

# *Living and Remaining*

## *The Adaptive Re-used Tannery Community Brings Us Together*

*Quanyin Zhang*

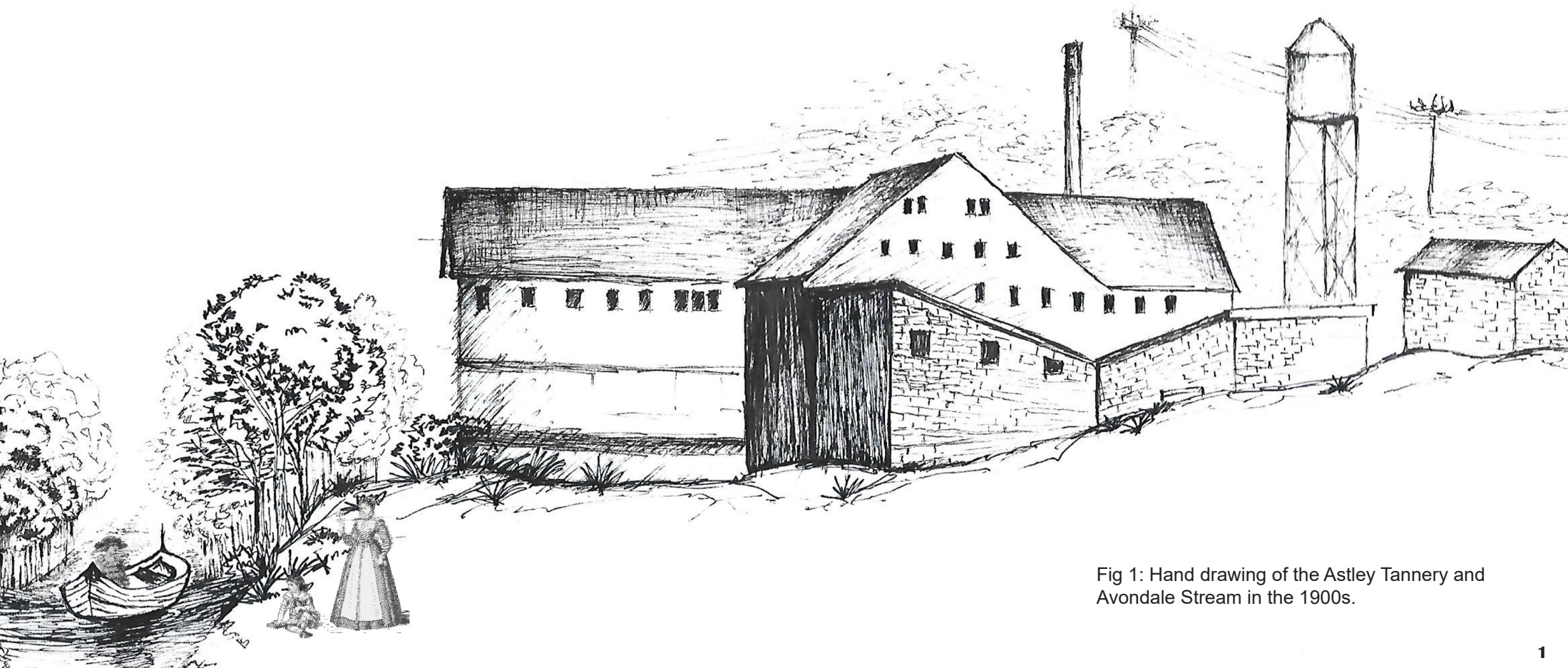


Fig 1: Hand drawing of the Astley Tannery and Avondale Stream in the 1900s.

*I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.*

*A thesis submitted in partial fulfillment of the requirements for the  
degree of Master of Architecture [Prof]*

*Auckland University of Technology, 2021*

*Date: 01 February 2022*

*Name: Quanyin Zhang*

*Signature: 张泉音*



# ***Abstract***

In the context of the Muddy Urbanism Research Lab, this thesis explores how an architectural intervention can recognise the historical value of an industrial heritage building precinct. The design research takes an approach of adaptive reuse whilst also seeking to impact positively on an urban waterway and stimulate neighbourhood connection.

The site, a collection of industrial buildings of different ages, is located alongside the Avondale Stream, a branch of the Whau river in the west of Tāmaki Makaurau, Auckland. This was once the Astley Tannery, a large animal hides tanning operation dating from 1888. No longer an active tannery, the site now makes space for an unlikely collection of programmes that make opportunistic use of the building's dimensions, volumes and materials; badminton, gyms, church services, ice cream manufacture, dance lessons and automotive services all find spaces suited to their activities. However, the mostly impervious zone behind the buildings is used for parking and as an informal rubbish dump, degrading the neighbouring stream and preventing neighbourhood connection to the waterway. This design research project intervenes in the site, seeking ways to productively build on the mix of programmes, valuing the industrial heritage, inserting residential accommodation and an ecological arts centre, and diverting a planned shared path to cross through the site, in order to activate and populate this 'potential landmark'.

Further, through the adoption of water sensitive and low impact urban design methods, the intention is to impact positively on the health of the waterway and have a positive effect on neighbourhood connection whilst valuing what already exists. This design research finds adaptive reuse is a programmatic strategy for repurposing buildings to achieve a sustainable future. As a result, this thesis suggests an approach to a strategic adaptive reuse programme at site scale.

## ***Acknowledgement***

Thanks to Kathy Waghorn for your well-informed guidance and patience throughout the year. You provided a substantial amount of pertinent advice, not only academically, but also shone a light for my future.

Thank you to my family and friends in these special and difficult two years. We are 10,000 kilometres apart, but you have always supported me. I miss you all very much.

# Contents

Abstract	3	Chapter Three: Case study	66
Acknowledgement	4	3.1 83 Barchester Street	67
Contents	5	3.2 798 Art Park	69
Pepeha	6	3.3 Morningside industrial precinct	71
Introduction	7	3.4 YangweiZhou Park	73
Muddy urbanism	10	Chapter Four: The Tannery Community	75
Chapter One: Site and Context	11	4.1 Methodology of complex site analyses	76
1.1 Te Whau River	12	4.2 Missing elements	80
1.2 Whau pathway	15	4.3 Opportunities	83
1.3 Human settlement	18	Chapter Five: Findings & Conclusion	115
1.4 Industry	19	5.1 Findings	116
1.5 Industrial and residential zone	22	5.2 Conclusion	118
1.6 New Lynn past and future	25	Bibliography	119
1.7 Site	27	List of figures	123
Chapter Two: Urban Context	35		
2.1 Adaptive Reuse	36		
2.1.1 Introduction	36		
2.1.2 Design strategy	37		
2.1.3 Heritage categories	47		
2.1.4 Challenging in evaluation	50		
2.1.5 On site	50		
2.2 Water sensitive urban planning	63		

# ***Pepeha (who I am, me and Whau)***

Kia ora tatou

Ko Xiang te maunga

*Xiang is my mountain*

Ko Yongding te awa

*Yongding is my river*

No China Ahau

*I am from China*

I tipu aka ahau ki Beijing

*I grew up in Beijing*

Ko Zhang toku whanau

*Zhang is my family name*

Ko Quanyin toku ingoa

*Quanyin is my first name*

Tenei te mihi ki nga tangata whenua o te rohe nei  
Tena kōkōu, tena kōkōu, tena kōkōu katoa.

I was born and raised in China; twelve years ago, I moved to Auckland, New Zealand, which I regard as my second home. I live a long way from my hometown and my parents; I always go alone to the mountains, rivers, and ocean when I am homesick. These scenes remind me of the scenery of my hometown. I'm a Master's student in the School of Future Environments, Auckland University of Technology. This year, I joined the Muddy Urbanism Lab, and I had the opportunity to work with my colleagues to restore the Whau River. Being in a busy city unfortunately makes me forget about the natural environment around me. As we constantly take from the environment, we eventually exhaust its resources. Making contact with the Whau River, and dedicating myself to it, is a challenge and allows me to look beyond the immediate values and see possibilities for the future.



# *Introduction*

As part of the Muddy Urbanism Lab, this thesis explores the opportunity for adaptive reuse on a former industrial site adjacent to the Avondale stream; a tributary to Te Whau River. It is a challenge to reconnect the community with nature while protecting and restoring urban waterways. Water is essential for every living thing, and the area is a cradle that carries history and life. Te Whau River is a tidal estuary located in Auckland's western suburb, with countless creatures having lived in the catchment. Māori tribes camped along the riverbanks; a portage linking Waitemata and Manukau harbours.

By contrast, the European colonists discovered there was abundant land and convenient transportation around the Whau River; they began utilising clay to make ceramic goods and bricks. During colonial times, large and small brickyards appeared, and tanneries gradually grew. The pollution has increased since then, and it is no longer a habitable environment.

People have continued to claim land and expand the city over the past two hundred years. Nowadays, Auckland's urban planning system is built upon the Auckland Unitary Plan (Auckland Council, 2021), which integrates all of Auckland's districts into one unified system. Stratified by zoning systems, the Unitary Plan guides land development in Auckland and the use of natural and physical resources. Various zonings appeared around the Whau River, such as the mixed housing urban zone, business park zone or light industrial zone.

Operating at the urban block scale on the site of a former tannery adjacent to the Whau River, this thesis analyses and responds to Auckland Council's vision for adaptive reuse of heritage buildings. Regeneration programs that succeed focus on preserving and adapting high-quality existing buildings. Building adaptation should respect the history of an area while also contributing to its intended future (Auckland Council, n.d).

The negative impact of light industrial activities has deterred residents from the Whau River. People have become less conscious of their responsibilities in the face of an environment like this. What used to be a clear stream, is now full of garbage.

The Te Whau Pathway Project, developed by Auckland Council and currently in phased construction, aims to restore the Whau river and rebuild its connection with people through a shared pathway. The pathway serves both pedestrians and cyclists, connecting Manukau Harbour to the Waitematā Harbour along the traditional Maori taonga waka (portage). The pathway links “Thirty three parks, reserves, esplanades, sports parks, and roads along the river” (Te Whau Path-way, n.d.). The site for this design research project, the former Astley Tannery is located in New Lynn, sits between the Avondale Stream and the planned Te Whau Pathway, where it runs along a section of busy road. My design proposal diverts the pathway behind the Tannery building providing a safer path for pedestrians and cyclists. Through the diversion of the pathway project, the historical value of the Tannery is recognised, and Avondale Stream can be restored and reconnected to the community.

This design research borrows a methodology from a U.K. project Making Space in Dalston (muf architecture, 2013). Their three-step methodology proposed in this research (valuing the site, nurturing possibilities and defining what is missing) helps me establish this thesis’ framework and form the final design proposal. This thesis seeks a way to re-establish the relationship between residents and the Whau through adaptive reuse. A series of opportunities for sustainable development are discussed and suggested as a strategic approach to achieving the community’s vision to create a new landmark while preserving our urban waterway and historical heritage.

**This thesis answers the questions:**

*How can an architectural intervention recognise the historical value of an industrial heritage building precinct by an approach of adaptive reuse whilst impacting positively on an urban waterway and stimulating local connection?*

**Sub question:** *How can a new programme on the riverside achieve low impact urban design principles?*

## **Chapter 1: Site and Context**

This chapter provides an overview of the context, history and industrial development of the Whau River, including the ambitions of Muddy Urbanism Lab. By conducting on-site research and reading literature to analyse the past and future of New Lynn (including the site adopted by the author) to identify conflicts and transform hidden values into design potential.

## **Chapter 2: Urban Context**

This chapter explores the theory of adaptive reuse and its application to heritage buildings through literature and case studies. It also aims to understand different structure types, strategies and adaptive reuse development. In addition, this chapter summarises the principles and methods that are incorporated into future urban planning by reviewing low-impact urban design literature. In connection with the site, it also discusses how low-impact design can contribute to the restoration of urban waterways.

## **Chapter 3: Case Study**

This chapter tests the functional role of adaptive reuse in practice by using local and overseas precedents. Each precedent covered a different type and value of the building, to collect materials for upcoming design proposals, analyse and learn from their successes. The chapter also discusses a precedent for low-impact urban design. It illustrates how people and urban waterways can establish a relationship while positively impacting each other.

## **Chapter 4: The Tannery Community**

This chapter adopts the Making Space in Dalston method of analysing and generating a design plan on a large-scale and complex site (muf architecture, 2013). The chapter also presents the design research details and intentions through a series of design outputs. Based on the previous analysis, a summary shows the elements missing from this site. As a new community along the Whau River, it serves residents and adds to the new Whau Pathway; it also meets the requirements to affect the waterway positively.

## **Chapter 5: Finding and Conclusion**

The Findings section summarises the research and experience from this study. It extracts the theories/methods from the precedents and illustrates how to apply them to the design proposals. In conclusion, the author reflects on the future of this adaptive reuse strategy, and provide a clear answer to the research questions.

# *The Muddy Urbanism Lab*

The Muddy Urbanism Lab is an ongoing urban research project focused on the future of the Waite Whau, (the Whau river) in Tāmaki Makaurau, Auckland, which bisects the inner west of the city. Used as a portage connecting two harbours, for iwi it provided a natural infrastructure of kai (food), connection and economic production. In the colonial economy, the river played a crucial role in the urbanisation of Auckland, as both a transport route and as a source of clay. Bound by the Rosebank Peninsula and the suburbs of Avondale, New Lynn and Kelston, the river continues to drain away by-product materials from factories and other businesses located on the riverbanks. In latter decades Te Whau, like many other waterways, has lost this ‘mobilising’ significance and infrastructural importance, and has become ecologically degraded. However, with municipal boundary changes in 2010, the river now sits at the geographical centre of the Whau Local Board area, and this local authority, iwi and others have started to embrace the opportunities a re-connection with the waterway might offer.

Led by HOOPLA, since 2013 the Muddy Urbanism Lab has worked with students, independent researchers and community groups to collaboratively re-imagine the regenerative future of Te Whau. The Lab has produced an archive and a series of speculative urban proposals, leveraging the powerful nature of utopian thought in imagining possible futures for this river and its neighbourhoods. The Muddy Urbanism research has been widely exhibited and published, circulating these speculative proposals with the anticipation that these might enter the public imagination. This has been a fruitful strategy with the proposal for a river-side linear park taking hold, and now a project in the first stages of construction as Te Whau Pathway.

In 2021 at Huri Te Ao Hoahoanga (AUT’s new School of Future Environments), five Lab members (Dylan Cawte, Ilycia Laverty, Nikitha Kolar Nagabhushan, Quanyin Zhang and Rebecca Burgess), presented design research thesis projects which questioned how to extend the impact of Te Whau Pathway as a new opportunity for reconnection to the awa. Each Lab member’s speculative project takes a site on Te Whau Pathway and imagines its specific potential as a neighbourhood or regional place along the linear path. Through this research each Lab member has developed a specific programme for their location and tested these through design-making, with each project proposing new neighbourhood and river connections in order to restore the mauri (life force) of the awa.



## Chapter one: Site and Context

*This chapter explores the history and future of the Whau River and New Lynn, analysis the Whau Pathway project and understands its goals. The thesis's site emerged from this chapter; a series of analysis examining its background and value as the basis of its subsequent design.*

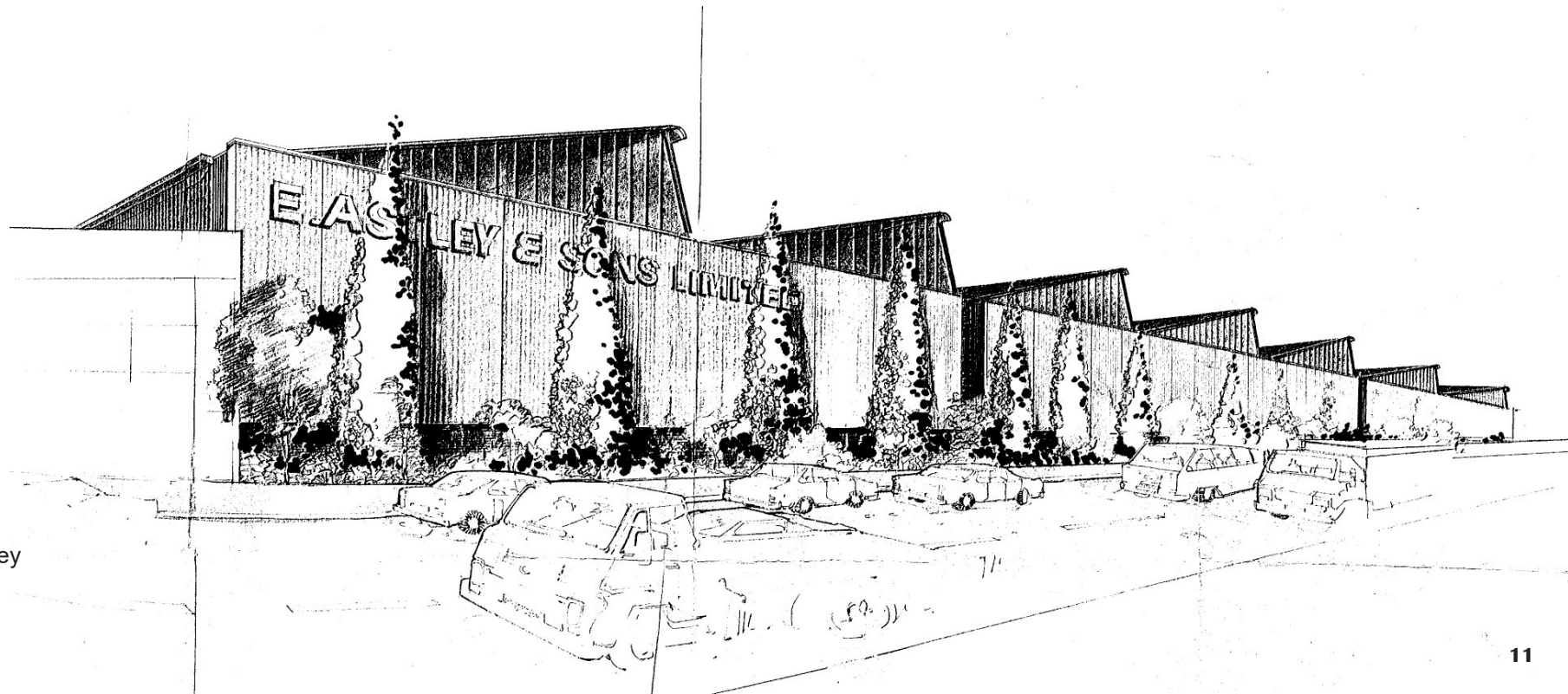


Fig 2: Hand drawing of the Astley Tannery warehouse from 1980 property file, Auckland Council.

## 1.1 Te Whau River

Fig 3: Map showing the location of the Whau River and its relationship to suburbs. The river connects Waitemata Harbour and Manukau Harbour.



Te Whau river takes its name from the Whau tree. This is a fast-growing native tree that produces light timber and was once plentiful on the banks of the river. As an estuarial arm of Waitemata Harbour (Fig 4-5), Te Whau River lies west of Auckland, heading towards the Manukau Harbour (Fig 3). “Te Whau is part of the vast area known as “Te wao nui o Tiriwa” or “the great forest of Tiriwa”, the ancient Maori name for west Auckland and surrounding districts” (Mackay, 2012, p.8). The Whau River has always been an important waterway for Māori for transportation between the two harbours.

Prior to any human activity along the Whau River, the clear, cool streams gathered in low-lying and fertile places. Rainwater gently washed the bank and was gradually absorbed by plants; the stream water brought fallen debris to the downstream gully. Clean water and embankments were homes for hundreds of species.

A catchment is an area of land from which streams or rivers flow and receive their water (Fig 6). In the catchment, every stream of the Whau River joins the same outlet and flows into the Waitemata harbour. Natural resources are considered spiritual treasures in Māori culture, having the power to sustain life. In the catchment area, land meets water, forming a living habitat (Mackay, 2012, p.9). Ancient tribes also defined their relationships and boundaries using water sources and catchment areas. Whau River is a catchment that stretches between Auckland City and Waitakere City (Fig 3); the river and its Avondale stream separating the two regions.

For hundreds of years, the Whau river has provided a habitat for various species and played an essential role in New Zealand’s history. During this section, I become more familiar with the Whau River, and subsequently, a more comprehensive study of the Whau River is conducted.





Fig 4: The Whau River and Te Atatu boating club at the mouth of Waitemata Harbour.

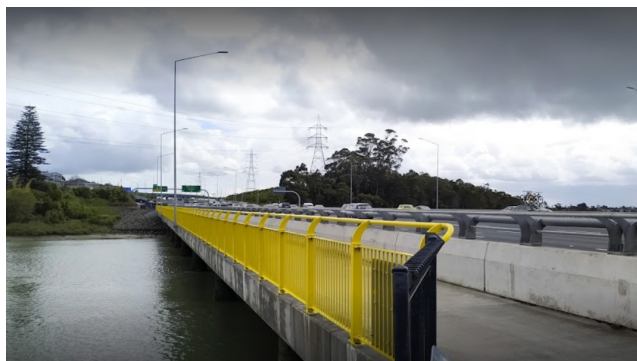


Fig 5: The new Whau Bridge at the mouth of Waitemata Harbour, next to the state highway 16.

Fig 7: The historical metal signage on the the Great North Road Bridge.



Fig 6: The Whau Rive and its wetland, view from the Great North Road Bridge.





## 1.2 Te Whau Pathway

Te Whau Pathway is a shared route linking the east and west coasts of Auckland. “It starts from Te Atatu and extends to Green Bay. It is approximately 15km long and 3-4m wide, tracing the edge of the Whau River connecting 33 parks, reserves and esplanades” (Te Whau Pathway, n.d.). As the only off-road link between the Waitemata and Manukau harbours, it is unique in Auckland. This vast pathway shares space with pedestrians, bicycles, and wheelchairs and provides necessary amenities for convenient travel to encourage low-carbon travel. Te Whau Pathway’s mission is to reconnect the communication between people, green spaces, and urban waterways. By popularising the history of the area, the Pathway project will evoke memories of the Whau River while increasing environmental awareness. A great deal of potential exists in enhancing the community’s cohesion by upgrading the surrounding amenities, such as supermarkets, restaurants, clinics, gyms and parks. Furthermore, the increase in pedestrians stimulates the local economy by bringing customers to local businesses.

It is a complex endeavor because the Te Whau Pathway Project connects multiple ecological habitats, such as rivers, urban streets, and nature reserves (MWH et al., 2017). In addition to enhancing sustainable transportation, the project became a modern artwork embedded into the Whau River to celebrate cultural and natural heritage. The project is divided into five parts to better achieve its goals (Fig 8).

Construction is still underway on the pathway; some of the sections have however, been completed. For the second and fifth sections, Auckland Council approved the resource consent in 2020; design and construction

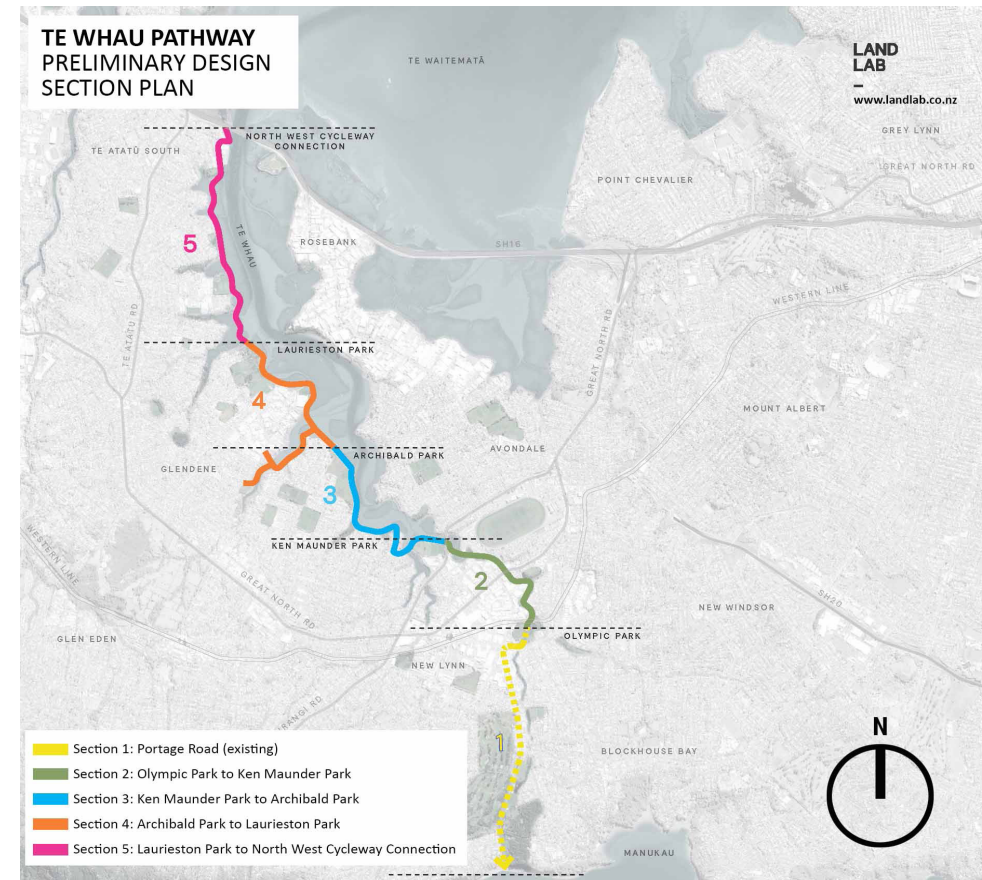


Fig 8: Te Whau Pathway sections preliminary design.

will take place in subsequent years (Auckland Council, n.d.).

The yellow line in Figure 8 indicates that the Portage Road stage is an existing bicycle route.

“The existing Portage Road may not suit cyclists, as evidenced by an interview by Bike Auckland. There is still potential for this section to increase the connection with other environments” (Auckland, 2017). Bicyclists are trapped between the motor vehicle lane and parking spaces while sharing Portage Road with motor vehicles (See Fig 9). The Whau Pathway attracts a high amount of bicycle traffic, and such a layout is not able to accommodate that volume of traffic.

Portage Road runs parallel to the former Astley Tannery (now Portage Road Business Park), the site of this thesis (see site plan Fig 88 ). Avondale Stream and its catchment are hidden behind a series of sawtooth roof buildings. Wire fences separate them to prevent pedestrians or bicyclists from encroaching. The current Te Whau Pathway planned route (along Portage Road) does not conform to the original intention of the pathway project, which was to connect pedestrians with the natural environment. An alternative pathway could diverge from Portage Road through the parking lot behind the buildings and run along the Avondale stream, crossing the creek to connect the outer neighbourhoods. This idea is further validated by defining the site of this thesis and conducting a detailed analysis in section 1.8.



Fig 9: View of Portage Road from Google map. Biking Route is in between of road and parking. This is also the planned route for Te Whau Pathway along the Portage Road.

### 1.3 Human settlement

The Whau River connects the two harbours as a vital communication waterway. There were abundant resources along the riverbank, such as freshwater fish and wood, to sustain early Maori tribes. Thus, the banks of the Whau River became short-term camps for Māori tribes. “Satellite fishing and gardening camps were usually set up away from long-term settlements during the summer months, and food would be preserved and then taken back to the kainga (village) for use during the winter” (Clough & Assoc. Ltd, 2019, p.6). Several tribes occupied West Auckland in the early periods, specifically Te Kawerau a Maki and Ngāti Whātua Ōrākei (Clough & Assoc. Ltd, 2019, p.7). Peace agreements and intermarriage fostered peace between the tribes. The Māori were soon to face conflict encountering European colonists after this period of relative peace.

The Europeans also saw the river’s enormous business potential. Settlements in the Whau area were granted sections by European settlers as early as the 1850s (Clough & Assoc. Ltd, 2019, p.7); the river providing great convenience for transportation. The Māori once paddled their canoes to the Avondale stream, landed, then carried them to the Manukau Harbour; this is why the route along Avondale stream is called the “Portage Road “ (Mackay, 2012, p.17). Water transportation was essential for trade at that time. Initially, Europeans planned to dig out the Whau River to build a canal to link the two harbours; however, they chose to upgrade the roads instead.

Furthermore, the fertile soil along the banks of the Whau River could be used to grow crops, as long as the shrubs and excess plants were removed, and fields close to the water source were very convenient for irrigation. Until the late 19th century, industry developed rapidly along the Whau River, and the riverside recreation gradually disappeared and was replaced by various kinds of factories.

Today, most of the heavy industrial activities have moved away from the Whau river, and the areas surrounding it have been urbanised, replaced by residential development or occupied by local businesses. Although the Whau River was once pristine, it has become seriously polluted over time due to industrial activity. Humans continue to invade animals and plants’ habitats to ensure their own survival and development. The relationship between humans and nature, however, is interactive; a contaminated environment is no longer a habitable climate and land for people either. Hence, this thesis proposes a plan to restore the natural environment as a means toward a



sustainable future.

## 1.4 Industry

Natural surroundings and waterway traffic along the Whau River encouraged people to settle there and provide speculators with many opportunities. Since the 1850s, brick manufacturing and pottery manufacturing industries have flourished on the banks of the river. These industries developed because of two major factors. The raw materials for making bricks came from the plentiful clay on the embankments. Second, the river provided convenient conditions for the transportation of heavy goods. A large number of brick kilns appeared along the Whau River from the 1880s to the early 1900s, as shown by the following brick factory distribution map (see Fig 10).

Besides brick factories and pottery manufacturing, Whau River was also home to tanneries. Leather processing requires a large volume of water for cleaning and boiling. The location of a tannery by the river makes it convenient to process and dispose of sewage. On the Whau River, the Gittos family established the first tannery. In 1847 Benjamin Gittos began his career as a tanner and shoemaker in Blockhouse Bay Road, Whau district. The Bell and Gemmell Tannery was north of the Olympic Park, established in 1878. Lastly, in 1888, Astley & Sons Ltd Tannery was founded near Portage Road and Avondale Stream (Timespanner, 2012) (Fig 10). The leather manufacturing and export business represented by these three families created the leather empire in the Whau district. These prosperous

1. Auckland Brick & Tile Co	1890s	1. Bell & Gemmel	1878
2. Hepburn's	1880	Riverdale Tannery	
3. Malam's yard	1861	2. Gitto's Tannery	1890
4. Laurie Bros	1863	3. Astley's Tannery	1888
5. Laurie's Brickwork	1897		
6. Black & Scott works	1880		
7. Hepburn's work	1862		
8. Hepburn's work	1895		
9. Archibald's work	1862		
10. Thomas's work	1909		
11. Redfern works	1870		
12. Wright works	1863		
13. Thomas	1906		
14. Ringross & Wright	1865		
15. Bourke & Kane	1892		
16. Remsden	1882		
17. Jagger Bros & Parker	1892		
18. Johnstone	1880s		
19. Thompson & Gardener	1902		
20. Crum brick Tile pottery Ltd	1935		
21. Glenburn potteries Ltd	1882		
22. Exler's pottery	1877		
23. Clark's potteries	1930		
24. Archibald Bros	1909		
25. Aiken's	1890		
26. Archibald	1870		
27. Redfern	1890s		

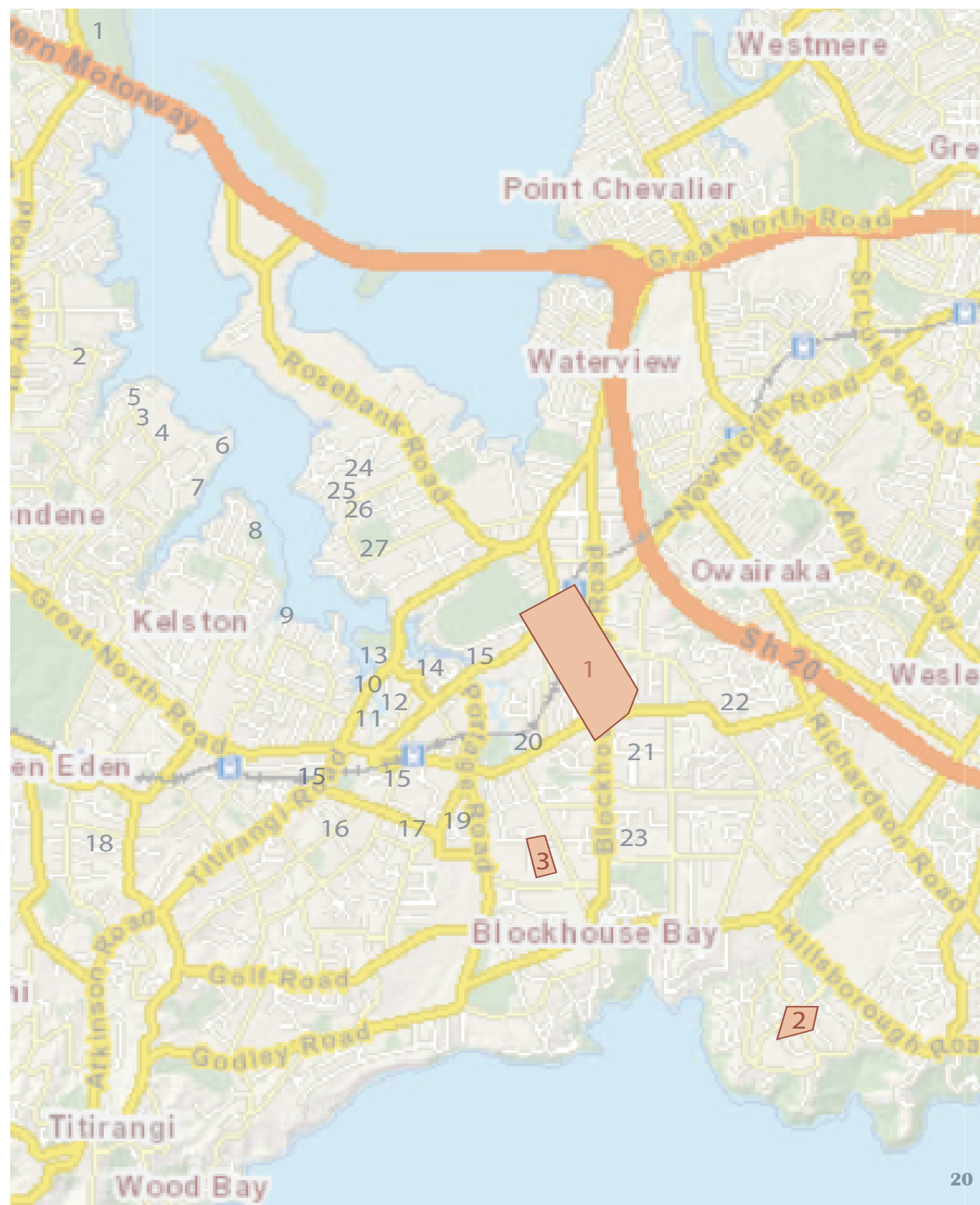


Fig 10: Map of all brickworks and tanneries around the Whau River, made by author of this thesis.

enterprises however, came at the expense of the Whau River's purity.

While the brick industry generated a high amount of carbon emissions, the leather industry dumped a large amount of industrial waste into the Whau River, including toxic chemicals, which seriously contaminated the river and endangered species that lived in its catchment (see Fig 11). "Since 1870, residents have repeatedly protested against the establishment of factories along the river" (kcv12, 2013). There is a painful fact behind the development of industry and other technologies – the environment on which humans and other species depend is sacrificed until it is exhausted.

Nowadays, there is no brick or tanning industry on the banks of the Whau River; instead, green reserves and optimistic local businesses have been established on these sites and connect with Te Whau pathway. Due to the influence of industrial history, the Whau district is still characterised by many historic industrial sheds. Many of these sheds are used for automotive shops and other local businesses. The conflict between industrial activities and residents therefore persists. The site of this thesis is



Fig 11: Chemical pollution caused milky colour of the Whau River. Photo from Newshub

## 1.5 New Lynn Industrial and Residential zone

### Unitary Plan

Auckland's urban planning system is built upon the Auckland Unitary Plan (Auckland Council, 2021), which integrates all of Auckland's districts into one unified system. Stratified by zoning systems, the Unitary Plan guides land development in Auckland and the use of natural and physical resources.

