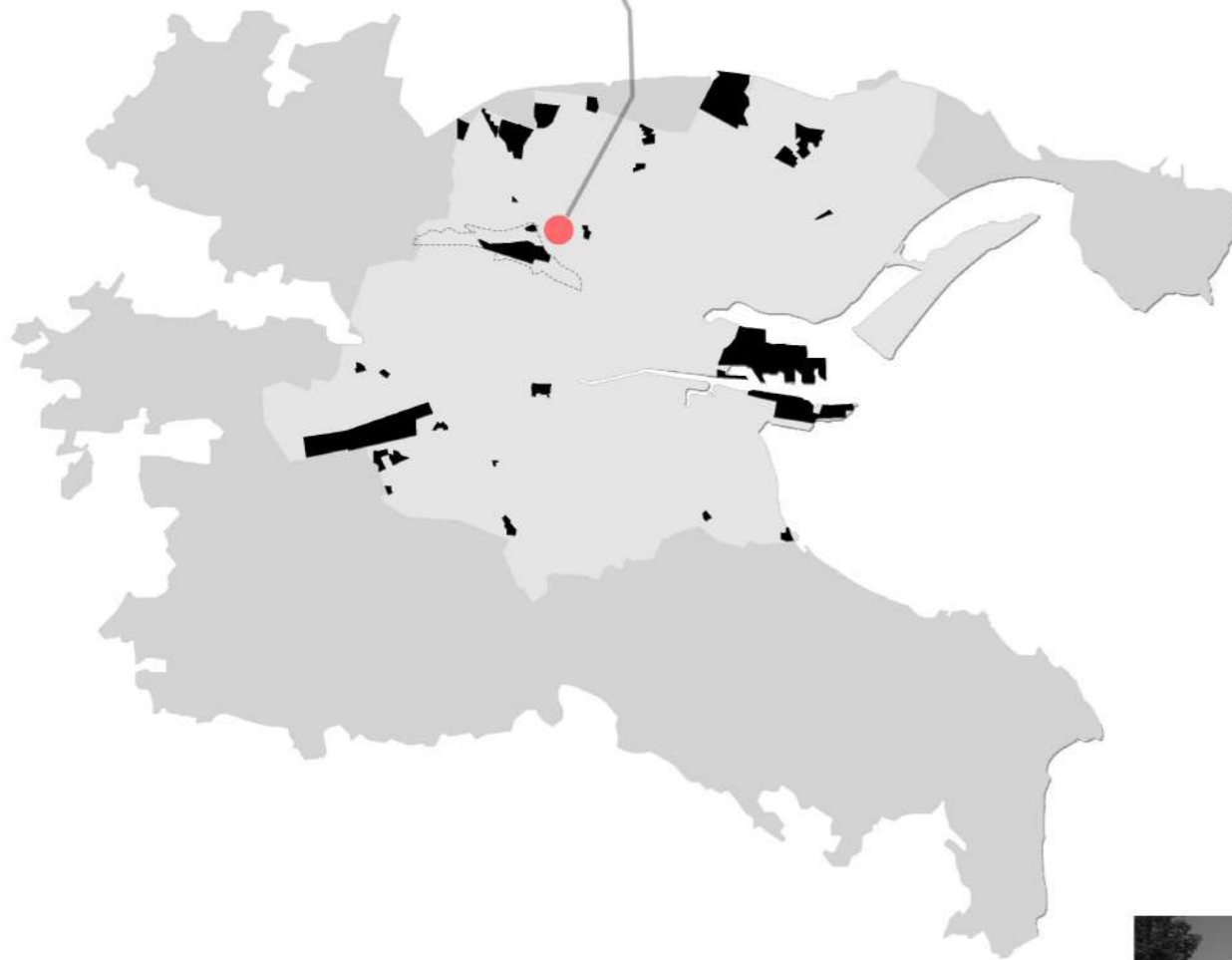


Fig 1.7; Diamond Glass Factory, Kylemore Industrial Estate.

The 1930's saw the development of 'functionalism' in urban planning. As elaborated in Appendix 1 the demand for 'healthy and physiologically suitable architecture' was the catalyst for seperating the workplace from the living space (Gehl, 2011). City architect at the time, Herbert Simms accommodated the gross migration of people from the inner-city tenements to the wider Dublin regions. As elaborated in Appendix 2 new towns were planned 'with their own industry to avoid endless sprawl' (McManus, 2022). The industry was intended to anchor the new communities from further sprawl with accessible employment and local economy.



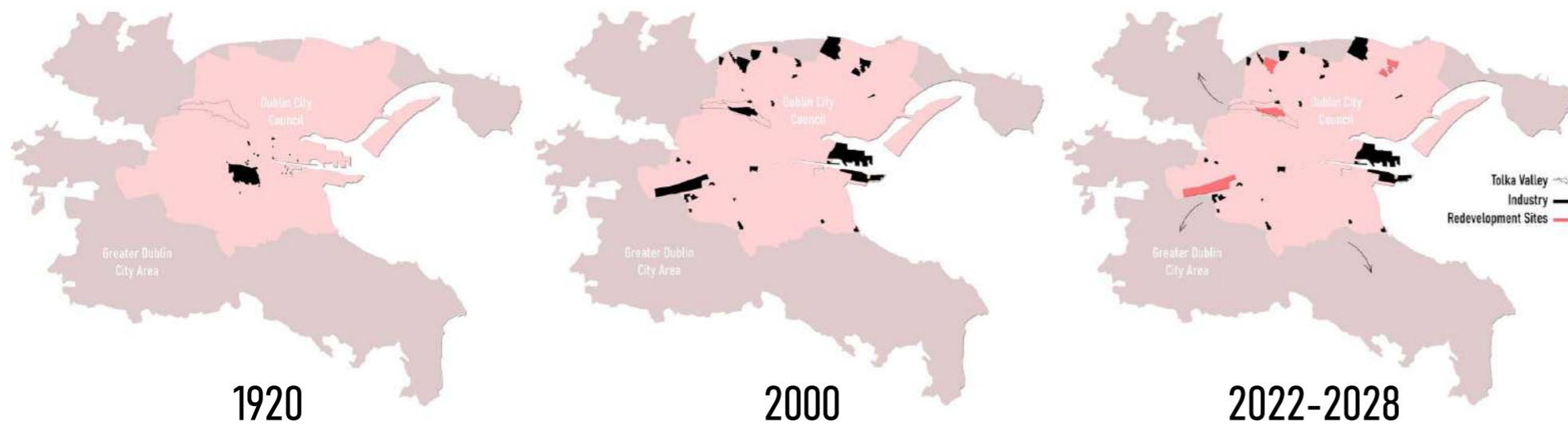
Fig 1.10; Herbert Simms.

By the end of the 20th century industry had spread to the wider Dublin areas, joining the sites provided to achnor satellite towns. The clustered industry formed estates which boasted a wide variety of enterprises and employment for the nearby communities.



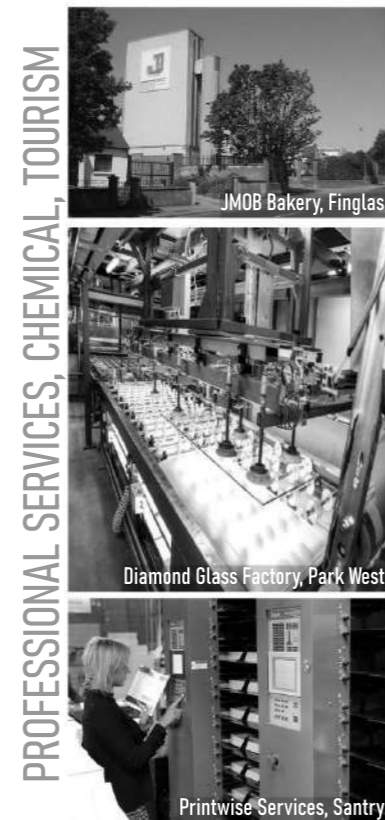
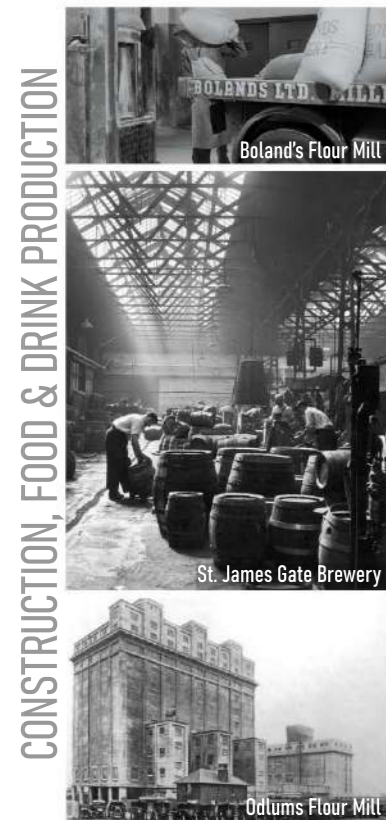
Fig 1.8 & 1.9; JMOB Bakery, Finglas & Printwise Services, Santry. The migration of large industrial units from the inner-city to the greater Dublin regions.





Today industry has undergone its greatest development, with tech, financial, and pharmaceutical firms being found throughout the city centre. As the typology of modern industry has developed into flexible, high-rise offices they are often layered above retail and other enterprise. As explained in Appendix 3, the ‘urban renaissance’ has encouraged ‘people back into cities to new higher-density developments built on brownfield sites’ (Burton, 2006). Former brownfield sites such as the Grand Canal Docks demonstrate the potential these sites have for facilitating new urban and residential quarters.

The larger places of production which reside in industrial estates have become tightly bound as the scarcity of housing development land grows. As Dublin City Council acknowledges the urgency for delivering quantitative housing units the inherent value of the industrial land is evident. Therefore, the council has identified 4 key sites as a source of new housing land. They are Jamestown, Finglas, Kylemore, and Dublin Industrial Estate. The existing infrastructure, production and amenities on-site are to be demolished, with high-rise high-density units being built in their place. Furthermore, continuing the cycle of industry sprawling further and further away from Dublin City.



Above; The migration of industry from the city centre to the wider Dublin regions. The sites shown in red are to be redeveloped to facilitate new housing land as part of the DCC Development plan 2022-2028.

# SEM 1 RESEARCH

## 8TH LOCK/ CAMPBELL'S GARAGE



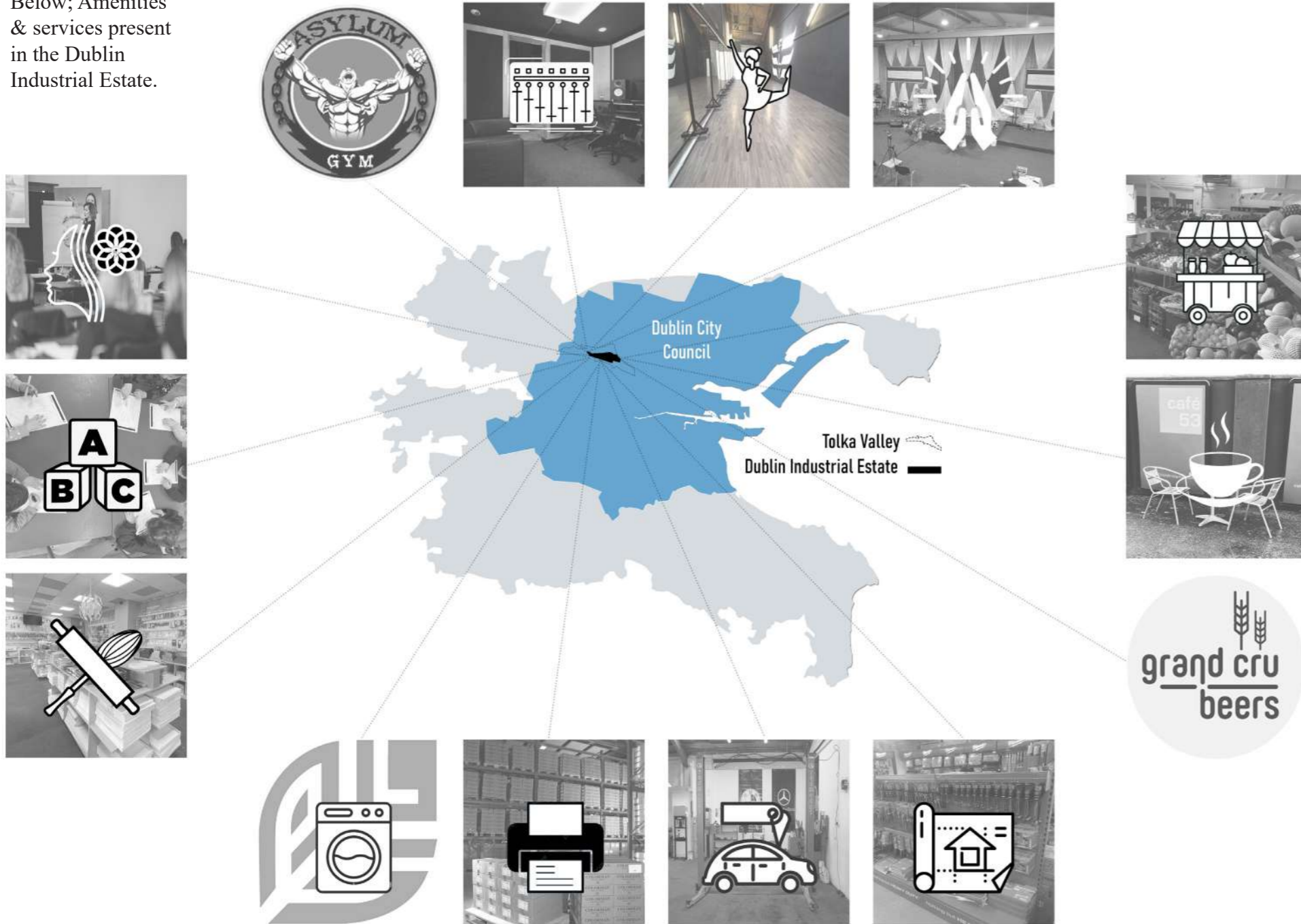
Above; Semester 1 speculative image. The Campbells family garage is being encroached by a sea of high-rise developments in the pelletstown area. Primarily the 8th lock development pictured above.

## THE CONTEXT /

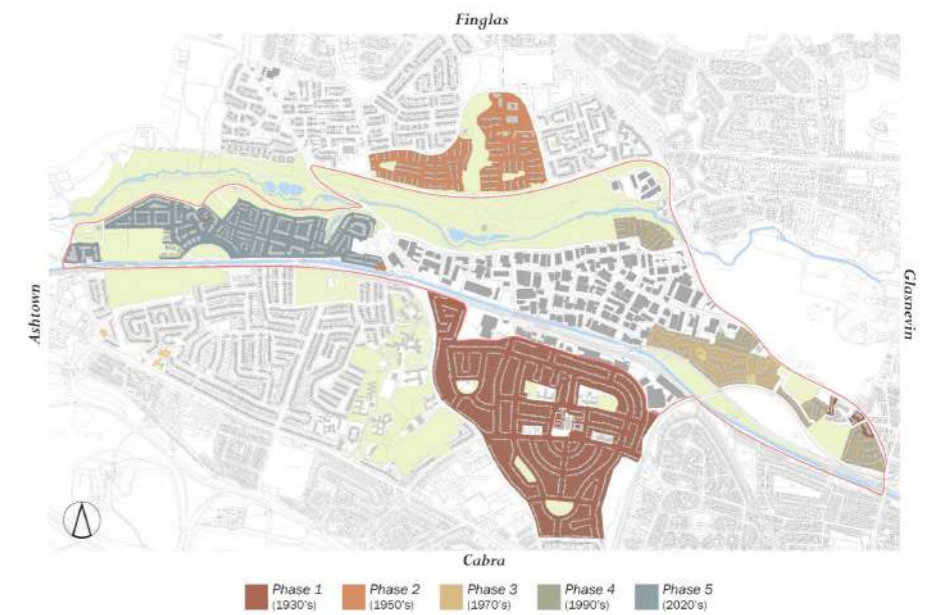
The Irish housing crisis has been an urgent concern for many years. As elaborated in Appendix 4 it directly affects young people and low incomes families who cannot afford to buy or rent a home. Dublin City Council’s former head of housing, Brendan Kenny, has stated that Dublin City will “run out” of residentially zoned land by 2025. As the city’s population is predicted to rise between 20,000 to 30,000 people in the next 5 years the demand to provide new housing is urgent. The DCC Development plan for 2022-2028 states that the city needs to provide an additional 40,000 homes to cater to the rising population. However, this figure does not represent those already seeking to rent or buy homes in the city.

As residentially zoned land runs out, there is an urgency to consider underutilized sites such as industrial estates as a source of new housing land. There is currently a multitude of brownfield sites that are suitable to be rezoned for mixed-use developments. However, problems arise with developers who are often allowed to purchase and flip them for a quick and easy profit, without any control over ‘the accessibility, affordability, and suitability’ of the homes delivered (Tranum, 2020). To focus my research on one site identified by the council, I have chosen the Dublin Industrial Estate.

Below; Amenities & services present in the Dublin Industrial Estate.



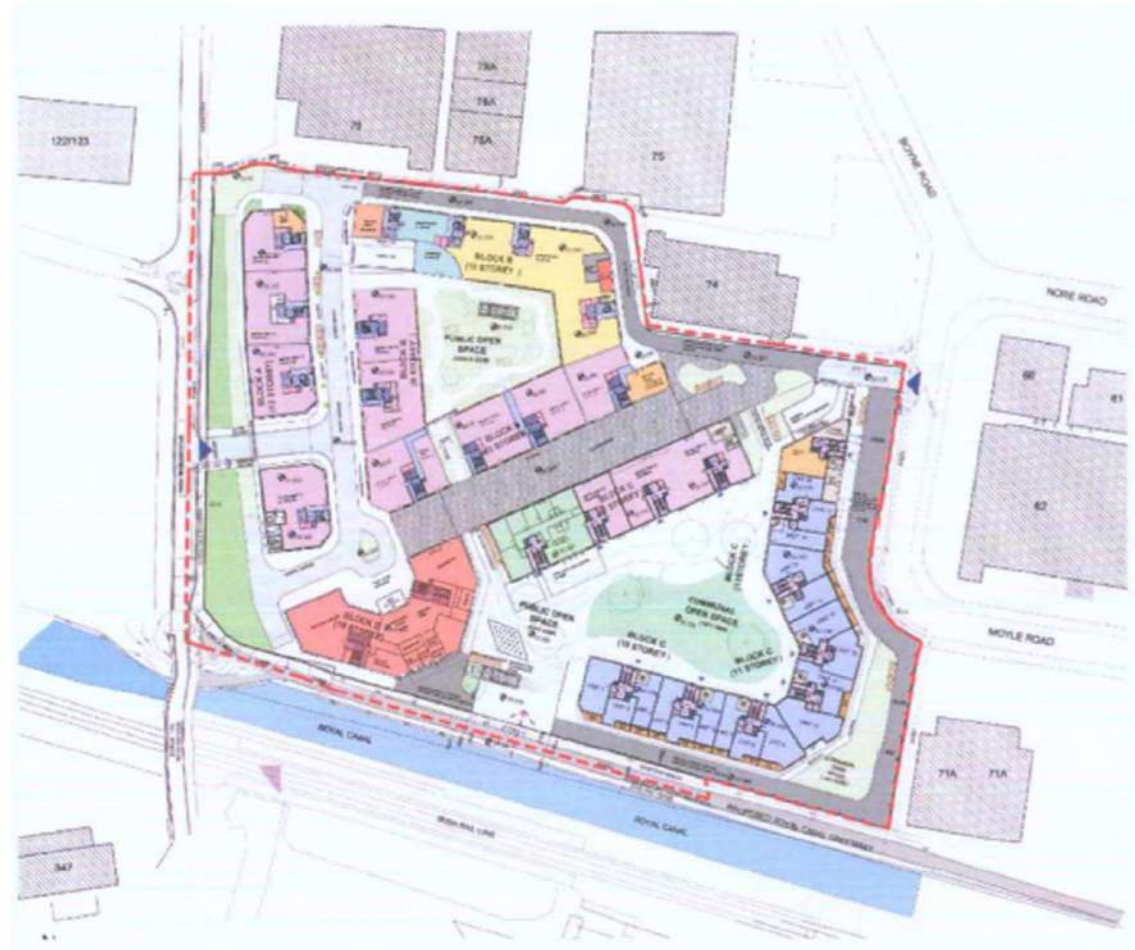
The Dublin Industrial Estate, located in the Tolka Valley, binds the neighboring communities of Finglas, Glasnevin, Cabra, and Rathborne. Its history stems back to the mid-20th century when industrially zoned land was provided to boost the local economy of those migrating from the inner city. Today it provides a variety of services beyond the typical place of production. They range from places of worship to recreational facilities and cafes, deeming the estate essential for the everyday life and well-being of the communities it serves.



