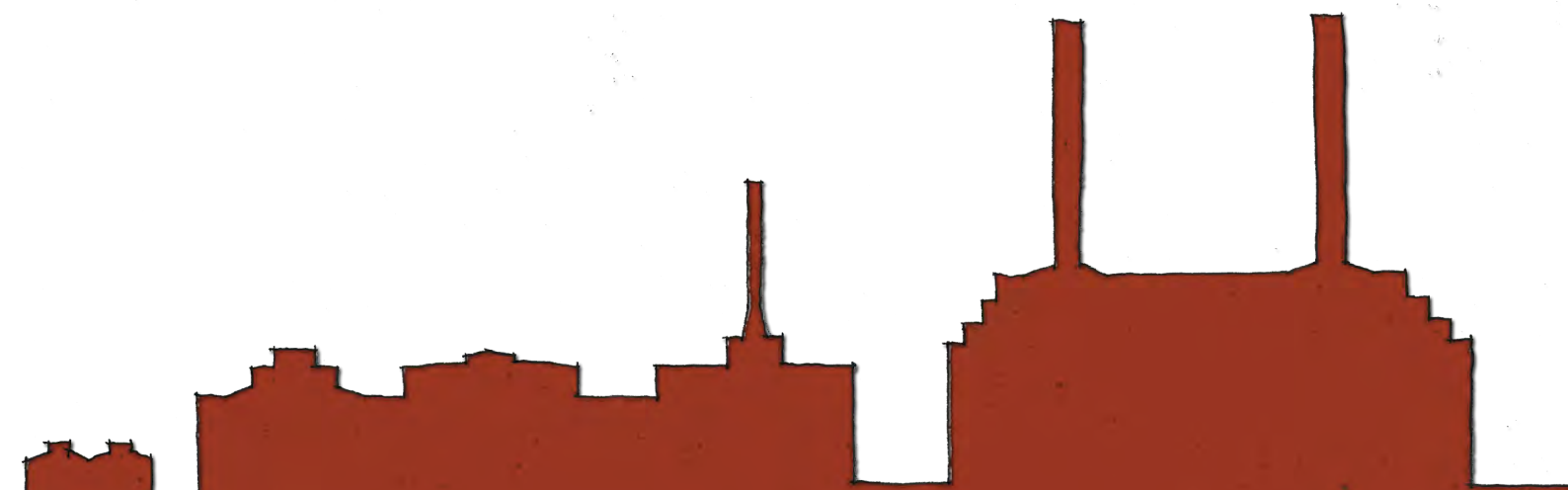




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[ preserve . inte  grate . intervene ]

progression at the Pretoria West Power Plant



[preserve . integrate . intervene]

progression at the Pretoria West Power Plant

- tracy leigh clark -

Submitted in fulfilment of part of the requirements for the degree of Magister in
Architecture (Professional) in the Faculty of Engineering, Built Environment and
Information Technology, University of Pretoria

November 2010



to my father, Chris, and his father, Richard
the men who began a legacy of architecture in our family



[Fig. 1] Some of us from 'The Old Power Plant' Framework group whilst on a site visit, from the left: Tracy Leigh Clark (me), Izaan Pauw, Mias Claassens, Jaco van Biljon and P G Smit



thank you...

[**chris clark**] [jill clark] [**leigh brendon barnes**] [danie joubert] [izaan pauw] [mias claasens] [pg smit] [**caroline clark**] [jaco van biljon] [calayde davies] [angelica koch] [arthur barker] [muse] [prof. piet vosloo] [dusty saunders] [**darryn botha**] [johan swart] [**marga viljoen**] [ilse behrens] [wallace honiball] [henry boardman] [jacobus erasmus] [goldfish] [justin bieber] [chemical brothers] [**jhono bennett**] [prodigy] [placebo] [woolworths]

[abstract]

This thesis is about the adaptive reuse of an old turbine hall at the Pretoria West Power Plant. As part of a proposed urban framework the Power Plant is developed as a node that connects the Pretoria CBD to Atteridgeville.

The driving concept generator for this scheme is the idea of progress.

The Turbine Hall has progressively been extended over time. This progress is demonstrated through increasingly dominant new interventions which also demonstrate where the building opens up to the public.

A program for the building is based on the results of site analysis, and in response to the urban framework. This program stimulates progress for people by creating a place that supports the production of entrepreneurs and encourages economic upliftment. The adapted building will contain an affordable housing component, rentable workshops, training facilities where people can learn business skills and crafts, a large artists' studio, a restaurant and an arts and crafts exhibition gallery. These functions support each other and create an environment where people can live, work and socialise.



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[1]



VOM HAGEN STREET

D.F. MALAN DRIVE

PRETORIA WEST

PROCLAMATION HILL

SHOW
GROUNDS

POWER STATION SITE

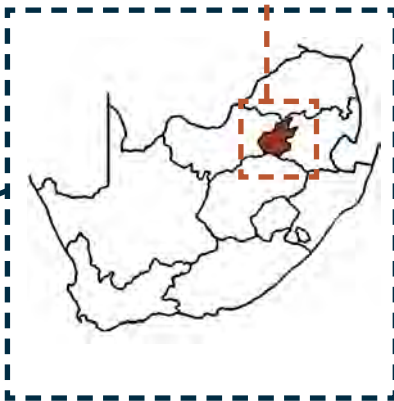
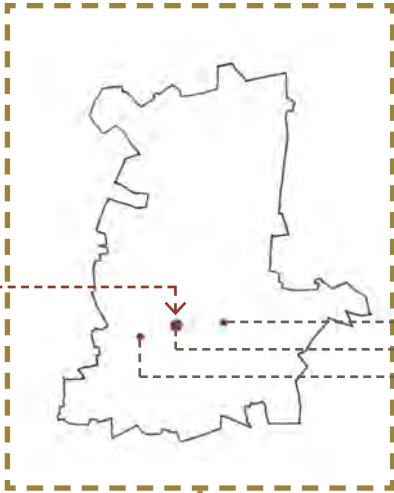
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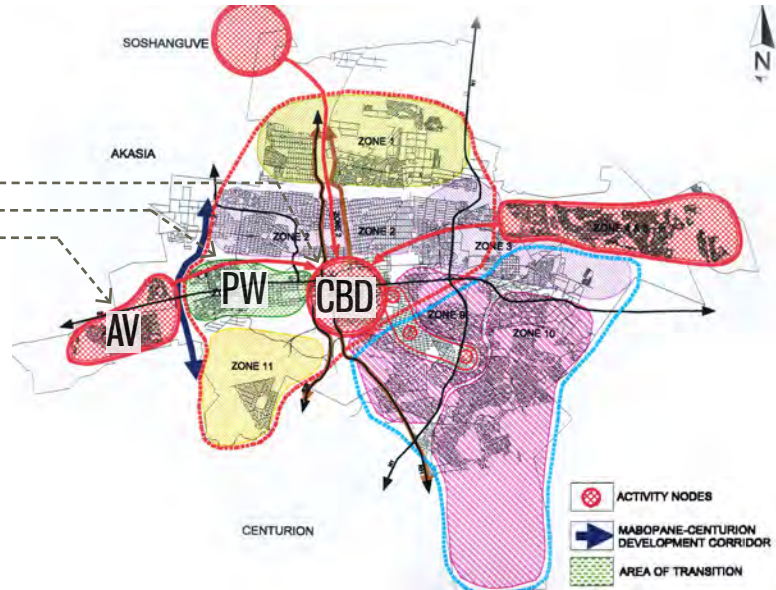
[chapter 1] background: urban framework

[Fig. 2] Aerial photograph of Pretoria West

[Fig. 3] Worldwide locality diagram



This thesis works within a framework that identifies the Pretoria West Power Station as a site of particular interest and potential. The location of the Power Station is directly between the Pretoria CBD and large residential areas, this combined with its proximity to good transport connectivity suggests the site as a good location for an urban support cell which encourages the development of the CBD as well as defining an activity corridor from Atteridgeville all the way to the CBD.



[Fig. 4] Map identifying the Pretoria CBD and Atteridgeville (AV) as activity nodes and showing Pretoria West (PW) as an area of transition between these nodes.

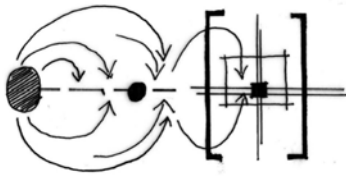
vision and framework

The vision for Pretoria West begins by looking at the whole of Pretoria West and analysing and understanding its context and connections and developing a vision for this area.

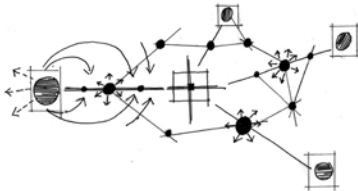
about pretoria west

Pretoria West is the area spanning approximately 3kms between D.F. Malan Drive to the East and the Power Station to the West, to the North Vom Hagen Street borders it and to the South it is defined by the rail line.

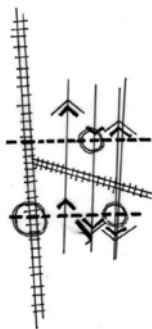
This area is characterised by light industrial activity; mostly focussed on the motor industry, as well as small residential houses and a few low-rise flats. Also of significance is that this area is a direct extension of the CBD grid and has very good access to public transport, especially via rail. Places of significance in Pretoria West are the Pretoria Show grounds



[Fig. 5] Sub-support system for the city of Pretoria; diagram demonstrates the location of Pretoria West along an activity spine between the CBD and Atteridgeville.



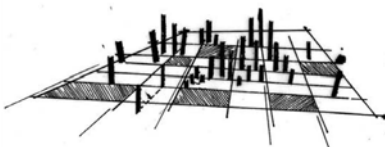
[Fig. 6] Diagram Demonstrating a network of sub-support cells around the CBD.



[Fig. 7] Existing urban infrastructure.



[Fig. 8] Regional and national connectivity.



[Fig. 9] Urban fabric of multiplicity.

and the Pretoria West Power Station, which is a prominent landmark of the area.

However what is most notable about Pretoria West is that, in theory, considering its extremely close proximity to the CBD and its excellent transport links, one would expect it to be an area of much higher density and activity than what, in reality, it actually is. Pretoria West most definitely appears to be a lost and forgotten part of Pretoria, while there are numerous spatial frameworks and development plans laid out for the city and many of the surrounding townships, Pretoria West has yet to feature in any of them.

vision for pretoria west

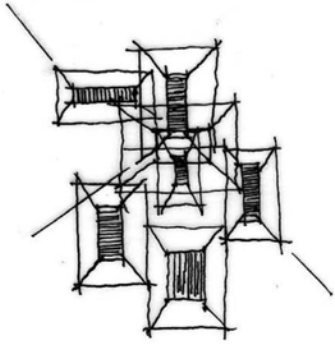
Part of the vision for Pretoria West is to develop it as a **sub-support system for the city of Pretoria** (fig. 1.5), sprawling weakens the city fabric and the city core cannot be developed without urban support cells. The location of the Pretoria West industrial cell can assist in the focus of energy from Atteridgeville towards the city and the development of an activity spine. This cell is ideally placed to aid in the densification and support of other frameworks that have been developed in and around the city and the vision is for this productive cell to eventually form part of a **network of various sub-support cells** (fig. 1.6) around the CBD.

Pretoria West already has strong **existing urban infrastructure** (fig. 1.7), with good rail connections and is located along existing and future bus and taxi routes, the existing grid is even a direct extension of the city core. These things imply that this area can far exceed its current densities and makes it a direct and manageable cell for support and densification to the CBD.

This cell can support a range of programs because of its direct connection via rail to provincial and nation systems of production and distribution, thus achieving **regional and national connectivity** (fig. 1.8) for this cell. This unique character should be cultivated in order to reach this cell's full potential as a productive quarter.

Across the study area there is the **potential for hybridity** in program, urban spaces and infrastructure and there is vast potential for economic, social and sustainable urban growth. The existing area has a large focus on production and the vision is to carry this essence of production throughout the vision for Pretoria West and to encourage the development of an **urban fabric of multiplicity** (fig. 1.9).

The **perception** people already have about the Pretoria West

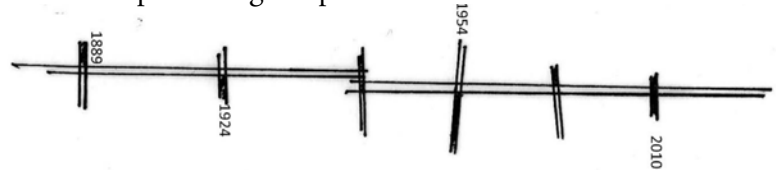


[Fig. 10] Perceptions

[Fig. 11] Industrial heritage

area is one of its largest downfalls, whereas the truth about levels of danger and crime, pollution and poverty are in large contrast to reality. Even based on nothing else but its excellent proximity to the CBD Pretoria West should be a very sought after place to be, with a lot of opportunity for positive development such as smart industry and housing, landscape urbanism and various other hybrid design theories can be applied to **develop a more positive image** for the area.

A very important part of the vision for Pretoria West is **managing the industrial heritage** (fig. 1.11) of the area and integrating valuable existing building stock into the urban fabric and preserving the productive nature of the area.



The vision for Pretoria West has a very long-term scope, with the goal being to greatly improve the area so that it effectively serves as a support to the city and a connection to outer lying areas. Maintaining the area as a light industrial area is also very important as well as finding hybrid functions that compliment the productive nature of the cell. The Power Plant was identified as an icon in this area and the framework for development that has been designed for it has been developed to support the vision for Pretoria West and use the Power Plant as a catalyst, anchor point and model for development throughout the Pretoria West area.



[Fig. 12] Photograph of how the power station looks today, highlighting the old part of the plant that is shown in the historical photograph (fig. 13), one can see how much the plant has grown over the years.



[Fig. 13] Old photograph of the Old Power Plant from 1932

[Fig. 14] Aerial Photograph with outline highlighting Old Power Plant Site.

the old power plant

The Pretoria West Power Plant is located on a large (approximately 1.5kms from north to south), mostly open site, on the eastern edge of Pretoria West, the Power Station is a large and prominent building that contributes character to the area.

Municipal Power owns the power station and the land around it. The original power station was built and first occupied in 1924. In 1952 an entirely new power station was built on the site alongside the old power station. Due to the fact that it would have been too expensive to demolish the old buildings they were simply abandoned and left vacant, they still stand to this day, derelict and falling further into disrepair.

The power station that was built in 1952 is still operating to this day. The station was temporarily decommissioned but was brought back into service when Eskom started to have problems with their service delivery, however the technology running at the power station is still the same as what was installed in 1952 and is becoming increasingly financially viable to keep running, which is why in the next 10 years the power station will be decommissioned permanently. Unfortunately it is not viable to refit a power station with modern power generating technology, so without creative intervention the power station is destined to meet the same fate as the early 1924 buildings and be left to stand vacant and unused.



development framework for the old power plant

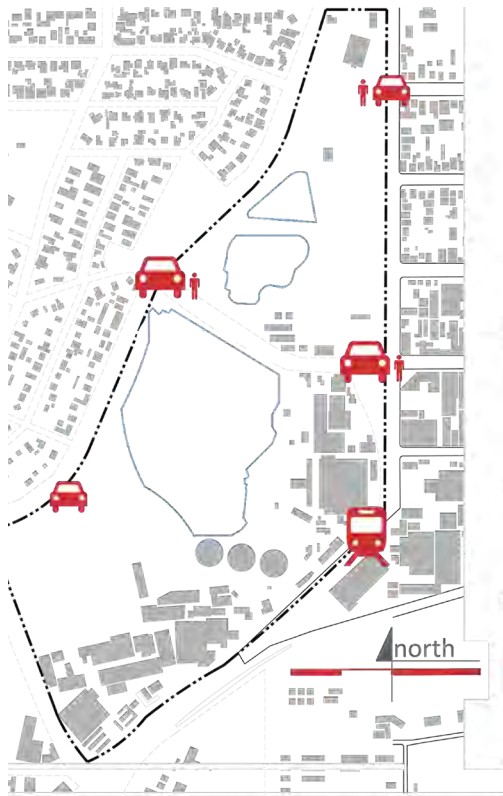
The intentions of this framework is to develop The Old Power Plant site as a node along a spine of activity between Atteridgeville and the CBD, to use the site as a gateway that acts as a funnel for people towards the city. The intention is to take advantage of existing good rail and road connection to the site for this purpose.

Having been owned by the municipality this large site has always been inaccessible to the public, the framework moved to make the site as permeable as possible and entirely open to the public, essential give the space back to the people, and in this way fulfill the existing public curiosity about this mysterious large piece of land.

One of the most important characteristics of this site is its industrial nature, it is very important that new development emphasizes and takes advantage of the opportunity for diversity that this site presents, from industrial to agricultural.

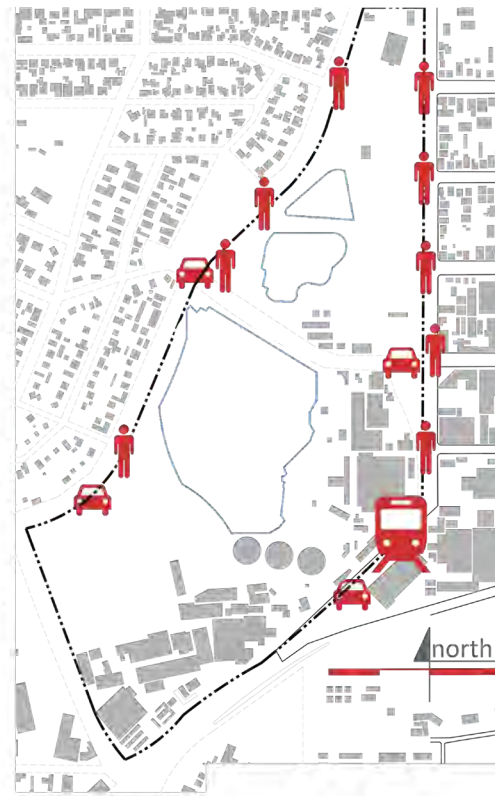


[Fig. 15] Framework for Old Power Plant Site



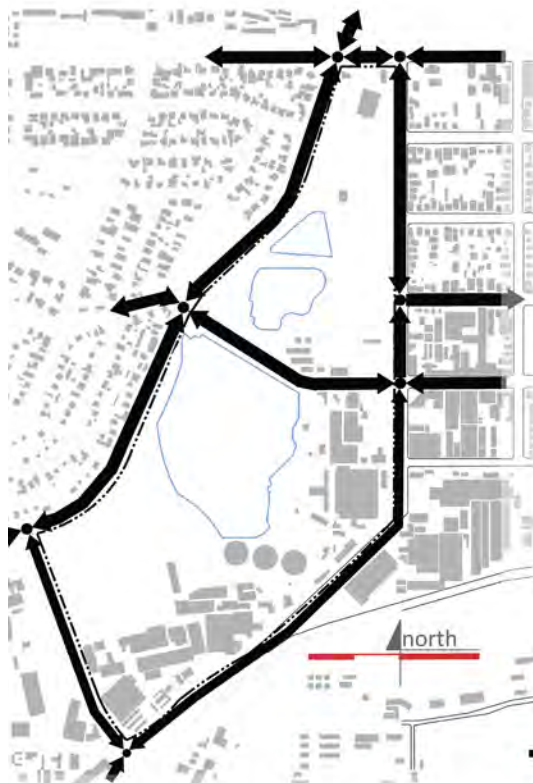
existing access

- activate
24hour amenities
- increase
pedestrian activity
rail activity
- slow down
motorist manoeuvres
- breach
park and campus access
- develop
produce and trade access



new access

[Fig. 16] Increasing access to the site as proposed by the framework.



