

# THE CRAFT OF CONVERSION:

ENHANCING NEW ZEALAND'S INDUSTRIAL HERITAGE THROUGH ADAPTIVE REUSE

by

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## I ABSTRACT

The aim of this research is to explore an adaptive reuse approach as a way to enhance industrial buildings in New Zealand. As in other parts of the world, New Zealand has accumulated industrial buildings which are now in disrepair. Many of these buildings appear to be undervalued by their local communities and are often demolished with little consideration given to other options. There are missed opportunities here to create composite architectures which make use of these somewhat curious buildings.

This thesis initially investigates the significance that these buildings may hold for society and suggests reasons why they ought to be reused. The research then questions *how* an adaptive reuse approach could be used to enhance industrial structures. By combining the research into the importance of older buildings, particularly industrial buildings, with international case study analysis, a set of design approaches are developed. These approaches offer concepts and techniques for the conversion of industrial buildings which pertain to physical factors such as proportion and form. The design process is informed by these approaches, where they are expanded and tested for their relevance in a New Zealand context. The site for this design exploration is the Lower Hutt Railway Workshops which were selected to reveal the challenges involved in a large-scale project and because they embody the typical issues of industrial disregard. The intended function is a film complex which has specific requirements necessary to probe change in the buildings. However, this design example does not suggest that one-approach-fits-all. Rather, these approaches are developed to provoke thought in designers embarking on industrial conversions.

Due to a widespread lack of appreciation of industrial buildings, there is typically more creative freedom in the way they are adapted, compared with non-industrial buildings. This suggests that more innovative conversion methods can be used. The approaches developed in this thesis advocate for an amalgamated adaptation which has a well considered relationship to the existing building and site. Overall this research reveals that there are a number of significant factors to consider when converting industrial architectures. When these factors are included in the design process, the experience of aged materials and the heritage-value encompassed in these buildings can be further enhanced.



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# 1.0 INTRODUCTION

## 1.1 PROBLEM STATEMENT

In New Zealand it appears that little consideration has been given to the heritage value of industrial buildings. When an industrial building is no longer required and is left vacant, the deteriorating building is often seen as an eyesore. Due to a lack of respect, countless opportunities to reuse the rich fabric and unusual forms of industrial buildings are wasted as the majority of the buildings from New Zealand's industrial age have been demolished. The few buildings that have survived threats of demolition seem to be doomed as moments frozen in time: a museum of the building's former use.

The way industrial buildings in New Zealand are managed is an example of how older buildings are frequently treated. People working in the preservation field tend to have limited ideas about how heritage buildings can be looked after for future generations to experience. If a building happens to survive the inevitable stage of being 'unfashionable', it then risks being restored to the point that it becomes a memoir of its period. This trend, which in some instances can be considered appropriate, denies a building's potential to have another lifecycle.



This thesis is an investigation into the architectural opportunities possible in the conversion of New Zealand's remaining industrial buildings. I argue that adaptive reuse is the best way forward for industrial heritage as it not only makes these buildings functional in the future, but also gives the greatest integrity to the existing physical features and histories. Transformation of the building produces a new form from the existing fabric, with both new and old being enhanced by one another.

A building that is given a chance to age, develops a rich fabric that can only be acquired through slow deterioration. In my view, this resource is more valuable than most people acknowledge, as the qualities of the materials would be difficult to achieve through any other means. Some of the most successful heritage buildings are ones in which their designers have embraced the existing fabric when adapting them to accommodate something new. When a new function is fitted to the structure designed for a former role, the inconsistency of the spaces required and the spaces supplied adds a special character. The juxtaposition of ideas, styles and techniques gives the resulting architecture a potentially beautiful outcome.

## 1.2 WHY INDUSTRIAL?

Industrial architecture was chosen for this investigation for a number of reasons. First, it poses a challenge to adaptation as industrial buildings are tailored to specific functions, so when a change in function is inserted into a function-oriented space, that conversion is likely to be expressive of adaptation in architecture. Secondly, as a design practice, varieties of remodelling have been common throughout architectural history, where conversions usually took place in a historical fabric (Brooker and Stone 9). New Zealand is a relatively young country which does not have the extent of historical architecture seen in older countries. Yet, like the rest of the world, New Zealand has also ended up with what can be termed 'modern ruins'; the leftovers from the industrial age. Non-industrial, historic buildings are usually designed with more care attributed to creating

an ‘architecture’ of the structure: these industrial ruins have not been given the same thought. Mostly industrial buildings are planned purely for function and are often produced by engineers alone. I am interested to explore what similarities or differences there are between adaptations in an industrial situation compared to a more historical example, such as the buildings adapted by Carlo Scarpa. Lastly, it seems that most industrial heritage is not regarded by New Zealanders as having much architectural merit; in fact, many hardly consider it architecture at all. Industrial architectures are often extremely large structures and in some cases appear quite daunting. I see it as a challenge to change this perception of industrial buildings.

### 1.3 AIM

The aim of this research is to investigate the possibilities an adaptive reuse approach has in creating a new composite architecture from the fabric of New Zealand’s industrial heritage. This research begins by offering a broad critique of building preservation as a whole and with particular respect to New Zealand’s industrial buildings. A set of approaches specifically relating to the conversion of industrial buildings will then be developed and tested. It is intended that the resulting architecture be an example of an alternative means of dealing with the ‘modern industrial ruin’ in New Zealand.

### 1.4 RESEARCH APPROACH

From the outset, I explore the basis for why some older buildings come to be appreciated and why interested parties endeavour to keep these buildings. Heritage conservation groups use justification phrases which are largely unchallenged. The New Zealand Historic Places trust “believes the conservation of this heritage enables New Zealanders to develop a greater understanding of their history and identity” (About Us: Introduction). While I do not disagree with such statements, the

reasons why heritage buildings have this significance and specifically, what significance industrial buildings may hold for communities, will be examined in some detail.

Following this, I intend to investigate New Zealand's industrial history and critique how industrial buildings have been dealt with. Research into how a building gains significance for a community will be used to argue for industrial architecture to be suitably recognized as part of New Zealand's heritage. Moreover, to then encourage the use of adaptation as a means to conserve the ongoing life of the building, rather than merely preserving its history. Analysis of New Zealand's industrial building stock will begin to highlight specific aspects of industrial architecture which make it significant.

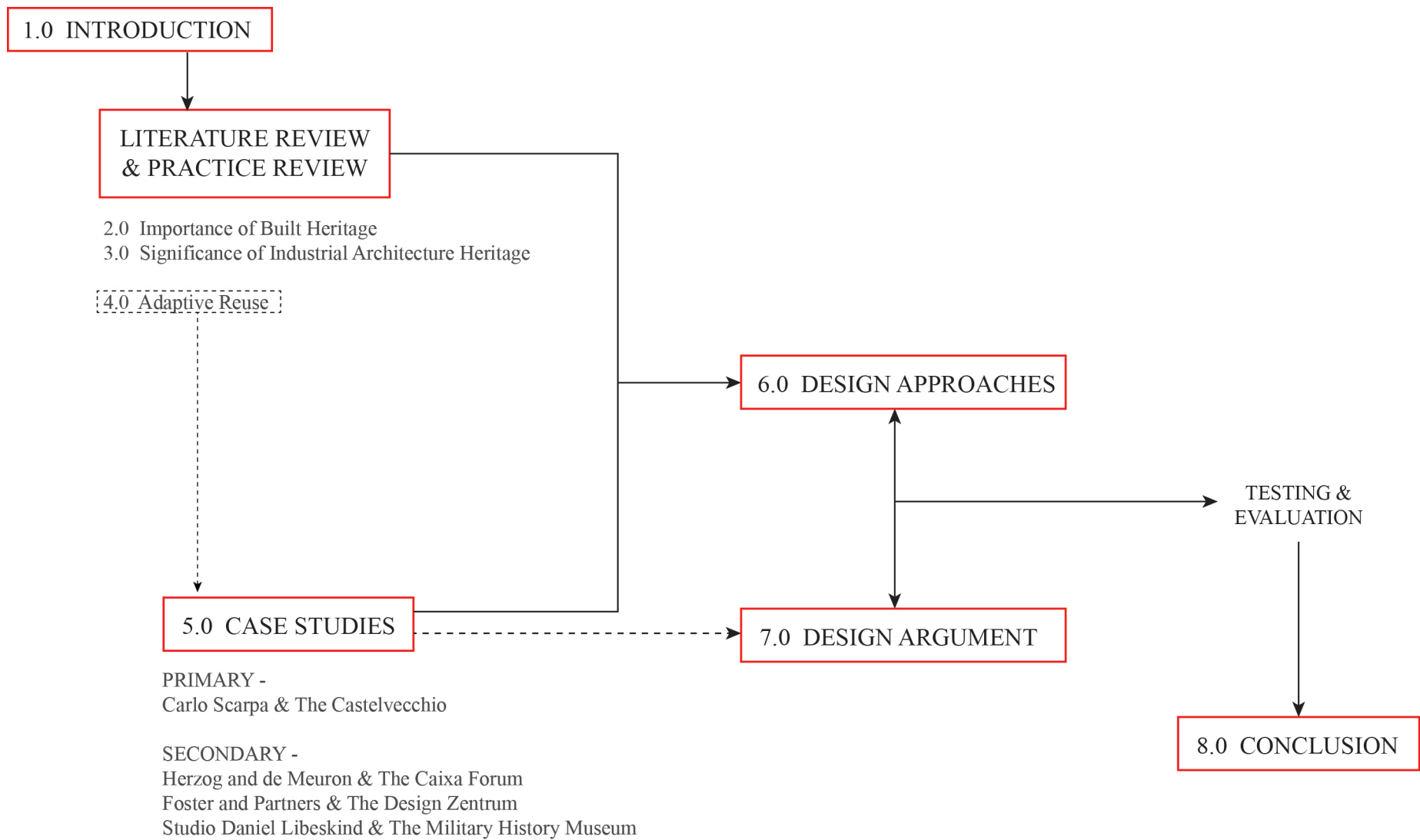
I contend that industrial buildings are special as they are often not planned with architectural aesthetics in mind. Non-industrial, historic buildings have usually been designed with artistic intention, but on the other hand, industrial buildings largely lack aesthetic concern and are erected for function in the most efficient way available. This thesis will explore whether tactics used to remodel historic buildings, such as those which are redesigned by Carlo Scarpa, are also applicable to the conversion of industrial buildings. A comparative analysis between case studies of conversion in a general historic contexts and industrial contexts is used to develop a set of design approaches for the adaptation of industrial architecture in New Zealand. These approaches will investigate design ideas relating to the physical aspects of conversion and not deal specifically with detailed issues of symbolism or meanings such as memory of the former use. I suggest that this is because it is the overall physical aspects have the greatest influence on how people experience the immaterial issues in these, often immensely-sized, buildings.

The focus for the design project is the Lower Hutt railway workshops located in the Wellington region. This research will begin with a site analysis, collection of relevant information for the project and investigating potential uses for the building. Then, I will experiment with ideas and techniques learnt in the case study research through drawing, hand modelling and computer modelling. This is where design informs the research: reflection and critique of the design work

will assess the validity of using internationally inspired conversion approaches in New Zealand. Consequently, techniques for adaptation of industrial architecture in a New Zealand context are proposed.

## 1.5 THESIS OUTLINE

This thesis begins with a literature review which underpins chapters two, three and four. The content of these chapters is based on this research as it informs the arguments developed. These first chapters explore the importance of industrial heritage and the concerns that surround the adaptive reuse approach. In these chapters a critique of certain parts of preservation theory will be provided, therefore setting up a theoretical position for this thesis. Following this, a review of practice looks at case studies which encompass a range of conversion styles, techniques and building types. The design approaches are informed by the ideas and issues raised in both the practice and literature reviews. These approaches are then used to drive the design project, which also tests their usefulness. Throughout the design process, the approaches are developed and the design is improved. The result of this process is discussed in the conclusion.



## 2.0 IMPORTANCE OF BUILT HERITAGE

### 2.1 INTRODUCTION

In this chapter some explanation is offered as to why and how buildings come to be appreciated. The three questions: 'Is it just because they are old?'; 'What is the value?'; 'Why bother?' set up a framework for why old buildings gain importance in society. Examining why industrial buildings may hold value for people is important for any efforts to retain them. This chapter sets a context for the thesis and informs the reader about issues of preservation.

### 2.2 IMPORTANCE OF BUILT HERITAGE

In order to work with older buildings, it is necessary to develop an understanding of what makes an 'older building' significant. Preservationist groups tend to use the term 'significance' broadly to cover all the reasons why older buildings are important without thorough explanation. Randall

Mason critiques the preservation field, arguing that there has been “little appetite for thinking critically about significance, or theorising a way of handling significance” (Mason 64). The NZ ICOMOS Charter provides five broad provisions that explain the purpose of conservation (The New Zealand National Committee of the International Council on Monuments and Sites 1).<sup>\*</sup> However, these statements are too general, which suggests that they are not typically questioned; perhaps this is because preservation as a movement has little opposition. According to the architectural writer, Stewart Brand, “Preservation was one of the swiftest, most complete cultural revolutions ever, yet because it happened everywhere at once, without controversy or charismatic leadership, it never got the headlines of its sibling, the environmental movement” (Brand 88). There was no opposition to the preservation movement because it was fashionable, and most people already wanted to retain ‘nice old buildings’. Although this may be the case, acknowledging the fundamental reasons behind why people are so accepting of the movement is essential to understanding what value buildings can hold in society.

### 2.2.1 *Is it just because they are old?*

Michael Thompson’s ‘rubbish theory’ suggests that it is a certain passing of generations and styles that makes a building important to society. According to Thompson, all buildings, objects and ideas are identified in one of three categories: ‘transient’, ‘rubbish’ and ‘durable’. ‘Transient’ describes contemporary objects which hold value for people because they are new; they are fashionable because they are modern. The problem in our highly consumerist world is that objects slip out of this category into the next too easily. People who own ‘transient’ objects tend to struggle to revive them in order to restore their ‘newness’. The following category ‘rubbish’ refers to objects that are simply worthless. Finally, objects categorised as ‘durable’ are retrieved from ‘rubbish’ and are elevated to a point where their value is recreated.

<sup>\*</sup> NZ ICOMOS Charter states:

- Have lasting values and can be appreciated in their own right.
- Inform us about the past and the cultures of those who came before us.
- Provide tangible evidence of the continuity between past, present and future.
- Underpin and reinforce community identity and relationships to ancestors and the land.
- Provide a measure against which the achievements of the present can be compared.

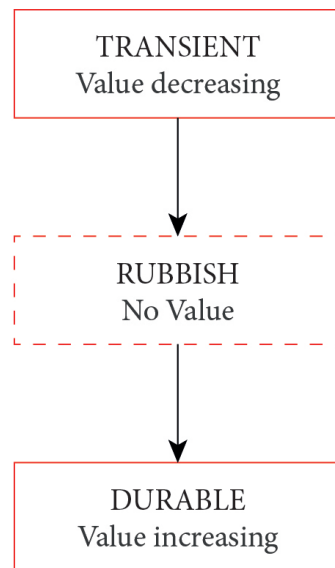


Fig 2.1: *Rubbish theory diagram.*

The example Thompson uses to illustrate his theory is a little neighbourhood of Georgian buildings in London. When new, these buildings were common options for middle-class families to inhabit, which they did until the style inevitably became unpopular. Once unfashionable, the buildings became homes of the poor: the slums of the area. There came a point when the rent for the houses was so little that it was not worth the maintenance; in one case a building was given away. This is an example of when a building shifts entirely into the rubbish category. Eventually, the buildings became popular due to a small number of people who showed interest in restoring them. Initially the idea was considered eccentric, but later started to take hold. Soon the buildings became sought after; their value was rising, proving that they were indeed becoming 'durable' (Thompson 40-43). This scenario is familiar as similar occurrences are found in many areas in New Zealand. In Wellington, for example, this transition can be seen in Thorndon, a small central suburb. The buildings were a typical style at the time of construction, then progressed into disuse and have now become desirable and are well-maintained. This phenomenon is often referred to as gentrification, which is defined by the displacement of low income people by middle class residents through a process of restoration of run down areas (Bucher 208).

While Thompson's argument is compelling, it is difficult to grasp that buildings could become valued simply because they are 'old'. Nevertheless, his theory does provide some answers. Vernacular building historian, J B Jackson appears to, independently and unintentionally confirm, the rubbish theory, by stating that "a form of death must precede rebirth: there has to be that interval of neglect, there has to be discontinuity" (Jackson 101). In this way, Thompson's theory does hold weight, as there are a variety of architectural types that have become popular again after a period of deterioration. However, it is possible that 'popularity' could also be a key factor in this cycle, not only age. The idea that fashion informs what we preserve is a shallow one, but trends undeniably motivate people to get behind movements such as preservation. Buildings can be either preserved because they have become popular due to their 'vintage' style, or simply for the reason that all 'old' buildings are popular. The latter suggests that people value age regardless of any aesthetic or historical factors which could make the building fashionable. Brand supports this view:



“Building[s] older than 100 years will be considered beautiful, no matter what. Having outlived its period of being out of fashion, plus several passing fashions since that, it is beyond fashion” (Brand 90). Brand suggests that people have a respect for age regardless of style. Nevertheless, style remains a relevant factor that determines which buildings are cared for at an earlier stage.

In 2010 Rem Koolhaas from the Office of Metropolitan Architecture (OMA), entered an exhibition in the Venice Biennale, which uncovered issues in preservation that are usually overlooked. Koolhaas indicates that the necessary time for a building to achieve “official heritage status has shortened, from centuries to now just a few years” (Davis). He uses the Maison a Bordeaux, as an example of this, as the building earned preservation status just three years after its completion. Koolhaas argues that “mania for the past is approaching an inflection point” and in the future buildings could be preservable before they are even built (Davis). The shortened time required for a building to be considered as ‘heritage’ suggests that preservation is heading in a selective direction: what people wish to preserve and therefore what they value is veering towards a stylistic choice, rather than historical factors.

### 2.2.2 What is the value?

The psychological attributes and physical qualities of a building appear to give buildings their value and make them ‘durable’. Many authors use different descriptions in their attempts to explain the reasons why we value older buildings. While these authors are convincing, their interpretations are often built on similar arguments. For instance, Brand explores the protest society makes against the conditions of contemporary culture:

What does preservation preserve? You might say it honors peculiarity, specific to the building and to the locality. It fights the invasive uniformity of franchise fast-food joints, multinational gas stations, and high-rise office buildings. There is also the romantic attraction of participating in the local myth (Brand 100).

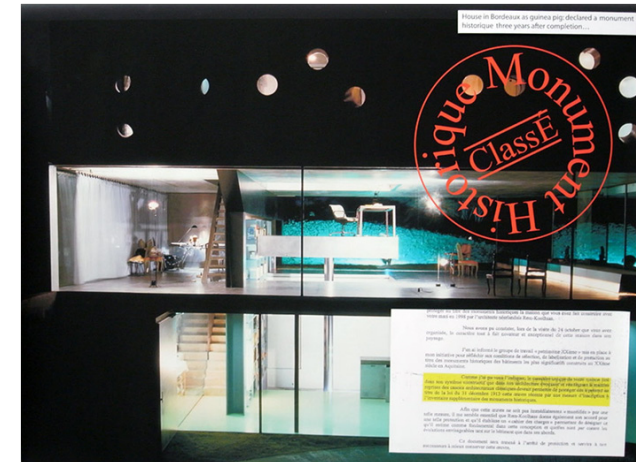


Fig 2.2: OMA exhibition panel.

A critique at the 2010 Venice Biennale of the preservation status Mason à Bordeaux earned shortly after completion.



Fig 2.3: The prosperous suburb of Thorndon.

According to Brand, preservation can be a form of society's resistance against new buildings which accommodate "franchise fast-food joints, multinational gas stations, and high-rise office buildings", particularly when people agree that these new buildings are likely to be to the detriment of their communities. Sometimes people do not necessarily preserve because they love older buildings, but because they are afraid of what will replace them.

Tom Heath develops Brand's ideas by emphasising a notion of change in the built environment. He suggests that old buildings are necessary amongst new buildings in order to stimulate people's senses: "It is the variety and richness of our environment, the range of opportunities for arousal increment or decrement, which we wish to preserve" (Heath 49). Both of these perspectives ultimately relate to a notion of visual variety. Critical author Jane Jacobs supports the importance of visual variety in her influential book, *The Death and Life of Great American Cities*, which suggests that for a city to work well economically, it must have a mix of old and new buildings. As Brand states, it is the "peculiarity", or uniqueness, older buildings bring to a built landscape that people value.

Brand also draws attention to the romantic idea of rescuing the "local myth". This is a nostalgic concern that highlights how people use buildings as symbols of the memories that help to define a 'place' for them. The older a building is, the more importance it can hold for a community in representing the history of that place. Ross Stevens proposes that "our memories give meanings to things, at the same time [these] things exist as samples of a bygone experience. Their existence in daily life also creates new experiences, so it is not only the past they reflect, but the present as well" (Stevens 137). If these "things", which Stevens refers to are buildings, this statement can be applied to the experience of built landscapes. Over time, buildings become representations of past experiences; just as people have a fascination with history, they are also drawn to the symbols or evidence of what is left of that history. Buildings often act as a lasting link between generations, giving them a strong connection with the society in which they stand.

To answer the question 'What is the value?' there appear to be two clear perspectives that explain

why people value buildings. These perspectives are different, but highly interconnected; scarcely does one explain their importance without the other. The psychological reason that people appreciate buildings, encompasses the idea of collective memory: that a building can be valued purely for its age because of its contribution to memory. Nostalgia is the driver for this motive, which is a socially generated notion that explains the warm emotions people have towards the past. Buildings are representations of the memories in our own heads that we want to conserve. The physical motives are concepts relating to visual variety, which suggest that buildings are appreciated because of their style. This is also a concept derived from our minds, but it is more tangible. This theory suggests that people can appreciate a building visually even if there are no connotations attached to it. In the case of industrial buildings, even if the memories are there, the physical aspects and negative association with these buildings prevent people from having nostalgic feelings towards them. While it can be seen that industrial buildings in New Zealand are not currently valued, I contend that they may come to be in the future, as they are a symbol of the history that remains in societies' collective memory and also provide visual variety. The only requirement that industrial buildings are yet to fill is popularity in the public eye. This issue is discussed further in Chapter three.

### 2.2.3 *Why bother?*

Juxtaposing old buildings with new buildings helps to provoke human curiosity with the past. However, this mix is important to a city for reasons beyond people's historical reflections; the increase in vibrancy helps a city to be more successful. Jacobs claims that one problem communities can face is having all new construction. Old buildings are necessary for those businesses that cannot support the "high costs of new construction" (Jacobs 188). It is "chain stores, chain restaurants and banks [which] go into new construction. But neighbourhood bars, foreign restaurants and pawn shops go into older buildings" (Jacobs 188). Jacobs stresses the requirement of old buildings in society by suggesting that small businesses which are special to a community could be lost

along with demolition of all old buildings.

An example of two wealthy brothers in Texas in the 1970's and 80's, used by Brand in *How Buildings Learn*, suggests that older buildings have an appeal that in some cases make them more economically viable. One brother “invested in blocks of new high-rises, while his competitive brother responded by putting money into preserving and reviving nearby blocks of old Fort Worth buildings. By the 1990's the high-rises were partially empty and in trouble, while the preserved blocks had become the centre of city life” (Brand 102). Scenarios like these prove that people have a fascination with older buildings. I suggest that a large part of this fascination is attributed to a perceived level of quality and detail. Brand affirms that “old buildings are full of details from an earlier time beyond the ken of the current generation of architects and builders” (Brand 105). In the older buildings which people seem to admire most, there is care and effort beyond the bare minimum that is common practice today. Maccreanor, collaborative author of the book *Time-based Architecture* makes suggestions as to the criteria for a building to have resilience. While some architects argue that “detail is an obsolete irrelevancy that distracts from overall concept”, Maccreanor asserts that “it is the cared for, finely detailed building that manages to retain its value” (Maccreanor 103).

### 2.3 CONCLUSION

In this chapter, parts of preservation which are largely ‘assumed’ by the preservation field have been discussed. Research into why older buildings are significant to people is crucial as it explains why it is important to retain them. This also sets a context for the following chapter which focuses on how these general ideas can be applied to industrial architecture. The ideas discussed in this chapter give value to industrial heritage, as well as provide fundamental information and backing for a thesis looking at industrial architecture adaptation.



## 3.0 SIGNIFICANCE OF INDUSTRIAL ARCHITECTURE HERITAGE

### 3.1 INTRODUCTION

Here, the previous chapter is built on by applying the information gathered about built heritage, in general, to specifically industrial architecture. This research is used to argue the relevance of industrial architecture as part of New Zealand's heritage. Next, the way 'industrial' has become an aesthetic in itself and what this aesthetic appears to mean to people will be discussed. I then investigate how negative perceptions about industrial buildings could be changed, and lastly what has already happened to New Zealand's industrial building stock.

### 3.2 SIGNIFICANCE OF INDUSTRIAL ARCHITECTURE

New Zealand's industrial heritage does not appear to be given the same appreciation as other built heritage. Continued demolition of industrial buildings with minimal opposition confirms that in many cases these buildings seen as unworthy of preservation. Industrial buildings are not considered attractive and are often seen as monstrous structures. Furthermore, these buildings are not



appreciated, perhaps because they represent the hardships of the society in which they were built. The Industrial Age may still be too recent for people to be able to reminisce on the leftovers in a picturesque light. While there are many international examples of decaying industrial buildings which have been romanticised; this is still rare in New Zealand.

Instead, in New Zealand, industrial buildings are usually perceived as ‘ugly’. This is a prominent reason for the removal of the Evans Bay power station and the recent demolition of the Patea Freezing Works. Industrial buildings such as these generally have undesirable connotations attached to them since the end of the Industrial era and their abandonment. Architect and professor, Phoebe Crisman, argues that when a “manufacturing building has lost its use, the condition of dereliction is particularly unsettling because physical decay references the problems of post-industrialisation” (Crisman 406). Communities built around industrial development grew as people moved nearer to job opportunities. However once the industries were dismantled and people were forced to leave their jobs, the remaining structures would have been reminders of the hard work but also, the end of a prosperous time. Industrial buildings are not the type of building which people feel an attachment towards; instead they are more likely to induce feelings of disdain.

In many cases, industrial buildings are demolished if the resources required are available. However, demolition work is not always a top priority on an owner or council’s agenda. If industrial buildings are left to deteriorate, nearby communities appear to deteriorate with them. Neighbourhoods close to industrial zones no longer benefit from this proximity as often residents “have not fully reconciled themselves to the loss of employment and the associated way of life that existed when these buildings were functioning as production facilities” (Crisman 406). Conversely, as cities grow around some industrial sites, the land becomes more valuable. This again invites the prospect of demolition, though when this does not occur the structure has the potential to become a feature of the community if it is adaptively reused. Examples of successful reuse of industrial buildings are the Tate Modern in London, the SoHo district in New York. Rather than



Fig 3.1: Patea Freezing Works before demolition.



Fig 3.2: Evans Bay Power Station before demolition.

destroying their history, the designers produced something new out of the existing fabric, which in turn added character to these cities.

Industrial buildings range dramatically in form according to their function: from whole landscapes to “unappreciated sheds” (Stratton 50). Despite their form, they have a particular charm when care is given to detail and quality materials are used. Many industrial buildings constructed today lack the solidity and quality that was so important in the past. The buildings that remain from the industrial era are survivors; they are the last of their kind and therefore are important to visual variety and collective memory. If these buildings are retained and used in projects of urban regeneration, they can become an attraction that draws people to a community instead of a deterrent. Architect, Robert Adam, suggests that our built surroundings are part of “traditional culture” and that “to deliberately destroy them or undermine them is to deliberately attack part of our culture” (Adam 36). Industrial buildings have started to represent the past and over time have gained meaning for people. Therefore, it is important to conserve these buildings as they are already ingrained in the community through their history and people’s interactions with them.



Fig 3.3: *Ruin in Bosnia.*  
This image illustrates the idea of romanticised dereliction.

### 3.3 THE INDUSTRIAL AESTHETIC

Industrial buildings are destined to either remain “threatening, delightfully mysterious, or merely invisible” (Crisman 409). On one hand, derelict industrial buildings are not accepted by the public; once disused, their decaying shell can represent a “gloomy urban future” (Edensor 14). The buildings begin to symbolise the shady happenings that they might accommodate. Author, Tim Edensor, suggests that a deteriorating industrial structure can offer a home to many illegitimate activities such as plundering, graffiti art, secret raves, destruction, vandalism as well as providing shelter or hideouts for the homeless and criminals. For these reasons, derelict industrial architecture is often seen in a negative light, as something unsafe and to be avoided. On the other hand, some see derelict industrial architecture as having a ‘grunge’ or some kind of ‘artistic’ aesthetic. As



Edensor suggests, they can “epitomise a sort of modern gothic” (Edensor 13). He points out that industrial landscapes can also play a positive role in people’s lives; they can be adventure lands for children, galleries for art exhibitions or just part of the scenery on a walk.

To some, these buildings are curious structures as they, and the landscapes on which they sit, are devoid of human scale. Architecture historian, Antoine Picon expresses the foreign scale of industrial landscapes by describing them as places that are somewhat frightful in the way that “nature seems to have obliterated itself” (Picon 65) and the mass of machines take over. He uses the example of the landscape seen flying into Manhattan: “In front sprawls a sort of hell, or purgatory: cranes, immense bridges spanning platform lined with containers, refineries and factories behind which are creeping swamps, everything in poor condition and rusted out, as though irreparably polluted yet somehow endowed with a strange beauty” (Picon 65). In many places around the world a similar condition exists, where highly industrial zones end up surrounded by cities. He highlights the intensity of these areas by using strong language, but it is this “strange beauty” that Picon refers to that is integral to the ‘industrial aesthetic’. The photographer, Edward Burtynsky, also illustrates the power industrial landscapes can hold. Burtynsky is fascinated by “the way in which technology has inadvertently created sublime landscapes” (Pauli 11) and seeks to reveal this curious part of the world that is often hidden from people. He shows the unconventional beauty of landscapes that “speak of brute strength and indomitable will” (Pauli 10).

A factor that has contributed to making ‘industrial’ into an ‘aesthetic’ is the artist-culture. According to Sharon Zukin, author of *Loft Living: Culture and Capital in Urban Change*, “declining manufacturing centers like New York have hauled artists [together] as an ‘industry’” (Zukin 112). Zukin argues that art has been made into an industry as a result of a “switch in orientation from an industrial political economy to one that is dominated by the service sector” (Zukin 112). The concept of an ‘artist industry’ is strongly linked to the notion of the artist lifestyle, and in turn, the places in which they live and work. An example of this is the SoHo district in New York which has a notorious eclectic vibe, which is attributed to the artists who inhabit it. The “lofts they

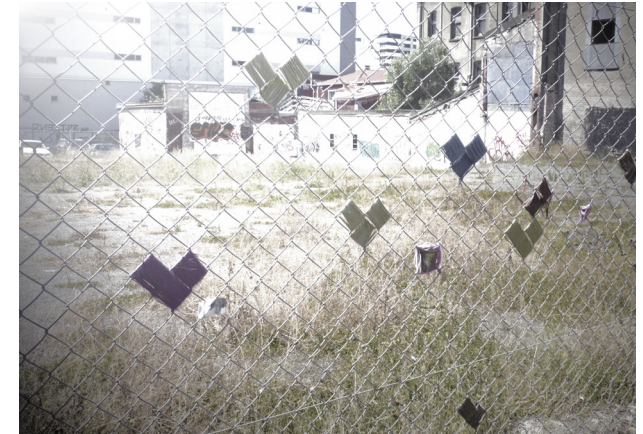


Fig 3.4: Woollen hearts.

A Wellington situation showing that a beauty can be found in unusual circumstances.



Fig 3.5: ‘Ship Breaking #13’.

Photograph taken in Chittagong, Bangladesh by Edward Burtynsky who finds the sublime in technological landscapes.

claim are in 100 year old buildings – megaliths by New York standards – that have neither been modernised for business use nor equipped with residential amenities” (Zukin 194). According to Zukin, no one could have anticipated that their “undervalued neighbourhood [would] blossom into a commercial paradise” (Zukin 194). The success of areas such as the SoHo district means that “culture-based economic redevelopment strategies” (Zukin 202) are now implemented rather than occurring naturally. Artists have made decayed industrial areas ‘cool’: they have become “popular destinations for visitors, many of whom are young adults attracted by that kind of life ‘on the edge’” (J. Wang 318). This spurs on many schemes that use art to reinvigorate these neglected areas, which in return reinforce the connection of the industrial aesthetic to artists.

### 3.4 CHANGING INDUSTRIAL ARCHITECTURE PERCEPTIONS

Jonathan Culler examines Thompson’s ‘rubbish theory’ discussed in Chapter two and suggests that for an object to move from ‘rubbish’ to ‘durable’, it must be desired by influential people. By this, he does not mean “that the most powerful get the most durables but rather that what the powerful collect become durables” (Culler 8). Thus, when an industrial building is desired by a certain number of “powerful” people, it consequently becomes accepted by society at large. Currently in New Zealand, there are few examples of industrial conversions that stand to encourage or inspire anyone, let alone a group which has influential status.