### Industrial Zone

The coexistence of residential and industrial zones from the settlement phase has lasted to the present day. In response to a review from Auckland Council, "A light industrial zone suitable for the increasing variety of warehousing and service trade operations is mainly located adjacent to residential areas." (Auckland Council, 2020, p.139). In the past, the industrial zone of New Lynn mainly operated activities like brickmaking, pottery making, or tanning; today, such actions have been moved to places away from dense populations. Many current uses of the site are directly relevant to residents' daily lives, such as automotive shops and food processing businesses. However, some activities' lack of management have caused traffic problems and adverse impacts to residents around them. The Figure below (Fig 12-13) shows the zoning distribution around the Whau River.

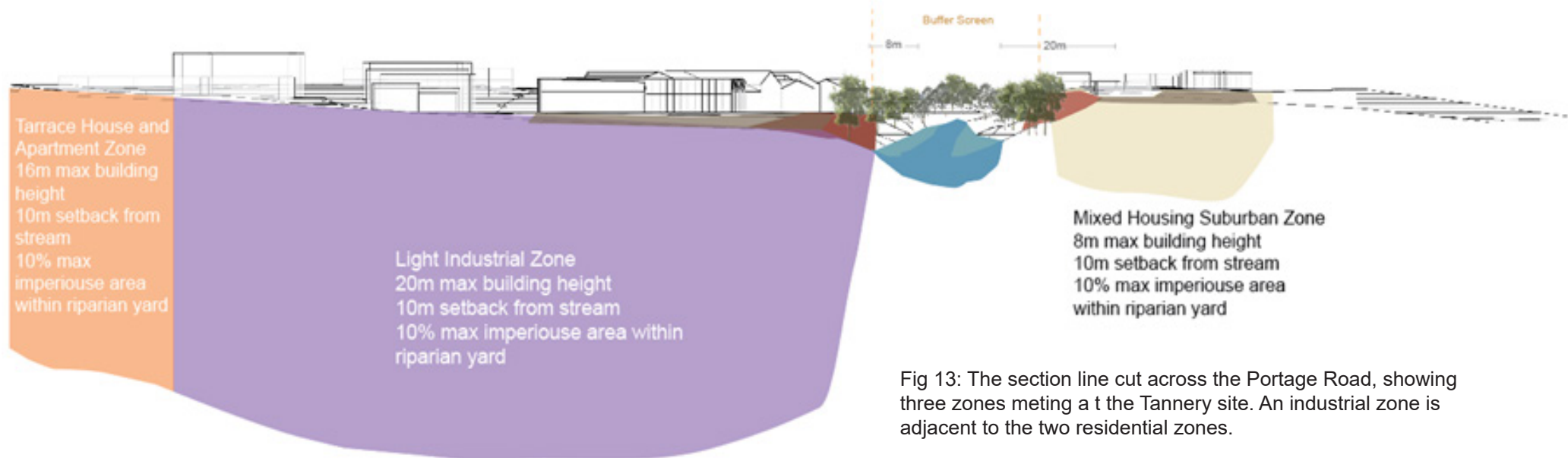


Fig 13: The section line cut across the Portage Road, showing three zones meeting at the Tannery site. An industrial zone is adjacent to the two residential zones.



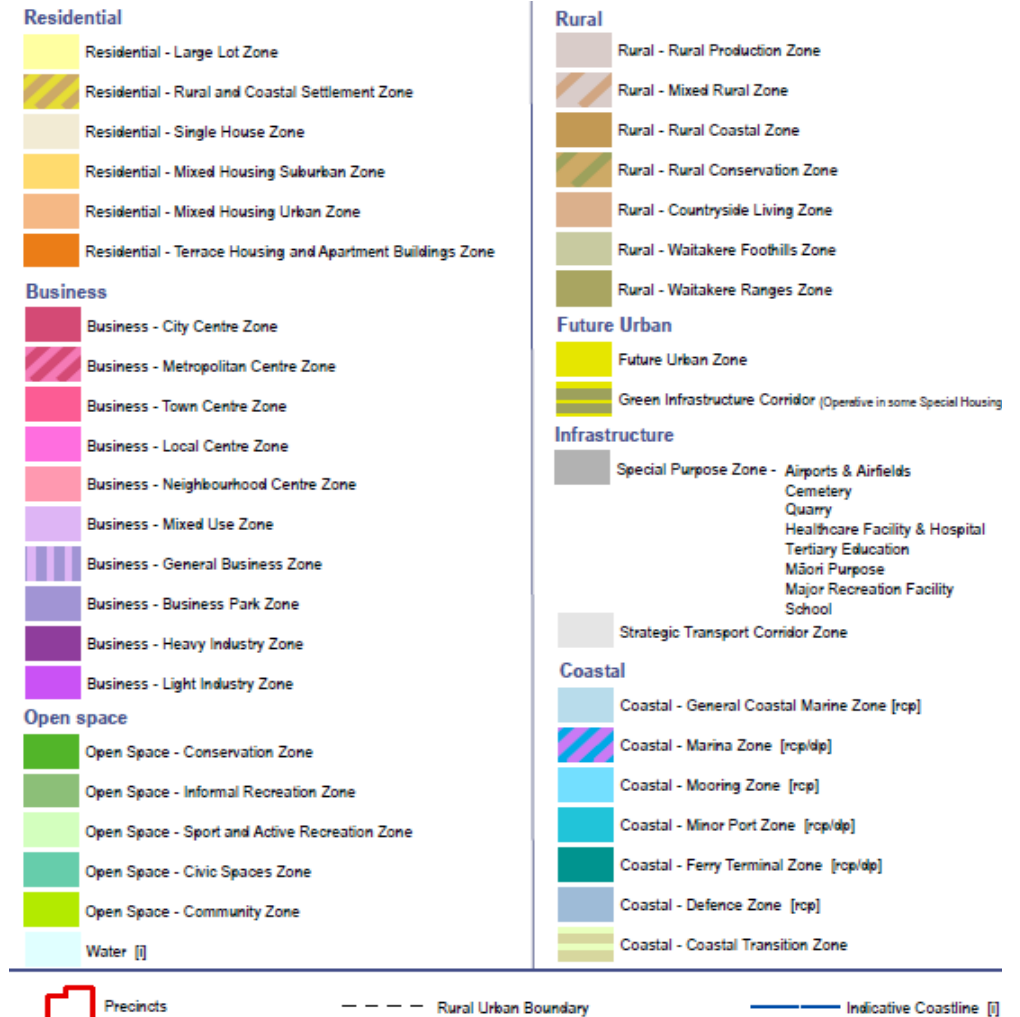
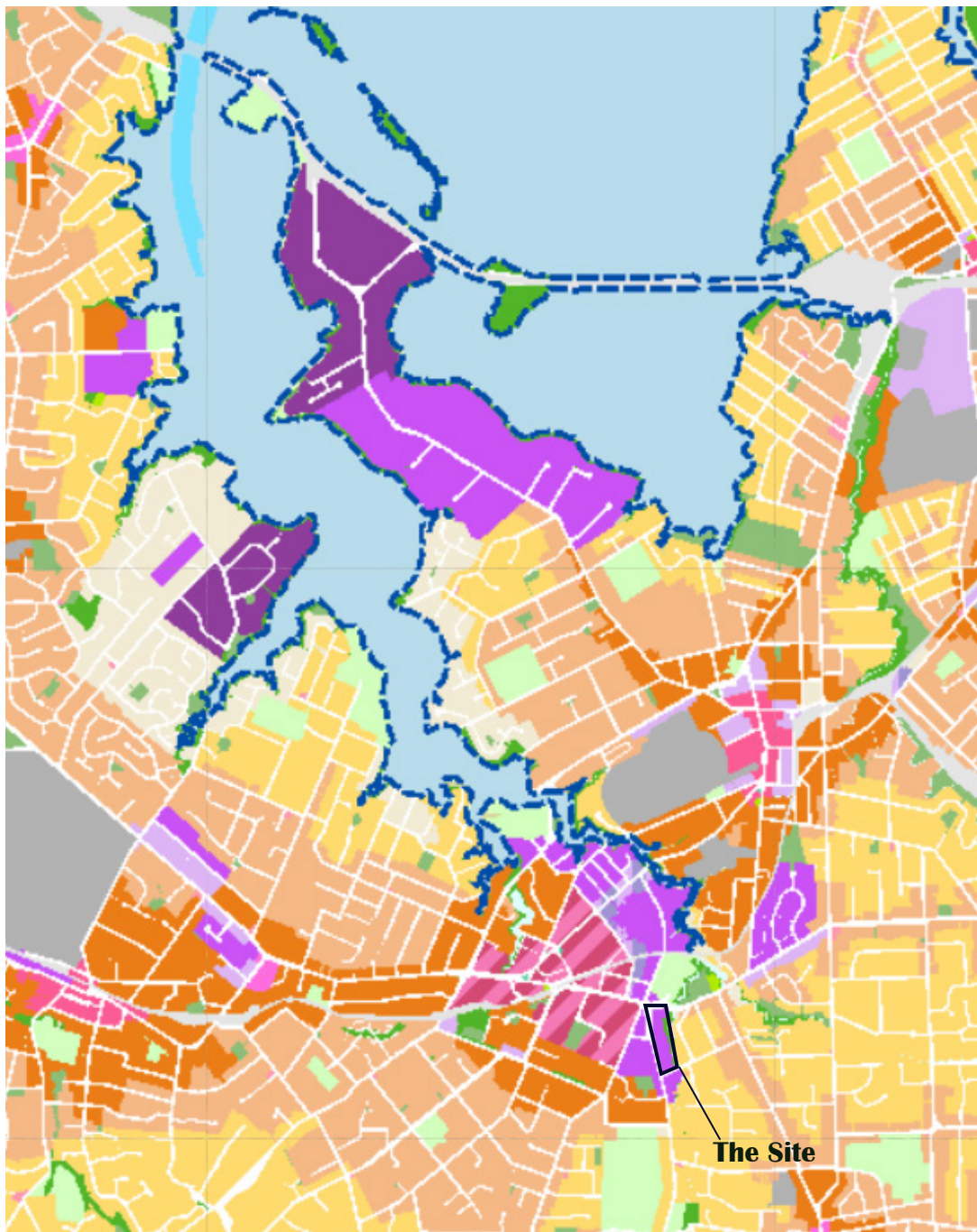


Fig 12: Zoning distribution around the Whau River from Auckland Unitary Plan map.

## Residential Zone

New Lynn is a large-scale residential suburb, “the earliest residential houses were built between 1900-1909. Since then, a large number of houses were built between 1970-1979” (Auckland Council, 2010, p.16). Since the Unitary Plan launched a new urban planning policy in recent years, many developers have turned their attention to this area. With the plan, New Lynn has a large area of a high-density residential zone to build more and taller buildings than before. However, there are also significant issues raised by the new policy. In this region, affordable housing with a small property area is becoming increasingly popular. The low-price forces developers to cut construction costs to maximise profits. As a result, New Lynn’s housing quality has decreased and many trees were felled to develop the land (Stuff.co.nz, 2021) (see Fig 14). Furthermore, a high-density lifestyle causes congestion and increases impervious surfaces, increasing flooding risks in the neighbourhood.



Fig 14: The developer chopped the precious native tree at the Avondale tree protest scene. Signages made by members on Mana Rākau.

## 1.6 New Lynn past and future

### Past

Ten kilometres southwest of the city centre lies the suburb of New Lynn. Brick production in New Lynn began with the arrival of European colonists in the mid-19th century and continued apace. “New Lynn experienced rapid population growth after the Western Railway Line opened in 1880” (Brooks, 2010) (Fig 15). It grew from a suburb with less than 100 people into an industrial centre, and in 1939, it became a Borough. During the Second World War, brick and ceramic products were in high demand. The majority of the potteries were supplied to the local market and in large quantities, such as coffee mugs or plates to the U.S. forces stationed in New Zealand and the Pacific. Crown Lynn, based in New Lynn, developed during this time into the largest pottery manufacturer in the southern hemisphere. New Lynn still retains the densest light industrial zone in West Auckland. (Auckland Council, 2010, p.16).



Fig 15: New Lynn railway station. photo by Les Downey, 1972



## **Future**

The former Waitakere City's mayor predicted that it would take 18 years to transform New Lynn into a high-quality eco-city with efficient transportation, more living options, and a healthier natural environment (Auckland Council, 2010, p.4). Under the New Lynn Urban Plan 2010-2030, New Lynn is committed to becoming a sustainable urban space with a world-class transit interchange capable of attracting 20,000 residents and 14,000 workers by 2030 (Auckland Council, 2010, p.4). With this vision, New Lynn hopes to develop infrastructure and livable communities while restoring the environment. The Council has developed detailed planning strategies and implemented them in phases between 2010 and 2030 based on its investigation and analysis results.

With 20 years of planning, Auckland City Council advocates maintaining the character and value of historical heritage. New Lynn's architectural heritage has been infused with characteristics from the past brick and tanning industries.

## **Summary**

It is proposed that the future urban planning of New Lynn should give more attention and protection to historical industrial heritage and consideration be given to how the design of new buildings are consistent with these characteristics. Furthermore, in the course of urbanisation, the restoration and protection of the natural heritage cannot be ignored. In the following chapter, this thesis accurately assesses and identifies the site's value, highlighting its importance while attending to New Lynn's future vision in terms of demand.



Fig 16: Site location map. It is on the 44 Portage Raod and adjacent to the Avondale Stream.

## 1.7 Site

### Astley Tannery

The site of this thesis is the former Astley Tannery. This section introduces this site in greater detail and shows its potential to connect with the Te Whau pathway project.

At one time, the Astley Tannery was one of the largest businesses by the Whau River (Fig 17). Nearby communities benefited from the numerous job opportunities provided by this business.

The family of Elijah Astley began planning its voyage to New Zealand in Chorley, Lancashire, in late 1879. Prior to emigrating, his leather-making business supplied materials for bootmakers and local factories. He and his sons initially worked for the Ireland Brothers' tannery at Panmure before moving to the Gittos family tannery up until 1883. The Astley family established a tannery business on Portage Road in New Lynn, along the Whau Creek, 1888. In 1903, the buildings were destroyed by fire but were quickly rebuilt (Truttman, 2020).

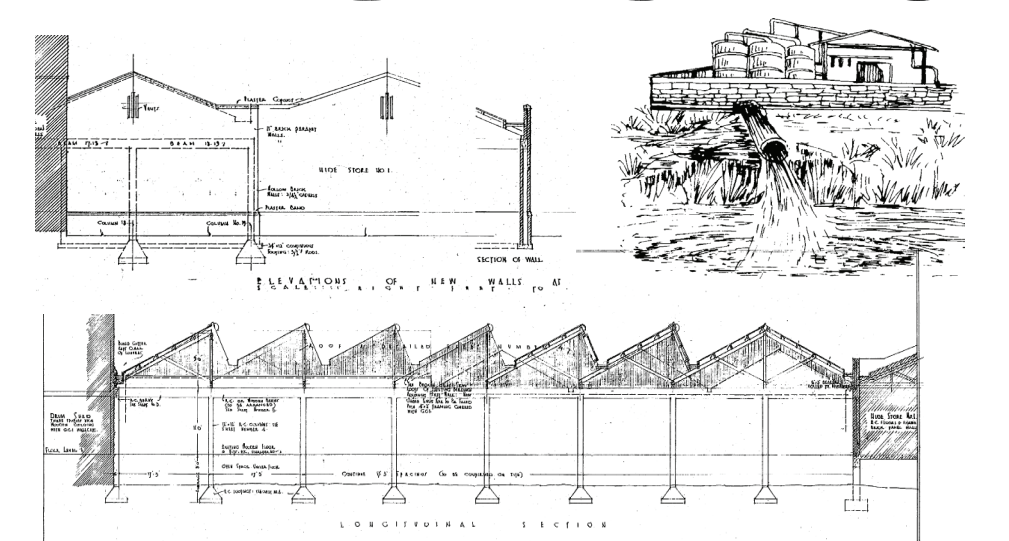
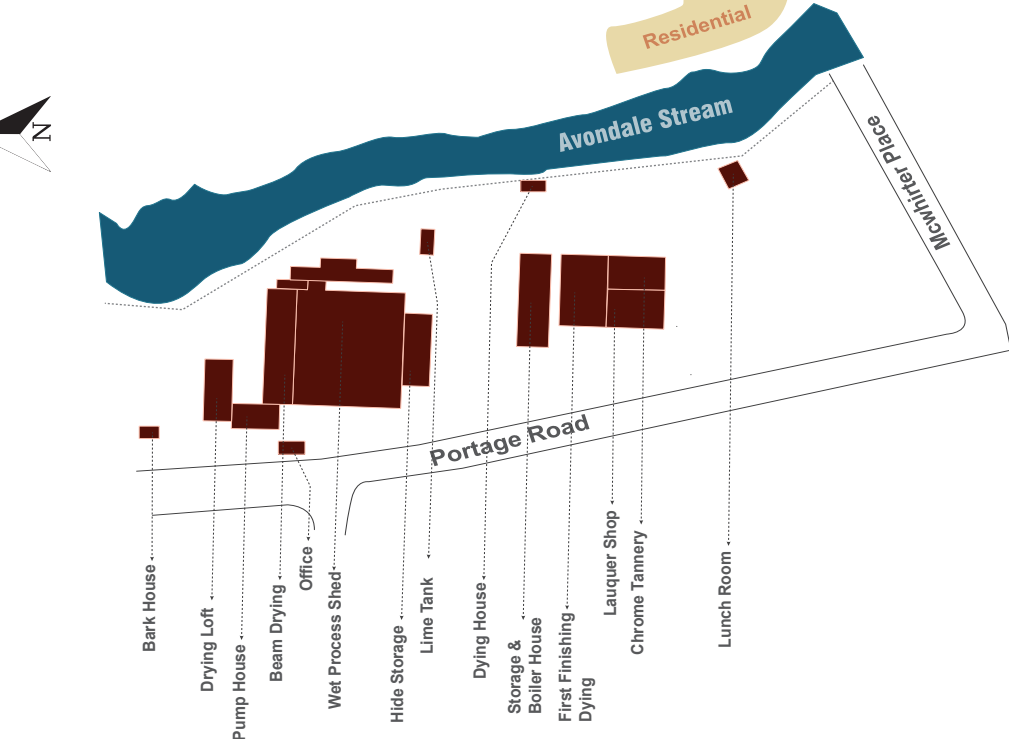
At one time, the Astley Tannery was an open space adjacent to Portage Road, and several buildings were used for various leather-making processes. Leather demand increased during the First World War; tanneries produced large quantities of boots, belts and saddles for the army. The war brought unexpected prosperity to the Astley family's business. The Astley Tannery resulted in a rapid expansion of its capacity; new warehouses were constructed to accommodate increased workloads, with more lunchrooms being added for employees (Fig 18 shows changes of Astley Tannery).

Fig 17: Photo of Astley tannery 1900s. View from east side looking across the Avondale Stream in foreground, with Waitakere Ranges in back ground.

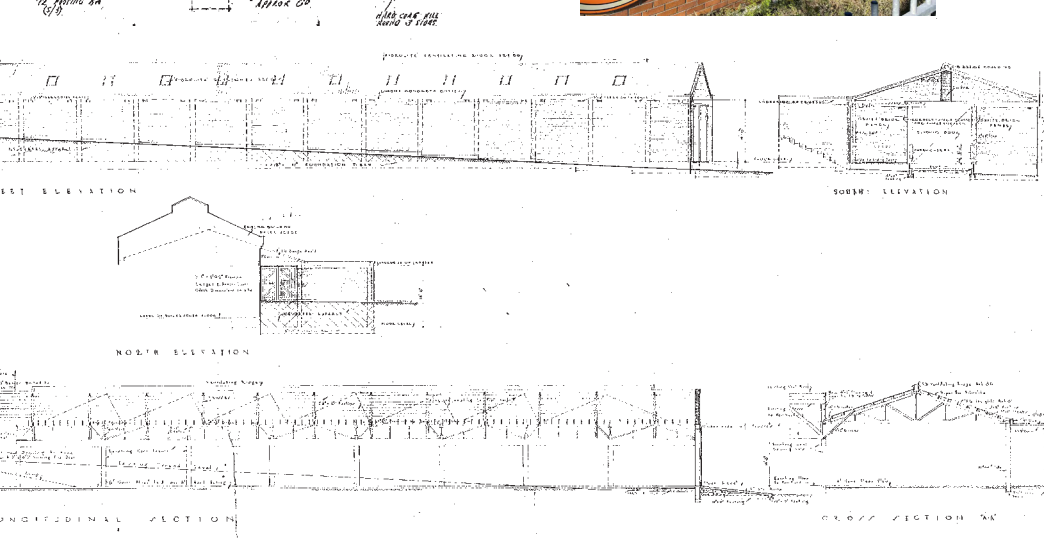
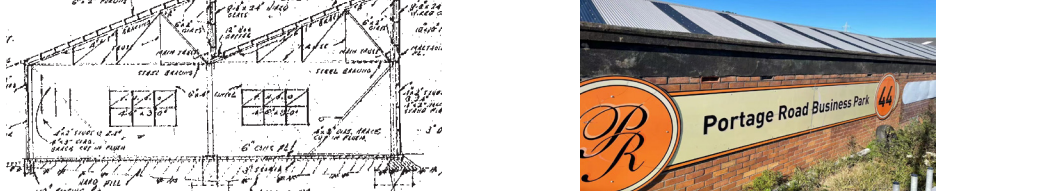




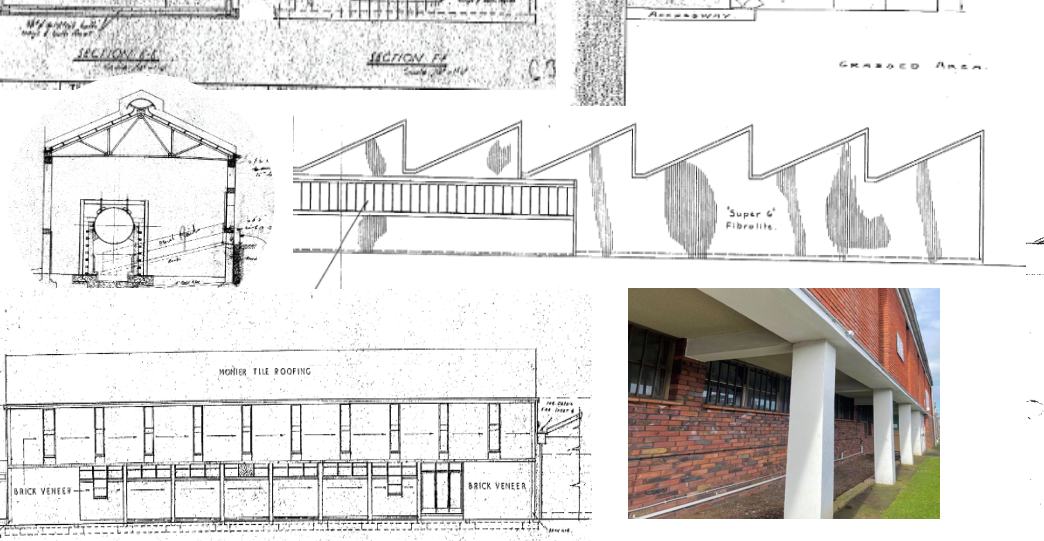
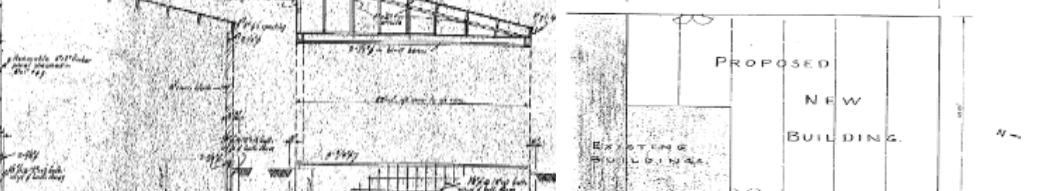
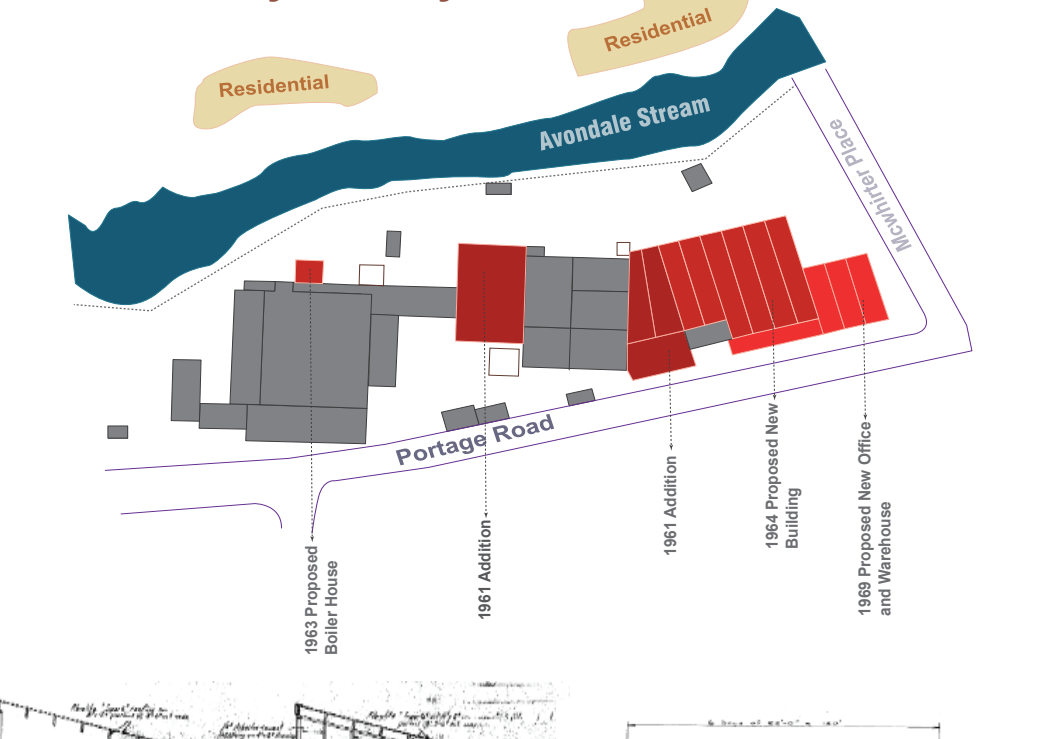
1933 The Astley Tannery



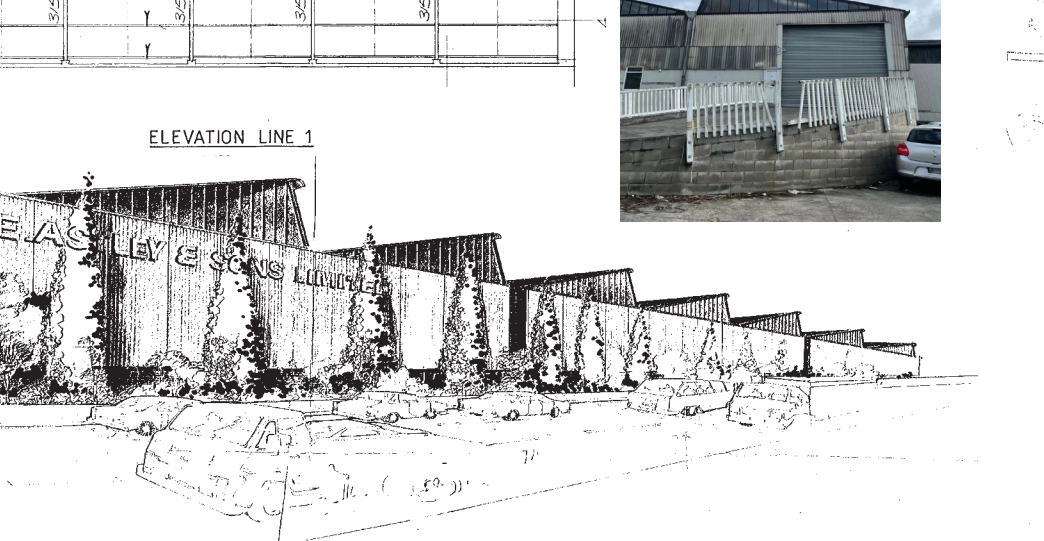
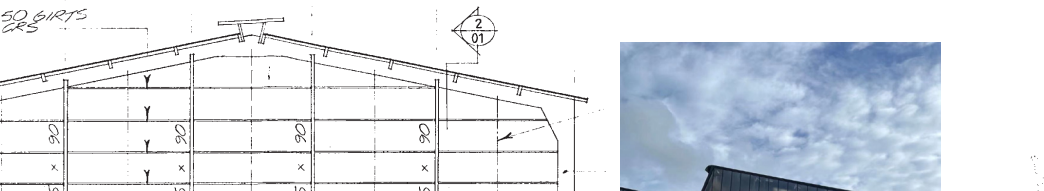
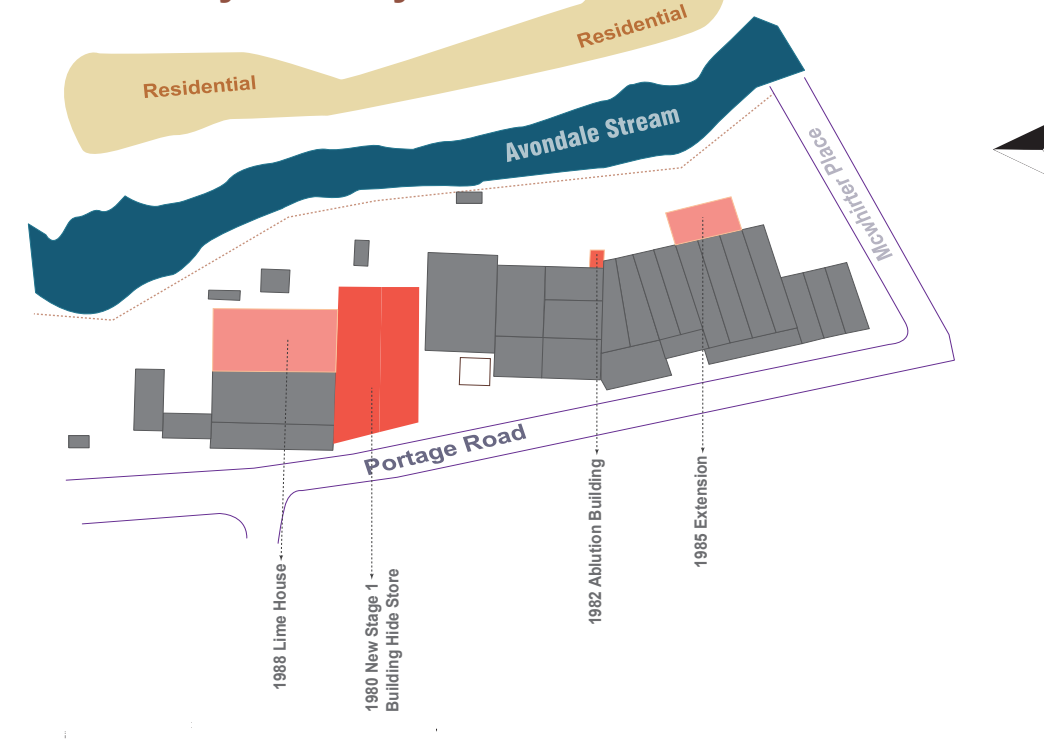
1952 The Astley Tannery



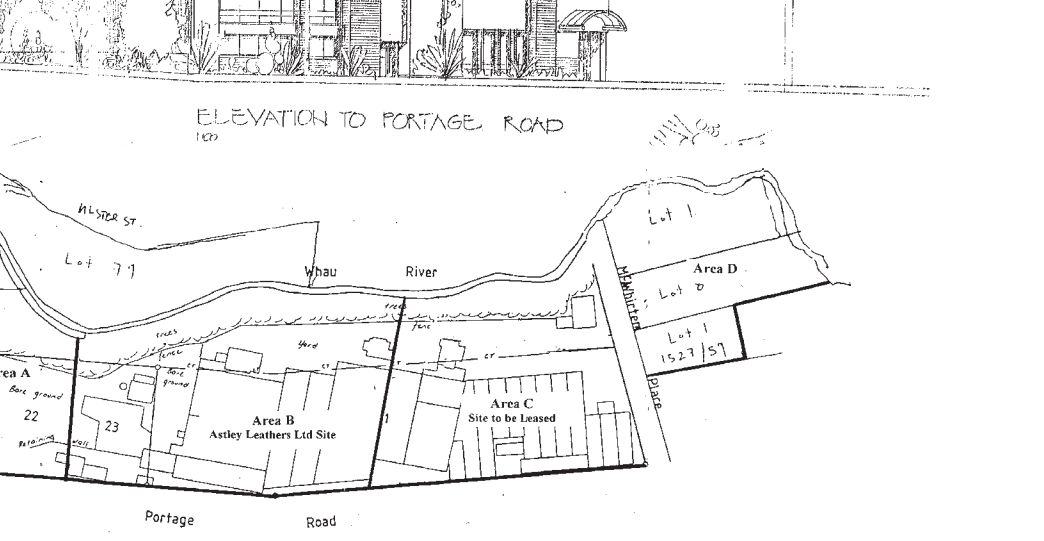
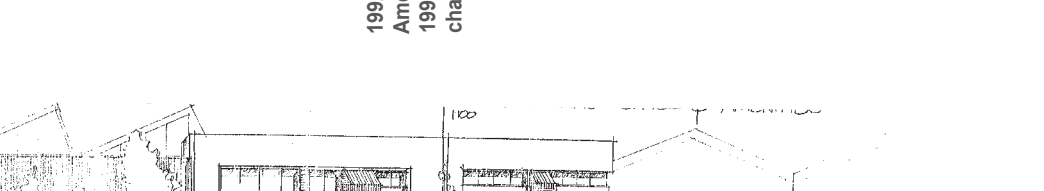
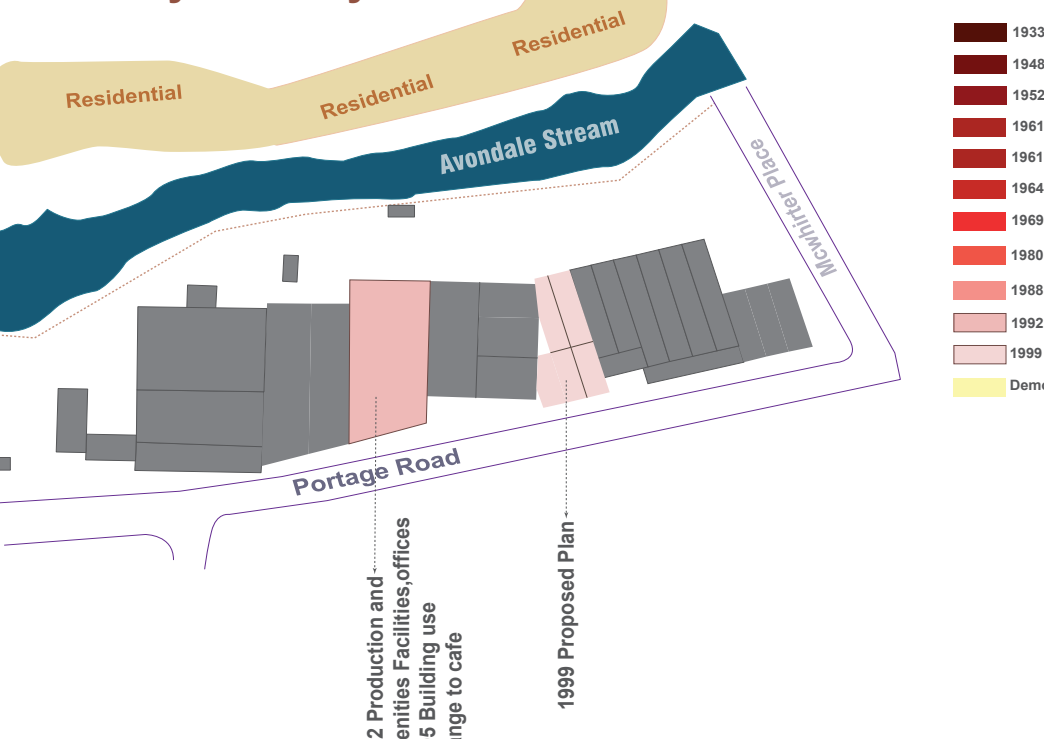
1969 The Astley Tannery