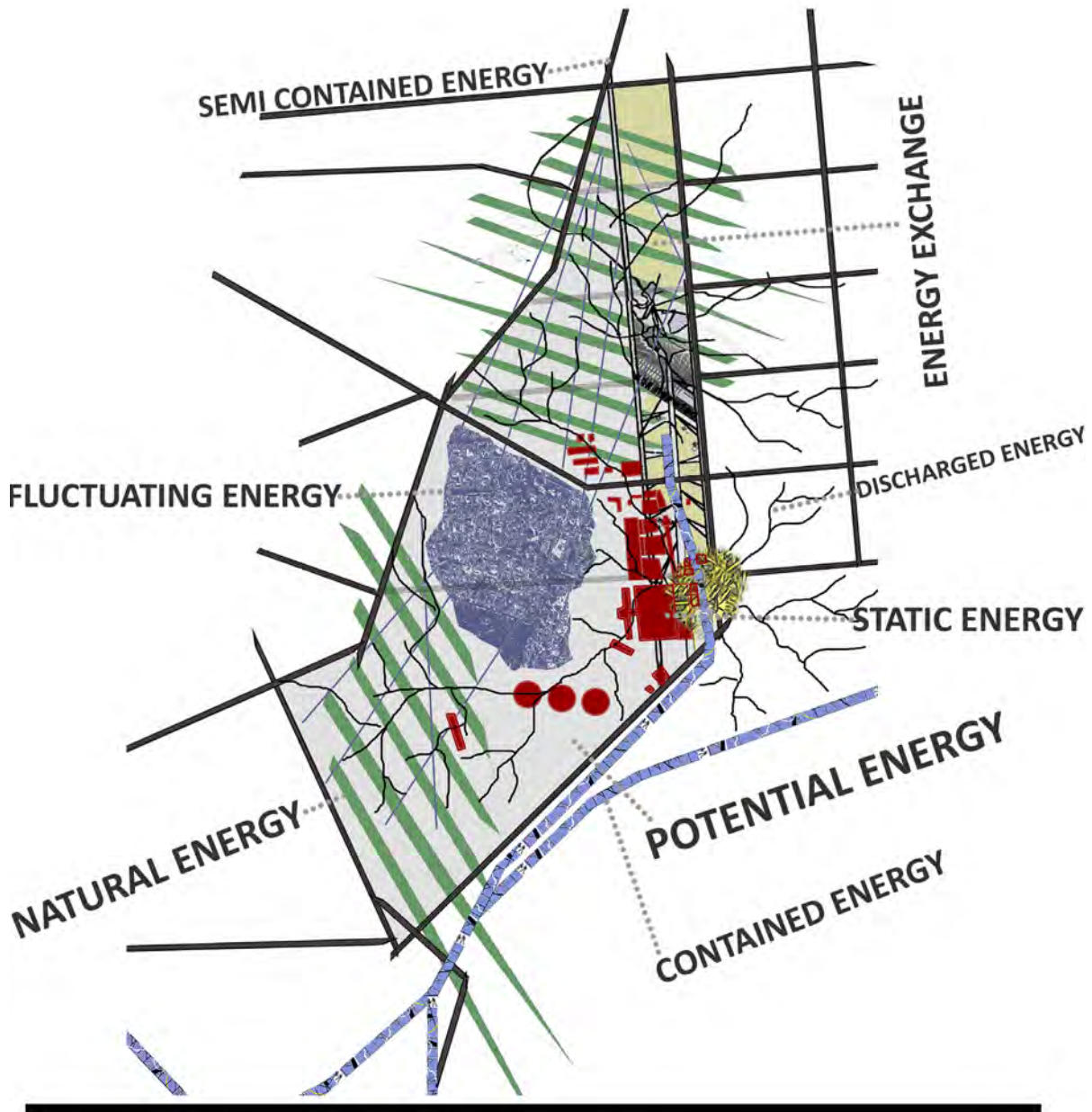
existing movement

- activate
24hour amenities
- increase
pedestrian activity
rail activity
- slow down
motorist manoeuvres
- breach
park and campus access
- develop
produce and trade access



new movement

[Fig. 17] Showing proposed permeability of the site.



[Fig. 18] Diagram of new energy inputs to the site.

phasing of development

The operating power plant is only likely to be shut down completely in the next 10 years, however while it is still running certain work can begin to rehabilitate the site and prepare it for development.

Phase 1 - Repair

This phase would begin the rehabilitation of the site. In the past a small triathlon event has been held on the site, this development phase would refurbish the sporting facility adjacent to the site and begin rehabilitating the ground through urban agriculture. This phase would also begin to open up the site to the public and begin to develop public spaces, for this purpose it is important that existing derelict buildings and dangerous areas of the site are secured while still left visually accessible. All this can be achieved while the power station continues to operate, but begins to put the Old Power Plant on display and create public interest in development that is to follow.

Phase 2 - Define

This phase begins when the power station ceases to run and the reuse of existing buildings can begin. This phase is about defining the site and its new functions, developing a housing framework for around the site and creating an urban edge, integrating urban agriculture with light industrial and public functions, encouraging active and passive recreation and creating 24hr activity.

Phase 3 - Connect

This phase builds on the previous phase and focuses on connecting the site to its larger context and linking it as a node on an activity spine which was the intention of the Vision for Pretoria West. Primarily through the construction of a train station for pedestrians and freight, this will give people and goods quick and easy local and regional access, this combined with links to local bus routes starts to develop the site as a transport interchange which not only brings focussed energy to the site but then starts to channel energy out into the surrounding areas.

Phase 4 - Continue

Phase 4 is about continuing to build on the previous phases, continuing and reinforcing connections, continuing to define urban edges and encourage mixed use development that increases densities and reduces urban sprawl, continuing to establish a sense of place and cultivating the culture of industry and production and trade.



repair

repair

rehabilitate available grounds and soils

introduce

local and regional community to site via sport/ recreation triathlons, races, etc

establish

a positive perception of the site

retain

restore valuable buildings for new uses

live

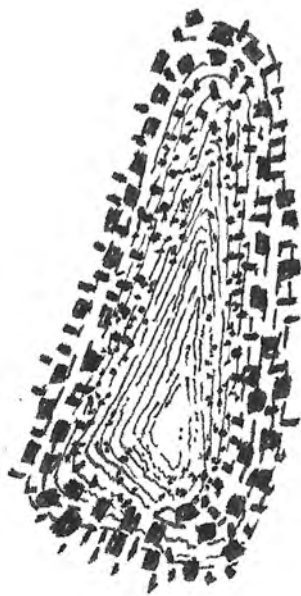
power station still running before decommission within next 10 years

made safe and showed "on display" for educational purposes



phase I

[Fig. 19] Phase 1 - Repair



define place

define

urban edge conditions with appropriate building stock

mix

mixed-use; smart housing; smart industry; recreation

breach

permeable urban developments

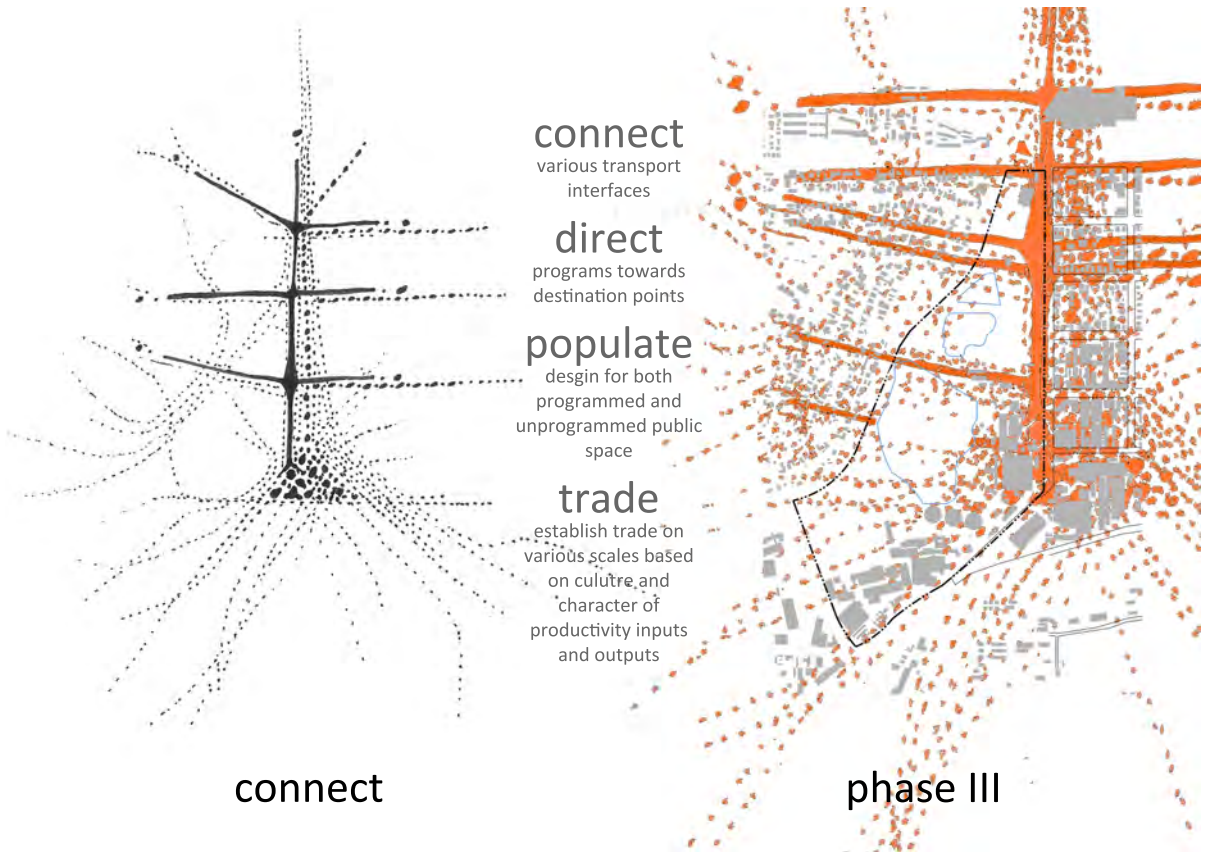
activate

24hour amenities

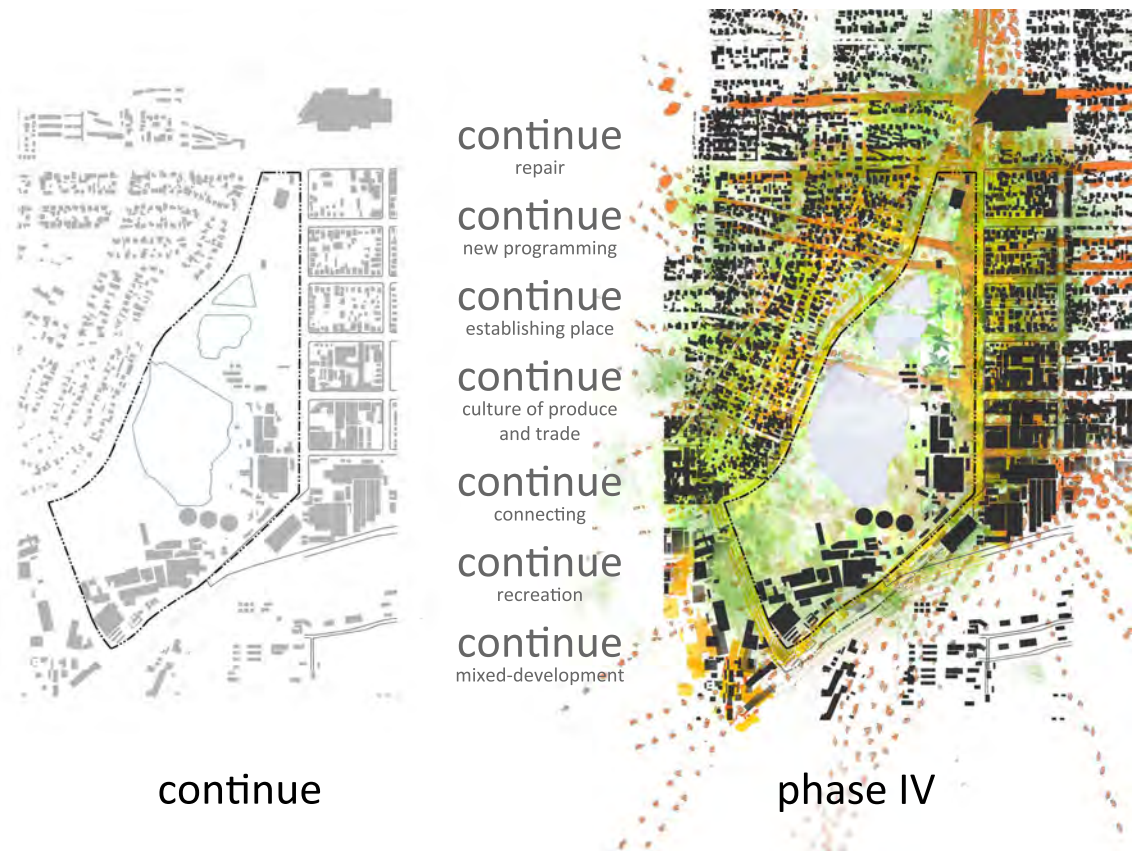


phase II

[Fig. 20] Phase 2 - Define

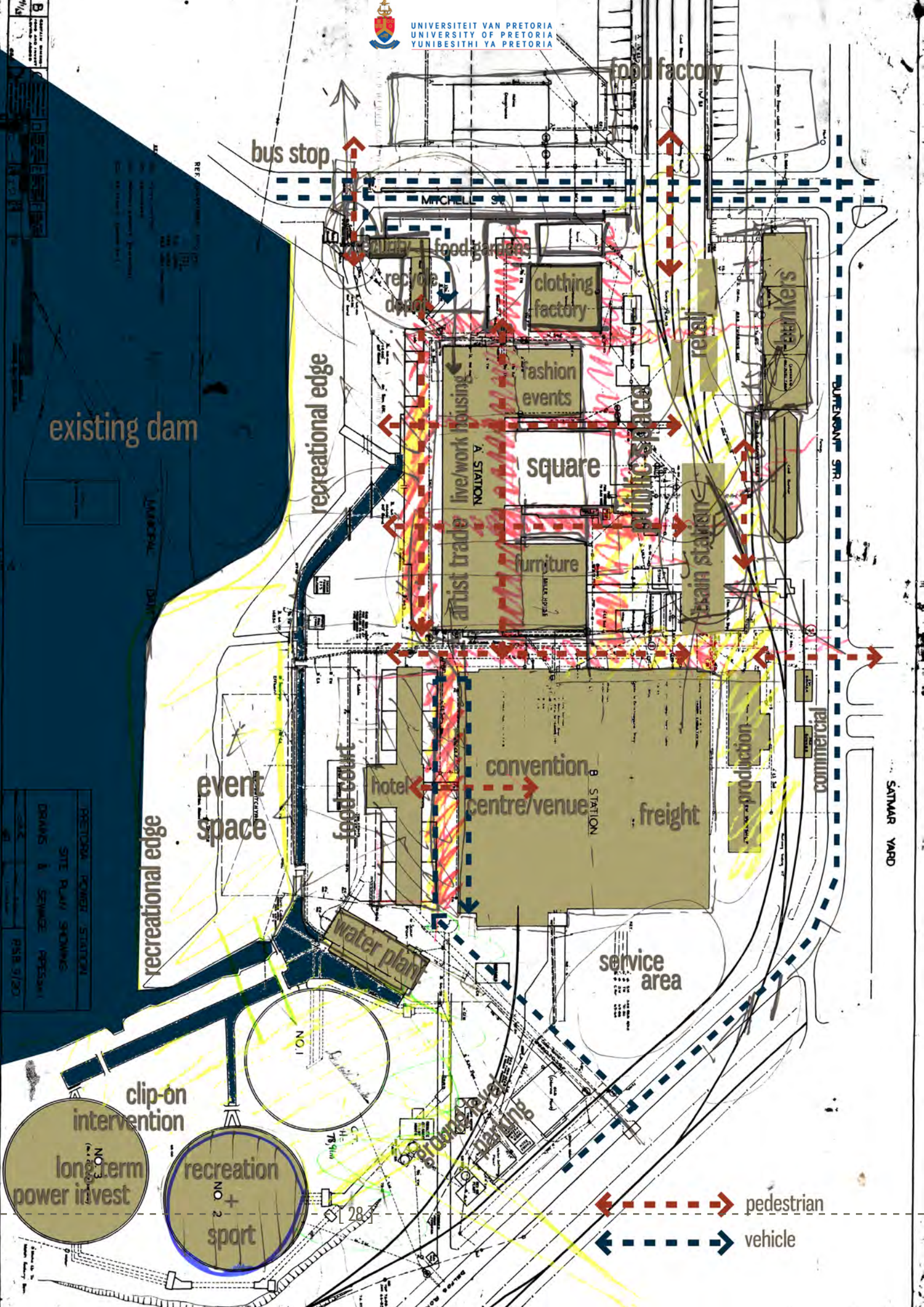


[Fig. 21] Phase 3 - Connect



[Fig. 22] Phase 4 - Continue

[2]



existing dam

bus stop

food factory

MPCHELL ST

food gardens

recycling depot

clothing factory

recreational edge

live/work housing

fashion events

square

public space

retail

artist trade

furniture

train station

event space

footcourt

hotel

convention centre/venue

freight

production

commercial

recreational edge

water plant

service area

SATMAR VARD

PRETORIA POWER STATION
SITE PLAN SHOWING
DRAINS & SERVICE PRELIMINARY
DATE 5/20

pedestrian
vehicle

[chapter 2] thesis project: introduction

[Fig. 23] Detailed Framework proposal for The Old Power Plant.

[Fig. 24] Aerial photograph showing entire Power Plant Site.

[Fig. 25] Aerial photograph highlighting Detailed Framework Area and the 1923 turbine Hall.

For the purposes of this thesis one of the buildings, namely, the turbine hall, within the Old Power Plant Framework has been selected for re-development.

The **Turbine Hall** was part of the original power station, built in 1923. It has been earmarked within the framework for small-scale light industrial activities, workshops, artists' trade and a housing component.

problem statement

The challenge of this thesis lies in the adaption and reuse of an existing heritage building for an entirely new function as well as the development of a building that forms a cohesive part of the framework for The Old Power Plant by contributing towards the development of the site as a node while incorporating the theme of production emanating from the framework.

sub problems

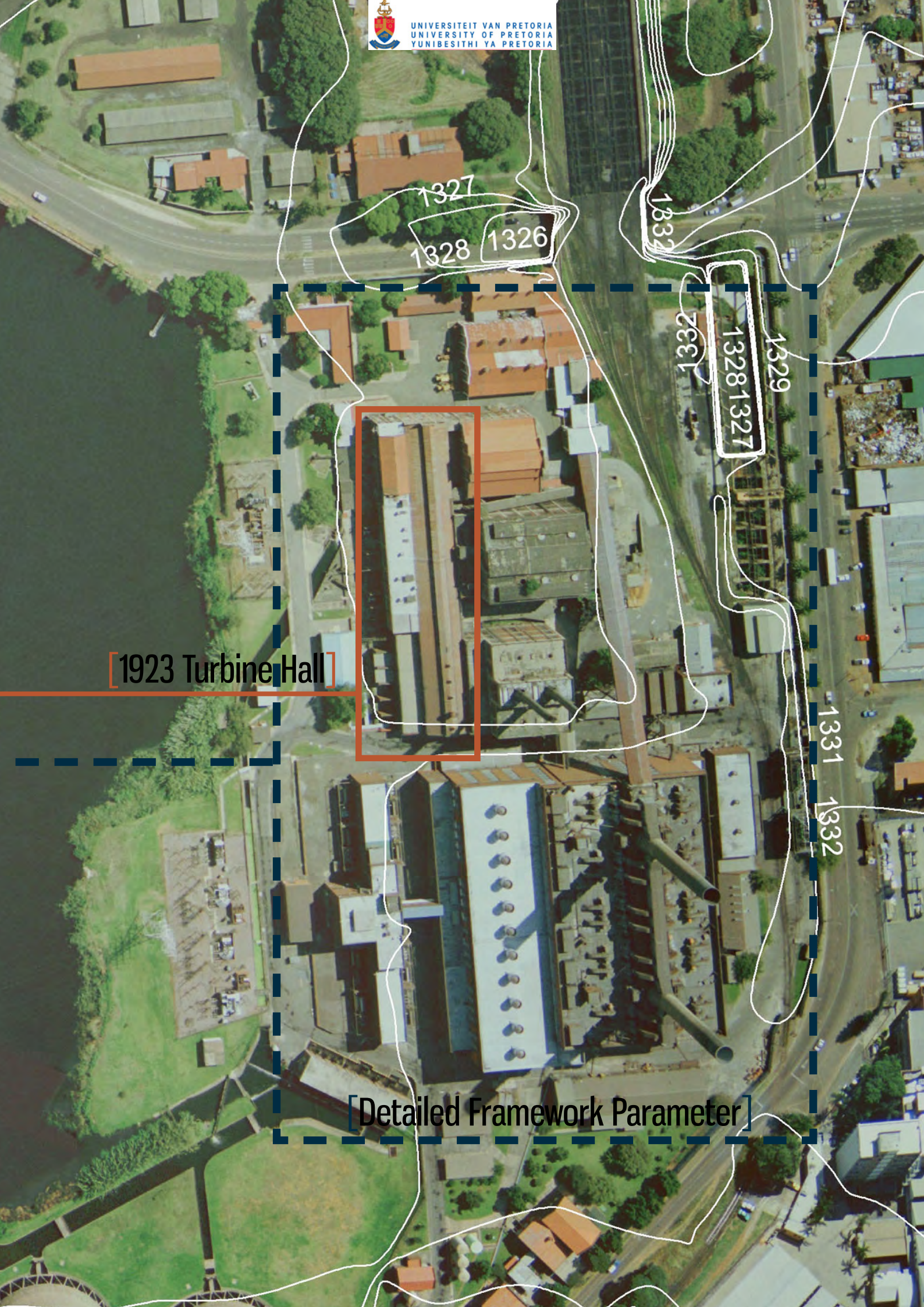
The provision of employment that is in close proximity to employees places of residence is a vital element in economic upliftment. To create a mixed-use building with residential and commercial poses the problem of how to handle the relationships between living and working spaces. It becomes very important to define a hierarchy of spaces that are public, semi public and entirely private and secure.