In recent years the estate has become fully bound by new developments to the west. The Rathborne development; shown as phase 5 above, consists of high-rise apartments, dense terraced housing, and insufficient amenities. A scarcity of outdoor activity space presents little opportunity for spending extended periods of time outdoors. Unable to support those within the residents must come and go in great numbers, using privately owned vehicles to commute to work and other amenities. This reliance is detrimental to communities as they become lifeless and monotonous from the absence of people and events locally.

# DUBLIN INDUSTRIAL ESTATE

## PROPOSED REDEVELOPMENT APPLICATION



**304**  
UNITS

**125**  
UNITS PER  
HECTARE

**265**  
BEDS PER  
HECTARE

**3.75**  
PLOT  
RATIO

Above; Current planning application for the Dublin Industrial Estate, containing a high-density mixed-use development of apartments, ground level enterprise and a hotel.



The council’s plan to redevelop Dublin Industrial Estate into ‘high-rise, high-density, high-priced build-to-rent apartments’ will ultimately suffer the same fate as the Rathborne development (Tranum, 2020). Since current planning for the estate proposes a mixed-use development of residential units layered above enterprise it is evident that existing places of production will be demolished. The motivation behind this research arose from the belief that industrial estates are imperative to the way we live. If the estate is to suffer the same fate as Rathborne, the entirety of Tolka Valley will become one monotonous social void. Therefore, to rezone the estate to simply deliver quantitative housing units would destroy the areas urban identity. Furthermore, emphasizing the urgency to challenge the council’s proposal with competitive alternatives regarding units and beds per hectare, whilst retaining industry and avoiding risks of gentrification and damage to local economy.



**Andrew Proudfoot, C17373241.**  
The owner of the old Chivers factory in north Dublin has denied he is "flipping" the site and said some Dublin city councillors are "obsessed" with his company making a profit.

Councillors have said they felt "fooled" into rezoning the Coolock site for housing after Mr. Gillick's company Platinum Land put it back on the market for €25 million, 10 times its value, before they rezoned it from Z6 Industrial to Z1 Residential.

The proposed plan of 350 sustainable homes up to 5 storeys tall, in which 30% was promised back to the council for social housing...



**"Excellent PR for DCC and Councillors..."**  
Councillors duped into making zoning changes.



"The Chivers site in Coolock is a perfect storm in terms of all that is wrong with the housing system. Here was a brownfield site that could and should have been purchased by DCC to develop social & affordable housing. Instead it was bought by developer Platinum Land and in 2018 Councillors agreed to re-zone it from industrial to housing on the promise from the developer that 350 affordable homes would be delivered quickly on the site. This was bumped up to 550 for which the developer Platinum Land got permission under the controversial Strategic Housing Development fast-track planning legislation." - Sinn Fein Councillor Larry O'Toole.

**Industrial/ Residential, Dublin.**  
savills.ie

For Sale, Former Chivers Factory, Coolock Drive, Dublin 17.

Former Industrial Site of Approximately 3.55 Ha. / 8.76 Acres with frontage onto Coolock Drive.

- Site Rezoned from Z6 Industrial to Z1 Sustainable Residential Neighbourhood, with great build-to-rent prospects.
- 8 kms from Dublin City Centre and approx. 1 km from the M50 /N2 Junction (Junction 5).

**Location.**

- This site is situated on the corner of Greencastle Road and Coolock Drive with extensive frontage to both. The entrance is accessed off Coolock Drive only 700 metres from Malahide Road.

**Asking Price.**

- The land owners Platinum Land Ltd. have asked for **€25 Million.**

Soiling Agents: **Greene & Butler**, 15 Malahide Road, Dublin 17. Tel: 01 832 2200. Fax: 01 832 2201. Email: info@greeneandbutler.ie

**Find out if your councillor is being wined and dined**

**Tamasin Cave Journal**

**Andrew Proudfoot C17373241**

Above; Chivers Factory Collage (Semester 1).

Right; Letter of appeal pertaining to Chapter 2: Core Strategy and the proposed rezoning of Dublin Industrial Estate for a new mixed-use community as outlined in Chapter 2.3.4 Future Development Areas.

## DCC LETTER FOR POLICY REVISION /

"Thank you for the opportunity to submit this response as part of the review for the DCC Development Plan 2022-2028. My final year thesis is set within Tolka Valley and explores the consolidation of industry with housing. Regarding the proposed development plan and with reference to my thesis research, I am making an appeal for policy revision in relation to Chapter 2: Core Strategy. The key point in my response relates to the proposed rezoning of the Dublin Industrial Estate for mixed-use communities as outlined in Chapter 2.3.4 Future Development Areas.

The development plan states that Dublin City Council's objective is to rezone the lands at Glasnevin from Z6 'Employment/ Enterprise' to Z1 'Sustainable Residential Neighbourhoods'. Under the Regional Spatial and Economic Strategy (RSES) the identified brownfield site is to be redeveloped into 'high-quality new housing and commercial development'. The recognised challenges such as fragmented land ownership and physical and social infrastructure provision present significant problems. However, there is no mention of the consequences relating to disposing of vast amounts of industry, employment, and amenities present on-site.

Whilst I agree that the estate requires intervention. I disagree that rezoning the site will resolve any of these issues. Instead, I propose that the industry on-site be retained and adapted to facilitate the consolidation with housing. If not, the high-rise high-density units that take their place will suffer from the extreme dispersal of events and lack of employment and activity locally. As discussed in the development plan, policy 'QHSN11' promotes the creation of a '15-minute city that provides for liveable, sustainable urban neighbourhoods and villages'. The estate sits at a strategic transport node, opposite Broombridge station. Boasting a variety of sustainable modes of transport. Therefore, as the prerequisites of local services, amenities and sustainable modes of transport exist, only high-quality housing along with accessible and safe public spaces are needed to classify the industrial estate as a '15-minute city'.

If the development plan is to simply rezone industrial land and allow developers to build what they describe as 'high-quality new housing and commercial development', then the need for policy revision is evident. The prerequisites of accessible amenities and employment are essential to lively communities and must be implemented prior to housing. To emphasise these concerns pertaining to the rezoning of 'industrial lands', I will remind you of the Chivers Factory in Coolock. As elaborated in the attached image, the redevelopment of a brownfield site into what was sold as 'sustainable' and 'affordable' housing outlined a series of flaws in former development plans. If a change in zoning had the potential to spike the land price, and without the guarantee that any homes would be delivered then rezoning the land is not the answer. Notably, no resolution to this issue has been provided in the 2022-2028 development plan. This precedent demonstrates that rezoning industrial land simply allows opportunistic developers to capitalise on the demand for quality housing in Ireland. To ensure affordable and sustainable homes be delivered there is an urgency for mixed-zoning sites. Where housing and industry can co-exist in symbiosis while remaining on industrially zoned land.

To conclude, I strongly advocate a re-examination of rezoning the Dublin Industrial Estate. To break planning and land-use patterns of segregated zoning by class and function a mixed typology needs to be considered. Furthermore, the consolidation of industry and housing would deliver urgent housing on industrial land without the effects of gentrification and the cost to the local economy."



Left; Site Survey Photos 2022.

Below; The chosen site in Dublin Industrial Estate, located at a strategic transport node.

## FINGLAS



RATHBORNE

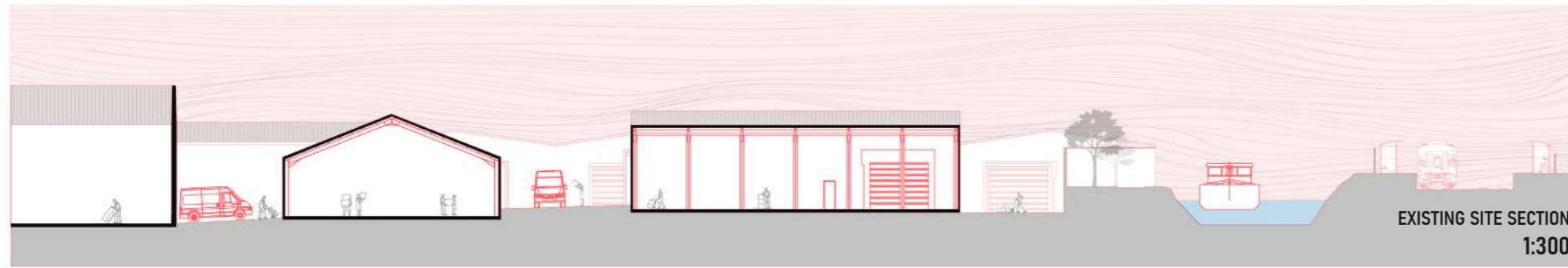
GLASNEVIN

CABRA

## THE SITE /

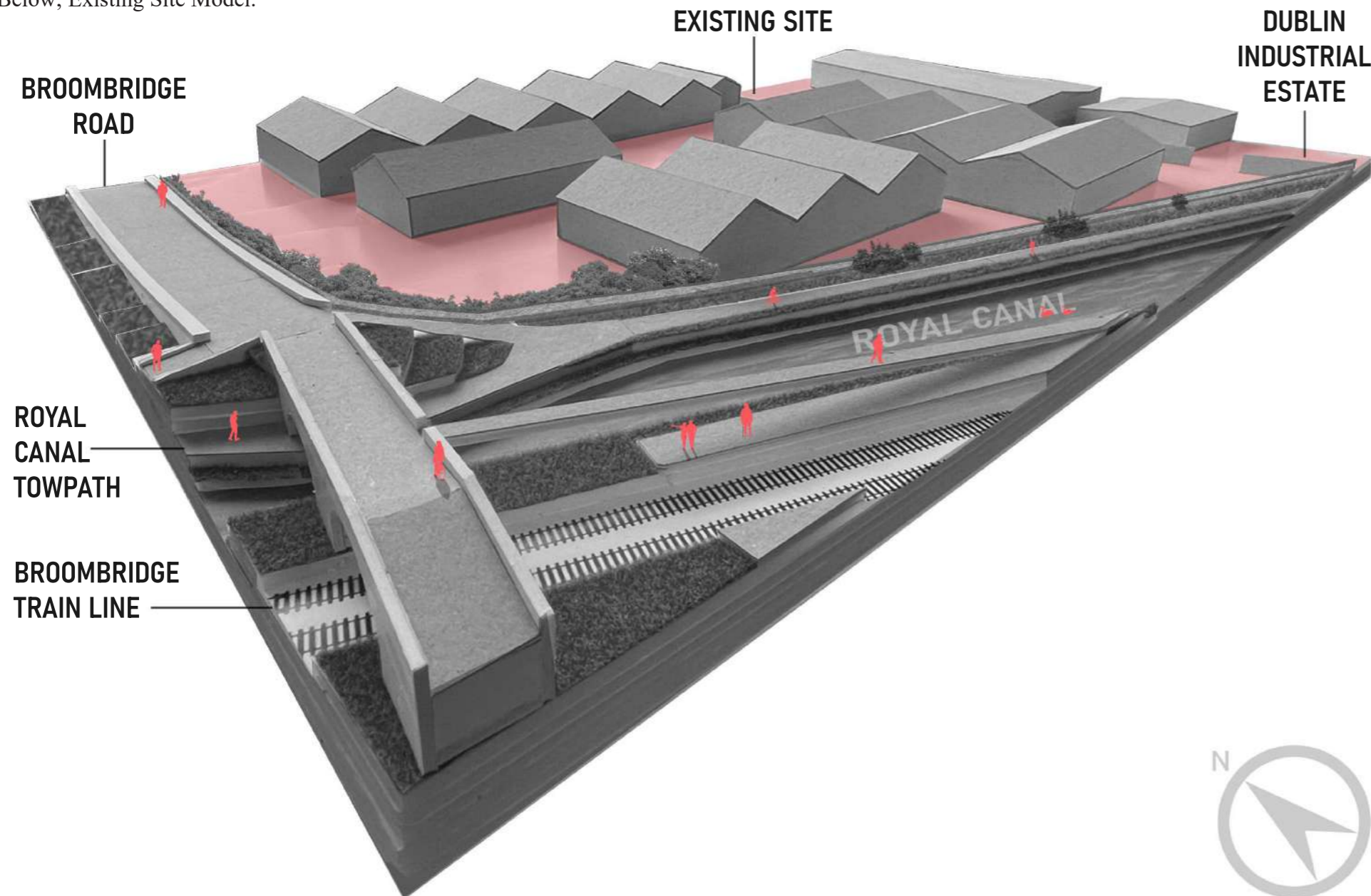
The idea of the ‘compact city’ was first advocated in the 1990’s. It proposed the ‘intensification of development in existing urban areas, including the reuse of brownfield sites and building new developments at high densities, close to transport nodes and facilities.’ (Burton, 2006). The perceived benefits include opposing urban sprawl, the inclusion of public transport nodes, accessibility to local employment and amenities, and reduced overall energy consumption. As explained in Appendix 3 the compact city gave rise to the ‘urban renaissance’ which proposed the reuse of industrial land as living spaces. Despite good intentions the redeveloped sites often became known for the gentrification of lower-class areas, destroying the urban identity of the existing communities. If modern industrial urbanism is to be truly inclusive it must recognize the needs of both existing and new communities.

The site most suitable for intervention sits at a strategic transport node along the Royal Canal, and opposite Broombridge station. Served by trains, bus routes, and the canal towpath, the site serves as a focal point within Tolka Valley. In addition to ongoing planning a mixed-use development, there are also plans for the Finglas Luas and Dublin Metro Line locally. As an existing brownfield site next to a transport node, the site requires local employment and amenities, along with affordable housing to be classified as a ‘compact city’.



Above; Existing Site Section showing the level change from the canal towpath to the site.

Below; Existing Site Model.



On-site, there are 4 existing warehouses composed of steel portal frames and block walls. Tall walls lined with barbed wire define its boundary, creating an unpleasant atmosphere along the Royal Canal. Bounded by water and walls, the lack of permeability to and from the canal has created long stretches up to 500m without escape. Despite providing necessary services its location has contributed to the decrease of people and events locally. As the nearby communities suffer from the extreme dispersal of events, they have become divided. Black spots between them have begun to appear which serve as no more than social voids. As anti-social behavior begins to fill these voids, the streets become barren. Emphazing present safety concerns on-site.

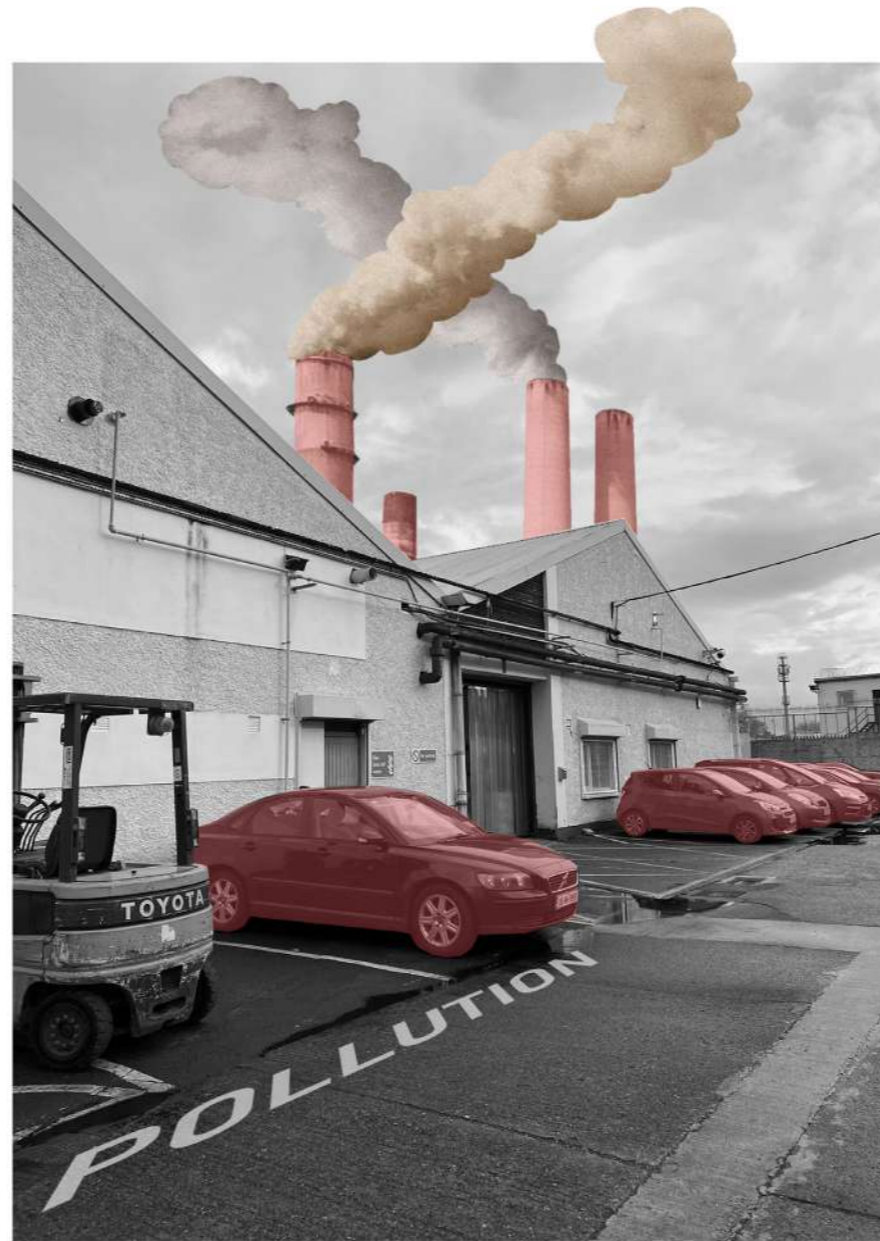
The Royal Canal is the closest public space, running adjacent to the site. Formerly used for transporting goods, the canal now serves as a biodiverse habitat and vehicular alternative to the city centre. The canal towpath has various pinch points less than 2m wide, which increases the chance of older people 'falling over or being knocked over by cyclists, skateboarders or people barging into them' (Burton, 2006). The narrowness of the canal deems it unsuitable for the events needed to stimulate a community. Consequently, inhibiting life in the area.



Below; Existing Site Conditions.



INDUSTRIAL ESTATE IS VOID OF LIFE & ACTIVITY AS ENTERPRISE CLOSES NIGHTLY.



LONG COMMUTES TO WORK CREATES A RELIANCE ON PRIVATELY OWNED VEHICLES.



ANTI-SOCIAL BEHAVIOUR STRIVES AS A RESULT OF POOR PASSIVE SURVEILLANCE & PERMEABILITY.