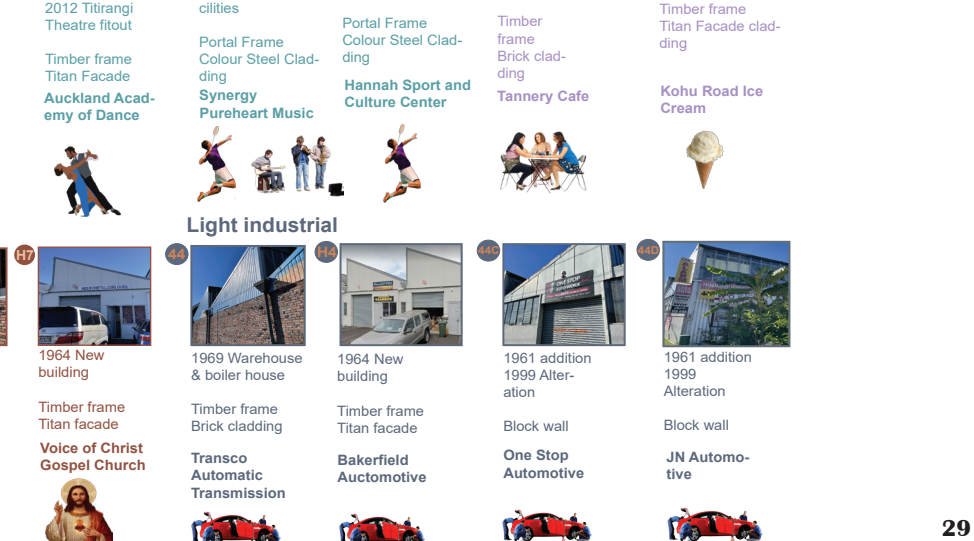
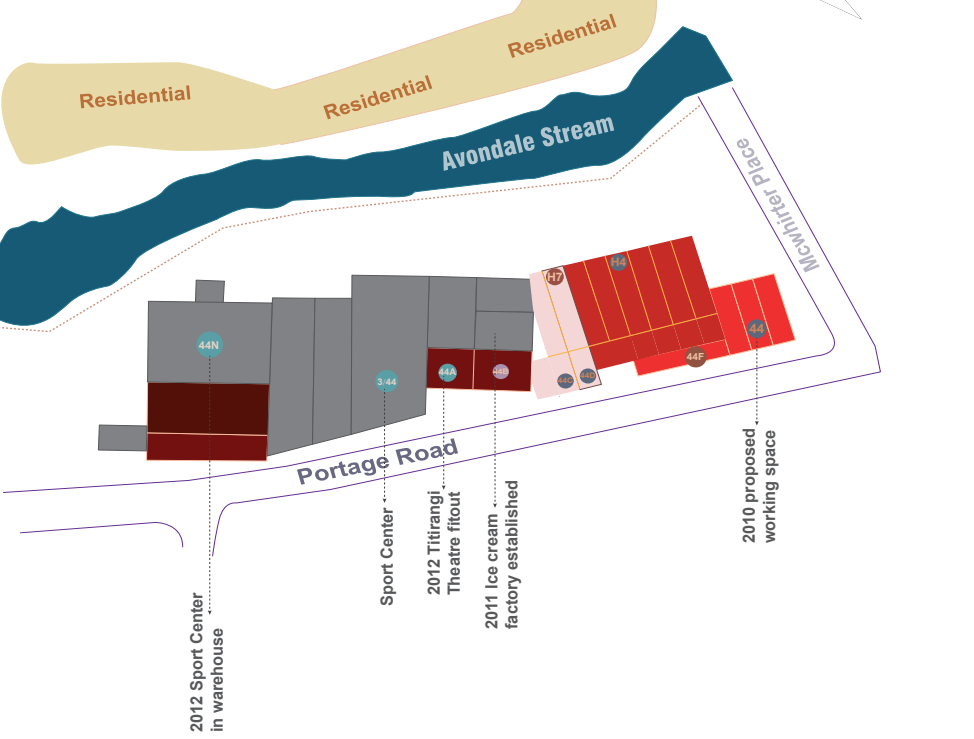
1988 The Astley Tannery



1999 The Astley Tannery



2021 44 Portage Road Business Park



**Sport and Culture**

- 1940 Hide Tannery: Timber frame Titan Facade
- 1940 Hide Tannery: Timber frame Titan Facade
- 1992 Production and amenities facilities: Portal Frame Colour Steel Cladding
- 1888 Lime House 2012 Sport Center: Portal Frame Colour Steel Cladding
- 2012 Titrangi Theatre flit: Synergy Pureheart Music

**Religion**

- 1969 Office: Jain Religious Center
- 1964 New building: Voice of Christ Gospel Church

**Light industrial**

- 1969 Warehouse & boiler house: Transco Automatic Transmission
- 1964 New building: Bakerfield Automotive
- 1961 addition 1999 Alteration: One Stop Automotive
- 1961 addition 1999 Alteration: JN Automotive

**Food & Drinks**

- 1940 Hide Tannery: Timber frame Titan Facade cladding
- 1948 Hide Tannery: Timber frame Titan Facade cladding
- Kohu Road Ice Cream



Fig 18: Mapping from 1933 to today based on Auckland Council property files, showing changes from The Astley Tannery to 44 Portage Road Business Park.

### **Impact on Avondale Stream**

The leather-making process involves utilising large volumes of water for washing and soaking. The tannery was located near the Avondale stream, which provided a significant geographical advantage (Fig 19). Despite this century-old industry creating enormous benefits for the local economy, it has also brought devastating environmental disasters; wastewater produced during the tanning process used to be discharged into the river. There were toxic chemicals present in the wastewater, which significantly damaged the waterway environment and destroyed wildlife habitats. As a result of continued pollution, the Avondale stream has lost its clarity and is no longer a navigable waterway.



Fig 19: Astley Tannery built along with the Avondale Stream, 1900. A boat docked on the bank.

### **Business Park**

New Lynn was just a small village when the Astley family first established this business; the Astley Tannery no longer exists in New Lynn today. In response to society's needs, the area has been developed as a business park, where numerous local businesses are gathered (Fig 21). In industrial buildings, the volume is usually large enough to handle all types of new projects, making them a good fit for sports centres, automotive shops, dance studios, and other activities that need a large amount of space. With the growth in vehicle usage, a concrete parking lot was constructed on the site, and the existence of Avondale Stream is now hidden behind the towering and in-coherent buildings. The parking lot increases the impermeable area, and rainwater washes the concrete floor and flushes harmful substances into the soil and water. Wire fences are placed along the edge of the stream to prevent people from approaching it. There is abundant litter in the parking lot, especially along the fenceline (Fig 20).





Fig 20: Litters were presented along the wire fence.

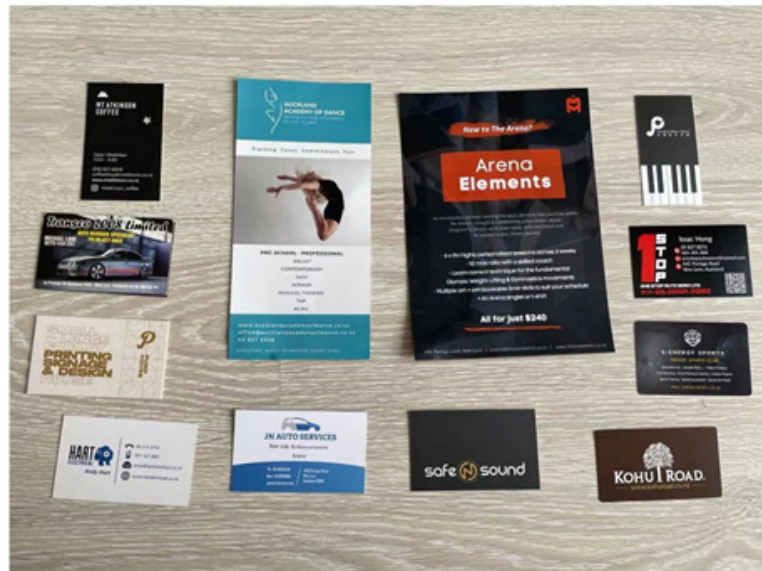


Fig 21: Business cards were collected from most of the local businesses in 44 Portage Road Business Park to show the Diversity of activities today.

Although the site was reused for new purposes, its historical significance still needs to be acknowledged better; the Avondale Stream should be restored as a valuable natural resource. Te Whau Pathway project offers this thesis a unique chance to re-examine the planning of the site, redefine its value and discover more opportunities to adapt it to future needs, as well as re-establish the connection between Avondale Stream and the neighbourhood, further improving the pathway project experience. The next chapter discusses how adaptive reuse methods repurpose the existing buildings, and Chapter Four introduces the opportunities discovered on this site.

## Chapter Two: Urban Context

*The two parts of this chapter cover the theory and strategy of adaptive reuse while discussing the principles and applications of low-impact urban design. This chapter is the key to this thesis' design proposal and lays its foundation.*



## 2.1 Adaptive Reuse

### 2.1.1 Introduction

The framework of adaptive reuse in architecture is a transformative process that enables old buildings to continue to play uses, even beyond the original service. This process retains the historical characteristics and value of the building while introducing new programmes. A growing awareness of adaptive reuse is also accompanied by increasing energy, environmental, and ecological concerns.

The 'protagonist' in this thesis, the Tannery, is also changing as a pending historical heritage site. Contemporary planning policy now also places more emphasis on the protection of the ecological environment and the construction of sustainable communities. Former industrial projects that cause river pollution and harm the ecological environment are also moved away from the community. The Tannery ceased leather manufacturing and instead became home to various small businesses.

The Astley Tannery, now known as 44 Portage Road Business Park, reveals that adaptive reuse is already underway. Some buildings on the site have adopted appropriate adaptive reuse strategies to highlight their historical value while serving new programmes. However, the site lacks proper management and arrangement, making the entire site disorganised and unattractive. It still needs future development for adapting to a growing population and supporting the rejuvenation of the Avondale Stream.

This chapter explores Lilian Wong's book "Adaptive Reuse Extending Lives of Buildings" to better recognise and protect the value of the site through adaptive reuse methods. This book demonstrates several adaptive reuse strategies aimed at different historical heritage buildings. Three categories of heritage based on the definition of the Auckland Council, are then researched to find out which types the Tannery belongs to. Wong's book gives practical knowledge and inspiration to the author in assisting to identify the site's position regarding adaptive reuse. Extending the life of buildings is to reset their historical value and play more roles in shifting societies and cultures. This chapter is also a process to explore the history of adaptive reuse. In the case of different periods, we can see that the complexity and functionality of adaptive reuse strategies are changing with the requirements and context of the times.

## 2.1.2 Design Strategy

Wong believes that the consciousness of adaptive reuse has existed since ancient times. “The reuse of caves as domicile and animal pelts as clothing are early instances of man’s resourcefulness” (Wong, 2016, p.6). Generally speaking, in order to extend the life of a building, we will inject new programmes and functions into the building or recycle its materials for other uses. When neither can be achieved, it is necessary to consider dismantling or expansion. However, in recent years, global attention to climate change has transformed adaptive reuse projects. “With a global focus on the conservation of resources, there are now, more than ever, concerted efforts to evaluate the potential of existing and outdated structures for reuse rather than to demolish and build anew” (Wong, 2016, p.6). The origin of adaptive reuse probably stems from people’s pursuit of immortality and this pursuit is known human behaviour. Whether in Eastern or Western history, countless allusions can be found to prove mankind’s desire for immortality. According to Liliane’s text, “Buildings, like humans, also experience a finite life span. At its conclusion, they, like us, face an end: demolition” (Wong, 2016, p.58). However, under the practice of adaptive reuse, the destiny of a building as demolished has been postponed indefinitely. Adaptive reuse takes different strategies. In this section, it is important to use accurate terms to describe these strategies.

### Preservation, Conservation and Restoration

Adaptive reuse does not just happen to a building; sometimes it may be a village or a city. The existence of a building bears witness to the story of an era, or the way of survival in an era. This strategy can be called **preservation** and **restoration**. In fact, **preservation** and **restoration** have different positions. Wong’s book shows that **restoration** is to restore the building to a specific period and remove the interference from other periods. **Preservation** aims to repair to an existing state to retain the historical features accumulated over time and it can add on new use as long as it is relevant to its context (Wong, 2016, p.83-85). The **preservation** position acknowledges time’s influence, and the fundamental principle of **restoration** is not to regard time as a variable. ICOMOS New Zealand has also recognised Wong’s views on **preservation** and **restoration**.



Preservation means to maintain a place with as little change as possible (ICOMOS New Zealand, 1993, p.4).

Restoration means to return a place to a known earlier form, by reassembly and reinstatement, and/or by removal of elements that detract from its cultural heritage value (ICOMOS New Zealand, 1993, p.4).

When implementing adaptive reuse, more than one strategy can be used in the exact location. Plimoth Patuxet Museum is a precedent that combines the **preservation** and **restoration** strategies in Wong's book. "Small communities of buildings such as colonial Plymouth (...) are examples of such structures that are no longer pertinent as living cities. Their significance lies in the recall of a moment in history" (Wong, 2016, p.60). Every detail of this small village has been completely restored to the era when it appeared (Fig 22). This village was restored as a tourist attraction in order for future generations to experience the life of the 17th century.



Fig 22: Plimoth Patuxet Museum with tourists.

Wong maintains that adaptive reuse strategies are influenced by culture, religion, revolution, or other factors. Religion always influences human behaviour; the evolution of adaptive reuse is also influenced by religion. Also, during the Middle Ages, there was a divide over whether historical buildings should be preserved. Some people believed that accepting death is the beginning of rebirth (Wong, 2016, p.67). Alternatively, others advocated those buildings should be treated regularly, just like humans, and that regular repairs can keep them alive. During this controversy, the word conservation has gradually emerged in a similar fashion to restoration but has a different meaning. **Conservation** focuses on the regular maintenance of historical heritage buildings rather than waiting for them to be destroyed beyond repair and then demolished or restored. It is sometimes hard to distinguish between **preservation** and **conservation**. The author proposes that **conservation** is an advanced strategy based on preservation. It pays attention to the building's historical significance while managing its relationship with the environment and time, adapting it to the current era, and passing on its historical value and characteristics in a continuous process.

The Church of the Holy Sepulchre and the Hall, has allowed the author to observe firsthand the practicality of preservation and explain why **conservation** is not appropriate. Located on Khyber Pass in Auckland, the Church of the Holy Sepulchre was built in 1880 (Fig 23). It is listed as an example of late-nineteenth-century Anglican religious architecture; the Church and its hall are valuable architectural works (Church of the Holy Sepulchre and Hall, n.d.). An important feature of this church is its well-preserved and significant timber construction from the late Victorian Gothic Revival era. The church also has a strong historical connection to major historical events and individuals, making it a significant historical landmark. In its history, this church has undergone many material replacements in support of the **preservation** principle; for example, in 1892-1896, the roof was replaced from shingles to corrugated iron, and in 1970, another concrete block foundation wall was built. Its historic features have not been altered by these repairs so that it continues to perform religious functions, officiate weddings and conduct funerals. Religion evolves along with society, so the church's function itself is sufficient to keep it alive. This church has been using a preservation strategy to continue its history. So therefore, choosing a strategy depends on the character and context of the building.



Fig 23: Street view of the Church of the Holy Sepulchre, 2020

Another case concerning **conservation** comes from the journal – Conservation and adaptive reuse of modern military industrial heritage: a case study on the former site of Jinling Arsenal in Nanjing, China (Wang et al., 2021). Two Opium Wars forced China to undergo social reform and self-improvement movements in response to foreign aggression, adopting the strategy of acquiring western advanced science and technology. During the late Qing period, foreign engineers were hired by the Chinese government to design and build many military-industrial bases (Wang et al., 2021). After the war, manufacturing and production became the focus of the country. Thus, this place was transformed into an industrial manufacturing factory, and more industrial buildings were constructed simultaneously. Industrial activities were forced out of the city during the early 20th century to meet Nanjing's urban planning requirements. Those buildings that marked the historical footprints were preserved and later became the Chenguang Creative Industrial Park. As shown in Figure 24, the site has had more buildings added during different periods. Jinling Arsenal's historical significance is more complicated than that of the church of the Holy Sepulchre. Its design reflects the culture and influences derived from western countries' colonialism. Later additions witnessed the industrialisation of modern China. Nevertheless, social development led to the elimination of its original attributes.

The best option to continue and preserve the value of this site is **conservation**. From its original state to the present, Jinling has undergone renovation and addition. A new layout has been created for the art park, walls have been removed, and new entrances have been added to enhance the urban landscape and increase openness. Besides displaying historical relics as an art park, it also maintains and repairs its historic features. Today's Jinling Arsenal is fully integrated into urban life. This example is similar to the Tannery site examined in the design research, which the next chapter covers in more detail.



Fig 24: Site plan of Jinling Arsenal with color coding of years.

## Intervention

After entering the 20th century, the practice of adaptive reuse has undergone significant reforms. The idea of using modern materials and technologies to restore and conserve historical heritage was proposed for the first time (Wong, 2016, p.92). This laid the foundation for subsequent **intervention** strategies. As Wong points out, “the human body is analogous to the host structure, as people have received medical interventions all their lives, such as organ transplants or prosthetic devices; these work best when the details of the guest conform to the host” (Wong, 2016, p.102). Renovations, additions, and extensions have become a more common **intervention** strategy in historical buildings. **Interventions** are also designed to align more closely with the features of the host structures. **Intervention** strategies can be further divided into interventions that do not change the original purpose and interventions that introduce new uses.

In regards to interventions, the demand for adaptive reuse today is more about adding new elements to the existing primary structure. In Wong’s book, there are a few types of hosts described in the intervention strategy (Fig 25).

The following section briefly introduces the five types of hosts based on Wong’s book.

Fig 25: Diagrams of type of host structure, Wong 1994.



### Intervention: Shell Host and Relic Host

**Shell hosts** handle interior retrofit, and they play a passive role in adaptive reuse, which means that the host permits interventions but suppresses them so that they cannot interfere with the host's connection to its history. The Apple company often opens its stores in old buildings (Fig 26). While the interior space of Apple Store is white, bright, and minimalist with modern floor-to-ceiling windows, the exterior features of the building reflect its age and history. In this type of host, the interior functions and uses are changed while the exterior features and architectural attributes are preserved. It is similar to the relic host, the difference is that the **relic host** displays them as fragments of history and the monuments surrounded or protected by new interventions, as in the Kolumba Museum (Wong, 2016, p.118) (Fig 27). As an intervention, the red bridge runs through the museum for people to walk and visit. The intervention is very abrupt in the host, and their sharp contrast defines the boundary between modernity and heritage.



Fig 26: Apple Store on Regent Street, London.



Fig 27: The new grey brick unites the fragments of the St. Kolumba Church in the new Kolumba Museum, Cologne, by Peter Zumthor.

### Intervention: Semi-ruin Host

Unlike hosts that perform passive actions, some hosts have performative actions, and the **semi-ruin host** is one of them. The **semi-ruin host** is the building that has an incomplete structure or missing functions and elements. Interventions aimed at conserving host structures usually merge with existing incomplete structures to create a unified whole. Besides appearance, this change affects function as well. The intervention gave existing buildings more capacity to adapt to the new experience. A semi-ruin host, the Moritzburg Museum Extension, illustrates this principle well (Wong, 2016, p.112). A modern intervention was inserted in the stonework of the ancient castle in Halle, Germany (Fig 28). By adding an extension, this ruined historic site gained an additional space for exhibitions and galleries (Fig 29).

Fig 28: Extension to Moritzburg Museum inside a ruined castle in Halle, Germany, by Spanish studio Nieto Sobejano Arquitectos. Photo by Roland Halbe.



Fig 29: Inside the Moritzburg Museum Extension. Photo by Roland Halbe.

### Intervention: Fragmented Host

Some abandoned structures do not have significant historical features, so they need to be evaluated before determining their value – these are **fragmented hosts**. Studio Piva's Le Terrazze Hotel in Treviso is a perfect example of how abandoned structures can be repurposed (Wong, 2016, p.114-115). The predecessor of this hotel was an abandoned concrete skeleton (Fig 30). Abandoned hosts can serve as resources for interventions. Recycling the **fragmented host** for new projects is a cost-saving strategy and a tool needed for a sustainable city.



Fig 30: Le Terrazze Hotel in Treviso by Studio Piva.

Fig 31: Zollverein coal mine and coking plant in Essen, Germany.



### **Intervention: Group Host**

A host structure is not always a single building; it can also be a group of buildings or even an entire city. In a **group host** strategy, each type of intervention is classified according to whether it is part of a complex or is a single element in an overall urban environment. When a complex has an intervention, it emphasises its value and inherits its context rather than inventing fancy features. In the Zollverein coal mine and coking plant in Essen, Germany, in an effort to honor the history of coal mining and the technological development of the site, a museum was developed at the coal mine site (Wong, 2016, p.119-121) (Fig 31). Even if its use is changed today, this conversion continues its prior legacy.

So far, this chapter has summarised adaptive reuse strategies as outlined by Lillian Wong (2016). The next section discusses classification of heritage in terms of the Auckland criteria. In combination these will lay the groundwork for developing an adaptive reuse strategy for The Tannery.

### 2.1.3 Heritage Categories – Auckland Council

The Methodology and Guidance for Evaluating Auckland's Historic Heritage assesses historic buildings and sites according to their "historical, social, mana whenua, knowledge, technology, physical attributes, aesthetics, and context values" (Auckland Council, 2020b, p.11). Based on the overall values, the Auckland Unitary Plan has divided heritage into three categories.

Category One: the outstanding significance of the building far exceeds the adjacent buildings

Category Two: the building is of great significance to the local area or a larger geographical area

Category Three: this is an interim classification, which is aimed at buildings in the former "district plan" that were defined as a historical heritage but are now being re-evaluated (Auckland Council, 2020b, p.6).

#### Category One

Large-scale renovations are not easily allowed, and adaptive reuse methods are too limited to use in such buildings. An adaptive reuse project should be sensitive to historical values when the structure of the building has a great significance in terms of aesthetics or technology. Heritage buildings classified into this category are typically landmarks in a city or a district. A preservation and restoration strategy is usually employed in this instance.

Wong used Castelvecchio as an example to illustrate the position of the first category of heritage in adaptive reuse. Castelvecchio is a must-see when visiting Verona. Built in the mid-1300s, the museum showcases Medieval and Renaissance sculptures, ancient bronze bells, jewelry, weapons and armour. Architect Carlo Scarpa undertook the restoration and preservation of the building in 1959 (Bianchini, 2018), the details being both subtle and thoughtful. In restoring the building, Scarpa cleverly incorporated additional features that are harmonious with its historical features, making visitors believe it is as it originally was. The old and the new structures may seem indistinguishable at first glance (Fig 32). A closer look reveals the blurry line between old and new materials (Fig 33). For example, the rusty hardware parts blend seamlessly into the building, whether attached to the brick wall as a staircase or used as a door handle (Fig 34). A preservation strategy effectively converted the building into its new function with modern materials while collecting and preserving its historical features, while a renovation strategy restored the building to its medieval state permanently.



Fig 32: Outside view of the Castelvechio Museum - old and new buildings merge.

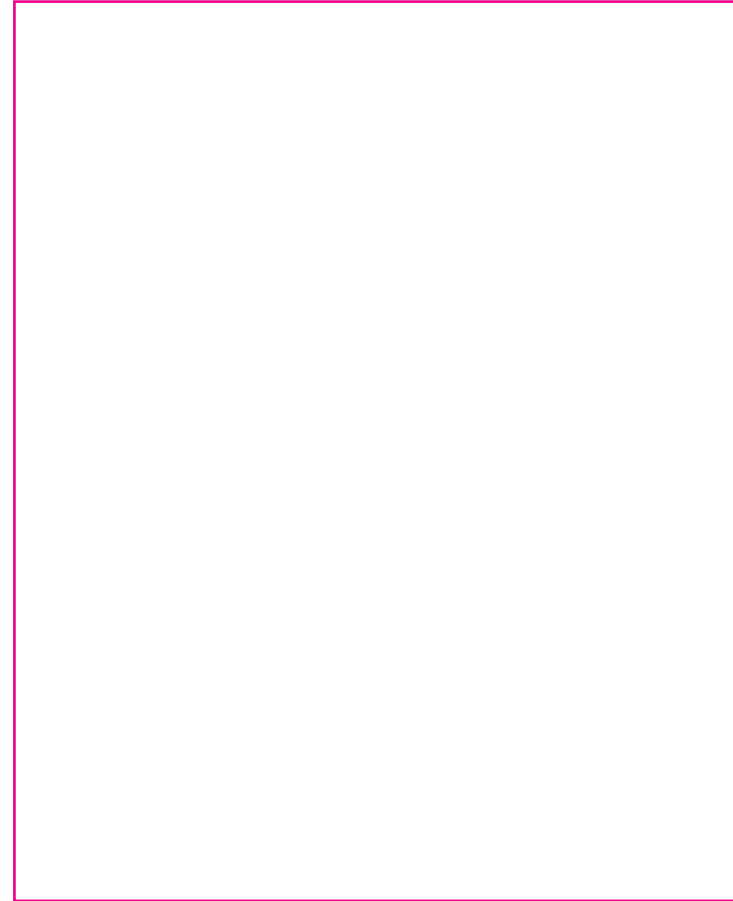


Fig 33: Stone slab on heritage brick foundation. Castelvechio Museum.



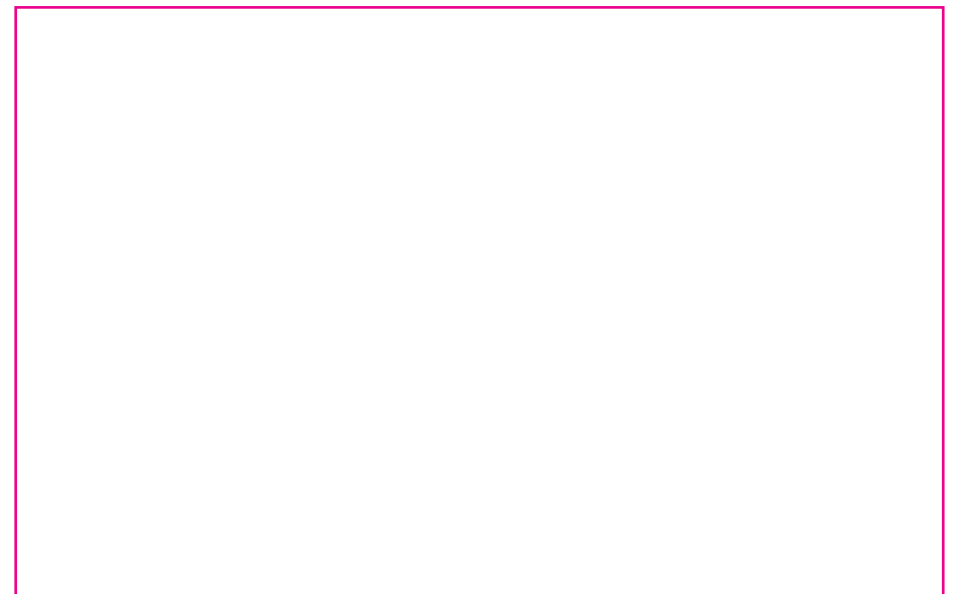
Fig 34: Rusty Staircase attached to the brick wall. Castelvechio Museum.

## Category Two and Three

Compared to the first type of heritage site, the second and third types have more possibilities in adaptive reuse. In the second category, heritage buildings are less valuable in terms of historical, aesthetic, and technical factors, and some of the historic features can be reproduced; they are often of great significance to the local area. Auckland has a large proportion of heritage buildings belonging to the second category, most of them are residential or natural heritage sites. Whenever they are refurbished, it is usually necessary to ensure that the intervention style is compatible with the age of the host. As there is less concern about a historic value being damaged or lost during construction, conservation and intervention strategies appear in this type of heritage.

In Wong's book, the Elbphilharmonie Concert Hall, by Herzog and De Meuron, illustrates how buildings with insured historical value can continue to flourish. The predecessor of the Elbphilharmonie Concert Hall was the Kaispeicher built in 1875, the largest warehouse in Hamburg's northern German port city (Wong, 2016, p.152). Abandoned in the 1990s, the developers of Hamburg decided to build a splendid concert hall on the old warehouse site in 2003. A warehouse does not often have much historical value, no matter the structure or context. This concert hall used intervention methods, taking the volume and structure of the original warehouse as its host (Fig 35). The extension added vertical space to accommodate the new programme. Injecting a new task, value, and mission to it, the transformed host became a landmark in the city.

Fig 35: Section view of Elbphilharmonie Concert Hall digital model.



### **2.1.4 Challenging in Evaluation**

Heritage buildings are not all as lucky as the Elbphilharmonie Concert Hall. There may be many buildings with no outstanding historical significance, so they do not draw attention. Kathryn and Merlino's book on "building reuse", criticised the classification of historical heritage. "Age has often been the starting point in determining buildings' historic value or significance. The age that officially qualifies a building to be considered 'historic' is typically fifty years, but buildings as young as twenty-five years can also qualify as 'historic' in some places" (Merlino, 2020, p.4).

It may be unfair to evaluate the value of a heritage building based on the historical moment when it was first built and may have overlooked partial value gained over time. Vernacular sites are unlike those cultural relics with apparent historical significance. Whether warehouses or shops, they are closely connected to people's lives, and it is these vernacular sites that make up a community. They, therefore, have cultural or social values (Merlino, 2020, p.23). Some of these buildings can be protected with preservation ordinances, but that does not ensure they are not to be significantly altered or destroyed. Thus, heritage value should also be considered socially, culturally, spiritually and environmentally, rather than solely based on its historical significance.

### **2.1.5 The Astley Tannery as a heritage site**

Astley Tannery is an example of what was discussed in section 2.1.4 above. This industrial complex was constructed along Portage Road in 1880, with historical information about New Lynn directly bearing its existence. After a century of change, the Tannery has undergone many additions, transformations and renovations to become the current commercial park, but at the same time it has weakened its historical characteristics. The Astley Tannery can become a landmark in the community, providing convenience to neighbours and benefiting the adjacent urban waterways. It needs complete planning and appropriate adaptive reuse strategies to better adapt to contemporary needs.

Wong's book and the resources of other authors are invaluable to this thesis. The adaptive reuse strategies have been systematically explored. At this time, the Astley Tannery's historical value and characteristics are still being assessed by Auckland Council. It is believed that the most effective strategy should be determined by analysing the context of each building and its potential for adaptive reuse individually, since this site is composed of multiple buildings with different materials and structures of different ages. In the following section, this analysis is presented.

Buildings remain in their original state

Buildings with interior fit-in

Buildings to demolish



Portage Road

McWhirter Pl

11

9

10

8

7

6

5

4

3

2

1

12

14

13

17

15

15

16

Fenceline

Impervious parking

Avondale Stream

Fig 36: Adaptive re-use analysis site plan with numerical order.

## 2.6 On-site Analysis

The Astley Tannery is a complex site with buildings of varying ages, materials, structures, and functions. I discuss the buildings in numerical order (refer to current site plan Fig 36) and test the possibility of adaptive reuse in the following context to help better understand the need and potential of adaptive reuse here. Information here has been sourced from Auckland Council's property files.

### Buildings 1 & 2

**Date Constructed:** Both before 1933.

**Original Purpose:** Building 1 was the bark room, becoming the office after 1958; Building 2 was the pumphouse.

**Current Use:** Building 1 is a hair dressing salon and Building 2 is a print shop.

**Construction:** Both buildings are constructed with brick walls ( Fig 38-39) and incorporate metal trusses for the roof; Building One has a tile roof and Building 2 has a long-run steel roof.

**Historical Value:** They served as part of an old tannery for over a century, reflecting the local history of the area.

**Social Value:** Represents the local collective memory and can become an icon of the site.

**Technological Value:** Special brick structure is unique; it reflects the European colonial context and local characteristics.

**Physical Attributes:** The bricks are made from Whau River clay.

**Context Value:** Currently intact, coexists with the local community.

**Context Value:** Currently intact, coexists with the local community.

### Analysis:

These buildings are shell hosts capable of embedding new structures and functions, and the programmes inside them are convenient for the neighbourhood. Such buildings are excellent examples of adaptive reuse. In the design proposal, the two buildings would remain unchanged.

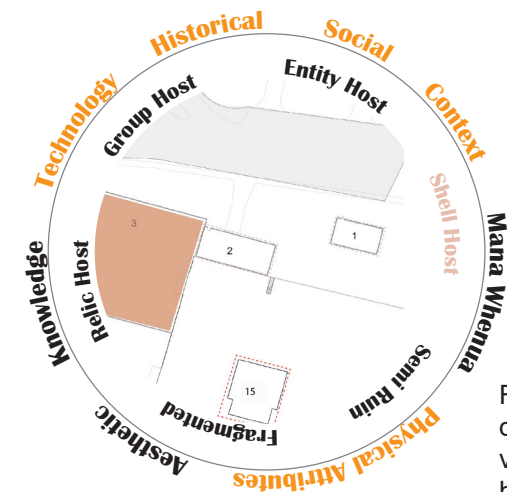


Fig 37: Building 1&2 diagram of building's value and potential host type.



Fig 38: Building 2 Outside view.



Fig 39: Building 1 Outside view.



### Building 3: (two joined parts)

**Date Constructed:** Part 1 before 1933; part two, 1947.

**Original Purpose:** Beam room.

**Current Use:** Auto-repair programmes and offices.

**Construction:** Part 1 (Fig 41), originally timber, converted into a steel truss and portal frame with a long-run steel roof and is clad in corrugated steel panels with sawtooth roof construction. Part 2 (Fig 42) is a brick cavity building with a gable roof.

**Historical Value:** Building 3 was a part of the old tannery, reflecting the history of the area.

**Social Value:** Part 2 faces the main road, making it an icon of the site.

**Technological Value:** Brick structure integrated with timber structure.

**Physical Attributes:** Brick structure of the 2nd part.

**Context Value:** Part 2 has been completely preserved to the present day and shows a former industrial site has been turned into a business park. The sawtooth roof signals the factory building typology that was common to this area.

### Analysis:

The current automotive programme of Building 3 involved many vehicles occupying the site, interfering with community aesthetics and obstructing traffic, which should be replaced with other programmes. The first part of the building has the potential to serve as a shell host or fragmented host due to its solid structure and large volume; a new use can be introduced with an indoor fit-out strategy. A second part of the building contains historical features and should maintain its original appearance.

Fig 40: Building 3 diagram of building's value and potential host type.

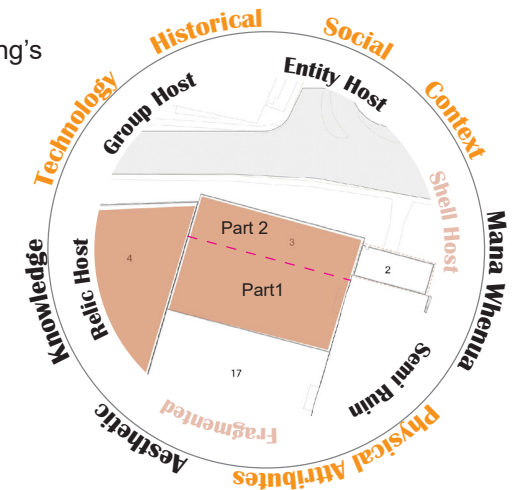


Fig 41: Building 3 part 2 outside view from the Portage Road.