In order to convince the public that a decaying industrial building might be something that they desire, the building must make this transition from ‘rubbish’ and become ‘durable’. Culler proposed that one way this could take place is a “change within the artistic system” (Culler 11). Using the example of Duchamp’s urinal, he suggested that once the object leaves its ‘transient’ function and becomes ‘rubbish’, it is then available to be elevated to the status of ‘art’. Once an object becomes ‘art’, it is no longer ‘rubbish’. However it must first be ‘rubbish’ before it can be considered for that upwards shift in status.

I propose that this is the most applicable means by which industrial buildings may come to be accepted in New Zealand. Examples in Europe and America show that art-related functions are common and well-received by the public. For instance, the Tate Modern in London and the Massachusetts Museum of Contemporary Art (Mass MoCA). However, rather than using ‘art’ as the new function of an industrial building, which is the most common and has been successful, I suggest that there is potential for the structure to be made into ‘architecture’, therefore making the building itself a work of art. The design strategies employed by individual designers ultimately determining the success of a building as something which holds artistic value.

### 3.5 INDUSTRIAL ARCHITECTURE TREATMENT IN NEW ZEALAND

Industrial heritage in New Zealand is often looked over as part of history, possibly because industrial functions remain in society today. However, when industrial buildings from the late 1800s to the early 1900s became redundant, they were not seen nostalgically or with any form of romanticism. In most cases these buildings were cumbersome and in the way of development. Industrial buildings are the remains of a difficult social period, so it is hardly surprising that people are determined to erase “blots” on the landscape (ONE News).

In the past, New Zealanders have worked in a number of different industries, some of which are tied to the land. The main industries according to New Zealand author Geoffrey Thornton in his book *New Zealand's Industrial Heritage* have included shipping, flax production, forestry, agriculture, mining and industrial engineering (see Appendix one). However, the various buildings that contained these industries have mostly been demolished, or left to ruin. Here, I use the Wellington region, and in particular Petone, which at the time “promised to become the most important industrial area in New Zealand” (Petone Borough Council 171), as an example of the extent to which New Zealand's industrial heritage has been erased. In Petone, there were a number of big industries, including Gear Meat Company Ltd, Wellington Woollen Company Ltd, General Mo-



Fig 3.6: Mass MoCA from above.





Fig 3.6: Wellington Woollen Company (left) and Odlins Timber and Hardware Company (back right), 1976.



Fig 3.7: Gear Meat Works in Petone, 1902.

\*An excellent example of New Zealand industrial architecture that still remains is the Ahuriri Williams and Kettle Woolstore built in 1904. This building has had a number of uses since its construction but none that changed the building as such. One known example of a successful conversion to industrial architecture in New Zealand is the adaptation of one remaining Gisbourne Freezing Works buildings into a restaurant called 'The Works'.

tors NZ Ltd and Odlins Timber and Hardware Company. All of these have been demolished along with many other smaller industries. Furthermore, demolished buildings in Wellington central include the Evans Bay Power Station and the Wellington Brick Works. However, some buildings from that era did survive, such as the Petone Railway workshops, which although partially demolished, now serve as an indoor sports centre. The Lower Hutt Railway Workshops also remain, but in a deteriorated form. While it would not be practical in some situations to keep all of these buildings, opportunities have been lost to use industrial building fabric.

There are many other distinctive examples of industrial structures that have been lost in New Zealand. For instance, almost the entire freezing works industry; the Ashburton Hoffman Kiln, with its tall chimney; and the flax mills of Foxton. However, some buildings remain, either as romanticised ruins, such as the Portland Cement Works ruin at Warkworth, or alternatively as industrial museums, such as the Dunedin Gasworks Museum. I keenly argue that the transition into industrial museums does little justice to the original building. The Dunedin Gasworks for example, was mostly demolished, leaving only the engine house which has been retained as the Gasworks Museum. This monument sits on a rather unflattering piece of land and is only open four hours a week. Structures such as these could be more widely appreciated by the community if they fulfilled functions that are needed by people today rather than solely representing the past.

However, all is not lost. Scarce as they may be, there are buildings which still stand from the industrial era. There is an opportunity to work with the remaining buildings to create composite architectures.\* Contrasting existing buildings with new forms is often surprising and leads towards an effective way of 'preserving' these symbols of history. I argue that conversion is a suitable solution for the remaining industrial building stock as New Zealand communities could benefit from the regeneration of these buildings, rather than leaving them to depreciate.

### 3.6 CONCLUSION

In this chapter, a brief outline of what has happened to New Zealand's industrial heritage is presented and some conclusions have been drawn as to the possible value industrial architecture could hold for communities. Namely, industrial buildings that have been converted for either art-related functions, or have been elevated to an 'art' status in themselves through architectural adaptation, appear have the ability to rejuvenate a community. The fascination some people have with industrial buildings along with the problems these buildings pose to society is investigated. The purpose of this was to explore how to capitalise on their positive aspects, in order to make use of the remaining buildings, and ultimately, to encourage their acceptance in society. This is important as for an adaptation project to be effective, these factors must be overcome.



Fig 3.9: Cement Works ruin in Warkworth.



Fig 3.10: Current state of the Dunedin Gasworks Museum.

# 4.0 ADAPTIVE REUSE

## 4.1 INTRODUCTION

The focus of this chapter is adaptive reuse as an alternate approach to the current treatment of industrial relics in New Zealand. Adaptive reuse is explained in relation to a range of conservation tactics and why this approach is suitable is discussed. Furthermore, the adaptive reuse approach is expanded by examining the different methods architects can use within it. The current practice is outlined, drawing attention to some problems with how heritage buildings are dealt with.

## 4.2 POSITION IN CONSERVATION LADDER

There are varying degrees of intervention architects can use when conducting work on heritage buildings. This ranges from preservation to adaptation, which is considered to be the most severe by preservationist groups. According to the ICOMOS NZ Charter, the degrees of conservation intervention are as follows:

**Preservation:** to keep as much of the original building as possible, simply aiming to stabilise, maintain and repair where necessary (The New Zealand National Committee of the International Council on Monuments and Sites 7).

**Restoration:** to “accurately recover the form and details of a property as it appeared at a particular period of time” (Burden 214). Restoration usually involves reassembly, reinstatement and may involve removal of additions, which take away from the cultural heritage value of buildings (The New Zealand National Committee of the International Council on Monuments and Sites 8).

**Reconstruction:** the act of rebuilding after damage has occurred using new or old materials. In this situation, sufficient research must be done and evidence provided to ensure heritage value is preserved. It is important to note that generalised representations of typical features or structures should be avoided. Furthermore, “reconstructed elements should not usually constitute the majority of a place or structure” (The New Zealand National Committee of the International Council on Monuments and Sites 8).

**Adaptation:** used where there is a need to alter the heritage building for continued use. However, “any change should be the minimum necessary, should be substantially reversible, and should have little or no adverse effect on the cultural heritage value of the place” (The New Zealand National Committee of the International Council on Monuments and Sites 9).

The ICOMOS NZ Charter advocates that the least degree of intervention should be employed where possible (The New Zealand National Committee of the International Council on Monuments and Sites 6). This is likely to be because this charter is written from a conservative preservationist perspective. However, I argue that these methods do not fit in a progressive ladder, but form an unordered list of approaches as they are all intrusive in different ways. In the next section the tension between these different approaches and issues is discussed.

### 4.3 CONTENTION IN CURRENT PRACTICE

The tension between these approaches surfaces in the question posed by industrial heritage-interested author, Michael Stratton: “should a new entrance or wing on a mill be decided by ‘minimising the changes they undergo’ or be ‘recognisably of our own age?’” (Stratton 50). This is a direct response to the following statement by architect and planner Les Sparks:

Our architects must produce buildings which are recognisably of our own age but with an understanding and respect for history and context. If this involves some challenges to public taste and convention, it may not be a bad thing. At the same time we should treat our historic buildings with care and integrity, minimising the changes they undergo to meet current needs, and maximising their authenticity (Sparks 70).

Sparks’ statement is broad and reflects advice that is commonly given to designers working with existing buildings. However, such statements provide little help; they give free reign to the designer as long as the resulting architecture sits between either extreme. Certain problems lie in both minimising changes and making buildings recognisably modern, as either approach contains questions of integrity.

Weathering and age are not evident when a building is continually preserved in its original state. This is also a problem within Modernist architecture as it is designed to always appear new. The materials used by Modernists have flat, unchanging surfaces, because of their “desire for an environment that was meant to be controlled, therapeutic, and iconic” (Mostafavi and Leatherbarrow 30). According to phenomenologist Juhani Pallasmaa, the loss of “details crafted for the human body” causes the architectural structures to “become repulsively flat, sharp edged, immaterial and unreal” (Pallasmaa 20). Older buildings which have been preserved to look new become tokens of particular periods in history. I suggest that a building which changes through time, showing wear and something of its different users, has more integrity as its past is visible. Stratton asks “why do so many structures look so different once they have been supposedly ‘preserved’ in their original form?” (Stratton 51). The so-called ‘conservation’ of older buildings often requires that layers such as dirt and weathering be stripped from surfaces of building materials:



A new curtain wall of red, buff and blue bricks may be almost indistinguishable from the old, once the latter has been sandblasted or cleaned with chemicals many towns and cities end up with an amorphous jumble of new buildings made to look old, and old buildings looking too new (Stratton 52).

In addition, the procedure of replicating elements, which are either missing or partially destroyed, holds little value as it presents a false reality. According to Kenneth Powell, the famous art and architecture theorist John Ruskin insisted that “imitating past styles was an insult rather than a compliment” and believed that people should build for the requirements of their own time (Powell 10).

On the other hand, over-restoration refers to when buildings are extensively refurbished. In many cases, surfaces are white-washed or sanitized to the point where the history they represent has disappeared (Crisman 410). The accumulation of additions such as ‘dirt’ and other debris give surfaces their unique textures. These are lost in refurbishment through a process of ‘cleaning’, similarly to the way the patina is lost in preservation. This ‘cleaning’ can also affect accessory structures nearby to a main building. Stratton explains that “many projects restore the multi-storey block to a pristine state while clearing the surrounding low-lying sheds and workshops,” which can result in a “bland, historically misleading monument surrounded by a carpark” (Stratton 32). While removal of unsightly additions can sometimes be appropriate, there is value in retaining these structures as they establish a context for a heritage building, particularly in an industrial situation. A more extreme example of over-restoration is the practice of only retaining the façade of a building while constructing something new behind. The new construction often has minimal association to the existing building; this lack of connection shows little respect to both structures. Authors Graeme Brooker and Sally Stone argue that as a result of this practice “the city is in danger of becoming little more than a theatre, the real buildings hidden behind stage sets of the retained facades” (Brooker and Stone 10).

The idea that a building should fulfil the needs of contemporary society is supported by the way designers approach transformation today. It is current practice to distinguish between existing

structure and new structure; in other words, the new should be new while the old should be old. An example of this approach can be seen in the Design Zentrum in Germany, where the architect has retained much of the original surfaces, while the required insertion is built with modern techniques and materials. This approach is generally accepted by practising architects today and can contribute to a greater understanding of a building's passage through time. In the context of conversions, their success is largely based on the quality of the designer. Particularly when dealing with industrial architectures, types of adaptation are largely variable because people tend to be less protective over them: "their scale, robustness and lower status in the conservation pecking order might suggest that designers can experiment with radical interventions that would be unlikely to gain acceptance with say, cathedrals or country houses" (Stratton 50). This suggests that within the realm of industrial conversion there is a greater opportunity for originality and freedom to challenge to the status quo.

#### 4.4 WHY ADAPT?

Adaptive reuse is a rapidly growing field and topical area of practice within architecture both locally and globally. It refers to the process of giving old buildings new uses. This thesis proposes that adaptive reuse is the best approach for dealing with heritage buildings and, in particular, industrial buildings. This allows old parts of a building to remain old, while at the same time accommodating new insertions that keep the building functioning in society. Older buildings are a part of a city's history and therefore its identity; through adaptive reuse they can also be useful in the future. Industrial buildings particularly benefit from such transitions because they are usually perceived more positively after such changes. The following points suggest the main reasons why older buildings are adapted.

### **Economic Incentives**

While many people are discouraged by the perceived difficulties in both owning and renovating heritage buildings, Miles Erwin suggest that this is misguided as “property prices can actually improve with heritage listing” (Erwin). Older buildings have a high degree investment potential and attract tenants who are drawn to the stable image that heritage buildings project. They are also sought after for bars and cafes as they provide a point of difference (Erwin). However, it is not enough to merely *preserve* older buildings; they must also fulfil a new function and have the ability to perform in a commercial capacity (Erwin). In this way, there is a greater incentive to owners and potential buyers to adapt older buildings. Successful examples of reuse can be seen throughout the world such as the old Fort Worth buildings in Texas, which were mentioned in Chapter two.

### **Sustainability**

Due to the fact that a large amount of our environmental concerns are caused by the building sector, there is a responsibility for this industry to mitigate this harm. Adaptive reuse of older buildings is pertinent as building materials become increasingly scarce and the recycling of resources becomes commonplace. The growing awareness around these issues and stricter legislation means that the reuse of existing buildings is likely to become more appealing than new constructions.

### **Heritage Led Regeneration**

‘Heritage-led regeneration’ describes heritage buildings used in urban projects which are designed to revitalise a community. Due to people’s fondness of older buildings such projects are often successful. The Prince’s Regeneration Trust is an organisation in the United Kingdom which focuses specifically on heritage as a way of regenerating communities. The trust concentrates on abandoned buildings in “socially and economically deprived areas” as these areas are likely to benefit the most (The Prince’s Regeneration Trust). One example of successful work done by the trust is the transformation of the Salt and Number 4 warehouses in West Yorkshire. The trust

developed a scheme to showcase the Canal and the water-based recreation in order to attract new business in the area (The Prince's Regeneration Trust). The new uses of the buildings include craft workshops, offices, and a cafe which "provide seventy jobs to the local community" (The Prince's Regeneration Trust). Often when industrial buildings are used in such projects, arts-related functions are seen to be the most successful way of regenerating.

### **Aesthetics**

My own interest in adaptive reuse was initially inspired by the aesthetic of worn and weathered materials juxtaposed against modern additions, which has become the 'look' of adaptive reuse. The contrast in old and new architectures places an emphasis on the beautifully aged materials of older buildings, as these are shown in direct comparison. Older materials are valuable because they can only be created through a process of gradual aging. The use of these materials in combination with the challenge of fitting a new function to an existing form creates this composite aesthetic.

### **Lifecycle**

The benefit of adaptation rather than conservation and restoration is that it preserves the ongoing 'life' of the building along with its history and materials. Renowned architect Carlo Scarpa's remodelling work suggests that buildings can have a 'life' in a sense. Critical architecture historian Kenneth Frampton describes Scarpa's work as being "evidently inseparable from its weathering that is from its alchemical mellowing or wearing away across time before one's eyes, as though it were quite literally a living being" (Frampton 383). In this way, Frampton suggests that a building ages similarly to a person and that the time it 'lives' through is shown on its building materials. Therefore, buildings should be designed in a way that acknowledges that they will have alternate functions in their life-span. Critic, Robert Jensen, suggests that a continued 'life' imagined for a building gives architecture "value beyond shelter" (Jensen 160). Furthermore, Brand points out that all existing buildings already have a story; "all you have to do is add the interesting next chapter" (Brand 105).

#### 4.5 DIFFERENT METHODS WITHIN ADAPTIVE REUSE

There are a range of conversion techniques used by architects that fall under the adaptive reuse approach. While every case is different, similar techniques can generally be grouped into categories which are useful for further analysis. Two prominent examples which explain adaptive reuse methods in a series of categories are Graeme Brooker and Sally Stone's *Rereadings : interior architecture and the design principles of remodelling existing buildings* and Robert Klanten and Lukas Feireiss' *Build-on : converted architecture and transformed buildings*. Brooker and Stone use three categories: 'intervention', 'insertion' and 'installation'. 'Intervention' describes an approach which fully integrates new architecture with the existing building. 'Insertion' refers to when a new form is put in, or around, an existing building. Lastly, 'installation' explains a light-touch approach where the new architecture is easily removed without damage to the existing structure. Similarly Klanten and Feireiss use the categories: 'new clothes', 'inside out' and 'add on'. 'New clothes' refers to a situation where the outside of the existing building is changed. 'Inside out' describes an adaptation that is inside an existing building, which is then made clear on the exterior. Finally, 'add on' explains the situation where a new form is connected to an existing building, but does not necessarily intermingle with it. While both books use relevant classifications, I felt that each lacked one or more categories which the other had. Through this review, I developed my own groups which are based on the examples given. These groups were used to choose and analyse different case studies. The groups are as follows:

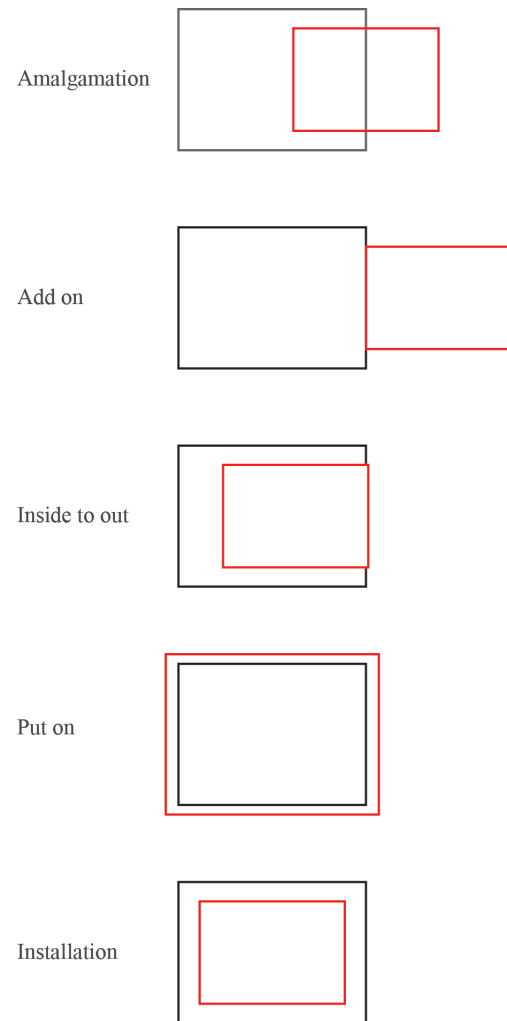


Fig 4.1: *Diagram of adaptation methods.*  
Red boxes represent new forms while existing forms are represented in black.

**Amalgamation:** an adaptation where new architecture intermingles with old. This group is based on Brooker and Stone's 'intervention' category. It is an approach that lets the new built form intimately connect with the old, in a way that makes each reliant on the other.

**Add on:** a new architecture or form that is attached to an original building. In this category, which was derived from Klanten and Feireiss, the relationship with the old is often superficial and not necessarily interconnected (unlike amalgamation).

**Inside to out:** also based on Klanten and Feireiss, 'inside to out' suggests that the interior is predominantly undergoing changes, and in some cases this change can be pushed through to the exterior of the original building.

**Put on:** when a building receives a new exterior lining. This is uncommon as the approach does not offer the changes that conversion normally seeks to achieve. While this was one of Klanten and Feireiss' three key categories, it is less relevant to this thesis.

**Installation:** a sub-group of 'inside to out', as it also deals with the interior. However, 'installation' refers to additions which are delicately connected to the existing structure as they can be removed without harm to the building. This is a direct translation of Brooker and Stone's 'installation' category, but similarly to 'put on' it has little relevance to the aims of this thesis.

## 4.6 CONCLUSION

In this chapter I have attempted to explain the relevance of an adaptive reuse approach compared to other conservation options. The issue with preservation, and similarly, 'over restoration' is that the aim is to make an old building new again. Adaptive reuse is suggested opposed to other options because it continues the 'life' of New Zealand's industrial heritage. Following this, design tactics within this approach were formulated into categories that are useful to discuss the case studies.\* The following chapter advances on information discussed here by looking at the implications of these design tactics in built situations.

\*These categories are further discussed in chapter five, with the exception of put on and installation as these are less relevant to the argument I put forward with my design.

## 5.0 INTERNATIONAL CASE STUDIES

### 5.1 INTRODUCTION

This chapter follows on from the previous chapter by investigating current adaptive reuse practice in relation to the work of four renowned architects. These examples have been chosen because they represent a range of conversion methods in a variety of settings. These case studies are investigated to create a set of design approaches but also act as precedents for my design project. Particular emphasis is given to the primary case study which is the work of Carlo Scarpa. Scarpa's architecture is compared with three examples of contemporary conversion which highlight additional approaches and issues in the field. As Scarpa is famous for his conversion work in Italy, I aim to discover if his theories and techniques are relevant in an entirely different, New Zealand industrial context.



	Amalgamation	Inside to out	Add-on
Non-industrial	Carlo Scarpa & The Castelvecchio		Studio Daniel Libeskind & The Military History Museum
Industrial	Herzog and de Meuron & The Caixa Forum	Foster and Partners & The Design Zentrum	

Fig 5.1: Case study diagram.

## 5.2 MAIN PRECEDENT: CARLO SCARPA AND THE CASTELVECCHIO IN VERONA

Carlo Scarpa is a famous Venetian architect, known widely for his adaptations of existing historical buildings in Italy. He is celebrated for his sensitivity to existing buildings while still creating innovative architecture. Scarpa exhibits the qualities of many Venetian designers by making his architecture works of craft through meticulous detailing. Scarpa's architecture is important to this study as a way to determine whether a similar approach can be used in a New Zealand context, which tends to oppose the notion of 'craft' in favour of mass production. This helps to provide a starting point for design, as well as a base for comparison against more contemporary conversion methods.

The Castelvecchio in Verona is regarded as one of Scarpa's most well-known pieces of architecture and is an example of 'amalgamation' because Scarpa's work is integrated with the existing fabric it sits in. This case study provides a point of comparison to the others discussed as it is an example of amalgamation and it is a conversion of a much older, historical building. In addition, it is also the oldest example of conversion from the selection of case studies chosen. The Castelvecchio is analysed to understand Scarpa's design strategies, which will be valuable in constructing my own design approaches.



Fig 5.2: Exterior view of the Castelvecchio.



Fig 5.3: Individuated floors.  
Gallery spaces in the Castelvecchio.



Fig 5.4: *Prun stone wall*.  
Detail from the Castelvecchio showing contrast.

### 5.2.1 Description of the Castelvecchio

The Castelvecchio was originally a fortress, built in the 1300s in a medieval gothic style for Lord Cangrande II Della Scala. In the 1700s, it was taken over by Napoleon and was used by him and his French troops. Many changes were made to the building, including the major addition of a neo-classical barrack building that closed the courtyard off from the river. Eventually, in the 1900s the building was claimed back by the Veronese and turned into a museum. The initial conversion into a museum was designed by the architect Ferdinando Forlati in 1923. Forlati obscured the history of the Castelvecchio by adding “late Gothic and Renaissance decorative elements” (Commune di Verona) to the interiors and the facades of the courtyard. In 1958, Carlo Scarpa was commissioned to redesign the museum, which was eventually completed in 1973. Scarpa’s intention was to restore authenticity to the building, which required that he strip back many of the decorative elements Forlati added, as well as some parts added in the Napoleonic era. Some of his changes were controversial at the time, but are now widely accepted by the Veronese public.

### 5.2.1 Scarpa and Detailing

Scarpa’s interventions were thoughtfully designed, with every detail considered. The way new and existing elements are engaged with each another is crucial to understanding Scarpa’s work. A defining feature of his architecture is the emphasis on even the most trivial details such as “the edge, the border, the outermost limit” (Beltramini and Zannier 24). Furthermore, Scarpa endeavours to accentuate the separation between two materials, creating a contrast wherever possible to highlight the difference between new and old materials. For example, the “edge of a slab, dividing lines among floor boards, the corner of a room, the gap between steps, or the narrow slot separating two materials” (Beltramini and Zannier 24). This ‘connection’ is a crucial element in Scarpa’s design as it distinguishes his architecture from the original building.

In the Castelvecchio, there are many examples of how physical joints are treated by Scarpa, such as the design of the floors in the subsequent galleries of the Napoleonic wing. The rooms are made into different entities by creating a division between the edge of the floor plane and the vertical wall plane. Scarpa found inspiration from “the water flowing round the walls of the castle... [and] got the idea of creating a version in negative. The floor of every room is individuated, as if they were a series of platforms” (Dal Co and Mazzariol 298). By leaving a void and using different coloured stone around the edges, the square of each gallery is emphasised. Attention to is drawn to the connection between vertical and horizontal but contradictorily the detail of this connection is obscured.

Rather than creating a void, Scarpa sometimes forms connections between elements by adding a new material to the seam. In this situation, the joint is emphasised by making the added material a feature. Scarpa achieves this by using quality materials, calculated design, and skilled craftsmanship. Scarpa’s drawing practice reflects this additive approach to design, as he often “layered plans and sections onto a single sheet, sometimes with sections both in front of and behind the observer, and with coloured pencil for clarification” (Murphy 12). Rather than erasing what was below, he chose to ‘build up’ the drawing by stressing certain elements in colour or making them bold. This idea is echoed in Scarpa’s architecture, as he often chooses to add a new material to the building in a way that still allows materials underneath to be visible. A prime example of this is a staircase that he reworked in another building, the Olivetti Showroom. Scarpa placed new stair treads which have openings in them on top of the original steps so that the fabric beneath is partially visible. This technique makes the viewer aware that this is an addition to the history of the building. Scarpa wrote, “in this way I renewed the staircase without destroying it, preserving its identity and history, increasing the tension between the new and the old. I was very concerned to articulate the points of junction so as to explain the visual logic of the union of the different parts” (Scarpa as in (Dal Co and Mazzariol 298)). This accumulative approach helps the viewer to understand the history in the building as the layers of construction are progressively built up over time. If the stair had been completely covered or renovated, that historical clarity would have been lost.

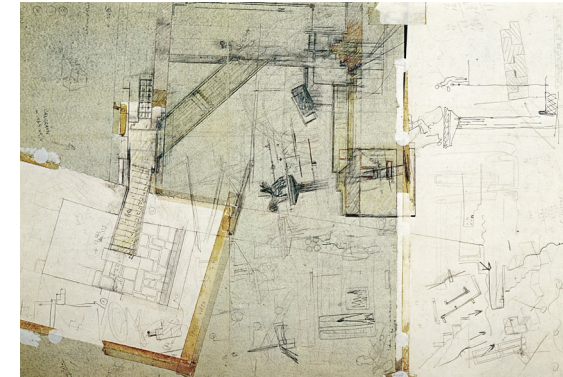
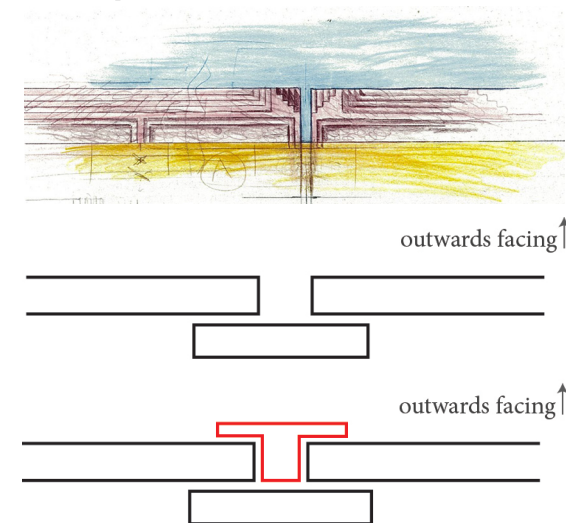


Fig 5.5: Study drawing by Scarpa.  
Sketch plan of the area in the Castelvecchio where the Cangrande statue is kept.



Above, Fig 5.6: Decorative detail sketch by Scarpa.

Below, Fig 5.7: Detail diagrams.

These images all show a connection between two materials in plan view. The top diagram shows how Scarpa often creates a void between materials and is illustrated in above sketch, while the bottom diagram explains how he sometimes connects two materials with a third, decorative material.



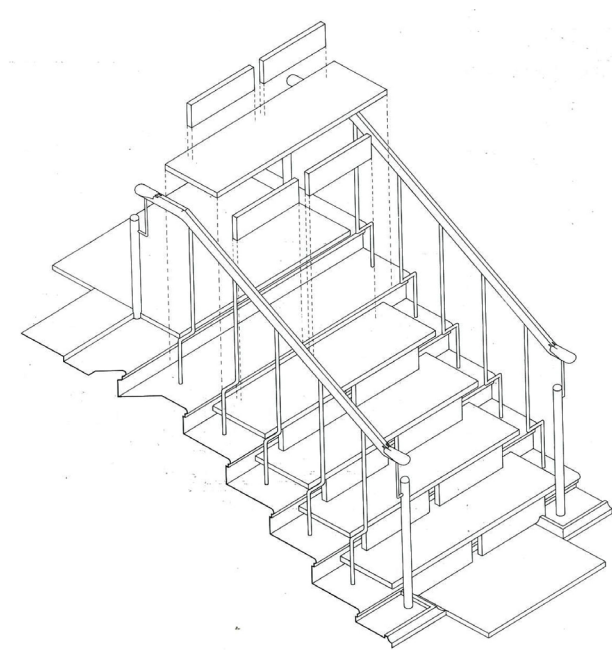


Fig 5.8: Olivetti Showroom staircase.  
This diagram shows how the new treads are placed on the old steps.

Another aspect of Scarpa's detailing is the various symbols which he uses liberally. For instance, the sign of the Versica Piscis that appears frequently represents a myriad of dualities, which include "universal v empirical, solar v lunar and unchanging v changing." (Frampton 368) Other dualities the sign could represent are 'old-new' and 'life-death'. The dualities in Scarpa's work extend past obvious symbols such as the Versica Piscis, but are also implied in the materials used that he juxtaposes with the original fabric. Brooker and Stone suggest that one example of this is the prun stone wall which has a variety of rough and smooth surfaces that represent the dualities by acting as "a miniature version of the contrast between textures on the interior of the space" (Brooker and Stone 249). The various dualities in the Castelvechio are a kind of dialectic: a system of contrasting detailing that connects the old and new architecture to create a unified architecture. Every detail in Scarpa's work is interconnected and important to the potential meaning of the composition as a whole.

### 5.2.3 Scarpa's Approach to History

Scarpa's renovations intend to "point out the changes those buildings experienced during their existence" (Birksted 51). In his alterations, Scarpa aims to represent the passing of time visually by revealing the sequence of construction. This exposes an aspect of 'memory' in his buildings. In this way, Scarpa is able to access "what might be called the 'soul' of the building, the part that is capable of telling stories about itself and its location" (Birksted 51). As a result, Scarpa's adaptations show viewers part of the history that is encapsulated in the building.

Just as Scarpa adds material to accentuate a building's history, such as the example used earlier where new treads were added to a worn stair, he also subtracts materials to give the same effect. The part of the Castelvechio that houses the Cangrande statue is a prime example of this; Scarpa's intention was to pull back the Napoleonic barrack from the fortifications to reveal that these two parts were not always connected. To do this, Scarpa demolished one section of the barracks and

redesigned the void that was left behind. The design of this section gives an impression of the order of construction as each layer of material and associated histories are peeled back from the structure. By peeling back and then adding on new constructions, Scarpa creates a new history built on the past.

Although his approach is commendable, Scarpa still made conscious decisions as to what history was worthy and what was not. Designers without accountability have the power to choose what aspects of history are revealed depending on their own judgements. In the case of the Castelvechio, Scarpa exposed many of the older elements in the building, but he also stripped away additions that he deemed to be unimportant (Murphy 9). Scarpa considered much of the work done by Forlati to be 'false' and an obstruction of the historical readability and therefore tore it down wherever possible. According to Murphy, Scarpa completely demolished the elaborate interiors which the Veronese were fond of. Although Scarpa's adaptation is widely accepted, popular opinion at the time was less favourable, as his transformation was too radical. Murphy commented that "even today Veronese can still be heard bemoaning the loss of the 'venetian coffeehouse' interiors" (Murphy 9). Another feature added by Forlati that Scarpa disliked was the internal courtyard facade. However, as he felt it too drastic to demolish the facade, Scarpa opted to use interventions which skewed the viewer's perception of it. He played visual games that exploited the 'thinness' of the facade, revealing it as a fake addition.\* While Scarpa's intention was to authentically show past elements of the building, he made a selective judgement as to what parts of history he wanted the viewer to experience.

\*Tactics Scarpa used to exploit the 'thinness' of the facade:

- Moving the entry from the center to the side of the building
- Demolishing the end bay which disrupts the symmetry
- Museum entry screen moving independently and counterpoint
- Making reveals look thin and unsubstantial
- Different orthogonal window frames behind the Venetian frames

(Murphy 8)



Fig 5.9: Cangrande statue in the Castelvechio.

This image illustrates how Scarpa pelt the Napoleonic barrack way from the fortress walls.