## THE BRIEF /

To summarize, the motivation behind this project stemmed from the belief that industrial estates are imperative to the way we live. The activities and amenities they provide are vital for everyday life. Despite a recent absence of connection between the nearby communities and the site, the removal of industry would be detrimental to both existing and new communities. There is an obligation as architects to protect that which remains while recognizing the demand to deliver urgent housing. If 'part of the solution for architects and developers in addressing climate change is to rediscover the beauty and value of what's there', then the most sustainable approach is to reuse the existing (Waite, 2022). Therefore, this thesis opposes the removal of industry, instead adapting the existing places of production to facilitate their consolidation with housing. Proposing a competitive alternative to current planning regarding units and beds per hectare. Whilst creating a place to live, learn and work.

As industrial urbanism 'locations are less important than the facilities and work environment provided', the 'new types of development will be more cost-efficient and profitable' (Pitts, 2014). If influenced by the Grand Canal Dock, the site has the potential to become 'an important recreational space for a new residential quarter' (NIAH, 2015). Through careful intervention of the site along the Royal Canal, it can become the focal point of activity and enterprise within Tolka Valley. Addressing issues of anti-social behavior and lack people and events locally.

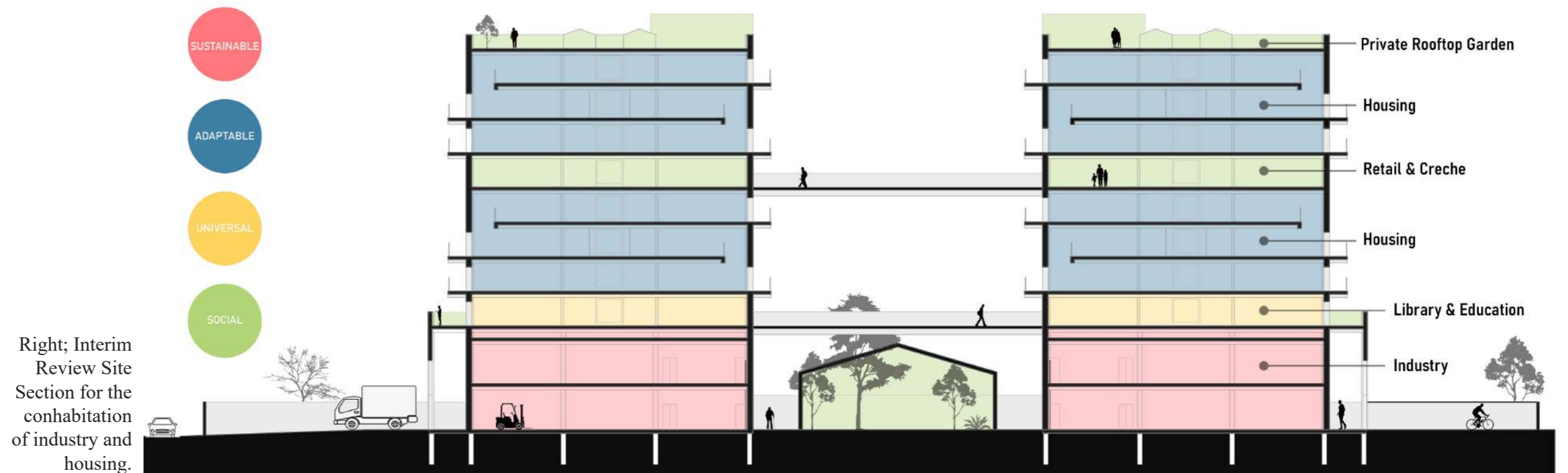


Above; Initial Concept for the cohabitation of industry with housing.



Above; Initial Site Section using key precedents as the basis for design.

The program for this thesis contains a merged typology of housing and industry, including event spaces, educational facilities, a cider mill, and a coffee roastery. The introduction of both internal and external public event spaces encourages people to circulate amongst one another. As each serendipitous interaction is unique, 'the number of new instances and stimuli are endless. Moreover, it concerns the most important subject in life: people.' (Gehl, 2011). The inclusion of public amenities beyond the vast green lawns seen locally, combined with various third spaces will enhance the quality of life on-site.



Right; Interim Review Site Section for the conhabitation of industry and housing.

Right; The identified requisites for a sustainable community.

HOW CAN INDUSTRY BE CONSOLIDATED WITH HOUSING TO CREATE A PLACE TO LIVE, LEARN & WORK?



**SESC POMPEIA FACTORY, SAO PAULO**  
LINA BO BARDI



**UNITE DE HABITATION, MARSEILLE**  
LE CORBUSIER



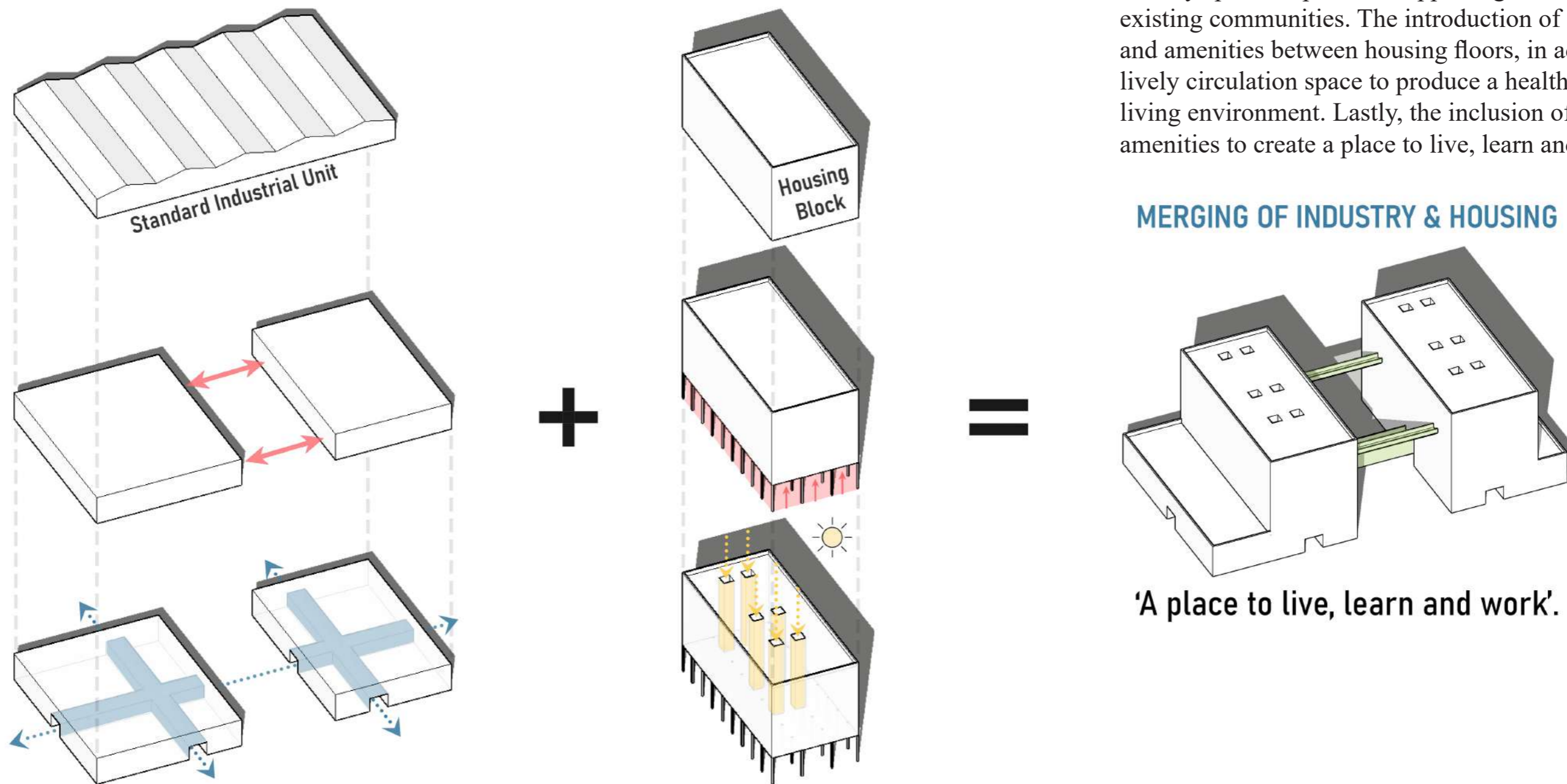
**THE BARBICAN ESTATE, LONDON**  
CHAMBERLIN, POWELL & BON



Left; Key precedents referenced throughout the thesis development stage.

## THE CORE STRATEGY /

To form an initial strategy, I drew influence from 4 key precedents. The first is the Sesc Pompeia in Sao Paulo. The design focused on maintaining and promoting vital activity in an existing industrial context. The spaces were retrofitted into exhibitions, a library, workshops, and a theatre to ‘maintain and promote vital activity, without demolishing the existing structures’ (Fernandez-Galiano, 2015). Since the available space was drastically reduced by retaining these structures, two new stacked towers were introduced, drawn together by spanning footbridges. Secondly, the Unite d’Habitation as an exemplary precedent for designing high-rise accommodation. The inclusion of enterprise and amenities between housing floors, in addition to lively corridors produced a healthy and social community. Next, is The Barbican Estate. As a response to post World War 2 bombing, the demand for quantitative housing did not trump the need for accessible public amenities and social spaces. As the spaces between the buildings are designed for serendipitous interaction there is a strong sense of community from within. Lastly, Fade Street which was once at the core of Dublin City. Recognized as the ‘Temple Bar’ of the 18th century, it demonstrated that through the inclusion of ‘third spaces’ communities can produce creative and artistic qualities of their own. Through similar interventions, Dublin Industrial Estate can become a new social node, offering unique examples of innovation and industry. The inclusion of event spaces and bars would allow activity to span from daytime use into night-time culture, solving issues regarding a lack of passive surveillance.



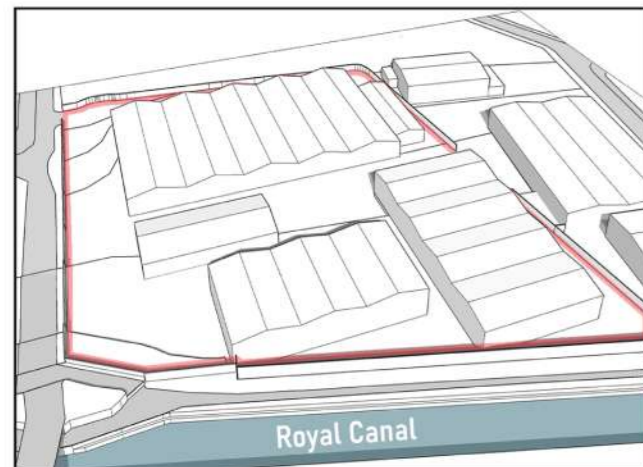
Through research on the above precedents, a core strategy was formed. The existing industry should be retained where suitable, adapting its form and function to facilitate the cohabitation with housing. In hand, maintaining and promoting vital activity on-site. Third spaces should be implemented to create a new social node along the royal canal, with public activity spaces capable of supporting both new and existing communities. The introduction of enterprise and amenities between housing floors, in addition to lively circulation space to produce a healthy and social living environment. Lastly, the inclusion of educational amenities to create a place to live, learn and work.

### MERGING OF INDUSTRY & HOUSING

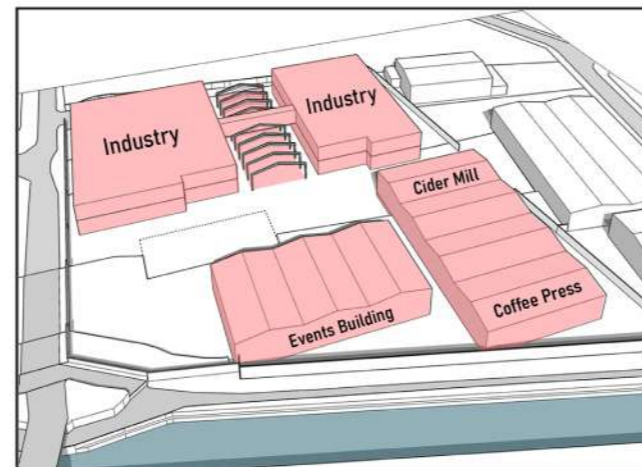
**'A place to live, learn and work'.**

Above; The core strategy for this thesis, regarding the consolidation of industry with housing.

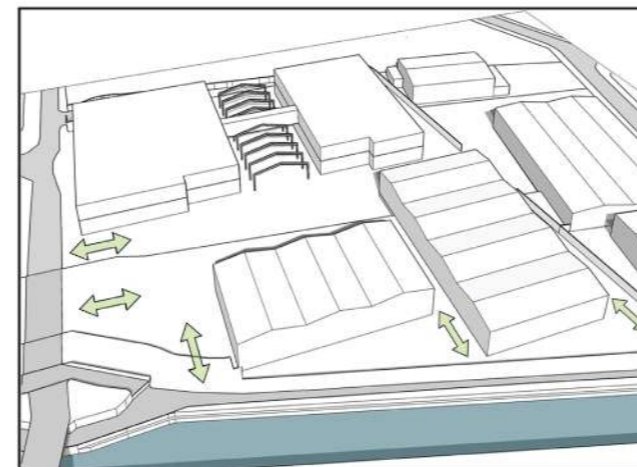
## THE SITE STRATEGY /



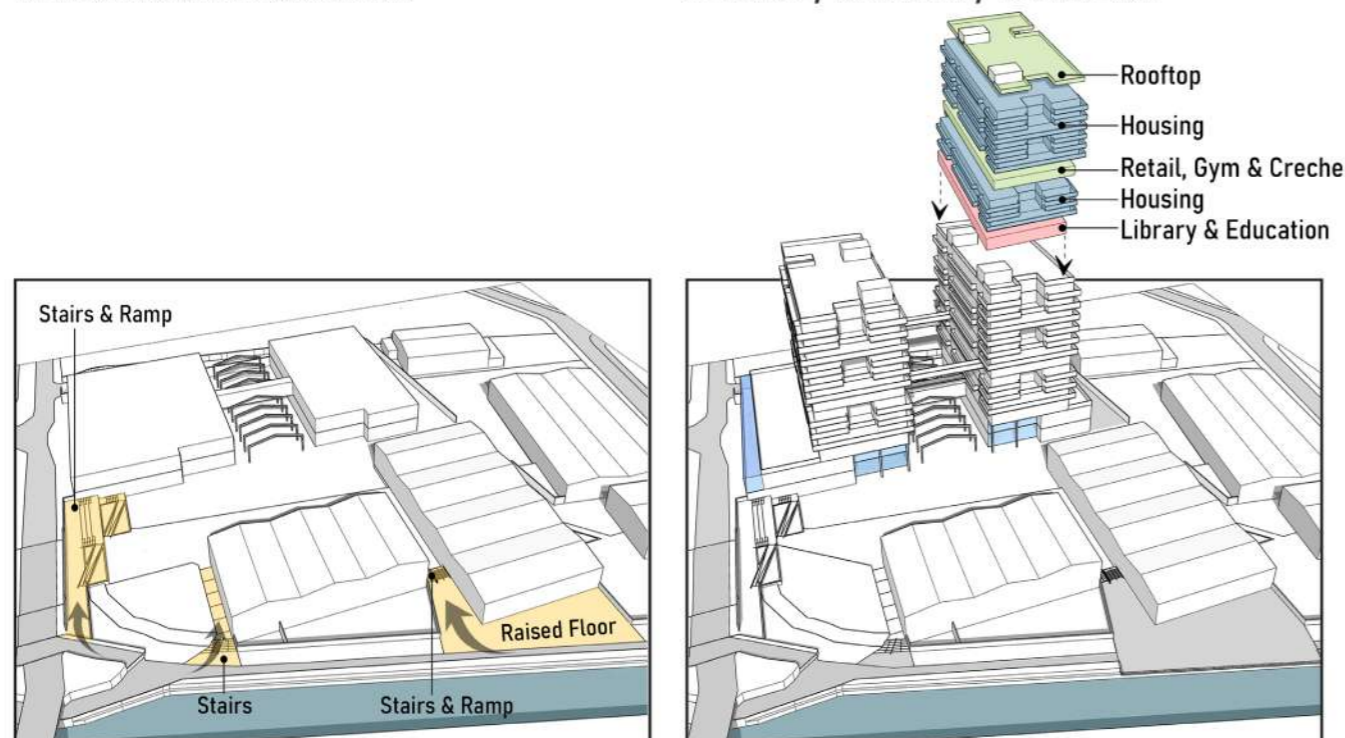
1. EXISTING SITE CONDITION



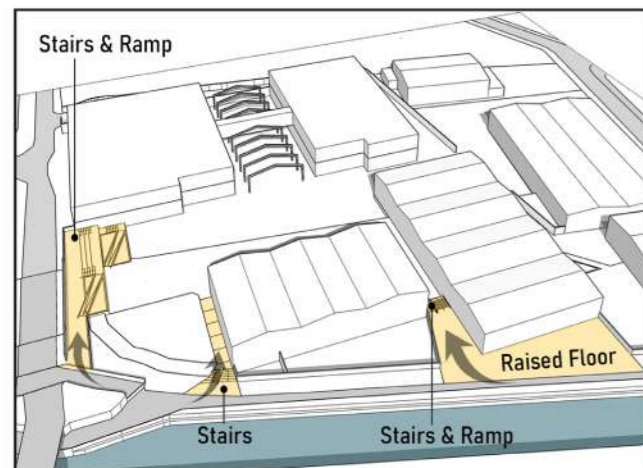
2. REUSE/ RETROFIT/ REDEVELOP



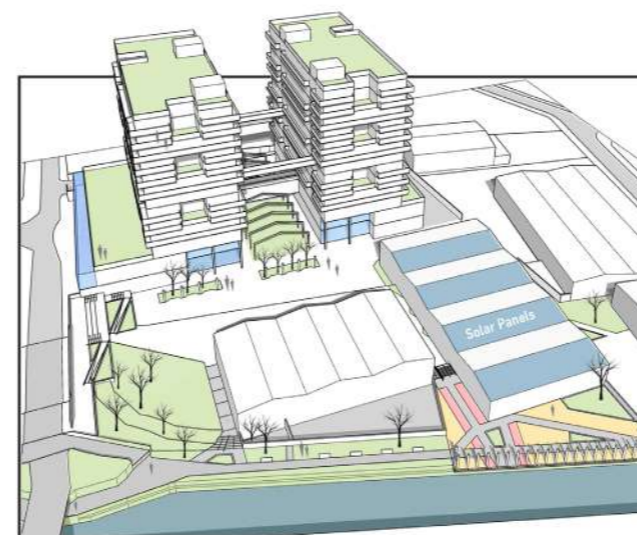
3. PERMEABILITY



5. STACKING PROGRAMME



7. ACCESSIBILITY



6. LANDSCAPING

The site strategy responds to issues of poor accessibility, permeability, and lack of people and events locally. An analysis of existing infrastructure on-site outlined that the steel portal frame and block wall warehouses were suitable to be retained. Recognizing the existing structures of inherent value, I began to evaluate which to retain. Light and circulation were at the forefront of consideration when it came to selecting which structures to redevelop, retrofit or remove. The smallest warehouse was removed to create a large central plaza, sheltered by the surrounding context. Both warehouses adjacent to the canal were reinvigorated with new retrofitting to secure their future on-site. An events building and cider mill was carefully integrated into the existing framework of the structures. Lastly, the largest warehouse to the north was removed to facilitate a new mixed-typology building of industry and housing.

The harsh boundaries along the canal are removed, and a series of ramps, stairs, and raised levels are added to provide both permeability and accessibility to the central plaza. The addition of a canal dock creates a threshold along the previously linear park, offering refuge and seating. By incorporating public spaces and amenities, the increased footfall on-site will oppose the former 'powers of demarcation and exclusion' caused by a lack of passive surveillance (Hall & Imrie, 1999).