Fig 42: Building 3 part 1 outside view from the parking lot.

## Building 4

**Date Constructed:** 1980.

**Original Purpose:** Hide storage.

**Current Use:** Unclear use.

**Construction:** Sawtooth trusses (Fig 45), corrugated roofing and cladding characteristic of industrial buildings. Precast panels (Fig 44) are attached to the outside of the brick walls on the side facing Portage Road.

**Technological Value:** It has an appealing design with precast panels fixed on the brick wall. With its sawtooth truss roof, the large volume building gets more sunlight.

**Physical attributes:** Brick wall with precast panels.

### Analysis:

The large interior volume could be used as a shell host. This building is adjacent to the badminton and basketball courts; it is possible to integrate with the sports centre and create another indoor sports amenity, such as a swimming pool.

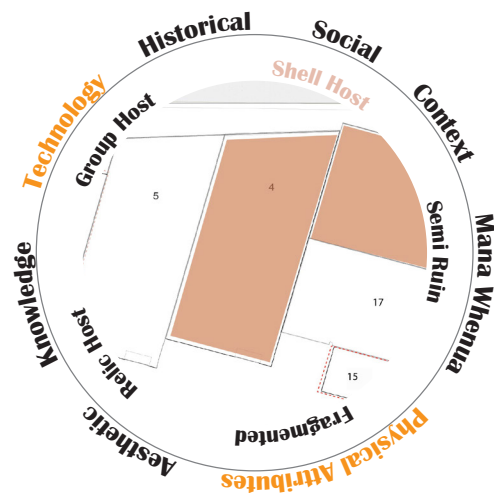


Fig 43: Building 4 diagram of building's value and potential host type.

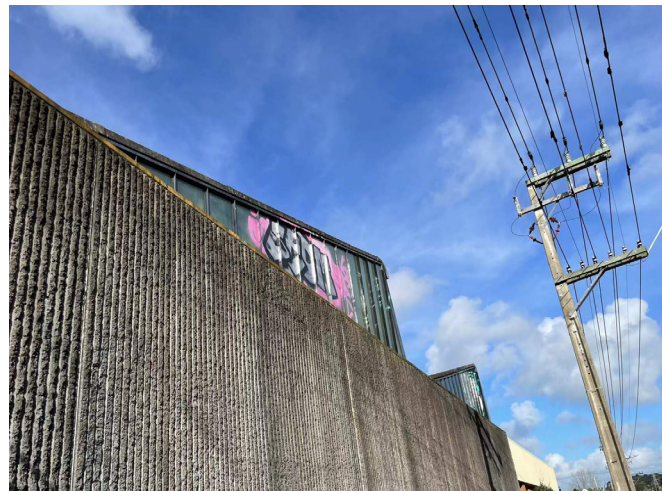


Fig 44: Building 4 outside view from the Portage Road.



Fig 45: Building 4 outside view from the Avondale Stream.

## Building 5

**Date constructed:** 1992.

**Original Purpose:** Office and mechanical room, converted into a cafeteria in 1995.

**Current Use:** Multi-use building is leased to many different kinds of business.

**Construction:** Constructed with a timber frame and clad with bricks (Fig 49) and corrugated iron (Fig 48).

**Social Value:** Building 5 hosts positive community activities; sports stadiums are vital to the community.

### Analysis:

The community has adopted Building 5 as a shell host for projects that benefit the community, and its current structure and function should be maintained.

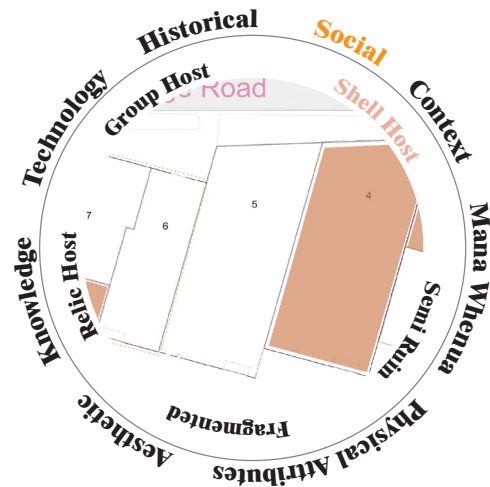


Fig 46: Building 5 diagram of building's value and potential host type.



Fig 47: Building 5 interior view.



Fig 48: Building 5 outside view from the Avondale Stream.



Fig 49: Building 5 outside view from the Portage Road.



## Buildings 6 & 7

**Date Constructed:** Both before 1933.

**Original Purpose:** Building 6 was for the dyeing process and became Titirangi Theatre in 2012. Building 7 was a lacquer shop.

**Current Use:** Building 6 is a fitness club. Building 7 is a café.

**Construction:** Timber framing with corrugated metal cladding of Building 6 (Fig 51) were later reclad with Titan panel. Building 7 (Fig 52) consists of a timber structure with brick cladding, and a parapet wall of Titan panels is attached to the brick wall, covering the sawtooth roof.

**Historical Value:** Buildings 6 and 7 served as a part of the old tannery; they are associated with local history.

**Social Value:** Tannery Cafe, located in Building 7, represents local memory; positive activities occupy both buildings.

**Technological Value:** The parapet wall and timber trusses are in perfect condition.

**Physical Attributes:** Exposed timber beams and trusses.

**Context Value:** They are displaying industrial heritage features.

### Analysis:

The two buildings serve as shell hosts to provide healthy activities for the site. To preserve their value, they should keep their current activities and maintain their building form.

Fig 50: Building 6&7 diagram of building's value and potential host type.

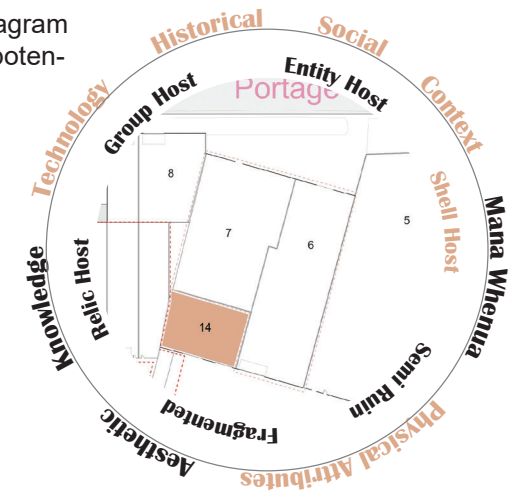


Fig 51: Building 6 outside view from the Portage Road.



Fig 52: Building 7 outside view from the Portage Road.

## Building 8

**Date Constructed:** 1961, renovated in 1999.

**Original Purpose:** Warehouse.

**Current Use:** Automotive shop.

**Construction:** It consists of the timber structure and block wall with plaster coating (Fig 54), an industrial-style sawtooth roof and skylights supported by a metal truss.

### Analysis:

This building has no historical significance, and its current use does not bring it social value. New Lynn, however, is home to a large number of automobile industries. The number of automobile shops is beyond the future needs of sustainable urban planning. Although Building 8 itself requires maintenance, the metal truss and block wall can still be used as fragment hosts for adaptive reuse. Furthermore, Building 8 can be used as a shell host for new programmes as well. The Tongan Church in Building 12 is having trouble organising church events in such a small space. By moving the church activities to Building 8, the building will gain mana whenua and social value.



Fig 54: Building 8 outside view from the Portage Road.

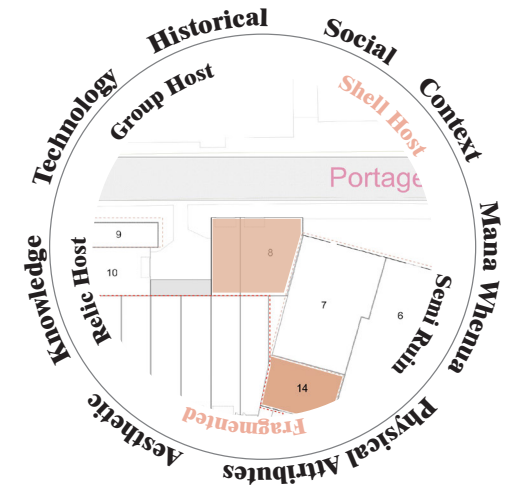


Fig 53: Building 8 diagram of building's value and potential host type.



## Buildings 9 & 10

**Date Constructed:** 1964-1969.

**Original Purpose:** Building 9 was an office; Building 10 was a warehouse.

**Current Use:** Leased to local businesses and religious group.

**Construction:** Both buildings are brick clad (Fig 56-57). Building 10 has a sawtooth roof structure and semi-transparent glass panels that make the interior light dim and soft.

**Mana Whanau:** Jainism is an ancient religion in India. Religious events add cultural value to Building 9.

**Physical Attributes:** Brick cladding made of Whau clay; reflects local features.

**Context Value:** Buildings contribute to the sense of the old tannery.

### Analysis:

Building 9 serves as a religious venue and a business office, so it should be preserved in its original condition. In Building 10 most of the space is unused, making it an excellent candidate to serve as a semi-ruined host, demolishing a part of the structure to make it receive more sunlight while using the interior to host a new function.

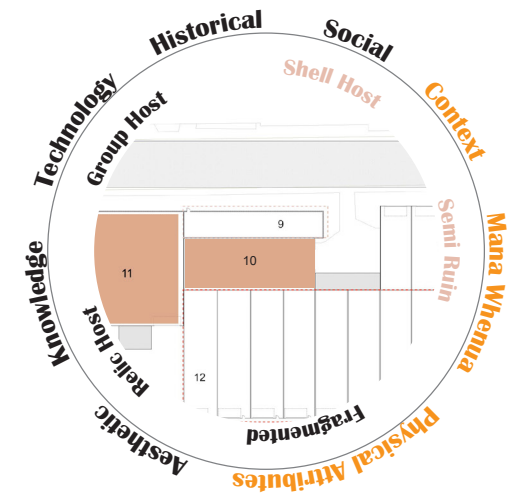


Fig 55: Building 9&10 diagram of building's value and potential host type.



Fig 56: Building 10 outside view from the Portage Road.



Fig 57: Building 9 outside view from the Portage Road.

## Building 11

**Date Constructed:** 1969.

**Original Purpose:** Workshop.

**Current Use:** Second-hand vehicle storage and repair.

**Construction:** On the south side of Building 11 (Fig 59-60) is a brick wall abutting a glass curtain wall; the sawtooth roof covers the building. Beautiful graffiti decorates the blue corrugated iron facade facing Portage Road, but the corrugated iron cladding facing the car park is unattractive.

**Historical Value:** The brick exterior and sawtooth roof reflects its industrial history and local features.

**Technological Value:** During the late 1960s, large glass curtain walls were rare. It was an architectural achievement.

**Physical Attributes:** Brick and glass curtain wall.

**Aesthetic:** The contrast of the corrugated iron facade and brick walls reflects the visual sense of art and emphasises the sawtooth roof, a characteristic of the building.

**Context Value:** Contributes to the sense of being a tannery.

### Analysis:

In addition to its status as a landmark building, its size is sufficient to accommodate a wide range of programmes. However, the internal structure of the building is not strong enough due to the lack of maintenance. Thus, removing the corroded and worn parts is possible and keeping the external wall with significant value. A semi-ruined host for habitable functions is created by integrating the new structure into it.

Fig 58: Building 11 diagram of building's value and potential host type.

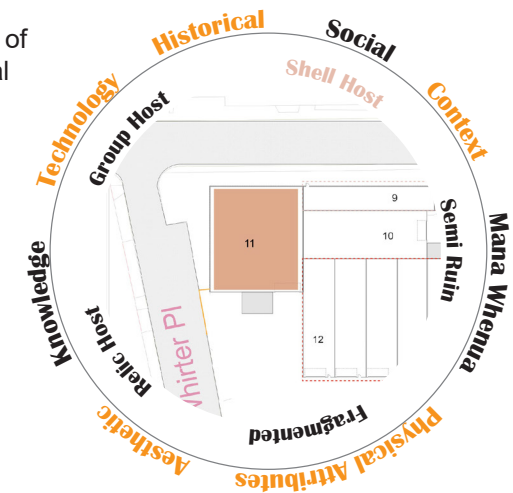


Fig 59: Building 11 outside view from the Portage Road.



Fig 60: Building 11 outside view from the Avondale Stream.

## Building 12

**Date Constructed:** 1964.

**Original Purpose:** Warehouses and workshop.

**Current Use:** Automotive shops and Tongan church.

**Construction:** It was originally clad in Fibrolite panels, which later proved to contain carcinogens and should not be used in construction. As a result, Titan panels with fire-resistant properties were used in the 1999 innovation (Fig 62).

### Analysis:

The eight warehouses are occupied by two car modification companies and one Tongan church. The rest are either idle or leased out as storage spaces. There was no significant value found in this building, and it also lacks a sense of design or maintenance. Consider the site as the group host; in that case, the building should be taken out of the group. New buildings should replace the existing ones so that the new programmes respect the group host's characteristics and enhance the value of the surrounding buildings.

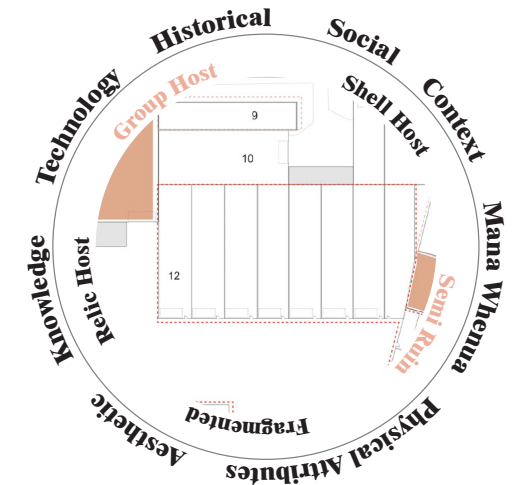


Fig 61: Building 12 diagram of building's value and potential host type.



Fig 62: Building 12 outside view from the Avondale Stream.

## Buildings 13 & 14

**Date Constructed:** Building 13 built in recent years; Building 14 built before 1940, renovated in 2008 (Fig 64).

**Original Purpose:** Building 14 was a chrome tannery.

**Current Use:** Kohu Road Ice Cream Factory.

**Construction:** Building 14 is clad with corrugated iron, timber frames and truss-formed gable roof and walls.

**Historical Value:** The exposed strong timber structure is associated with industrial architecture.

**Context Value:** Contributes to the sense of being a tannery.

### Analysis:

Building 14 has no local features on its exterior, while the internal structure is valuable and beautiful. As a shell host, it operates a famous local business, Kohu Road Ice Cream Factory. Another possibility is for Building 14 to combine manufacturing and sales by reconfiguring the exterior and changing the interior layout to become an ice cream shop.

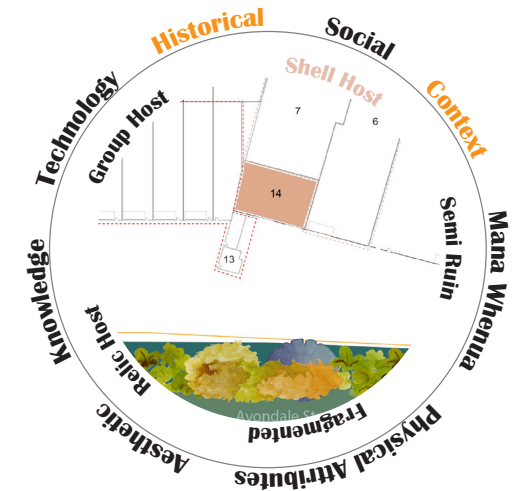


Fig 63: Building 13&14 diagram of building's value and potential host type.



Fig 64: Building 13&14 outside view from the Avondale Stream.



## Buildings 15 & 16

The poorly designed addition of Buildings 15 and 16 (Fig 65-66) were leased to automotive shops. They occupy excessive space on the site and should be removed in the design proposal.



Fig 65: Building 16 outside view from the Avondale Stream.



Fig 66: Building 15 outside view from the Avondale Stream.



Fig 67: Building 17 diagram of building's value and potential host type.

## Building 17

**Date Constructed:** Before 1948.

**Original Purpose:** Wet-processed beam house.

**Current Use:** Badminton centre.

**Construction:** This building is made of block foundations and a timber portal frame, and it has corrugated iron cladding, which is a classic industrial warehouse-style (Fig 68).

**Social Value:** This building hosts an activity that is beneficial to the community. Building 17 and adjacent buildings can form a complex of buildings featuring sports.

## Analysis:

Building 17 is also a typical shell host, and is similar to many of the buildings on the site. The massive capacity of the buildings meets the space requirements for sporting activities and makes sport a community characteristic. Building 17 enhances the Whau Pathway experience by providing positive activities; therefore, its current state should be maintained.



Fig 68: Building 17 outside view from the Avondale Stream.



The above analysis, combined with New Lynn's future planning, can reveal missing elements on the site. As a result, a series of potential opportunities are provided to the site as a design proposal. This proposal is introduced in Chapter 4.

## **2.2 Low impact urban design and development in an Adaptive Re-use project**

This section discusses whether it is possible to reduce the impact of human activities on 44 Portage Road to ensure the regeneration of the urban river that has been contaminated by former industrial programmes and urban development.

Marjorie van Roon and Henri van Roon propose a big picture of low-impact urban design and development (LIUDD) in their research. According to this theory, "human design and development should consider the carrying capacity of natural ecosystems. The only way to achieve sustainable living is by following the operation of the ecosystem" (van Roon et al., 2009, p.1). As the Van Roons say, "time and scale are necessary reference conditions in human activities. The natural time unit may be much larger than the human time unit" (van Roon et al., 2009, p.3).

The Astley Tannery was focused on manufacturing more than 100 years ago, but pollution discharged from the factory into the river changed the river water and soil for the worse. This degradation process is slow and hard to reverse. Even small-scale human activities may have large-scale consequences.

In the Van Roon's research, there are three major principles that need to be followed in the design and development of low-impact urban development.

- Primary principle: Work with nature's cycles on a catchment basis to maintain the integrity and mauri of ecosystems.
- Secondary principles: Select sites for minimal impact/adverse effect; use ecosystem services and infrastructure efficiently; maximise local resource use and minimise waste.
- Tertiary principles: Promote and support alternative development forms (natural space, efficient infrastructure); 3-waters management; natural soil, water and nutrient cycles; minimum earthworks; reduction and containment of contaminants; restoration, enhancement, and protection of biodiversity; energy efficiency (van Roon et al., 2009, p.6).

### **LIUDD on the site**

The Astley Tannery is located adjacent to the Avondale stream, the major tributary of the Whau River. The sound of gurgling water can be heard upon closer inspection, but the drop of 6-8 metres from the site to the stream makes it difficult for people to approach the water. Moreover, the banks are covered by lush vegetation, and the stream is tucked away behind this.

Consequently, the design proposal of this thesis is to create a cohesive urban community with an attractive landscape that extends to the Avondale stream; also restore and enhance the natural environment while responding to the site's characteristics and urban context. Further, this thesis seeks to establish the relationship between residents and the natural environment, making human activities impact beneficially on urban waterways.

The design must respect the natural ecological cycle to comply with the primary principle. Natural cycles include photosynthesis, and the water, carbon and nitrogen cycles. Among them, the water cycle is most easily affected by the built environment. Rainwater cannot naturally infiltrate into the ground due to the building, road and footpath's impervious surface; rainwater washes over the surface and flushes pollutants into the soil and water source. The current impervious area of the riparian yard on the site has far exceeded a maximum of 10% based on the Unitary Plan requirements. Therefore, the design should greatly reduce the impermeable surface on the site.

Many plants play an essential role in restoring the ecosystem. Some plants filter pollutants from rainwater, balance the pH value and prevent soil erosion with their roots. Thus, rain gardens and swales should be designed to filter stormwater pollutants and particles before they penetrate the soil and enter the ground water and stream. Additionally, swales create a buffer to slow down the stormwater flow, reducing the flood volume of runoff and allowing it to pass completely into the drainage pipe system. Stormwater treatment is more effective when rain gardens and swales are designed.

The stormwater on the site is eventually discharged into the stream. This catchment can be improved by replanting specific plants allowing stormwater with heavy metals and sediments be filtered by vegetation and soil before entering the river. In addition, this can also be incorporated into the landscape design of a site to provide green space.

LIUDD's second principle focuses on choosing the appropriate location; if possible, avoid interacting with natural environments that are sensitive or complex. Avondale Stream is an important ecological corridor. Dense vegetation grows on the catchment area of the Avondale Stream, and many creatures live here. From the point of view of the second principle, the design should connect people to the awa (river) but limit people's areas of activity. Building lookout stations and steps at specific locations to enable people to get close to the water while restricting their disturbance of plants and animals is proposed. In addition to reducing human impact on the surrounding environment, this idea also ensures safety at the site.

Thirdly, the principle encourages the development of eco-friendly infrastructure while minimising resource consumption and protecting biodiversity. Since the vertical residential model reduces land work significantly, it is ideal for inserting apartment buildings on the site. Aside from that, consider constructing infrastructure that helps improve the quality of the natural landscape, such as composting toilets and bins, garbage sorting, recycling stations and water tanks. These facilities can reduce consumption, save natural resources and contribute to a sustainable future. Additionally, incorporating Te Whau Pathway into the site helps to encourage active transport and the reduction of traffic.

In these ways, a low-impact urban design approach has been applied in this speculative design for Astley Tannery. This design proposal uses the existing ecosystem, considers various aspects of the design and sees future needs while meeting current conditions.

## Chapter Three: Case Study

*This chapter reviews some precedents, shows how they relate to the last chapter's theories, and lays the groundwork for the design proposals later.*

In what way does the new structure or content relate to the old one? Three examples of adaptive reuse are used in this chapter to examine how successful adaptive reuse designs integrate with old buildings. Showcasing these interventions explores the fit with the host structure by reviewing the context of these precedents. Additionally, this chapter explores the similarities between this thesis and those three precedents. Thus, consideration is given to whether similar approaches can be utilised for the design of this thesis.

### 3.1 83 Barchester Street, Poplar, London, Architects, 2019

A new development of 115 affordable homes is planned in East London's Limehouse Cut Conservation Area amidst former industrial buildings. The predecessor of this site was a factory in 1939 and a warehouse in 1956, which were later used for document storage.

In addition to preserving some of the original features, a new set of six-storey buildings is proposed to replace the old warehouse. The new building contains most of its storeys within the old warehouse. The new street-facing elevations use brickwork with recessed stretchers and cross motifs that are derived from the adjacent Lansbury estate, with bronze coloured zinc for the courtyard elevations (AT Editor, 2020) (Fig 70). The contrast between the modern zinc-clad siding and the industrial brick siding is striking but not abrupt (Fig 71). The upper floor appears to be inlaid into the existing brick wall with a series of angular roofs on top. The building is designed to reflect an industrial setting with its saw-tooth profile (Fig 69).

A precedent like this extends the life of an industrial building and breaks the stereotype of affordable housing, which is cheap and reproducible without too many design considerations. And the precedent perfectly demonstrates that a thoughtful design can save cost. Durable materials reduce maintenance costs, and zinc cladding is fully recyclable, significantly reducing industrial waste pollution (AT Editor, 2020). Adaptive reuse also encompasses the idea of reusing abandoned areas rather than blindly demolishing them and consuming natural resources.

83 Barchester Apartment is a typical incomplete host building; a **semi-ruined host**. The industrial area on Barchester Street is no longer used for industrial purposes. The architectural style of this building resembles most of the industrial architectural styles from the 19th century. The predecessor of 83 Barchester Street was a complete and sturdy structure; the design demolishes a part of the building structure, resulting in a **semi-ruined host** structure. The previous host structure is therefore not defined with a significant historical value, as the existing structure cannot accommodate the demand for apartments.



Additionally, a brand-new modern building constructed in an industrial district cannot cater to the general environment of the neighbourhood or incorporate the community's economic status. As a result, the previous host building's appearance was retained to integrate the new intervention with the block and shorten the value difference between it and its neighbours. In other words, the 83 Barchester Apartment block found the balance between its value and the value of its neighbourhood. Adaptive reuse has led to new possibilities as well as a new position for the entire community.

This precedent and the Tannery are all former industrial buildings; they are very similar in structure. Secondly, some buildings on the Tannery site have no significant historical value like this precedent. As an example, part of the exterior of Building 10 has historical significance, but other parts lack any importance. Consequently, Building 10 can adopt this precedent's adaptive reuse method and design it artificially as a semi-ruined host. Using such a method can preserve its historical features whilst blending in with its surroundings. In addition, it can be given new functions to continue providing services.

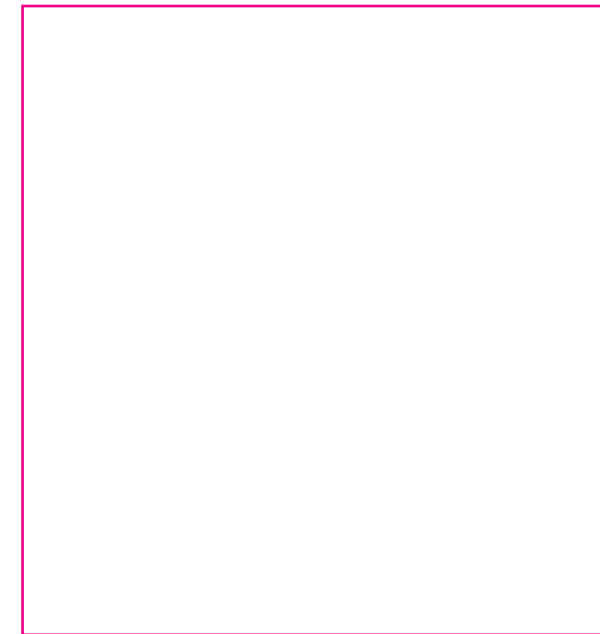


Fig 69: Outside view of the 83 Barchester Street, Poplar, saw-tooth profile can be seen from the riverside.

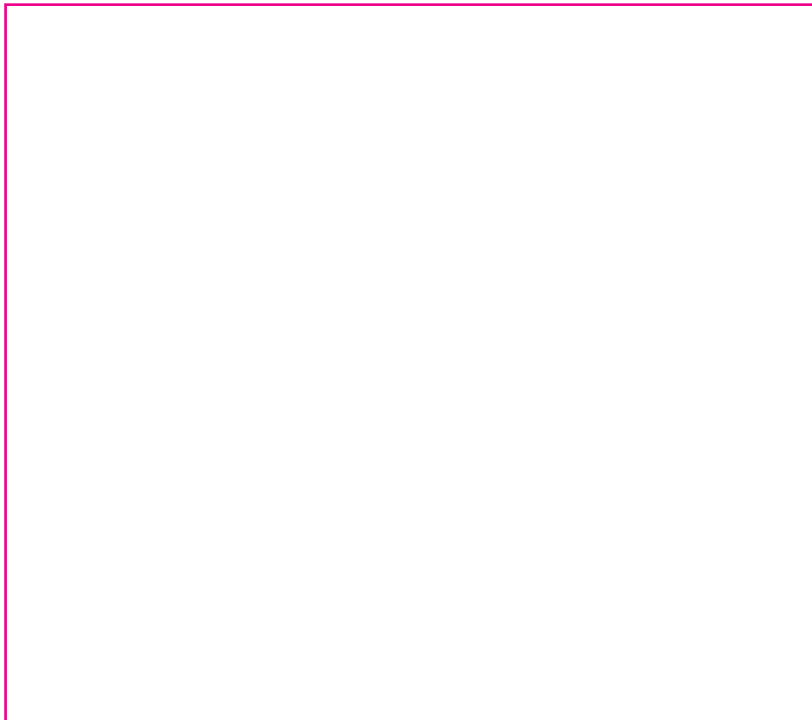


Fig 70: Bronze zinc-clad of the 83 Barchester Street, Poplar, view from the courtyard.

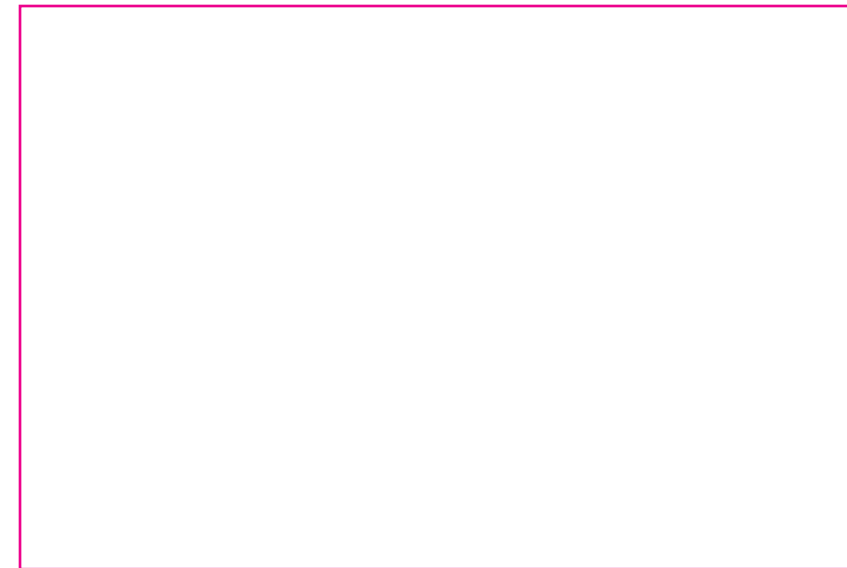


Fig 71: Bronze zinc-cladding combined with the brick cladding, view from the Barchester Street.

### 3.2 798 Art Park, Chaoyang District, Beijing, Architects, 2002

When China, the Soviet Union and East Germany collaborated to build a factory in the north-eastern suburb of Beijing in 1950, nobody imagined 50 years later that this factory would change from a manufacturing complex to a cultural hub. Beijing's 798 Art District is located in the Chaoyang District. Initially, it was the old factory area of the 798 factory and other electronics industries. Today, 798 has attracted wide attention from domestic and foreign media, becoming a new symbol of Beijing's urban culture (Yin et al., 2015).

Additionally, East Germans contributed their unique architectural style – Bauhaus architecture. Bauhaus architecture is a school of design and architecture founded by architect Walter Gropius in 1919, in Weimar, Germany. The school was founded to unite fine arts with applied arts (Yin et al., 2015). In contrast to the towering, symmetrical and spectacular Soviet buildings, the East Germans built huge Bauhaus-style warehouses (Fig 72-73) on a wide site at the 789 Factory. The warehouses have slightly curved roofs that look saw-toothed when they are connected. Such a building form was unprecedented in China then.

The area attracts discerning artists because of these beautiful and unique structures, the large volume, and the strong sense of history. The 798 Art District was officially opened in 2002, and after that event, there has been a saying, that if you come to Beijing, you must climb the Great Wall, eat Peking roast duck, and visit 798. Since artists and cultural institutions moved into the area, large-scale leases and renovations of warehouses have gradually become galleries, artist studios, design companies, dining spots, and entertainment venues. With its fusion of architectural space, cultural industry, contemporary art, and urban life, 798 is no longer merely a tourist attraction but a lifestyle that is attracting people worldwide.

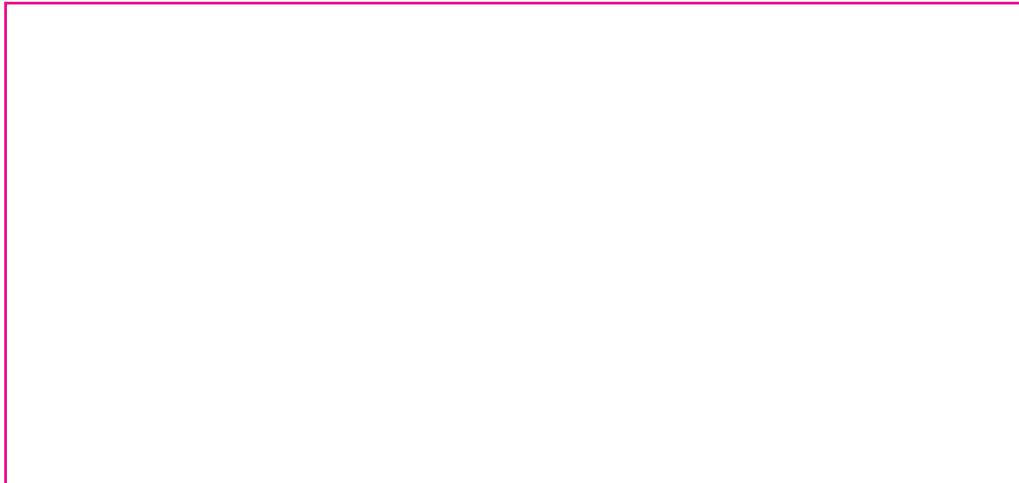


Fig 72: In 798 Art Park, the Bauhaus architecture was designed with curve saw-tooth roofs. The art exhibition is in the square.

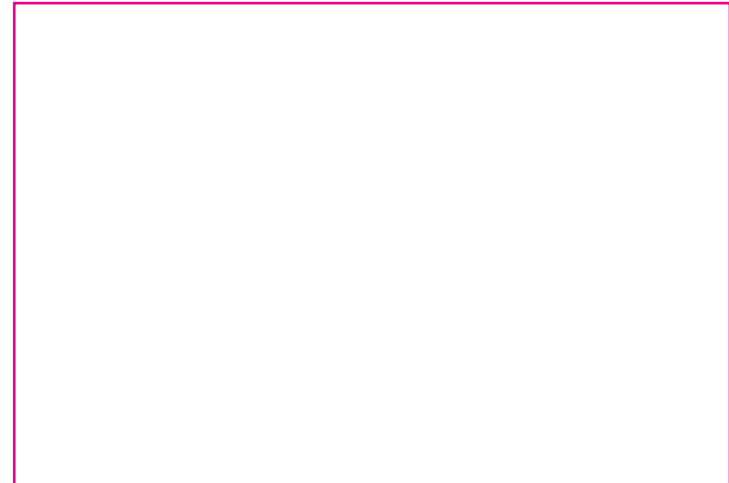


Fig 73: Exhibition is in the Bauhaus architecture.



Fig 74: A modern new structure was built on the old building in 798 Art Park.



Fig 75: The former industrial facilities surround sculptures.



Fig 76: Various stores fitted into the former industrial buildings add a sense of culture here.

An example of a **group host** is 798 Art Park. Adaptive reuse is the method that aims to maintain the German industrial architecture style and revive an abandoned site by adding new elements and undertaking new projects (Fig 74-75). At the same time, it spurs economic growth in the surrounding suburbs. Dashanzi, where the 789 Art District is located, was originally a suburb of Beijing lacking infrastructure, and the economy was stagnant. Farmland and industrial factories dominated the landscape here. The city grew rapidly in the 1980s. Eventually, the factory began moving farther away from the urban area in order to meet the quality of the urban environment. In the old factory sites that have been left behind, new projects inevitably emerge that are better suited for urban development and urban positioning, with low energy usage and little pollution. The emergence of 798 indicates a move towards a metropolis in this area.

Besides artists and designers, 798 is also home to many entrepreneurs who have developed various novel projects (Fig 76). Protecting the original cultural and architectural heritage is the basis for redefining and re-designing the factory here. As well as creating new architectural work, the reformed factory brings innovative ideas to both architecture and lifestyle. The way of survival of these residents in 798 can best be described as a win-win situation between their dreams and economic plans.

798 Art Park and the sites in this thesis can all be considered **group hosts**. In 798 Park, the structures are of uniform age, are more extensive scale and have greater historical and cultural value. 798 Art Park has been transformed from an abandoned factory into an urban cultural centre through rational planning and clear themes. The adaptive reuse method changes the industrial background to fill the urban planning blueprint with a cultural experience. By contrast, Astley Tannery has served the local business after fading industrial use, it lacks pertinence and theme in selecting projects, becoming disorganised and unattractive. By studying the precedent of 798, the author is inspired to consider the community's real needs and the suburbs' future planning. To achieve the role of adaptive reuse in this thesis, it is crucial to carefully examine the missing links in the Whau Pathway project and the missing elements in the community and use the site's advantages to make up for any lack.