A mixed-use building needs accessible facilities and infrastructure for the residents; such as schools, public transport, medical facilities and job opportunities. Since the framework encourages densification of the area, how does one create private living conditions in close proximity to fully functional communal spaces?

In terms of re-development alterations and additions will have to be executed to accommodate new functions. The problem, however, arises as to what extent one is allowed to alter heritage buildings while still preserving the industrial character of the specific building and direct context.



[Power Plant Site]



1327
1328 1326

1331

2331

1328 1327

1329

[1923 Turbine Hall]

1331

1332

[Detailed Framework Parameter]

[3]



[chapter 3] methodology

It is the role of the architect to “take responsibility for a building’s behaviour as well as its artistic presence” (Sorkin 2004:63), “architecture is unavoidably a public art that is seldom simply serving the pleasure of its creation it must inevitably provide an appropriate shared experience” (Porter et al 2004:140). We need to consider the behaviour of a building and its influence on the surrounding community and environment throughout all stages of development and its lifetime. Sorkin (2004:64) writes that we should never produce projects that, if built would have a clearly detrimental effect on a neighbourhood. He believes that there is no instance where a building could be “sufficiently exceptional as to excuse trodding on the existing convention of scale.” Le Roux (2003:17) describes the role of architecture as “one of support, not of control”. We should therefore work toward creating community architecture that can make a contribution toward social development (Jekot 2003:23). Moreover, we should, through our projects, aim to demonstrate the value of an architect in raising the sense of communal pride, and of architecture, in engendering a sense of community. We design buildings to improve the lives of people. Whether a building provides a home or purely stands to inspire awe; architecture affects people. Of particular interest to me is what the effect can be and how good architecture can create an environment that evokes positive experiences and perceptions. Let us look to phenomenology to discover how architecture can support meaningful experiences in the built environment.

1. phenomenology

As architects we do not primarily design buildings as physical objects, but the images and feelings of the people who live in them. The phenomenology of architecture looks at architecture from within the consciousness experiencing it, and seeks the inner language of building (Pallasmaa 1996:450)....The most comprehensive and perhaps the most important architectural experience is the sense of being in a unique place.

The quality of good architecture for Pallasmaa is not in the sense of reality that it expresses, but in its ability to stimulate our imaginations (Pallasmaa 1996:452).

The Importance of Place Making

Why do so very few modern building appeal to our feelings, when almost any anonymous house in an old town or the most unpretentious farm outbuildings gives us a sense of familiarity and pleasure? (Pallasmaa 1996:448)

Phenomenology for Norberg-Shultz, describes a methodology for place-making, and proposes that the existential purpose of architecture is to transform a site into a place and to uncover the meaning of that place (1996:422). Christopher Alexander described phenomenology as that “quality without a name” (Porter et al 2004:140).

Pallasmaa believes that “the buildings of our own time may arouse our curiosity with their daring or inventiveness, but they hardly give us any sense of the meaning of our world or our own existence” (1996:448). “On the basis of the ideology taught by the Bauhaus school, architecture is taught and analyzed as a play with form combining various visual elements of form and space. This is thought to acquire a character which stimulates our visual senses from the dynamics of visual perception as studied by perceptual psychology” (Pallasmaa 1996:449, Pallasmaa promotes the idea that an artistic work is the opposite of the elementarist idea and that the meanings of an artistic work are born out from the whole and are in no way the sum of the elements according to gestalt perceptions (Pallasmaa 1996:449). In terms of the meaning of art and architecture for us, Pallasmaa believes that “meaning lies not in its forms, but in the images transmitted by the forms and the emotional force that they carry. Form only affects our feelings through what it represents.” Therefore a stylistic return to ancient themes lacks emotive power and is no longer linked with phenomenologically authentic feelings that are true to architecture” (Pallasmaa 1996:449).

Why do abandoned, unheated houses have the same smell of death everywhere? Is it because the smell we sense is in fact one that is created through our eyes? (Pallasmaa 1996:453)

The phenomenological idea of place, as suggested by Frampton, is a solution to main urban and environmental problems (Frampton 1996:440). What then makes a *place*? It is obviously something more abstract than simply a geographical location. Frampton says “A place is therefore a qualitative, *total* phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight.”

Being a qualitative composition of various totalities places cannot be broken down and analysed in any scientific terms. Norberg-Shultz describes the structure of places, firstly by distinguishing between natural and man-made phenomena, and secondly by representing the categories of earth-sky (horizontal-vertical) and outside-inside (horizontal-horizontal). “These categories have spatial implications and *space* is hence re-introduced, not primarily as a mathematical concept, but as an existential dimension.” The final, and particularly important, step is taken with concept of ‘character,’ where character describes the general atmosphere of a place: “the concept of *genius loci* denotes the essence of place” (Norberg-Shultz 1996:418).

The structure of a place is not a fixed, eternal state. As a rule places change, sometimes rapidly. This does not mean, however, that the genius loci necessarily change or gets lost (Norberg-Shultz 1996:418).

Norberg-Shultz makes three important points about the essence of place making:

- firstly, he points out that mono-functional places will soon become useless. Places should have the capacity for naturally facilitating different functions;
- secondly, a place could obviously be interpreted in different ways. In order to protect the *genius loci* its essence needs to be concretized in ever new historical contexts; and
- thirdly, the history of a place ought to be its self-realization; the possibilities of a place should be illuminated and preserved through works of architecture that are simultaneously old and new (Norberg-Shultz 1996:422).

Space and Character

“Place is illuminated by the analysis of the aspects of space and character” (Norberg-Shultz 1996:422). By looking at the structure of basic linguistics one can gain a better understanding of what is meant by *space* and *character* and their relationship to *place*. *Places* are referred to as nouns, this implies they are concrete “things that exist” e.g. town square, garden, bedroom, city; while *spaces* are denoted by prepositions and referred to by relation e.g. things that are: over, under, upon, behind; and *character* is descriptive and referred to with one or many adjectives, e.g. festive, sombre, cosy.

Space and *character* come together at the boundary that defines places. From this understanding one may agree with Venturi when he defines architecture as “the wall between the inside and the outside” (Norberg-Shultz 1996:418). While *space* is defined by its relationship to objects, *character* is created by the formal and material qualities of a place; *character* is determined by how things are made and therefore depends on technical

realisation. It, however, must be noted that while spatial organisation does put certain limits on characterization the two are interdependent (Norberg-Shultz 1996:414).

Orientation and Identification

When man dwells he is simultaneously located in space and exposed to a certain environmental character. The two psychological functions involved may be called "orientation" and identification." To gain an existential foothold man has to be able to orientate himself; he has to know where he is. But he also has to be able identify himself with the environment, that is, he has to know how he is in a certain place (Norberg-Shultz 1996:423).

The basic spatial structures which denote man's orientation are *node*, *path*, and *district*. The combined relationship of these elements create an "environmental image," and a good environmental image is what gives a person an important sense of emotional security. To be lost is the opposite of this feeling of security. The environmental quality that prevents man from feeling lost is "*imageability*; that shape, colour, or arrangement which facilitates the making of vividly-identified, powerfully-structured, highly useful mental images of the environment" (Norberg-Shultz 1996:423).

In our context "identification" means to become "friends" with a particular environment (Norberg-Shultz 1996:424).

Identification is the foundation for man's sense of belonging, this identity is to a large extent created by a combination of places and things. Therefore is it very important that our environment consists of "objects of identification" as well as "spatial structures which facilitate orientation." True belonging to a place presupposes The fully developed psychological functions of orientation and identification (Norberg-Shultz 1996:424).

2. critical regionalism

Like phenomenology, the celebration of particular qualities of *place* are also fundamental to the theory of critical regionalism. Critical regionalism places focus on the physical and cultural context; from regional to global levels. It also concentrates on an architecture that people can identify with as their own. "The awareness of a regional architecture as an idiom having a distinct identity and being associated with an identifiable group, and having this association used for further manipulating the group's identity, goes as far back as ancient Greece." (Lefaivre & Tzonis 2003:11)

"Regionalism becomes a constant process of negotiation between the local and the global on the many different issues

that traditionally made up regionalism” it is “this attitude of engagement rather than resistance, it leans towards integration rather than segregation.” For Lefaivre and Tzonis (2003:34) regionalism is a process of overcoming deeply ingrained, culturally inherited contradictions and conflicts. They describe Mumford’s regionalism as a dialectical process.

Mumford’s definition of regionalism has five important aspects (Lefaivre et al 2003:35):

1. Absolute historicism is counter productive. Mumford calls the attempt to duplicate historical forms “a piece of rank materialism” since the form contains no substance without its original social and historical context. Furthermore, its is counter productive to authenticity (Lefaivre et al 2003:35).
2. He rejects the purely aesthetic values of architecture: Regional forms make people feel at home (Lefaivre et al 2003:36).
3. Functional and sustainable technology of the present era should be used (Lefaivre et al 2003:36).
4. Community is multicultural.
5. The negotiation between the local and the global. Mumford believed that regionalism and globalism are mutually inclusive.

“To make the best use of local resources, we must often seek help from people of ideas or technical methods that often originate elsewhere. As with a human being, every culture must both be itself and transcend itself; it must make most of its limitations and pass beyond them; it must be open to fresh experience and yet it must maintain its integrity. In no other art is that process more sharply focused than in architecture.” (Lefaivre et al 2003:39)

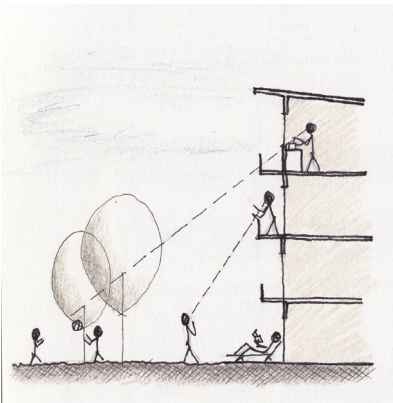
intentions

Both Phenomenology and Critical Regionalism both suggest an approach to architecture that rejects meaningless form and one that emphasises the importance of creating places that people can personally identify with while still having relevance to their greater context. **It is the intention of this thesis to create unique, multifunctional places that stimulate the imagination and create the *genius loci* while illuminating the history of a place without resorting to imitation.**

The main focus of this thesis is on **how to adapt and reuse the Old Turbine Hall**; to address the connection between old and new architecture in a way that pays tribute to the original building and its heritage. Although the function of the existing building will change, it is important to **maintain the existing industrial character** and spatial qualities of the place. Where the additions should bring into focus these existing properties, in that way concretises the *genius loci* on an identifiable human scale which reveals the historical essence of the Old Turbine hall.

[4]

[chapter 4] theoretical informants



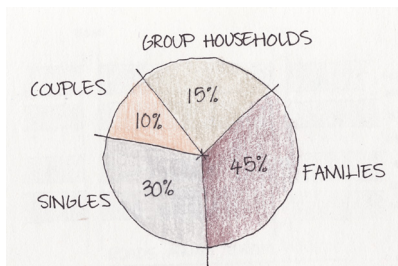
[Fig. 26] Four storey limit

1. pattern language

Christopher Alexander's book 'A Pattern Language' focuses on the needs people have from the spaces they inhabit. The following patterns extracted from the book have a particular focus in how people prefer to live and work. This is particularly relevant information to this thesis which focuses on the design of a mixed use building which contains both residential and working components.

Pattern #21 - Four-Story Limit

High buildings have no genuine advantages, high rise takes people away from the ground and disconnects them from activity on the sidewalks. There is also abundant evidence to show that high buildings make people crazy. It is possible that certain building can exceed four storeys but they should never be for human habitation.



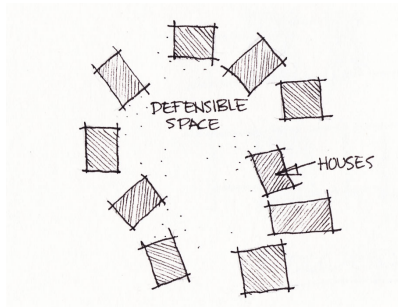
[Fig. 27] Household mix

Pattern #35 - Household Mix

A mix of households should be encouraged in every neighbourhood, this allows people access to confirmation and support from people who have reached a different stage in their life cycle as well as people who are at the same stage. Especially always make provisions for the elderly in every community. The correct balance can be easily derived from the demographics of an area. This mix will only work if the community is small enough to have some internal politics and human intercourse, it is suggested that a neighbourhood of 500 people works well.

Pattern #36 - Degree Of Publicness

People are different, and the way they want to place their houses in a neighbourhood is one of the most basic kinds of difference. Each neighbourhood should have three kinds of houses, in about equal numbers: those, which are nearest to the action, those which are half-way in between, and those which are almost completely isolated.



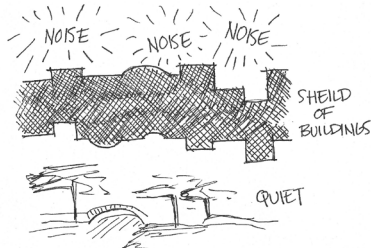
[Fig. 28] House cluster

Pattern #37 - House Cluster

People want to be part of a neighbourly cluster, with public land between them that is jointly owned. Clusters should not be so tight that they exclude the greater community, groups of 8 to 12 household seem to work best, with this number of households it is easy for everyone to keep in touch with the whole group without too much effort.

Pattern #48 - Housing In Between

Where there is a sharp separation between residential and non-residential areas the non-residential areas will quickly turn to slums. When housing is integrated with non-residential functions the area is enhanced by the vitality of people's homes, this makes the entire area 'lived in.'



[Fig. 29] Quiet backs

Pattern #59 - Quiet Backs

Anyone who has to work in noise all day, surrounded by people, needs to have a place to go for quiet, a place to pause and refresh themselves. The fronts of buildings can be given over to the busyness of the street but create backs with a quiet place to get away from the bustle.

Pattern #60 - Accessible Green

People need to have green open places to go, these greens need to be close for people to use them, if they are further than a 3 minute walk the distance will overcome the need. It is recommended that a green space should be provided approximately 230m from every house and workplace; these greens should be at least 45m across and least 5550m² in area.

Pattern #61 - Small Public Squares

A town needs public squares they are important outdoor rooms. However one should make a public square much smaller than you would first imagine, squares that are too large look and feel deserted. A good size is between 14 – 18m across, and never more than 21m, this applies to the short dimension, but in the long direction it can certainly be longer.

Pattern #64 - Pools And Streams

Water plays a fundamental role in our psychology, we need constant access to water, however, in cities water is always out of reach. For most people their only connection with water is when they turn on the tap. Imagine having access to water to swim in, water to sit beside, water where you can dangle your feet. Natural pools and streams should be allowed to run through the city, with paths next to them for people to walk along, and in places with out natural running water create fountains in the streets.

Pattern #118 - Roof Garden

If you consider how much of the earth's surface consists of roofs, coupled with the fact the total area of ground that can be exposed to sunlight is finite it becomes obvious to create roof spaces which take advantage of the sun and air. These spaces can be like rooms without a ceiling, protected from the wind but open to the sky. Ideally roof gardens should be able to be accessed at the same level as a lived in part of the building. The

roof gardens should be flat with places to sit and even sleep and even possible terraces for planting.

Christopher Alexander offers a more pragmatic approach to architecture, with his patterns giving direct clues in terms of architectural form, dimensions and layouts of space, all with a specific focus on human scale and level of experience. He also provides much insight into how people like to live and work, however, many of his patterns refer to dwelling in a more suburban setting, part of this study is to gain insight from these patterns and interpret them at a more urban scale.

2. social housing foundation

The Social Housing Foundation (SHF) in South Africa provides guidelines and information for designing and running social housing projects. Historically this was the responsibility of the National Housing Commission (NHC), however, the standards set by the NHC focused on minimizing space requirements, materials and cost of constructing and maximized densities, with the intention of creating dormitory towns to provide labour for the city, this attitude made it virtually impossible for these places to be healthy sociable areas. (Martin, 2000:4)

The SHF works to bridge the gap between where people live, work and socialise (Martin, 2000:7), and ensure that social housing projects are designed to:

- fit into and enrich the neighbourhood;
- provide for the range of residents' needs;
- integrate residents and neighbourhood; and
- make every resident proud of his or her home

“Social housing promotes improved quality of life and the integration of communities by providing affordable, high standard, subsidized housing with the added benefit of regeneration of the area in which the housing stock is located. The process is managed by viable and sustainable, independent institutions which encourage the participation of residents in the management of their own communities. Social housing is aimed at low-to-moderate income families and takes into account a wide variety of tenure forms. It does not include immediate individual ownership.” (Martin, 2000:7)

The SHF uses the following as their working definition of social housing:

The SHF also has criteria which they recommend for the quality design of social housing projects, below is a summary of these criteria extracted from their ‘Guidelines for Social Housing Design’ (2000:15); namely:

1. Meeting the objectives of social housing

- a. Affordability
 - b. Meeting the unique need of the target market
 - c. Safe and secure environment
 - d. Sustainability
2. Urban planning and design
 - a. Intergrated into the urban development (such as accessibility to amenities)
 - b. Long-term planning design
 - c. Community involvment
 3. Use of the site
 - a. Fit (relationship to the street)
 - b. Geo-technical and topographical characteristics
 4. Building(s)
 - a. Appropriate density for the context (rural or urban)
 - b. Quality
 - c. Aesthetics
 - d. Safety and health (such as visibility and lighting)
 - e. Mixed use of land (residential and other)
 5. Units
 - a. Size
 - b. Affordability (size to rent ratio)
 - c. Mix of types of units
 - d. Safety and security
 - e. Standard of finishes (such as carpets and tiles)

The SHF helps to offer insight into the practicalities of designing and developing a social housing scheme, and the summary of criteria for quality design that they provide serves as a good checklist for this study.

Informants

- housing that would enrich the neighbourhood
- provide for a range of the residents' needs
- creation of homes that the residents' can be proud of
- bridging the gap between living, working and social places
- provide mixed types of units
- create a safe and secure environment

social housing act

In its preamble the South African Social Housing Act (SHA) recognises the “dire need for affordable rental housing for low to medium income households which cannot access rental housing in the open market”(2008:2). It States that:

- everyone has the right to have access to adequate housing;
- the government must give priority to the needs of the poor in respect of housing developments;
- the elimination and prevention of slums and slum conditions

is promoted; and

- in order to ensure the economical use of land and services, higher density housing developments are promoted.