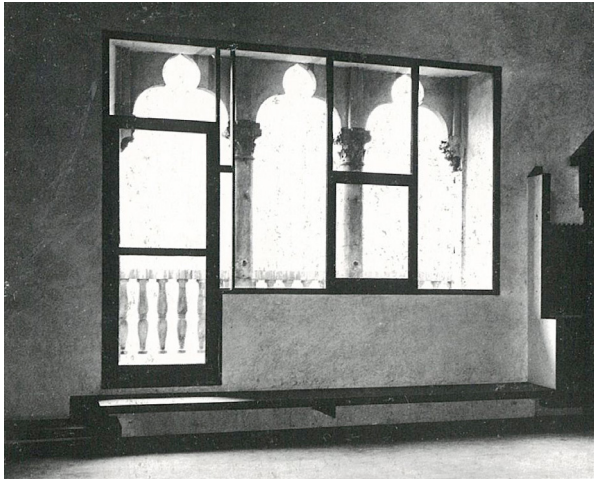


Fig 5.10: *Windows in the Castelvechio.*  
This shows one of Scarpa's techniques which undermine the Venetian facade.



Fig 5.11: *Contrasting materials in the Castelvechio.*  
This image illustrates Scarpa's crisp material choices against the rough stone wall of the fortress.

#### 5.2.4 A Scarpa Approach in an Industrial Context

The work of Scarpa is firmly rooted in an historical context and mostly in Venice. Since Venice is an island, where transportation is usually by boat or foot, it has “largely avoided the industrial revolution, and so prolonged the love of craft” (Murphy 14). Furthermore, industrial buildings are made up of completely different materials, which are generally a lot thinner than those used in non-industrial heritage buildings. For these reasons, it is hard to imagine Scarpa adapting an industrial building, but that is what makes the comparison interesting. Discussing Scarpa's theories, techniques and methods in relation to an industrial context provides information on their applicability.

While there are many instances where Scarpa's approach can be translated to an industrial context, there may also be some necessary changes in technique. Firstly, there is more design freedom in an industrial context because these buildings are often not heritage listed or held in high regard, so people tend to be more relaxed with the changes made to them. Although Scarpa made significant interventions to the Castelvechio, such as the section where the Cangrande statue stands, the building as a whole has basically been kept in the same form. Scarpa's alterations are subtly intertwined with the existing historical context. I imagine that he would be more liberal in his approach when redesigning an industrial building, as Scarpa has shown that he is willing to make bold changes even to non-industrial buildings. Secondly, the materials used in industrial architectures are generally much thinner, commonly, glass, steel and corrugated iron (occasionally also concrete and brick which are thicker). Scarpa, on the other hand, often dealt with extremely thick materials such as stone and the dense construction that was common at the time. He uses glass, steel and wood, both because they were contemporary materials and to make a point of contrast against the older materials. But, in an *industrial* context, should modern materials continue to be used or should solid materials be used to make a contrast? It seems that Scarpa's main concern lies with imitations, asserting that “stupid imitations... always look mean” (Dal Co and Mazzariol 297). As a result, Scarpa would perhaps still insist on using modern materials within an indus-



trial context. Lastly, due to the nature of Scarpa's renovations, some of the building's patina is lost unintentionally, leaving the building crisp and clean. Conversely, in an industrial building, that build up of 'dirt' is part of its grunge appeal. This is a key point of difference, because if too much wear is wiped away, an industrial building would lose part of its charm.

On the other hand, there are some examples of approaches that can be readily translated to an industrial context, such as his method of adding material to create layers of history and his technique of separating materials at connection points to create voids that ensure clarity between old and new. One of Scarpa's theories that can be transferred to an industrial context is his notion of historical readability. This refers to changing a building in a way that is not confusing to viewers, but makes clear what parts are added and what parts are original. Finally his consideration as a designer can be emulated by other architects in other built fabrics, for example, his attention to scale, form, texture and style. When these fundamental aspects of a conversion to existing fabric are corresponding, the overall design can reach its full potential.

#### -Summary-

Several key points covered in this section include Scarpa's detailing, symbolism and his approach to historical interpretation. Analysis of his detailing method shows that he frequently uses a void to create contrast between materials. He also uses an accumulative method which involves joining two materials with a third to highlight their connection. Each of these details is included by Scarpa for its symbolic value. Scarpa uses symbolism to reveal a story about the history of the building and to create a cohesive whole which unites the architectures. Finally, his search for historical clarity is reflected in the way he layers new materials on the old, while leaving what is below visible. However, Scarpa's spotless approach to 'dirt' is one that is less transferable to an industrial context.



Fig 5.12: North facade of the Castelvecchio.  
This shows Scarpa's layering technique and his nestled insertion.



Fig 5.13: Side view of the Caixa Forum.

### 5.3 SECONDARY PRECEDENTS: CONTEMPORARY CONVERSION

The following three examples of contemporary conversion from leading architectural practices demonstrate highly-skilled adaptations, but very different methods. Two of the examples are conversions in an industrial context, while the third is non-industrial. A range is chosen to allow for a comparison between these methods and Scarpa's, and to analyse current practice.

#### 5.3.1 Herzog and De Meuron: *The Caixa Forum in Madrid*

The Caixa Forum is a renovation of an old power station built in 1899, which now functions as cultural centre for Madrid. The conversion was completed in 2008 by Herzog and De Meuron. As described by Cohn, the architects “skinned and gutted the structure like an animal, transforming its tattered brick shell, four widths thick, into an exotic, pelt like veneer” (Cohn 109). As the brick shell of the building was heritage-listed, this is the only part of the building which was retained in the conversion. The interior was surgically removed, along with the base of the building to create a sheltered plaza that draws people into the building (Cecilia and Levene 92). The removal of the base gives the impression that this mass of structure is floating above the ground and therefore giving an interesting perspective on a once powerful industrial building. The Caixa Forum gains more floor area both through building underground and adding a new roof terrace made of rusted steel above.

This building is categorised as another example of amalgamation because the new features of the building are irreversibly intermingled with the existing structure. The intervention is unmistakable when viewing the exterior of the building, but from the inside it is easily forgotten that the building was once Madrid's Central Electrica de Mediodia power station. The industrial heritage and the new architecture are carefully combined in the façade, in a way that is contrasting but complementary. An example of this is the roof top addition which sits on the power station



like a perfectly chosen hat. Although a contrasting line separates the perforated and light-feeling rusted steel from the heavy brick beneath, they are complementary as the materials respond to each other tonally. In addition, this sculptural 'hat' has been designed to reflect the roof-scape of the surrounding buildings (Cecilia and Levene 94). Furthermore, the power station windows were bricked up to create a cohesive material that is then punctured in places irrespective of the original window placements. This makes it clear from the outside that changes have been made to the interior.

On the other hand, the interior does not have the same interaction with the original fabric. The inside of the building is modern, with shiny steel surfaces and white-washed walls covering the whole interior. While this is an interesting point of distinction from the outside, and creates an element of surprise, these interiors are completely unrelated to the space that they inhabit. As the building was hollowed out, the architects responded by filling up the space with interior linings. Along with all new interior coverings, entirely new floor levels were created so that nothing of the previous interior elements, or the building's prior function, is evident.

#### -Summary-

This conversion highlights a 'fill-it-up' issue, which is common with industrial building conversions. The result is an interesting interior, but one that does not respond to the past, or reveal any history to the viewer. While this is true of the interior, the exterior of the building is designed so that a feature is made of this former use as a power station.



Fig 5.14: *Material close up.*  
The sharp connection between the two complementary materials is illustrated.



Fig 5.15: *The Caixa Forum entrance interior.*



Fig 5.16: Zeche Zollverein Complex from above.

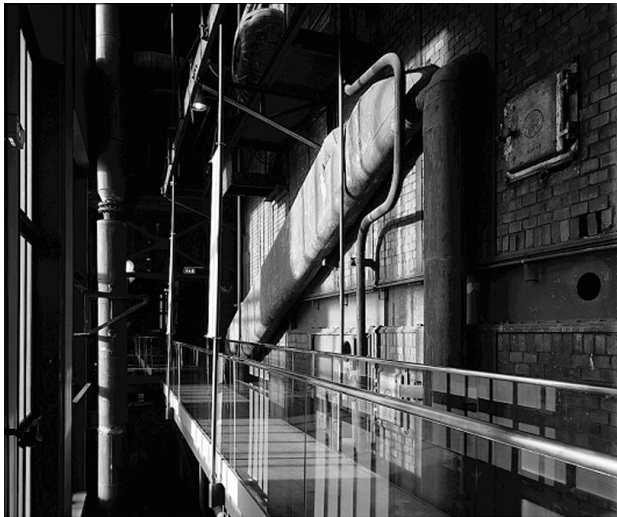


Fig 5.17: Light insertions in the Design Zentrum.

### 5.3.2 Foster and Partners: *The Design Zentrum in Essen*

The Design Zentrum is part of a renovation of the Zeche Zollverein complex, a major coal mining site in the Ruhr area of Germany. The site was kept largely intact, but its function was changed to a multi-purpose cultural centre. The Zeche Zollverein consists of a collection of buildings with twelve mining shafts built from 1847 to 1932, which operated until the mine was closed in 1986. A master plan for the site was developed by OMA, where different areas and buildings were designated for a variety of cultural functions. The Design Zentrum is a museum for quality German product design, completed in 1997, which occupies the cavernous space that was the former power house (Brooker and Stone 111). The Zeche Zollverein mining complex is representative of a “crucial period in the development of traditional heavy industries in Europe” (UNESCO World Heritage Centre) and was therefore declared as an official world heritage site in 2001 (Hauser 171). This is also because the Zeche Zollverein adaptation is a particularly good example of how design can be used to transform a disused industrial complex into something useful for the future.

The Design Zentrum adaptation is considered an example of ‘inside out’, but bordering on ‘installation’ as the intervention that Foster used has an extremely light touch in the sense that it does not destroy the existing fabric. The original materials of the now Design Zentrum consist of a steel frame with a red brick and glass infill, which has largely been left untouched. Foster inserted circulation routes and display areas inside the building made of crisp steel, glass and fair-faced concrete (Brooker and Stone 111). While these materials are similar, their smoothness makes a strong contrast against the worn context. By leaving the accumulation of dirt, pipes, wires and other miscellaneous objects on the interior surfaces, there is a sense of the past and the building’s previous use. The new insertions accentuate the older rough materials, and vice versa, so they work as an eclectic whole.

Although the interventions made to this building are delicately intertwined with the original, examples of this can only be seen in the interior. The exterior of the building has been completely restored to what some may consider its ‘former glory’. By restoring it in its original condition,

nothing of the changes made to the inside are reflected on the outside. Part of the reason this building is almost considered part of the ‘installation’ category is because the interventions do not protrude through the outside shell. By not interfering with the outside shell, the conformity of the greater site is maintained, but without piercing through the shell, the intervention does not have an exterior presence amongst the rest of buildings on the site.

#### -Summary-

This example is useful as it shows how a building can be converted without sanitising or scrubbing away its unusual beauty. The intervention to this building sits lightly amongst the previous function of the building, so its former use is acknowledged and appreciated. However, unlike the example from Herzog and De Meuron, the inventive nature of the intervention is not revealed on the outside.

#### 5.3.3 Studio Daniel Libeskind: The Military History Museum in Dresden

Daniel Libeskind’s intervention in the Dresden Military History Museum is the most recent case study used, completed in October 2011. It was chosen because Libeskind’s strong approach to conversion practice creates a key point of difference to the other case studies. This is an example of ‘add-on’ in a non-industrial fabric, unlike the other contemporary case studies. This building was built as an armoury in 1876 and first became a museum in 1897. Its former uses include, a Saxon armoury and museum, a Nazi museum, a Soviet museum, an East German museum and now the Military History Museum of a unified and democratic Germany (Studio Daniel Libeskind). Libeskind was commissioned to transform the museum after having won the architectural competition in 2001.



Fig 5.18: *The Design Zentrum Exterior.*



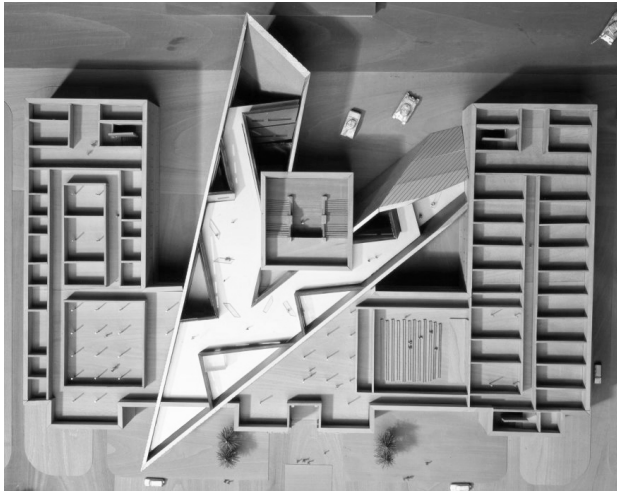


Fig 5.19: *Model of the Dresden Military History Museum.*

The old part of the museum is traditional both in its architecture and the way that exhibitions are displayed. Set around columns placed at regular intervals, the exhibition follows a chronological timeline of Germany's military history. By focusing on the lasting societal impacts of military history, Libeskind's bold extension provides a contrast against the original museum's architecture and its exhibition content (Studio Daniel Libeskind). Libeskind was determined to "create a bold interruption, a fundamental dislocation, to penetrate the historic arsenal and create a new experience" (Arch Daily).

Libeskind's intervention is a five story wedge which is severely cut through the building, disrupting the symmetry in the front façade and slicing through the horse-shoe shape in the plan. This type of intervention is considered a 'trademark' design of Libeskind's, as the often slanted and pointy forms are typically of his work. Where new architecture intercepts the old structure, the old is erased. It is essentially a completely new building put in the midst of another. While inside the building it is possible to walk from old to new. This change is obvious as the interiors Libeskind designed are angular spaces made of steel, glass and fair-faced concrete.

The intervention to this building is a very intrusive example of conversion. It illustrates a crisp incision method and a different approach to how new architectural forms can co-exist with existing fabric. However, the issue with the addition to this museum is that there is little or no relationship with the original fabric, suggesting that this fabric is irrelevant to how the intervention is designed. It seems that this particular intervention could have been done to any given building. Since the new architecture hardly reacts to the original structure, the relationship with the past is limited. The point where the old and the new meet on the inside is the only place where adaptation to a historical building is felt.

**-Summary-**

The Dresden Military History Museum is a clear example of a surgical incision into a building. I consider this the best way to bring a new form into an existing building. While this adaptation is striking, it does not appear to derive from its surrounding context and only endeavours to be radical for the sake of it.

## 5.4 CONCLUSION

The four buildings investigated in this chapter highlight skilled, but also very different methods of designing within an existing context. Interestingly, all four of these buildings have been converted into museums. The interventions by Scarpa and Foster are examples of more subtle approaches to design. The new architecture fits in, and works around, the existing fabric. Conversely, the interventions posed by Herzog and de Meuron, and Libeskind are more dramatic, as these architects bring about further changes that employ adaptive reuse as an architectural style. From the four buildings investigated, only Foster kept the debris of time on the building. For me, this is an essential aspect of the conversion of industrial buildings, as it is part of what gives the building its curious appeal. The other ideas dealt with in this study include the surgical incision, the physical relationship of old and new, the filling issue, and the approach to the treatment of history. These themes are discussed in further detail in the following chapter, where approaches for design are established.



Fig 5.20: Back of the Dresden Military History Museum.

## 6.0 INDUSTRIAL CONVERSION APPROACHES

### 6.1 INTRODUCTION

In this chapter, the techniques, methods and issues explored in the previous chapter are arranged into a series of approaches that will be useful in the design project. The concepts discussed here assist in establishing a general theory for adaptation of industrial architecture in New Zealand. The five approaches I developed are the ‘stuck-on add-on problem’, the ‘surgical cut’, ‘a collage approach to conversion’, the ‘fill-it-up issue’ and the ‘effect of time’.

### 6.2 ‘STUCK-ON ADD-ON’ PROBLEM

One of the most important aspects of conversion projects is the treatment of the physical relationship between new architecture and existing buildings. Three main elements of this relationship include proportion, material and connection. ‘Proportion’ includes considerations such as scale,

form and position. The considerations involved with 'materials' are the colour, texture and contrast. Finally, 'connection' refers to the physical joint between old and new structure. When these have been carefully considered, the architectural result is more relevant to, and sits more comfortably with, the original building.

Scarpa's approach to adaptation is almost the complete opposite of Libeskind's. The interventions that Scarpa designs in a building are imagined as a direct result of his analysis of the existing structure. New elements slot into the original building subtly, but up close the difference is clear. Whilst his choices of material are modern compared to what was originally there; they have a sense of harmony. On the other hand, Libeskind appears not to design according to the original structure, as his forms seem to dominate over the existing building. While the insertion Libeskind adds to the Military History Museum sits well in plan proportionally, when seen in elevation, it feels alien to the building. Libeskind's interventions look like they could be inserted into any building and are therefore not site-specific designs.

A good example of a form that is considered in terms of proportion, material and connection is the top addition to the Caixa Forum. As discussed in Chapter five, the rooftop addition was designed as a reaction to the buildings that surround it, the tones of the rusted steel work well with the warm brick. The connection between the two is crisp, highlighting the gable roof form of the original power station. This building has 'street presence' and projects a vision of adaptation to the community. The intervention by Herzog and De Meuron elevated respect for this building and made it into an attraction, a sight to see in Madrid. When the relationship between the existing building and the intervention is not considered, it can seem like an 'add-on' that feels as if it has been 'stuck-on'. This may appear as a simple or obvious approach, but it is an important factor to take into account.

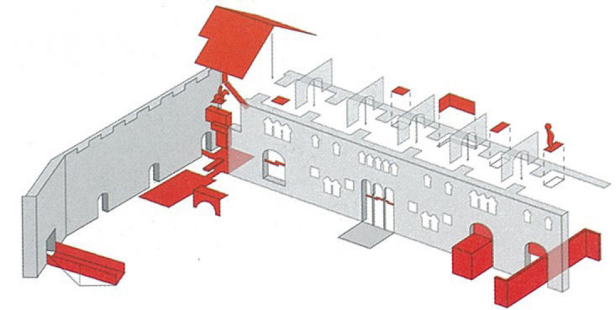


Fig 6.1: Diagram of additions to the Castelvecchio.



above, Fig 6.2: Diagram of addition to the Dresden Military History Museum.

below, Fig 6.3 Diagram of addition to the Caixa Forum.

\*The concept of a 'surgical cut' was derived from both Francesco Dal Co and Giuseppe Mazzariol in *Carlo Scarpa: The Complete Works* on page 159 and David Cohn's article, *Herzog & de Meuron manipulates materials, space, and structure to transform an abandoned power station into Madrid's CaixaForum* on page 109, where these authors referred to certain interventions as "surgical operations", not to mention the variety of sources which use terms such as 'cut' or 'incision' to describe conversion projects.



Fig 6.4: 'Day's End'.  
Installation designed by Gordon Matta-Clark in 1975, New York.

### 6.3 SURGICAL CUT\*

To 'cut' a building is a powerful, but also a destructive move. It is destructive in that it takes material away, but what it adds is a new dimension to how the architecture is perceived. Artist, Gordon Matta-Clark uses the concept of 'the cut' in the most dramatic way possible. He hacks pieces out of abandoned structures on a gigantic scale. An example of this is the intervention he made to Pier 52 in New York in 1975, which he called 'Day's End' (Diserens 8). This building was an "intact turn-of-the-century wharf building of a steel truss construction having virtually basilical light and proportions while being a heavy industrial hangar" (Diserens 8). Matta-Clark and his team set to work on this building, creating large circular penetrations in it. These penetrations disrupted the way the architecture is normally understood when it stands as a functioning building (Krivýa 838). The holes disturb conventional architectural qualities of the building and in return, give a fresh perspective on the "pure materiality of the object" (Krivýa 838). Cutting a building creates an element of surprise and forces people to accept a change.

Cuts made by Matta-Clark are instrumental, but far less precise than those made by the architects mentioned in the case studies in this thesis. Similarly to Matta-Clark, Libeskind's penetrations are somewhat arbitrary and abstract, and also aim to disrupt the way the existing building is perceived. Conversely though, cuts designed by Libeskind are 'surgical': sharper and are specifically used as a means to introduce his own architecture. By using this method Libeskind eliminates the need to integrate his architecture into the existing fabric, seemingly preferring to retain a clean separation. This contrast is favourable in the context of contemporary conversion practice as it gives clarity as to what is old and what is new.

The alteration to the Caixa Forum was far less arbitrary than Libeskind's. In what was described as a "surgical operation" (Cohn 109), the base of the power station was removed from the building. This move simultaneously solved the issue of access and created a compelling public frontage. Removing the base gave a feeling of surprise as the weight of the power station looms above



with little noticeable support. Like the cuts of Matta-Clark, this one puts viewers in a position of unease, as it exposes the building in an unexpected way.

The notion of the surgical cut is an important and influential idea in adaptive architecture, which was difficult to ignore. Each case study was described in one sense or another as having made ‘incisions’ to a building. Whatever the type of incision, cutting is the means of creating fragments to be reassembled in the form of a collage; this is discussed further in the next section. The surgical cut is used to make the change necessary for a building to be seen as a new architecture.

#### 6.4 A COLLAGE APPROACH TO CONVERSION

The concept of collage, which was invented by Braque and Picasso in 1912, uncovered a fresh way of looking at redundant materials (Iliescu 62). A key aim of collage is to create a connection between disparate objects. This concept is relevant to adaptation in architecture because of the frequent juxtapositions between old and new. The techniques and approaches used in assembling collage give some insight into methods of how adapted architecture could be composed.

The fundamental intention of collage is to associate “unrelated images and objects to form a different and expressive identity,” (Jo 82) which I argue, is the goal of adaptation in architecture. Both collage and adapted architecture are similar in that they are essentially made up of fragments and layers. Existing structures in combination with new fabric make up the collection of materials with which composite architecture can be created. Combined, these materials have their own perceived identity. Pieces from the past and contemporary pieces become fragments to be adjusted and arranged to create surprise and interest in a new form.

In adaptive reuse projects, the ideas of fragmentation and layering commonly emerge. Anne-Catrin Schultz discusses these ideas in Scarpa’s work, stating that he removes each successive layer



Fig 6.5: Interior of the Dresden Military History Museum. Shows where new and old structure meet inside.

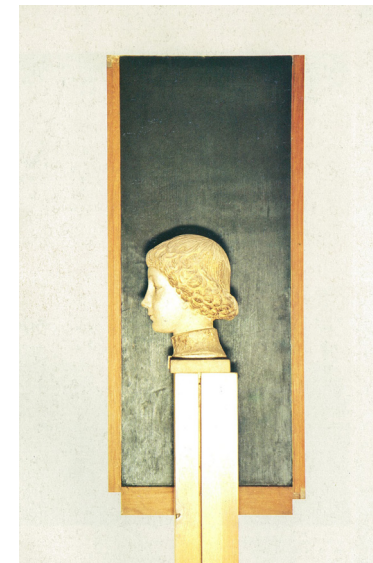


Fig 6.6: Gallery Detail. Shows scarpa's meticulous layering technique.

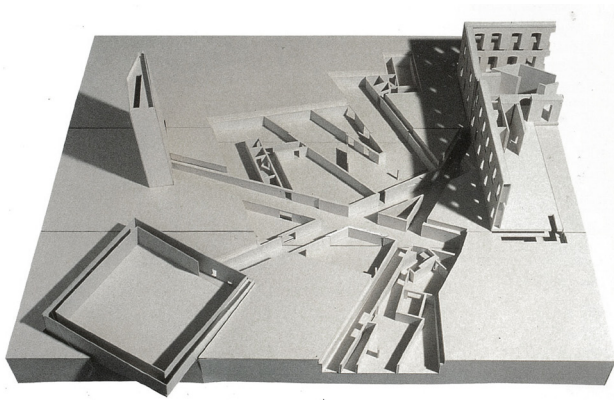


Fig 6.7: *Berlin Jewish Museum model*.  
This shows the result of a cut and collage technique used to create form.

from structure, in order to show the history entwined in materials below (Schultz 16). Scarpa creates distinctions between these layers by following the process of “separation, excision and contrast” (Schultz 16). An example of this is the juxtapositions that he creates when making insertions into the existing building. Scarpa contrasts “orthogonal against the freer forms of previous structures” and uses materials with smooth finishes to contrast rougher textures (Murphy 15). The way these fragments are connected and overlap gives the effect of collage.

The concept of layering in Scarpa’s work is perceived in multiple ways. On a more abstract level, he seems to imagine the addition of material to a building over time as history ingraining itself with every change. By peeling back the added fabric, Scarpa attempts to expose the histories that are associated with earlier layers (Schultz 16). Constructions from the past are then added to by Scarpa, which creates a further impression of time. Conversely, Scarpa conceives of layers in a more tangible sense, as planes to be overlapped, revealed, folded or detached (Murphy 15). Schultz builds on this idea by explaining that these planes are organised vertically and horizontally and can consist of their own individual layers. This is how Scarpa can then “subdivide walls, floors and ceilings into fields, to do partial interventions, to leave elements visible, or, in some cases, to cover them completely” (Schultz 79). In doing so, new architecture appears to fit well with the existing building, as it has been carefully arranged to create compositions that finely highlight differences in materials.

Libeskind also uses a collage technique, albeit, less harmoniously than Scarpa. The way fragments are created in Libeskind’s architecture, and the way they are reunited, suggest that his methods stem from a notion of dissection. As noted by author, Seungkoo Jo, “he carves existing plans into meaningless segments and then reassembles them with concern not for spatial implications of the diagram, but textual preferences of how light and dark interact” (Jo 85). Jo argues that his ‘cut and paste’ design process has a direct impact on the outcome of his buildings. While Libeskind makes strong incisions and creates fragments, his method deviates from Scarpa in that he does not use layering in a similar way. Alternatively, Libeskind tends to create planes that intersect at arbitrary angles, rather than maintaining particular planar directions as Scarpa does.

In the examples given, the fragment is valued over the whole. The collage-style approach often results in cohesive designs where new forms are integrated into existing buildings. When a collage technique is used in designing, existing materials and new materials create a new architecture, giving a fresh perspective on the building. Iliescu argues that the poetic subtleties of collage “are potent both because they make room for ordinary, crude or fragmentary materials and because they represent a challenge to rigid or normative boundaries between art and life” (Iliescu 62). However, Iliescu also points out that collage representations can become overly literal, and when this happens, the ability collage has to surprise us is lost (Iliescu 62). The collage method echoes the ideas within the amalgamation category, as the aim of the resulting architecture is to combine elements to form a unanimous whole.

## 6.5 ‘FILL-IT-UP’ ISSUE

Although industrial typology varies widely, from multi-storey mills to sheds, Stratton points out that a common form of industrial structure is a “great hall” (Stratton 36). During the Victorian era, engineers became more prolific in using iron and glass to create large unbroken interior volumes such as huge railway sheds and erecting shops (Stratton 36). While remaining buildings of this sort provide us with expansive flexible space, often in conversion projects architects can fall into the trap that is the ‘fill-it-up’ problem. ‘Filling up’ is an issue that affects the integrity of the original building as it stands to be considered as a “decorative canopy or man-made landscape” (J. Wang 323) for a new insertion. They can be considered this way because these large volumes of space are no longer required for large activities, but act merely as shelters for other structures which ‘fill’ the inside. Moreover, the new architecture is weakened because of its inability to be innovative.

An example of this problem in a built context is the Southern California Institute of Architecture (SCI-Arc), which occupies a formerly neglected freight depot. Heritage restrictions and an



Fig 6.8: *Tate Modern interior.*  
Left of the image are the inserted gallery spaces and on the right is a temporary installation.

unusual shape made the design of this building challenging. The “unremittingly linear” building has a quarter of a mile long exterior shell, which was not allowed to be pierced (Snoonian 136). Therefore, a variety of mezzanines of different scales were inserted along the length of the building, which did not engage with the shell (Snoonian 140). Deborah Snoonian argues that this may have been a valid response, but it is “no more original than many open-landscape interiors at vaguely hip agencies in corporate office parks” (Snoonian 140). Wang makes a similar point by arguing that conversions of this kind often have the problem where “ordinary office scale spaces” are created from what were once impressive volumes of space (J. Wang 323).

The Tate Modern is another example where the ‘fill-it-up’ issue is present. While half of the building’s interior that was formerly the turbine hall was left open, the other half, which was the boiler house, is now filled by gallery spaces in a multileveled box. In navigating these gallery spaces “visitors quickly forget that they are inhabiting a place that once supplied power to much of London” (Crisman 410), and lose themselves in a sanitised world of windows behind windows and artificial lighting. Although the turbine hall still gives the opportunity to revel in a great cathedral-like space, the two halves are completely disconnected from one another. Sometimes these smaller scaled spaces are required for programmatic reasons, so I do not propose that the structures remain empty and ‘pure’. However, there is a widely ignored opportunity to integrate new forms with existing structures in order to capitalise on contrasting spatial experiences.

This problem is one which applies specifically to industrial architecture conversions because these buildings are often full of expansive space. These examples all show a slightly different ‘fill-it-up’ situation, but essentially the result is the same: the original building becomes a left-over shell. The Tate Modern is an example of a light insertion, but it has a similar effect of closing visitors off from the industrial aesthetic in the way that is felt in the Caixa Forum’s heavy intervention, which was discussed earlier. Industrial buildings are often seen as uncomplicated conversions because of the sense that anything can be put in, but those who subscribe to this idea fall into a trap that ends in an un-integrated intervention.



## 6.6 EFFECT OF TIME

Often in heritage conservation projects, the materials that represent the past are covered or cleaned to the extent that their special fabric is lost. Part of the charm of older buildings is how the materials have melded into the site through gradual weathering: they appear comfortable in their settings. Pallasmaa argues that “the patina of wear adds the enriching experience of time to the materials of construction” (Pallasmaa 21). Industrial buildings, in particular, have a recent patina of dirt and grunge which gives them their rough and mysterious appearance. When layering is implemented over ‘cleaning’ or replacing, the past is displayed in the fabric of the building. An example of this was used in Chapter five, where this approach has been implemented is the Design Zentrum by Foster and Partners. Foster left the existing surfaces in the decaying state that they were found. The build up of dirt and services were left as a signal for visitors to understand how the building was previously inhabited.

In *From Industry to Culture*, Crisman argues against erasing this ‘dirt’ in industrial buildings. She uses four contemporary museums as examples to discuss different approaches, and after analysing them, asserts this point. Opposing the Design Zentrum, she contrasts the Dia: Beacon conversion in New York. The method used to adapt the Dia: Beacon was much more severe. Crisman reports that during the conversion process “the building was largely purged of its past: every surface was carefully scrubbed and refinished,” which resulted in standardized spaces that felt meaningless to people (Crisman 416). Surfaces were stripped and white-washed, and window panes were replaced. This left only the structural form to hint at the histories encompassed in the building. To some, this method feels cleaner, fresher and more restorative. However, I argue that an approach similar to the one used in the Design Zentrum better expresses the features an abandoned industrial building can offer.

Decay in a building provides something against which new architecture can be distinguished. A crisp insertion to a building shines out when it is contrasted against worn building materials. The example used in Chapter five of the Olivetti Showroom staircase which Scarpa renewed is useful



Fig 6.9: Galleries in the Design Zentrum.



Fig 6.10: Typical Dia: Beacon gallery.

to illustrate this point. He renewed the staircase by layering new treads on the worn steps leaving the deterioration below partially visible. This effort is more interesting than complete coverage or erasing because it creates a juxtaposition of time. Architecture critic, Kenneth Frampton notes that Scarpa's "empathy for the ruin [leads] him to resist the impulse to repair the original fabric in its entirety" (Frampton 367). Scarpa appears to appreciate the beauty of age in a building and that to take this effect away, would be to the detriment of the combined architecture.

## 6.7 CONCLUSION

These above approaches derive from the issues found, and the methods used, in the case studies. While this list is not exhaustive, the most significant concepts pertaining to the physical aesthetic of conversion have been highlighted. These approaches are suggested as concepts that other designers may consider in future industrial conversion projects. They are important factors in the following design phase, as they will inform the design process. In return, they will be assessed for their relevance in practice.



## 7.0 DESIGN ARGUMENT

### 7.1 INTRODUCTION

In this chapter, my research findings are put into design practice. The aim of this design project is to provide an example of what can be done with an industrial ruin in New Zealand, so that options other than demolition are, at least, considered. I begin by explaining the site and brief for the project, followed by the process I used in achieving my final design. In particular, I point out key design decisions where the approaches from the previous chapter have been implemented.

### 7.2 SITE SELECTION

It was difficult to find a site because many of the options considered had already been demolished. However, four potential sites in New Zealand were considered before making a final decision. These included the Tokomaru Bay Freezing Works, the Wellington Woollen Company building in Petone, the Wellington Shelly Bay Military Base and the Lower Hutt Railway Workshops. The criteria for selecting a site included factors such as proximity to the Wellington region, quality of construction and detailed features, vacancy or abandonment of the site, size of the building, opportunity to change negative perceptions and my own personal preference.





From left to right, Fig 7.1: Tokomaru Bay Freezing Works.