### 3.3 Morningside industrial precinct, Morningside, Auckland, Cheshire Architects, 2018

The Morningside precinct is a perfect precedent for adaptive reuse in Auckland. Morningside is a suburb 4km away from the centre of Auckland and referred to as the 'city fringe.' It takes its name from the farm estate "Morningside," later subdivided for housing lots in 1865 and eventually becoming a community (Heard, 2018). It has also become an area where light industry and small factories are gathered and surrounded by residential areas with bungalows and villa architectural styles. Just a few years ago, this unremarkable industrial area became a must-see mecca for Aucklanders. In Morningside, an abandoned curtain factory was upgraded into an avant-garde, artistic hospitality spaces of various scales (Fig 77).

Nat Cheshire, the chief designer of this project, claimed that the quality of the original Morningside's construction is far inferior to the projects they encountered in the city centre (Admin, 2018). Nevertheless, they are still willing to take the challenge of these buildings. Crave, a well-known restaurant business, occupies 700 square metres of Food Street, located initially on McDonald Street (Admin, 2018). Later, more shops, restaurants and taverns joined this location (Fig 79-80). In addition, the Glasshouse as a particular intervention inserted between the Crave building and the curtain factory, serves as a community venue to undertake various activities (Fig 81).

The team that transformed Morningside carefully considered the adaptive reuse strategy as well as selecting the programmes that resided here. All occupancy businesses are mutually beneficial relationships, which means they can support each other. If these small businesses were not closely arranged together, it would be difficult for them to survive. Because the design team kept this consideration in mind, the layout of spaces for hospitality was set together instead of distancing them.

Fig 77: The hand drawing of the Morningside Precinct is from its official website.



Due to observation, Morningside completed its transformation through a strategy of interventions. In this industrial community, some buildings become **shell hosts**, and some are **fragmented hosts**. The Morningside hospitality space can adapt to the needs of the times. It naturally integrated with the surrounding community and environment, rather than being rigidly placed. Its design interprets the essence of adaptive reuse, which is to retain the original host as an industrial building. On this basis, it exerts the advantages of structure and volume and injects new functions and languages. Morningside has subsequently become the link between residents and the community.

Morningside precinct has many similarities with the Tannery site explored in this thesis. After looking through the information, it was found that the original intention for transformation is similar to the proposed design purpose. Their predecessors were all factories for manufacturing, and they built portal frame structures combined with gable or shed roofs. They all have a large internal volume and do not need to expand to increase the area to adapt to activities that require a large flow of people. The difference is that many small businesses currently occupy the Tannery site, and these businesses are not related. The automotive shop shares space with the community church, and the dance studio and the ice cream factory are neighbours. It is difficult for them to rely on each other. The Tannery precinct cannot be attractive to residents with such a chaotic arrangement.

Furthermore, the Morningside project creates a pocket of real estate, offering local neighbourhoods an alternative to enjoy brunch in a stylish environment, rather than needing to go to the city centre where restaurants are more concentrated. Morningside precinct reflects how a former industrial area realises its value and gathers neighbours around it through adaptive reuse strategies. It made a landmark of this suburb and a landscape of the urban. Also, it brought a positive impact to the community in terms of economy. These successes are precisely what the Tannery design research project is committed to achieving.



Fig78: The former factory turned into a back packer motel in the Morningside Precinct.



Fig 81: The Glasshouse hosts a market, a view from the entrance.



Fig 79: People in Morningside Precinct can find food here by following the street signs.



Fig 80: Local taverns and restaurants are located inside the former factory.



### 3.4 Yanweizhou Park, Jinhua City, Zhejiang Province, China, Turenscape, 2014

This project integrates multiple functions relating to residents' leisure places, urban landscape, flood control, and ecological protection. An outstanding design feature in the park is a pedestrian bridge connecting both banks of the Yiwu River and the Wuyi River. "The bridge has a total length of 1200 meters and passes six parks" (Landezine, 2016) (Fig 83). The dragon of Chinese culture inspired the design, and the red and yellow colour scheme emphasises the local characteristics. Yanweizhou Park is an experimental landscape project that explores resilient design. The project aims to create a flood-friendly city while achieving urban landscape restoration and social and cultural integration.

Yanweizhou is geographically a peninsula, and is also a rare natural landscape and ecological wetland in a crowded city with a population of one million people. Yanweizhou riparian area is surrounded by a wide river (Fig 82), making it difficult to access nature and get close to it. The monsoon climate also causes Yanweizhou to be inundated with floods every year, resulting in many poplars and Chinese wingnut trees becoming dominant species and forming habitats for many creatures (Landezine, 2016). In some ways, Yanwei State Park faces the same challenges as the Tannery, and both places should maintain riverside ecological environments while providing citizens with recreational opportunities.



Fig 82: The overall view shows the river and a city surrounding Yanweizhou Park.



Fig 83: A bridge over the river connects parks and prevents flooding.

Yanweizhou Park is designed to simplify and reduce intervention, restoring the natural environment by preserving the peninsula's natural vegetation, pond and highlands. A shared bridge is built to establish communication between residents and the natural environment in the park, named Yanweizhou Bridge. Its purpose is similar to those of Te Whau pathway.

With a design that respects **low-impact urban planning** principles, site selection is used to reduce the impact of people's activities on the environment. Yanweizhou Park adheres to this principle to a large extent. A bridge is built at a height where floodwaters cannot reach, allowing people to travel between the two banks even during a flood season. A lookout platform is built on high land to enjoy the lake and city views (Fig 84). Bridge and lookout platforms limited the flow of people and the scope of activities, thus creating a boundary between the ecological environment and human activities.

Flood prevention is one of the critical functions of **low-impact urban design**. The flood-resistant wall along the riverside is demolished and replaced by a terraced vegetation embankment (Fig 85). In flood-prone areas, vegetation covers the embankment, slowing down water flow and filtering it, thus reducing pressure on the land when the river recedes. Floods also bring a lot of sediment to the area, which provides vegetation with nutrients and an excellent growing environment. In addition, the park's activity area is 100% permeable. Gravel or slippery-resistant tile is used on the pedestrian area and the driveway to return the stormwater to nature.

Yanweizhou Park's improved urban biodiversity and stabilised ecosystem makes it a valuable reference for this design research. Avondale Stream, is an essential component of the city's natural heritage. Like Yanweizhou Park, it faces the challenge of coexisting in harmony with the bustling city. Yanweizhou Park sets up a natural oasis within dense buildings. The concept of resilient landscape is a strategy that establishes relationships between people and water, people and vegetation, and water and vegetation. Te Whau Pathway project has adopted many strategies similar to that utilised in Yanweizhou Park. It demonstrates low-impact urban planning that satisfies people's desire to be close to nature and regenerate natural resources. The design proposal of the Tannery should continue to embrace the low-impact design to achieve the goal of harmonious coexistence between humans and nature.



Fig 84: On lookouts, people can see the river view.



Fig 85: Terraced vegetation embankment, plants and permeable areas help rainwater flow back to its cycle.



## Chapter Four: The Tannery Community

*Firstly, this chapter analyzes the methodology that constitutes the thesis structure and then elaborates on the design proposal, providing solutions to the research question.*



## 4.1 Methodology of complex site analysis

This chapter introduces the methodology behind the framework of this thesis. This approach helps identify the Tannery site's missing elements and explores the various opportunities for a design proposal.

### **Making Space in Dalston**

J. & L. Gibbons and muf architecture/art collaborated on a strategic research project titled "Making Space in Dalston" (Gibbon et al., 2009). The aim of their research was to generate workable plans and programmes linked to the urban public realm and cultural activities in Dalston, a suburb in Hackney, East London that lacks quality open space. The area is characterised by a diversity of ethnic groups, which means it is gaining a reputation as a thriving cultural hub in London. A long history has shaped the communities of migrants and generated homes for independent businesses. By contrast to other parts of London, the number of independent businesses here seems to form a unique operating system, and large or monopolistic businesses are less prevalent. Nevertheless, due to the low socio-economic resident population, Dalston still gives off a feeling of poverty and danger (Gibbson et al., 2009).

A three-step methodology designed by Gibbons and muf constitutes the framework of the "Making Space in Dalston" research. This methodology is discussed, followed by an explanation of how it has been incorporated into the design research and thesis. These three steps illustrate a progressive approach in the research. The three steps are:

- **identify the value**
- **nurture the possible**
- **define what is missing (Gibbons et al., 2009, p.19).**

(As can be seen in the diagram from Gibbons and muf see Fig 86)



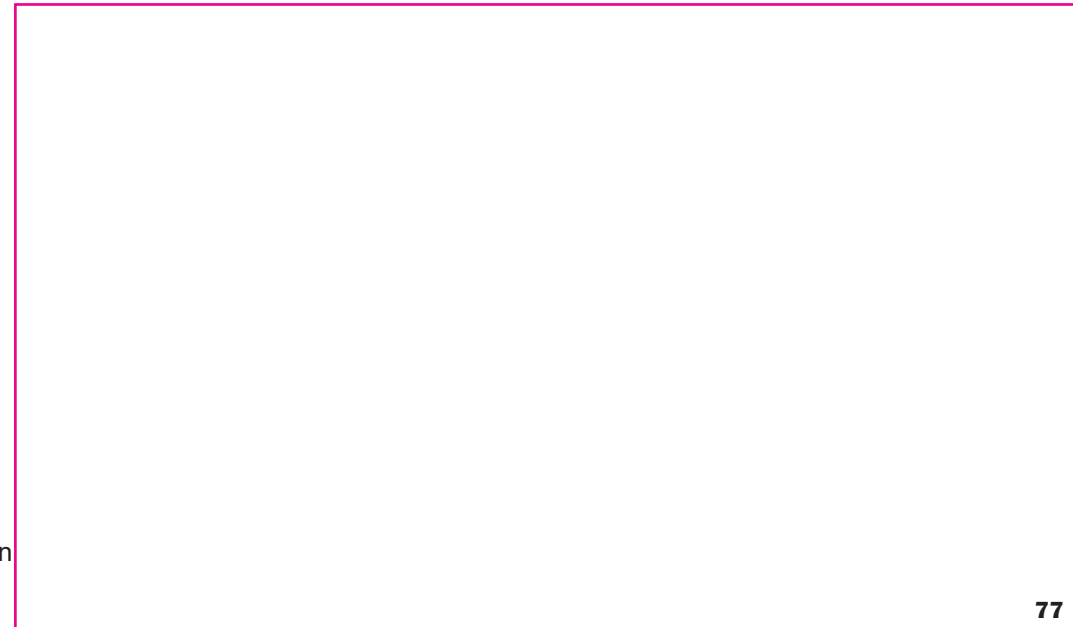
Fig 86: Diagram of three-step methodology.

There are many creative and cultural attractions in Dalston. As a first step, the research identified Dalston's existing assets and values, such as cultural assets, green landscapes, and open public spaces. Photographs and diagrams were used to illustrate how cultural assets and green open spaces are distributed among Hackney and Dalston. The contrast in conditions between Dalston and Hackney shows that thriving cultural activities in Hackney (funded by its relationship to artists and art spaces who act as entrepreneurs) have led to the construction of better public spaces and infrastructure.

Second, the research suggested that instead of large-scale development in Dalston, using existing buildings and incorporating local organisations to create public spaces would be more effective (Gibbons et al., 2009, p.19). As most organisations require a venue for their events, public infrastructure is needed to accommodate them all. Hence, this research aims to better serve the community by utilising the existing space.

The third step in research, Define What is Missing, brought to light ten strategic project themes for follow-up steps. The ten aspects covered specific spaces for Dalston's potential improvements (e.g., the High Street) as well as several missing functions (e.g., improving wayfinding and establishing green routes). The culture was at the core of these ten themes, including enhancing streets, releasing space, integrating space, supporting local businesses and activities, conserving the green environment and heritage, and building infrastructure (Gibbons et al., 2009, p.43). Each theme led to either single, or sometimes more, deliverable projects. The Figure 87 below shows the example of projects under ten strategies. The methodology improves design efficiency. It is directly designed to meet the needs of a region based on an extensive analysis of the value and missing elements.

Fig 87: The map shows all projects under ten strategies in Dalston.





## **Application to the design research**

The methodology developed by Gibbons and muf for “Making Space in Dalston” is also applicable to this design research thesis. In a sense, the Astley Tannery is like Dalston on a smaller scale. There are cultural, social, historical, and natural values here, but people do not recognise them. The research methodology developed in Dalston helps investigate a site with diverse activities and architecture. It can also help to identify its value and explore its development potential without the displacement of existing activities. Astley Tannery is currently acting as a base for small local businesses, which is of social and cultural value. There are industrial buildings with simple structures and large capacity that both reflect the area’s historical background and make space for activities that can be difficult to house – basketball and volleyball, dance lessons, printing, coffee roasting and worship. The brick structure of some buildings is rare and historically valuable. Also, the Avondale Stream runs alongside the site, a former city waterway that has been forgotten behind the fence; such a landscape is of significant ecological value. Strategies from Dalston inspired the transformation of Astley Tannery in many ways by examining the value, nurturing the possible and identifying opportunities to make the site a landmark of the community.

Hosting Space, the third strategic theme identified in the Dalston research, offered several valuable strategies for the Tannery site. It emphasises putting empty or unused spaces to good use for the community, such as repurposing a car park as a public events venue. The parking area at the Tannery can also serve as a variety of functions. The Tannery car park is hidden behind the building adjacent to Avondale Stream, thus providing an opportunity to divert the Te Whau pathway to Avondale Stream. Creating walking and cycling trails and adding green space in the parking lot would establish people’s relationship with the waterway and enhance their awareness of natural sites.

The second theme also has a profound effect on the Tannery's design through its strategy 'Release Spaces.' This is a strategy dedicated to de-clogging busy roads and establishing communication between neighbours and places. It discusses removing barriers and building access facilities (stairs, bridges, etc.) to increase pedestrian movement. A similar method is also needed for the Tannery Site to improve communication between pedestrians and the site. Avondale Stream and Whau pathway cannot connect due to the current lack of coherence between the buildings. For future development, connecting Portage Road with the pathway and opening more entrances on site is essential.

It was the fifth strategic theme in the Dalston research, Wayfinding, that showed importance in the planning details in this example. Some exciting activities or businesses are challenging to locate because there is no apparent signposting. Thus, placing signage or an introduction in the appropriate location is an excellent way to understand a place quickly. Dalston's ambition is to establish itself as a culturally distinctive district. It would also be good to give the Tannery site-specific labels, such as becoming a community that offers arts and sporting activities.

"Making Space in Dalston" has provided many design inspirations and helped establish the methodology framework of this thesis. Prior to this chapter, a detailed analysis of the site determined its values, but some missing elements could still be created for a better community. In the following sections various opportunities have been identified and outlined on the Tannery site.

## 4.2 Missing elements

Before introducing the design proposal, what is found to be missing is summarised and the value that could be expanded on the site based on the analysis performed previously. The author learned more about the site's needs by visiting the site and talking to its current users. The changes to the site over time are presented through careful mapping, following the integration of property file materials from the Auckland Council. By taking photos of the area during many visits, the author recorded the imperceptible value and details of the site. After the Astley Tannery ceased producing leather, it became a small business hub. Nevertheless, there is still considerable potential to contribute to local cohesion and improve residents' quality of life. Several aspects of this site could be improved upon and reformed based on observation here.

**Space sharing:** The parking lot behind the Tannery building is a private space but accessible and it is now used for vehicle storage. In a future residential community, we should consider making it more public to bring people together and engage them in the local community. Additionally, increasing the outdoor green landscape and reducing the impervious area would comply with the principles of low-impact urban design.

**Residence:** The Avondale stream has now been used as a boundary, separating the Tannery site from the residential neighbourhoods, preventing communication between the two. A residential facility on the site would help establish a stronger bond between residents and the community, stimulate local connections, and cater to the growing population's needs. Furthermore, setting up the residential function can ensure a local population on the site at all times to increase safety.

**Urban waterway:** Avondale Stream is the main tributary of the Whau River. Historically, it served as an essential waterway for transportation. Unfortunately, industrial emissions and the decline of transportation function caused this waterway to be isolated by wire fencing and largely forgotten. This condition does not prevent it from growing lush vegetation and being home to a variety of species. The precious natural heritage must be restored to preserve its value and offer the public picturesque natural scenery.

**Building adaptive reuse:** This thesis examines adaptive reuse strategies for the Tannery buildings. On the site, the buildings reflect different ages and represent different values. These buildings should be preserved and repurposed for alternative use while highlighting valuable historical features and providing clear directional information to visitors. On the other hand, the site currently has many types of small businesses, but they lack connection and do not reflect the community's main characteristics. In some cases, current use does not help historical buildings adapt to contemporary life and showcase their value. When reusing a building, it is imperative to choose a new purpose that will extend the life of the building as well as add activities that will benefit the community's residents.



Fig 88: An urban view of the site plan shows the existing Te Whau Pathway and the proposed Whau Pathway.

- Existing Whau Pathway
- Proposed Te Whau Pathway



Opp 1: New proposed pathway  
Opp 2: Natural playground  
Opp 3: Opening access points  
Opp 4: Museum  
Opp 5: Community pool  
Opp 6: Break room  
Opp 7: Tongan Church

Opp 8: Ice-cream shop  
Opp 9: Spatial legibility  
Opp 10: Stream restoration  
Opp 11: Apartment complex  
Opp 12: Eco art centre

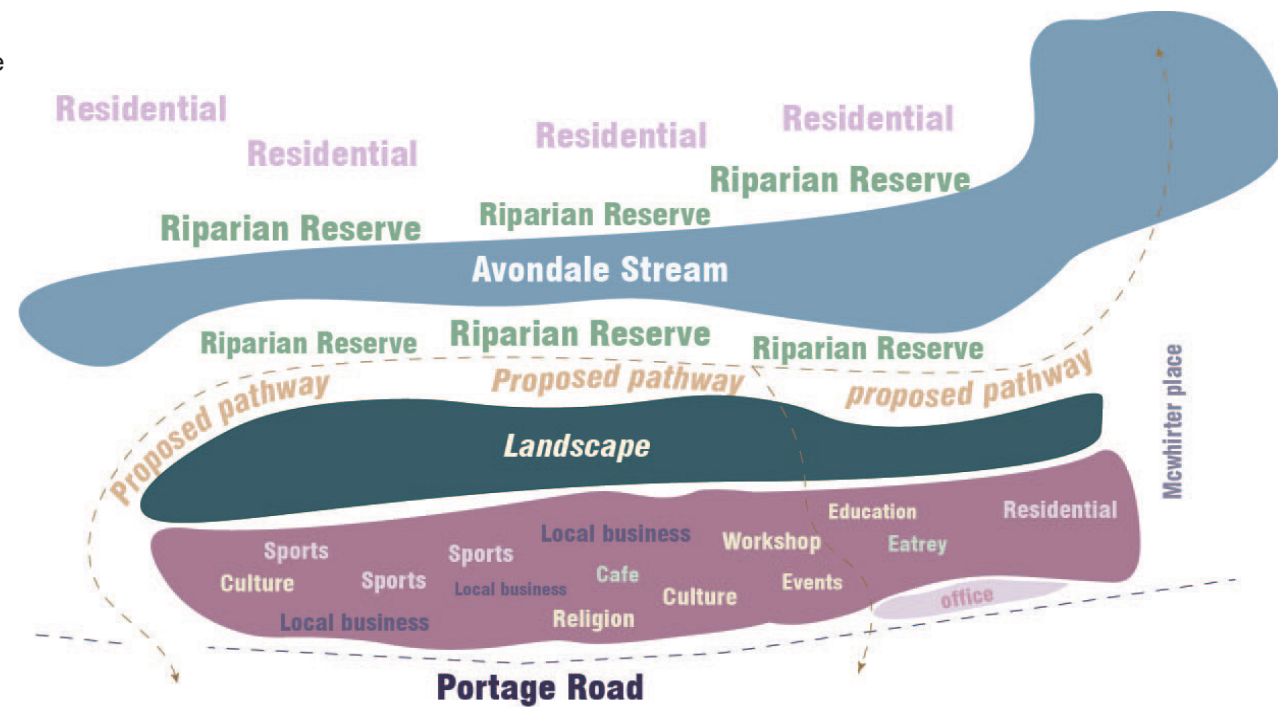
New buildings  
Interior fitout  
Relocation  
Remained



Fig 89: The Site Plan indicates in numerical order where opportunities are located.



Fig 90: The Tannery site parti diagram shows the proposed pathway and its surroundings.



## 4.3 Opportunities

In response to the issues raised above, this section proposes thirteen opportunities to address this site for a more sustainable future. These thirteen opportunities constitute the design proposal for this thesis.

### Space sharing

#### Opportunity 1: New proposed pathway

The Te Whau Pathway project is designed to provide pedestrians and cyclists with a safe and enjoyable route. The existing bicycle route along the Portage Road is part of the pathway project. A busy main road cannot guarantee cyclists' safety, and the warehouses and traffic on both sides do not make cycling a pleasant experience. Hence, the first opportunity for the Tannery site is to divert the new Te Whau Pathway into the Tannery site to run alongside the Avondale Stream (Fig 88). The new pathway will occupy the existing parking lot space. For people to view the scenery of Avondale stream, there is a viewing lookout set up on the new pathway with a large height difference (Fig 93). Low-lying terrain allows people to walk to the area near the stream via a stone road (Fig 91). In addition, to capitalise on the attraction for bicycle users there is a pump track (Fig 92) for bicycles and skateboards, providing an outdoor sports amenity adjacent to the pathway. The new pathway complies with low-impact design principles and contributes to the restoration of the Avondale Stream. It has also stimulated communication and become a link between neighbourhoods and nature.



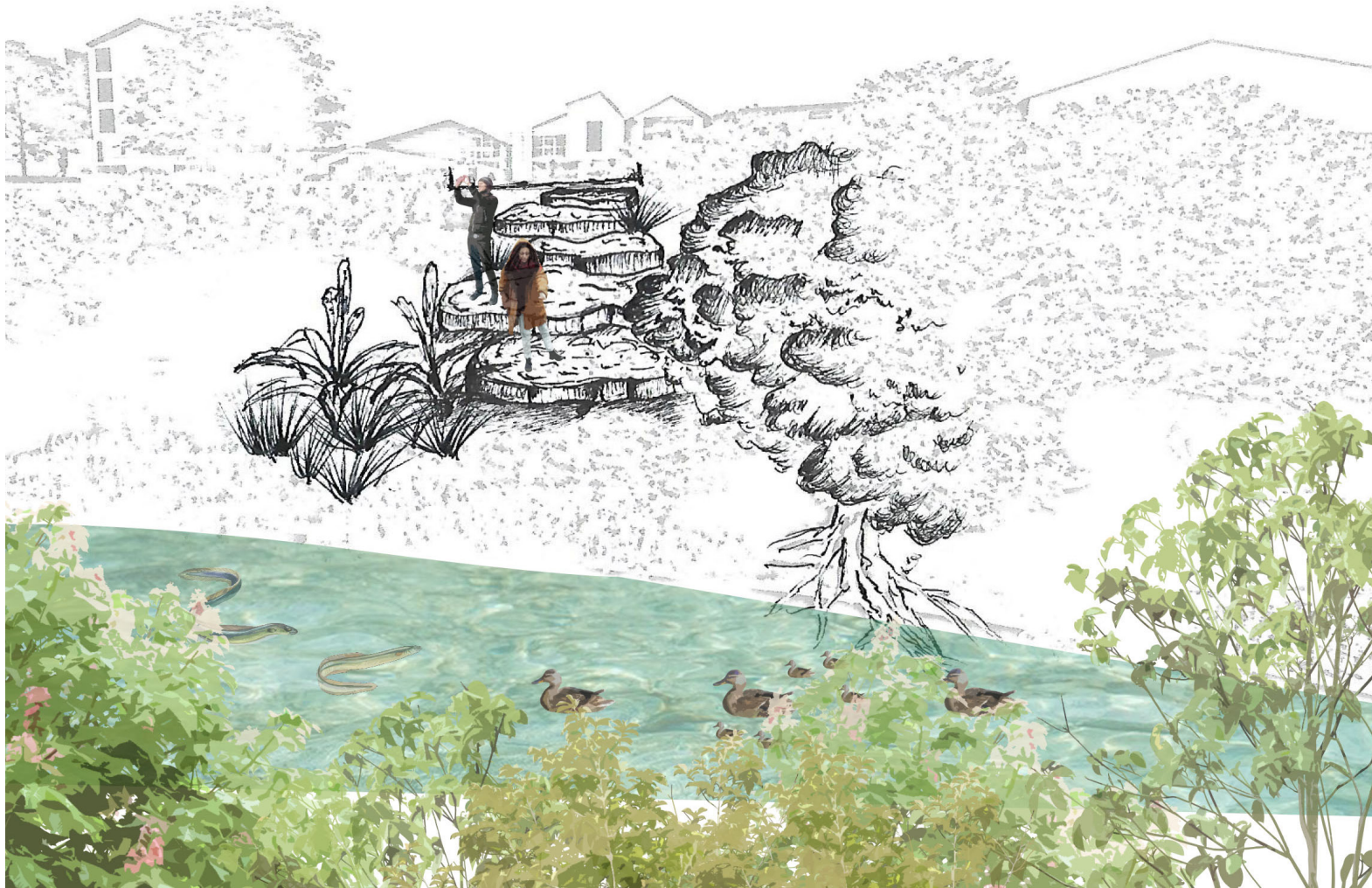
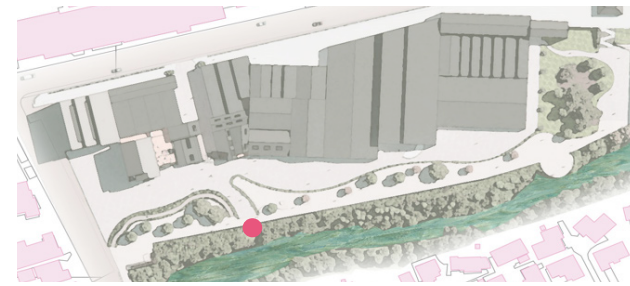


Fig 91: People can access the streamside by a stone staircase.



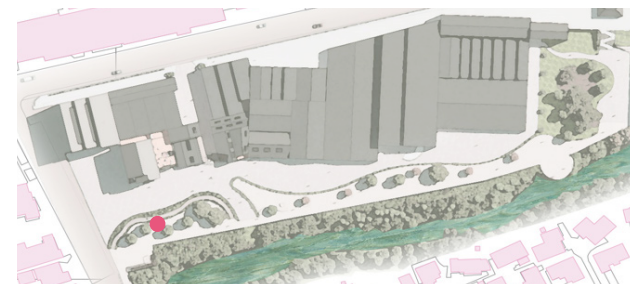
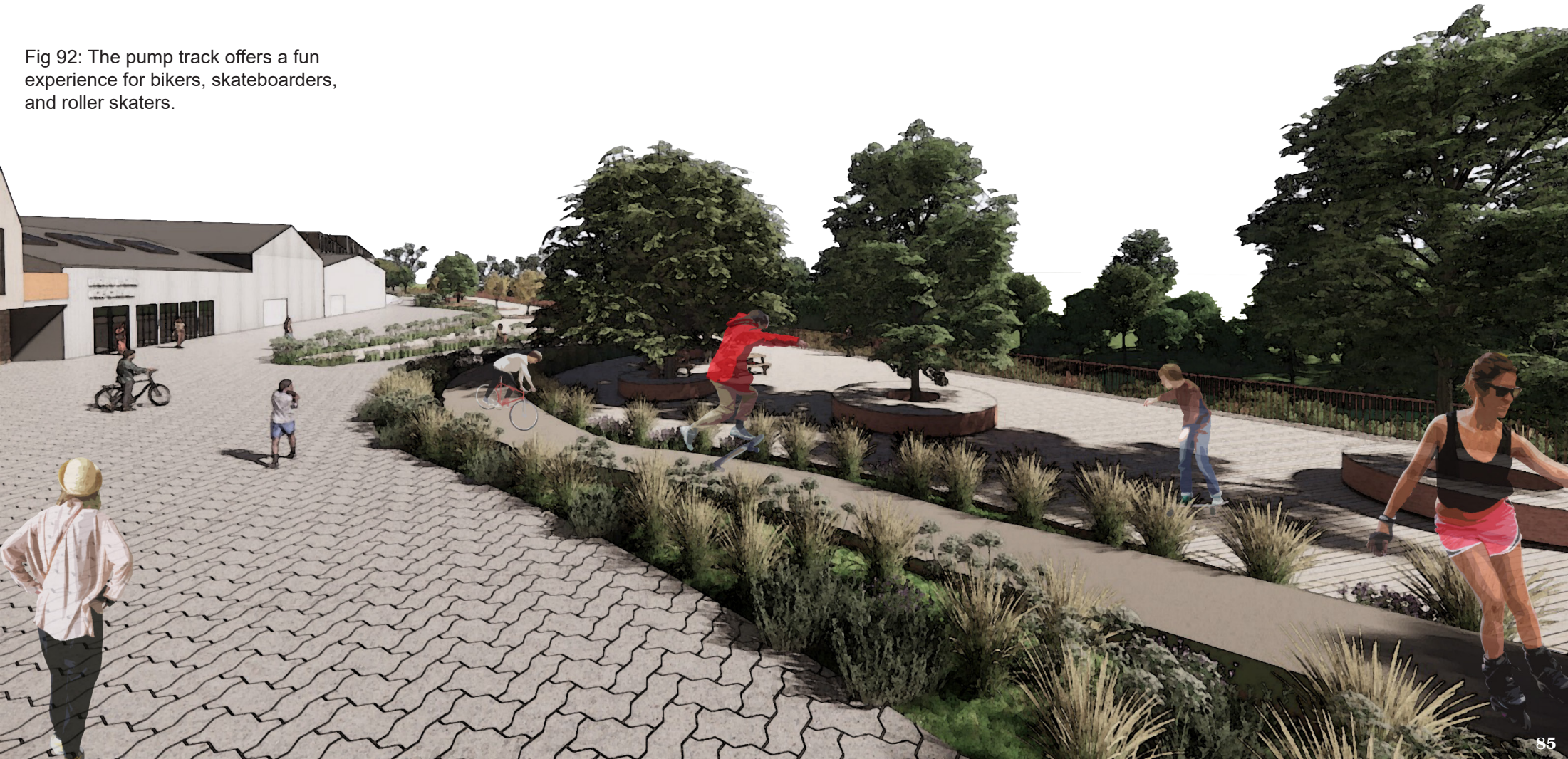


Fig 92: The pump track offers a fun experience for bikers, skateboarders, and roller skaters.





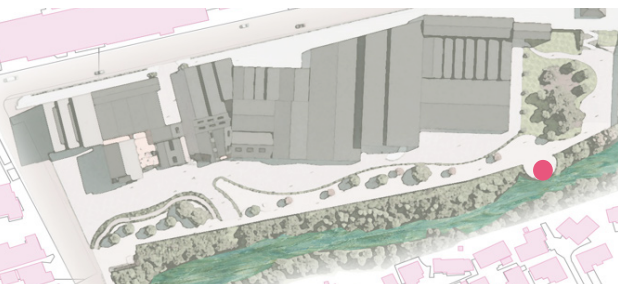


Fig 93: A lookout provides a safe and accessible space for visitors to take in nature.



Scan it to see the VR community



## Opportunity 2: Natural playground

Additionally, the new pathway provides spaces for resting and playing. A natural playground as a part of new pathway activity offers children a spot to hang out with friends, which enhances the experience of the pathway for them. A natural playground pioneer in Auckland is the Mara Hupara (NZILA, 2019). Instead of modern equipment, this natural playground is made from tree trunks and roots. Children can climb, jump, and walk between the stumps (Fig 94). This design takes inspiration from traditional Maori games. Landscape architect Mark Lewis brought this idea to Oakley Creek and proved that the natural playground is a unique opportunity to engage with nature and history through play; it is also a low-impact design option to help restore the adjacent waterway. The natural playground alongside the Avondale stream emphasises an intimate connection with nature.

Fig 95: The bike stand is made of tree trunks and set up in the community.

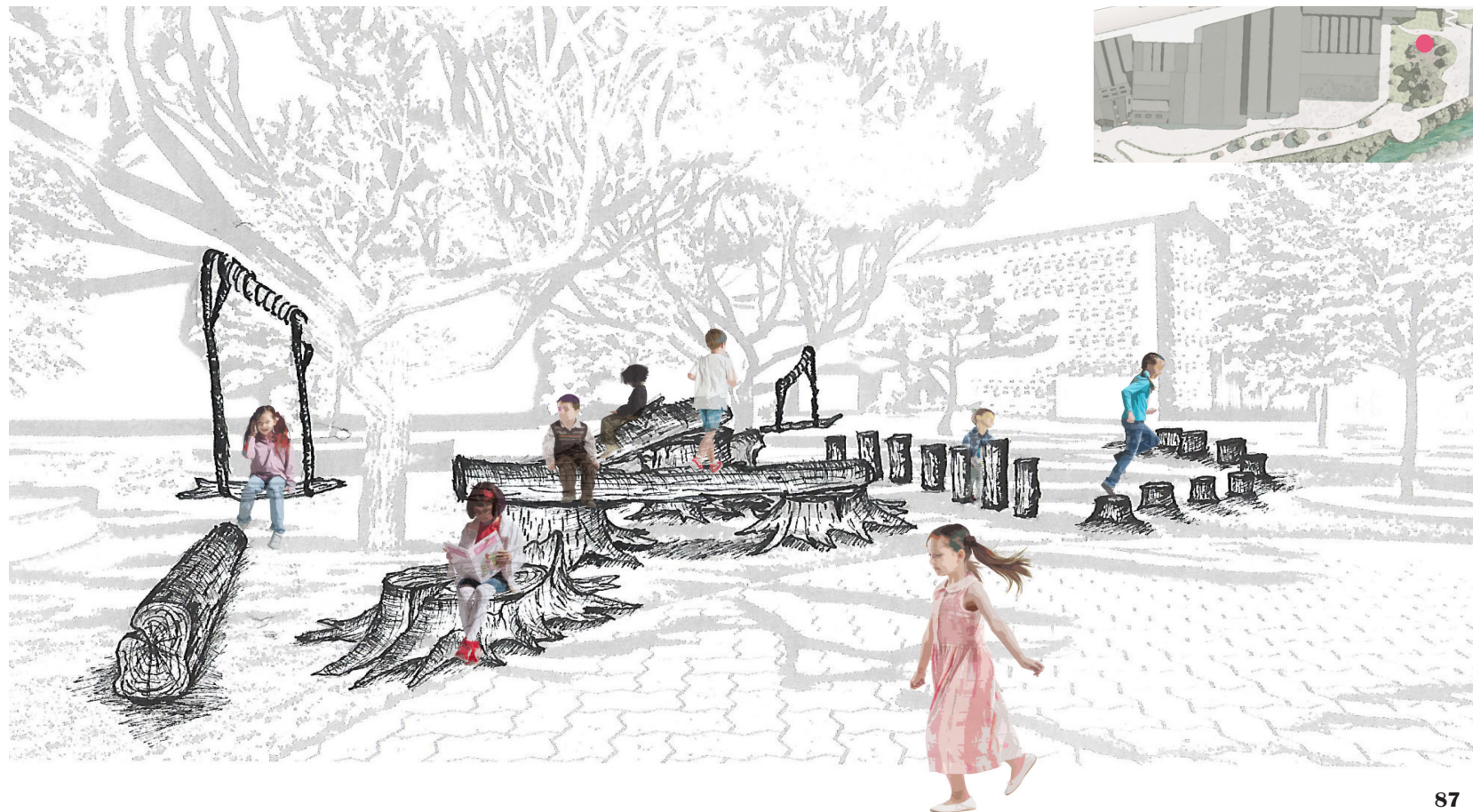
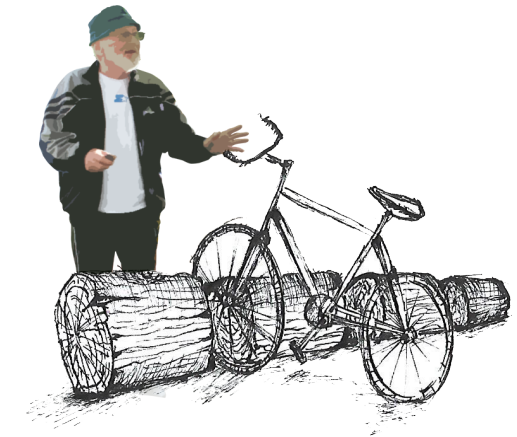


Fig 94: A natural playground is constructed from tree trunks and roots, enabling people to engage with nature.