The SHA stipulates general principles for social housing, points under Section 2.1.i that are of particular relevance to this study are that nation, provincial and local spheres must promote:

- training opportunities for stakeholders and interested parties who wish to enter the social housing market;
- social, physical and economic integration of housing development into existing urban and inner-city areas through the creation of quality living environments;
- medium to higher density in respect of social housing development to ensure the economical utilisation of land and services;
- the provision of social, community and recreational facilities close to social housing development;
- the expression of cultural identity and diversity in social housing development;
- the suitable location of social housing stock in respect of employment opportunities;
- the conversion or upgrading of suitable residential and non-residential buildings for social housing use; and
- the use of public funds in a manner that stimulates or facilitates private sector investment and participation in the social housing sector.

Informants

- Integrate housing into an urban environment
- Provide medium to higher density housing
- Locate housing close to employment opportunities
- Convert or upgrade existing buildings for residential use
- Provide training facilities
- Provide social, community and recreational facilities nearby
- Express cultural identity and diversity

south african national heritage resources act

The South African National Resources Heritage Act (NHRA) mostly addresses the administrative aspects of dealing with a heritage building. However, it does promote the use and enjoyment of and access to heritage resources and promotes that these resources contribute towards social and economic development (NHRA 1999:sec5.7).

Under section 7.1 the NHRA (1999) distinguishes between three categories of heritage resources:

- (a) Grade I heritage resources with experiential qualities that are of special national significance;
- (b) Grade II heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- (c) Grade III: Other heritage resources worthy of conservation.

The NHRA also states that no person may alter or demolish any structure that is older than 60 years without a permit (NHRA 1999:sec34) and that special consent would be required for any alteration or development to a listed building (NHRA 1999:sec 30.7a).

The majority of buildings at the Pretoria Power Station are well over 60 years old. This means that even if the buildings were not declared heritage resources (although they most likely would be) special consent would still be required before any development on site could take place.

Informants

- Promote enjoyment, use and access to heritage
- Contribute socially and economically

burra charter

The Burra Charter speaks more specifically on how to deal with heritage buildings, it states that the aim of conservation is to retain the **cultural significance of a place** (Australia 1999:sec 2.2) and that **conservation is based on a respect for existing fabric** and recommends a cautious approach of changing as much as necessary but as little as possible. It also goes on to say that the cultural significance of a place is best understood through a process of collecting and analysing information before making decisions (Australia 1999:sec 6.1).

The Burra Charter recommends that adaptation is only acceptable when it has **minimal impact** on the cultural significance of the place and involves minimal change to significant urban/cultural fabric (Australia 1999:sec 21). Imitation should be strictly avoided and new work should be readily identifiable as such (Australia 1999:sec 22).

Informants

- Collect and analyse information in order to understand cultural significance
- Adaptation should not effect cultural significance
- Imitation should be avoided
- New work should be easily identifiable

[5]

[chapter 5] precedent



[Fig. 30]



[Fig. 31]



[Fig. 32]



[Fig. 33]

The main focus of this study is how to adapt and reuse an exiting industrial building, to gain further insight on how to develop an approach for an appropriate design various precedents from different categories have been analysed. Firstly it is most important to look at existing projects in which heritage buildings have been have adapted and reused in order to analyse the different approaches one can take to adapting an old building. Secondly projects that offer programmatic informants will be assessed. The analysis of all these projects will then provide inform the development of the design.

adaptive reuse

The following buildings have been selected as precedents to explore the different ways new construction can interact with old buildings. It is important to find an approach to dealing with additions to a heritage building that is appropriate. While it is important for new work to be easily differentiated from the original building, this has to be done sensitively, new work should pay homage to and promote the cultural significance of the original building, not overshadow it.

For the purpose of this analysis the approaches to adaptive reuse projects have been defined by three categories; restore/preserve, integrate and intervene.

restore/preserve

This approach demonstrates projects where the original appearance of the building has been preserved, while the function of the building may have changed exiting elements have been refurbished and preserved. The focus of this approach is on the old.

huron substation

[Self build by owner - Meike Kopp]

[Cypress Park, Los Angeles]

The Huron Substation is a decommissioned electric power substation built in 1906 (McCown 2009), it has been renovated and restored by its owner who now calls the substation home.

Informants

All new additions to the building occur on the interior, in this way preserving the original appearance of the building from the exterior which has simply been restored. New additions on the inside of the building are differentiated from the old through the use of colour and contrasting material.



[Fig. 34] Restored exterior of the substation.



[Fig. 35] Showing the clear contrast between the existing brickwork and the new timber and red steel.

niccolò paganini auditorium
[Renzo Piano Building Workshop]
[Parma, Italy]
[2001]



This building was originally the main block of a sugar factory which formed an important part of the social heritage of Parma, it now houses a 780 seat concert hall (Pesavento & Piano 2001). Along the long east and western elevations the aesthetic of the original building has been restored, while the northern and southern gable ends have been removed and replaced with glass curtain walls; this is quite a drastic alteration, however, clear memory of the original building has been preserved and the view allowed by the glass curtain walls through the length of the building celebrates the character of the industrial volume of the existing building.

Design Informants

The approach to the design of the renovations of this building demonstrates that quite drastic alteration can be carried out by identifying the most important elements of the building and restoring them (i.e. the long eastern and western facades) and in this way still preserve the original appearance of the building within its landscape.



[Fig. 39] Showing glass curtain wall which allow an undisturbed view of the volume of the building



[Fig. 40] View of the eastern elevation of the building



[Fig. 41] Western elevation of the building in its context appears entirely unaltered

integrate

This approach suggests an approach where new work has been added to an existing building in a complimentary way and that takes its inspiration from the history of the building. The focus of this approach is on the connection between the old and the new.

drill hall

[Michael Hart Architects Urban Designers]

[Johannesburg CBD, South Africa]

[2004]

The Drill Hall has a rich and colourful history; it was built in 1904 by the British just after the Anglo-Boer war as a symbol of British military might, the drill hall later became notorious as the location for the Rivonia Treason Trial in 1956, this combined with its use during the 70's and 80's for conscription for the SADF made the Drill Hall a landmark for Apartheid oppression. In 1992 it was vacated by the military and became occupied by squatters, however fires in 2001 and 2002 killed 10 people and at this point it became apparent to the city council that something had to be done about the Drill Hall (Drill Hall... 2004:52).



[Fig. 42] Concrete posts stand in memory of the old drill hall piers.



[Fig. 43] Reinterpretation of the original roof, supported on lightweight steel and glass construction



[Fig. 44] Upper floor exhibition space



[Fig. 45] Firemen inspect the damage from the fire.



[Fig. 46] Damage caused by the fire



[Fig. 47] How the Drill Hall originally looked

What was key to the development of this project was an understanding of the cultural and historical significance of the place. While the building still houses some military functions it is now primarily a cultural facility and exhibition space (Joubert & Bakker 2009:124), with a focus on opening up the building as a publicly accessible venue. Considering that the Drill Hall was severely damaged in the fires, memory of what was actually the hall itself has been preserved and a public square now sits in its footprint, defined by concrete posts which are reminiscent of the piers of the former exterior (Joubert et al 2009:124). The building to the west of the square underwent the most alteration, it has been made more permeable at the ground level and the roof and upper level have been rebuilt entirely, this new work reinterprets the historic envelope in lightweight steel and glass which separates it from the original masonry walls (Joubert et al 2009:125).

Design Informants

One of the focuses of this project is how what was a very private building had been transformed into a public space. In terms of the approach to dealing with a heritage building all new work is intended to compliment and enhance the memory of the original building, contrasting materials are used to touch the building lightly and reinterpret the original buildings forms and where the old building has been demolished, the memory of its form remains.



[Fig. 48] How the Drill Hall looks today, one can see how the memory of the original form has been preserved

turbine square

[GAPP Architects]

[Newtown, Johannesburg]

[2009]

The Jeppe Street Power Station was built in 1927 and ran until 1961 when it was shut down, 4 years later 2 new Rolls Royce gas turbines were installed for use in peak periods and for emergency electricity supply, however the power station slowly fell into neglect and by 2000 over 300 squatters were living in the turbine hall. In 2005 all the squatters were relocated and work began to transform the power station into AngloGold Ashanti's new head offices (Turbine Hall 2010).

One of the most controversial aspects of this project was whether or not to demolish the North Boiler House, the case against argued that the option to adapt and reuse the building has not been sufficiently explored and the demolition of a heritage building is generally not acceptable (Krige & Beswick 2008:91). However if the North Boiler House was not demolished parking would have to be built above ground at a scale that would be inappropriate next to the existing fabric, as a result the success of the project depended on the demolition of the building and it was determined that the social and economic benefits of the

[Fig. 49] Elevation of the Old Turbine Hall



project combined with the catalytic effect the project would have for other heritage buildings in Newtown justified the demolition (Krige et al 2008:90).

The new offices were built over where the North Boiler house used to stand and the memory of certain elements from the boiler house have been used as inspiration for the new. The exiting turbine hall and South Boiler House have been restored and opened as public venues that connect to the new offices. In terms of the design for the new building it was the architect's intention to "treat the new building in manner that would pay homage to existing structures in material selection, scale and spacial experience. The result is an intentionally 'modest' external expression with celebrated internal volumes" (Krige et al 2008:98).

Design Informants

The crux of this scheme is how a new building stands amongst two heritage buildings, as the intention of the scheme was to compliment the existing buildings and to emphasise the heritage of the place. Therefore the new building has been very carefully considered. Through the use of different yet complimentary materials the new building can be identified from the old, while

[Fig. 50] View of the refurbished South Boiler House (left), and the new office building (right) from turbine square





[Fig. 51] Large industrial like volumes in the new offices

at no point does the new resort to mimicry because it takes legible inspiration from the old. For instance, the repetition and rhythm along the Jeppe Street elevation is clearly inspired by the rhythm of the industrial windows from the turbine hall. In the new building large industrial-like volumes are created, this combined with the reinterpretation of old industrial forms which allows the industrial character to emanate from the old and the new and concretise the heritage of the place in a original way.



[Fig. 52] Rhythm created along the Jeppe Street elevation inspired by the Turbine Hall (fig. 44)



[Fig. 53] Turbine square garden. Column grid lines have been extended into the landscape, reinforcing the building's connection to the ground

[Fig. 54] Boiler chimneys from the demolished North Boiler House

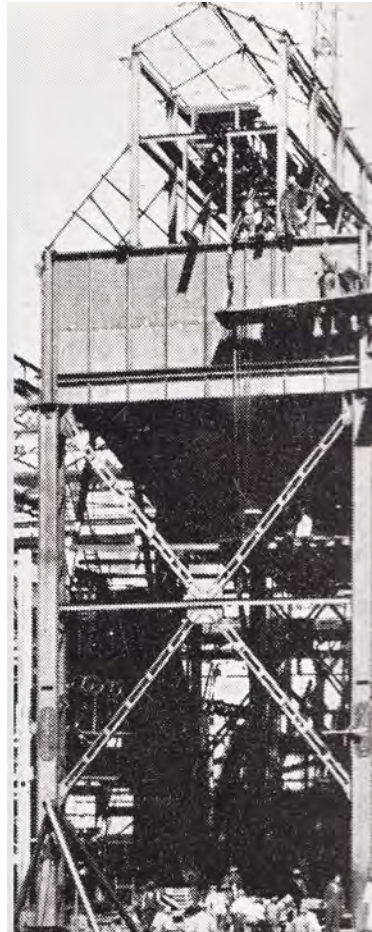
[Fig. 55] Reinterpretation of North Boiler House Chimneys as skylights in new office building

[Fig. 56] Steel cross bracing used in original construction

[Fig. 57] reinterpretation of steel cross bracing in concrete

[Fig. 58] Circular skylights found in original construction

[Fig. 59] Circular skylights reinterpreted in new building



Intervene

royal ontario museum (ROM)

[Daniel Libeskind]

[Toronto, Canada]

[2007]



[Fig. 60]



[Fig. 61]



[Fig. 62]



[Fig. 63]



[Fig. 64] Panoramic view from restaurant

[Fig. 66] The new addition literally explodes from the heritage building

[Fig. 65] The Gloria Hyacinth Chen Court framing a view of the heritage building

The brief for this project was to renovate galleries within the existing heritage building and create an extension to the museum, this extension is now known as the Michael Lee-Chin Crystal, and contains mostly gallery space as well as a new entrance and lobby with a shop accessible from the street and three new restaurants, the most spectacular of which is located on the fifth floor of the crystal and cantilevers over the existing galleries and has panoramic views of downtown (Libeskind [Sa]).

The large atrium, known as the Gloria Hyacinth Chen Court, is what separates the new building from the old and frames a nearly complete view of the restored heritage building. The extension also provides improved access to the old building.

The location of the ROM is on a very prominent street corner and “the centrality of the site intensifies the profound relationship between history and the new, between tradition and innovation. The Crystal is an interlocking form which turns this important corner of Toronto into a luminous beacon - a veritable showcase of people, events and objects, transforming the entire museum complex into a world-class destination” (Libeskind [Sa]). The intention of the addition was to concretise the programmatic content of the ROM and transform its character into an inspired atmosphere that establishes the Museum as the dynamic centre of Toronto.

Design Informants

This approach is certainly the most drastic way of approaching additions to a heritage building, and it seems the main focus is on creating iconic architecture that through drawing attention to itself encourages interaction with the heritage building to which it is attached. The architecture itself draws no physical relevance from the existing building and instead is an abstract interpretation of the program of the existing building, however, the main focus of the building is now certainly on the new addition. The new addition does improve the access to and status of the existing building as well as provide a focused view of the old building; in this way attracts attention to the heritage of the place.



programmatic

bat centre

[Paul Mikula & Jennifer Whitehead]

[Durban Harbour, KwaZulu Natal, South Africa]

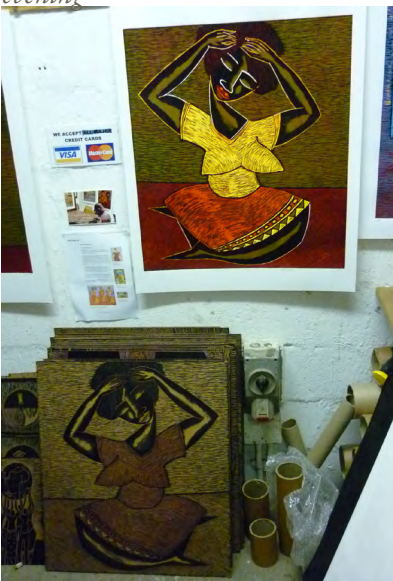
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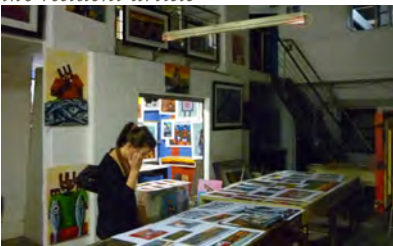
[Fig. 67] Graffiti by the artists



[Fig. 68] Activity on a Saturday evening



[Fig. 69] Lino prints by one of the resident artists



[Fig. 70] Tables rented by the artists



[Fig. 71] Art decorates every available corner in the studio

The Bat Centre is located in a vacant navel base between the railway and tug basin on Durban's harbour, it was established as an arts development centre to provide a home for fine art, cultural organisations and musical events. (Joubert, 2009:402)

Short courses, workshops & seminars take place at the BAT Centre on a continuous basis. Topics of discussion vary from the field of the visual arts, music, acting, writing and literature, to discussions on health, politics, business skills and entrepreneurship.

On their website (www.batcentre.co.za) the centre states their mission to be:

To celebrate the arts and culture of Durban, Kwa-Zulu Natal and South Africa by promoting local talent and skills, celebrate our unique cultures and encouraging cross-fertilization.

To create jobs for the artists by sourcing talent, imparting skills and developing markets

To act as a community cultural centre for the city of Durban, the people of the harbour and the Esplanade.

To become a resource to outlying art and cultural centres and creative people

The front façade of the building is one giant mural that is redecorated by local artists every few years. The ground floor along the front of the building is edged with small arts, crafts and curio stores. The main body of the building is accessed up a flight of stairs onto a terrace, on this level is the performance space in the old drill hall which is furnished with an adaptable and moveable bleacher seating system, which make this a very multi-purpose performance space, for example during the week there are regular poetry readings and on Saturday nights small hip hop concerts are held here, small plays and theatrical performances have also been performed here.

On Friday nights there are live jazz performances in the bar area, these various cultural activities attract people to the BAT Centre and provide customers for the local artists that work there.

The double volume visual arts studio provides workspace for local artists, every nook, cranny and tabletop is for rent. Artists working in the studio can benefit from communal facilities, such as the cutting room and lino press. Visitors to the centre are welcome to walk around the studio and see the artists at



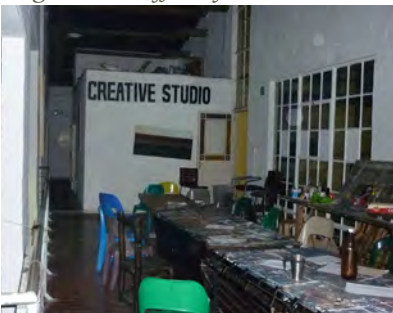
[Fig. 72] Double volume artists' studio



[Fig. 73] Murals cover every inch of the front of the building



[Fig. 74] Graffiti by the artists



[Fig. 75] Teaching area



[Fig. 76] Communal facilities



[Fig. 77] Murals on the building



[Fig. 78] Courtyard outside studio

work and buy art from them directly, the artists also exhibit their work in the gallery at the centre and sell work in the curio stalls, their work is also exhibited and sold locally in other galleries in the Durban area.

Also in the studio is a dance room, which is used to teach dance classes and as a gathering space. Upstairs there is also a space where art classes are taught, these classes are taught by senior artists who work in the studio.

The Bat Centre has been very successful in creating a destination for local arts and creating an infrastructure for developing and supporting local artists.

Informants

This thesis draws greatly from the success of the program at the Bat Centre, and takes note of how the different functions within the centre support each other and rely on each other for success; for example how musical and performance events draw the customers to the centre which support the local artists, also how a gallery provides a showcase for the artists as well as a benchmark for success, its is also important to note the holistic approach the Bat Centre has towards developing, supporting and promoting local artists, through education programs, provision of affordable workspace with access to artistic facilities and through exhibitions and events at the centre.

It must also be noted that by allowing artists to cover the building in creative murals this gives the people an important sense of ownership and identity with the place, these colourful murals also contribute hugely towards the tangible artistic energy and character which permeates the entire centre.



[Fig. 79] Lock up workspaces rented by the resident artists

bus factory

[Newtown, Johannesburg]

[2001]

During the first half of the 20th century what is now known as The Bus Factory was used as tram repair sheds and later used as a garage for double decker busses. In 2001 the building was extensively renovated and now houses the head office for the Johannesburg Development Agency (JDA), and is now a hub for the generation of inner city developments and renewal projects.

The Bus Factory is also home to the offices of many cultural non-governmental organisations (NGOs), one example of which is the Artist Proof Studio which focuses on print making and skills development and assisting people in achieving economic independence (fig. 71).

Another significant aspects of the Bus Factory is that it is home to the Beautiful Things craft exhibition, which was put together for the World Summit on Sustainable Development held in Johannesburg in 2002. Crafts made according to ancient traditional methods can be found amongst crafts made by contemporary methods to suite the expanding local and international markets. Many of the new products are made by groups set up by the Poverty Alleviation Fund which was established to create jobs for poor people (SouthAfrica.info 2003).

Informants

While the Bus factory is also another example of an adaption and reuse of a heritage building and the way in which new buildings have been constructed within an enormous industrial volume should be noted, what is most relevant about the Bus Factory to this thesis is its program.

One thing that the Bus Factory successfully does is bring ones attention to how arts and crafts can be used to create economic upliftment for poor people. The Artists Proof Studio actively educates and promotes local artists and the Beautiful Things craft exhibition showcases craft as a relevant and truly african art.