Fig 7.2: Wellington Woollen Company.

Fig 7.3: Shelly Bay Military Base.

Fig 7.4: Lower Hutt Railway Workshops.



Fig 7.5: Railway Workshops in their Residential Setting.

Although the Tokomaru Bay Freezing works is a beautiful building in a semi ruined state, the difficulty in visiting this site made it unfeasible. The abandoned Wellington Woollen Company building is in an old industrial part of Petone that is cut off from the suburb by the motorway. The building is now partially used as a paintball arena as it has an expansive interior. The Shelly Bay Military Base is located on a wharf on the harbour near to Miramar. This building has a saw tooth roof and sits in a significantly derelict condition. The issue with this site is that it is currently used by Westside Studios for making movie props. Finally, the Lower Hutt Railway Workshops appealed to me because of the physical impact of the decayed condition and the style of the architecture. I was uncertain of this site because of its size and because it is not yet completely vacant. However, before these buildings are lost due to the residential area closing in on them, the process of adaptation could begin to facilitate future functions as buildings become available.

The site chosen for the design component of this thesis is the Lower Hutt Railway Workshops. This site is of great importance as part of locomotive engineering heritage, as this was once one of New Zealand's main industries. According to Geoffrey Thornton all the major centers were established with railway workshops (Thornton 87). Out of the six primary workshops that existed, only this one and the hillside workshops in Dunedin are still standing. It is an iconic example of early industrial architecture in New Zealand, as the detail and material choices are of a high level. Due to this, there is a point of difference from historic architectures such as those renovated by Carlo Scarpa. The residential location poses a challenge to change the way the architecture is currently perceived by the community. There is potential to enhance the area with a conversion project rather than leaving the buildings to degenerate the community as they currently do.

### 7.3 SITE ANALYSIS

The Lower Hutt Railway Workshops were built in 1929, as a replacement of the Petone Railway workshops, which were built in 1877. The Petone Workshops required replacement as the indus-





*Left, Fig 7.6: Macro site plan.*  
Highlighted in orange is the site in its wider context.



*Right, Fig 7.7: Micro site plan.*  
Highlighted in yellow are the two buildings chosen for the focus of this design project.





Fig 7.8: View over Lower Hutt from Wainuiomata hill, 1951. The Railway Workshops are pictured in the distance to the right of the race course.



Fig 7.9: Birds eye view of the Railway Workshops, 2002.



Fig 7.10: Birds eye view of the Railway Workshops, 2010. This comparison shows the residential area closing in on the site.

try was outgrowing them and the working conditions became inadequate as ventilation technology outdated the building. The Lower Hutt Railway Workshops are situated near the Woburn station, towards Seaview, which at the time was hardly occupied. In their 'hey-day', the workshops were completely self-sufficient, having their own lumber workshop and the ability to make everything down to the last bolt. Since that time the industry has become obsolete in New Zealand as locomotive-building contracts can be filled more cheaply overseas. For this reason, while some of the buildings are still used for locomotive maintenance, many of the buildings on the site have become redundant.

The site is made up of a series of large shed buildings which are situated along an internal private road. The entire site is roughly 186,000 meters squared and can be accessed on a private railway line which stems from the main Hutt Valley trunk. The two largest buildings on the site are roughly 170 meters long, which are the former locomotive erecting workshops that are accessed by locomotives on a traverser pit. Other ancillary buildings on site were formerly the foundry, blacksmiths, steel wagon repair shop, rail car shop, wood mill, power house, pattern shop, bolt making shop, iron rack, painting sheds and storage. Over time, the suburb surrounding this site has been closing in on it, pressuring the owners to give up land for residential uses. Sitting strangely close to this hugely industrial wasteland are neat residential culs-de-sac, in which residents appear to be oblivious to the proximity of the site or appear to consciously ignore it.

This site has the feeling of power: crashing noises that echo through the buildings and great halls of space which give them an almost cathedral-like presence. Buildings like these - at once awe-inspiring, frightening, and mysterious - are rarely experienced by the public. Due to the neglect of these buildings, their age is visible on the surfaces. Only a small number of the buildings on the site are still being used, and at a rate that is incomparable to when they were first built. This means that some of the buildings are already vacant and are at risk of being demolished.

This investigation focuses on two buildings to the east of the site. These buildings were the former rail car shop and the steel wagon repair shop, which are now abandoned and derelict. These are



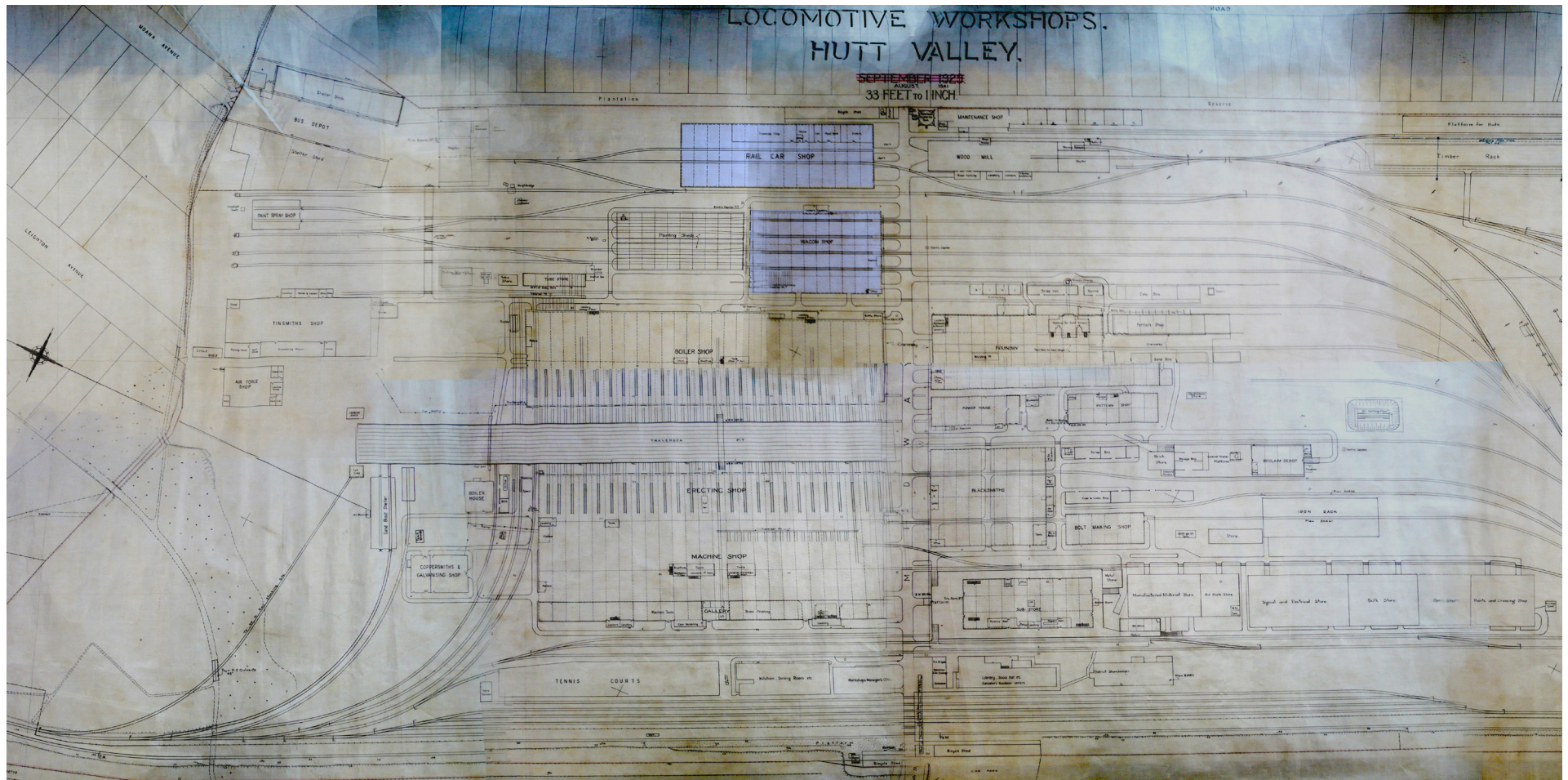


Fig 7.11: Archives site plan, 1929.

This image shows the original functions of the buildings on site. The two buildings chosen for the focus of this design project are highlighted in blue.



Top down,

Fig 7.12: Last 30m of the rail car shop exterior.

Fig 7.13: Transition in the rail car shop interior.

Fig 7.14: Steel wagon repair shop interior.

the smaller buildings on the site; but even they are 90m x 30m and 60m x 45m respectively. They both have corrugated iron exteriors and exposed steel structure interiors, with timber ceilings. Both sides of the two buildings are lined with large windows, which are made up of many smaller panes. The steel wagon repair shop has four pits that run along its length, and has heavy-duty lifting cranes on each side of the building, also traversing the length. The rail car shop is a simple building that has been altered slightly due to the amount of vandalism. Most window panes were smashed out, so the top level of windows were replaced with opaque corrugated plastic. Additionally, the last thirty meters of the building has a different structure that appears to have been added later. Particular features that were identified as special to the site are as follows:

1. Distinctive geometry of the building.
2. 'Furniture' e.g. cranes in ceiling, rails through building, pits and machinery
3. Details in structure e.g. use of bolts, lattice work in columns.
4. Large volumes of space.
5. Large windows made up of many little panes.
6. Vibrant colours.

## 7.4 PROGRAM SELECTION

A major issue with industrial conversion projects is finding potential functions that are feasible. Some of the greatest opportunities to adapt “survive where land values [are] too low to justify demolition and redevelopment” (Stratton 31), while industrial buildings that happen to remain in optimum locations become the most successful and renowned. Motives that previously pushed industries into cities, such as, “transport, proximity to skilled labour, suppliers and markets” (Stratton 32) remain practical problems that hinder adaptive reuse projects in more remote locations today. However, there are some examples of adaptive reuse of industrial buildings outside





Clockwise, Fig 7.15: Geometry. Fig 7.16: Furniture.  
Fig 7.17: Details. Fig 7.18: Volume. Fig 7.19: Win-  
dows. Fig 7.20: Colour.

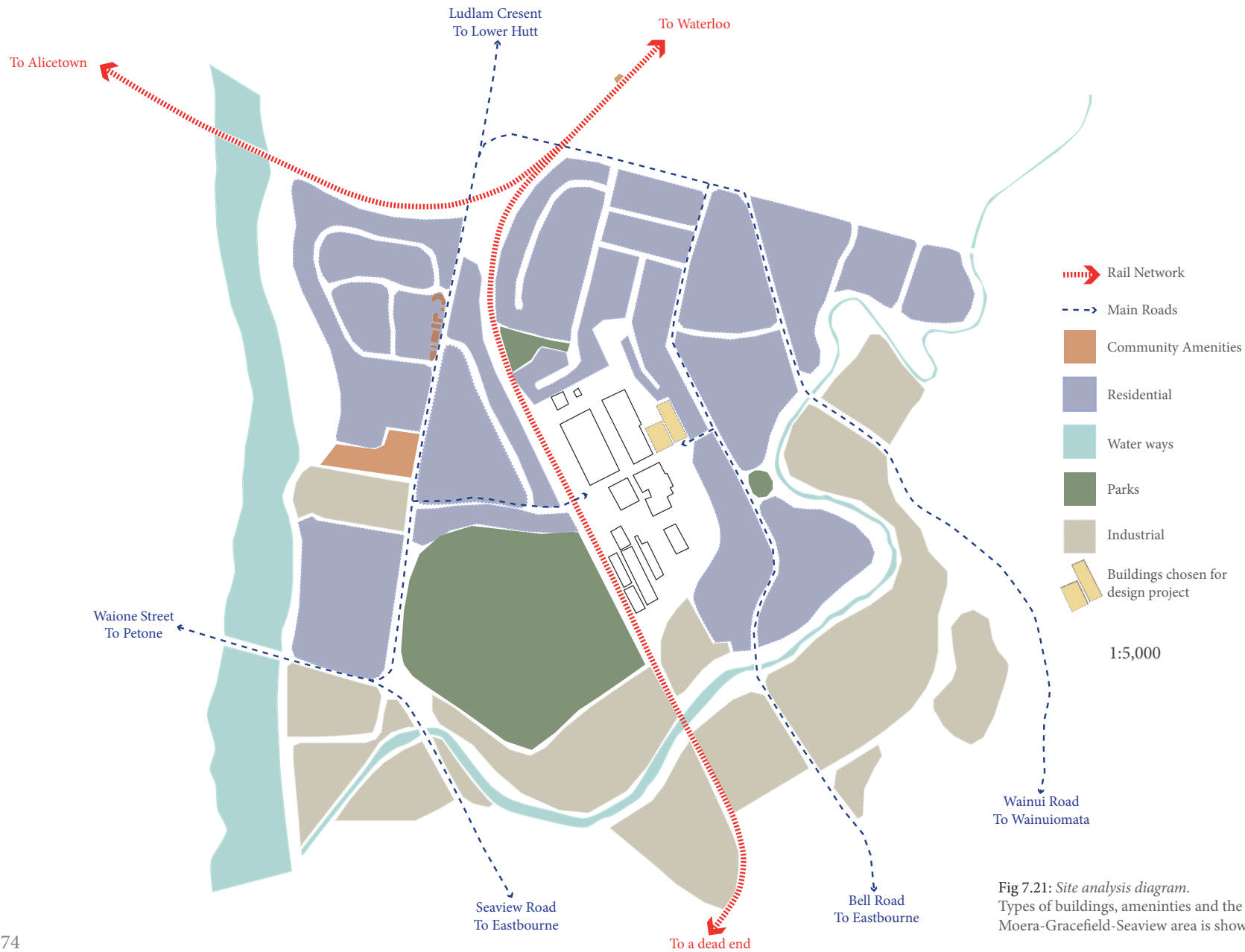


Fig 7.21: *Site analysis diagram*. Types of buildings, amenities and the transport structure in the Moera-Gracefield-Seaview area is shown.



of cities that are successful such as, the MASS MoCA and the Design Zentrum. It was difficult to choose a program for the Lower Hutt Railway Workshops as the somewhat industrial and suburban location of this site is inappropriate for many future uses.

It is important to find a use that exploits the potential for hybrid architecture; some proposed functions involve minimal change to a building. This retains a building's original features, but it does little to challenge a designer to create new forms. With no challenge, it is unlikely that a composite architecture will be created that intimately connects new and old. Functions that industrial buildings are often assigned are cultural ones, possibly because many artists are fond of this industrial aesthetic. It is beneficial to the future of a building that the proposed function has some element of public involvement as this means that adaptive reuse gets exposure, as well as the increased likelihood that finance would be provided to create a more 'artistic' or 'architectural' conversion.

Bearing these factors in mind, a number of uses which this site could potentially accommodate were considered.\* However, having discovered a proposal for a "film hub" expected to be developed in the Hutt City, I decided that the two buildings chosen for this project could become the beginnings of an international film school and studio (Easton). Since New Zealand, and Wellington in particular, is becoming recognised around the world for expertise in the film industry, it seemed fitting that the premises of this industry be expanded in a public domain. The 'film hub' would include a film school fit for two hundred students, film and television studios, a film archive and library, public theatre and other amenities necessary for the reception to a future film centre. As other buildings become available, they can be assigned functions relating to this industry, such as large scale film sets and studios. The hope is that with such a function, arts-led-regeneration of the area will occur.

\*The other options that were considered for this project included; an Enterprise Development Centre, which would entail offices, laboratories and joint facilities for emerging innovation companies in New Zealand; A polytechnic which would require a series of classrooms, labs, studios and offices; A shopping complex or 'market place' that would facilitate a number of shops, stalls and dining options.

## 7.4 BRIEF

The brief for the project is as follows. Estimation of areas required is based on David Adler's *Metric Handbook: planning and design data*.

### *General facilities:*

- Entrance to Complex	min 80 m <sup>2</sup>
- Reception/ Administration	150 m <sup>2</sup>
- Exhibition Space	150 m <sup>2</sup>
- Cafe (100 seats)	150 m <sup>2</sup>
- Cafe Kitchen (0.6 p. seat)	60 m <sup>2</sup>
- Shop	110 m <sup>2</sup>
- Staff Room	60 m <sup>2</sup>
- Toilets x 4	18 m <sup>2</sup>
- Conference Room	60 m <sup>2</sup>
- Sheltered Outdoor Seating	min 40 m <sup>2</sup>
- Private Offices x 8	6 m <sup>2</sup> each

### *Film School for 200 students:*

- Class rooms x 3	50 m <sup>2</sup>
- Seminar/ Screening Space	100 m <sup>2</sup>
- Digital Workshop	125 m <sup>2</sup>
- Editing Suites	100 m <sup>2</sup>
- Student Workshop	160 m <sup>2</sup>
- Computer Classroom	70 m <sup>2</sup>
- Student Common Room	80 m <sup>2</sup>

### *Theatre:*

- Public Theatre (0.4 p. seat)	160 m <sup>2</sup>
- Projection suite	70 m <sup>2</sup>
- Ticket Booth	5 m <sup>2</sup>

### *Film/ TV Studio:*

- Studio Space	200 m <sup>2</sup>
- Rehearsal Room	90 m <sup>2</sup>
- Dressing Rooms	20 m <sup>2</sup>
- Master Control Room	30 m <sup>2</sup>
- Sound Room	60 m <sup>2</sup>

### *Library:*

- Film Archive Library	}	150 m <sup>2</sup>
- Film Literature Library		
- Small Projection Room		50 m <sup>2</sup>
- Administration for Library	}	90 m <sup>2</sup>
- Reception		
- Reading Room		90 m <sup>2</sup>

## 7.5 DESIGN PROCESS

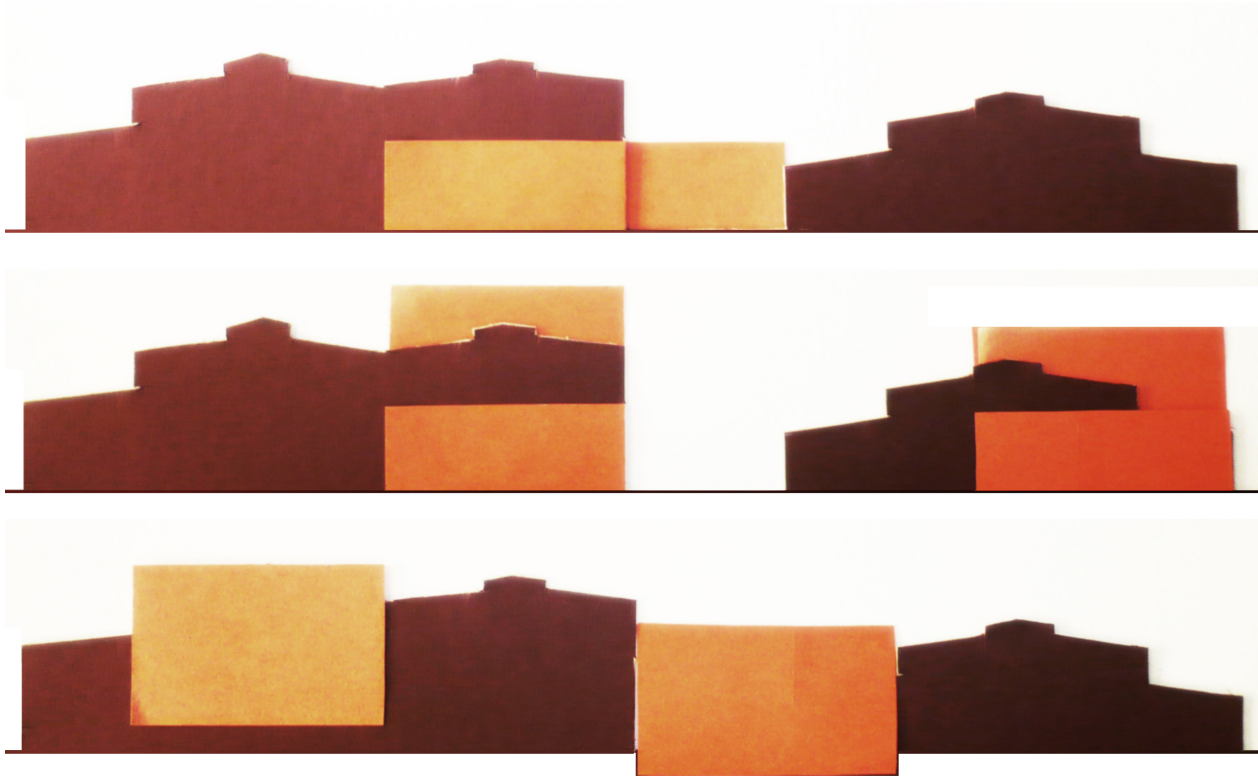
The process and the design that emerged from it will be discussed in terms of the five approaches I developed in Chapter six. Some of the approaches apply more to the initial stages of design, while others have become more relevant in the detail design phase. For each approach I have attempted to create tools which could be appropriated by other designers in future projects.

### 7.5.1 *Stuck-on Add-on Avoidance*

The intention of this project was to create a conversion that amalgamates new and old material to form a combined architecture; to achieve this, a new form needs to be introduced. I began this process by experimenting with what form this new addition could take on. I experimented with the front elevation thoroughly as this would become the public frontage and because I was inspired by the geometry.

This process involved a series of studies in different media, looking particularly at how a new addition would physically relate to this front elevation. This involved a set of collaged ideas that illustrated basic geometries interacting with the existing shapes in a two dimensional format. Following this, experimentation of forms was hand drawn, so that I could freely envision more detailed ideas. Initially, linear forms that cut through the lower part of the building were tested, but as the process continued, the relationship between the new design and the original geometry became stronger. Forms which responded to the existing buildings appeared to sit more comfortably in the context.

The final design incorporates new forms that are derived from the existing gradients and heights which uniformly connect the two buildings along the façade. The final development of this elevation has a separate, and much smaller, entrance building which creates some differentiation from



*Fig 7.22: Collage investigations set one.*

In this investigation, block forms have been used to experiment with ideas of placement and how they could possibly intersect the building. The top image explores a form which comes from the outside and cuts into the building. The middle image looks at how an intervening form could be arranged so that parts of the facade are visible. The bottom image considers how a form could be raised or sunken into the building.

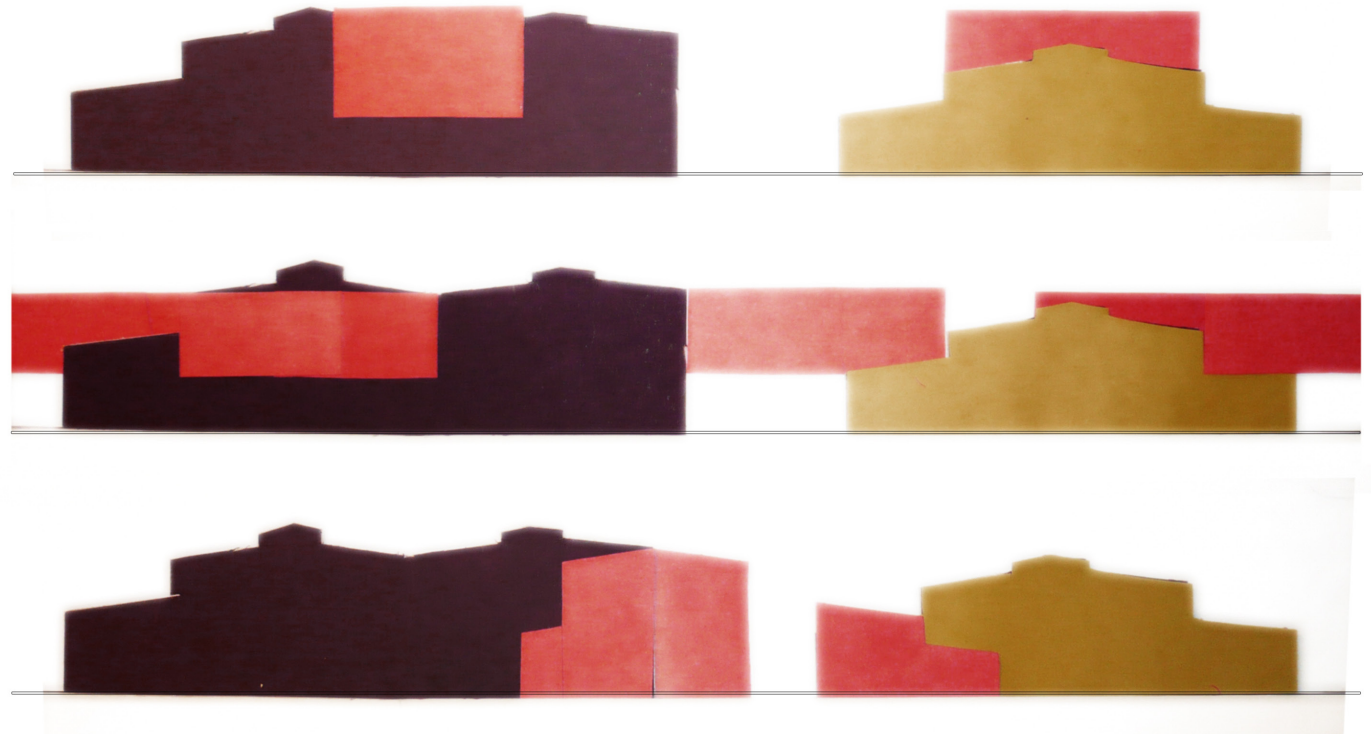


Fig 7.23: Collage investigations set two.

The concepts from the last set are developed here. The top image compares a form which sits in the foreground with one that sits in the back. The middle image is an attempt to weave a linear form into the facade geometry, while the bottom image heads towards concepts where forms derive from existing shapes.

the other forms. I found that this signalled the entrance better than in the previous development, where it was much larger. In this development there is a greater feeling of anticipation upon entering the spacious volumes of the original buildings.

The new forms designed on the facade extrude forwards, beyond the original line and back into the building. This creates a dynamic street presence that is indicative of the formal changes inside. In the final design, the entrance building protrudes further forward than the rest, which indicates its importance. The forms developed in this section become crucial to the rest of the project as they inform what happens inside the building.

Scarpa argues that materials should be chosen for their suitability rather than just saying “I’m modern – I’m going to use metal and plate glass” (Dal Co and Mazzariol 287). Bearing this in mind, I decided that a material which had an element of verticality in it would sit well with the corrugated steel of the existing exterior. Therefore, the material chosen for the new forms is vertical timber tongue and groove. Timber is suitable because it has a softening effect on the steel and weathers naturally. The garage doors of the original buildings can be opened, which helps to create a feeling of transparency as it allows the public to see in.



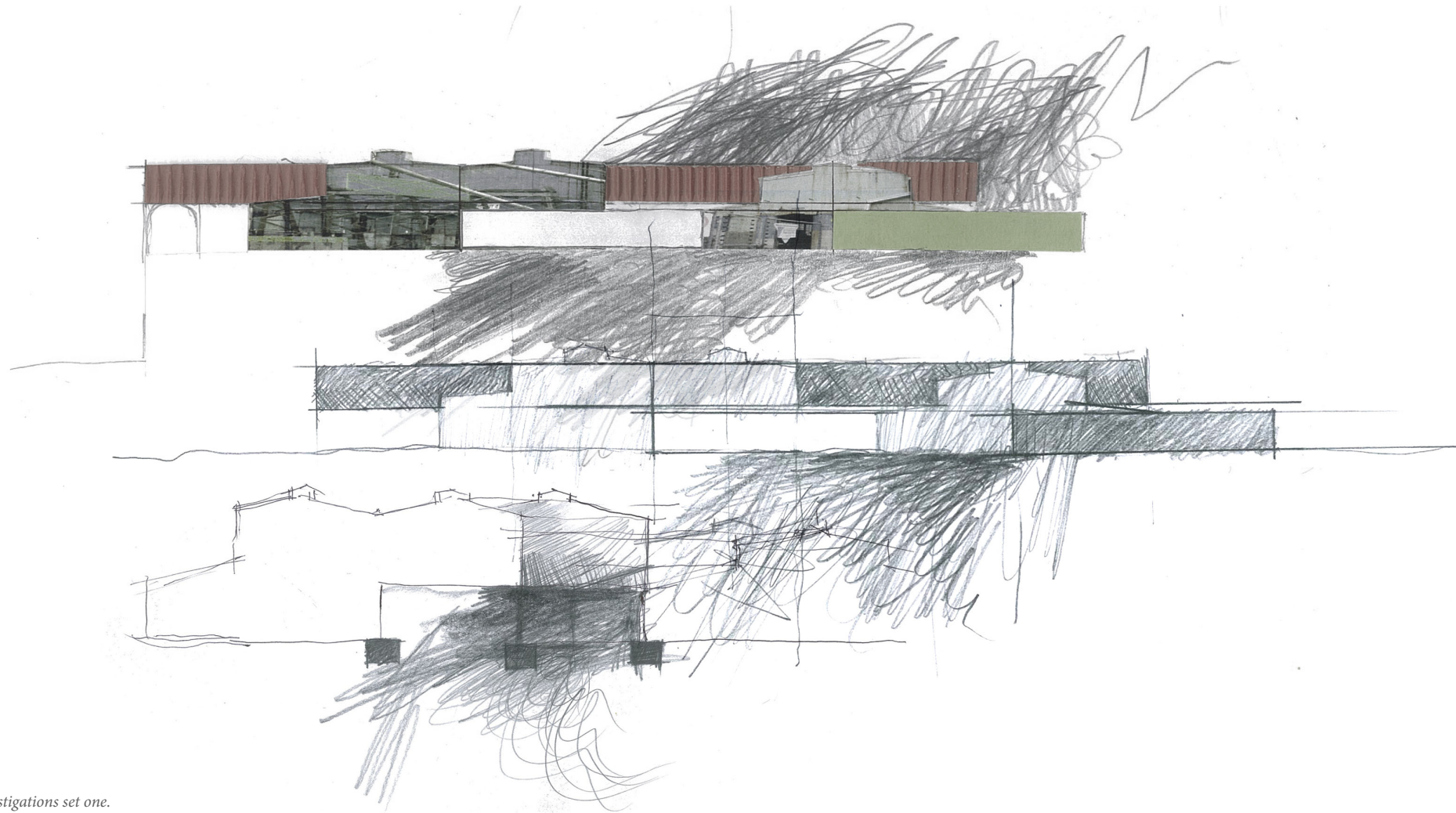
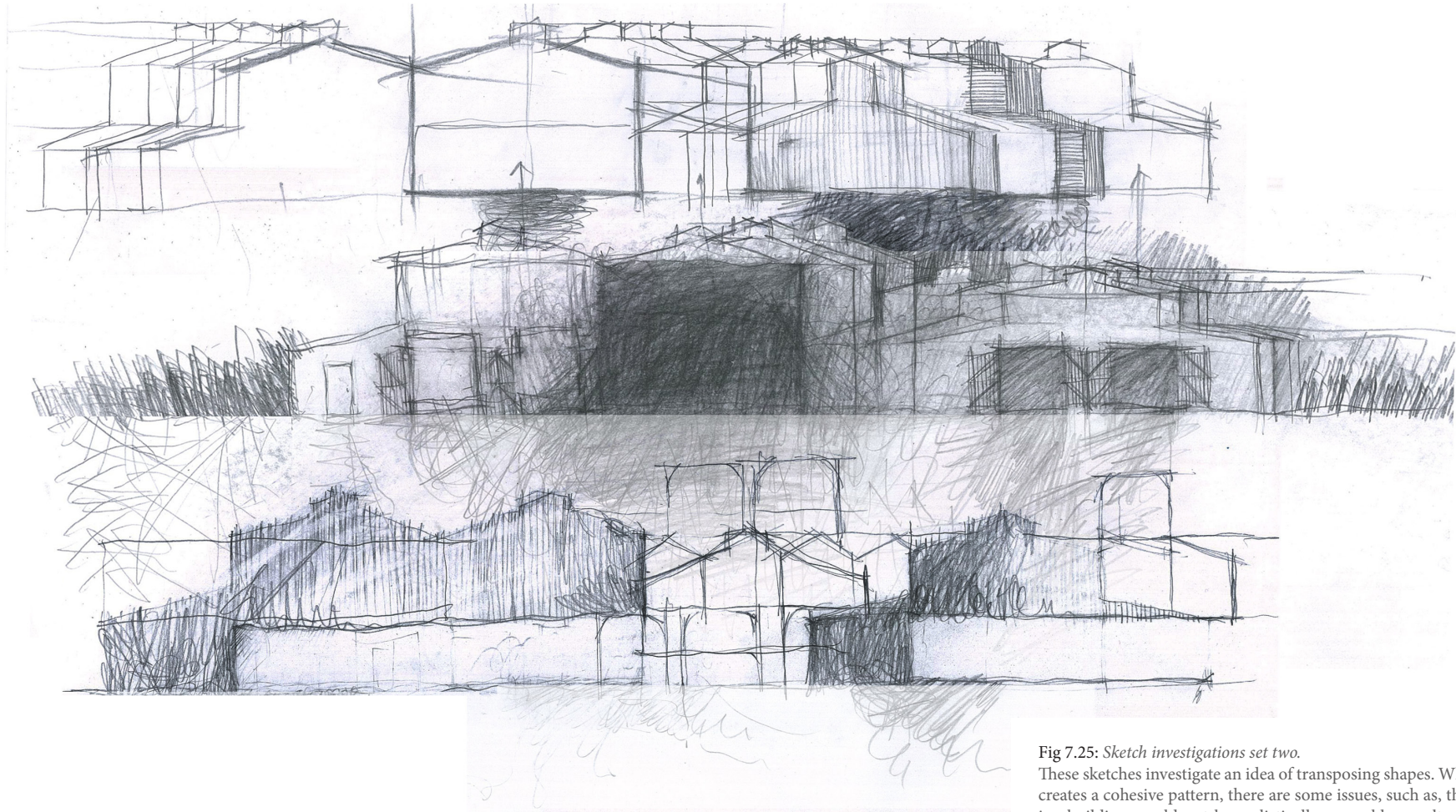


Fig 7.24: *Sketch investigations set one.*

This set explores potential ways in which linear forms could cut into the buildings. The predominant concept here is two forms which stack up, creating a two level structure. These have been designed so that they slip past each other giving the appearance of independent entities.