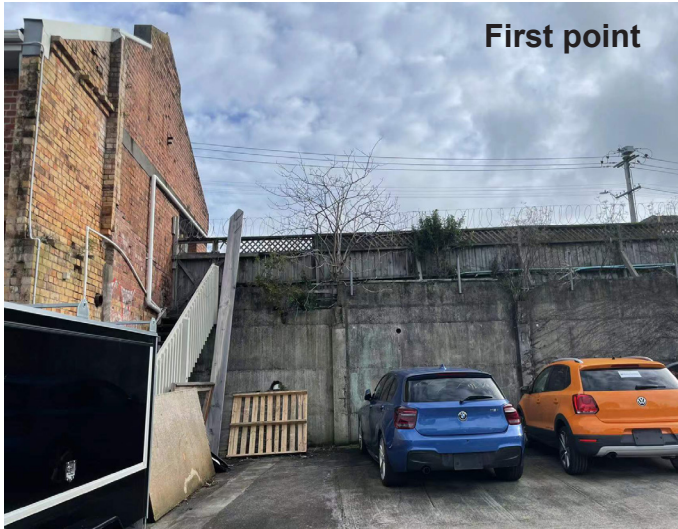
### Opportunity 3: Opening access points

The additional access points from Portage Road improves the visibility of the pathway and makes it easier for people to discover the fun hidden behind the buildings (see Fig 88).

The first access point is near the Pumphouse. Located here is a retaining wall which is about 4 metres high; a timber staircase, which was once present, has been abandoned due to lack of maintenance (Fig 96). With a total length of 10 metres, the access is comprised of concrete steps, ramps and plant terraces. The ramp is designed to facilitate the passage of bicycles and wheelchairs alike (Fig 97). In addition, the plant terraces also offer a place for resting and enjoying the sun. The new access point releases space on the Tannery site, making it an obvious public space.

The previous assessment defined Building 12 as lacking value and a sense of design (Fig 96); it should be demolished to make way for new buildings. Therefore, the second access point is formed when it is demolished (Fig 98). In this case, the access point is a corridor that runs through buildings. This corridor measures approximately 5-13m in width and 50m in length. Through the corridor, the site's openness is enhanced further. It also breaks the oppressive feeling of the buildings by cutting off the coherent structure. While this happens, it can reveal the background landscape and draw people to this area.

First point



Second point



Scan it to see the VR community

Fig 96: The first access location is obscured by 4m high retaining walls and an abandoned staircase. And the second access location is obscured by building 12.



Scan it to see the VR community

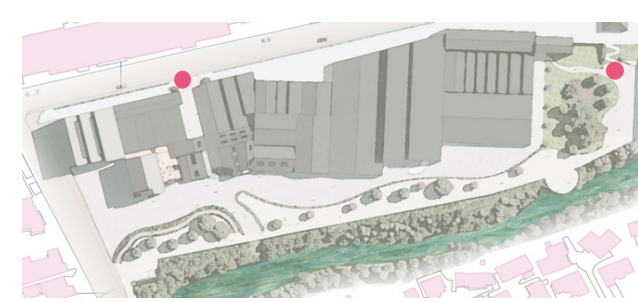


Fig 97: It is a sunset scene with a digital concept of the first access point after construction.



Fig 98: It is a night scene with a digital concept of the second access point after construction.



## Adaptive reuse

### Opportunity 4: Museum

Plan objectives are to establish community characteristics, form a mutually beneficial relationship between businesses on the site, and positively impact the community. Automotive shops and workout activities currently dominate the site. It has become incongruous in the residential community and should be eliminated. There are currently five buildings occupied by automotive firms: 3, 8, 12, 15 and 16. Buildings 12, 15, and 16 are on the list of buildings to be demolished. Building 3 was one of the earliest buildings on this site, which served as the main production area of the Tannery and named Beam House. Conservation of this structure is essential to preserve its value in the future. In response, it is transformed into a museum that illustrates the story of the Tannery and the Whau River and significant events that have impacted them (Fig 99). The building is in good structural condition and can be used to implement retrofits for incorporating educational and historical works to enhance the significance of architecture on this site.

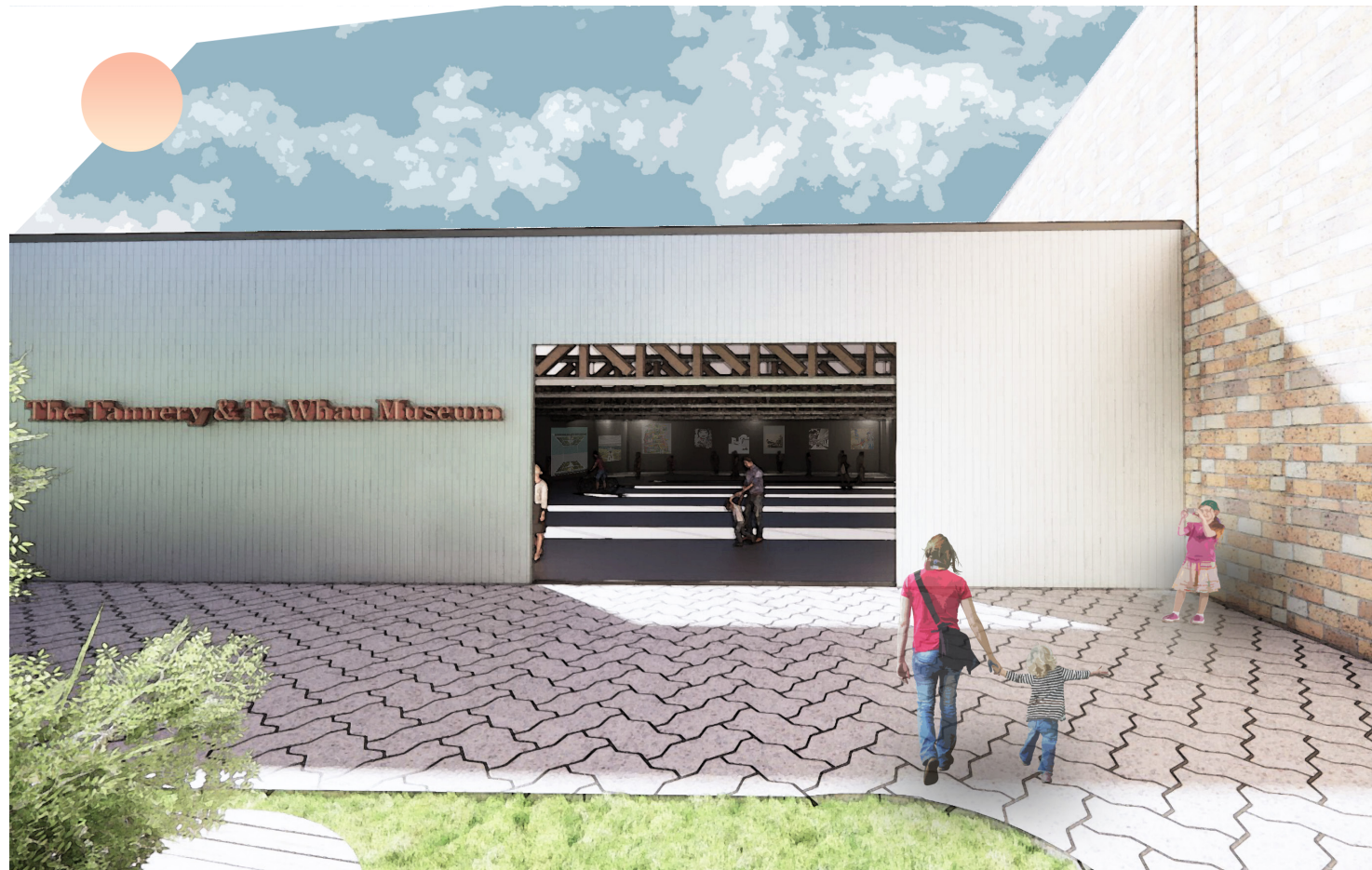


Fig 99: The picture shows the outside view of the museum in a digital format.



Scan it to see the VR community

### Opportunity 5: Community pool

A variety of sports are currently available on this site. The activities contribute to the health and well-being of residents while enhancing their experience in the community. There are also opportunities for sport to flourish in the community. There is only one public swimming pool in West Auckland, so Sport Waitakere continues to call for new pools in Avondale and New Lynn (Stuff.co.nz, 2018). This could be done by creating a community pool by retrofitting Building 4 within its vast space and sloped terrain (Fig100-101). The pool is located between two sports centres, which are integrated into one workout facility. Due to the height of the location, this makes it possible to discharge wastewater, making the design and construction easier.

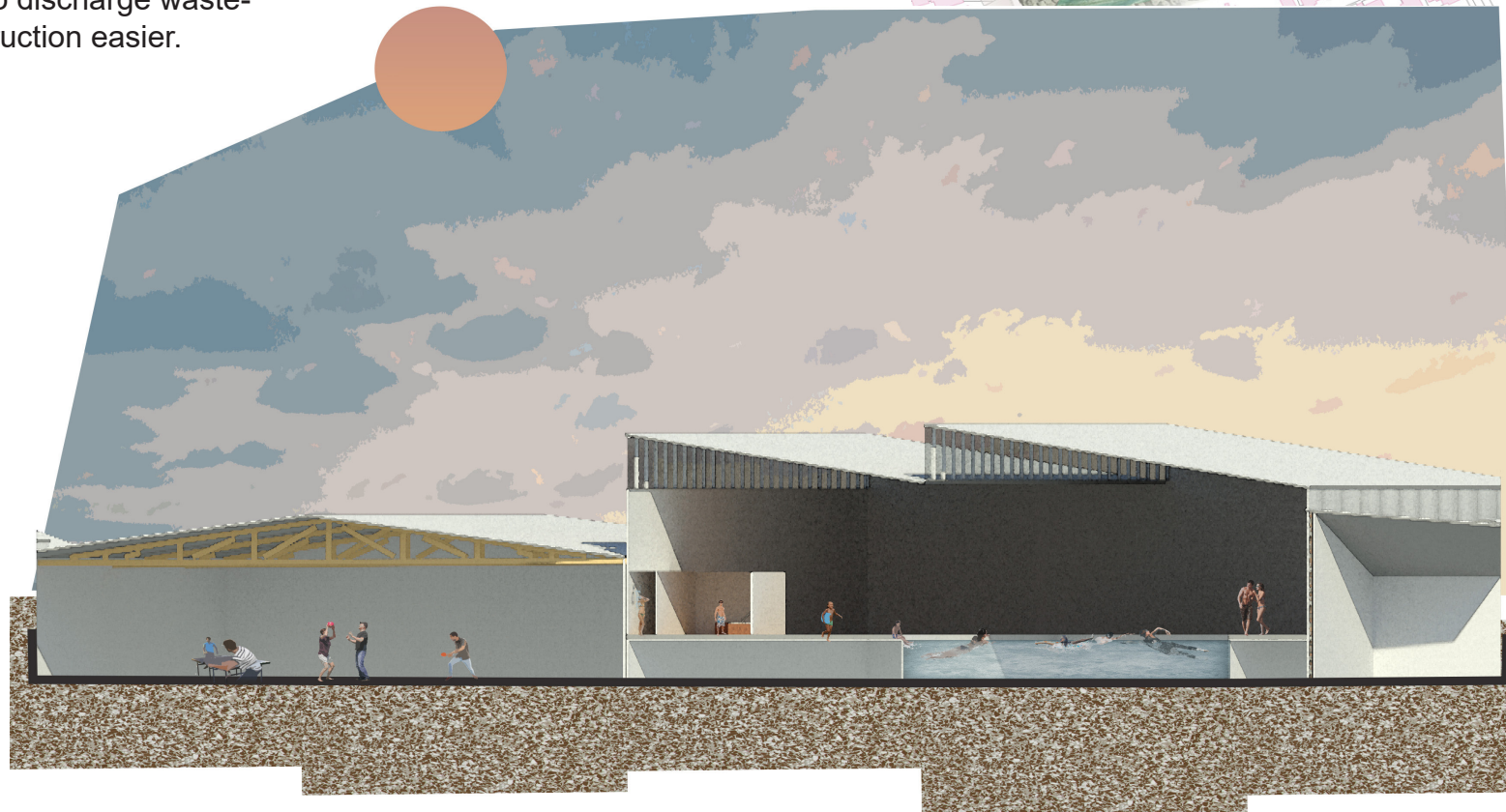
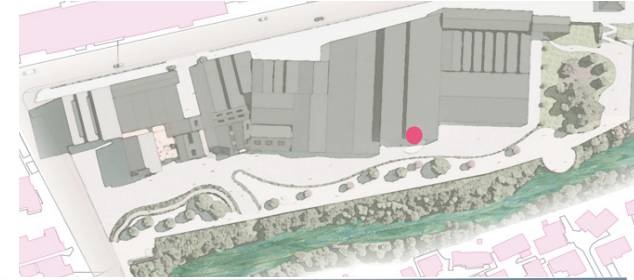


Fig 100: The picture is a section view of a community pool and adjacent sports centre.





Fig 101: An interior concept of the community pool.



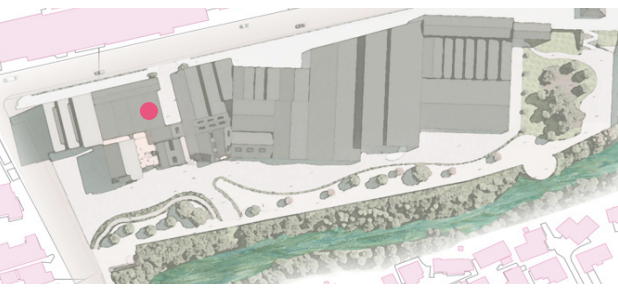


Fig 102: The figure shows a view of the break room from outside at the second access point.

**Opportunity 6: Break room**

Buildings 9 and 10 are connected. At present, Building 9 is primarily used as an office building, a shared workspace for several small businesses, and a place of worship for the Jainist community. The connected Building 10 does not have a clear function, and people here view it as a rudimentary rest area. When the Tannery was booming, it set up multiple lunch rooms for employees. Current office buildings do not have restrooms to allow employees to clearly distinguish between office and rest areas, affecting work performance. Thus, Building 10 can effectively serve as a staff room for employees on the site, providing them with a comfortable place to take a break during the day (Fig 102); the space includes a kitchen (Fig 103), dining and lounge areas (Fig 104). Additionally, increasing the lighting of the building is essential for the success of this venture.







Fig 103: There are kitchen and dining areas in the break room.



Fig 104: Timber louver walls separate the lounge into a few resting spaces.

### Opportunity 7: Tongan Church

Religious experiences have had a crucial effect on cultural values within the community. The Tongan and Jain churches are located on the current site. Building 9 houses the Jain Church, which is the office building as mentioned above. This proposal includes the demolition of the building that the Tongan Church used. It was learnt from the site visit that the Tongan Church members were also looking for a better church space. The Tongan Church, therefore, moves into Building 8 (Fig 105); current automotive usage would be removed. It is spacious enough to accommodate the Tongan Church's services, with a kitchen and office built into the site, and the remaining space available for events. Repairs and maintenance are needed to the facade of the building, and Tongan cultural elements would be incorporated to emphasise its purpose.

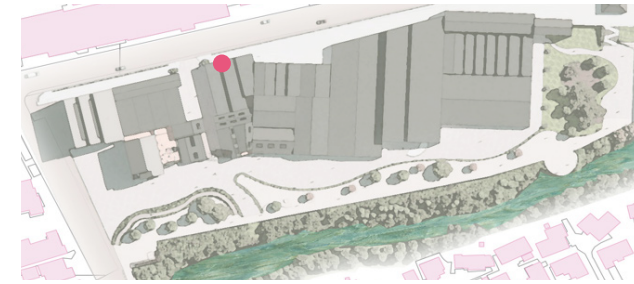


Fig 105: An outside concept of the Tongan Church, as seen from the Portage Road.





Fig 106: An outside concept of the Kohu Road ice cream shop, as seen from the Avondale Stream side.

### Opportunity 8: Ice-cream shop

In the Portage Road Business Park, Kohu Road Ice Cream Factory has been operating since 2012. It occupies Building 14 which used to be a leather factory. The building still retains its timber solid beams and trusses with industrial characteristics. Ice cream manufacturing maintains the building's original industrial nature. However, the ice cream factory can add walk-in shopping and dine-in services to showcase historic building structures and meet residential needs (Fig 106). The store is designed with a big glass wall to separate the production area from the dine-in area. People can still view the production process whilst they enjoy eating ice cream, it is also an exciting feature of Kohu Road (Fig 107). In this way, Kohu Road gains more profit from the new use and provides visitors with an appealing opportunity for summer escape.



Fig 107: While the ice cream shop still has exposed timber trusses, skylights are added to increase brightness. The large glass window allows people to watch the ice cream production process.

**Opportunity 9: Spatial legibility**

On the site, some buildings with historical and contextual value are not able to be recognised by people. It is important to increase the site's legibility. The names of each building are displayed, and additionally, recycled Whau bricks are incorporated to echo the area's past. New buildings also have gable or sawtooth roofs with industrial characteristics to create a sense of consistency between the old and new.



## Urban Waterway

### Opportunity 10: Stream restoration

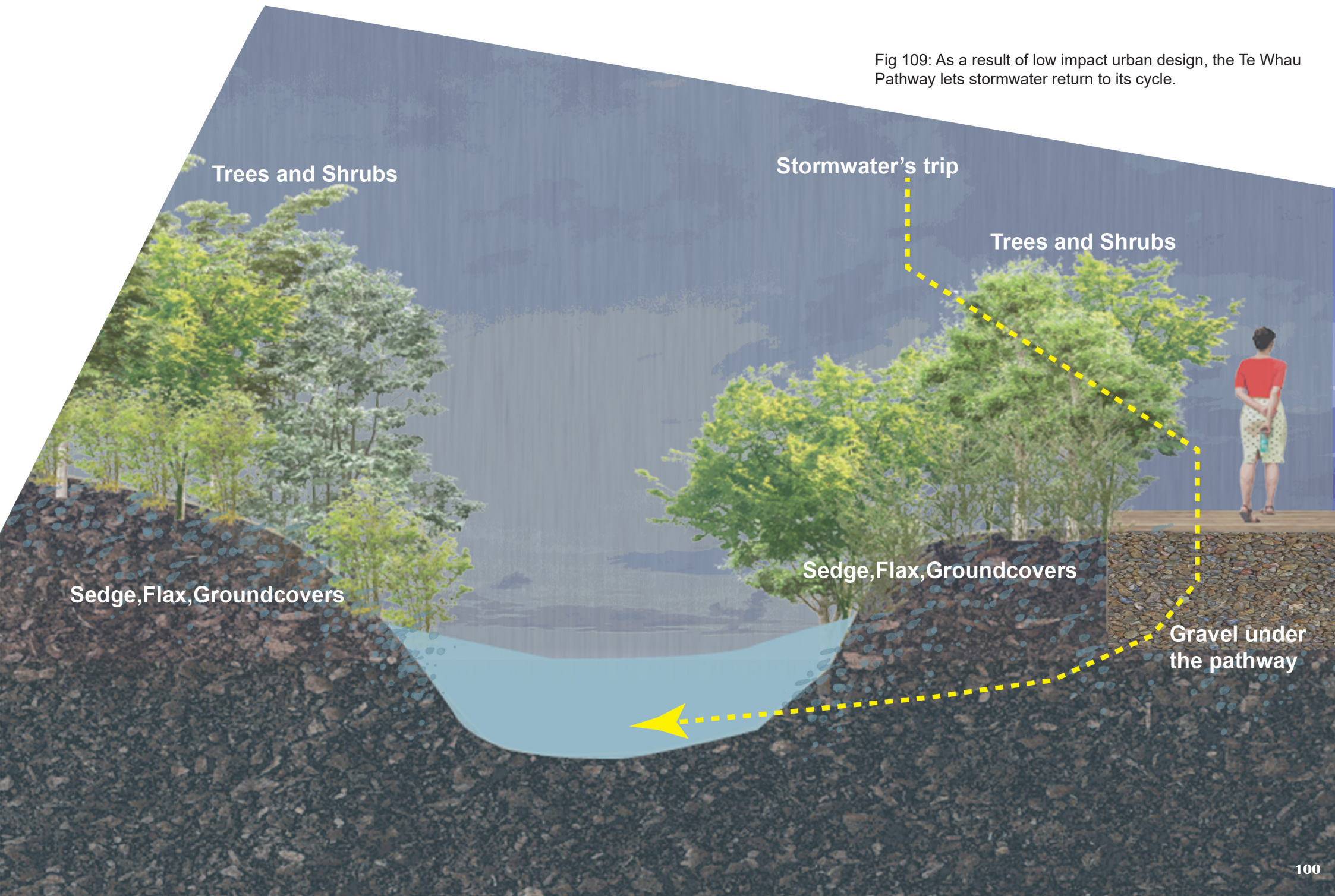
There is a valuable natural heritage at the site – the Avondale Stream. Its context contains mana whanau and historical significance. Many species of plants and animals inhabit here, contributing to its biodiversity. Since industrial discharge has plagued the stream for a hundred years, the quality of the environment has suffered. This proposal offers opportunities to restore urban waterways through low-impact design. By replacing concrete floors with paved tiles and enhancing the landscape, stormwater can naturally permeate and return to the water cycle. A rain garden filters out pollutants in rainwater through selected plants and controls the stormwater flow rate, so it does not trigger a flood (Fig 108). The new path would also have a soakage system installed, which allows stormwater to pass through the deck and gravel, soaking into the soil until it merges with the stream (Fig 109). Ensuring that buildings have water tanks allows stormwater to be collected and reused for irrigation of plants and flushing toilets. The long-term low-impact strategy helps restore the Avondale Stream to its original state.



Fig 108: The rain garden is designed along the kerb, and selected plants are shown in this figure.



Fig 109: As a result of low impact urban design, the Te Whau Pathway lets stormwater return to its cycle.





Housing Block A 1:50

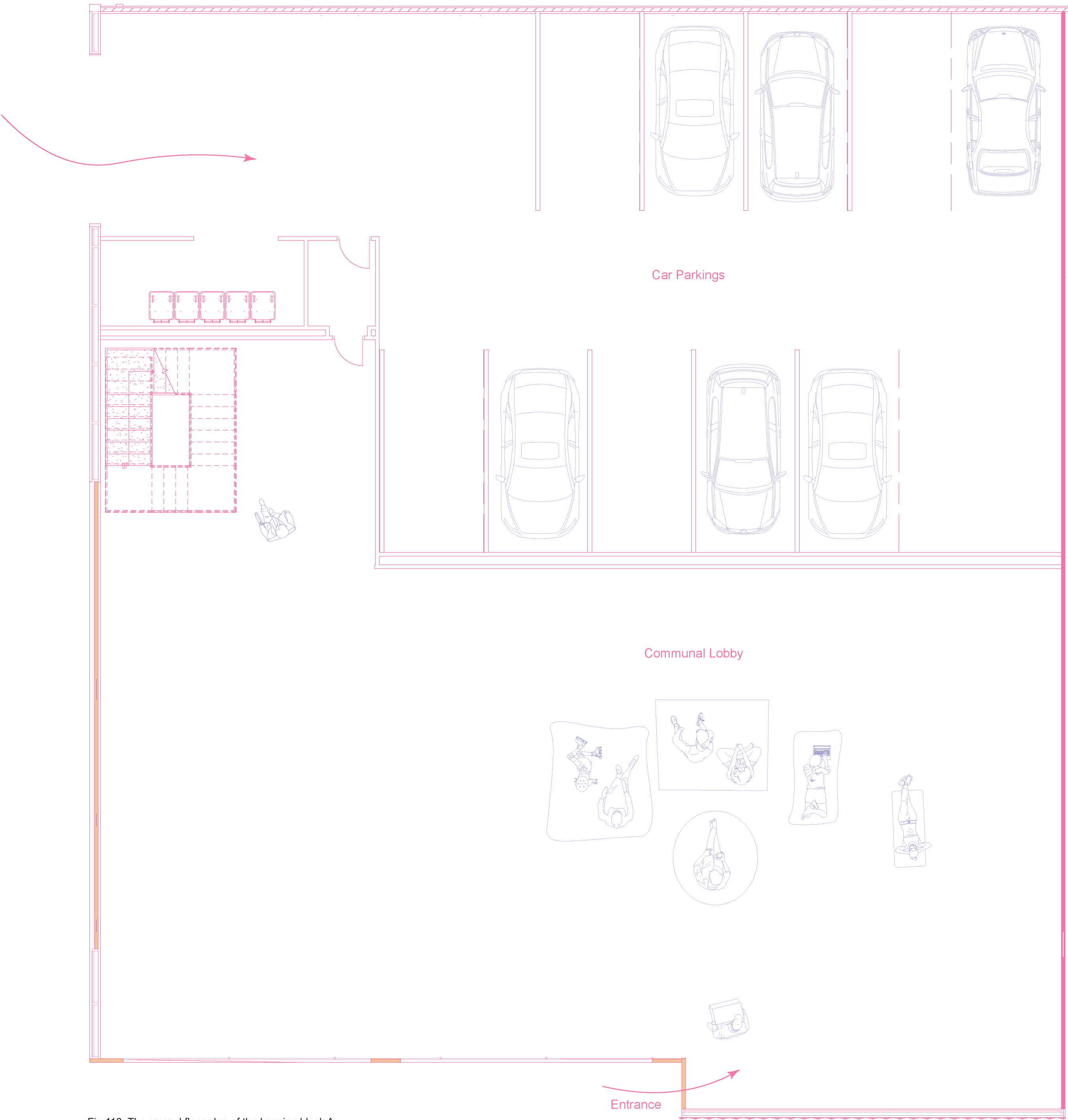


Fig 110: The ground floor plan of the housing block A.

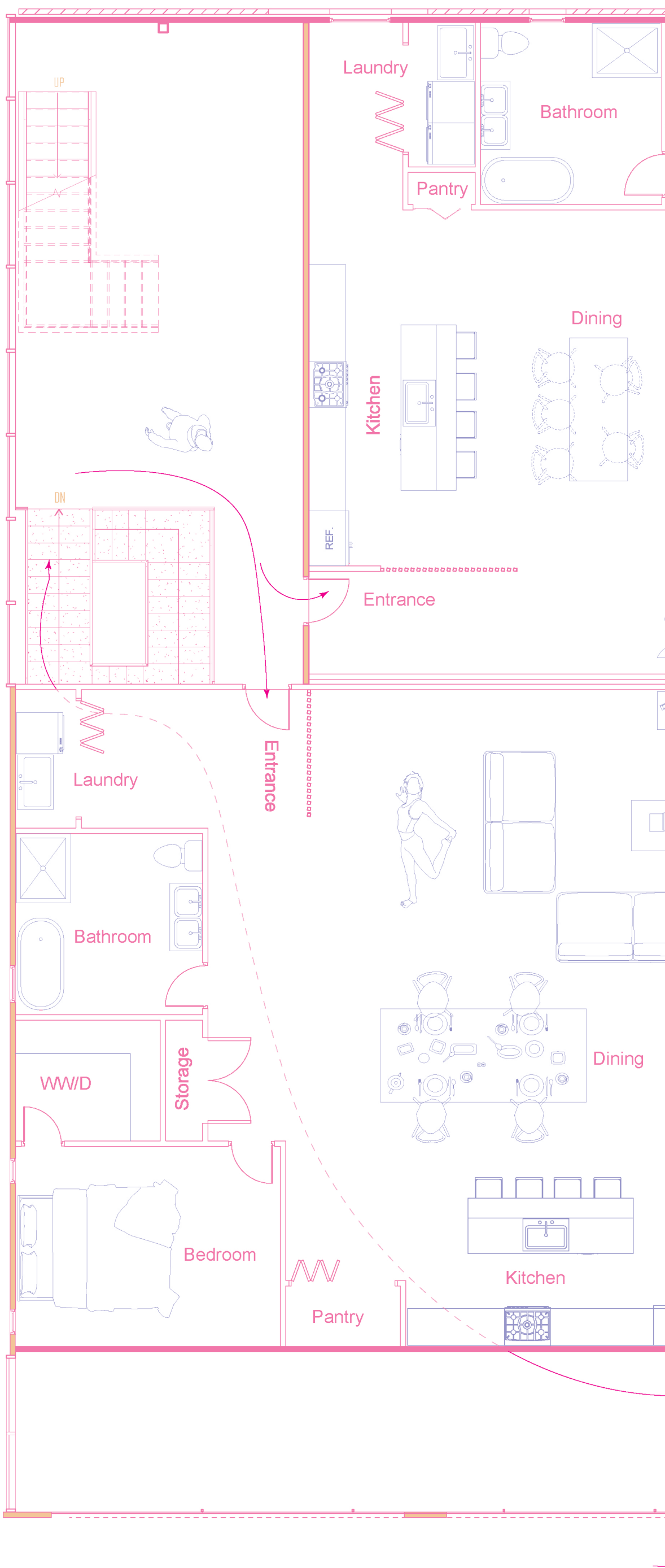
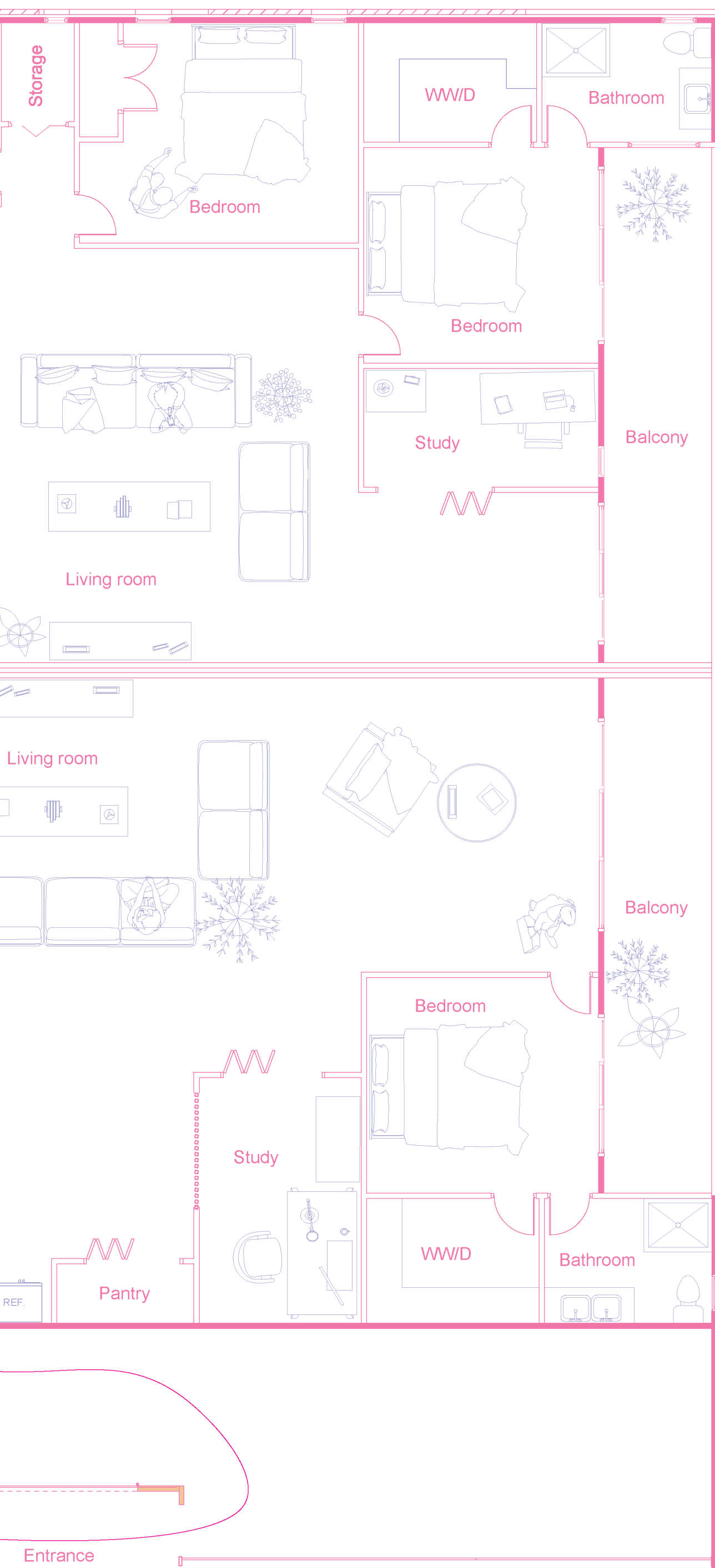


Fig 111: The first floor plan of the housing block A. As well as above floors



Type 1

Type 2

Housing Block 1 First Floor  
Type 1 136m<sup>2</sup>  
Type 2 169m<sup>2</sup>

## Residence

### Opportunity 11: Apartment complex

Developing the site with residential facilities would increase safety and adapt to the rapid growth of the population. Moreover, residential purpose provides the area with an opportunity to weaken its image as a light industrial zone, thus improving its environment.

Two housing blocks with 4-6 dwellings can accommodate ten families (see floor plans Fig 110-113), and the industrial context influences the buildings' shapes in addition to brick walls. With this design, the housing blocks blend in with the existing buildings on the site (Fig 114-115).

Housing blocks have a tenancy space on the ground floor and a communal lobby for residents' entertainment (Fig 116). An attached restaurant provides residents with all-day dining (Fig 117). The housing blocks do not have a yard, the pathway has set up a planting area for residents, where people can grow their crops, and this area is also part of the community landscape (Fig 118).