[Fig. 80]



[Fig. 81]

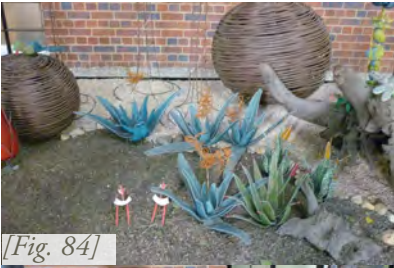


[Fig. 82]

More and more South Africans are making their livelihoods producing crafts, as non-governmental organisations and government departments alike embrace the sector as a means of fighting poverty and raising awareness about HIV/Aids. The craft sector is estimated to employ 1.2 million people and contribute a whopping R3.4-billion to the economy every year (Russouw 2002).



[Fig. 83] Fence around the bus factory made from recycled steel waste



[Fig. 84]



[Fig. 85]

It is difficult to estimate how many people are involved in the crafts industry in South Africa, but their contribution to the economy is significant.

According to Susan Sellschop of the South African Crafts Council, “Funds generated from crafts are often the sole source of income for poor, usually illiterate, people to gain access into the formal economy” (Russouw 2002). According to the Cultural Industries Growth Strategy (CIGS) compiled by the Department of Arts, Culture, Science and Technology in 1998, “craft provides an entry-point into the economy for under resourced groups who are then able to develop their skills through experience, apprenticeship and mentoring ... Craft activity acts as a low-cost training ‘school’ for skills which can be later used in the formal sector” (Russouw 2002). This report also points out that in developing countries craft sectors tend to have poor resource bases.

This suggests that by developing a resource base for the craft sector a program can be developed that assists in the growth of economic stability, job opportunity and skills development for poor people.



[Fig. 86] Beautiful Things craft exhibition

[summary]

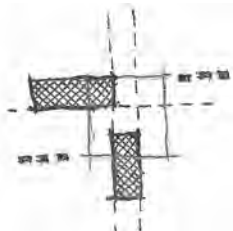
This analysis details three different approaches to adapting and reusing heritage buildings, while these different approaches are progressively more drastic they each have their own merit and are appropriate under different circumstances, however they all have the same intention of making heritage buildings more publicly accessible and in all cases new work is easily differentiated from the old. Below are summarised points of the informants derived from this precedent study:



[Fig. 87] Conceptual diagram of 'Restore/Preserve' approach

Restore/preserve

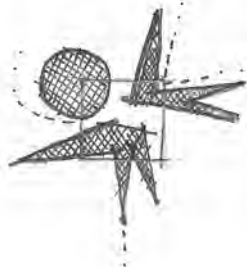
- Focus on the old
- Exterior appearance of the building has been preserved within its greater context
- Additions are mostly internal and can be identified through contrasting materials and colour
- Important to identify significant elements of the building and preserve them



[Fig. 88] Conceptual diagram of 'Integrate' approach

Integrate

- Focus on the connection between the old and the new
- Must understand the cultural and historical significance of the place
- New work is complimentary
- Touch the existing building lightly
- Where old buildings have been demolished new elements are used to preserve their memory
- Memory of the old drawn on as inspiration for the new without resorting to blatant mimicry



[Fig. 89] Conceptual diagram of 'Intervene' approach

Intervene

- Focus is on the new
- Intention is to create iconic architecture - improved status of the heritage building
- Architecture inspired by an abstract interpretation of the program of the place - draws no physical references from the existing
- Provides views and increased access to the heritage building, thus increased exposure

This study also analysed exiting projects whose program could offer insight to this thesis, what has been learnt from those projects is:

- Functions within the building must support each other
- Develop a holistic approach to developing, supporting and promoting entrepreneurs through education and making available supporting facilities
- Allow people to create their own sense of ownership of a place
- Arts and crafts as a means of poverty alleviation

[6]

[chapter 6] context & site

Context surrounding this thesis at a larger urban scale has been explored and responded to by The Vision For Pretoria West and by the Development Framework for the Old Power Plant (see chapter 1), this chapter will then explore the immediate context created by the development framework and explore factors that are directly relevant to the development of The Old Turbine Hall.

As revealed by the methodology of phenomenology understanding the context of a place requires more than a simple analysis of objects within a landscape. One needs to fully understand the essence of a place before you can create architecture within it, to understand the essence of a place one needs to analyse concrete and intangible phenomena and differentiate between natural and man made elements, to understand what makes a location a place, the spacial qualities and character also need to be scrutinised and the history of the place fully understood

[Fig. 90] Old aerial photo taken of the power plant in the 1940's

[Fig. 91] current aerial photograph highlighting historical fabric (over 60years old) and demolished fabric





historical fabric

demolished conveyor

demolished cooling tower

[present day]

[Fig. 93]





1954
power station

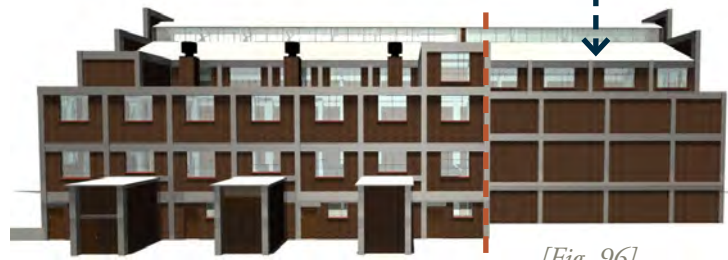
[Fig. 94]

1924

1928

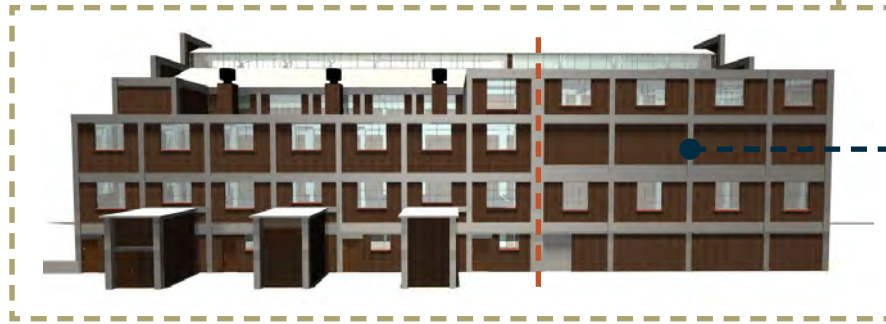


[Fig. 95]



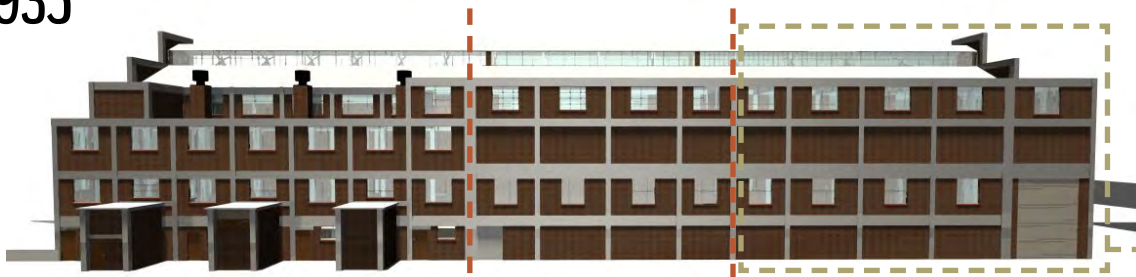
[Fig. 96]

1932



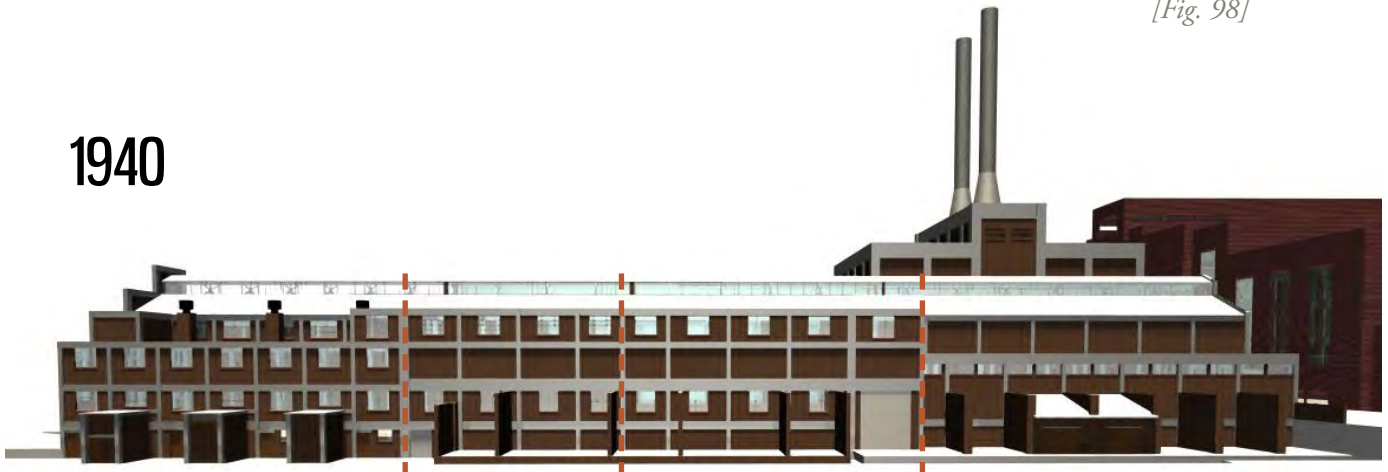
[Fig. 97]

1935



[Fig. 98]

1940

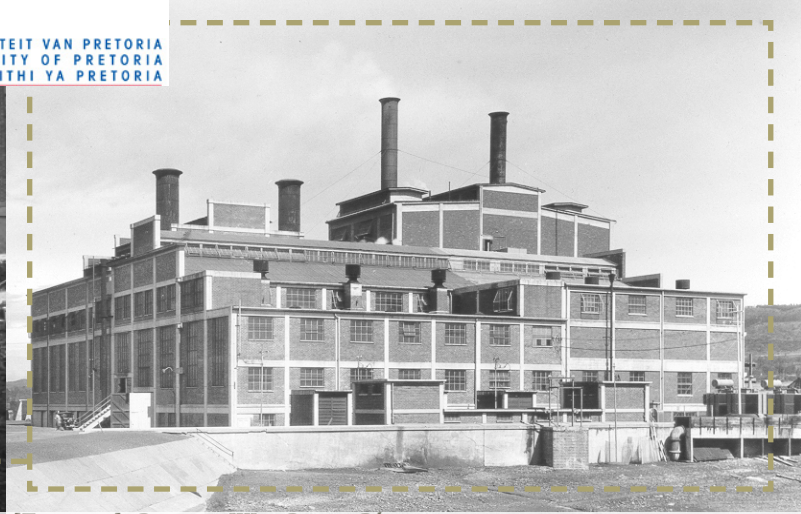


[Fig. 99]

[growth of the old turbine hall over the years]



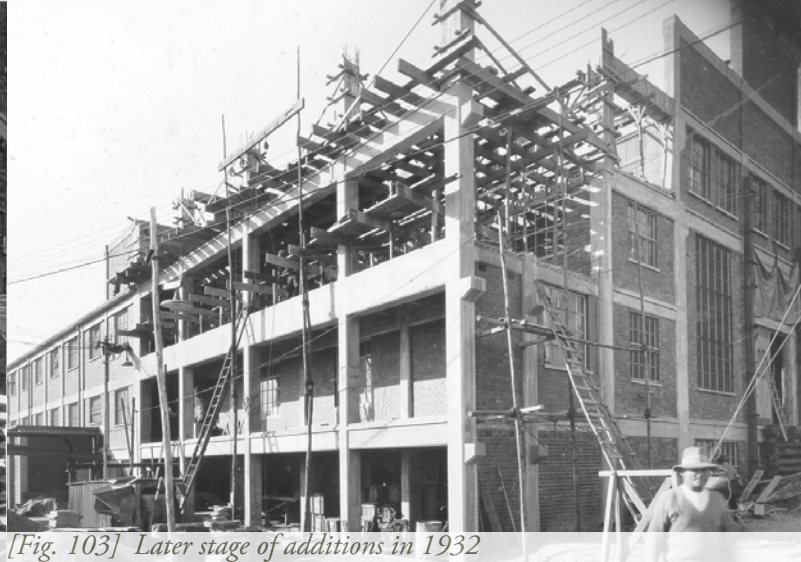
[Fig. 100] Foundations for turbine hall extension (1928)



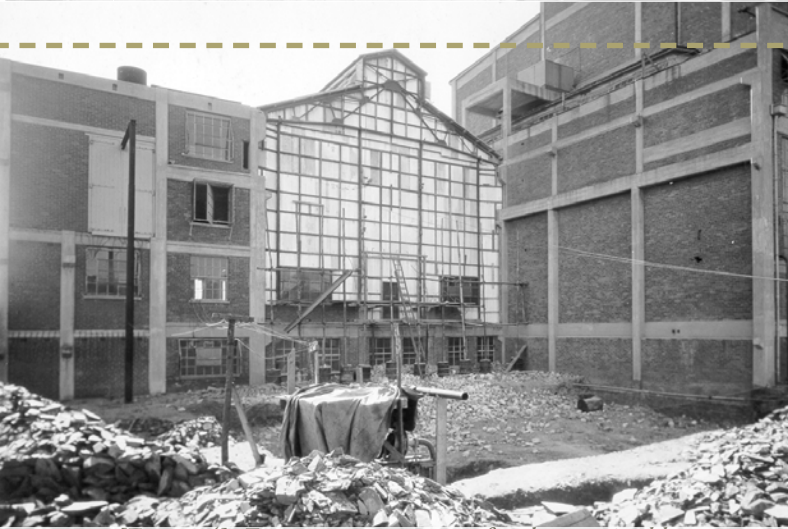
[Fig. 101] Pretoria West Power Plant in 1932



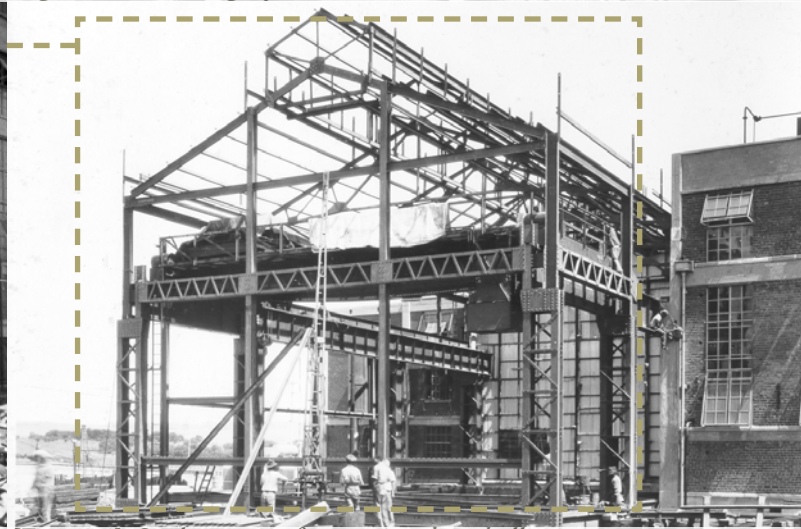
[Fig. 102] New addition to the turbine hall in 1932



[Fig. 103] Later stage of additions in 1932



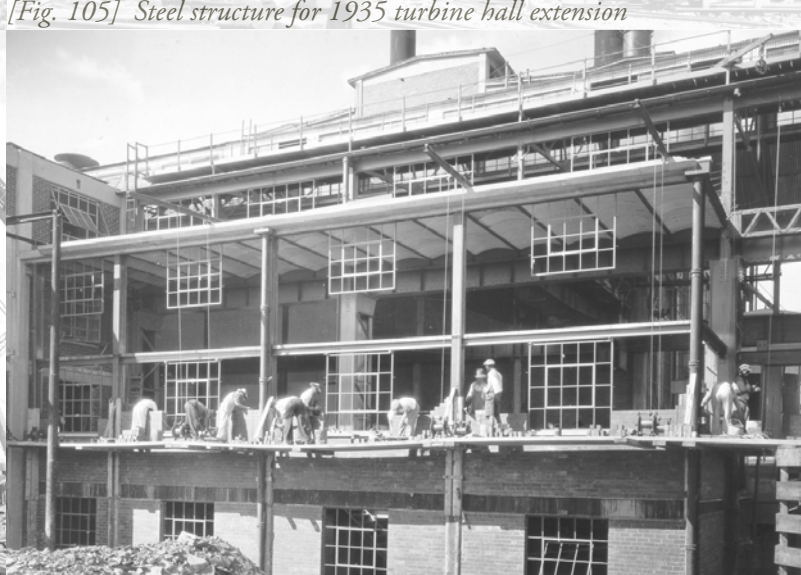
[Fig. 104] Excavation to prepare for the 1935 addition



[Fig. 105] Steel structure for 1935 turbine hall extension



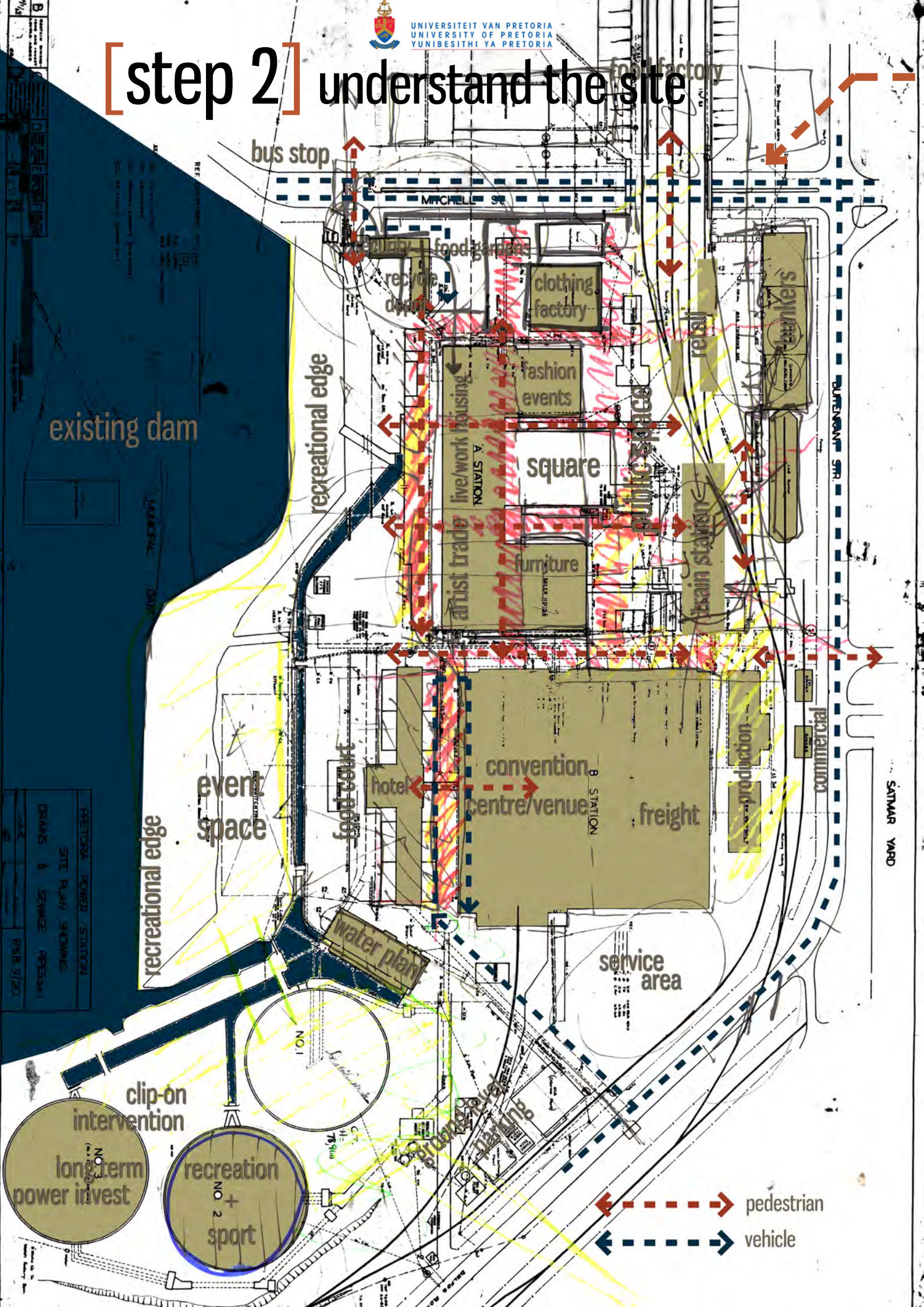
[Fig. 106] Steel structure for 1935 turbine hall extension