The stacking program consists of residential blocks carefully layered over industrial facilities. As educational facilities bind industry and housing, an enterprise and amenity level provides services for each wing. The events building and cider mill promote a new social node along the linear canal park which spans from daytime use into a nighttime culture.



Fig 2.1; Piazza del Campo. The open plaza serves as a public living room for its citizens.



Above; Rathborne Housing Development. The streets are barren due to the reliance on privately owned vehicles.

LIFE BETWEEN BUILDINGS



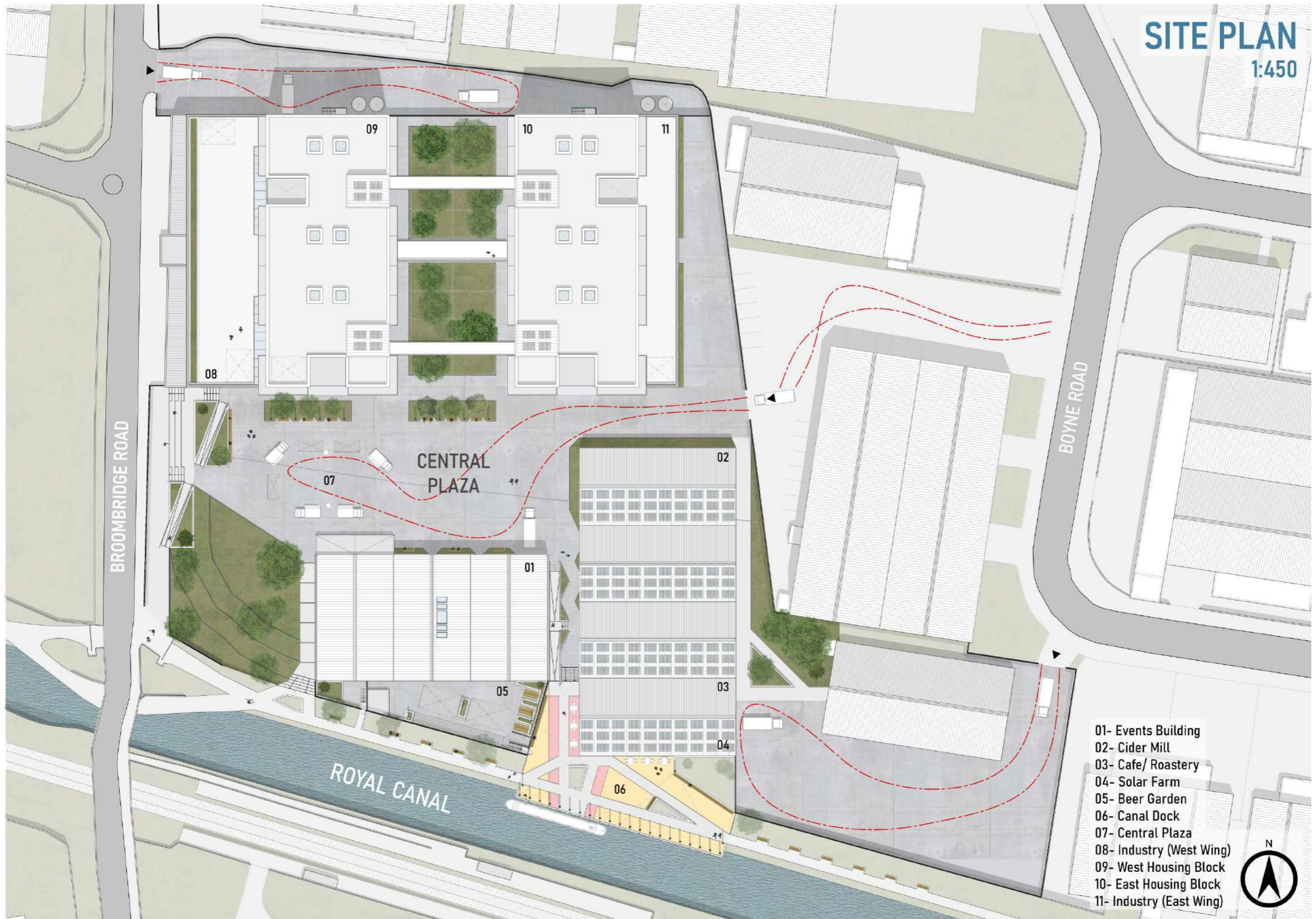
Fig 2.2; BedZED Housing Scheme. Vehicles are pushed aside, freeing the streets for social interaction.

‘Life between buildings is drastically reduced when activities cannot stimulate and support one another’. As observed in suburban areas such as the Rathborne development, the extreme dispersal of public activity space hinders social interactions from growing into more ‘meaningful and inspiring sequences of events’. History has shown that cities have not always developed through carefully curated plans, they ‘evolved through a process that often took hundreds of years’. This slow continual development allowed for adaptation and adjustment of the built environment ‘to the city functions.’ The city itself was not the intended outcome, but a tool forged by function and use. As a result, the spaces created are exemplary precedents of the life between buildings. An example of such is The Piazza del Campo in Siena. The city’s enclosed spatial design and orientation regarding sun and climate boast the ability to ‘function as a meeting place and public living room for its citizens, both then and now’. Therefore, to account for the increase in people on-site the central warehouse and structure was removed. Creating a large open plaza capable of facilitating markets, seasonal event spaces, and public activity (Gehl, 2011).

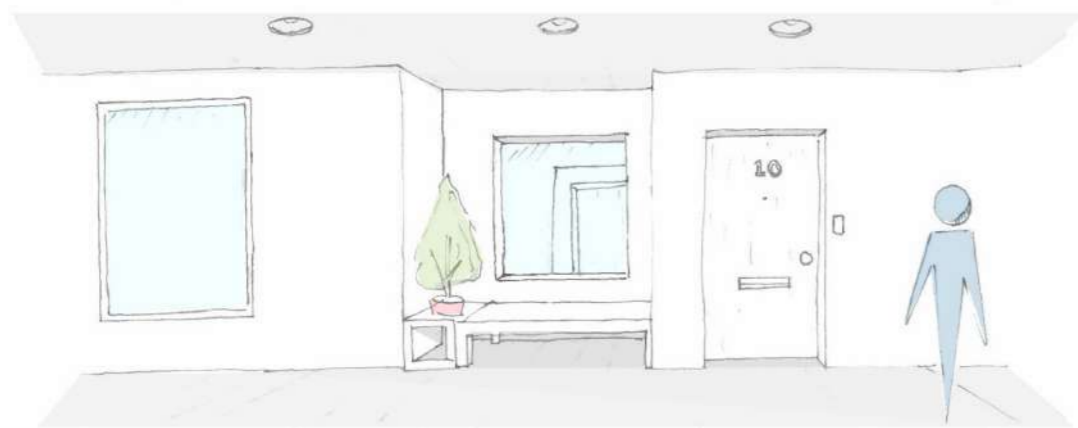
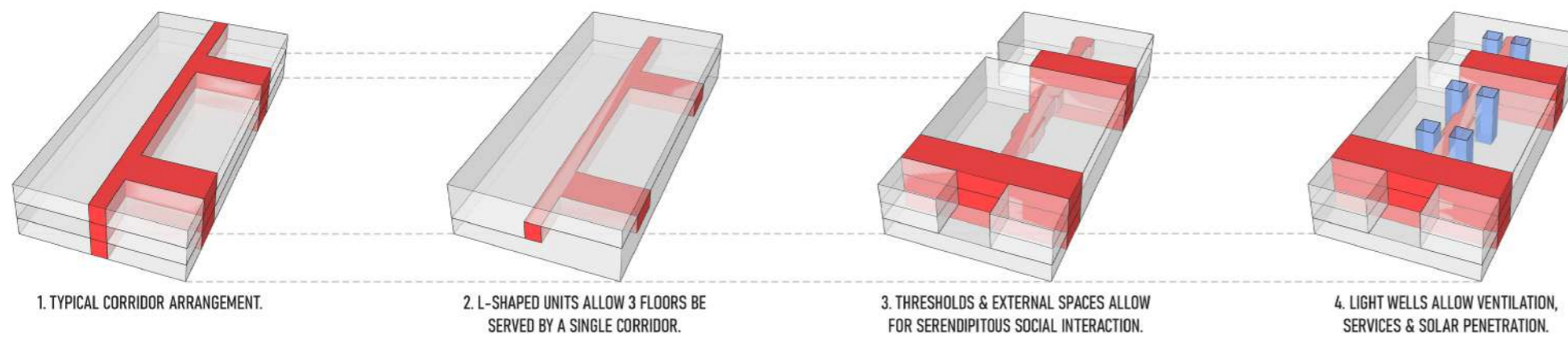
As explained in Appendix 5 the ‘BedZED’ encourages using alternative forms of transport to the privately owned vehicle. Vehicles and parking are pushed aside, freeing the streets for children to play and people to interact. In contrast to the existing communities in Tolka Valley, the opportunity to interact with one another is emphasized by the journey to and from vehicles or public transport. Therefore, this thesis restricts vehicular access on-site, with designated service yards and parking for each place of production and housing wing.

# SITE PLAN

1:450



## THE 'LIVING STREET' STRATEGY /

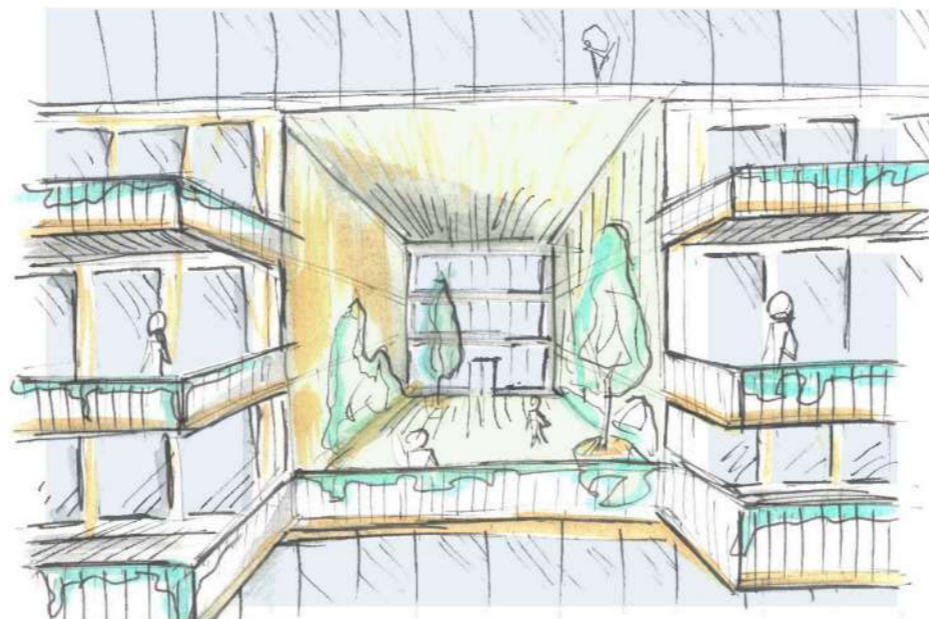


Left; Thresholds along residential corridors create spaces for serendipitous social interaction, while lightwells disperse light & ventilation.

Fig 2.3; The Unite d'Habitation corridors have an abundance of light and available seating.



Right; Semi-private external spaces within each housing block.



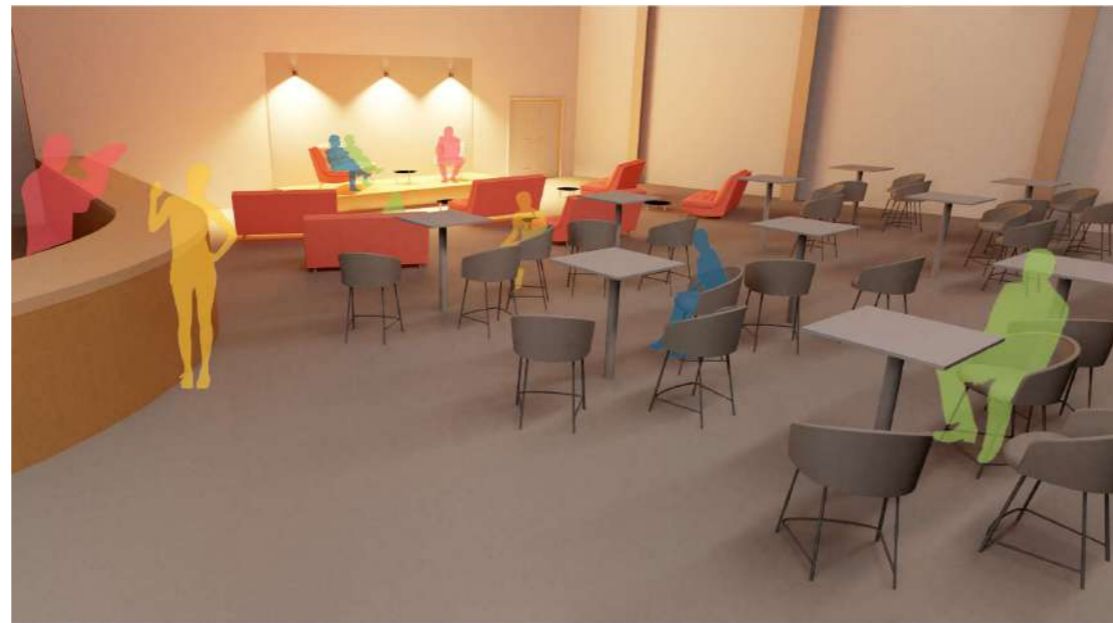
Due to 'inner-city land shortages and compact city policies to reduce urban sprawl', there is a high-rise boom occurring in Dublin City. As high-rise apartments are often associated with the 'dissatisfaction of living space, limited green areas and a higher likelihood of renting' the residents often suffer from 'poor mental health' (Gifford, 2007). The demand to live in these developments is driven by the 'proximity to public transport, education facilities, and workplaces, in addition to social facilities and nightlife' (Buys, 2012). Since these developments suffer from lifeless and monotonous corridors there is a need for quality circulation space in which residents can serendipitously interact under well-lit and well ventilated conditions. Therefore, this thesis implements a 'living street' strategy for all residential corridors.

Taking inspiration from the Unite d'Habitation, one corridor serves 3 floors of duplex units. The reduction of internal circulation gives back to each unit in terms of additional living space. Thresholds, semi-private external spaces, and seating is implemented throughout the corridor to branch away from the typical monotonous linear corridor. As the corridor becomes occupied, it resembles that of a traditional residential street, presenting opportunities to stop and converse with neighbours outside your front door. Lastly, light wells penetrate each block providing light and ventilation deep into the internal plan.

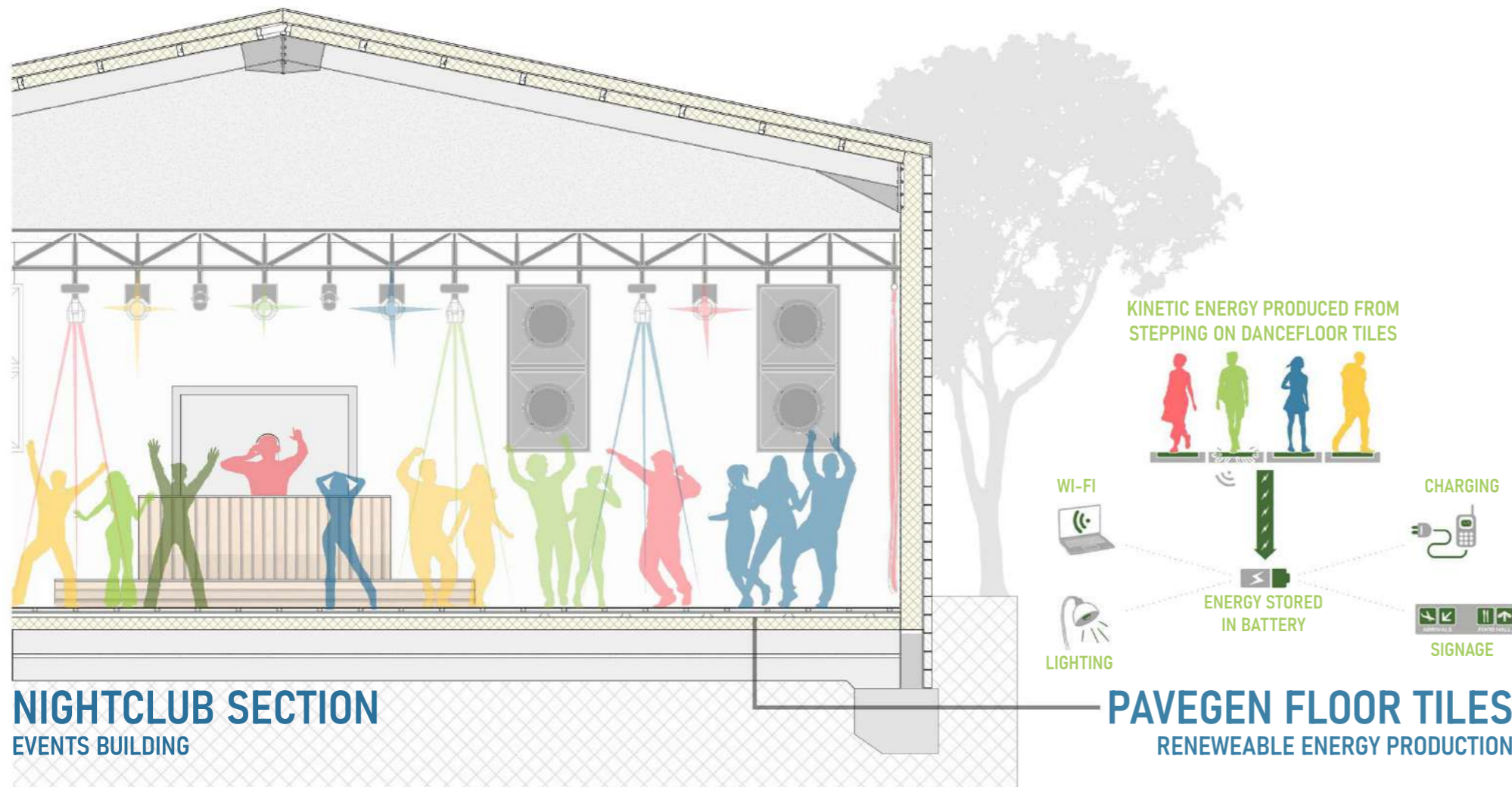




Above; Beer Garden utilises the existing level change from canal path to site.



Above; Comedy Club/ Secondary performance room in events building.



Above; Events building nightclub/ Primary performance room. Pavegen floor technology harnesses kinetic energy from dancing and stores it as renewable energy on-site.