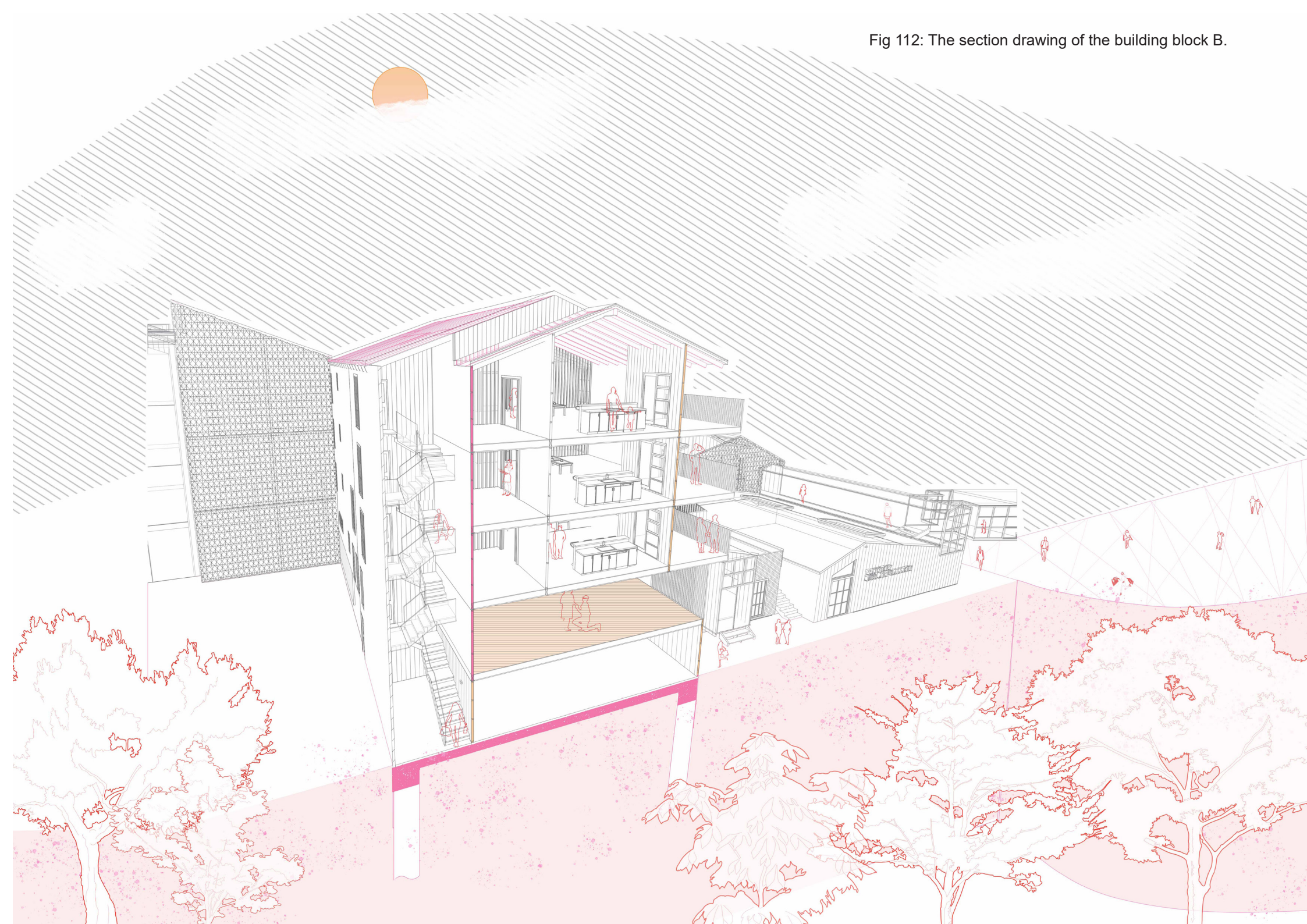
Many people use this site as an informal rubbish dump since there is no recycling infrastructure, and the buildings hide the rubbish behind them. Food packaging and beverage bottles tend to be discarded here. Planning for rubbish classification and collection is therefore necessary (see Fig 110 & Fig 112). Residents' planting area is equipped with compost bins to provide fertiliser for their crops (Fig 118).



Scan it to see the VR community

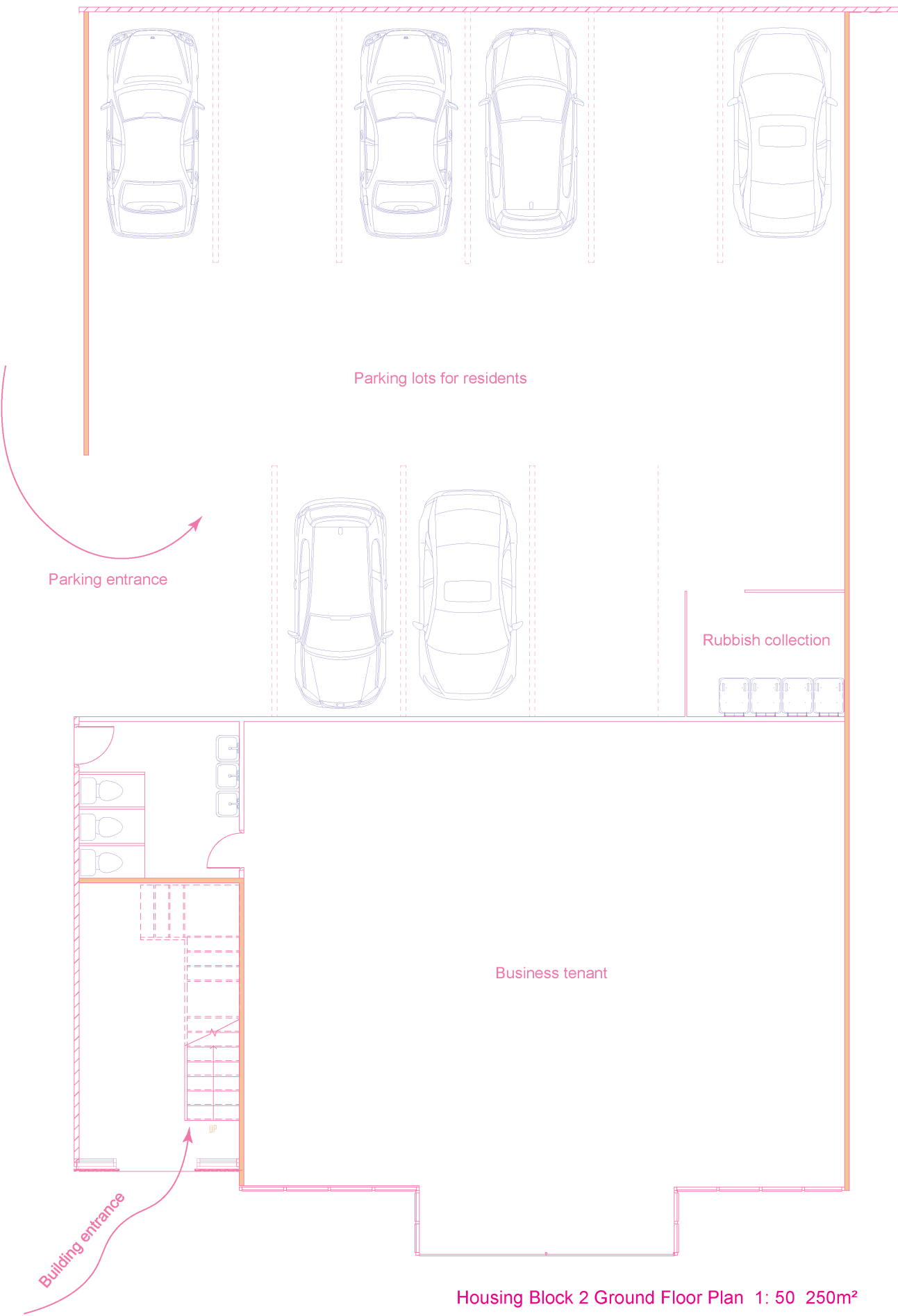
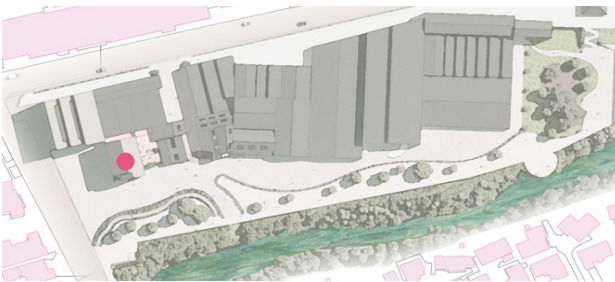


Fig 112: The section drawing of the building block B.



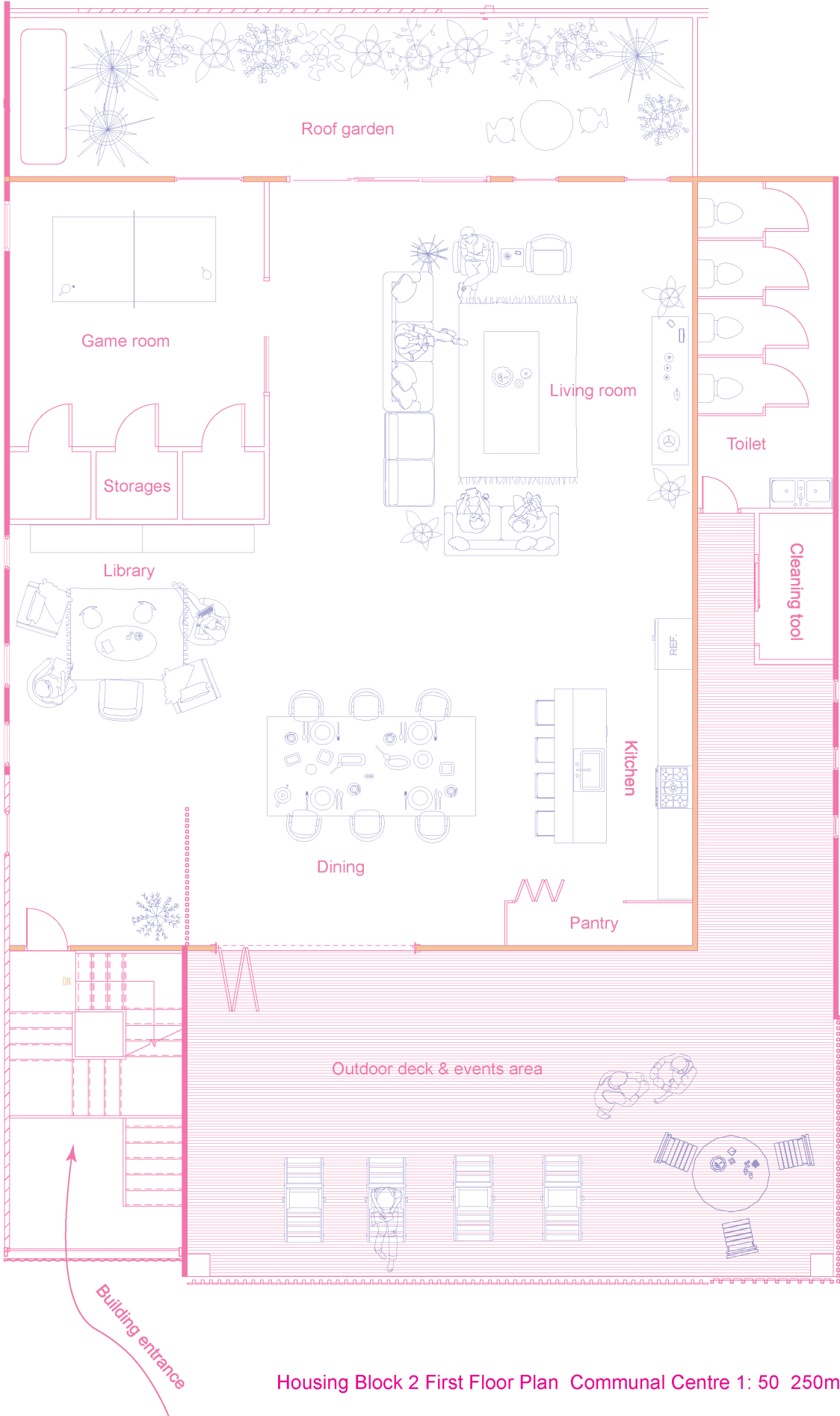


Housing Block B 1:50



Housing Block 2 Ground Floor Plan 1: 50 250m²

Fig 113: The ground floor plan of housing block B.



Housing Block 2 First Floor Plan Communal Centre 1: 50 250m²

Fig 114: The first-floor plan of housing block B, as well as all the floors above.



Fig 116: The brick wall of the existing building is still visible and merged into the new building in this exterior view of housing block A, seen from the Portage Road.

Fig 115: Outside view of two housing blocks and their surroundings.







Fig 117: A Movie is playing in the communal lobby of housing block A.



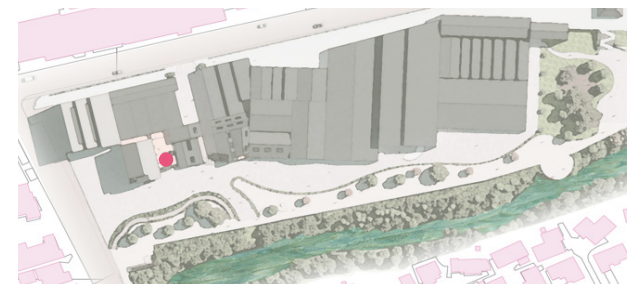
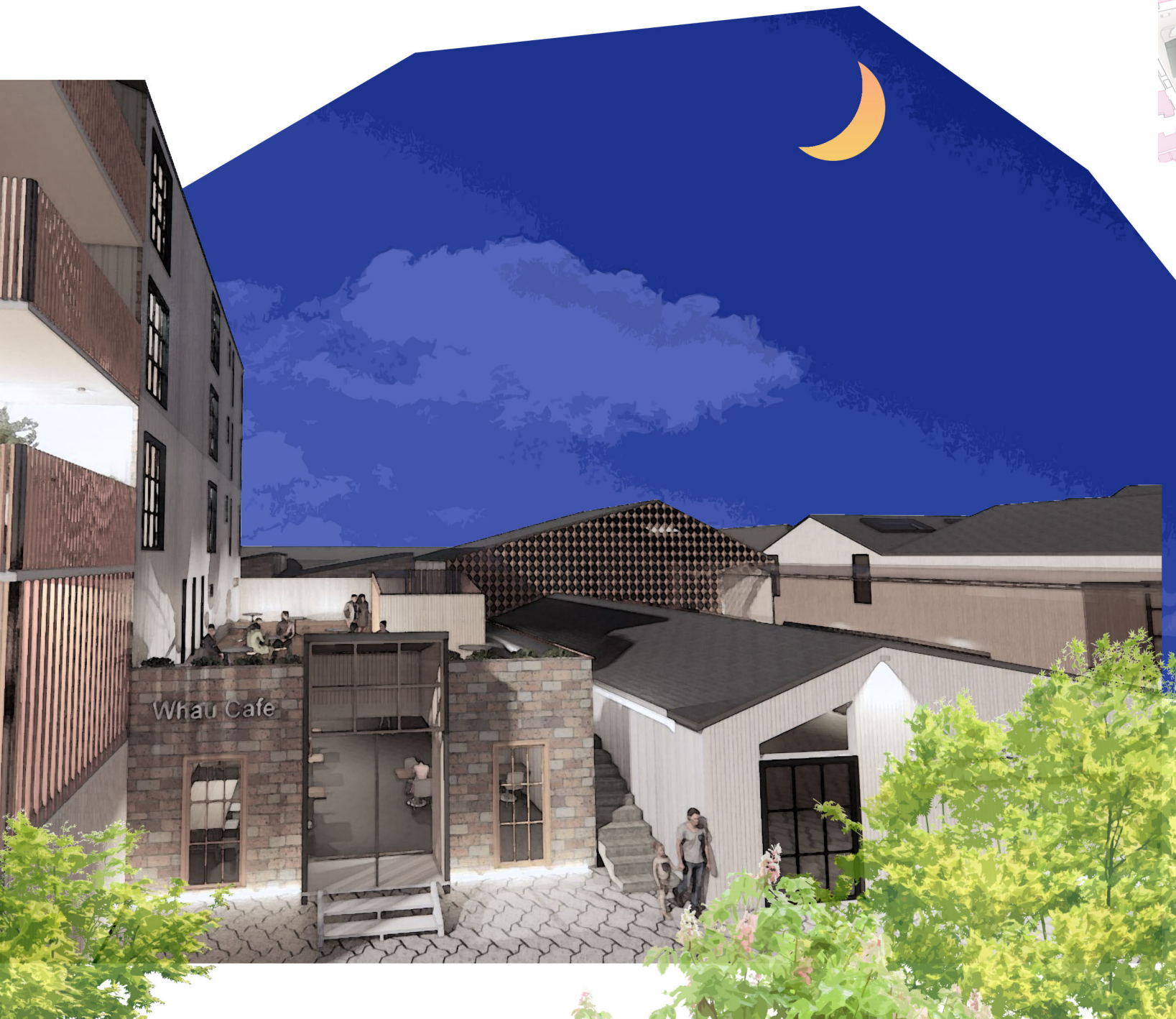


Fig 118: A restaurant is adjacent to housing block B; the figure shows a scene of people having dinner on the rooftop.



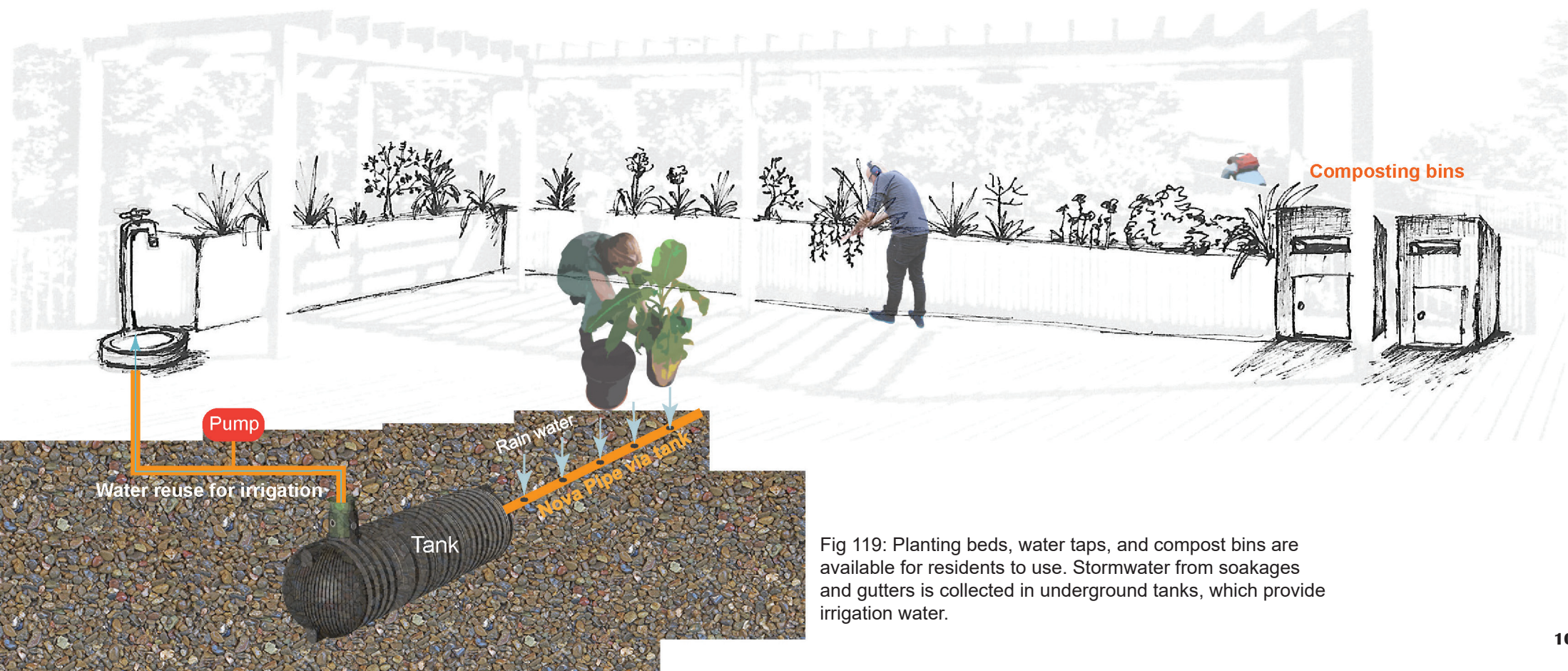


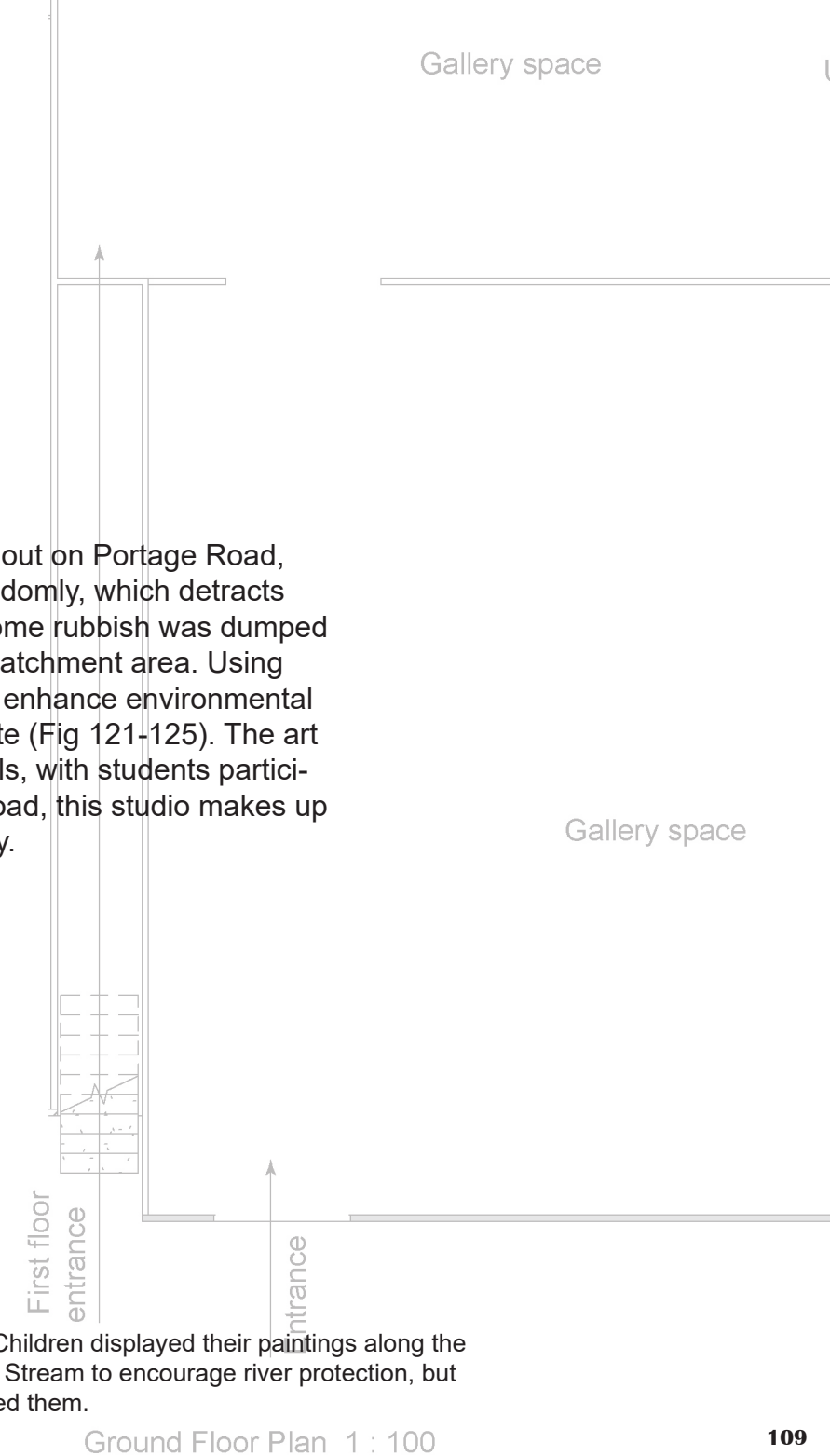
Fig 119: Planting beds, water taps, and compost bins are available for residents to use. Stormwater from soakages and gutters is collected in underground tanks, which provide irrigation water.

### Opportunity 12: Eco art gallery and studio

Light industrial manufacturing or automotive work is carried out on Portage Road, resulting in a lot of industrial waste. Wastes are piled up randomly, which detracts from the aesthetic quality of the environment. In addition, some rubbish was dumped along the banks of the Whau River, causing damage to its catchment area. Using art to spread environmental awareness, the studio seeks to enhance environmental quality in New Lynn and solve the problem of industrial waste (Fig 121-125). The art studio would organise exhibitions for local artists and schools, with students participating in educational programmes (Fig 126). On Portage Road, this studio makes up for the absence of an art and cultural presence in the vicinity.

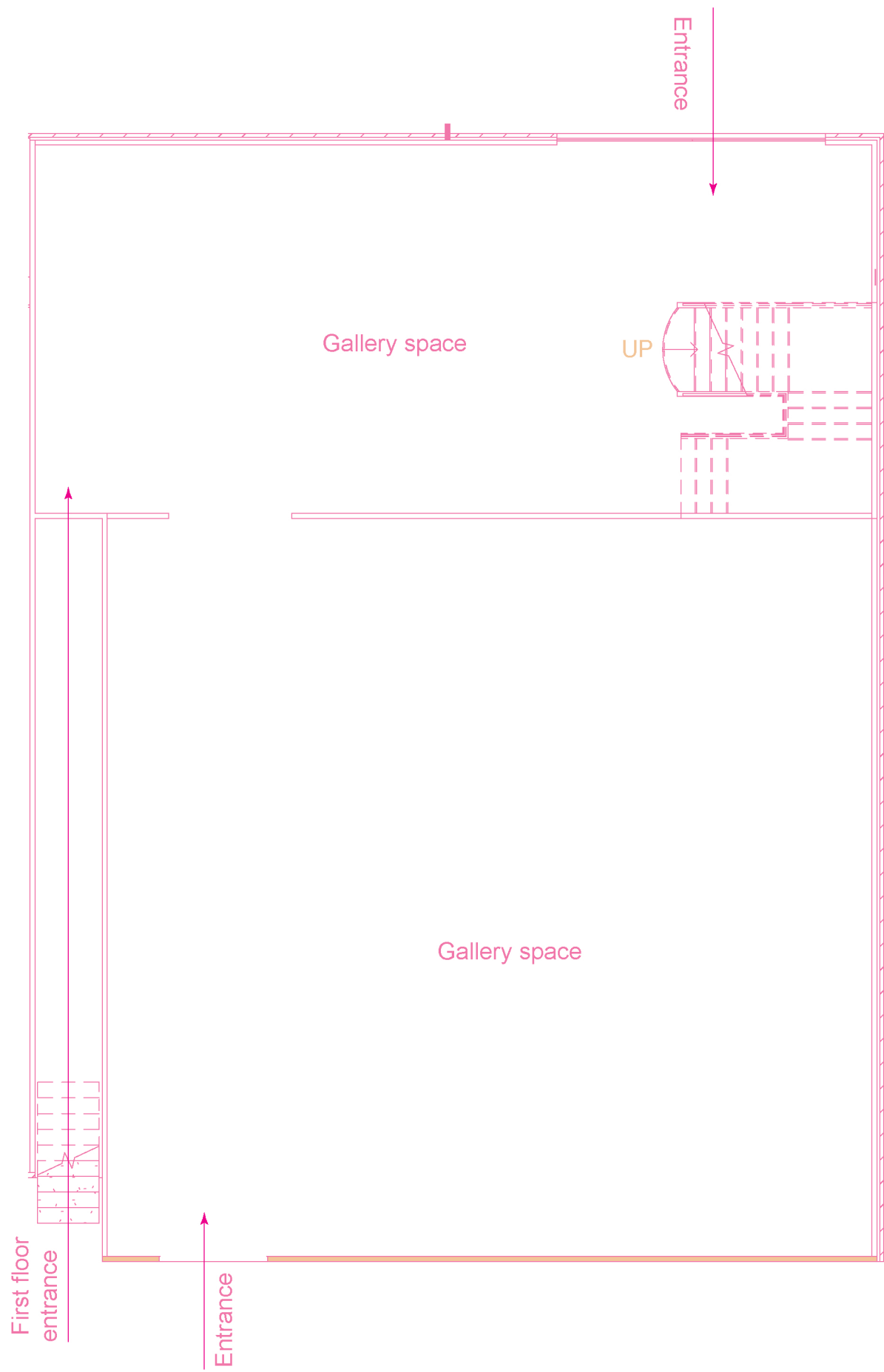


Fig 120: Children displayed their paintings along the Avondale Stream to encourage river protection, but few noticed them.





# The Tannery Art Gallery and Studio



Ground Floor Plan 1 : 100

Fig 121: This is the ground floor plan of the Tannery Gallery. The gallery spaces host exhibitions.

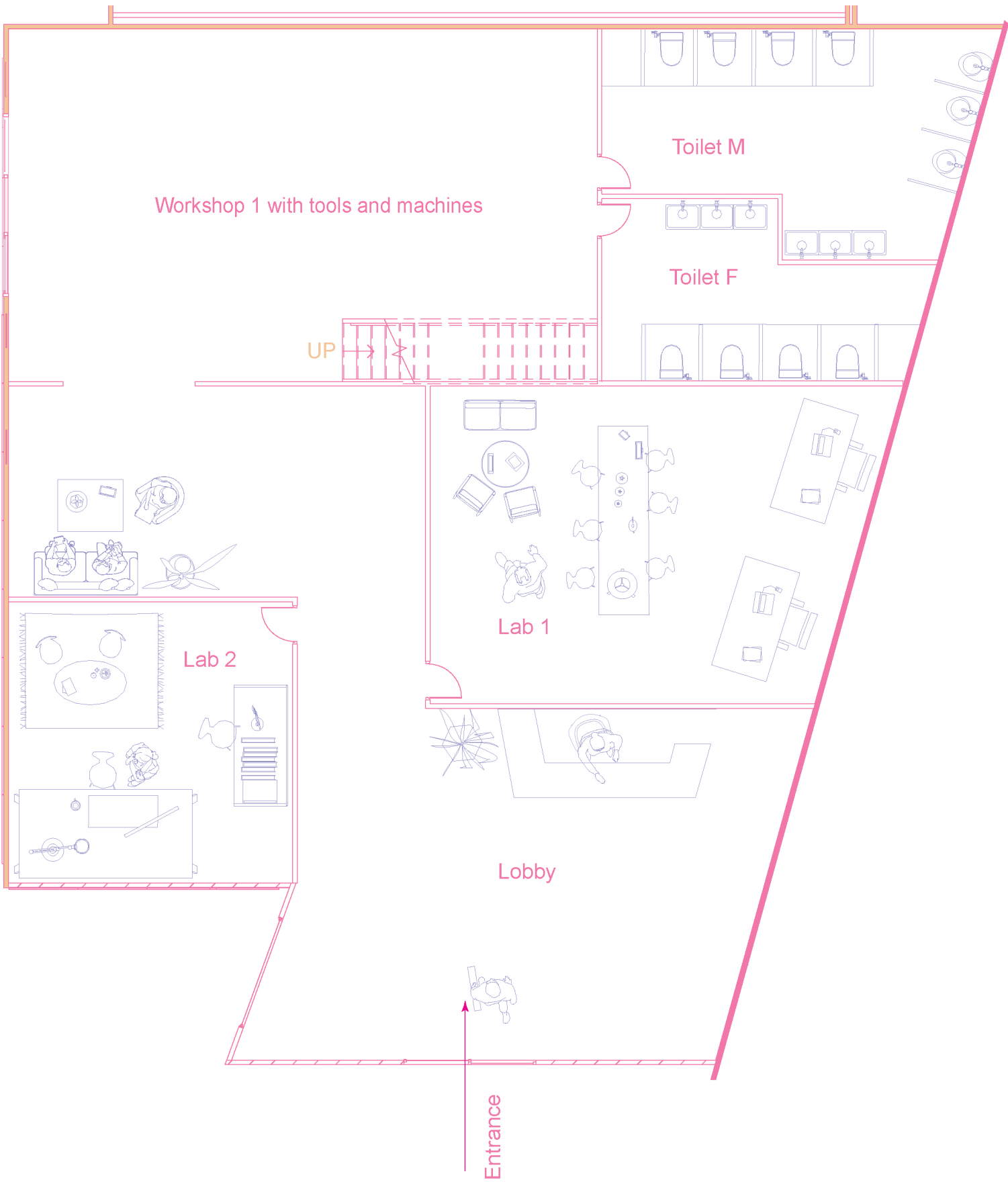
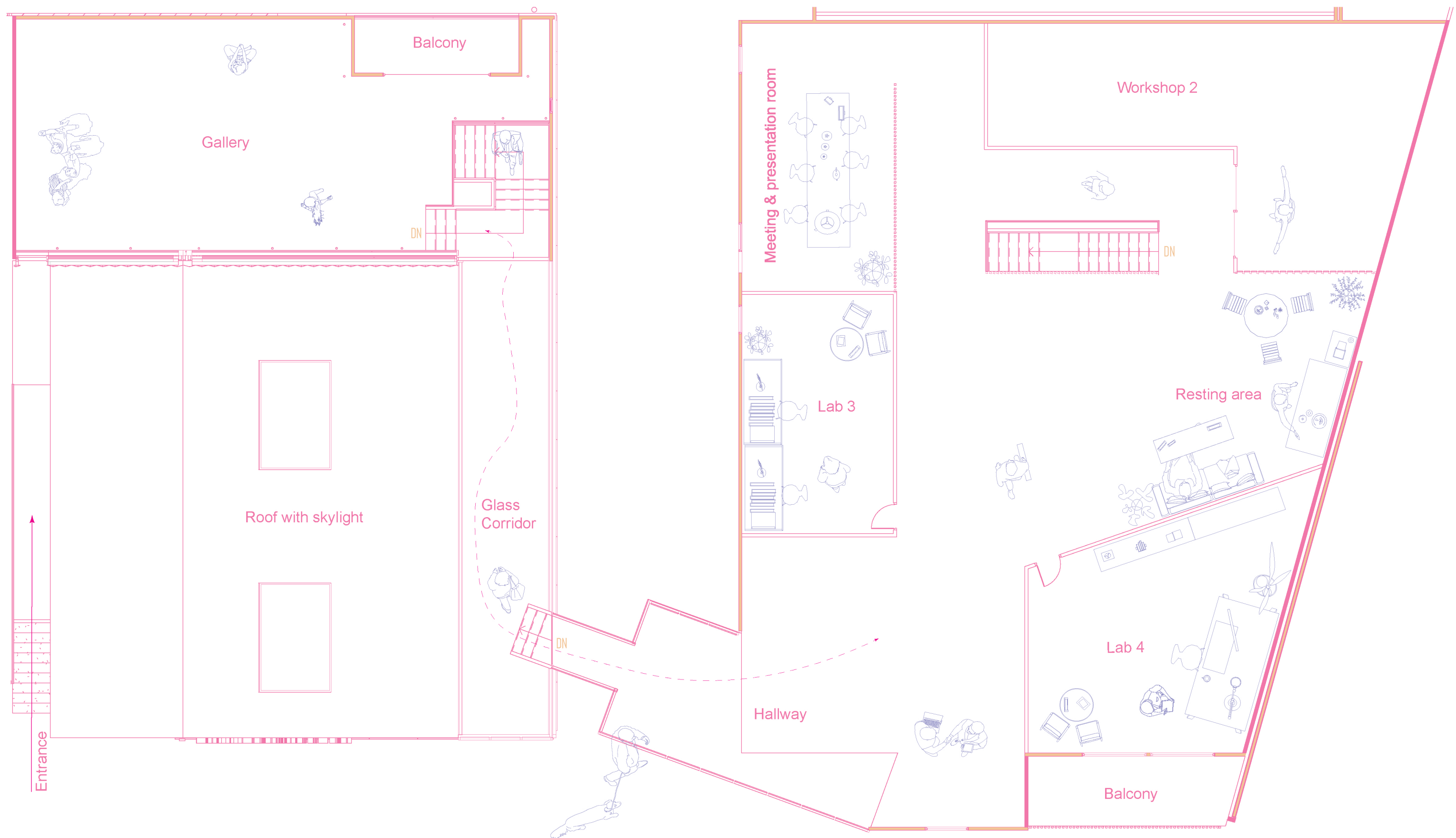


Fig 122: This is the ground floor plan of the Tannery Studio, and artists work there.



First Floor Plan 1 : 100

Fig 123: This is the first floor plan of the Tannery Gallery and Tannery Studio; a corridor connects them.



Fig 124: The outside view of the Tannery Studio from the Avondale Stream side.





Scan it to see the VR community



Fig 125: The outside view of the Tannery Gallery from the Avondale Stream side.



Fig 126: The art exhibition is hosted on the first floor of the Tannery Gallery.