**Fig 7.25:** *Sketch investigations set two.*

These sketches investigate an idea of transposing shapes. While this creates a cohesive pattern, there are some issues, such as, the existing building would not be realistically moveable, or alternatively because copies would need to be made. This approach seemed false and would lack innovation and therefore was not pursued. The other concept explored here is large penetrations cut into the facade to create distinctive entrance foyers, which hold some potential for further study.



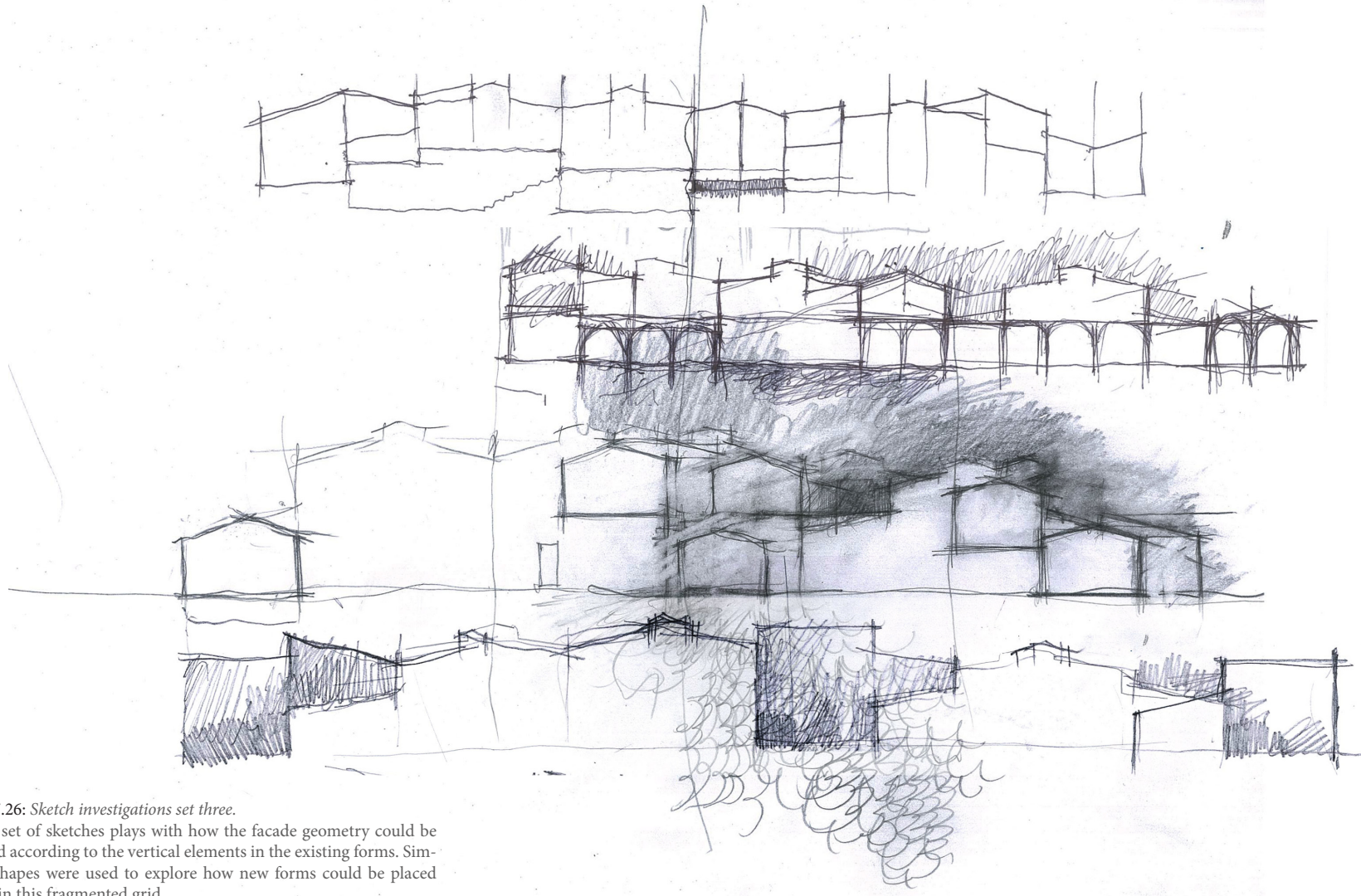
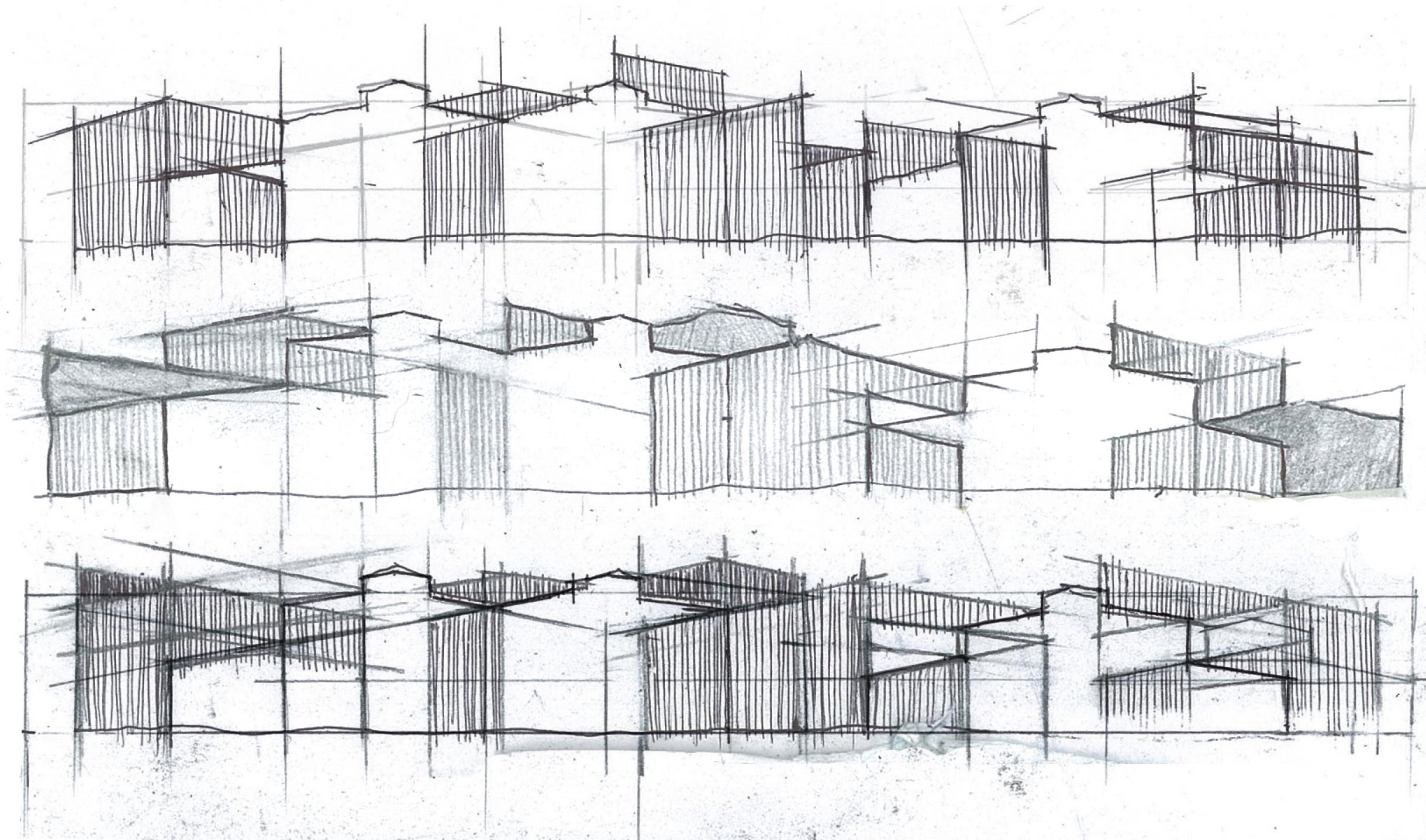


Fig 7.26: *Sketch investigations set three.*

This set of sketches plays with how the facade geometry could be sliced according to the vertical elements in the existing forms. Simple shapes were used to explore how new forms could be placed within this fragmented grid.



*Fig 7.27: Sketch investigations set four.*

These drawings are a development of the previous set as the vertically sliced grid designed is used in combination with angles and heights that relate to the original geometry. Because the new forms resulting from this experiment are a reflection of the existing shape, they seem to belong. These drawings also hint at a material that enhances the strong verticality already seen in this elevation.



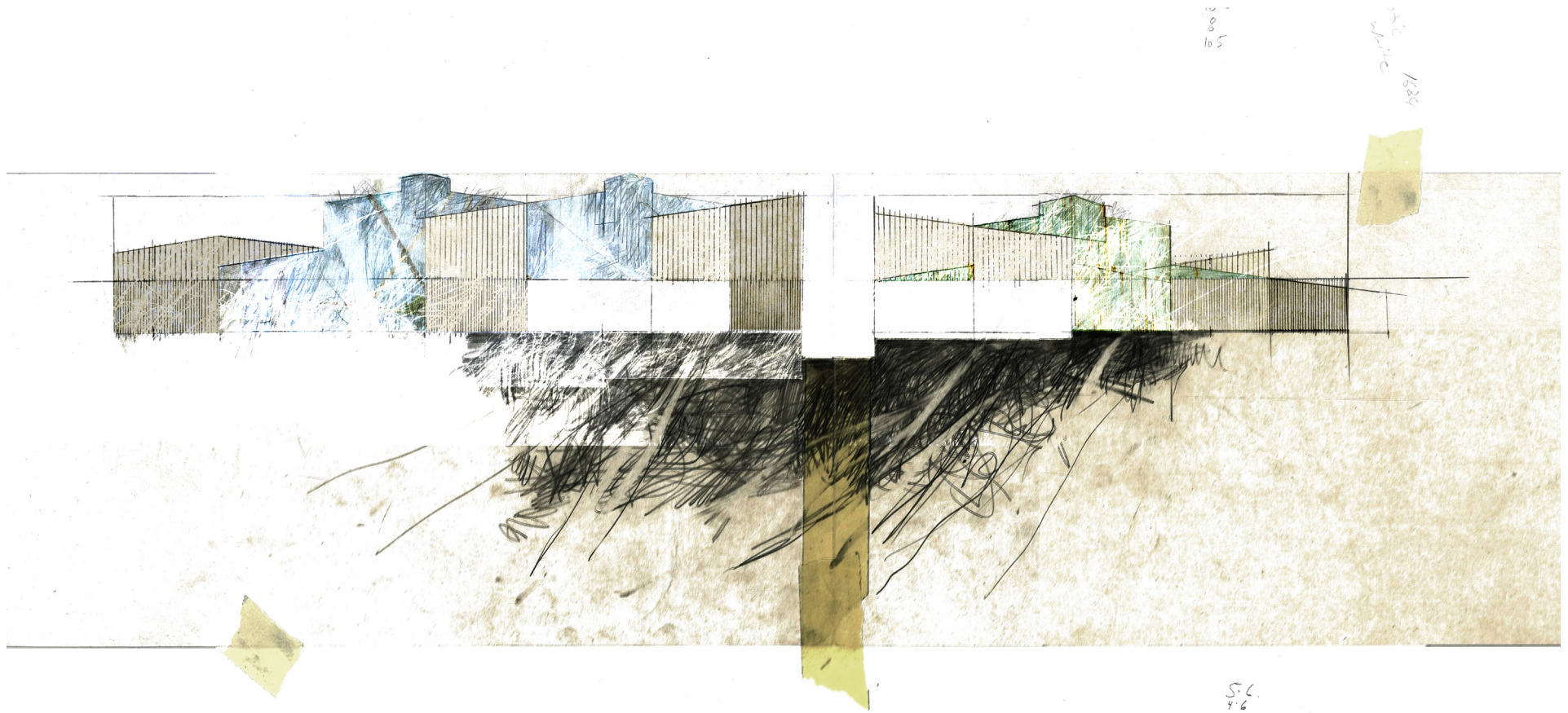
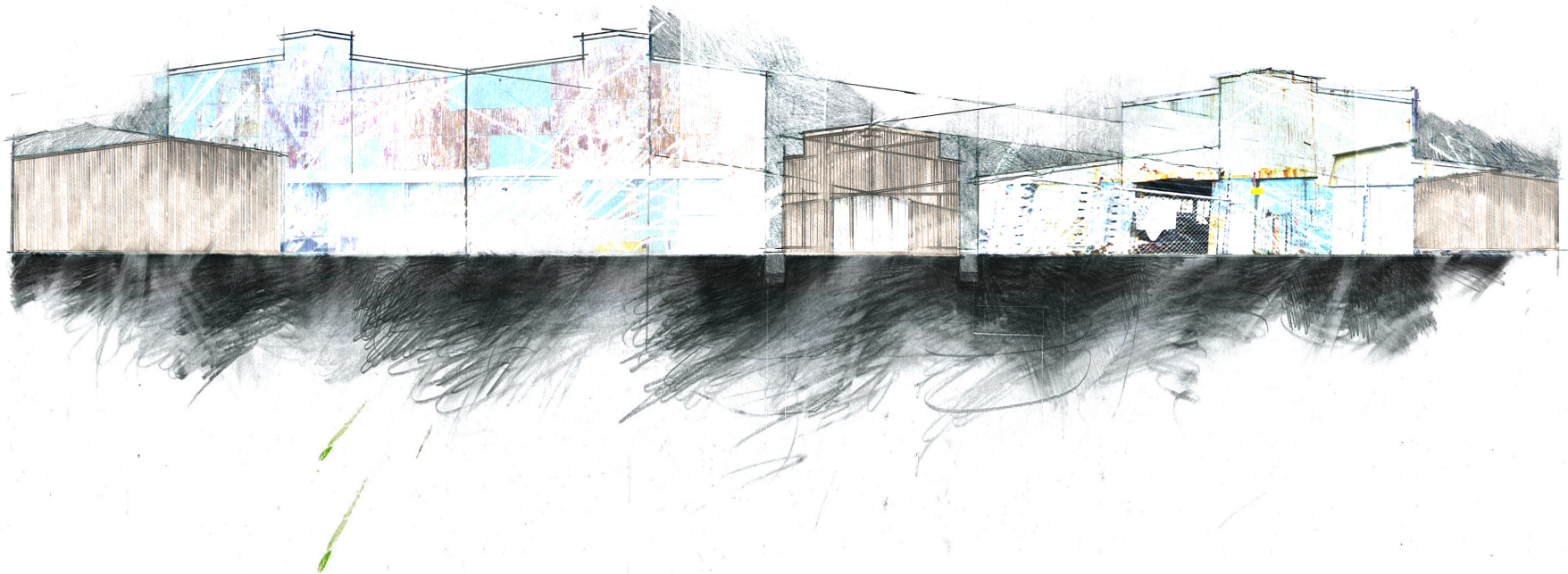


Fig 7.28: *Developed design of front facade.*

This is a finalised design of the previous development sketches. It shows a facade that is connected by forms which weave in front and behind the original buildings. The horizontal cuts at the base of these buildings are a further development of the set two sketches. These become contrasting elements which direct people into the building. This drawing evokes the sense of compatibility and connection I strived for to fulfil this design approach.



*Fig 7.29: Final design of front façade*

In this final version the front facade the entrance building is accentuated by separating it and pulling it forward from the original buildings. The separation creates a shadow gap on either side which adds further impact. The geometry of this iteration is derived similarly to previous developments, however, this form retains more of the original fabric.



### 7.5.2 Surgical Cut

Early in the project, I made the decision to cut the site against the obvious grain which the buildings follow. This brought changes to the building and created a connection from one building to the next. A natural grid is formed inside the buildings due to the 6m column spacing, but because of the 3m offset between the two buildings, the grid lines are spaced 3m apart along the length of the building. The concept of raking against the regular grain of the site set up ideas of slicing, slippage and weaving between the buildings.

Fig. 7.32 illustrates my intention to view the building differently. By drawing the two buildings as a long segment, a series of strips were imagined. This changes the experience of each building, which is entirely separate and currently viewed along its grain. I began designing inhabitation according to these strips, as this had the effect of weaving the two buildings together. For the purposes of this exercise, segments such as the ones illustrated, were thought of as separate buildings along this direction.

According to the grid created, four different types of 'cut' are implemented. The first, and most severe, are the cuts that form atriums and aid with connectivity and circulation across the buildings. The second cut is made by the forms developed for the front facade that extrude through the building. The third cut is less severe as it slices between the atrium cuts, and only through these new extruded forms. This slice slips the new forms against each other so that they are slightly offset and sometimes penetrate through the exterior of the building. Lastly, the most subtle of the cuts, which run with the grain of the building, are the cuts into the ground. These include the existing pits in the buildings, but also places where I have designed further cuts into the ground to create new spaces. Physically modelling this design idea helped me to understand the implications of these cuts. As the fourth cut is most subtle, it is only illustrated later in fig. 7.50.

Fig. 7.35 shows the implementation of rectangular-shaped forms that enclose the atrium cuts. These were constructed for this purpose, but also to create a contrasting form. However, these

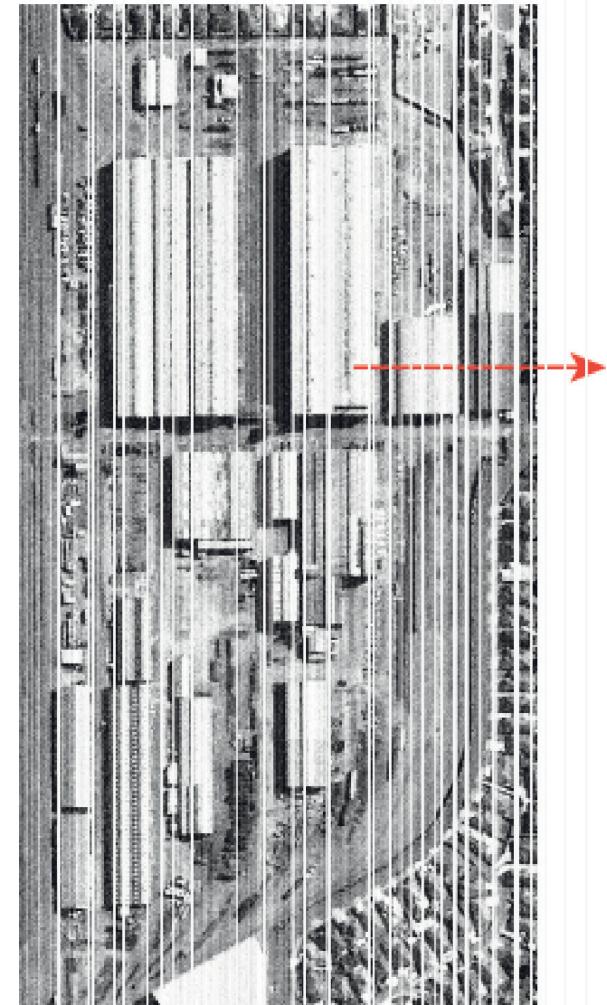


Fig 7.30: *Directionality diagram*. This image emphasises the natural grain that these buildings follow. The red arrow shows the intended cross raking direction.

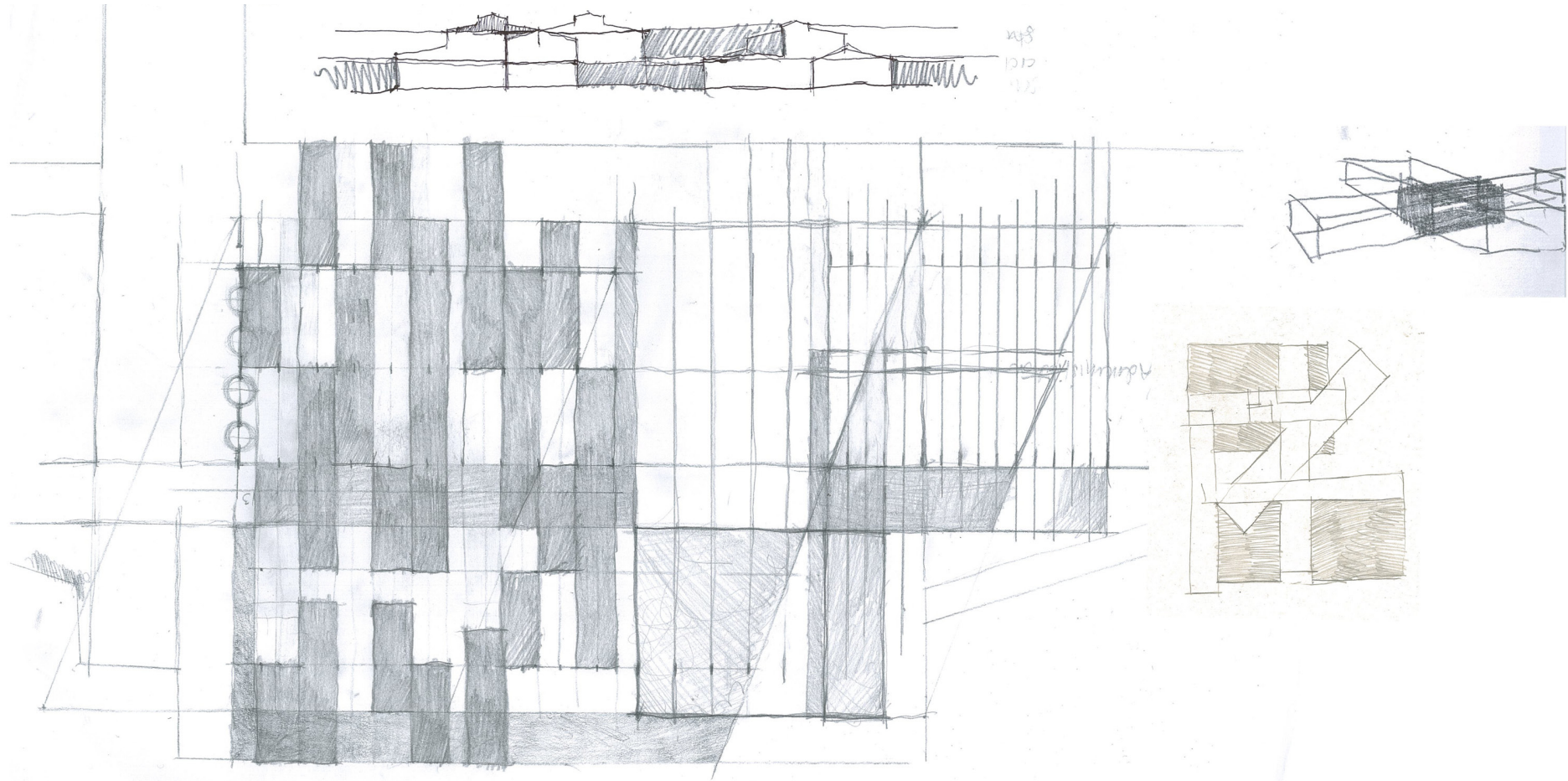


Fig 7.31: Early sketches of the cutting concept.

These are concept drawings that begin to show how these buildings could be connected across the natural grain of the site. These drawings explore what happens when two cuts meet and how these linear forms could be placed in plan. Initial ideas for a grid framework begin with this study.

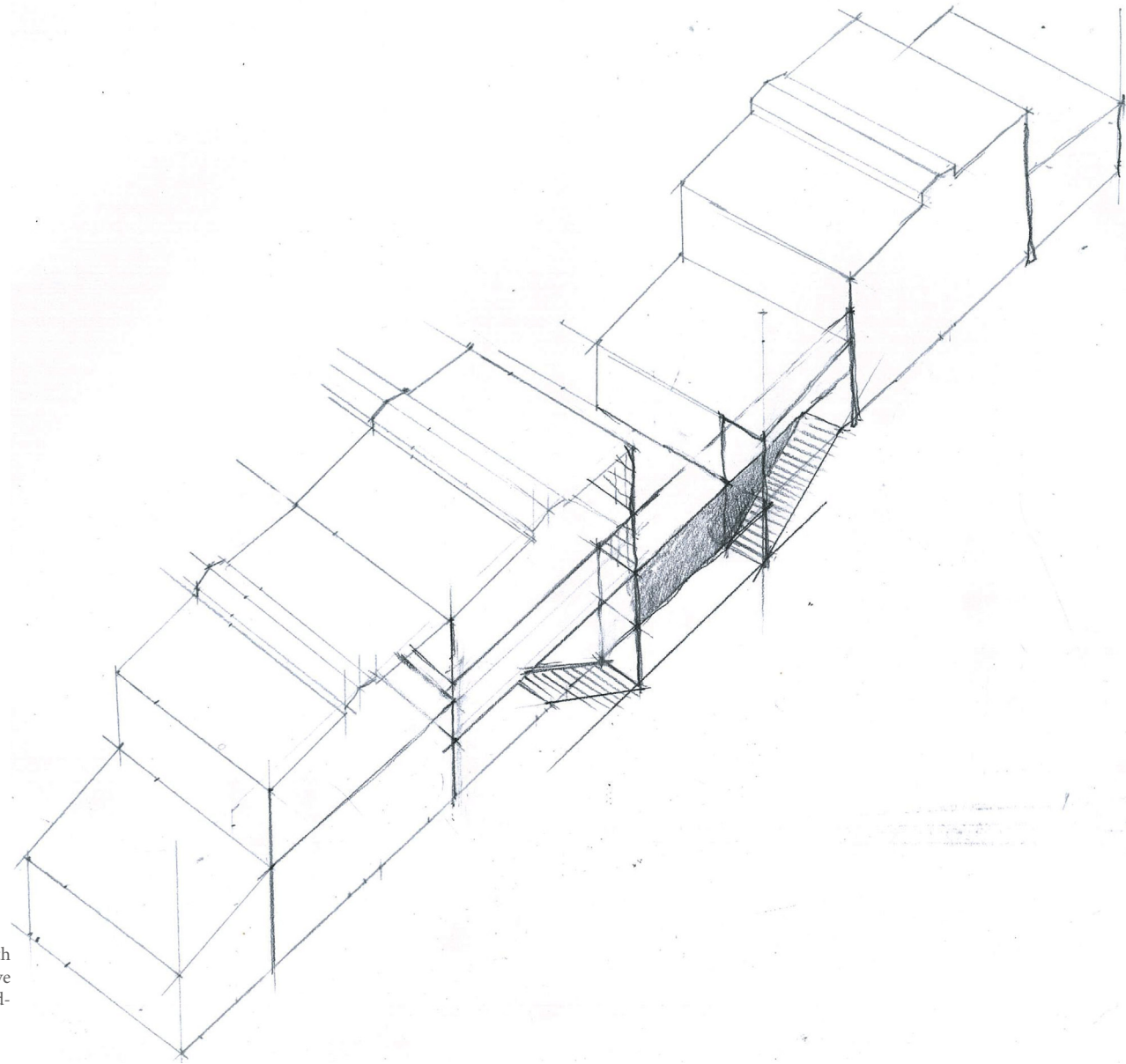
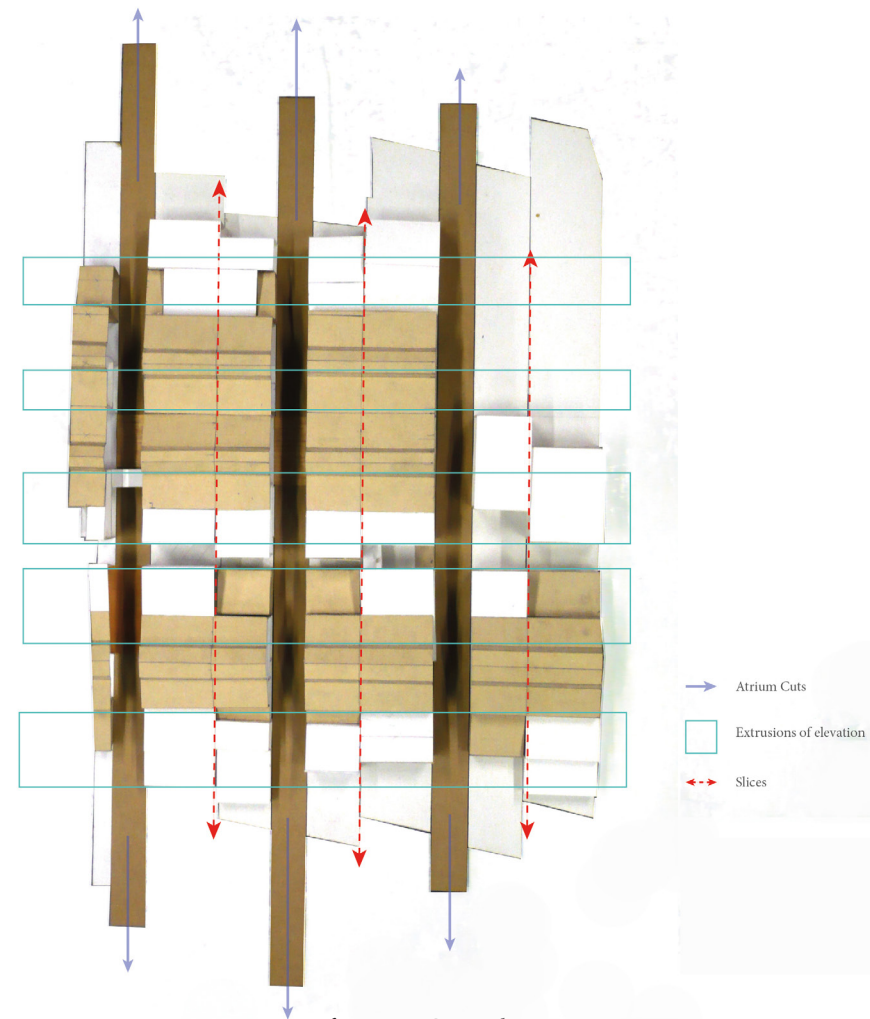
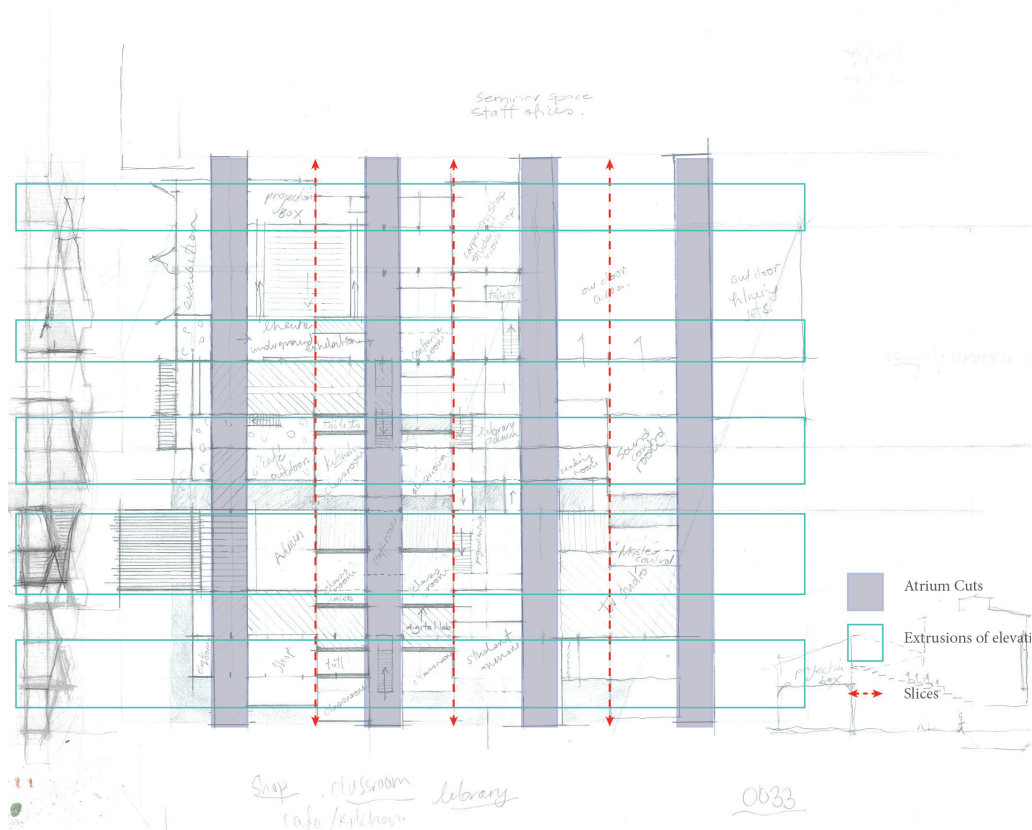


Fig 7.32: *Segment axonometric.*

This image shows a segment that resulted from a slice through both buildings against their natural grain. This sketch helps to conceive of two buildings differently. This study looks into how the two buildings could be connected in this direction.