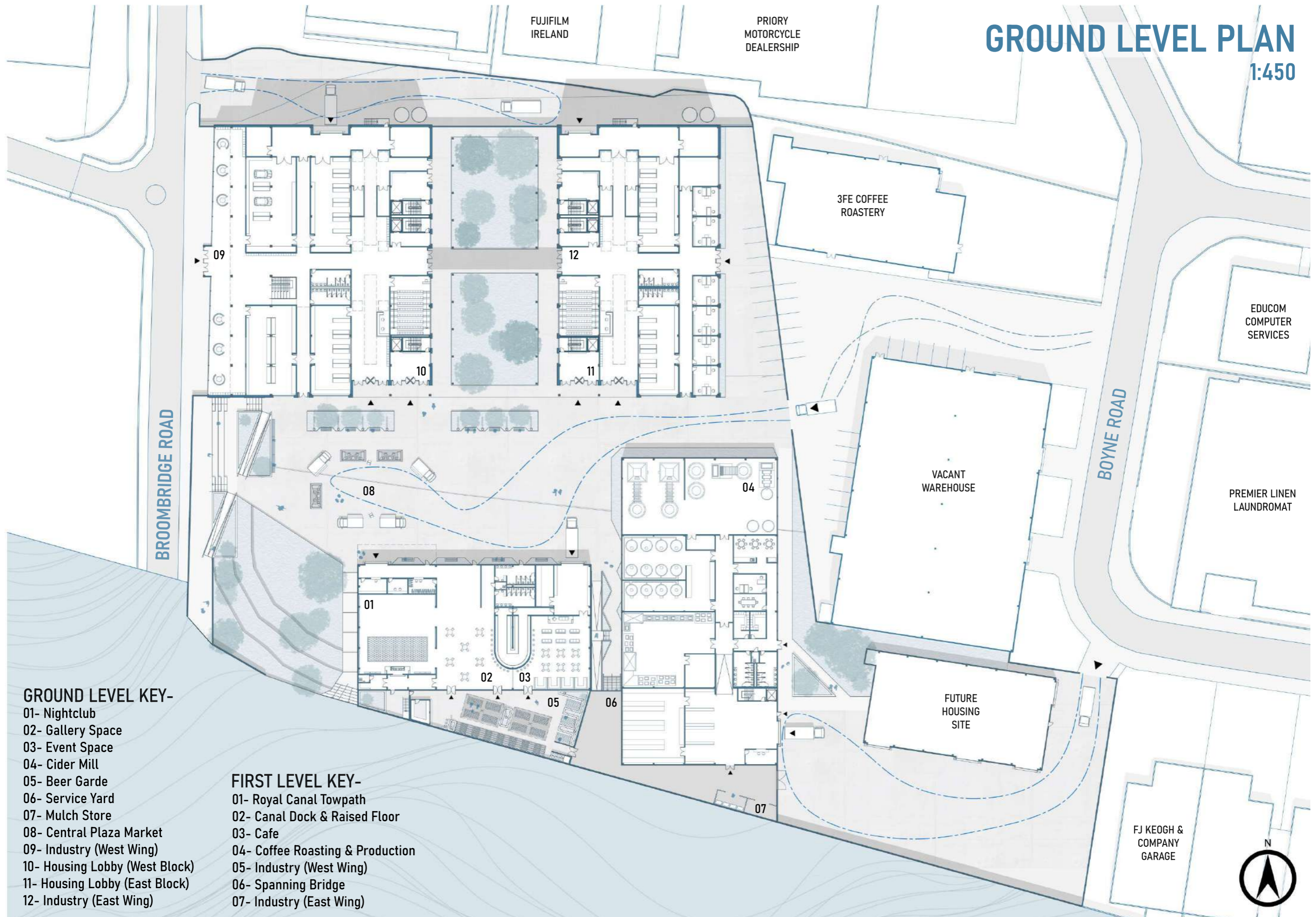
## THE DESIGN /

The design consists of 3 independent structures. Both warehouses which ran adjacent to the canal were retrofitted. The first has been developed into an events building containing a nightclub, late-night bar, secondary performance room, and beer garden. The intention of these amenities is to create a late-night social node to oppose the discussed issues on-site. The second warehouse contains a cider mill. A mezzanine is added to the south structural bay to facilitate a coffee roastery and café. An external raised floor meets the mezzanine, bridging the gap between the canal towpath and the café. The west facade of the mill is glazed for views of the cider production process. The views are observable while transitioning from the canal dock to the central plaza. The produce is sold on-site between the events building, café, and market. Any mulched food waste is stored under the raised floor until being used for fertilizer. Lastly, the consolidated industry and housing blocks are connected by spanning footbridges. At ground and 1st-floor levels there are large open spaces for modern places of production and industry to inhabit. Vehicular access to the north of the building is hidden from view. The stacked program above contains educational and enterprise amenities in addition to 9 floors of residential units.

Regarding renewable energy on-site there are a variety of systems in place. The events building contains a 'Pavegen' floor technology which harnesses kinetic energy from dancing and stores it as renewable energy. Secondly, solar farms on both the cider mill and housing roofs harvest sufficient energy to power housing on-site. Lastly, water harvesting tanks collect rainwater which falls on the west and east wing roofs. The harvested rainwater, in addition to the mulched produce waste, is used for vegetation throughout the site and linear canal park.

# GROUND LEVEL PLAN

1:450



## GROUND LEVEL KEY-

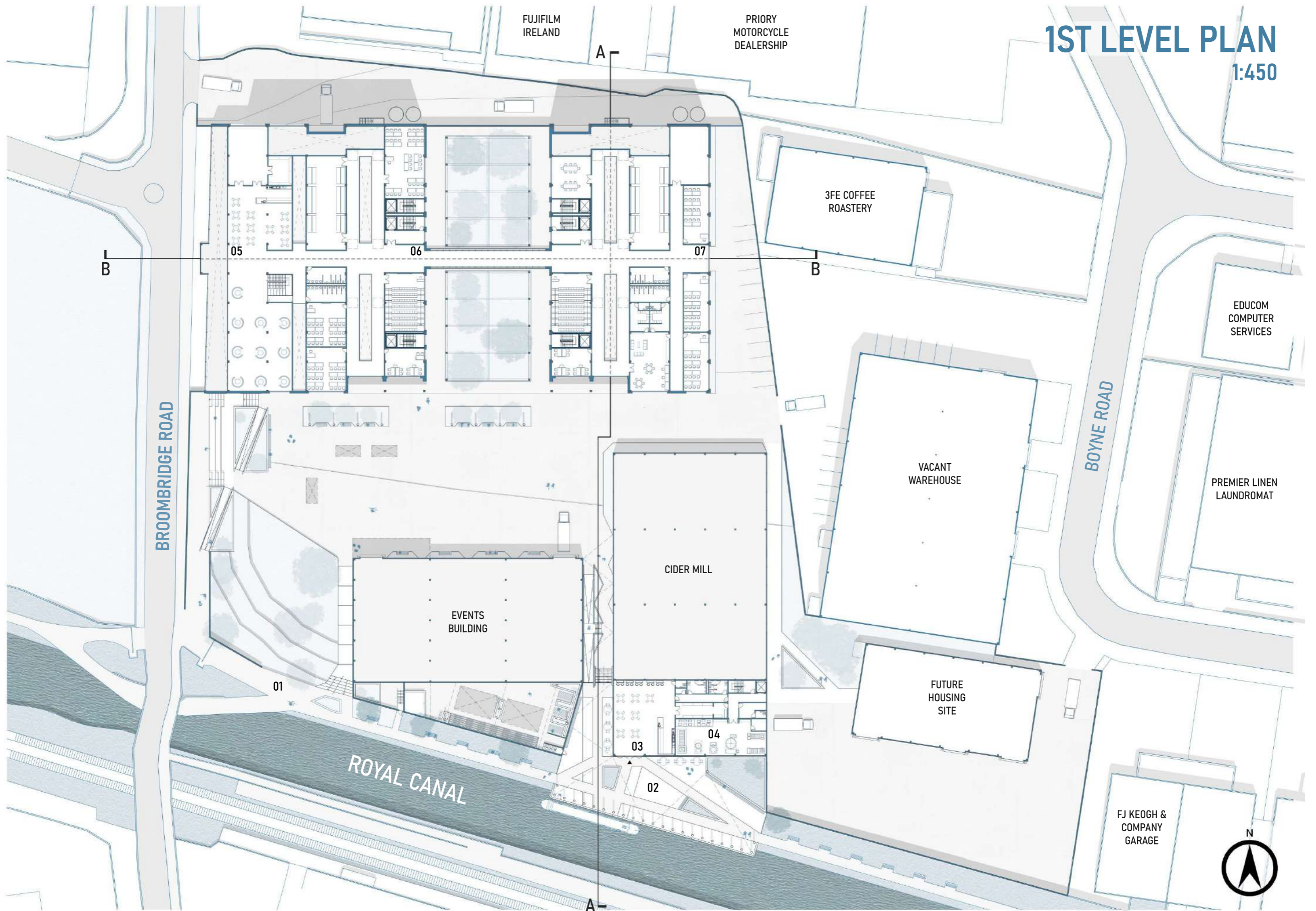
- 01- Nightclub
- 02- Gallery Space
- 03- Event Space
- 04- Cider Mill
- 05- Beer Garde
- 06- Service Yard
- 07- Mulch Store
- 08- Central Plaza Market
- 09- Industry (West Wing)
- 10- Housing Lobby (West Block)
- 11- Housing Lobby (East Block)
- 12- Industry (East Wing)

## FIRST LEVEL KEY-

- 01- Royal Canal Towpath
- 02- Canal Dock & Raised Floor
- 03- Cafe
- 04- Coffee Roasting & Production
- 05- Industry (West Wing)
- 06- Spanning Bridge
- 07- Industry (East Wing)

# 1ST LEVEL PLAN

1:450





CENTRAL PLAZA

Above; Central Park. Existing portal frames are retained to convey the sites industrial heritage while supporting young planted trees.

Below; South facing section cuts through the west and east wings. Light wells run through the stacked program, dispersing into the generous circulation space below. Downpipes run along the facade to rainwater collection tanks located on the 1st floor roof.

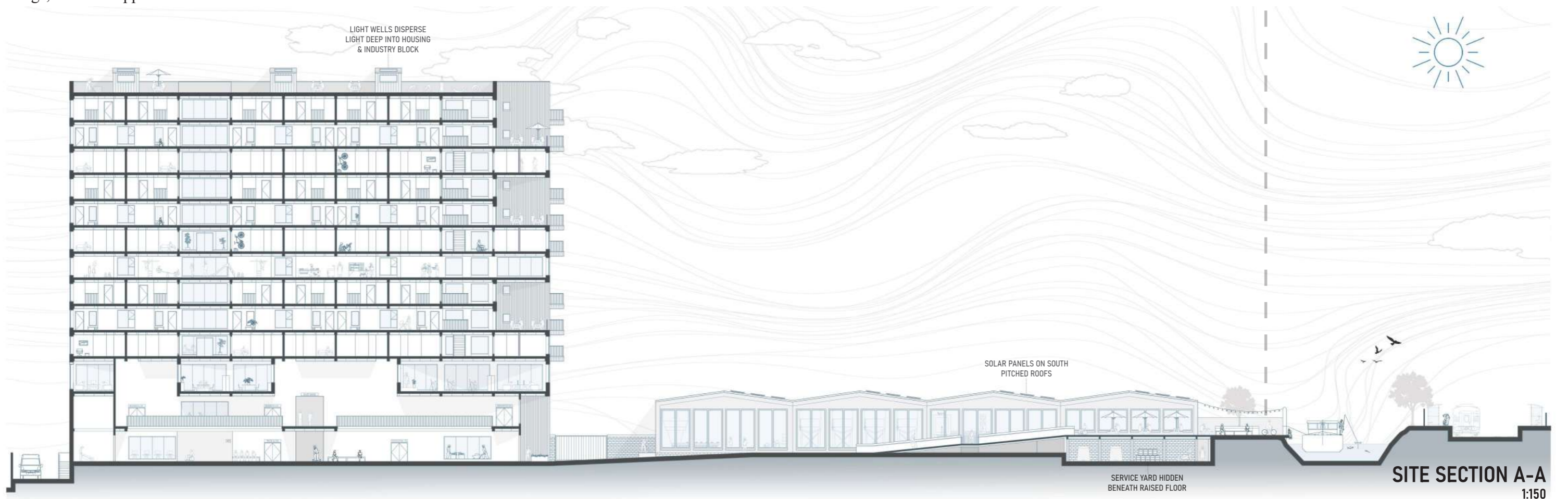


SITE SECTION B-B  
1:125

Right; The Royal Canal Dock provides refuge along the linear canal park. An abundance of shade and seating is provided for elderly and impaired people to rest.



Below; Site Section. Renewable energy is harvested through solar panels on the cider mills and housing blocks roofs. The raised floor which meets the canal towpath provides accessibility to the central plaza, whilst concealing storage for kegs, mulched apple and waste below.





Left; South Elevation shows the west and east wing entrances from the central plaza. The spanning footbridges connect the two stacked programs at the 1st, 2nd and 6th floor levels.

SOUTH ELEVATION



Right; West Elevation shows the main industry entrance from Broombridge road.

WEST ELEVATION



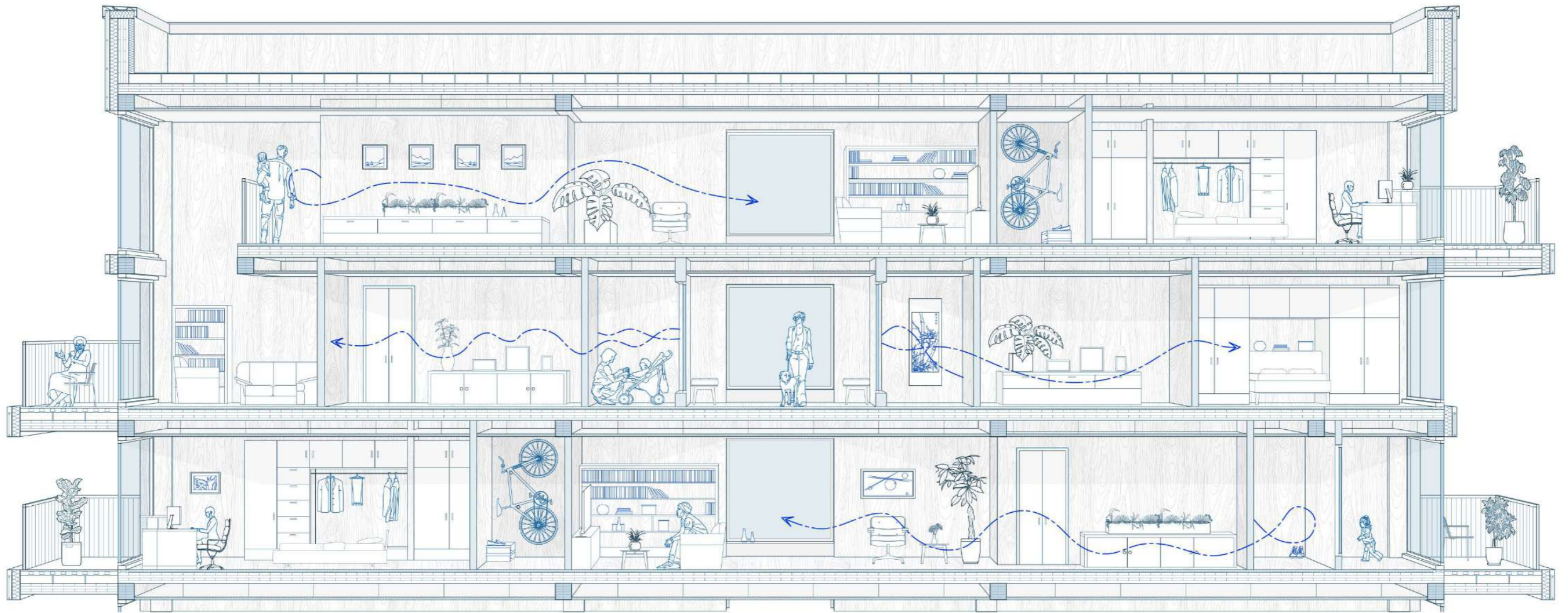
## HOUSING BLOCK

Above; Spanning footbridges connecting the east and west wings.

## THE HOUSING /

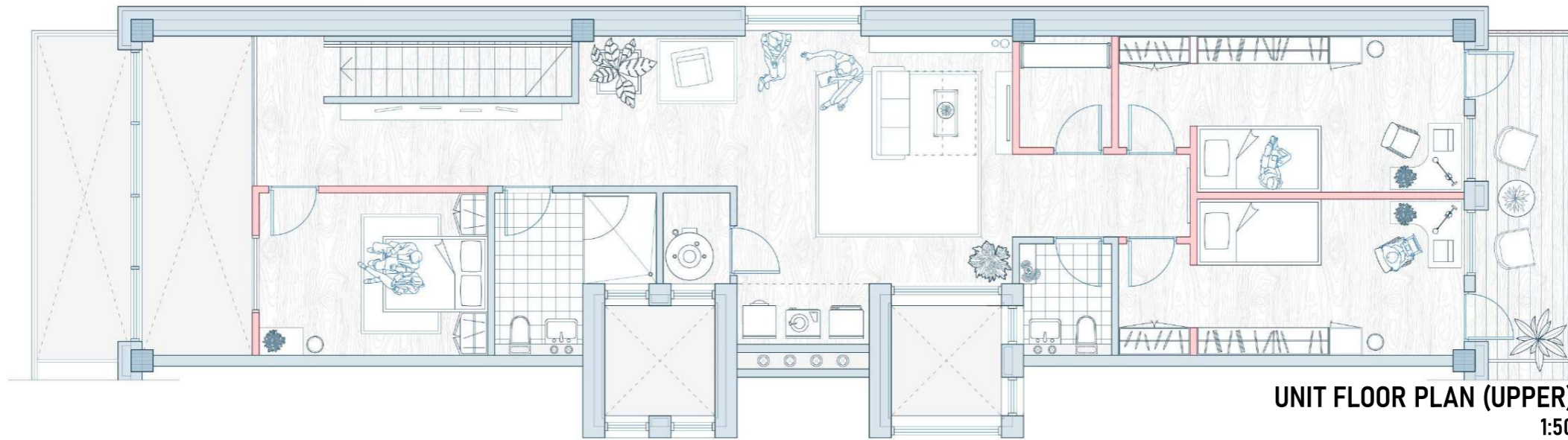
The units delivered on-site are a direct response to the Irish housing crisis. As costs associated with building on residentially zoned land have surged due to land scarcity, the solution is to build on industrially zoned land. To do so, existing industries and housing must co-inhabit on the same site. The introduction of residential units carefully layered above industry, allows the existing industry and amenities to be retained, in turn providing the new housing with essential services. This symbiotic relationship is the basis for change in modern industrial urbanism.

In total, there are a maximum of 180 units between the two wings. Standard units come as 3-bed duplex flats, each with access to private external balconies. All units receive sufficient solar access, facing either east, south, or west. The units are restricted to 8m wide to fit within the 8 x 6m structural grid. Therefore, standard units are capable of being adapted into 1 and 2-bed units due to the lack of interior load bearing elements.



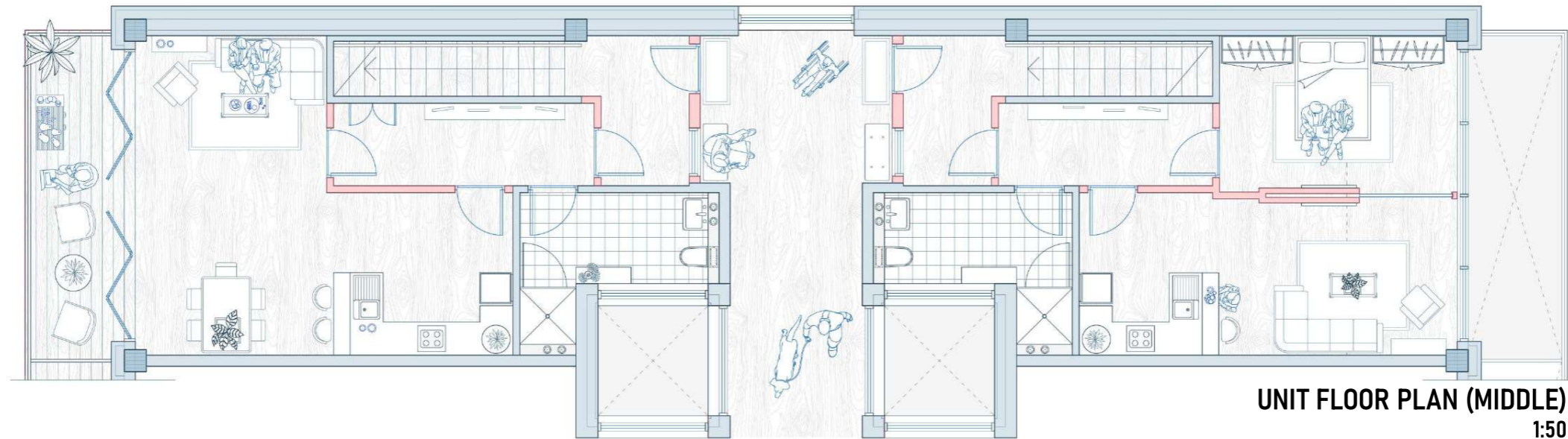
Above; Unit Detail Section. The structural grid creates large internal spans free from load bearing elements. This allows for greater flexibility in each housing unit.