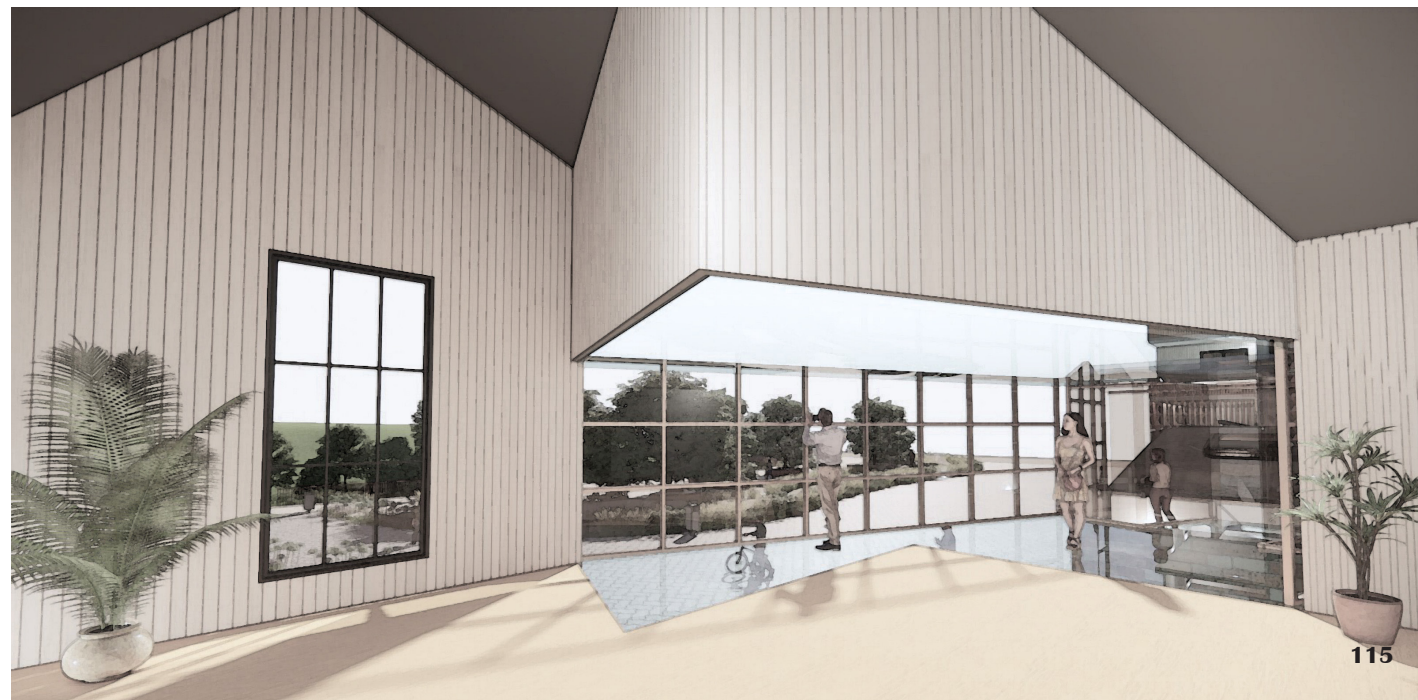
Fig 127: Artists are showing their work to a student group in the Tannery Studio.





Fig 128: From the inside of the corridor, people can see the landscape of the community through the glass wall.

Fig 129: The corridor's entrance on the first floor in the Tannery Studio has a glass floor connected to a timber middle floor and a mirrored film coating underneath to protect privacy.





## Chapter Five: Findings & Conclusion

This chapter summarises the results of my study in response to the research questions.

## 5.1 Findings

During research done this year, many valuable resources have been read and practical theories and strategies derived from them by the author to solve the research problems. The following content summarises the findings from four perspectives.

### **Whau River and its pathway**

This research year gave many exciting, first-hand insights into the Whau River's history, environment, and significance to Auckland, which were not previously known to the author. As a result of this finding, it was recognised that the Whau River is a crucial part of Auckland's hydrology. Auckland Council is building a pathway along the Whau River to rejuvenate this urban waterway. Restoring the Whau River and re-establishing its relationship with people ensured the sustainability of its natural and historical value. The Whau River harnessing effort has been taken seriously; however, restoring a long-polluted urban waterway still requires a lot of time and consideration. This thesis may contribute to the mission of the Muddy Urbanism lab by studying the Pathway's potential to seed new riverside programmes.

### **Site and adaptive reuse**

This thesis used the location at 44 Portage Road, New Lynn as a site to conduct research and form the design proposal. Several other excellent locations on the Whau Pathway project were visited with Muddy Urbanism's members before this particular site was chosen. These sites proved that the Whau pathway project has successfully connected the Whau River with its surrounding communities. However, the pathway project completely ignores 44 Portage Road, the site of the century-old company Astley Tannery, behind which Avondale stream, a tributary of the Whau River flows. As a result of this research, it was realised that development often puts economic interests first, thus burying or destroying history or natural heritage.

The above insight led to the adaptive reuse strategy as proposed in this thesis. In the second chapter, Lilian Wong's book is mentioned as a critical reference for the research and lends credence to the idea that adaptive reuse can extend the life of a building. It was necessary to read hundreds of property files from the Auckland Council to comprehend the site's background and recognise its entire value. Despite the challenges, I completed the series of mapping as a tool to visualise the changes here over the years and reveal the site's complexity. It was paramount to carefully consider the characteristics and value of each building on the site before generating an adaptive reuse strategy.

### **Low impact urban design**

The design proposal of this thesis is associated with the principles of low-impact urban design. It was found that simulating natural hydrological principles through the design of the site could control stormwater discharge, prevent flooding, and improve water quality, restoring the urban waterway and serving the vision of the Whau Pathway project. The concept of low-impact urban design became familiar after researching its principles and precedents.

### **Making space**

The Gibbons and muf project Making Space in Dalston provided the methodology for approaching this site. Three steps were identified in this research to form a cohesive urban planning process: discover the site's value, its missing aspects and its opportunities. The site at 44 Portage Road was described as a dead zone when first visited because a chaotic and disorganised scene was encountered. As a result of research into the Making Space strategy, the author was reminded to focus on architecture's value (to communities, groups and businesses) rather than its challenges. When this site was examined more closely, rare historical features, such as bricks made from the mud of the Whau River were found.

Furthermore, traditional industrial buildings also have large volumes, which is an advantage for adaptive reuse. Accordingly, the site of this thesis must uncover its buried value and seek more opportunities to make up for the missing elements in line with the city's future demands. The new opportunities defined here are not limited to a brand-new large building but also a simple facility. Thus, this thesis was not focused on designing beautiful architecture, but on formulating strategies to create a new community that adapts to the needs of the community and restores the environment of a former industrial, riverside area.



## 5.2 Conclusion

This thesis explored adaptive reuse strategies in great detail. According to related books and precedents, adaptive reuse encompassed a variety of methods for different types of buildings. Due to the presence of diverse ages, additional materials, and different structural styles of buildings in an industrial area, this thesis carefully examined each facility to determine their value and possible use in adaptive reuse. Maps, diagrams, and plans can be used as research tools to visualise each building's position within an adaptive reuse strategy. Adaptive reuse organically took root on the site after the Astley Tannery closed down, and some projects have successfully used the property's value to preserve the building to this day. Overall, this site requires better strategies to highlight its historical value and positively affect the community and adjacent waterways.

This project intended to find and develop potential opportunities for this site to adapt to the needs of the future community. In recognition of their significance, historical buildings have adopted preservation practices. By contrast, other facilities have little historical value but may have spatial or social importance. New interventions were applied to these facilities. Additionally, in the process, the salient features of industrial buildings were retained and incorporated into the new building to maintain consistency in the architectural style of the new community. As an industrial area that has stood by the Whau River for a century, it is more important to transform it from a role that harms urban waterways to one that enhances them through adaptive reuse.

As a response to the objective of the Whau Pathway project, which is to rebuild the relationship between people and the Whau River, this thesis criticised the current pathway route and proposed a new route along the Avondale Stream. This would help break the current situation of isolation on both sides of the stream. A section of the bridge is used to link the residential area opposite the site. Additionally, it adds residential apartments, infrastructure, and recreational activities to enhance the lives of residents, thereby enhancing the pathway's appeal. The proposed pathway and the surrounding building facilities adhere to low-impact design principles, which minimise the impact of human activities on nature and can effectively restore the Whau River environment in the future. The Whau River pathway project has drawn more attention to the river, allowed people to re-encounter and better understand the waterways of this urban environment, and made the relationship between man and nature more intimate.

A better understanding of West Auckland was gained through this research. Land development has destroyed the ecological environment in recent years, and many species have lost their habitats. The urbanisation process is a two-edged sword. In one sense, it creates convenience for mankind, but in another sense, it accelerates the loss to the planet from human activity. This thesis' original intent was to find a way to coexist between the city and nature. Instead of reclaiming land, adaptive reuse encourages people to recycle and reuse existing buildings. The experimental transformation of an industrial area into a residential community is the subject of this study. The opportunities outlined on this site allows a disorganised environment to be transformed into a landmark. This strategy may also be applicable to similar communities looking to realise the value of buildings better and move toward more sustainable practices.

## ***Bibliography***

## Te Whau

Auckland Council. (n.d.). *Te Whau pathway*. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-projects/projects-west-auckland/Pages/te-whau-pathway.aspx>

Bike Auckland. (2017, April 9). *It's Whau real - a design for Te Whau pathway*. <https://www.bikeauckland.org.nz/whau-real-feed-back-te-whau-pathway/>

Brookes, N. (2010). *Green Bay to Gondwanaland. Proto*, 4-5. [http://www.chimaera.co.nz/greenbay/004\\_19thCentury1.html](http://www.chimaera.co.nz/greenbay/004_19thCentury1.html)

Clough & Associates Ltd. (2019). *Te Whau Pathway main route, West Auckland: Archeological assessment (3rd ed.)*. <https://www.aucklandcouncil.govt.nz/ResourceConsentDocuments/14BUN60337530Appx>

Stuff.co.nz. (2021, January 6). *Avondale tree protesters holding up much-wanted development, business association says*. Stuff. <https://www.stuff.co.nz/environment/123878330/avondale-tree-protesters-holding-up-muchwanted-development-business-association-says>  
DArchaeologicalAssessment.pdf

Te Whau Pathway. (n.d.). *What is Te Whau Pathway?* <https://tewhaupathway.org.nz/about-the-pathway/>

Timespanner. (2012). *Changing signs*. <https://timespanner.blogspot.com/search?q=tannery>

Truttman, L. (2020). *New Windsor: the beginnings of a suburb*. Beacon. <https://www.bhb.nz/back-in-the-day/new-windsor-the-beginnings-of-a-suburb>

Waghorn, K., & Barrie, A. (2013). *Muddy Urbanism* [E-book]. Amsterdam University Press.

Mackay. (2012). *The Whau (Yukich, R. Ed.)*. <http://projecttwinstreams.com/wp-content/uploads/2012/10/thewhau.pdf>

MWH, Monk Mackenzie, & Jasmax. (2017). *Te Whau pathway landscape and urban design framework (Vol. 1)*. <https://at.govt.nz/media/1973046/te-whau-pathway-uldf-volume-1.pdf>



## Urban Planning & Design Inspiration

- Auckland Council. (2020b, August). *Methodology and guidance for evaluating Auckland's historic heritage (No. 2)*. <https://www.aucklandcouncil.govt.nz/arts-culture-heritage/heritage/protecting-our-heritage/Documents/methodology-guidance-evaluating-aucklands-historic-heritage.pdf>
- Barchester Street. (n.d.). *Metropolitan workshop*. <https://metwork.co.uk/work/barchester-street/>
- Bianchini, R. (2018, November 20). Castelvechio Museum, Verona. Inexhibit. <https://www.inexhibit.com/mymuseum/castelvechio-museum-verona/>
- Cheshire, N. (2018, December 18). *Nat Cheshire's story*. Crave Cafe. <https://www.cravecafe.co.nz/blogs/the-latest/nat-cheshire-story>
- Church of the Holy Sepulchre and Hall. (n.d.). *Heritage New Zealand*. <https://www.heritage.org.nz/the-list/details/98>
- Clough & Associates Ltd. (2019). *Te Whau Pathway main route, West Auckland: Archeological assessment (3rd ed.)*. <https://www.aucklandcouncil.govt.nz/ResourceConsentDocuments/14BUN60337530AppxDArchaeologicalAssessment.pdf>
- Heard, S. (2018, December 19). *A new multimillion-dollar dining precinct has opened in Morningside*. Concrete Playground. <https://concreteplayground.com/auckland/design-style/design/a-new-multi-million-dollar-dining-precinct-is-opening-in-morningside-this-month>
- ICOMOS New Zealand. (1993). *ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value*. [https://www.icomos.org/images/DOCUMENTS/Charters/ICOMOS\\_NZ\\_Charter\\_2010\\_FINAL\\_11\\_Oct\\_2010.pdf](https://www.icomos.org/images/DOCUMENTS/Charters/ICOMOS_NZ_Charter_2010_FINAL_11_Oct_2010.pdf)
- J. & L. Gibbons Landscape Architects & muf [Firm]. (2009). *Making space in Dalston*. <https://landezine.com/making-space-in-dalston-by-j-l-gibbons-landscape-architects/>
- Merlino, K. R. (2020). *Building reuse: Sustainability, preservation, and the value of design (Sustainable design solutions from the Pacific Northwest)* [E-book]. University of Washington Press.
- muf Architecture. (2013, January). *Making space in Dalston*. [https://issuu.com/mufarchitectureartllp/docs/making\\_space\\_big](https://issuu.com/mufarchitectureartllp/docs/making_space_big)
- Ramshaw J. (2020). *Roofing inspiration and knowledge: Zinc roofing and cladding best practice at 83 Barchester Street in East London*. *Architecture Today*. <https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/>

Wang, Y., Chun, Q., Xiong, X., & Zhu, T. (2021). Conservation and adaptive reuse of modern military industrial heritage: A case study on the former site of Jinling Arsenal in Nanjing, China. *Journal of Asian Architecture and Building Engineering*. <https://doi.org/10.1080/13467581.2021.1941977>

Wong, L. (2016). *Adaptive reuse: Extending the lives of buildings (1st ed.)*. [E-book]. Birkhäuser.

Yin, Y., Liu, Z., Dunford, M., & Liu, W. (2015). *The 798 Art District: Multi-scalar drivers of land use succession and industrial restructuring in Beijing*. *Habitat International*, 46, 147-155. <https://doi.org/10.1016/j.habitatint.2014.11.007>

## Adaptive Re-use & Methodology

Auckland Council. (2010). *New Lynn urban plan 2010*. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-by-laws/our-plans-strategies/place-based-plans/docsnewlynnurbanplan/new-lynn-urban-plan-2010-part-1.pdf>

Auckland Council. (2020, October). *Auckland unitary plan*. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-by-laws/our-plans-strategies/unitary-plan/Pages/what-is-the-auckland-unitary-plan.aspx>

Auckland Council. (2020a). *Section 7: Industrial Zones*. <http://www.aucklandcity.govt.nz/dbtw-wpd/CityArchives/DistrictSchemes/TMK106-28/PDFs/07.%20SECTION%207%20INDUSTRIAL%20ZONES.pdf>

Auckland Council. (n.d.). *Adaptive re-use - Auckland Design Manual*. *Adaptive Re-Use Auckland Design Manual*. Geraadpleegd op 11 april 2022, van <https://www.aucklandddesignmanual.co.nz/sites-and-buildings/mixed-use/guidance/thebuilding/mixeduseconfigurations/adaptivereuse>

New Zealand Institute of Landscape Architects, Tuia Pito Ora. (2019). *Mara Hupara playground - a return to traditional Maori games*. <https://nzila.co.nz/news/2019/04/mara-hupara-playground-a-return-to-traditional-mao>

*Mara Hupara playground - a return to traditional Maori games* | New Zealand Institute of Landscape Architects Tuia Pito Ora. (2019). NZILA. <https://nzila.co.nz/news/2019/04/mara-hupara-playground-a-return-to-traditional-mao>

Stuff.co.nz. (2018, May 7). *New pool for West Auckland receives community push*. Stuff. <https://www.stuff.co.nz/auckland/local-news/western-leader/103684960/new-pool-for-west-auckland-receives-community-push>

Turenscape Landscape Architecture. (2016). *A resilient landscape: Yanweizhou Park in Jinhua City by Turenscape*. *Landezine*. <https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/>

van Roon, H., van Roon, H. T., Trueman, S., Ltd, van Roon, M., & Manaaki Whenua-Landcare Research New Zealand Ltd. (2009). *Low impact urban design and development*. Amsterdam University Press.

## *List of figures*



Fig 1: Hand drawing of the Astley Tannery and Avondale Stream in the 1900s.	1
Fig 2: Hand drawing of the Astleh Tannery warehouse from 1980 property file, Auckland Council.	10
Fig 3: Map showing the location of the Whau River and its relationship to suburbs. The river connects Waitemata Harbour and Manukau Harbour.	11
Fig 4: The Whau River and Te Atatu boating club at the mouth of Waitemata Harbour.	13
Fig 5: The new Whau Bridge at the mouth of Waitemata Harbour, next to the state highway 16	13
Fig 6: The Whau Rive and its wetland, view from the Great North Road Bridge	13
Fig 7: The historical metal signage on the the Great North Road Bridge.	13
Fig 8: Te Whau Pathway sections preliminary design. Te Whau Pathway. (2021, November 18). <i>Section Overview map with funded areas marked</i> [Map]. <a href="https://tewhaupathway.org.nz/route/section-overview-map/">https://tewhaupathway.org.nz/route/section-overview-map/</a>	14
Fig 9: View of Portage Road from Google map. Biking Route is in between of road and parking. This is also the planned route for Te Whau Pathway along the Portage Road.	16
Fig 10: Map of all brickworks and tanneries around the Whau River, made by author of this thesis.	19
Fig 11: Chemical pollution caused milky colour of the Whau River. Photo from Newshub NZ Herald. (2019, November 28). <i>Company fined \$28k for dumping paint additive in stream</i> [Photo]. <a href="https://www.nzherald.co.nz/nz/company-fined-28k-for-dumping-paint-additive-in-stream/D4O7BI6746I-7PA4TDTD2GERVIY/">https://www.nzherald.co.nz/nz/company-fined-28k-for-dumping-paint-additive-in-stream/D4O7BI6746I-7PA4TDTD2GERVIY/</a>	20
Fig 12: Zoning distribution around the Whau River from Auckland Unitary Plan map. <i>Auckland Unitary Plan Operative in part 15th November 2016 - LEGEND</i> . (2016). [Illustration]. <a href="https://map-public.aklc.govt.nz/portal/sharing/rest/content/items/6b1b28dc36264a4187dd52cb46101e39/data">https://map-public.aklc.govt.nz/portal/sharing/rest/content/items/6b1b28dc36264a4187dd52cb46101e39/data</a>	22
Fig 13: The section line cut across the Portage Road, showing three zones meting a t the Tannery site. An industrial zone is adjacent to the two residential zones.	21

Fig 14: The developer chopped the precious native tree at the Avondale tree protest scene. Signages made by Avondale tree protestors.	23
Fig 15: New Lynn railway station. photo by Les Downey, 1972 <i>New Lynn Railway Station</i> . (1972). [Photo]. <a href="https://www.pinterest.nz/pin/652459064736060195/">https://www.pinterest.nz/pin/652459064736060195/</a>	24
Fig 16: Site location map. It is on the 44 Portage Road and adjacent to the Avondale Stream.	26
Fig 17: Photo of Astley tannery 1900s. View from east side looking across the Avondale Stream in foreground, with Waitakere Ranges in back ground. Diamond, John Thomas, D. J. (1966). <i>Astley tannery and other industries, New Lynn</i> . [Photo]. <a href="https://kura.aucklandlibraries.govt.nz/digital/collection/photos/id/52347/">https://kura.aucklandlibraries.govt.nz/digital/collection/photos/id/52347/</a>	27
Fig 18: Mapping from 1933 to today based on Auckland Council property files, showing changes from The Astley Tannery to 44 Portage Road Business Park.	28
Fig 19: Astley Tannery built along with the Avondale Stream, 1900. A boat docked on the bank. Diamond, J. T. (1977). <i>Astley Leathers Ltd</i> [Photo]. (p.19). <a href="http://projecttwinstreams.com/wp-content/uploads/2012/10/thewhau.pdf">http://projecttwinstreams.com/wp-content/uploads/2012/10/thewhau.pdf</a>	30
Fig 20: Litters were presented along the wire fence.	32
Fig 21: Business cards were collected from most of the local businesses in 44 Portage Road Business Park to show the Diversity of activities today.	33
Fig 22: Plimoth Patuxet Museum with tourists. <i>Plimoth Patuxet Museums</i> . (2021). [Photo]. <a href="https://seeplymouth.com/listing/plimoth-plantation/">https://seeplymouth.com/listing/plimoth-plantation/</a>	37
Fig 23: Street view of the Church of the Holy Sepulchre, 2020 Cairns, B. (2010, November 20). <i>Church of the Holy Sepulchre and Hall, Grafton, Auckland</i> . [Photo]. <a href="https://www.heritage.org.nz/the-list/details/98">https://www.heritage.org.nz/the-list/details/98</a>	38
Fig 24: Site plan of Jinling Arsenal with color coding of years. <i>Distribution of Architectural Remains in Different Periods</i> . (2019). [Illustration]. <a href="https://www.tandfonline.com/doi/full/10.1080/13467581.2021.1941977">https://www.tandfonline.com/doi/full/10.1080/13467581.2021.1941977</a>	40

Fig 25: Diagrams of type of host structure, Wong 1994 Wong, L. (2016b). Host structure type [Illustration]. In <i>Adaptive Reuse: Extending the Lives of Buildings</i> (p. 106).	41
Fig 26: Apple Store on Regent Street, London Fingas, R. (2015, September). <i>City of Westminster gives go-ahead to revamp “tired and outdated” Regent Street Apple Store</i> [Photo]. <a href="https://appleinsider.com/articles/15/09/30/city-of-westminster-gives-go-ahead-to-revamp-tired-and-outdated-regent-street-apple-store">https://appleinsider.com/articles/15/09/30/city-of-westminster-gives-go-ahead-to-revamp-tired-and-outdated-regent-street-apple-store</a>	42
Fig 27: The new grey brick unites the fragments of the St. Kolumba Church in the new Kolumba Museum, Cologne, by Peter Zumthor. Zumthor, P. (2016). <i>St. Kolumba Church in the new Kolumba Museum</i> [Photo]. In <i>Adaptive Reuse: Extending the Lives of Buildings</i> (p. 118).	42
Fig 28: Extension to Moritzburg Museum inside a ruined castle in Halle, Germany, by Spanish studio Nieto Sobejano Arquitectos. Photo by Roland Halbe. Halbe, R. (2011). <i>Moritzburg Museum Extension by Nieto Sobejano Arquitectos</i> [Photo]. <a href="https://www.de-zeen.com/2011/06/17/moritzburg-museum-extension-by-nieto-sobejano-arquitectos/">https://www.de-zeen.com/2011/06/17/moritzburg-museum-extension-by-nieto-sobejano-arquitectos/</a>	43
Fig 29: Inside the Moritzburg Museum Extension. Photo by Roland Halbe. Halbe, R. (2011). <i>Moritzburg Museum Extension by Nieto Sobejano Arquitectos</i> [Photo]. <a href="https://www.de-zeen.com/2011/06/17/moritzburg-museum-extension-by-nieto-sobejano-arquitectos/">https://www.de-zeen.com/2011/06/17/moritzburg-museum-extension-by-nieto-sobejano-arquitectos/</a>	43
Fig 30: Le Terrazze Hotel in Treviso by Studio Piva. Wong, L. (2016c). <i>Le Terrazze Hotel in Treviso by Studio Piva</i> . [Photo]. In <i>Adaptive Reuse: Extending the Lives of Buildings</i> (p. 115).	44
Fig 31: Zollverein coal mine and coking plant in Essen, Germany. <i>Zollverein Coal Mine Industrial Complex, Germany</i> . (2001). [Photo]. <a href="https://visitworldheritage.com/en/eu/zollverein-coal-mine-industrial-complex-germany/b0b631c5-ea55-4717-9141-dcf745ee052d">https://visitworldheritage.com/en/eu/zollverein-coal-mine-industrial-complex-germany/b0b631c5-ea55-4717-9141-dcf745ee052d</a>	45
Fig 32: Outside view of the Castelvecchio Museum - old and new buildings merge. <i>Castelvecchio Museum – A masterpiece by Carlo Scarpa</i> . (2014, May). [Photo]. <a href="https://www.archiobjects.org/museo-castelvecchio-verona-italy-carlo-scarpa/">https://www.archiobjects.org/museo-castelvecchio-verona-italy-carlo-scarpa/</a>	47



Fig 33: Stone slab on heritage brick foundation. Castelveccchio Museum Castelveccchio. <i>Castelveccchio Museum – A masterpiece by Carlo Scarpa</i> . (2014, May). [Photo]. <a href="https://www.archiobjects.org/museo-castelveccchio-verona-italy-carlo-scarpa/">https://www.archiobjects.org/museo-castelveccchio-verona-italy-carlo-scarpa/</a>	47
Fig 34: Rusty Staircase attached to the brick wall. Castelveccchio Museum. <i>Castelveccchio Museum – A masterpiece by Carlo Scarpa</i> . (2014, May). [Photo]. <a href="https://www.archiobjects.org/museo-castelveccchio-verona-italy-carlo-scarpa/">https://www.archiobjects.org/museo-castelveccchio-verona-italy-carlo-scarpa/</a>	47
Fig 35: Section view of Elbphilharmonie Concert Hall digital model. <i>ELBPHILHARMONIE-DE-HAMBURG</i> . (2017). [Illustration]. <a href="https://www.orgue-en-france.org/en/elbphilharmonie-de-hamburg-2/">https://www.orgue-en-france.org/en/elbphilharmonie-de-hamburg-2/</a>	48
Fig 36: Adaptive re-use analysis site plan with numerical order.	50
Fig 37: Building 1&2 diagram of building's value and potential host type.	51
Fig 38: Building 2 Outside view.	51
Fig 39: Building 1 Outside view.	51
Fig 40: Building 3 diagram of building's value and potential host type.	52
Fig 41: Building 3 part 2 outside view from the Portage Road.	52
Fig 42: Building 3 part 1 outside view from the parking lot.	52
Fig 43: Building 4 diagram of building's value and potential host type.	53
Fig 44: Building 4 outside view from the Portage Road.	53
Fig 45: Building 4 outside view from the Avondale Stream.	53
Fig 46: Building 5 diagram of building's value and potential host type.	54
Fig 47: Building 5 interior view.	54
Fig 48: Building 5 outside view from the Avondale Stream.	54

Fig 49: Building 5 outside view from the Portage Road.	54
Fig 50: Building 6&7 diagram of building's value and potential host type.	55
Fig 51: Building 6 outside view from the Portage Road.	55
Fig 52: Building 7 outside view from the Portage Road.	55
Fig 53: Building 8 diagram of building's value and potential host type.	56
Fig 54: Building 8 outside view from the Portage Road.	56
Fig 55: Building 9&10 diagram of building's value and potential host type.	57
Fig 56: Building 10 outside view from the Portage Road.	57
Fig 57: Building 9 outside view from the Portage Road.	57
Fig 58: Building 11 diagram of building's value and potential host type.	58
Fig 59: Building 11 outside view from the Portage Road.	58
Fig 60: Building 11 outside view from the Avondale Stream.	58
Fig 61: Building 12 diagram of building's value and potential host type.	59
Fig 62: Building 12 outside view from the Avondale Stream.	59
Fig 63: Building 13&14 diagram of building's value and potential host type.	60
Fig 64: Building 13&14 outside view from the Avondale Stream.	60
Fig 65: Building 16 outside view from the Avondale Stream.	61
Fig 66: Building 15 outside view from the Avondale Stream.	61
Fig 67: Building 17 diagram of building's value and potential host type.	61

Fig 68: Building 17 outside view from the Avondale Stream.	61
Fig 69: Outside view of the 83 Barchester Street, Poplar, saw-tooth profile can be seen from the river-side. Smith, T. (2019). <i>Roofing Inspiration and Knowledge: Zinc roofing and cladding best practice at 83 Barchester Street in east London</i> [Photo]. <a href="https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/">https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/</a>	67
Fig 70: Bronze zinc-clad of the 83 Barchester Street, Poplar, view from the courtyard. Smith, T. (2019). <i>Roofing Inspiration and Knowledge: Zinc roofing and cladding best practice at 83 Barchester Street in east London</i> [Photo]. <a href="https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/">https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/</a>	67
Fig 71: Bronze zinc-cladding combined with the brick cladding, view from the Barchester Street. Smith, T. (2019). <i>Roofing Inspiration and Knowledge: Zinc roofing and cladding best practice at 83 Barchester Street in east London</i> [Photo]. <a href="https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/">https://architecturetoday.co.uk/roofing-inspiration-and-knowledge-zinc-roofing-and-cladding-best-practice-at-83-barchester-street-in-east-london/</a>	67
Fig 72: In 798 Art Park, the Bauhaus architecture was designed with curvey saw-tooth roofs. The art exhibition is in the square. <i>798 Art District – New Landmark of Beijing Urban Culture</i> . (n.d.). [Photo]. <a href="https://www.chinadiscovery.com/beijing/798-art-district.html">https://www.chinadiscovery.com/beijing/798-art-district.html</a>	68
Fig 73: Exhibition is in the Bauhaus architecture. <i>798 Art District – New Landmark of Beijing Urban Culture</i> . (n.d.). [Photo]. <a href="https://www.chinadiscovery.com/beijing/798-art-district.html">https://www.chinadiscovery.com/beijing/798-art-district.html</a>	68
Fig 74: A modern new structure was built on the old building in 798 Art Park. M. (2017). <i>More of Beijing 798 Art District</i> [Photo]. <a href="https://www.flickr.com/photos/max_the_dog98/35702491094">https://www.flickr.com/photos/max_the_dog98/35702491094</a>	69
Fig 75: The former industrial facilities surround sculptures. Smith, T. (2019a). <i>A Brief History of Beijing's 798 Art District</i> [Photo]. <a href="https://theculturetrip.com/asia/china/articles/a-brief-history-of-the-798-art-district-in-beijing/">https://theculturetrip.com/asia/china/articles/a-brief-history-of-the-798-art-district-in-beijing/</a>	69
Fig 76: Various stores fitted into the former industrial buildings add a sense of culture here. M. (2017). <i>More of Beijing 798 Art District</i> [Photo]. <a href="https://www.flickr.com/photos/max_the_dog98/35702491094">https://www.flickr.com/photos/max_the_dog98/35702491094</a>	69



Fig 77: The hand drawing of the Morningside Precinct is from its official website. <i>Morningside Precinct Aerial Render</i> . (n.d.). [Illustration]. <a href="https://www.morningside.nz/morningside-precinct">https://www.morningside.nz/morningside-precinct</a>	70
Fig78: The former factory turned into a back packer motel in the Morningside Precinct.	71
Fig 79: People in Morningside Precinct can find food here by following the street signs.	71
Fig 80: Local taverns and restaurants are located inside the former factory.	71
Fig 81: The Glasshouse hosts a market, a view from the entrance.	71
Fig 82: The overall view shows the river and a city surrounding Yanweizhou Park. Turenscape Landscape Architecture. (n.d.). <i>Yanweizhou Park in Jinhua City</i> [Photo]. Landzine. <a href="https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/">https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/</a>	72
Fig 83: A bridge over the river connects parks and prevents flooding. Turenscape Landscape Architecture. (n.d.). <i>Yanweizhou Park in Jinhua City</i> [Photo]. Landzine. <a href="https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/">https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/</a>	72
Fig 84: On lookouts, people can see the river view. Turenscape Landscape Architecture. (n.d.). <i>Yanweizhou Park in Jinhua City</i> [Photo]. Landzine. <a href="https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/">https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/</a>	73
Fig 85: Terraced vegetation embankment, plants and permeable areas help rainwater flow back to its cycle. Turenscape Landscape Architecture. (n.d.). <i>Yanweizhou Park in Jinhua City</i> [Photo]. Landzine. <a href="https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/">https://landezine.com/a-resilient-landscape-yanweizhou-park-in-jinhua-city-by-turenscape/</a>	73
Fig 86: Diagram of three-step methodology. muf Architecture. (2013). <i>The principles of the study</i> [Graph]. In Making space in Dalston (p. 18).	75
Fig 87: The map shows all projects under ten strategies in Dalston. muf Architecture. (2013). <i>The principles of the study</i> [Graph]. In Making space in Dalston (p. 44-45).	76
Fig 88: An urban view of the site plan shows the existing Te Whau Pathway and the proposed Whau Pathway.	80
Fig 89: The Site Plan indicates in numerical order where opportunities are located.	81

Fig 90: The Tannery site parti diagram shows the proposed pathway and its surroundings.	82
Fig 91: People can access the streamside by a stone staircase.	83
Fig 92: The pump track offers a fun experience for bikers, skateboarders, and roller skaters.	84
Fig 93: A lookout provides a safe space for visitors to take in nature.	85
Fig 94: A natural playground is constructed from tree trunks and roots, enabling people to engage with nature.	86
Fig 95: The bike stand is made of tree trunks and set up in the community.	86
Fig 96: The first access location is obscured by 4m high retaining walls and an abandoned staircase. And the second access location is obscured by building 12.	87
Fig 97: It is a sunset scene with a digital concept of the first access point after construction.	88
Fig 98: It is a night scene with a digital concept of the second access point after construction.	88
Fig 99: The picture shows the outside view of the museum in a digital format.	89
Fig 100: The picture is a section view of a community pool and adjacent sports centre.	90
Fig 101: An interior concept of the community pool.	91
Fig 102: The figure shows a view of the break room from outside at the second access point.	92
Fig 103: There are kitchen and dining areas in the break room.	93
Fig 104: Timber louver walls separate the lounge into a few resting spaces.	93
Fig 105: An outside concept of the Tongan Church, as seen from the Portage Road.	94
Fig 106: An outside concept of the Kohu Road ice cream shop, as seen from the Avondale Stream side.	95

Fig 107: While the ice cream shop still has exposed timber trusses, skylights are added to increase brightness. The large glass window allows people to watch the ice cream production process.	96
Fig 108: The rain garden is designed along the kerb, and selected plants are shown in this figure.	98
Fig 109: As a result of low impact urban design, the Te Whau Pathway lets stormwater return to its cycle.	99
Fig 110: The ground floor plan of the housing block A.	101
Fig 111: The first-floor plan of housing block A, as well as all the floors above.	101-102
Fig 112: The section drawing of the building block B.	103
Fig 113: The ground floor plan of housing block B.	104
Fig 114: The first-floor plan of housing block B, as well as all the floors above.	104
Fig 115: Outside view of two housing blocks and their surroundings.	105
Fig 116: The brick wall of the existing building is still visible and merged into the new building in this exterior view of housing block A, seen from the Portage Road.	105
Fig 117: A Movie is playing in the communal lobby of housing block A.	106
Fig 118: A restaurant is adjacent to housing block B; the figure shows a scene of people having dinner on the rooftop.	107
Fig 119: Planting beds, water taps, and compost bins are available for residents to use. Stormwater from soakages and gutters is collected in underground tanks, which provide irrigation water.	108
Fig 120: Children displayed their paintings along the Avondale Stream to encourage river protection, but few noticed them.	109
Fig 121: This is the ground floor plan of the Tannery Gallery. The gallery spaces host exhibitions.	110
Fig 122: This is the ground floor plan of the Tannery Studio, and artists work there.	110
Fig 123: This is the first floor plan of the Tannery Gallery and Tannery Studio; a corridor connects them.	111

Fig 124: The outside view of the Tannery Studio from the Avondale Stream side.	112
Fig 125: The outside view of the Tannery Gallery from the Avondale Stream side.	113
Fig 126: The art exhibition is hosted on the first floor of the Tannery Gallery.	114
Fig 127: Artists are showing their work to a student group in the Tannery Studio.	114
Fig 128: From the inside of the corridor, people can see the landscape of the community through the glass wall.	115
Fig 129: The corridor's entrance on the first floor in the Tannery Studio has a glass floor connected to a timber middle floor and a mirrored film coating underneath to protect privacy.	115



THANKS FOR READING