[Fig. 107] Installation of windows to the 1935 extension

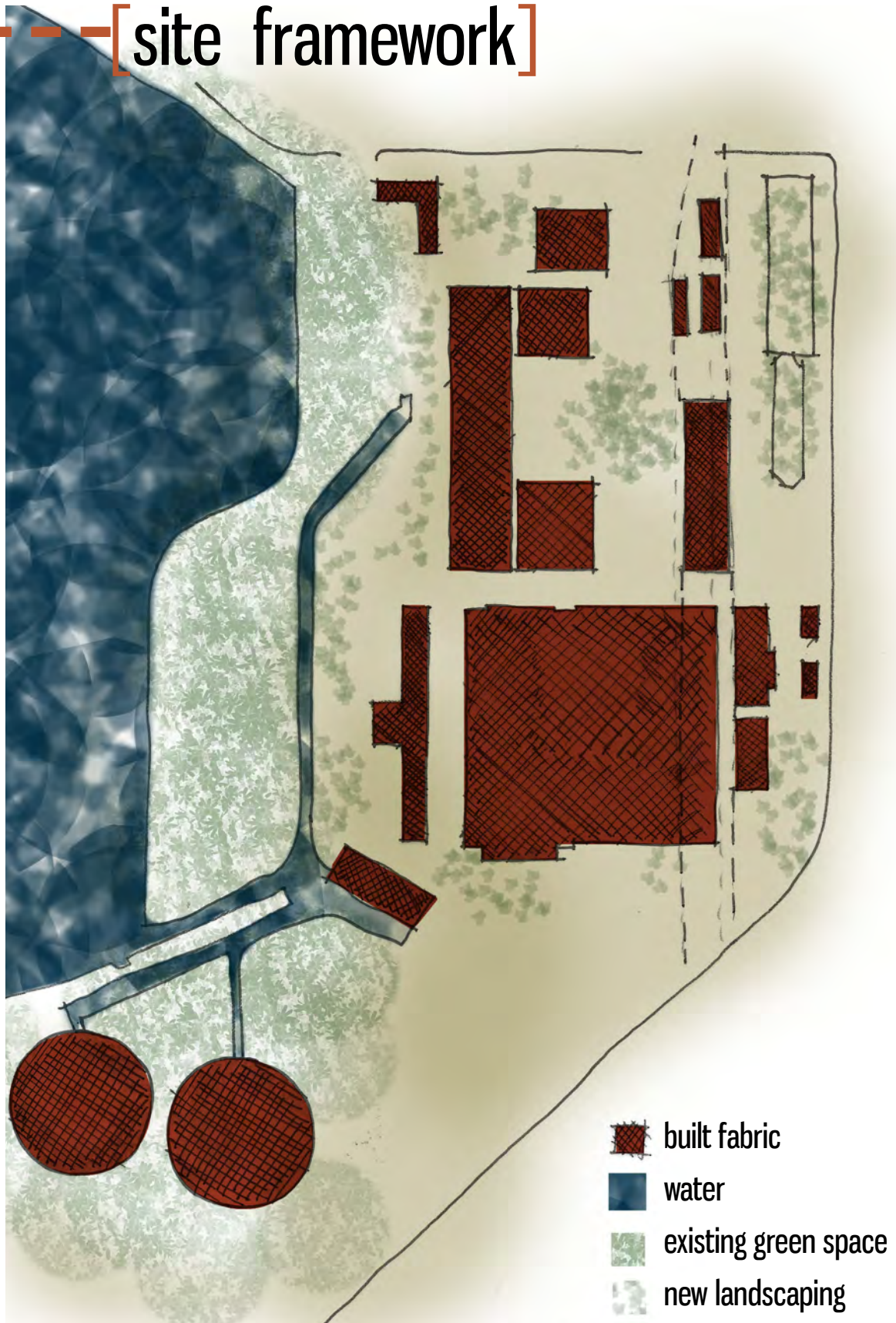


[step 2] understand the site



PRETORIA POWER STATION
SITE PLAN SHOWING
DRAINS & SERVICE PRETSAH
PUB 5/20

[site framework]



[natural & man made phenomena]



[natural phenomena]

[Fig. 108] *Natural phenomena*





[man made phenomena]

[Fig. 109] Man made phenomena





[spaces]

[Fig. 110] Spaces





[existing character]

[Fig. 111] existing character

KENNISGEWING
GEEN TOEGANG VIR
ONGEMAGTIGDE PERSONE

NOTICE
NO ADMITTANCE TO
UNAUTHORISED PERSONS



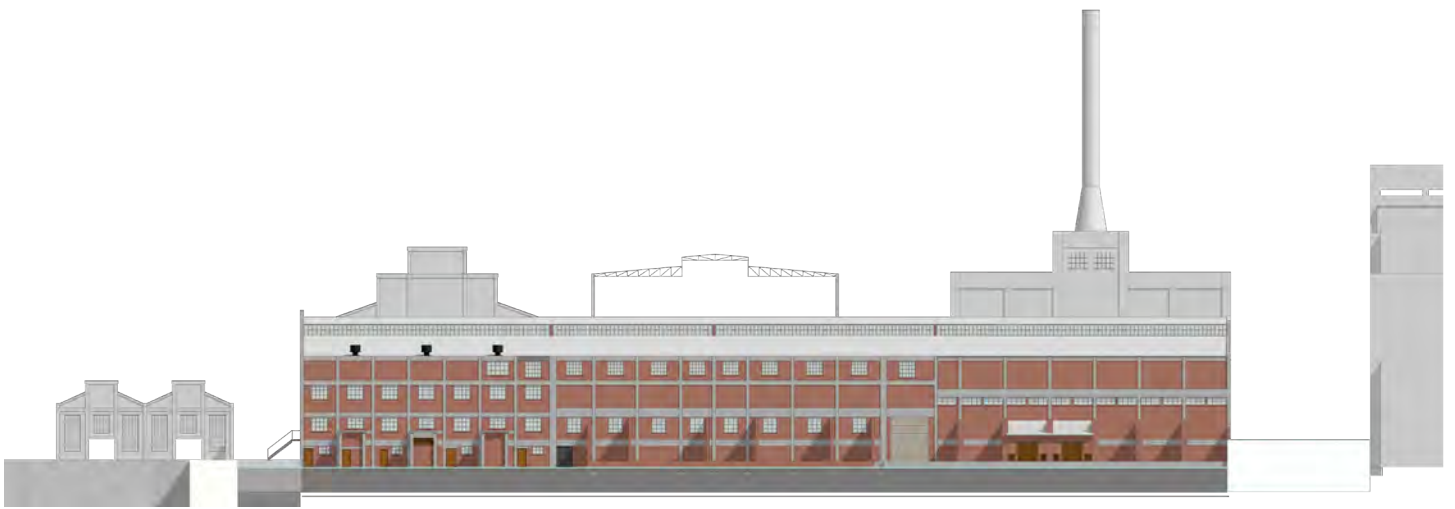


[character proposed by framework]

[Fig. 112] Character proposed by framework



[step 3] understand the building



[Fig. 113] West Elevation

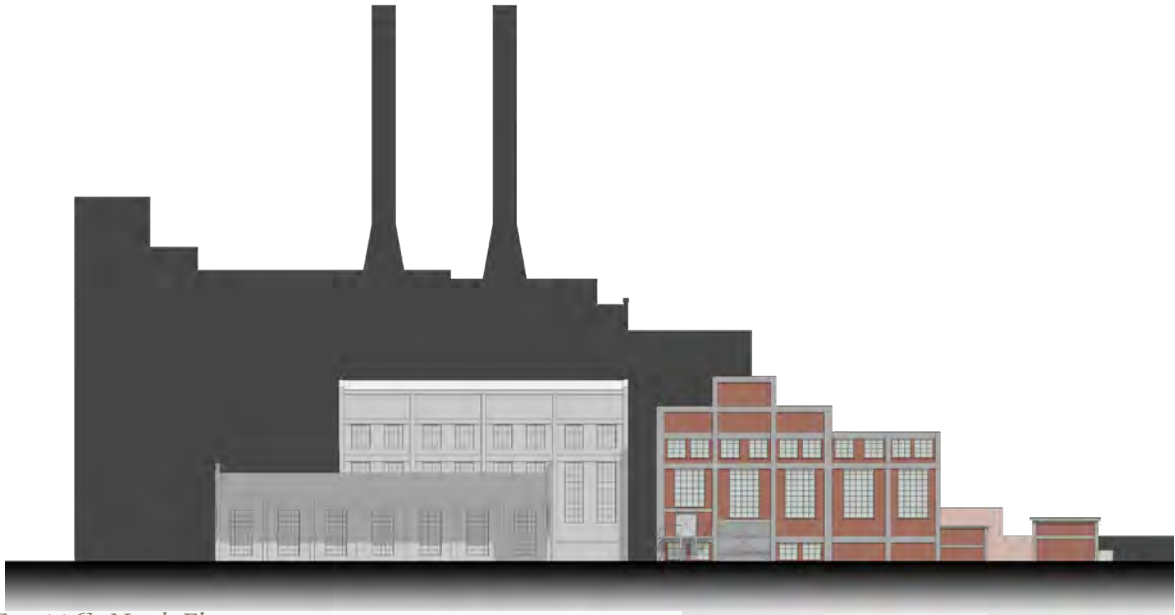




[Fig. 114]



[Fig. 115]

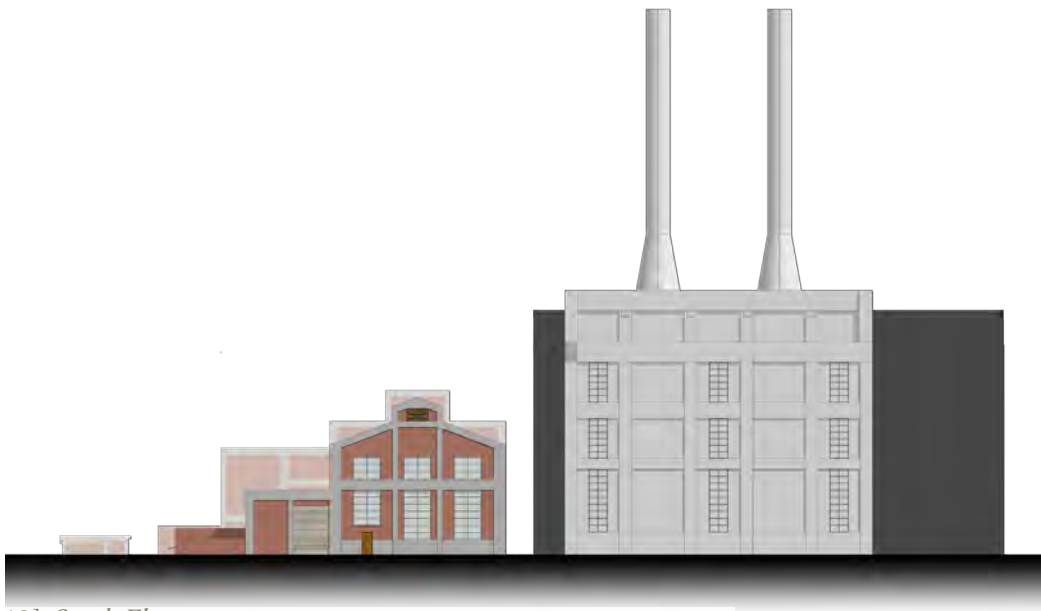


[Fig. 116] North Elevation



[north elevation]

[Fig. 117]



[Fig. 118] South Elevation



[south elevation]

[Fig. 119]



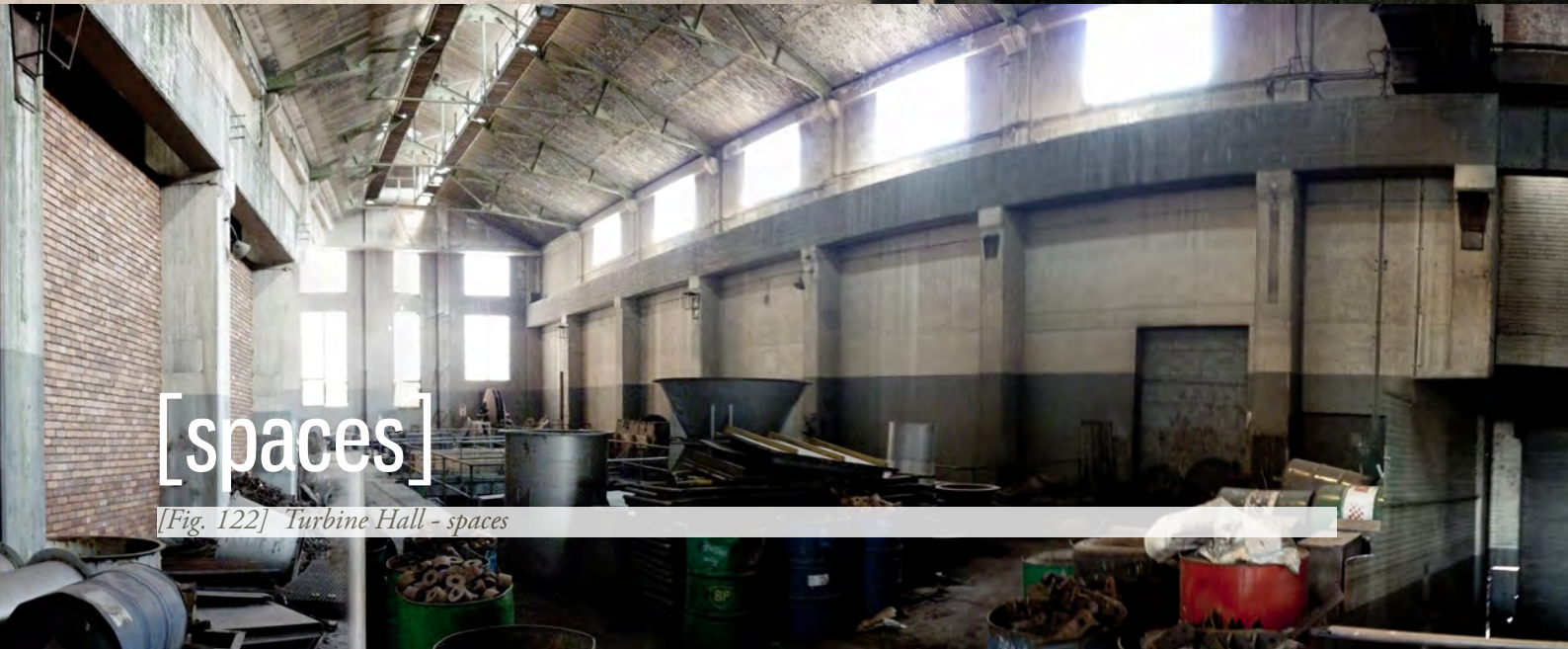
[natural phenomena]

[Fig. 120] Turbine Hall - natural phenomena



[man made phenomena]

[Fig. 121] Turbine Hall - man made phenomena



[spaces]

[Fig. 122] Turbine Hall - spaces



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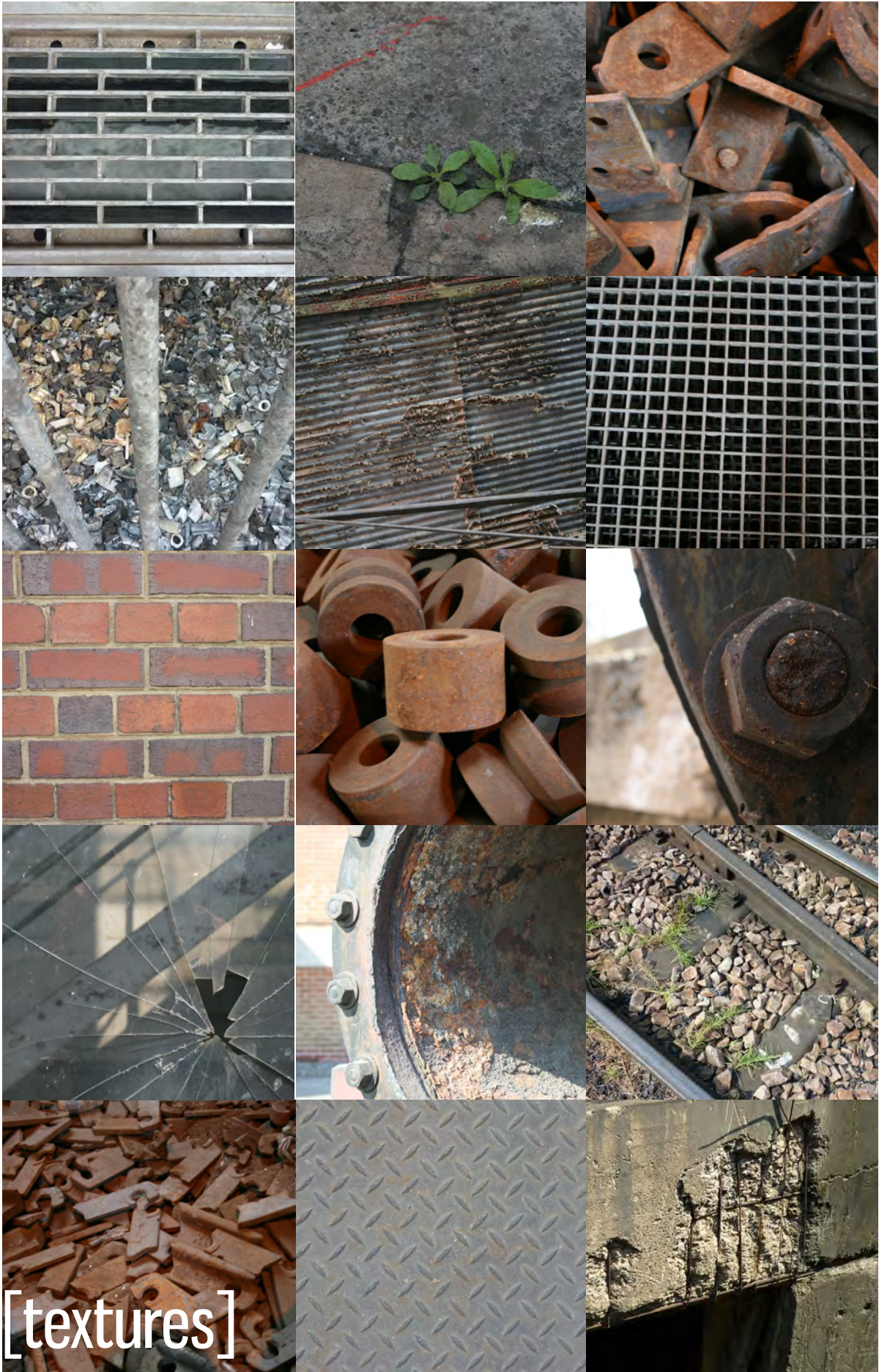




[character]

[Fig. 123] Turbine Hall - character





[textures]

[Fig. 124] Turbine Hall - textures



[7]

[chapter 7] design development

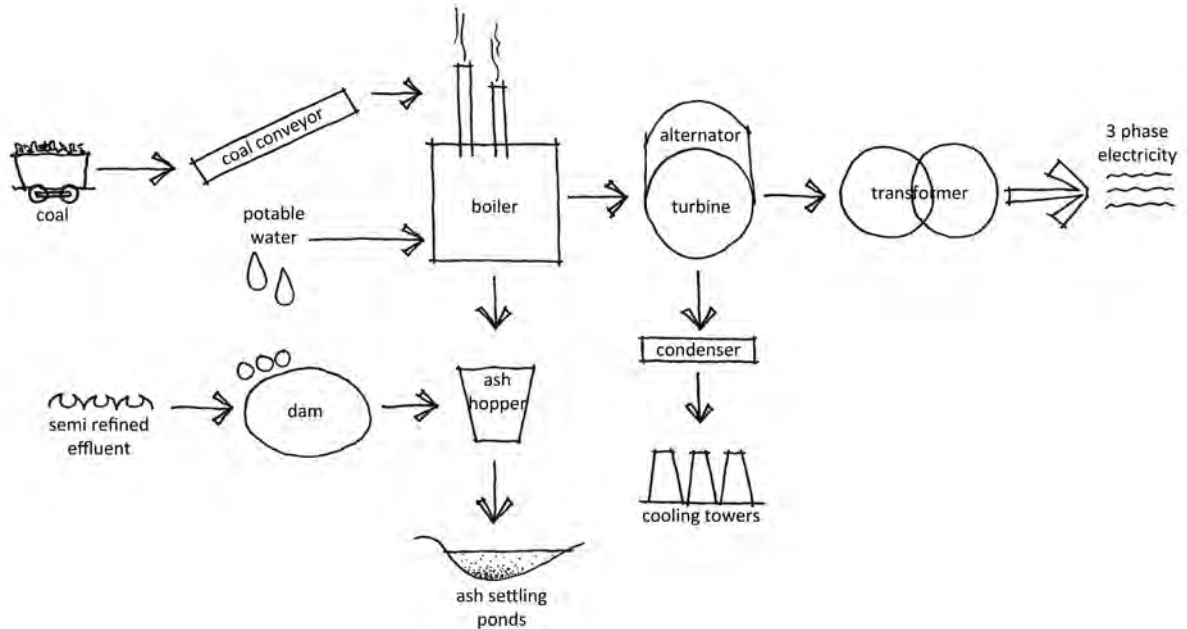
concept development

Progress is the most important driver for the concept of this scheme. This idea is inspired on an urban scale by the intentions of the Vision for Pretoria West and the Development Framework for The Old Power Plant that promote the development of the Old Power Plant as a catalyst to encourage **progress throughout Pretoria West**, and ultimately the CBD. In terms of the old Turbine Hall, the idea of progress is inspired by the way in which the spatial requirements expanded over time, hence the **progressive expansion of the building over time**.