**UNIT FLOOR PLAN (UPPER)**  
1:50

Left; Unit Plans. The rigid walls, shown in blue are fixed to protect important elements such as stairs, services, and unit divisions. A core surrounding the light well, boiler room and toilet are also fixed to protect vertical running services. The partition walls shown in red are flexible and can be removed, allowing a wide range of unit personalisation.



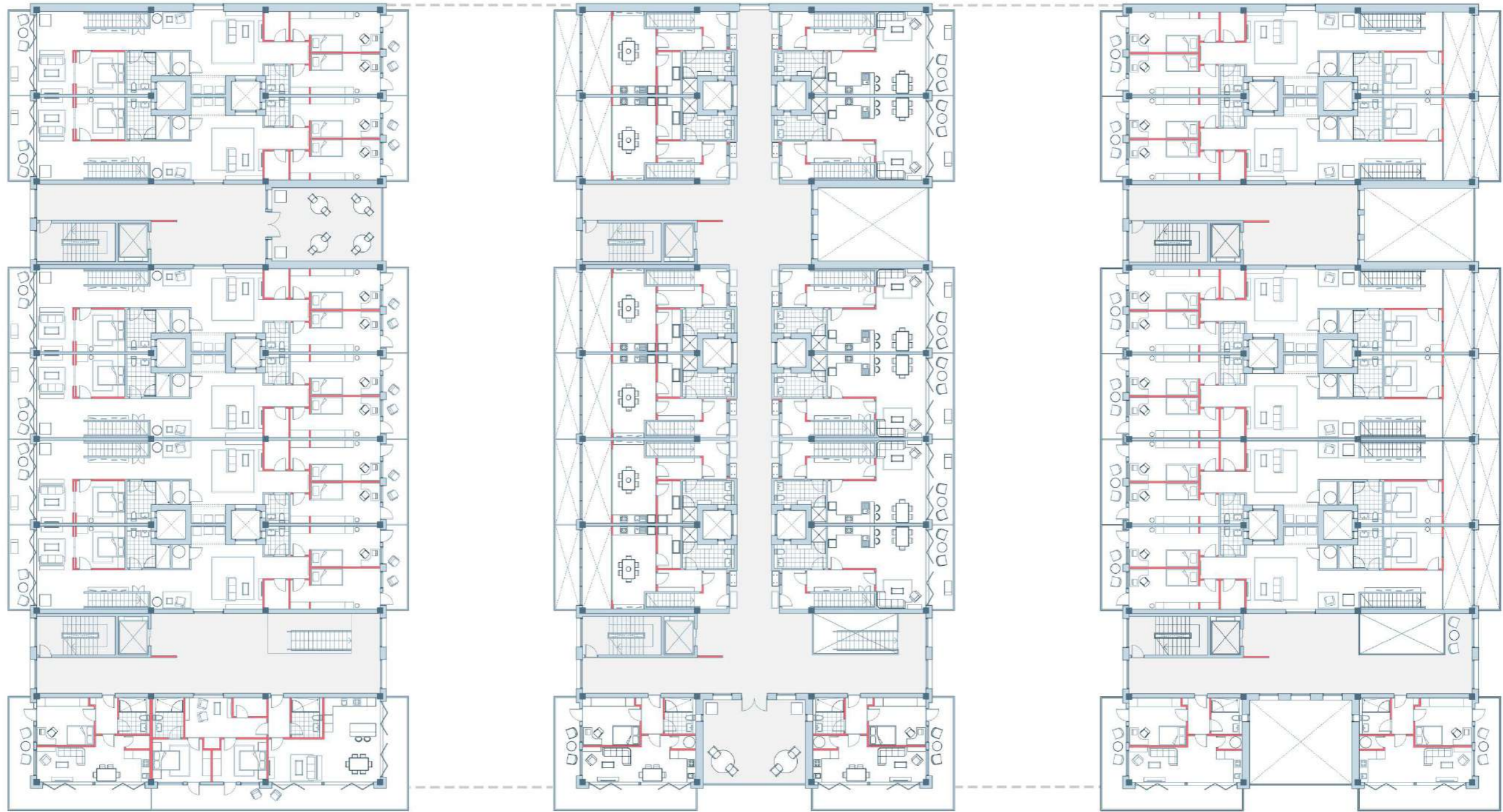
**UNIT FLOOR PLAN (MIDDLE)**  
1:50



**UNIT FLOOR PLAN (LOWER)**  
1:50

# HOUSING FLOOR PLANS

## EAST BLOCK



**LOWER FLOOR PLAN**  
1:200

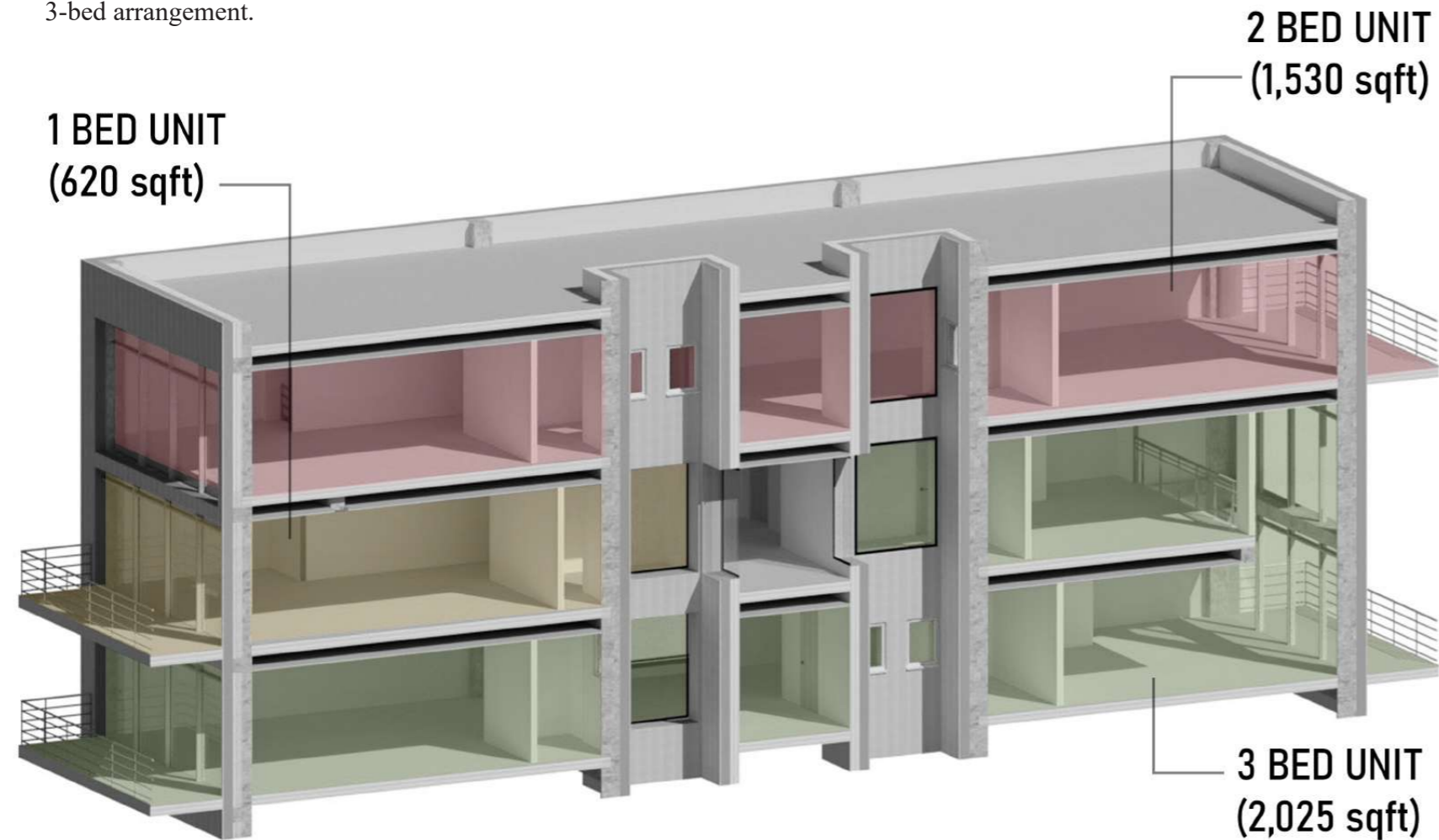
**MIDDLE FLOOR PLAN**  
1:200

**UPPER FLOOR PLAN**  
1:200

-  RIGID WALLS
-  PARTITION WALLS



Below; Unit sizes based on a typical 1-bed to 3-bed arrangement.



180  
UNITS  
(MAX)

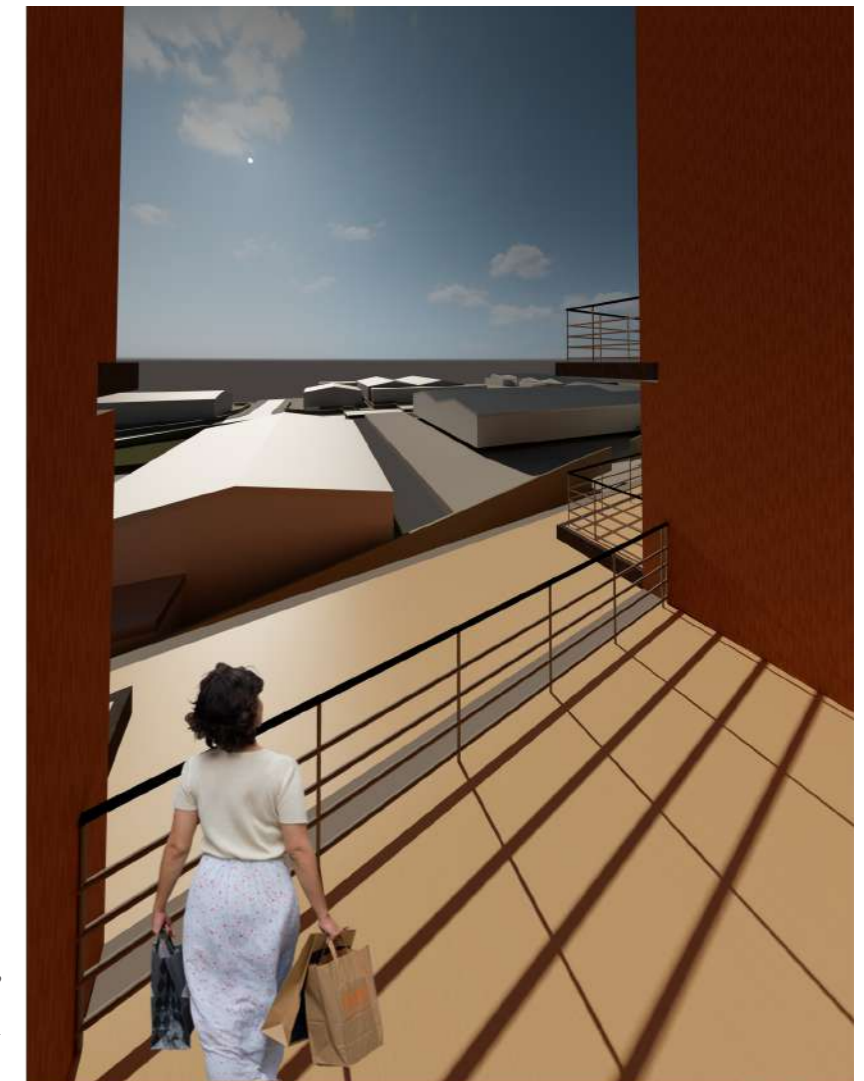
113  
UNITS PER  
HECTARE

162  
BEDS PER  
HECTARE

2.6  
PLOT  
RATIO

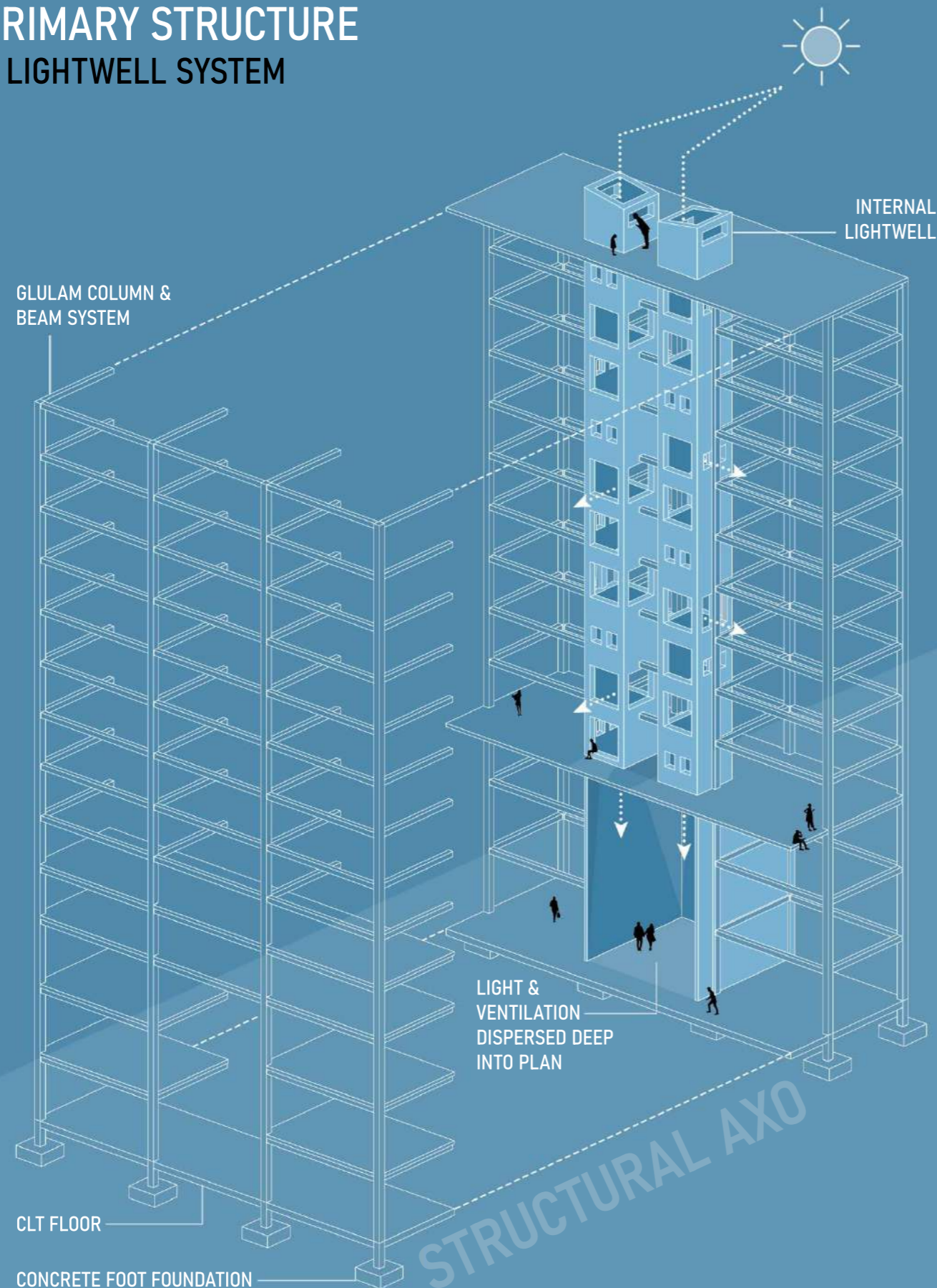


Right; Internal double height spaces allows light deeper into the unit.



Right; Semi-private external spaces located off 'living street' corridors in both wings.

## PRIMARY STRUCTURE & LIGHTWELL SYSTEM



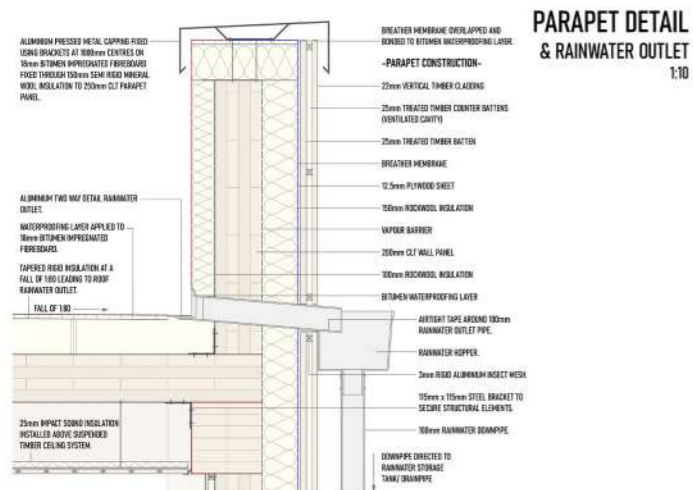
## THE STRUCTURE /

As we design for the future there is a moral responsibility to build sustainably. Carbon sequestering materials such as glulam, cross-laminated timber, and wood claddings are imperative to reducing our carbon footprint and costs associated with construction. For this reason, the new structures on-site are to be made using sustainable building materials.

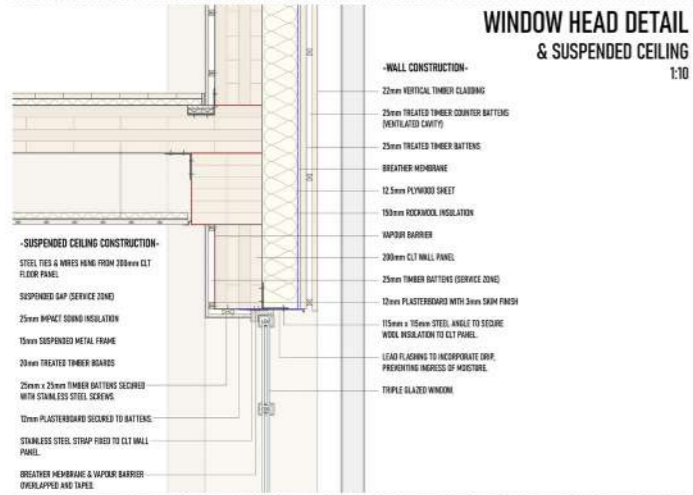
The primary structure of the mixed housing & industry block is a glulam column and beam system. The 400mm square columns rest on concrete footings which run down into the site's foundation. 200mm CLT floor pieces sit on glulam beams forming the structural floor arrangement. Whereas 200mm CLT walls are placed within perimeter columns to form the wall construction. The external walls are clad with vertical timber panels, and charred timber is used to emphasize the circulation cores. The column arrangement is in a 6 x 8m grid, forming large open spans within the building. These spans are credible for internal adaptability. As each unit is a maximum of 6m wide the structural elements are contained in the boundary walls. This allows great flexibility to alter the internal layout as needed.

The light wells are composed of insulated CLT walls. They span from the roof down to the 1st floor where they open into a large circulation space. The wells provide stacked ventilation as winds pass over the building, pulling air up through the well and in through the perimeter windows.