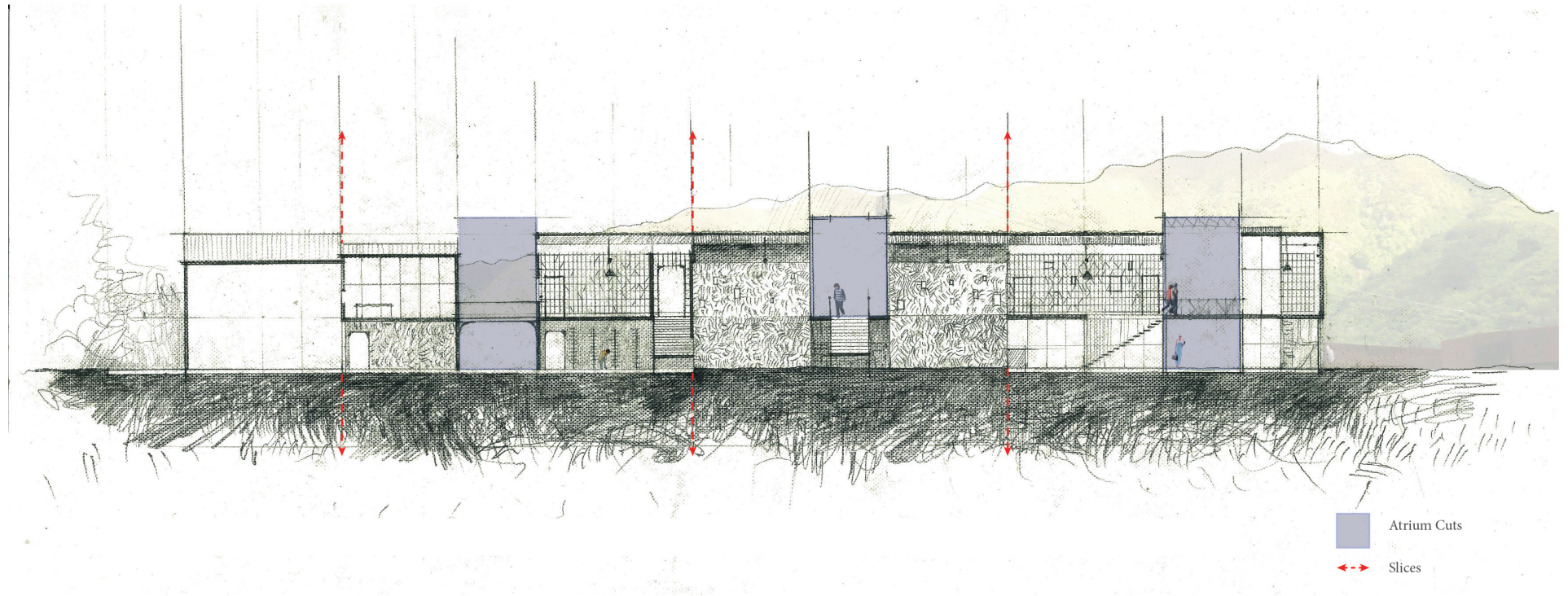


Left, Fig 7.33: Cutting diagram.

This illustrates the different types of cuts employed in this design.

Right, Fig 7.34: Working model diagram.

This image shows the cuts physically employed in my working model. This model helped to understand what the implications of these cuts would be in a three-dimensional format.



**Fig 7.35:** *Longitudinal section through the steel wagon repair shop.*  
This is an early design development showing the atrium cuts that were designed in the building. Rectangular forms were created to shelter the voids left by these cuts. This image illustrates how the building is conceptually cut into a series of 'segments'.





*Fig 7.36: View shaft created by the main atrium.*

The coloured forms seen in this image represent the new structure, while existing elements are rendered in greyscale. This drawing illustrates the 'new view' created through the two buildings which are now connected. Although this perspective has since changed with the final iteration of the entrance building, it illustrates the fresh perspective created by this type of cut. To the left of the atrium is the reception and administration, while the public theatre and shop are to the right.



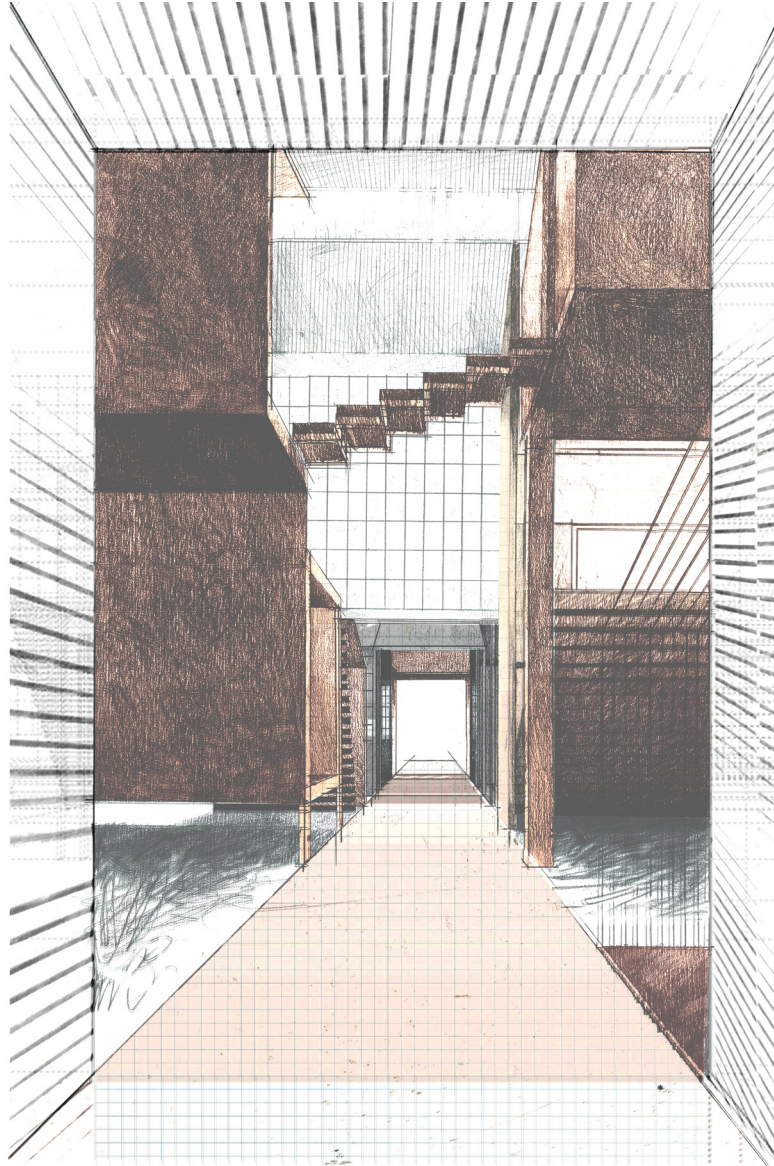


Fig 7.37: View shaft created by circulation route.

As in Fig 7.36, the new forms are coloured, while existing forms are rendered greyscale. This view is framed by an extrusion which pushes into this building along this circulation route. Again, this image shows the visual and physical connection of the two buildings by creating these cuts. To the left of the image is the library while the right shows the public theatre.

were later rejected, as their dimensions felt uncomfortable as a result of their disproportionate height. The rectangular forms were also unnecessary and appeared alien to the building. The decision to reject them was made in light of the ‘the stuck-on add-on problem’.

After extensive development, fig. 7.36 and fig. 7.37 show the final outcomes of the main atrium cuts through the building. The most important cut is the first atrium as it forms the main branch of circulation and fuses the two buildings at the entrance. These drawings illustrate the new view shafts created in the building as a result of cutting against the grain. They are important because they conceptually embody the decided change to these buildings.

### 7.5.3 A Collage Approach to Conversion

The cutting process, which was discussed previously, was crucial in performing ‘a collage approach to conversion’. To implement this approach, the other essential tool required was the grid. Like Scarpa, I limited the design to vertical and horizontal planes.\* While simple, in combination with such structured buildings, this seemed the most suitable design approach. Incisions made along this grid framework, in both directions, created fragments which were altered and pieced together according to extensive program planning throughout the design process. To fully understand the program requirements and the circulation in the building, I began by creating bubble diagrams that slowly became more detailed. It was necessary to push and pull the grid in order to accommodate certain functions. The new architecture is intertwined with the old through this process of arranging fragments.

The problem with the initial design was that I was too rigid in adhering to the geometries set up by the grid: some forms closed off the building where it was originally open and the circulation routes lacked clarity. As a result of these issues, the grid layout was developed to accommodate functions and circulation, instead of changing the spaces to suit the grid. In the final design, the entrance is through a separate building that leads into each part of the facility. In particular, the visitor is led straight to the main atrium space, which all circulation routes branch from. Functions that have a public role are positioned closer to the entrance, while functions that are private are nearer to the back. A key iteration in the design process was the change of the middle cut illustrated in Fig 7.37 from an atrium space to a smaller circulation route between the buildings. This design move still alters and connects the buildings but reduces the harsh impact of three large atrium cuts.

Other references to the collage, such as the notion of layering, are noted in the ‘effect of time’ section as they relate closely to how particular aspects of the building are retained.

\*The use of curved or angled geometry in the new forms were eliminated for this project. While the unusual geometries were experimented with, they were rejected for their lack of relationship to the existing forms.



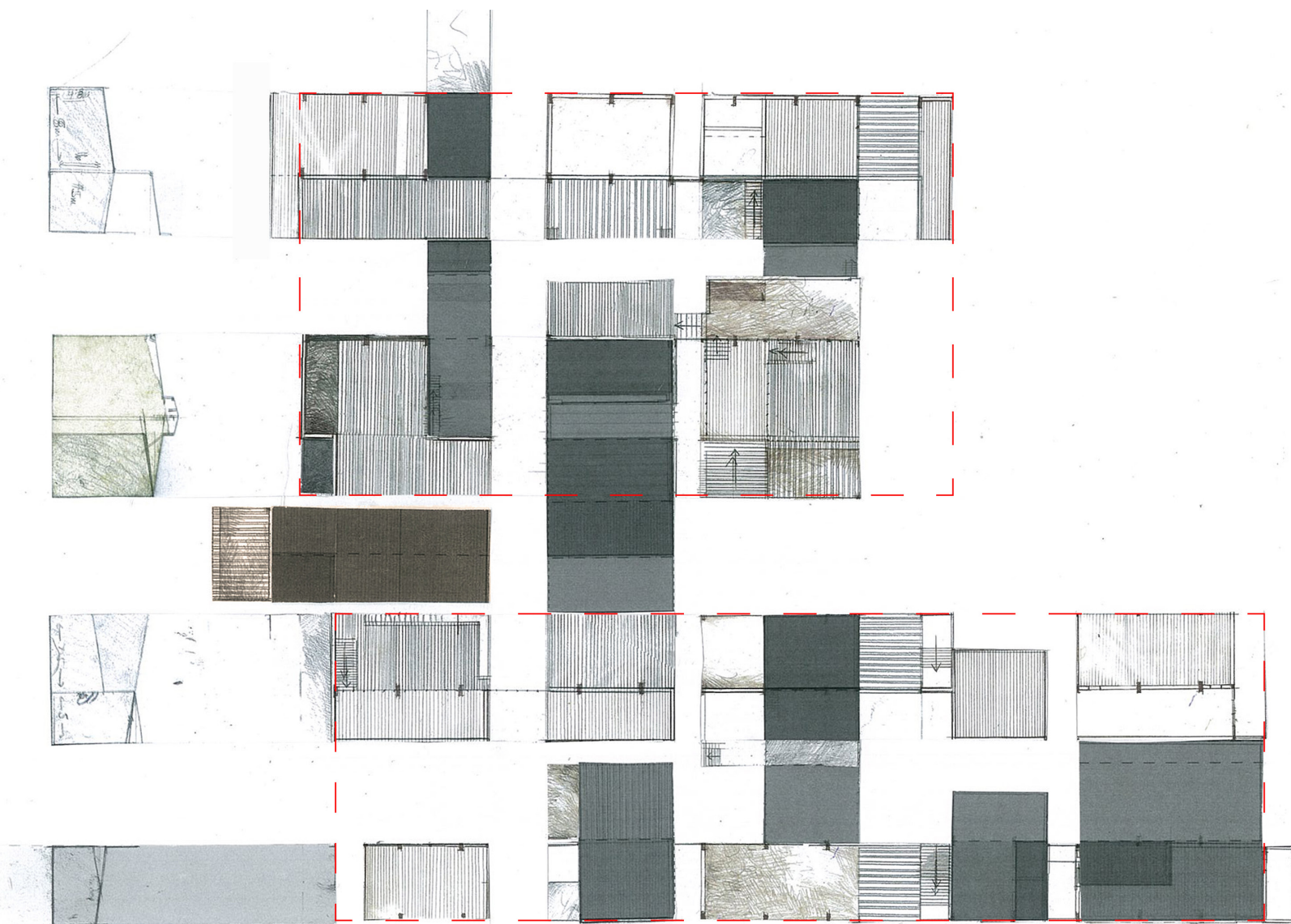
Fig 7.38: Grid diagram with dimensions.

This image shows the grid that was produced due to the column placements and the overall size of this site.

Opposite, Fig 7.39: Collage concept.

This is a conceptual image that explains how the 'fragments', or spaces were placed according to the grid that was set up.





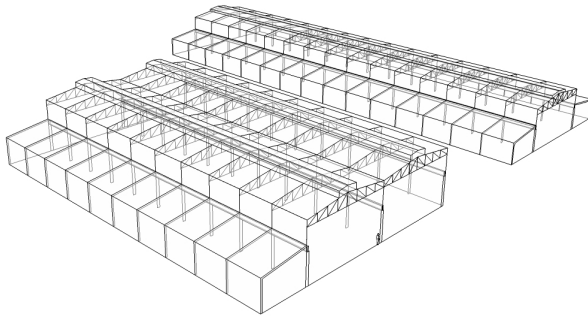


Fig 7.40: Isometric Perspective of building skeletons.

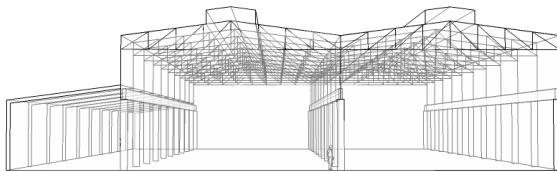


Fig 7.41: Internal perspective of the steel wagon repair shop structure.

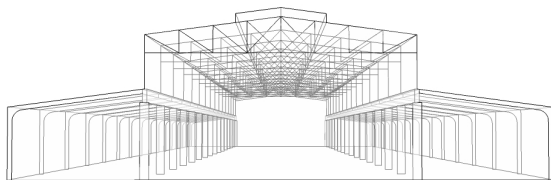


Fig 7.42: Internal perspective of the rail car shop structure.

#### 7.5.4 Fill-it-up Avoidance

New forms and spaces must be created in a building in order to accommodate new functions. However, it is the relationship of these spaces to the existing volumes that is important to avoid ‘filling up’ a building. Filling becomes a problem when the viewer is no longer able to experience the volumes of space that are familiar to industrial architectures. In this project, new spaces are placed in the midst of existing voids so that contrast is made. An example of this is the library archive space, which consists of mezzanines that branch upwards inside the original steel wagon repair shop. The viewer is always conscious of their variable surroundings. For instance, it is possible to look over large voids of space, and then go to cosy enclosed spaces for reading. This type of interchanging experience is also highlighted with the new entrance design. A humble space is created with the small entrance building, which then enhances the impact of the following impressive volume of space.

The original buildings were initially assessed to understand which spatial experiences were desirable and what parts could be inhabited. In this case, the impression of scale is important to the experience of the building, so the new parts rarely block out this view, rather they merely insert into the view, as shown conceptually in the physical model (fig. 7.44). Where walls are needed in the transverse direction, often translucent partitions are used instead of solid walls in order to maintain the impression of wide open space.

The other way that the ‘fill-it-up’ issue was avoided was by implementing forms that do not ‘end’ when they reach an exterior wall. The grid informed where the forms protruded through shell as this design tool decided where forms slipped forwards and backwards. Extending beyond the existing exterior shell makes the conversion visible to the public from the outside. This acts to entice people’s curiosity and encourages them to explore the changes made to the building. Furthermore, it helps to provide a ‘face’ for conversion.



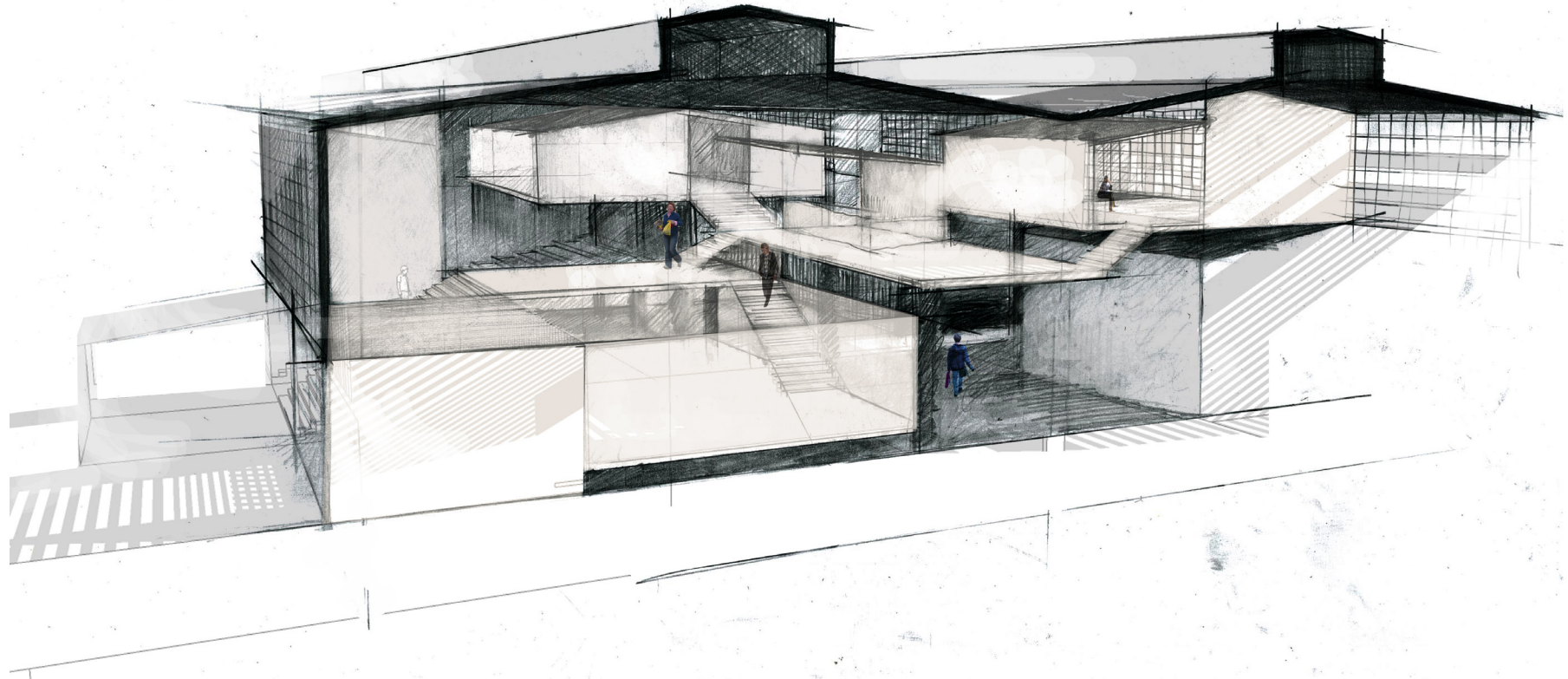
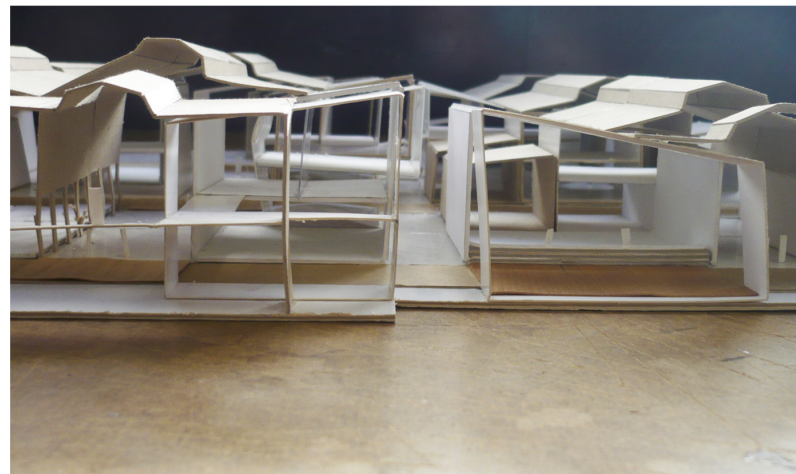
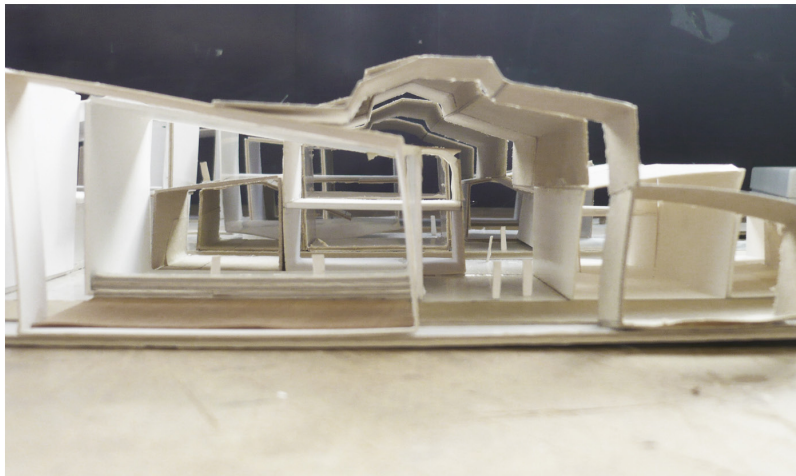


Fig 7.43: *Library perspective section.*

This section cuts through the back of the steel wagon repair shop to reveal the Library archives space. Here, it is possible to see the intermingled relationship between the new spaces and the open expanse of the original building.



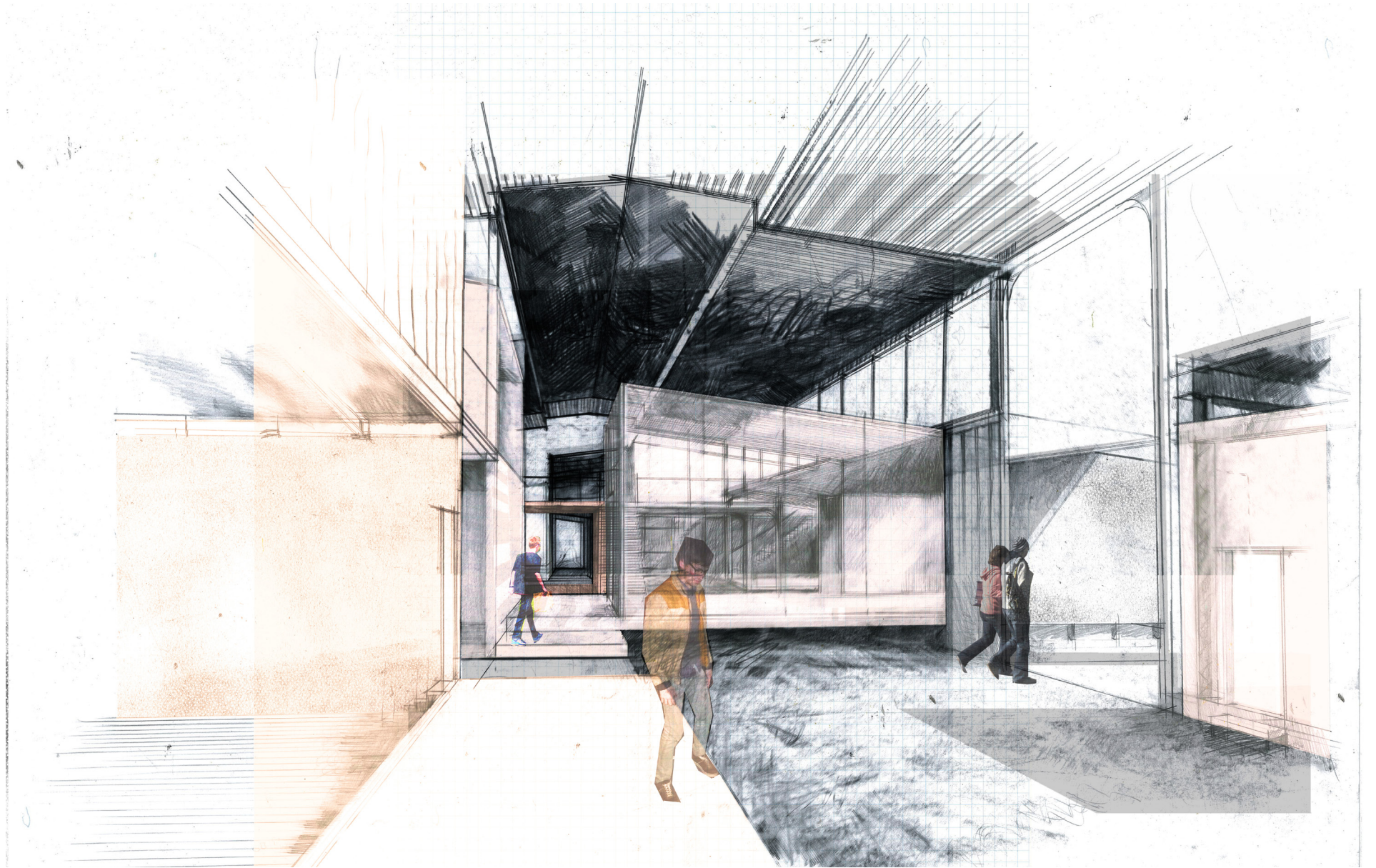
*Fig 7.44: Model photographs.*

These images illustrate how forms might intercept the space without blocking the view. They show how ribbon forms can be created in one direction, leaving the view down the buildings open. Where necessary walls could be created in the transverse direction with translucent materials to create enclosure.

*Opposite, Fig 7.45: New view down rail car shop.*

This image shows how the new forms interject into the space creating a strong juxtaposition of old and new.









**Fig 7.46: Roof plan.**

This illustrates how parts of the building protrude through the original shell of the building. It also shows the change in the last 30 m of the rail car shop where the forms begins to break down.

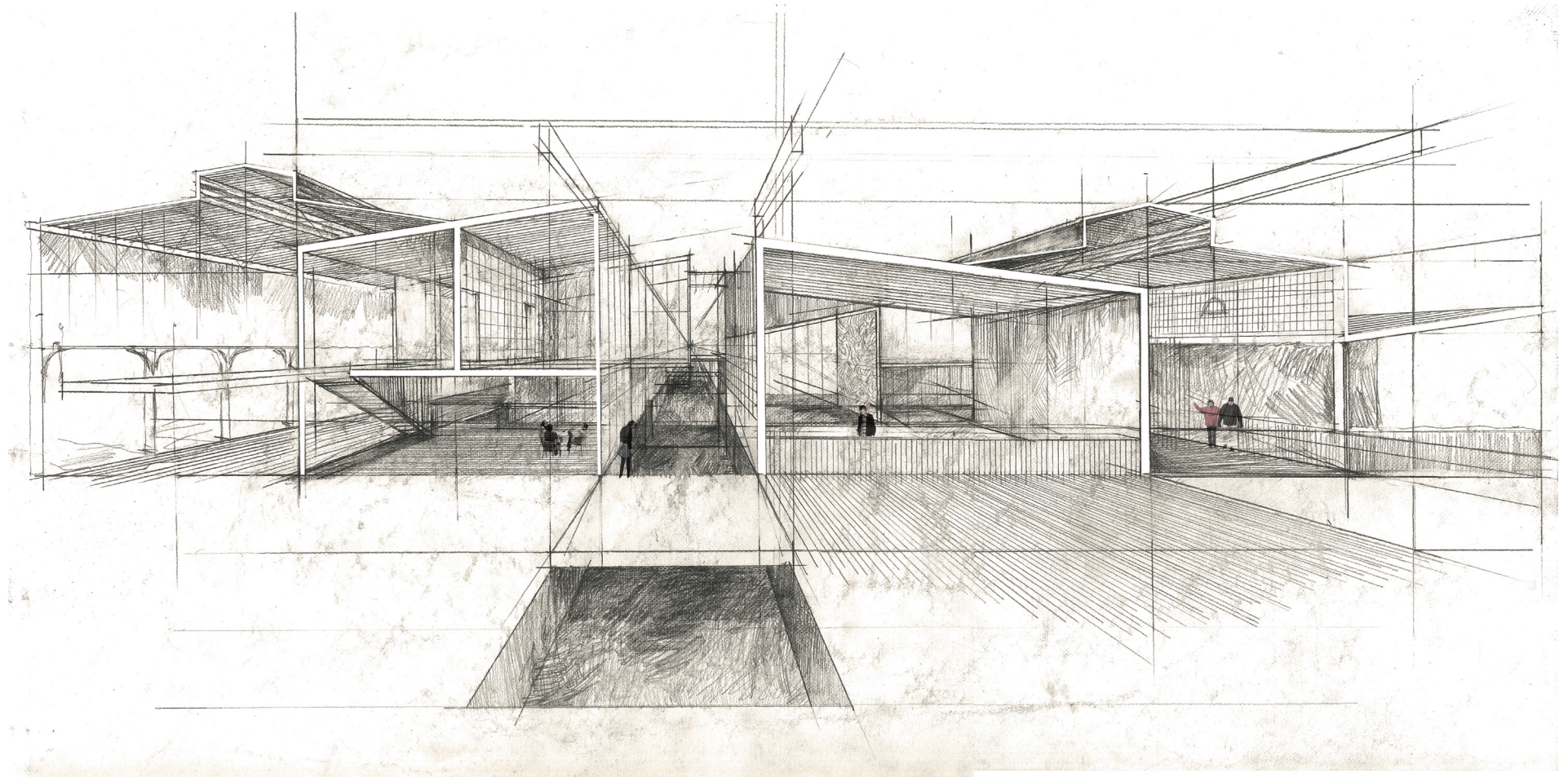


Fig 7.47: *Initial entrance concept.*  
Rather than keeping forms inside the existing volumes, this image shows the potential for new forms to intercept the existing forms.





Fig 7.48: Site features, rough concrete



Fig 7.49: Site features, corrugated iron



Fig 7.50: Site features, timber ceilings

### 7.5.5 *Effect of Time*

This concept became more relevant later in the project as details were considered. This approach is closely linked to the collage approach as the design tools relate to the concept of layering. Firstly, features which I felt were of importance to the viewer's perception of these industrial buildings were identified. Particular examples which highlight the industrial 'aesthetic' include the windows, floors, timber ceilings, rusted corrugate and furniture. These have each been dealt with using a type of 'collage' approach.

The concrete floors of these buildings have a rough texture that is gained through unrelenting use. To retain the original floor, new floors were added on top of the old. These floors are raised above the existing floor so that they appear to touch lightly. These new floors define new spaces within the building without necessarily having to enclose them. They are made of timber floor boards, which complement the rough concrete as it is a natural material, but also have a sense of warmth that contrasts against the current qualities.

The intricate windows, which are significantly weathered, give character to these buildings. Each pane is differently worn as some have already been replaced, some panes are more vulnerable to the weather and others are at a greater risk of vandalism. Even the broken panes add atmosphere to these facades. This aspect of the buildings is in danger of being removed as this has already been done in the rail car shop. My proposal is a costly option, but it allows a continued aging process. Illustrated in fig.7.55, each window is replaced individually, either in part, or in whole with a range of window types. Some might be replaced with clear, frosted or operable windows, so that this mosaic effect is retained and enhanced.