The general character of Pretoria West is that of production with the power plant's function being the **production of electricity**. While the power plant will eventually not be able to produce electricity when its technology becomes obsolete, the framework proposes that, whatever new functions the power plant buildings are adapted for, the **focus on production** should remain. Other buildings within the framework will be adapted for light industrial functions that are a literal reference to the **essence of production** while the Turbine Hall will aspire to accommodate the **production of entrepreneurs** and encourage **progress for people** by means of economic upliftment.

[Fig. 125] Showing the three main phases of progressive construction of the old Turbine Hall



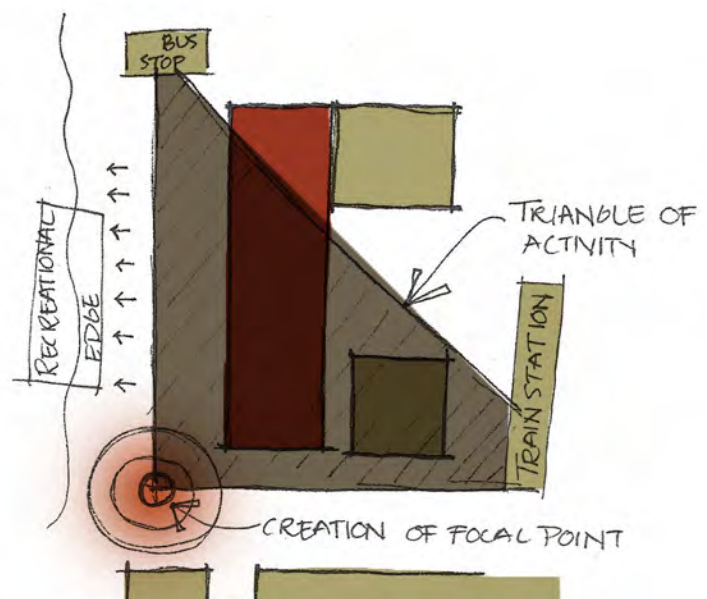


[Fig. 126] Process of electricity production at the Power Plant

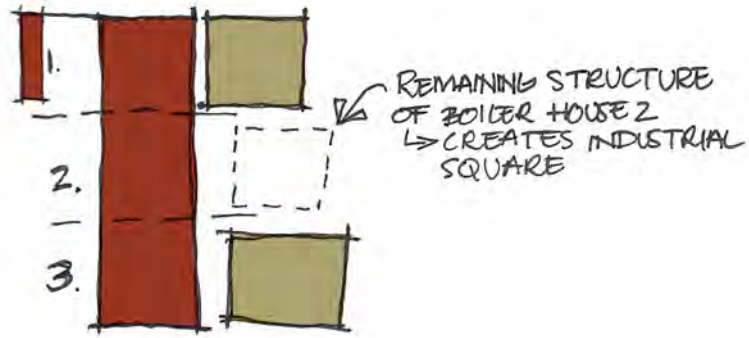
These ideas on **progress and production** inspire the proposed architectural language of which the main informants are:

- that the Old **Turbine Hall** was **progressively built over the years** – its construction occurred in three phases over a period of three decades which correspond to that of the three boiler houses. This suggests that new work should express these three key phases;
- derived from the site analysis, the site entrances and pedestrian movement patterns would occur between the train station and the bus stop: by connecting these points by a route around the existing buildings, a **triangle of activity** is identified. This triangle suggests which part of the building would emulate the highest activity and therefore, the public zones; and

[Fig. 127] triangle of activity



[Fig. 128] Diagram showing the three sections of the turbine hall



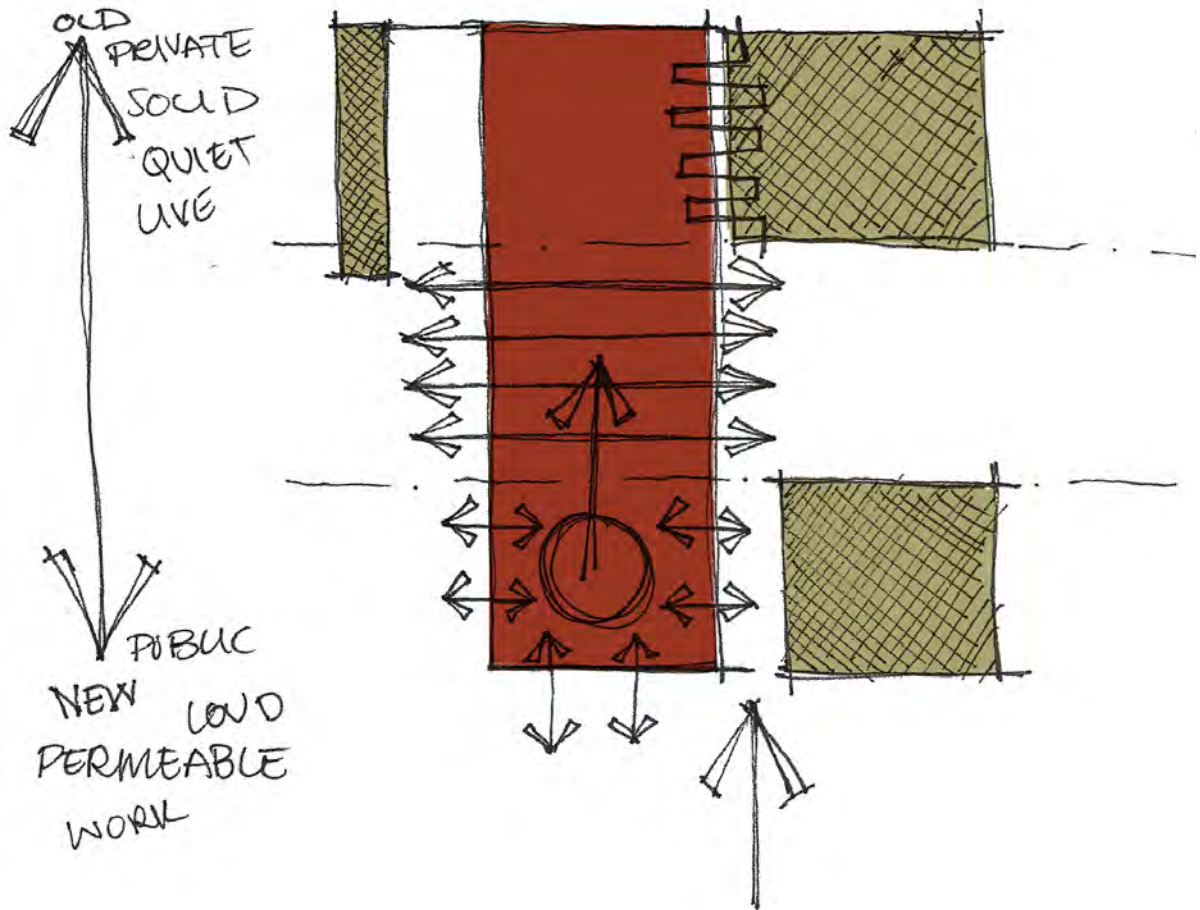
- the **Turbine Hall as a heritage building** is the most important factor to consider when developing an approach to new construction. This means all new work needs to be easily identifiable and the existing character and important spatial qualities need to be preserved.

The concept for this scheme is derived from these three factors which indicate, the more recent the construction to the Turbine Hall, the more public that part should be. The progression from the northern part to the southern part of the building (the oldest to the newest part of the building) also implicates the progress in the use and zoning of the building, namely, from the private to the public. The architectural language and modes of intervention could then be used to demonstrate this progression as well as emphasise the three main phases of construction.

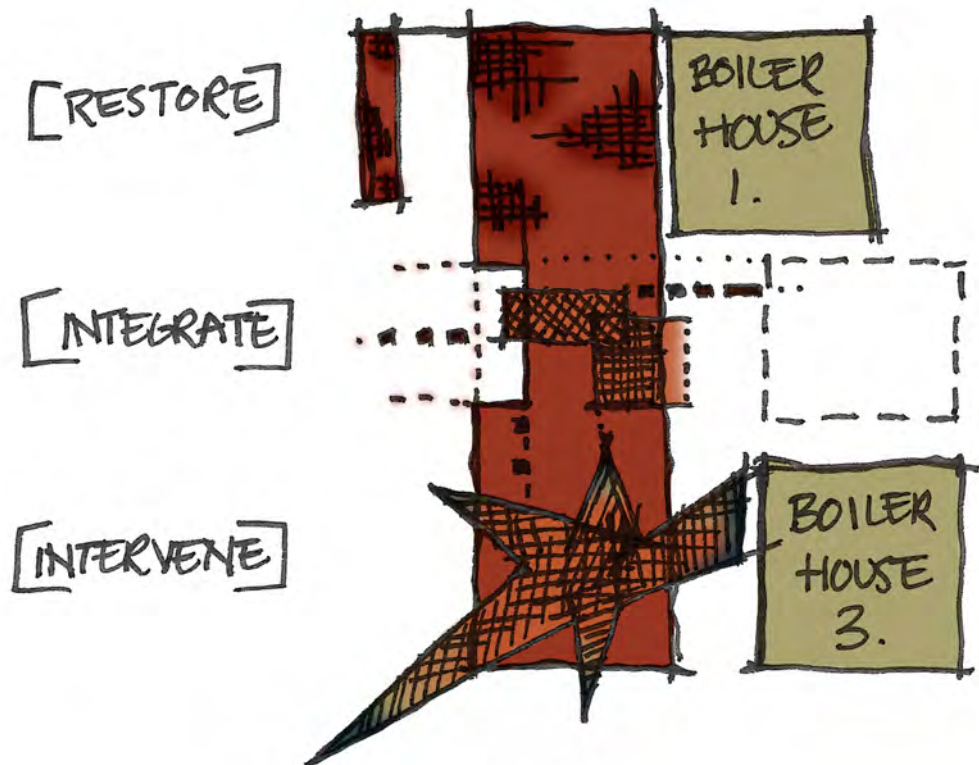
It then becomes logical that the older quieter third should have the most sensitive and least drastic approach to adapting a heritage building and that this approach should become progressively more bold as the building opens up to a more public environment. Then taking reference from the precedent study and the three different approaches to adapting heritage buildings that it identifies this then derives the concept for this scheme, namely “**Restore, Integrate and Intervene**”.

development of form

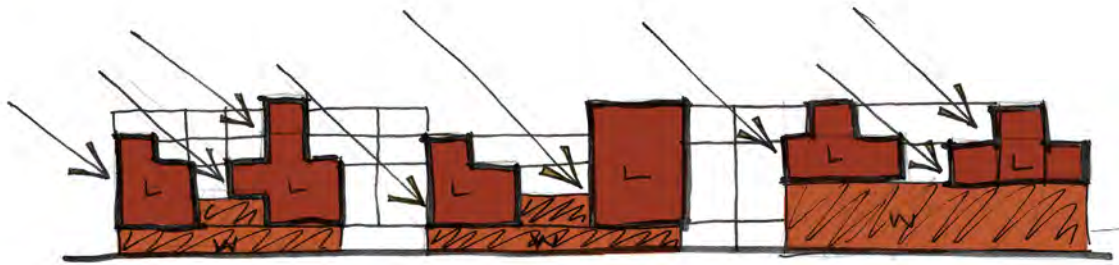
The division of the building into three parts; each with the different architectural language, is the most important informant of the proposed redevelopment, however, the east-west orientation of the building impacts the articulation of the new architecture. The Turbine Hall’s main facade faces west and is the most important within the context of the Power Plant as a whole. Sun control of the western facade, together with the problem of the short northern facade, which does not allow enough direct winter sunlight into the building, have to be addressed in the proposed design solutions to the new residential and recreational spaces.



[Fig. 129] Conceptual diagram demonstrating degrees of permeability, public access and progression



[Fig. 130] Conceptual diagram demonstrating different approaches to new architecture

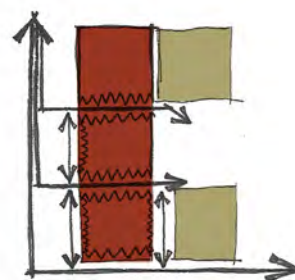
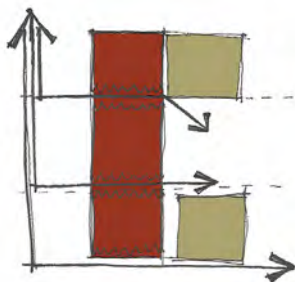


[Fig. 131] Diagram demonstrating harvesting northern light by cutting courtyards into the building, suggests which spaces could be appropriate for living and for working

Northern sunlight can be harvested into the building when parts of the existing roof sheeting are removed, thereby creating interior courtyards. This will not only allow natural sunlight into the building, it will accentuate the volumnicity of the industrial space.

programmatic rationale

Having defined three progressive 'levels' in terms of public exposure and access (and in terms of the building's history – the three construction phases of the building and its additions), it makes sense that each of these sections should house different supporting and interrelated functions to form a new whole. These sections could be viewed as follows:

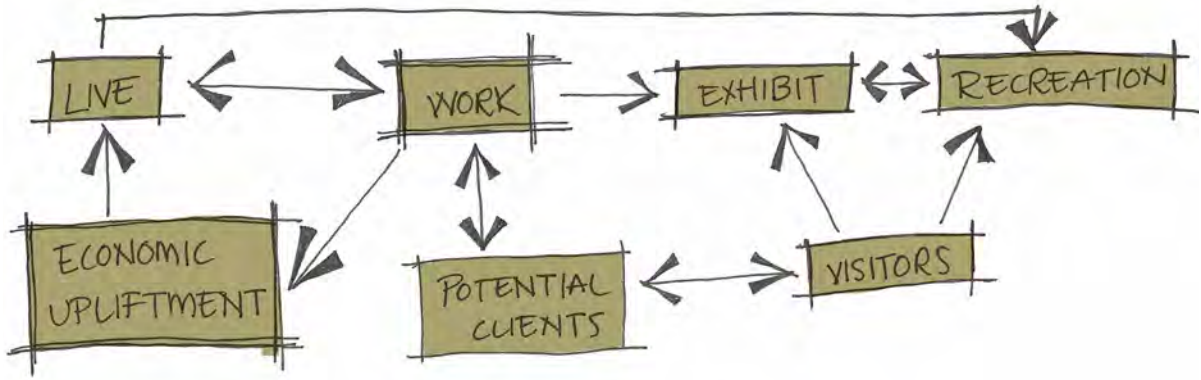


Restore

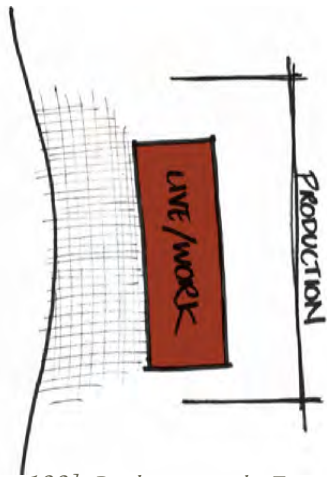
The northern part of the building will be the quieter part, and thus would allow the most privacy. The benefit of direct exposure to northern sun adds to the belief that it would be the best location for the affordable housing component with the supporting functions such as a crèche and a small library. This would promote learning and provide a safe environment for children while the adult residents are at work in a different part of the Turbine Hall or those parents who commune across the site on a daily basis.

Integrate

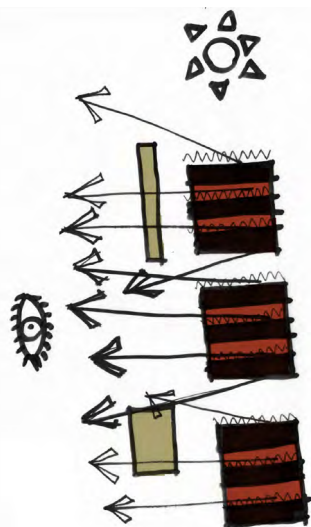
This middle section is the mediator between the most public and most private ends of the building which suggests the accommodation of semi-public activities such as a learning centre for acquiring business, arts and crafts skills. This section will also house small rentable workshops from which entrepreneurs can run their small businesses. The general use of these workshops will pick up on the theme of production



[Fig. 132] Diagram outlining how different function support each other



[Fig. 133] Production to the East and recreation to the West



[Fig. 134] North sun vs. view to the west

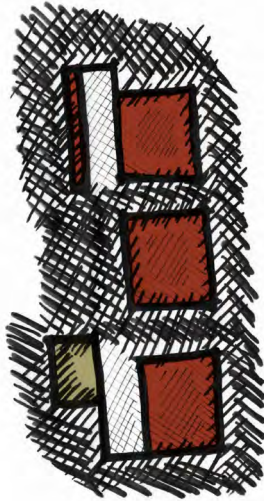
that emanates from the site development framework. This section of the facility's focus will be on creating material output such as pottery, beadwork, carving, metal work and other arts and crafts. Workshops located towards the public side of the building might be used as shops for trading arts and crafts on behalf of informal traders, while the workshops on the quieter side of this section might be appropriated as small studios for businesses such as small design firms and artists.

The residential component ('Restore' section) will overlap with the mediating section ('Integrate') as a few residential units will be located on the uppermost floors. A restaurant introduces a recreational aspect to the building which overlaps and creates a gradual transition to the most public 'Intervene' section.

Intervene

An arts and crafts gallery and a large artists' studio will be accommodated in this southern part of the Turbine Hall. The functioning and design of the studio will be informed and inspired by the BAT centre (as discussed in the precedent study earlier). The intention for this part of the building to be a place where emerging artists rent a small place to work from and promote their skills. By opening the studio for permanent public access, it encourages interest and awareness of the artists and their facilities and thereby encouraging a platform for trade. Creating an 'artist' working environment might encourage mutual support and allow learning opportunities. As artists' skills develop they can share their knowledge and pass on the skills of their trade. The gallery on the other hand, could also be the platform for a variety of artistic and performing arts events and exhibitions, which would draw more visitors on a regular basis.