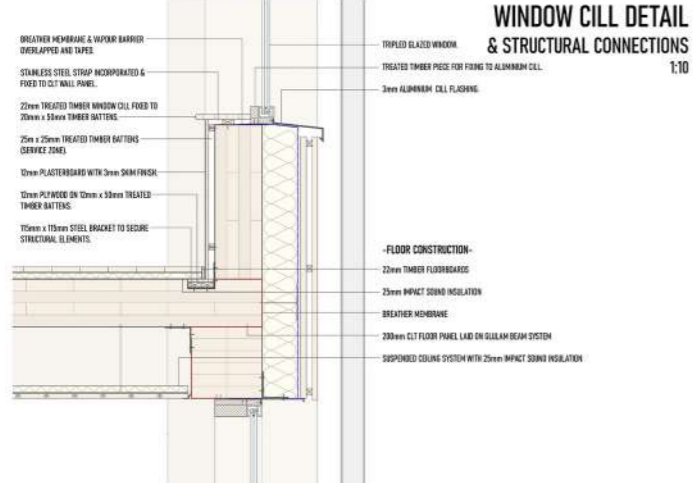
Left; Exploded Structural Axo and lightwell system for dispersing light & air deep into the blocks plan.



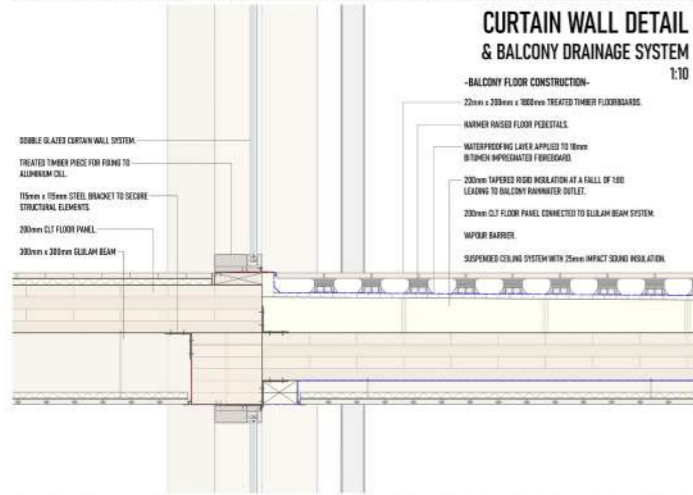
**PARAPET DETAIL & RAINWATER OUTLET**  
1:10



**WINDOW HEAD DETAIL & SUSPENDED CEILING**  
1:10



**WINDOW CILL DETAIL & STRUCTURAL CONNECTIONS**  
1:10

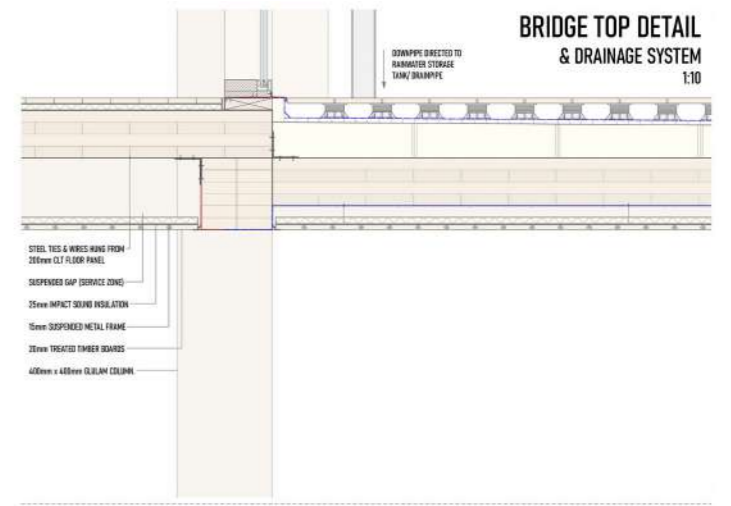


**CURTAIN WALL DETAIL & BALCONY DRAINAGE SYSTEM**  
1:10

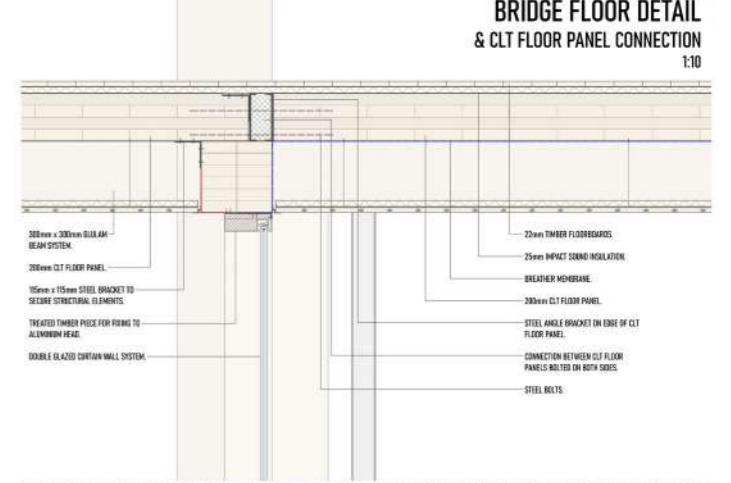


Above; Material palette.

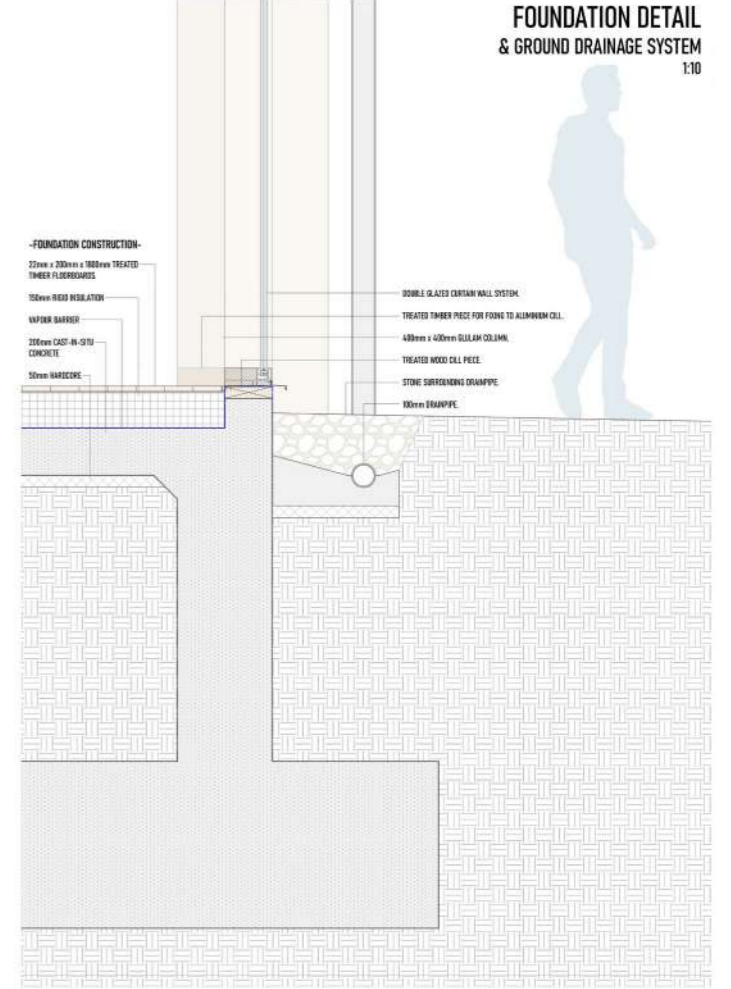
Right; Glulam & CLT Structural Details from the foundation up.



**BRIDGE TOP DETAIL & DRAINAGE SYSTEM**  
1:10

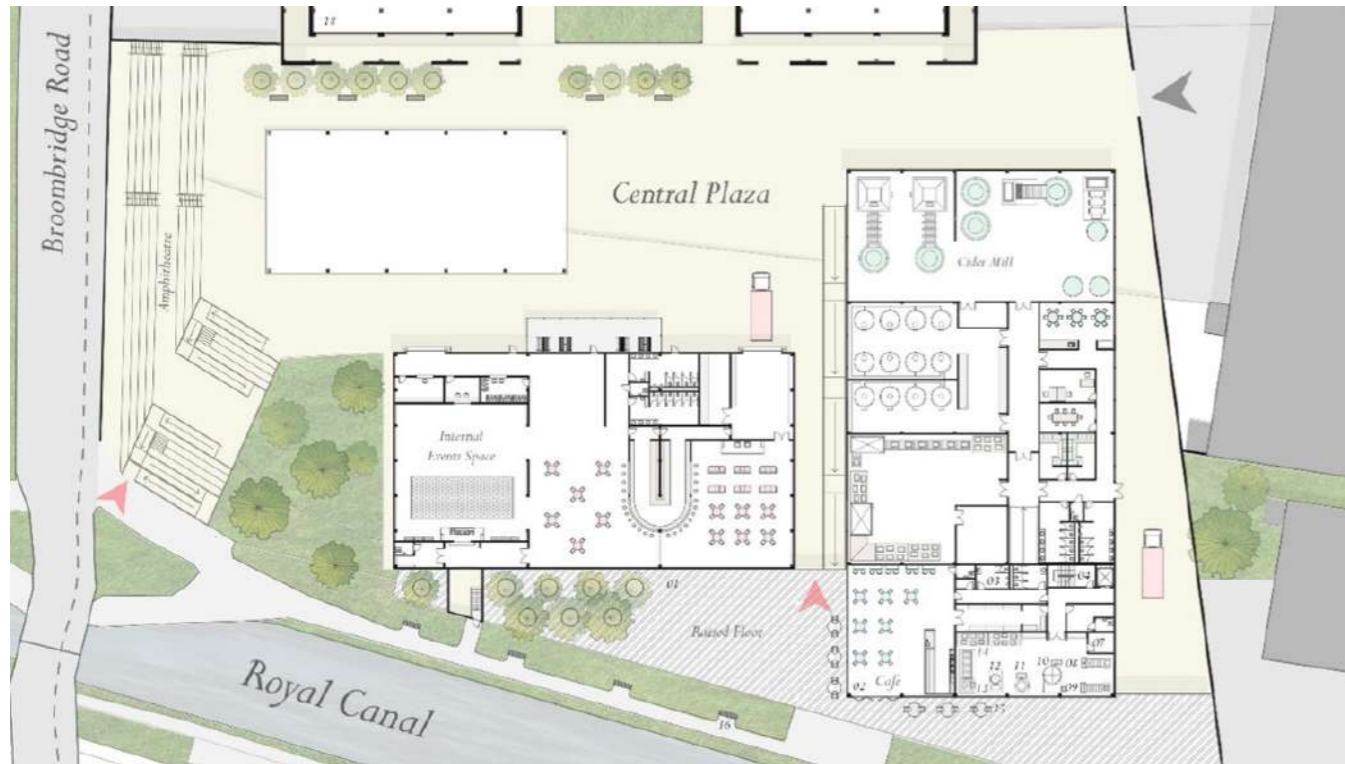


**BRIDGE FLOOR DETAIL & CLT FLOOR PANEL CONNECTION**  
1:10

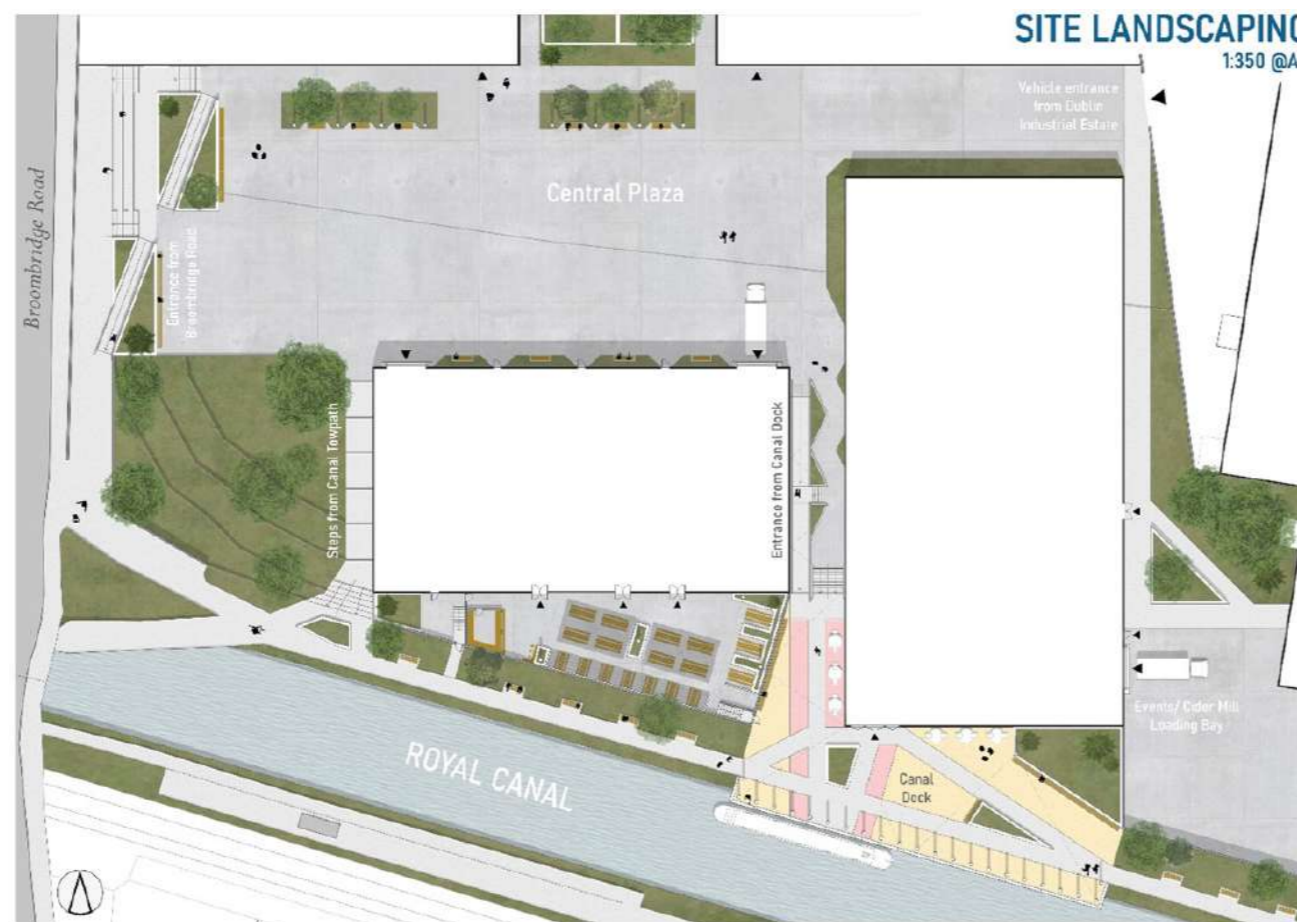


**FOUNDATION DETAIL & GROUND DRAINAGE SYSTEM**  
1:10

Left; Glulam & CLT Structural Details from the parapet down.



Left;  
Initial Site  
Landscaping.



Right;  
Revised Site  
Landscape  
following  
the interim  
review.

## REFLECTION /

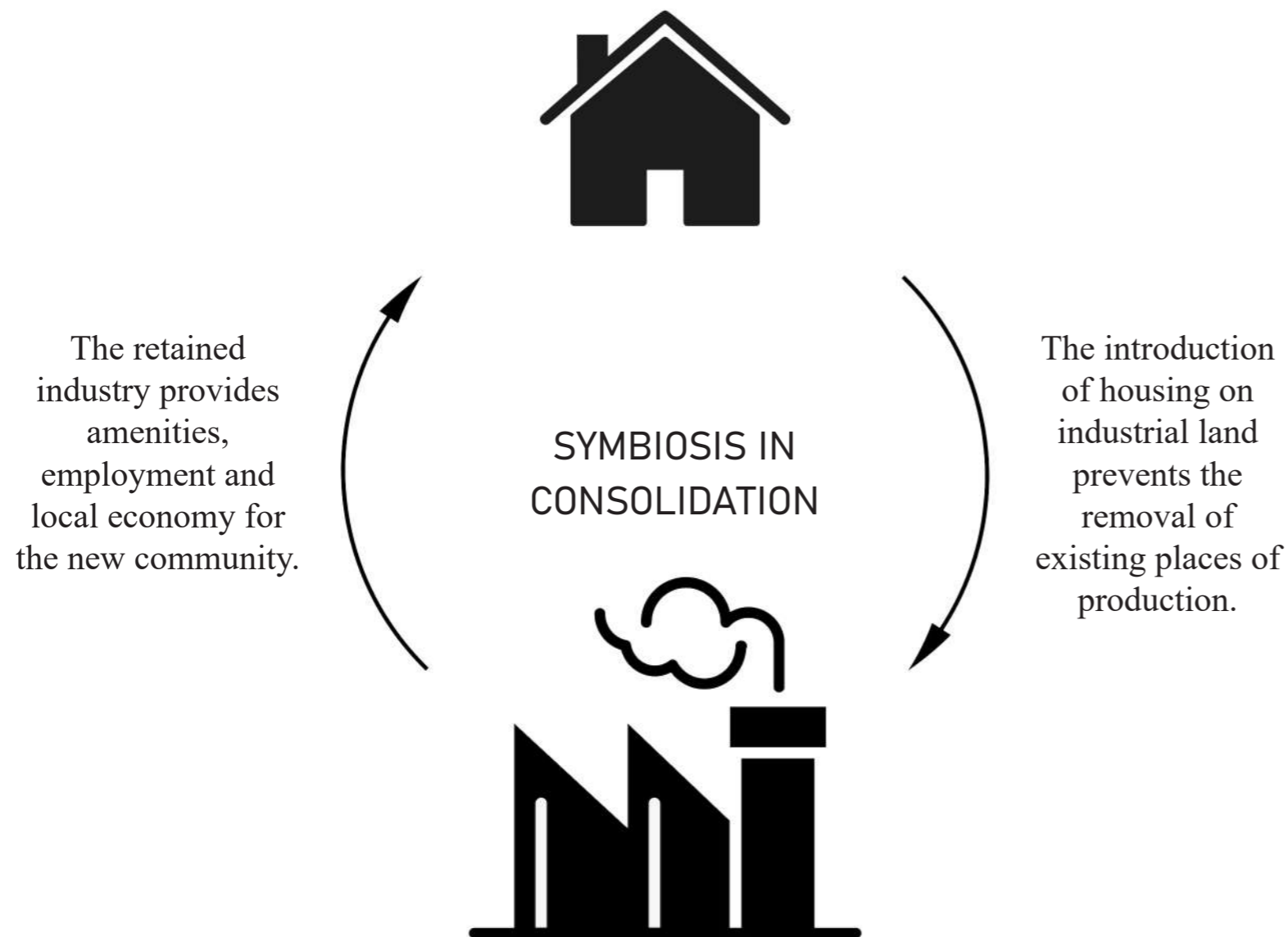
Upon reflection on my thesis project, the macro scale involved presented difficulty in interrogating every detail of the design. Upon review of the final design, I felt that more could have been done regarding the external facade of the housing and industry wings. Although the entirety of the project was within a 15,000m<sup>2</sup> site, micro details such as downpipes and balcony railings impeded the overall architectural intent. Perhaps, if further examination of the design was taken through renderings and atmospherics, opportunities for change may have been presented.

The final design saw the project's landscaping and central plaza come to fruition. However, on reflection of the design I felt the scheme lacked public activity space beyond the concrete paved plaza and central park. Through the introduction of playgrounds, community gardens, and alternative meeting arrangements the site would have enabled better life between the buildings. Therefore, I believe the above reflections are things I would have explored further given more time.

## CONCLUSION /

In conclusion, the removal of industrial estates is detrimental to existing communities. To protect these sites and the communities, we as architects must take urgent action. Through the cohabitation of vital housing on industrially zoned land, new symbiotic relationships can be formed. As residential units are carefully layered on industry it opposes the rezoning of the sites. Moreover, the retained places of production provide the inhabitants with accessible employment and services. Demonstrating the symbiosis in consolidation.