The timber ceilings, rusted corrugate and furniture are dealt with similarly in that they are left as they are. The timber ceilings are hardly aged, so currently no work is required. The corrugated steel, on the other hand, has become somewhat dilapidated. In places where this is an issue (some parts are not an issue because some new spaces are enclosed), it will be covered with a new mate-

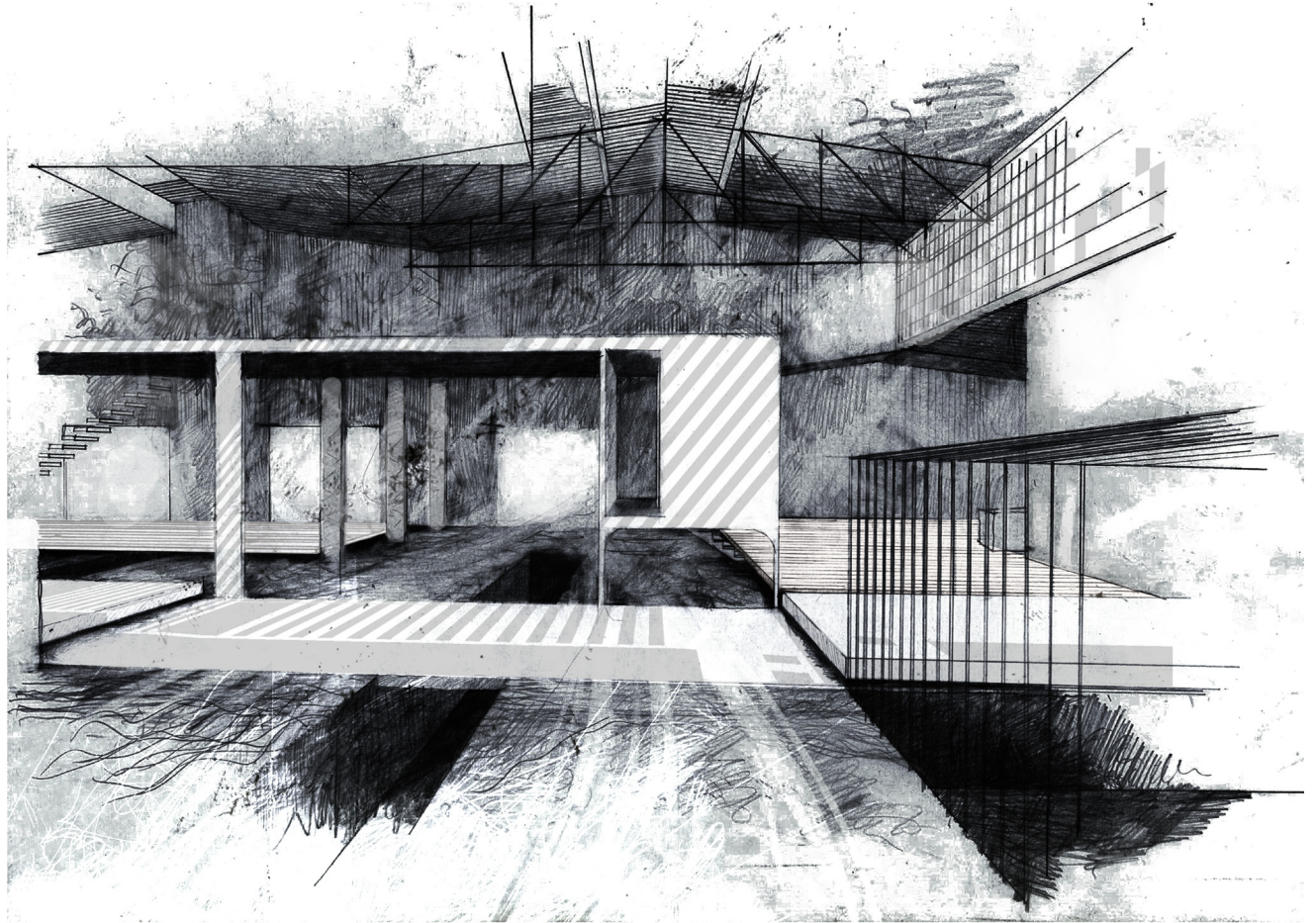
Fig 7.51: Floor layering concept.

This image attempts to illustrate the 'grunge' aesthetic in this building. The floors are lightly connected to the structure and strongly contrast with the rough materials. By layering rather than replacing, a juxtaposition is created that enhances this space.

Overleaf, Fig 7.52: Lower plan, 1:500.

Aside from showing the functions of this building, this plan illustrates the layering that has been used in the buildings further. The new floor geometries overlap the existing floors. This maintains a connection with the history encompassed in the buildings.

Overleaf opposite, Fig 7.53: Upper plan, 1:500.

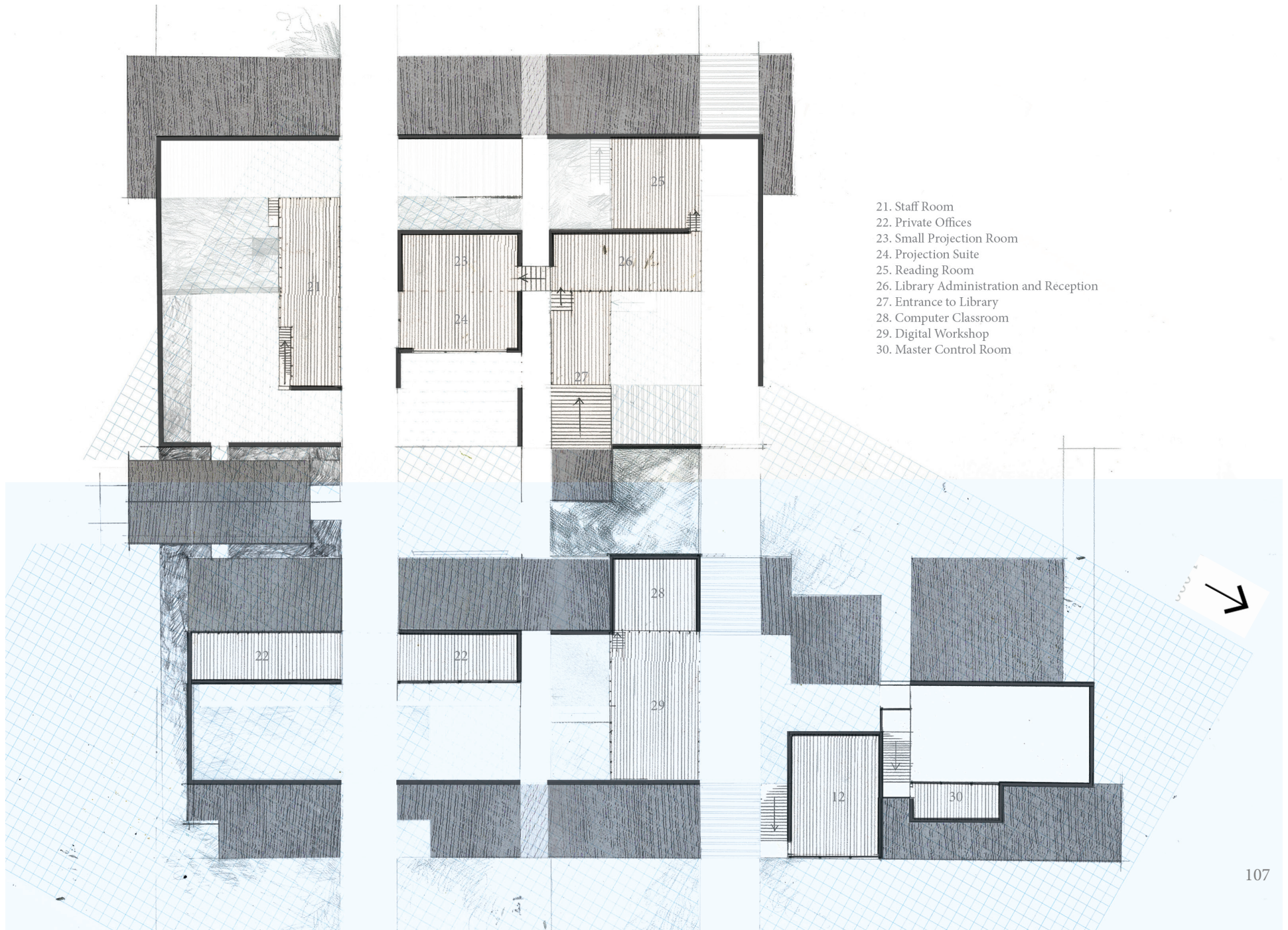




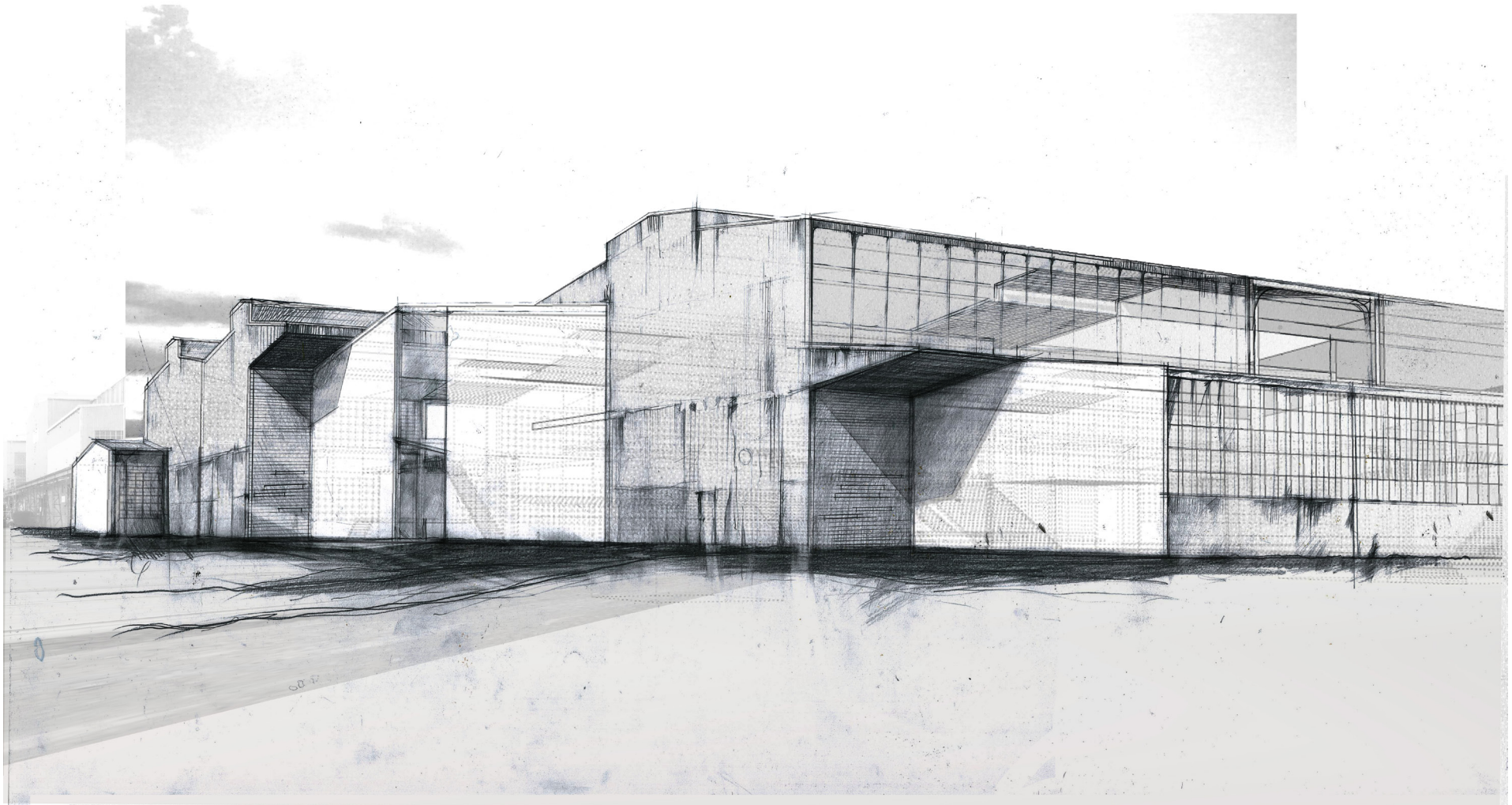


1. Cafe
2. Cafe Kitchen
3. Toilets
4. Exhibition Space
5. Entrance Building
6. Reception and Administration
7. Conference Room
8. Student Workshop
9. Ticket Booth
10. Public Theatre
11. Shop
12. Classroom
13. Student Kitchen
14. Student Common Room
15. Library Book storage
16. Library Entrance
17. Editing Suite
18. Rehearsal Space
19. Dressing Room
20. Filming Studio









**Fig 7.54: Front façade contrast.**

Although this was an earlier development of the front facade, it illustrates the goal of the 'effect of time' approach. New forms clearly contrast the old, making a point of difference. This enhances how the original fabric is perceived.

rial on the inside, which would render the outer shell as a sacrificial layer. Furniture such as the cranes, are kept where possible, but are mostly unmovable as new forms would prevent them from rolling down the length.

Along with these individual considerations, the overall design intention was to create juxtapositions that emphasise to the original fabric. The important parts of the buildings were exposed through direct contrast with the new architecture, or just left alone. This approach was prompted by a critique of the methods used in preservation, which tend to result in the 'death' of a building. Part of the value of old buildings is their age, which is expressed on worn surfaces. This approach aims to retain the effect of dereliction and to leave the aging process in progress.

## 7.6 CONCLUSION

In this chapter, I have provided an example of how the approaches developed earlier can be implemented in a New Zealand industrial context. This chapter has been specifically tailored so that understanding of these approaches is expanded, and so that the design itself continues to develop the approaches. Design tools were created to make these theories applicable in a 'real' context, and accessible to other designers. These approaches have clearly influenced the design process, particularly in the development of a form that has a specific relationship to the site. In the following chapter, the relative success of applying my approaches to the design project is discussed.

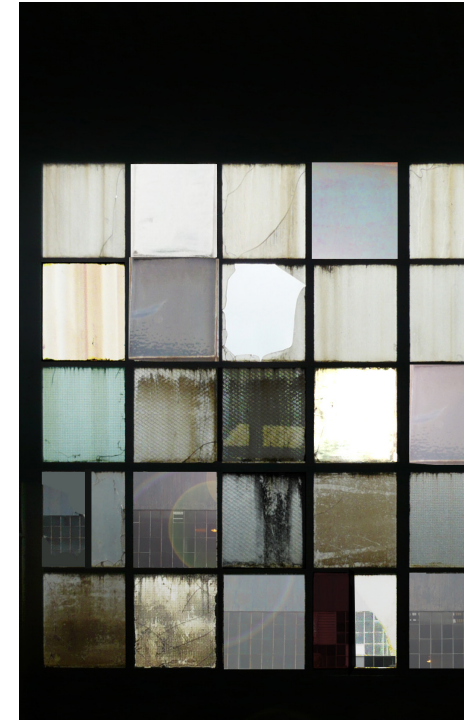


Fig 7.55: *Window concept.*  
Rather than replacing these windows, I suggest that they can be cared for in a way that is creative.

## 8.0 EVALUATION AND CONCLUSION

In this chapter, I evaluate and critique the consequences of applying my design approaches to the design process and present a conclusion to this thesis. As in previous chapters, the five adaptive-reuse approaches (the ‘stuck-on add-on problem’, the ‘surgical cut’, ‘a collage approach to conversion’, the ‘fill-it-up issue’ and the ‘effect of time’) form the structure of this reflection. The design project is assessed for its relevance and usefulness as an example for further conversion of industrial heritage. In turn, the approaches used to inform the design process are assessed for their applicability to a New Zealand industrial context. The limitations of this design process are explained and opportunities for further investigations are explored. Finally, the results of the design process are further discussed in relation to the thesis as a body of work in the final conclusion.

## 8.1 REFLECTION ON THE DESIGN PROCESS

The design argument was structured around the design approaches, which are based on research into international examples of adaptive reuse. To clarify, the design approaches are focused on issues specific to adaptive reuse. As a result, there is no mention of ideas such as, mimicking building ornament or facadism, as these relate to preservation and restoration, which are already argued against. These approaches were useful as they provided a way to start the design process, but also acted as an ideal, against which to base key decisions.

‘Stuck-on Add-on’ avoidance suggests that new additions ought to relate to the existing building. With this in mind, a form was designed that relates to the original building in terms of proportion and geometry. The process of experimenting with form could be applied to a range of buildings, but as discovered it is particularly applicable to the strong, yet simple, geometry of industrial buildings. This aspect was successful as it helped to create new insertions that meld with the existing and weave the two buildings together in a uniform pattern. Due to the effort put into developing form, the aspects of ‘materials’ and ‘connection’ pertaining to this approach were only experimented with briefly.

The ‘surgical cut’ approach is important as it is a tool that has a capacity to significantly alter the nature of a building. I found that cutting produced unusual views through the building, which enhanced the conversion. My critique of the ‘surgical cut’, however, is one that also applies to the previous approach. While cuts are crucial to a conversion, it is left up to a designer’s judgement as to how much material should be cut away. In dealing with this issue, I devised a tool that helped to choose where to cut. The tool used was a site-specific grid by which logical incisions could be made. A gridding method similar to this could be applied to other buildings, but its success still relies on the quality of the designer.

‘A collage approach to conversion’ describes a process that combines new and old fragments of construction in a layered way. This approach has a strong influence on the design process if it



used rigorously. One weakness of my design process is that I could not experiment freely with the collage technique due to the grid-like structure I chose to create. While fragments were produced as a result of this grid, there was no process by which to reunite them. A redeeming aspect of this design flaw was the application of layering. The fragments formed were layered over existing fabric, which created a juxtaposition of histories, similarly to the technique Scarpa often uses. Furthermore, the form studies discussed at the beginning of the design project also employed a collage method of representation. However, if this approach had been experimented with further, the resulting design could have been more thoroughly integrated.

‘Fill-it-up’ avoidance refers to the intention to keep viewers aware and engaged with the existing spatial qualities of industrial buildings. I became mindful that insertions are required to give people rest from the massive volumes that industrial buildings can contain. Therefore, personable places of retreat were designed in these expansive buildings. I came to realise that it is the contrast between the new spaces and existing spaces that is important, rather than avoiding insertions altogether.

Some of the efforts to avoid ‘filling up’ the buildings possibly ended in cutting the external shell unnecessarily. I imagined that if the new forms pierced through this shell, they would not be ‘filling’, but intervening with the building. While revealing the adaptation made to a building on the outside is important to signal that it has undergone changes, consideration must also be given to retaining its unique features. The final entrance design still shows the conversion on the outside, and the cuts into the exterior shell in some places, but retains more of the aged materials and little window panes.

The ‘effect of time’ approach refers to the inclusion of aged, and even sometimes ‘dirty’, materials in an adaptation project. By using this approach in the design project, a broader sense of what is conservable was discovered. Often it was not the building material itself that needed to be kept, but its continued aging. The continued deterioration is important to the aesthetic appeal of these buildings. This approach was successful because retaining materials in a derelict state provided a

strong contrast between old and new architecture.

The comparison between industrial and non-industrial conversions revealed the differing ways that adaptive reuse is carried out. This exposed issues and methods that apply specifically to the successful conversion of industrial architecture. Unlike the approach to general historic conversions, when adapting industrial architecture, part of the aim is to incite appreciation. Conversions to non-industrial, historic buildings are often subtle, with little alteration, as people tend to be inherently attached to them. Alternatively, conversions of industrial buildings allow for more creative freedom. Architects are usually given discretion to design freely by owners of industrial buildings, which is a great advantage in adaptive reuse projects.

This research argues for an amalgamated adaptation where the building reflects its setting. Collectively, these approaches suggest an amalgamated conversion can be achieved by treating the industrial building fabric as a set of materials to be used in conjunction with new architecture. Investigation into Scarpa's methods highlighted amalgamation as the most integrated and well-considered intervention approach. While 'add on', 'inside to out', 'put on' and 'installation' are relevant in certain situations, I found that they can all be incorporated in an 'amalgamation' method. Consequently, these approaches are developed to produce conversions that are respectful to the original building, beyond merely preserving the fabric.

## 8.2 LIMITATIONS AND FURTHER INVESTIGATIONS

The limitations uncovered by the design experiment often lead to further research possibilities. Firstly, attention is given to the aesthetic focus of this investigation. Rather than exploring issues such as how memory could be retained or how previous functions of building could be expressed, a conscious choice was made to focus on the physical aspects of conversion. This was decided because the physical aspects form part of the basis for the immaterial factors that are created in

people's minds. Additionally, the aesthetic aspects of adaptation are a strong personal interest of mine.

Another limitation of this research is that it excludes surveys into how people in the nearby community perceive the building and how they might reflect on a proposed design for the site. Therefore the results of the community's perception of this design study are unknown. While this is a potential route for further investigation, as already stated, this research focused on physical aspects of conversion design. This research brings international approaches to a New Zealand situation to assess how they could be implemented, rather than analysing particular communities. Acceptance of a design in one community would not necessarily equate to acceptance elsewhere. While this research does not prove that adaptive design could change community perceptions, further study into this could be illuminating.

One limitation that may have influenced how well the design responded to the approaches is the extensive design program. The complex requirements of the program changed the overall design as spaces were altered to accommodate certain functions. The 'film hub' was chosen because it would force changes to be made within the building. To further assess the approaches, it would be worth testing how other potential uses would change the resultant design.

Similarly, testing alternate sites would also create more conclusive results. The sheer size of this project may have prevented a more detailed level of design to be achieved. As the Railway Workshops are so large, there was a focus on creating a form that would be coherent across the whole site. Further research into how adaptive reuse could be applied to smaller projects may result in different outcome. More testing in a variety of situations would result in greater legitimacy of the approaches and the ideas involved in them.

### 8.3 FINAL CONCLUSION

Many buildings that make up New Zealand's industrial architecture heritage have been lost, either through demolition or because they have been preserved in a way that does not respect their continued life. Built industrial heritage is usually lost or undervalued because people have little appreciation of it. This research attempts to change the way these buildings are currently treated by retaining them through adaptive reuse. By employing this method, a unified architecture is created through the use of existing building elements in combination with new additions. Constructing 'architecture' from devalued 'rubbish' heightens people's awareness of our industrial heritage and creates a face for adaptive reuse as a style.

The aim of this research was to develop design strategies and provide an example of how adaptive reuse could be used to regenerate industrial architectures in New Zealand. This thesis began by looking at *why* we would want to protect these buildings. This is crucial in New Zealand as industrial buildings are not often thought of as having a heritage status. By understanding the significance industrial architecture may hold for people, the strengths and weaknesses of these buildings were clarified. Industrial buildings are important as they contribute to visual variety in a built landscape and the collective memory of people in the community, which becomes more ingrained as these buildings get older. Yet, these buildings are still not 'durable' or significant as they remain unpopular in the public eye. This thesis argues that an adaptive reuse approach holds potential for making industrial relics desirable.

The second part of this research answers the question of *how* we might intertwine existing structures with new forms in a way that improves appreciation of industrial buildings. As concluded earlier, by turning function-based industrial buildings into 'art' or 'architecture', the community's perception of these buildings can be enhanced. This part of the research was informed by four international case studies that highlighted different techniques of conversion and the issues surrounding them. Turning the analysis of these case studies into specific design approaches was a productive way of understanding the information and applying the ideas developed to the design



process. Using the approaches in the design process developed them further and helped to show other designers how they could be applied. The ideas within the approaches once tested and evolved through the design process became the products of this research.

Although I was concerned with finding a site that represented the modern industrial ruin in New Zealand, and a program that was feasible, these two factors were largely irrelevant to the research. These concerns were irrelevant as this research focuses more on *how* these design ideas are implemented, rather than on the realistic success of the project overall. However, as the new function of a building is a major factor contributing to its success as a conversion project, it was important, yet difficult, to conceive of a realistic program. In saying this, as long as industrial buildings perform *some* function in society they are likely to be viewed in a better light. A building that is devoid of function tends to be meaningless to people as they cannot interact with it, merely enjoy its presence, if that itself is possible.

A related issue is the significant cost of this type of reconstruction. While conversion projects can be financially rewarding in time, adaptations can often be more expensive than building new. This would most likely be the case for the type of adaptation that is advocated in this thesis. However, I argue that it is worth investing in conversion projects because they have potential to enrich the communities they surround. This is a prominent reason why some form of public function may be required in order to realistically achieve a conversion project like the one proposed here.

The significance of this research lies in its usefulness to designers in the future, as renovations of industrial architecture in New Zealand may become more common. The approaches devised can, theoretically, be applied to all types of industrial building, with this design project as an example of how these ideas can be implemented. The intention of this thesis is not to create model architecture to be replicated, but to advocate for site-specific architectures that amalgamate with the original building. Furthermore, this thesis encourages adaptations in which the viewer's experience of existing fabric is enhanced by the new fabric and vice versa.

It is impossible to suggest exactly how to design as it is often the quality of the designer that makes a project successful. However, the design approaches advanced do provide some guidelines for design. At the least, they offer thought-provoking contributions to the existing theory around adaptive reuse and how it can be applied to the adaptation of the 'modern industrial ruin' in New Zealand.

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## APPENDICIES

### APPENDIX ONE:

**Shipping:** This was a particularly early industry of New Zealand, as rivers and ocean were the main method of transportation around the country. Many early towns are based on ports and as we can see today, our main cities are still situated there.

**Flax Production:** This industry is highly specific to New Zealand and relied on the knowledge of Maori people, who were familiar with over sixty varieties of flax. The flax fibres were used for a very tough rope often used on sailing ships. The Manawatu region was an important area for this industry and in particular the Foxton district which had a number of flax mills.

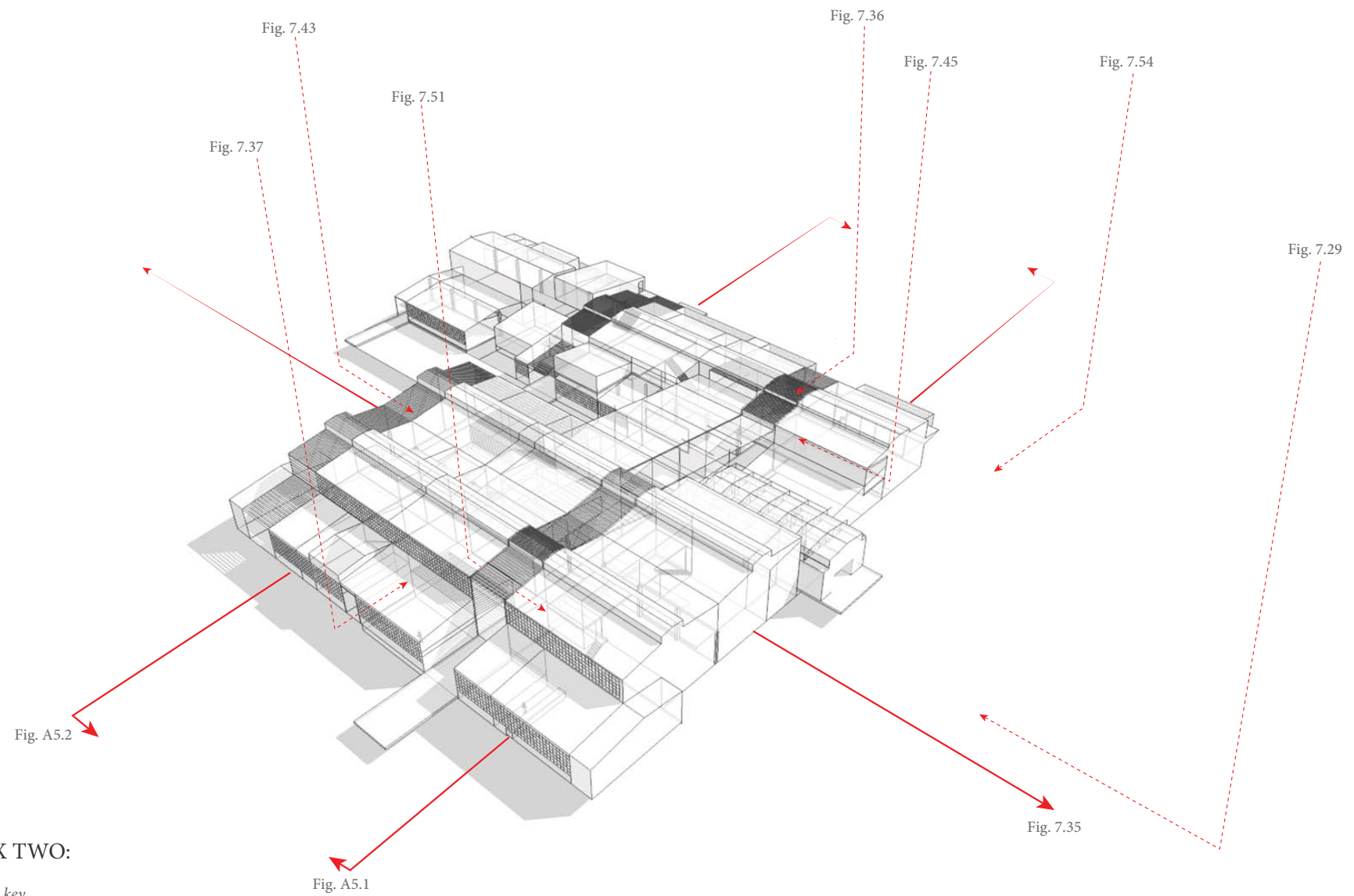
**Forestry:** A large industry due to New Zealand's rich source of timber.

**Agriculture:** Sheep and dairy farming are well known New Zealand industries. Farming has resulted in many different types of buildings, some which are iconic to the New Zealand landscape, such as wool stores, freezing works, and associated farm buildings. Due to the large amount of meat production in New Zealand, the frozen meat industry was developed.

**Mining:** This includes industries in coal mining, gold mining, copper and antimony mining. The gold rushes in New Zealand were a time where fortunes were to be made quickly. This was a prevalent industry in the South island, particularly in Otago.

**Industrial Engineering:** Within this range of industry, a major engineering field was in railway workshops. By the 1880s railway workshops were established in all the main centres.

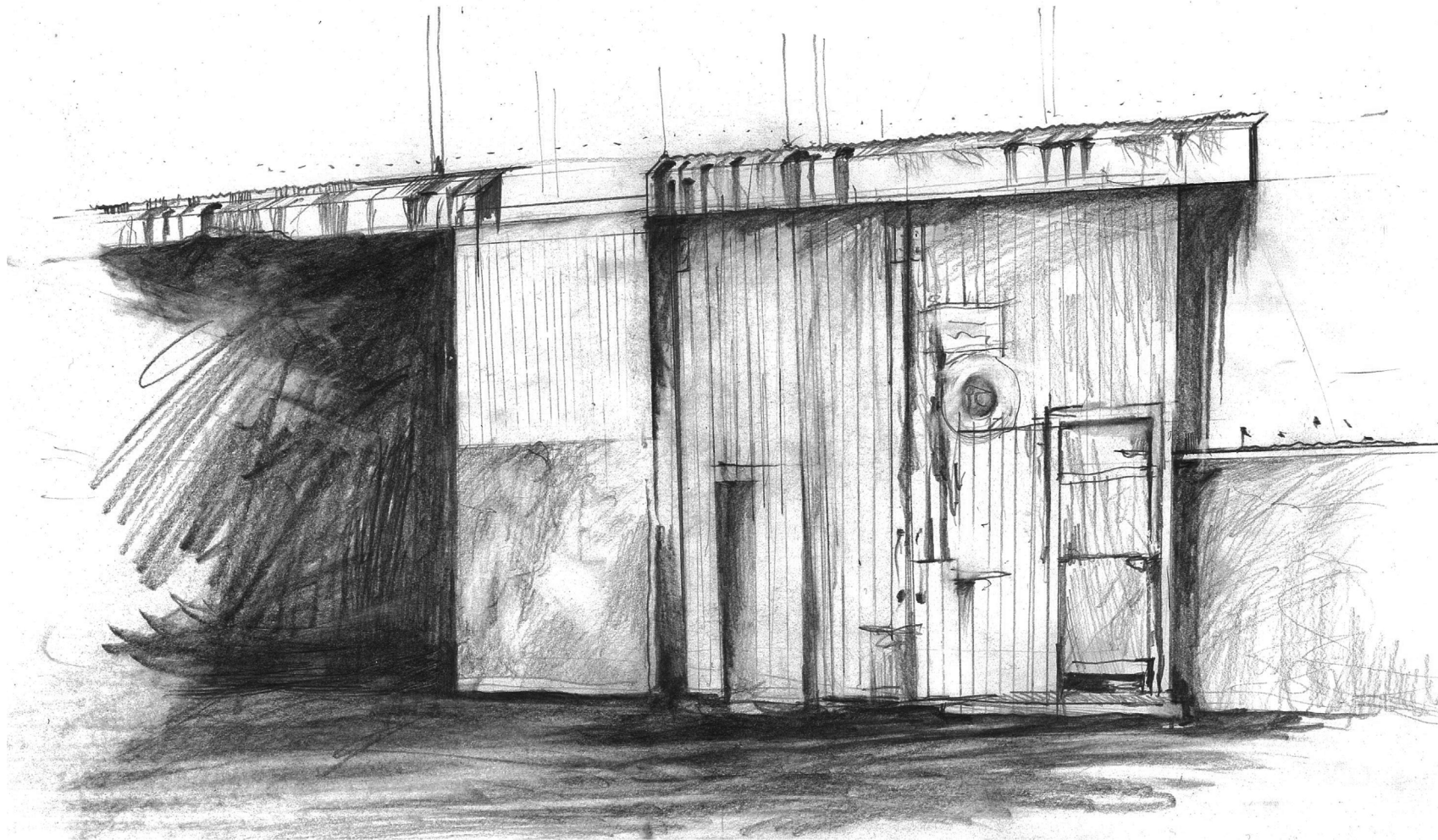
**Other industries include:** brewing, flour milling, tanning, gas works, brick making, lime burning, Portland cement manufacturing, papermaking, electric power generation, shoe manufacturing, sugar refining, and various other miscellaneous industries.