The housing delivered presents a competitive alternative to existing planning on-site. In total, 180 homes were delivered, with 113 units per hectare and 162 beds per hectare. This figure falls short of the current planning application which has a total of 304 homes, with 125 units per hectare and 265 beds per hectare. However, this thesis opposed the removal of industry on-site. Instead retaining the imperative industry and services which serve the communities of Tolka Valley. Therefore, I believe the consolidation of industry and housing to be part of a solution to the Irish Housing crisis. Creating a multitude of places to live, learn and work.





Above; Concept for the central plaza.

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## TABLE OF FIGURES /

All images/ drawings/ site photographs are by the author unless otherwise specified. See the below table for all referenced images.

Fig 1.1- The Musuem Collection (2013) 'Tenement Life' [online]. Available at: <https://20thcenturydublin.com/2013/07/29/tenement-life-1900s/> (Accessed: 20/12/22).

Fig 1.2- Market Bar (2004) 'Learn about our story' [online]. Available at: <https://marketbar.ie/our-story/> (Accessed: 20/12/22).

Fig 1.3- Burke, Diane (2021) 'A look back at the Guinness Brewery' [online]. Available at: <https://www.dublinlive.ie/news/look-back-guinness-brewery> (Accessed: 06/04/23).

Fig 1.4- Bolands Mill (2022) 'History' [online]. Available at: <https://www.bolandsmills.com/history> (Accessed: 06/04/23).

Fig 1.5- Odlums (2023) 'Who we are' [online]. <https://www.odlums.ie/about-us/> (Accessed: 06/04/23).

Fig 1.6- Historic England (1949) 'Batchelor and Co. Ltd' [image]. Available at: <https://britainfromabove.org.uk> (Accessed 28/12/22).

Fig 1.7- Diamond Glass (2022) [image]. Available at: <https://diamondglass.ie/about/> (Accessed 06/04/23)

Fig 1.8- JMOB (2022) [image]. Available at: <http://www.jmob.ie/history/> (Accessed 06/04/23)

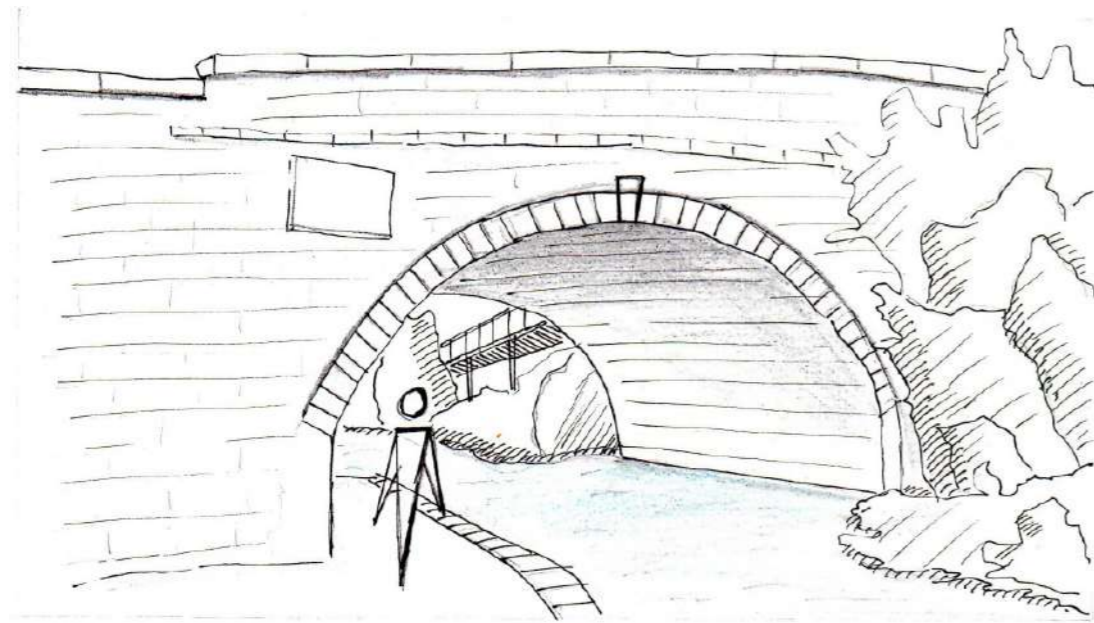
Fig 1.9- Printwise (2023) [image]. Available at: <http://www.printwise.ie/about-us/> (Accessed 06/04/23)

Fig 1.10- (McManus, 2022).

Fig 2.1- Moukarzel, Bachir (2022) 'Siena' [image]. Available at: <https://droneawards.photo/gallery/photo/27355> (Accessed 29/11/22).

Fig 2.2- (Schoon, 2017).

Fig 2.3- Glancey, Johnathon (2013) 'Le Corbusier's Unite' [online]. Available at: <https://www.bbc.com/culture/article/20130423-design-iconhorror> (Accessed: 26/12/22).

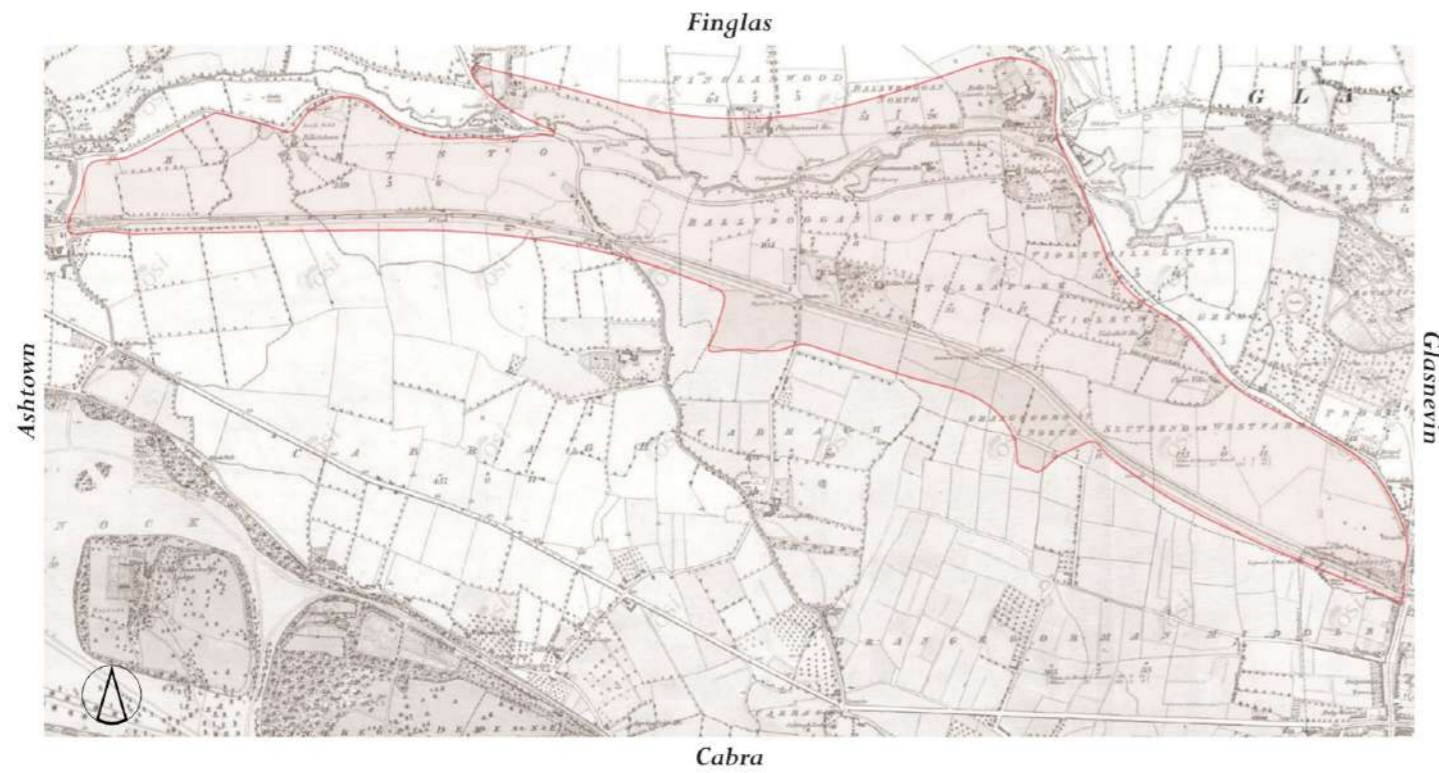


Above; Broom Bridge.



Above; Tolka Valley Park.

Right; Tolka Valley 1900's housing statistics.



## APPENDICES /

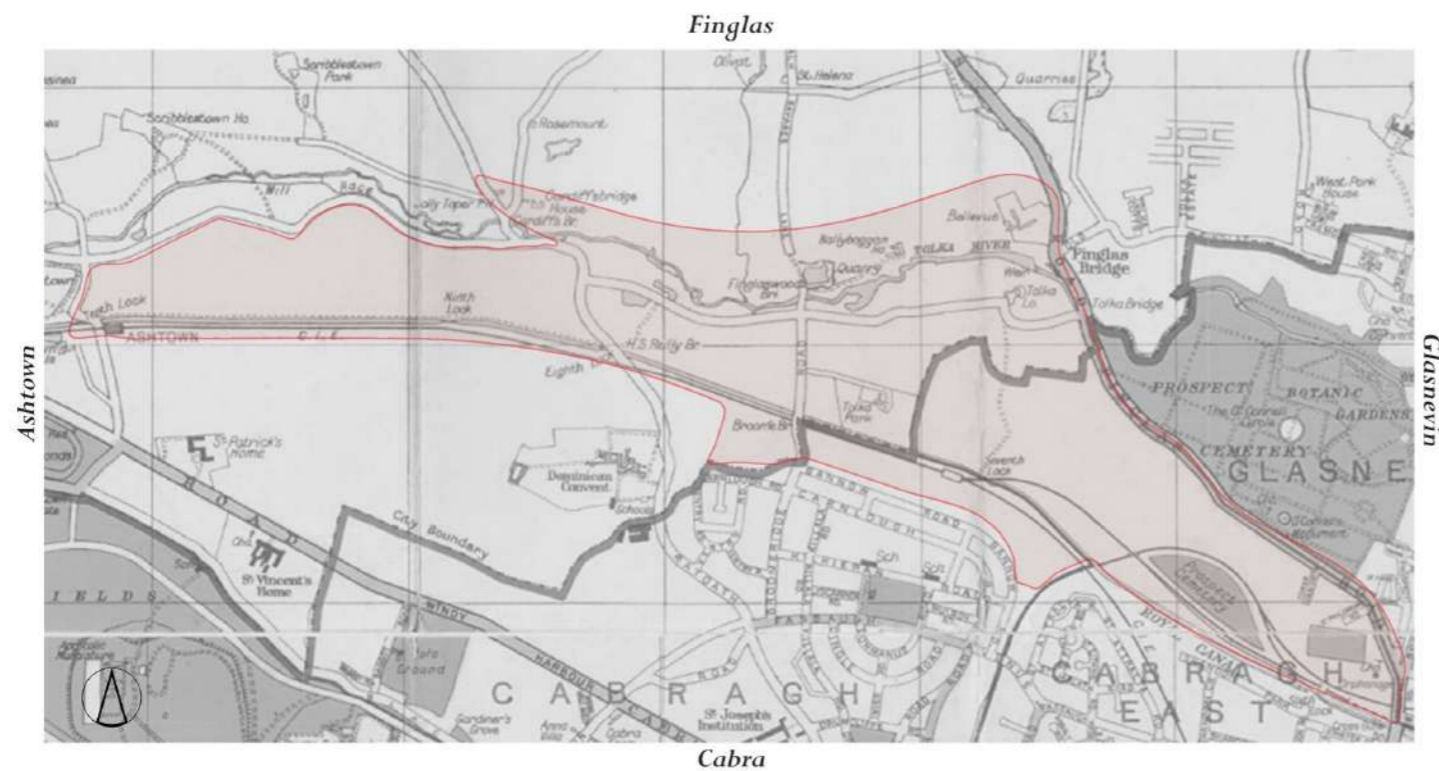
### APPENDIX 1- 'FUNCTIONALISM'

The 1930's saw the second important development of urban planning; known as 'functionalism'. Its basis primarily included advances in medical knowledge throughout the 18th and early 19th centuries. 'This new and extensive medical knowledge was the background for several criteria for healthy and physiologically suitable architecture around 1930.' (Gehl, 2011). Dwellings were required to have sufficient light, ventilation, and access to external public spaces. Urban design progressed to orientating buildings towards the sun, opposed to the former belief that they should face the street. Additionally, the separation of workplace from the living space was formulated to ensure healthier living conditions.

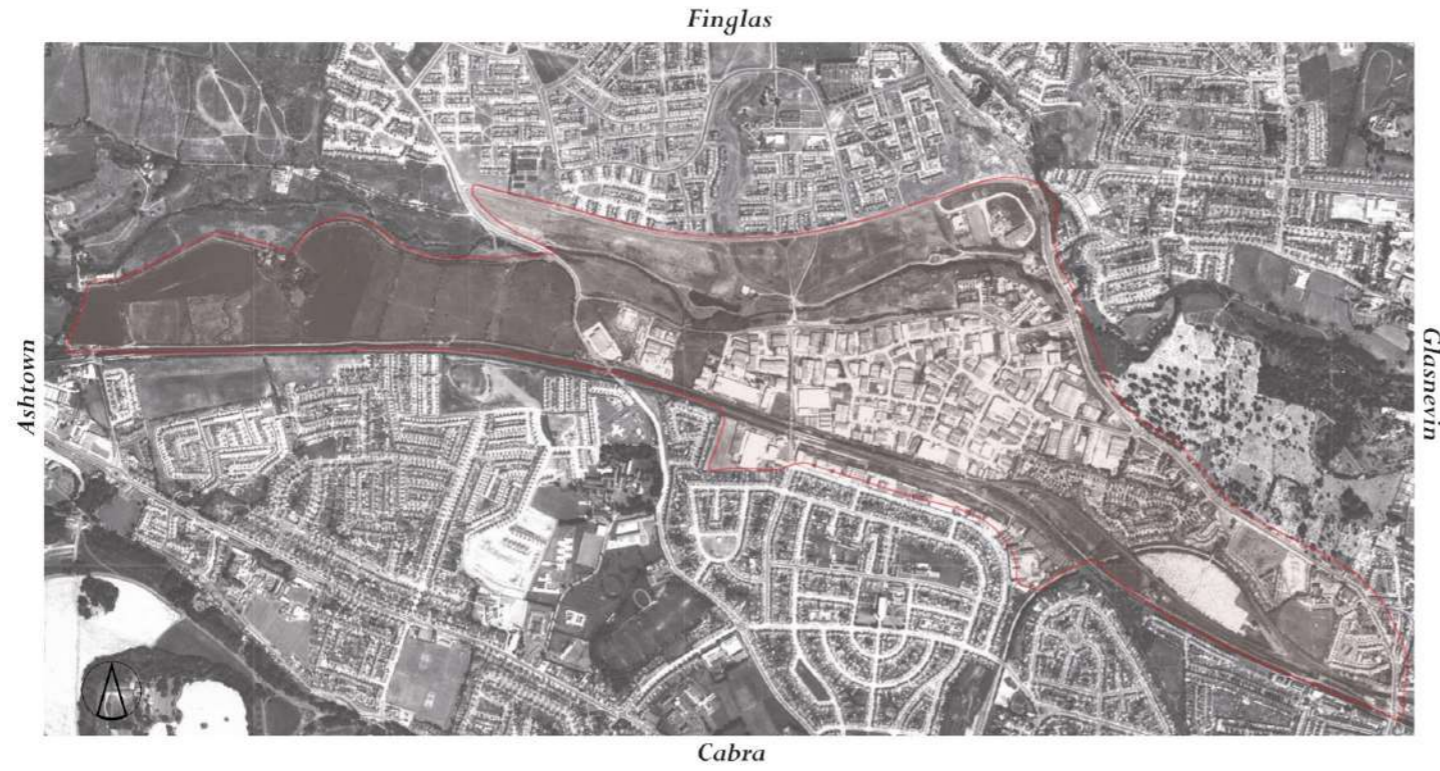
### APPENDIX 2- THE BATCHELORS FACTORY.

Following the completion of the Cabra housing development, the Batchelors factory arrived on Bannow Road in 1947. City Architect, Herbert Simms believed that 'towns with their own industry should be used to avoid endless sprawl' (McManus, 2022). Following this belief, the space along the Royal Canal had been reserved for the development of industrial units. The Batchelors factory, completed in 1947, provided an abundance of local employment in the Tolka Valley area, employing between 2000-3000 people. This boosted the local economy and provided the community with a new sense of identity among the working-class people. In the 1960's a mass emigration of Irish people in search of better economic conditions resulted in many local industries employing more women. Furthermore, leading Batchelors to have a large, predominantly female workforce, many of whom continued working into their later years.

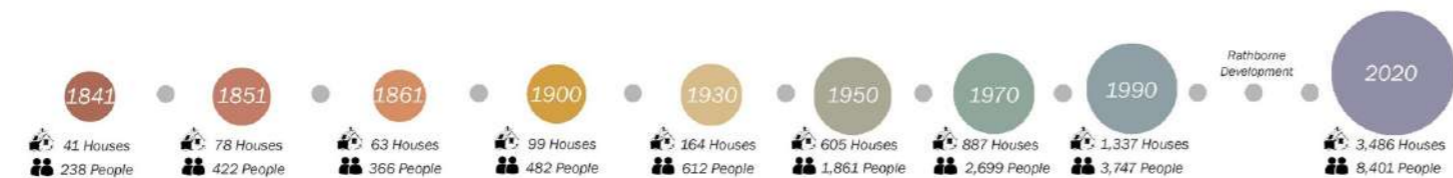
Right; Tolka Valley 1950's housing statistics.



Right; Tolka Valley  
1990's housing  
statistics.



Right; Tolka Valley  
2020's housing  
statistics.



### APPENDIX 3- THE URBAN RENAISSANCE.

The compact city gave rise to a new concept, the 'urban renaissance'. It encouraged counter-urbanisation and 'people back into towns and cities to new higher-density developments built on brownfield sites.' (Burton, 2006). These inner-city sites often known for their negative political and media discourse were transformed into high-rise, high-density neighbourhoods. However, what these sites boasted in density they lacked in amenities. The focus on delivering quantitative units overshadowed the need for accessible amenities and activity space vital for everyday existence, well-being, and enjoyment of life. The re-used sites were later criticised as a tactic to get the middle class back to city centres while neglecting the existing lower-class communities.

### APPENDIX 4- THE IRISH HOUSING CRISIS.

The Irish housing crisis has been at the forefront of concern for too long. It directly affects young people who cannot afford to rent, low incomes families and drives the massive influx of homeless. As the cost of buying or renting a home has surpassed the income deemed adequate to attain it, there is an urgency for radical intervention. Local authorities are reliant on renting homes through leasing schemes for social housing, depending on private developers to deliver quality, affordable homes. This nonsymbiotic relationship results in housing built on residentially zoned land being extortionately expensive and inaccessible to those who need it. Consequently, architecture has become a capitalistic machine for developers to profit from delivering 'high-rise, high-density, high-priced build to rent apartments or student accommodation.' (Tranum, 2020).

### APPENDIX 5- 'BEDZED'.

A 'large-scale, mixed-use sustainable community' with over 100 homes, workspaces, learning spaces and communal amenities. Its design 'encourages residents to use greener forms of transport to radically reduce greenhouse gas emissions from travel compared to conventional suburban housing development'. With only 0.6 car spaces per housing unit, the development offers a 'City Car Club' alternative. The hybrid cars are pushed aside, freeing the streets for children to play. This presents residents with a 'convenient alternative to owning their own vehicle without the cost and time involved in owning and maintaining their own vehicle' (Schoon, 2017).