## APPENDIX TWO:

Fig A2.1: *Image key.*

This image shows the angles from which each of the perspectives have been taken.



### APPENDIX THREE:

This is a series of site drawings that were made to illustrate the emotive qualities of this site. These drawings were displayed as a set in the 'Publication' exhibition where work from final year architecture was presented.

Fig A3.1: *Site drawing, doors*



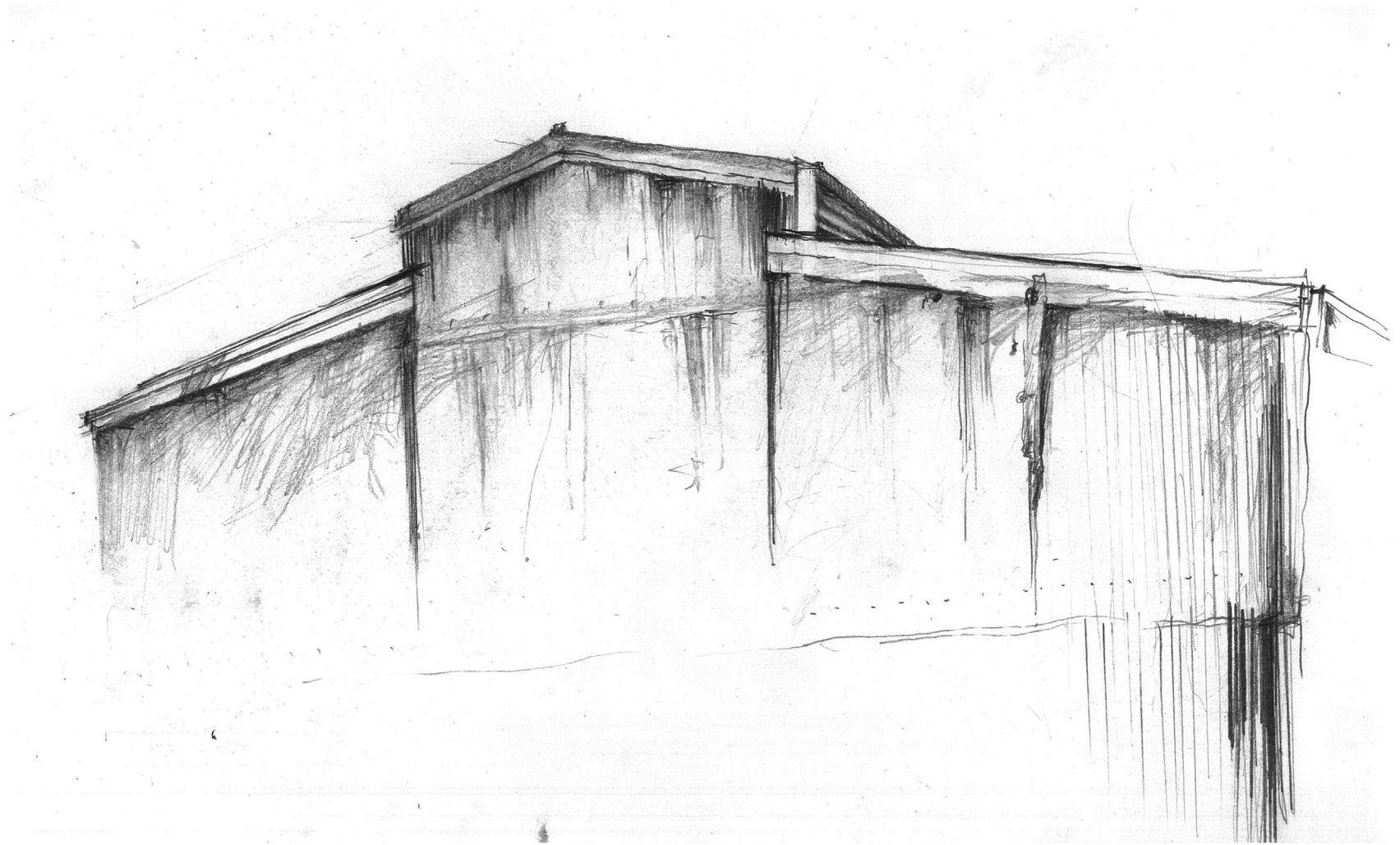


Fig A3.2: Site drawing, skyline.

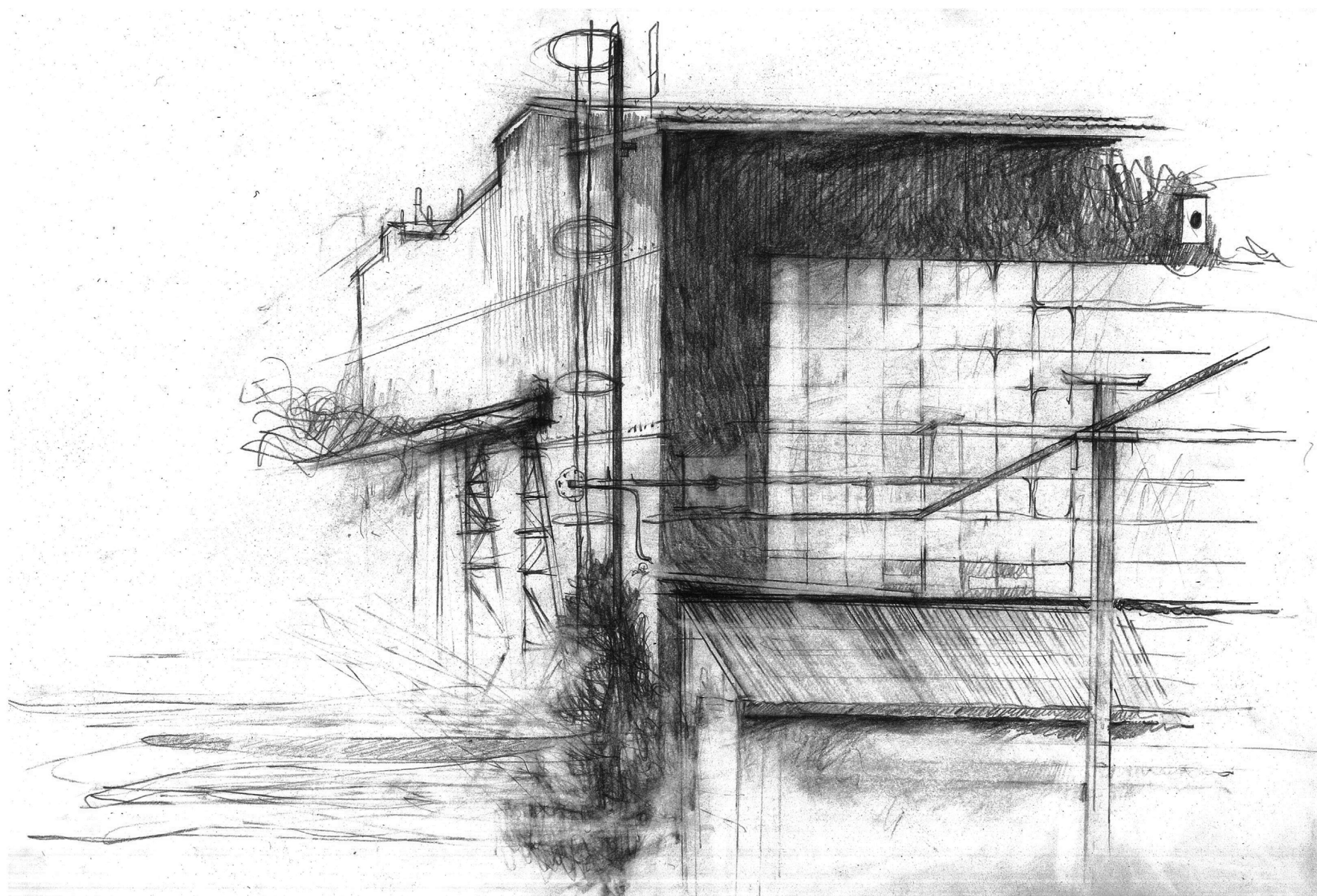


Fig A3.3: Site drawing, steel wagon repair shop.



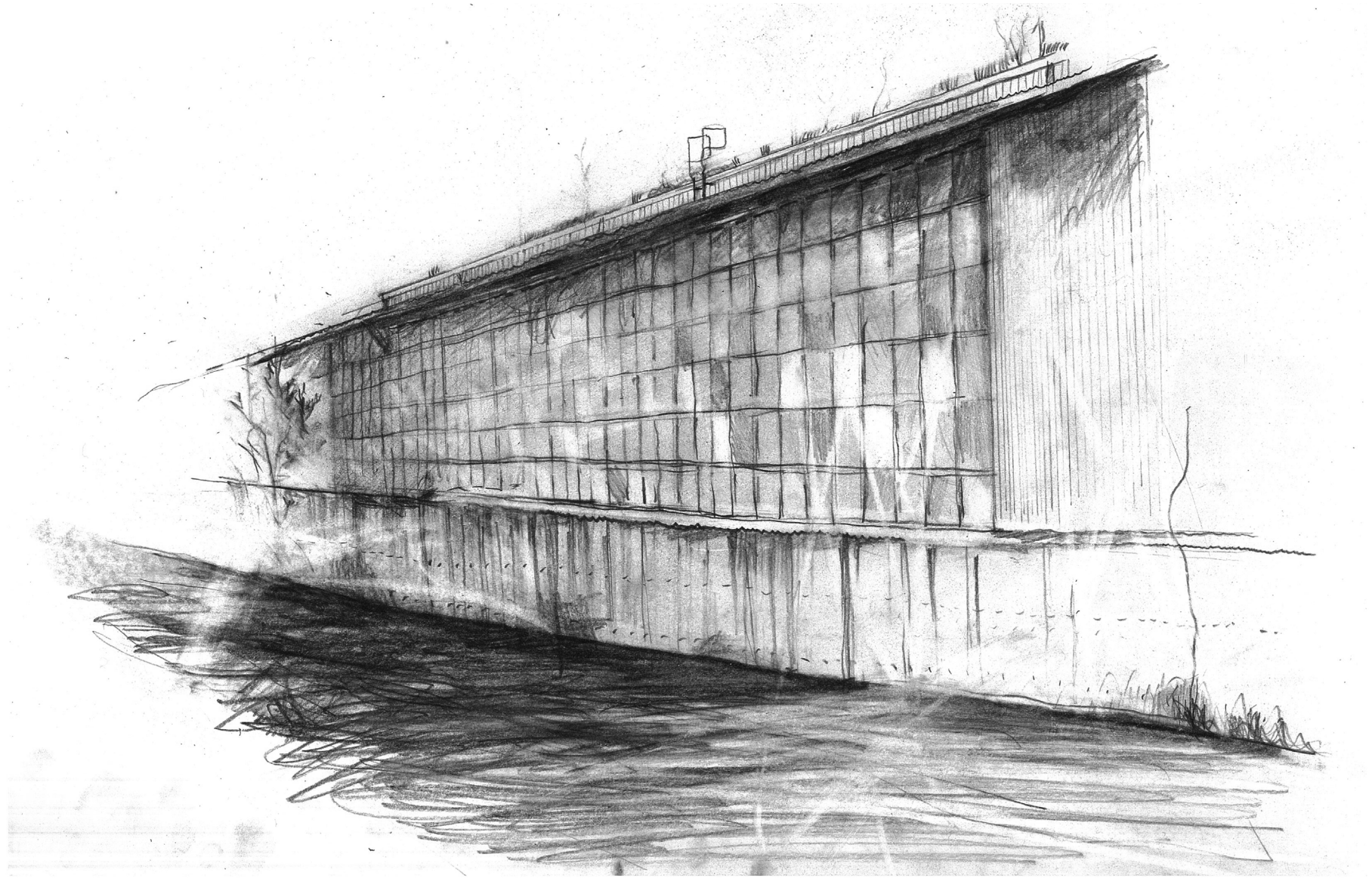
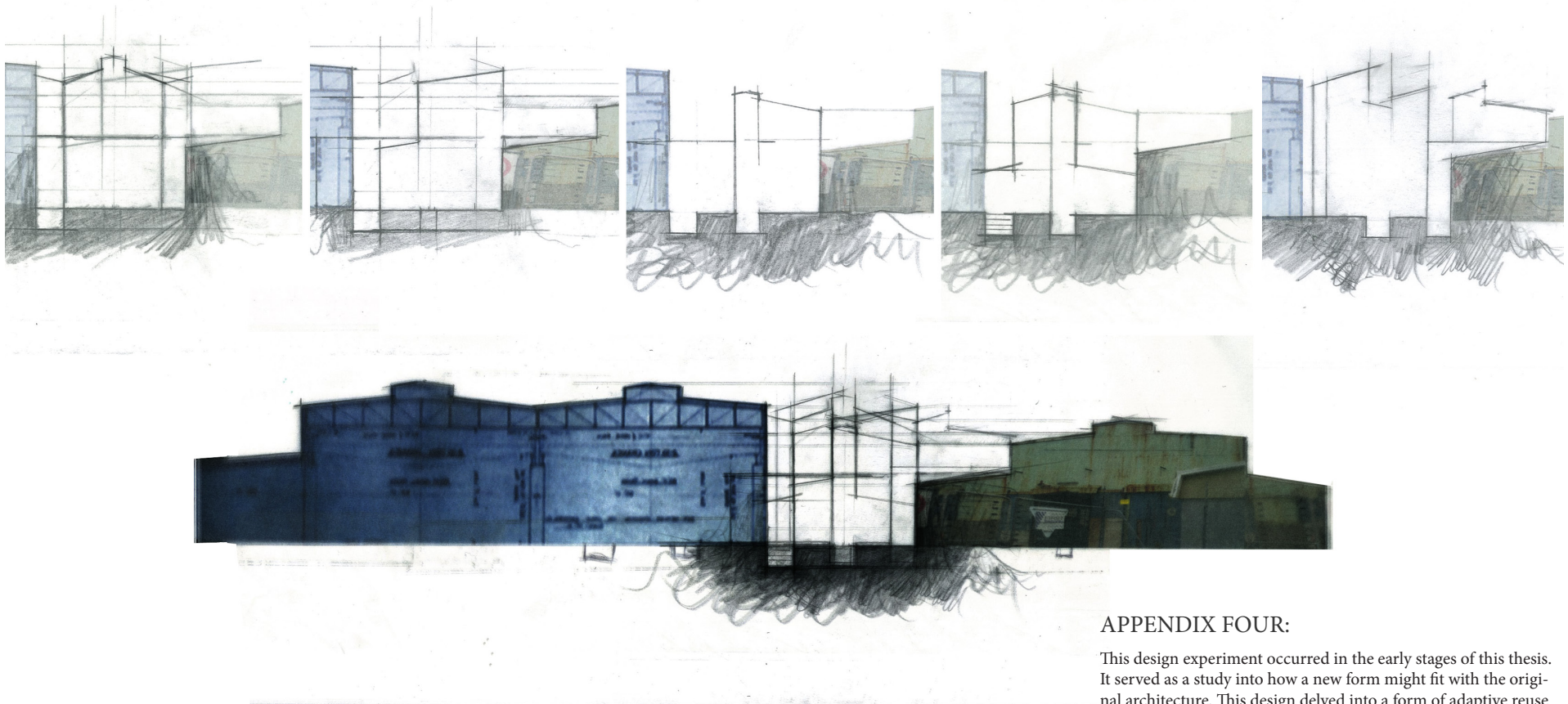


Fig A3.4: Site drawing, windows.



#### APPENDIX FOUR:

This design experiment occurred in the early stages of this thesis. It served as a study into how a new form might fit with the original architecture. This design delved into a form of adaptive reuse which does not intensively use the original structure. It helped to define ideas of proportions which reflect the original building. It looked into using the gap between the two buildings as a connecting spine which could link them together

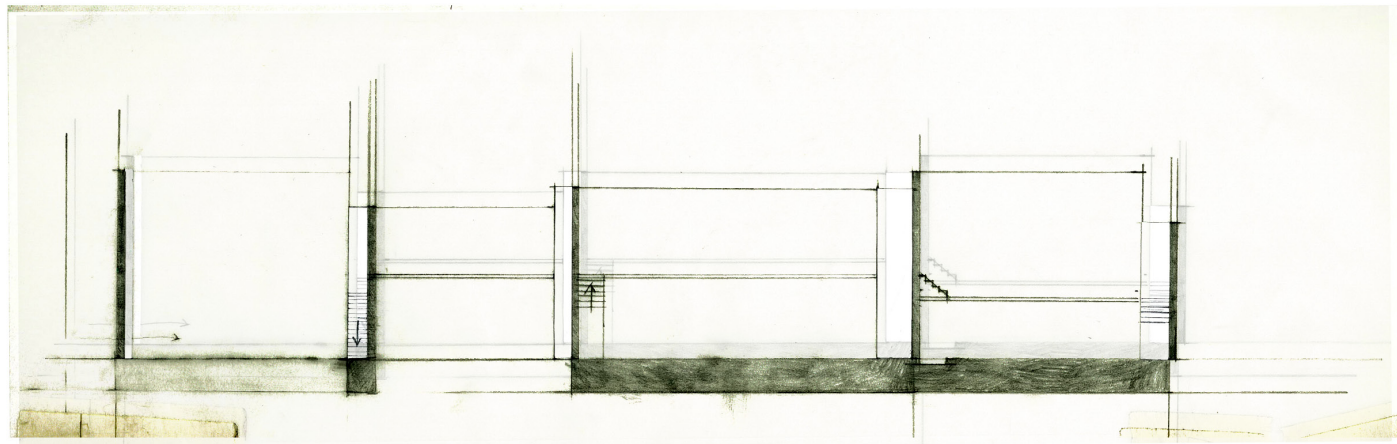
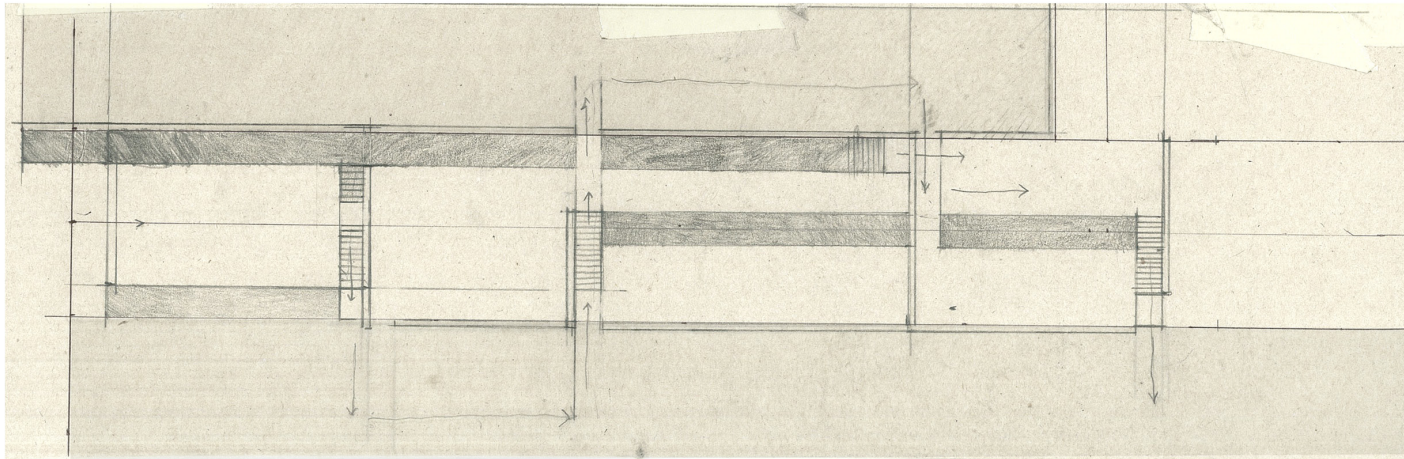
*Above, Fig A4.1: Pre-design experiment, transverse sections.*

I designed a variety of shapes which had some type of connection to the original shapes. These were spaced along the length of the spine and extruded until that form reached the next shape.

*Below, Fig A4.2: Pre-design experiment, elevation.*

This an impression of what these forms might look like in elevation. It shows how each of the forms relate to one another.





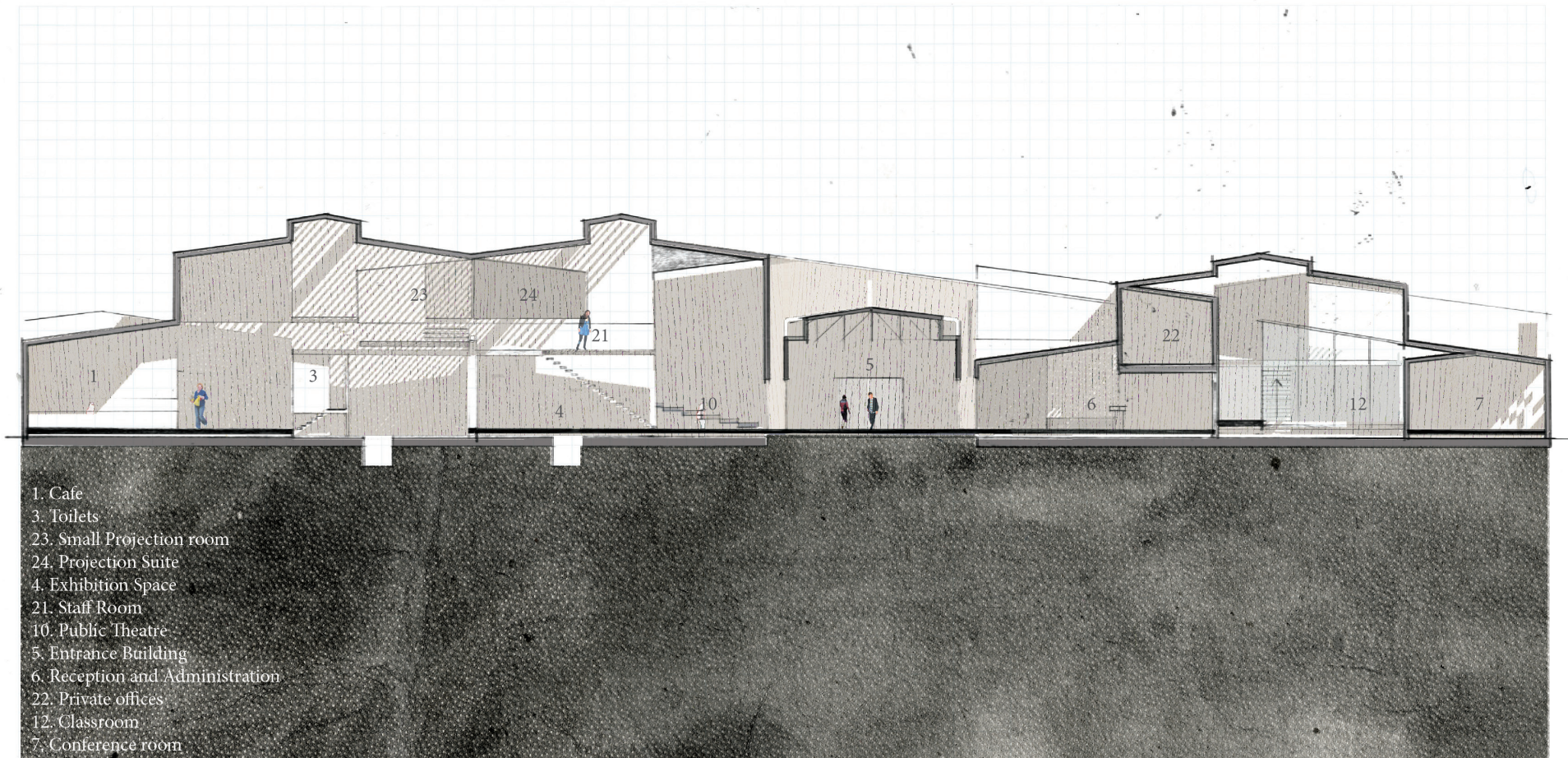
Above, Fig A4.3: *Pre-design experiment, lower plan.*

This view shows how these forms might begin to connect with the existing bulidings through walkways and bridges.

Below, Fig A4.4: *Pre-design experiment, longitudinal section.*

This Image shows how each section might have a different floor level and height. it also represents how the images from Fig A4.1 are literal walls as well as extruded shapes. These walls are heavy concrete and often have a stair next to them.

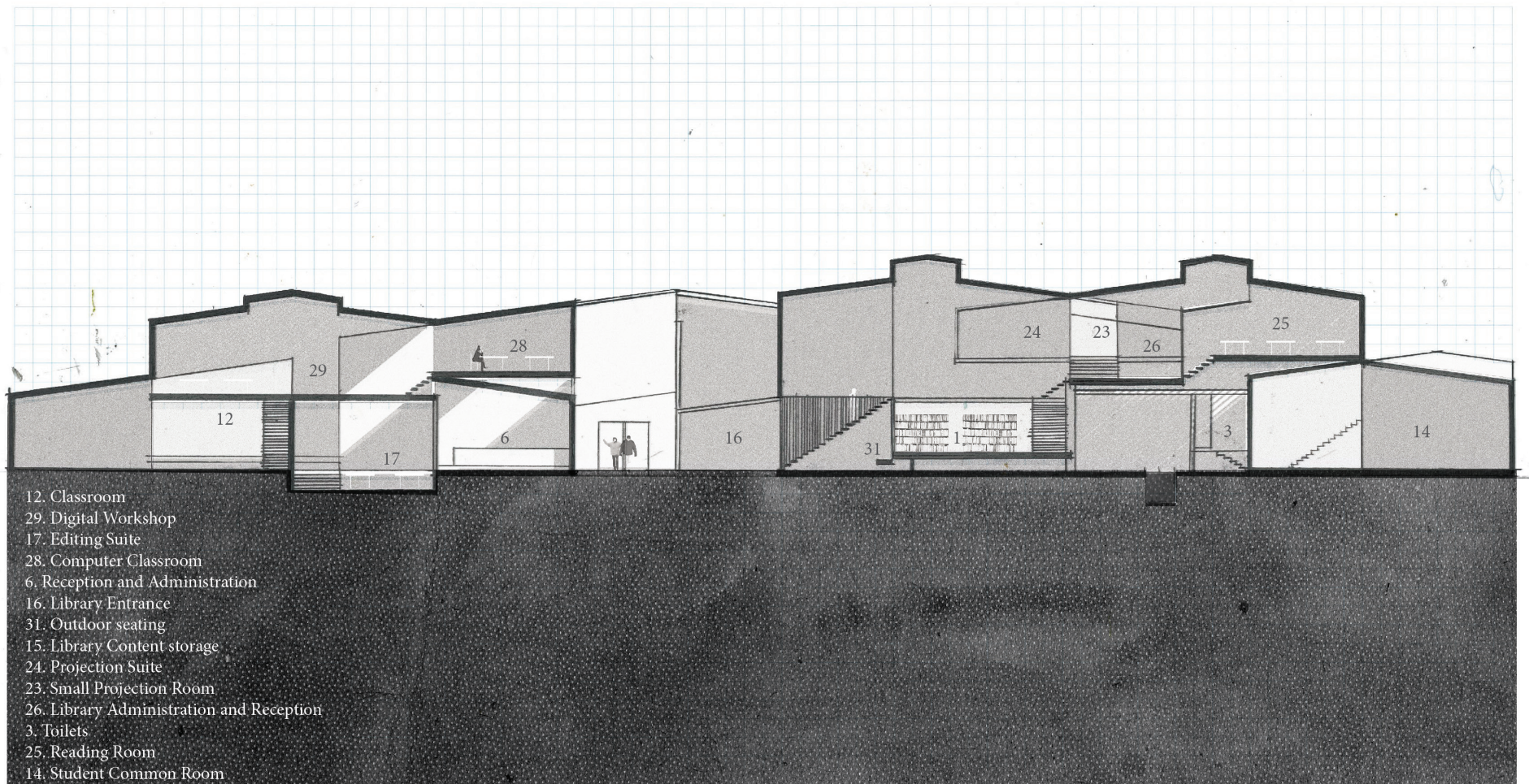




## APPENDIX FIVE:

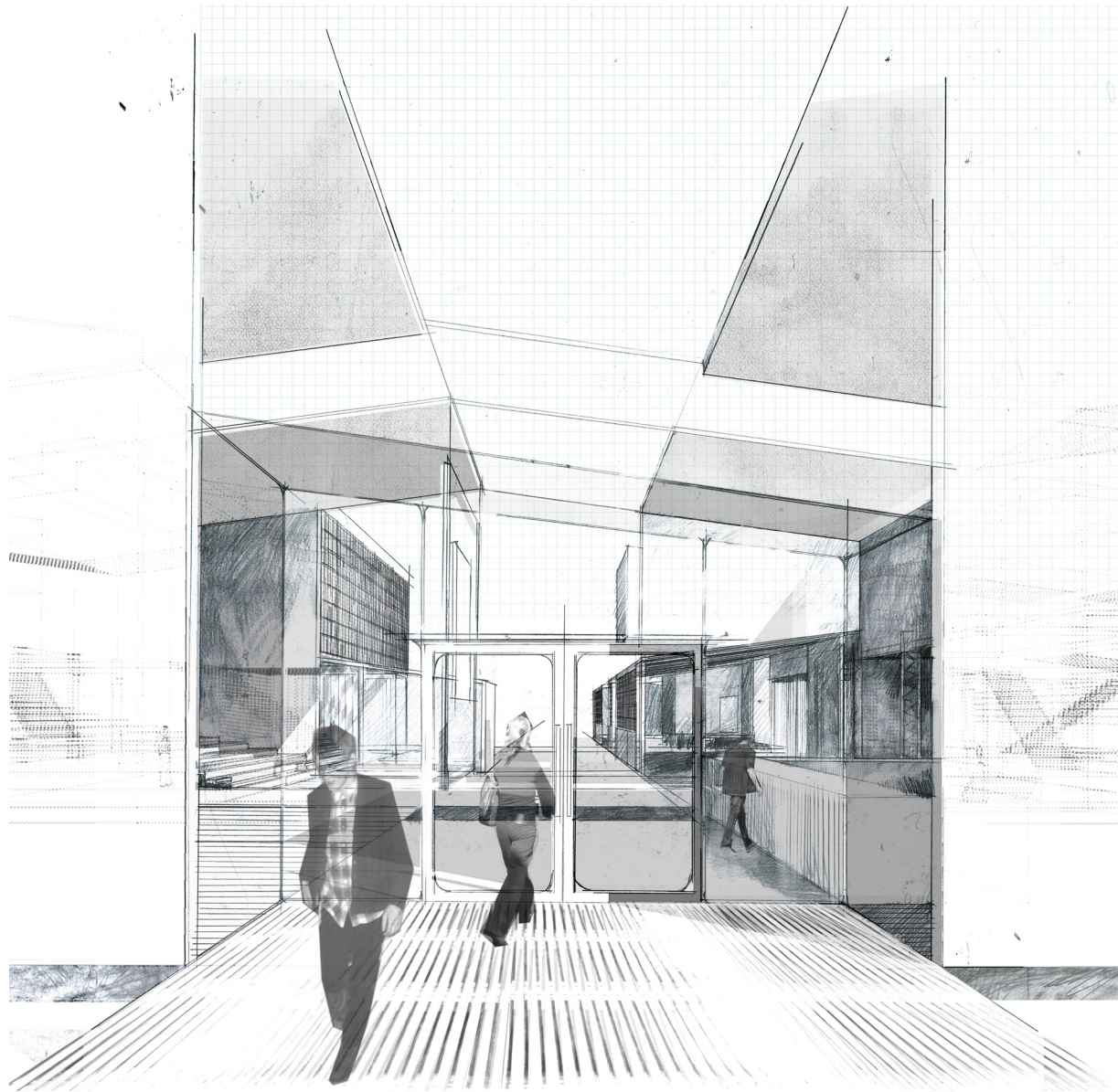
Fig A5.1: *Transverse section through the front of the building.*  
 This image shows how the new floors are raised above the existing. It also shows where the pits have been retained in the buildings.





**Fig A5.2:** *Transverse section through the back of the building.*  
 This image shows the varying levels of the mezzanines in the library space. This is a tactic which helps to avoid 'fill-it-up' because a visitor filters between insular spaces, but it still aware of their surroundings.





#### APPENDIX SIX:

*Fig A6.1: Early entrance design.*

This entrance was later rejected because of two issues. The first was that the space was so large that it did not have a sense of contrast with the existing forms. The second issue is that this entrance is that the first half of both of these buildings needed to be cut away. I decided that the view shown in Fig A3.3 was a particularly special part of the building and could be better dealt with.