To get a clearer picture of the personal interactions and transactions, the following scenario might suggest the most likely occupants and residents of Turbine Hall:

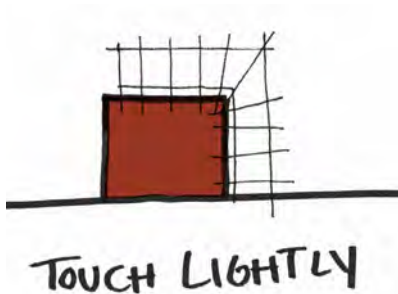


[Fig. 135] *Hierarchy of spaces*

a) The struggling artist,

who has the talent, but also lacks the knowledge and skill of promoting him or herself. The artist can start off by renting a table in the artists' studio. He or she can work from the same place that they sell his/her work. Moreover, the communal facilities will allow greater opportunity for interaction with other artists who will inspire and offer support. As he/she sells more works, he/she will be able to afford a larger working space within the studio.

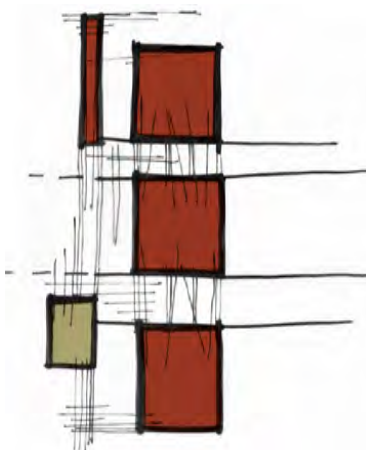
These artists aspire to having their work displayed in the gallery and work hard to reach that goal to increase their chances of being the next hot local talent discovery. As they become more experienced, they start teaching classes in the studio and at the learning centre to encourage other artists.



[Fig. 136] *diagram demonstrating approach to new interventions in section*

b) The Entrepreneur

has good ideas, but lacks the 'know-how' to materialise them. Entrepreneurs could attend classes at the learning centre and business centre respectively, where they would acquire the necessary business skills and receive valuable advice on acquiring the necessary start-up funding for their own businesses. They could even rent workshops to run their small businesses from. The opportunities arise for employing people and renting apartments in the Turbine Hall. These opportunities would allow them to live and work in the same environment and hence saving on travelling and public transport expenses and time away from their family.



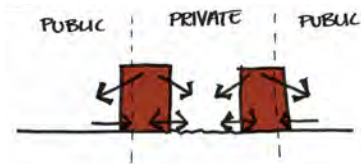
[Fig. 137] *diagram demonstrating approach to new interventions in plan*

c) The Commuter

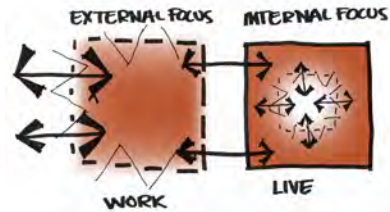
is someone who commutes to and from work by train. This person may need access to print something important on the way to work, or want to access the internet on their way home. The necessary facilities in the Turbine Hall would be accessible to them in the business centre. They may be dissatisfied with their current job and want to create more opportunity for themselves by furthering their education with evening classes at the learning centre, or catch supper with a friend at the restaurant before they head off into their different directions. On a lovely evening, they may enjoy wandering around the Turbine Hall to peruse the activities in the studio and workshops and to browse through the gallery.

d) The Family

who lives in one of the apartments, have moved closer to the city. Their savings on travelling expenses pays for their rent.



[Fig. 138] Diagram demonstrating the use of courtyards and height to create public and private spaces



[Fig. 139] Conceptual diagram demonstrating the external focus of working environments and the internal focus of living environments

Furthermore, their proximity to the different potential job opportunities on the site increase their likelihood of obtaining better life conditions. Since the crèche is located close to home where the youngest child is cared for, the eldest daughter's school work has improved; she goes to the library after school where she has access to books, the internet and learning assistants to help with her homework. The neighbours are also there to keep an eye on them.

e) The recreational visitor,

this is someone who would visit the Power Plant after work or on weekends. The success of the new Turbine Hall is to a large extent dependent on the visitors' economic input into the Turbine Hall. Commuters who visit the site and take classes at the learning centre will be familiar with the place and may be inclined to visit the site again after hours. Hosting events is another excellent way to draw people to the Turbine Hall. Drawing on the precedent of the BAT centre which hosts weekly jazz evenings, this creates a regular following of people who return to the venue and offer a solid client base for the artists and entrepreneurs.

architectural approach

Restore

The architectural approach to new architecture in this section of the building focuses on restoring the existing and preserving the original aesthetic of the old building, while new work on the exterior of the building should be identifiable it should be discreet and added sparingly. Emphasis on the old.



[Fig. 140] Restore

Integrate

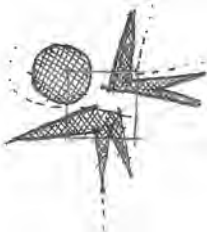
New work in this part of the building takes reference from the old and where existing infill is removed the structure remains to preserve the memory of the old building. Emphasis on the connection between the old and new.



[Fig. 141] Integrate

Intervene

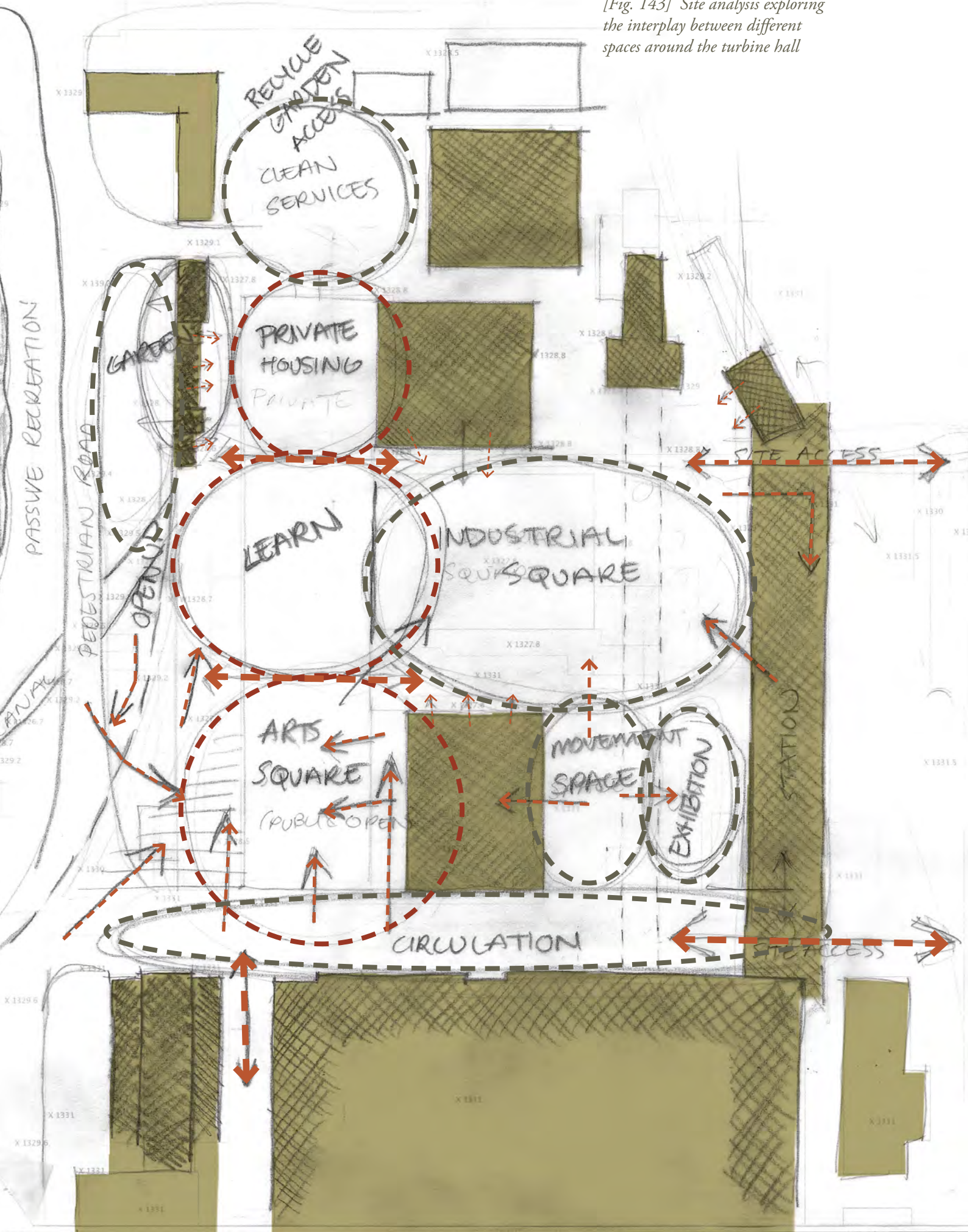
This section of the building has the opportunity for bold new intervention. Materials must contrast strongly with the old. New forms need only take abstract inspiration from the old building or its new functions. Emphasis on the new.

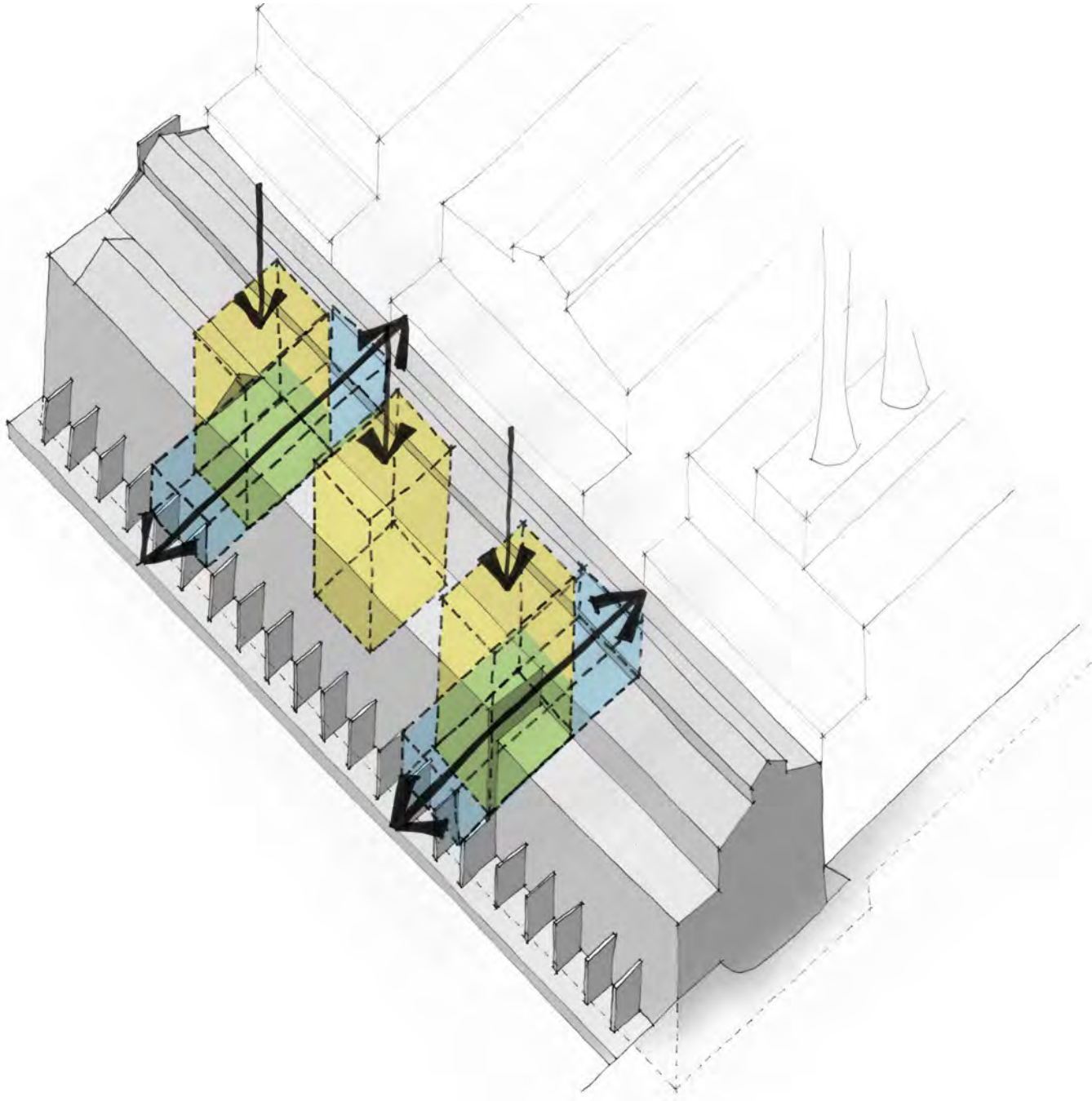


[Fig. 142] Intervene



[Fig. 143] Site analysis exploring the interplay between different spaces around the turbine hall





[Fig. 144] Axonometric exploring where circulation and light penetrate the existing mass



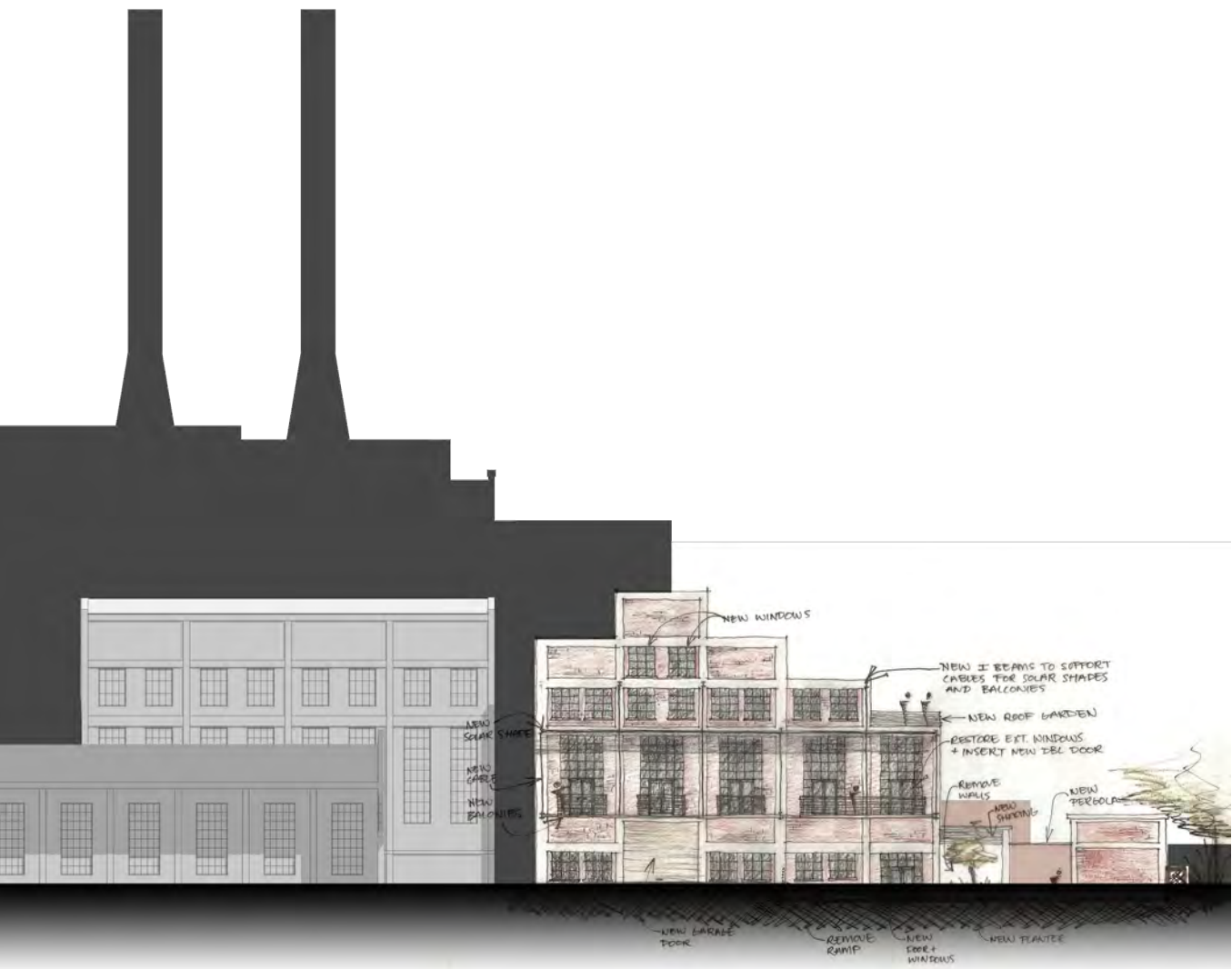
[sketch design]



[west elevation]

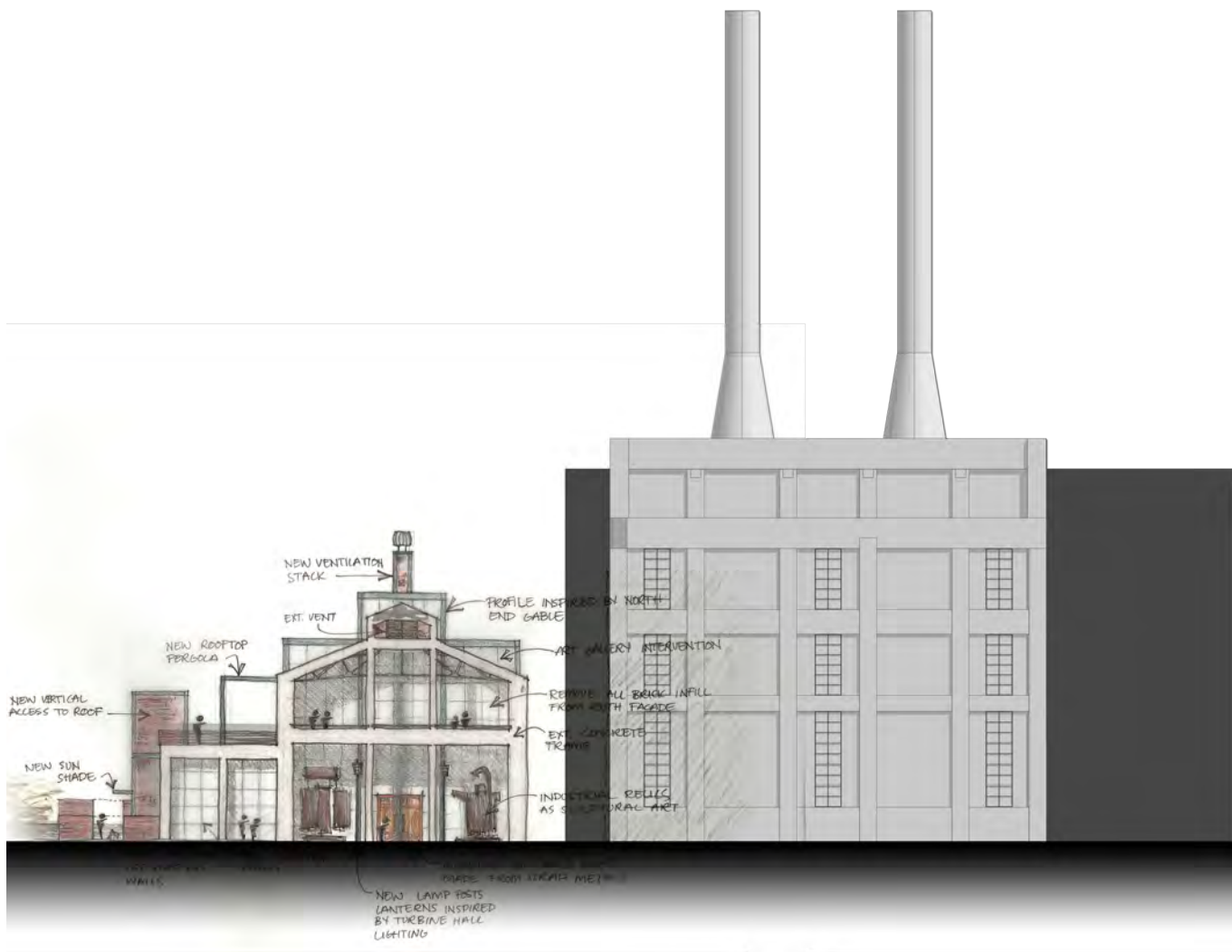
[Fig. 145] *West Elevation (not to scale)*





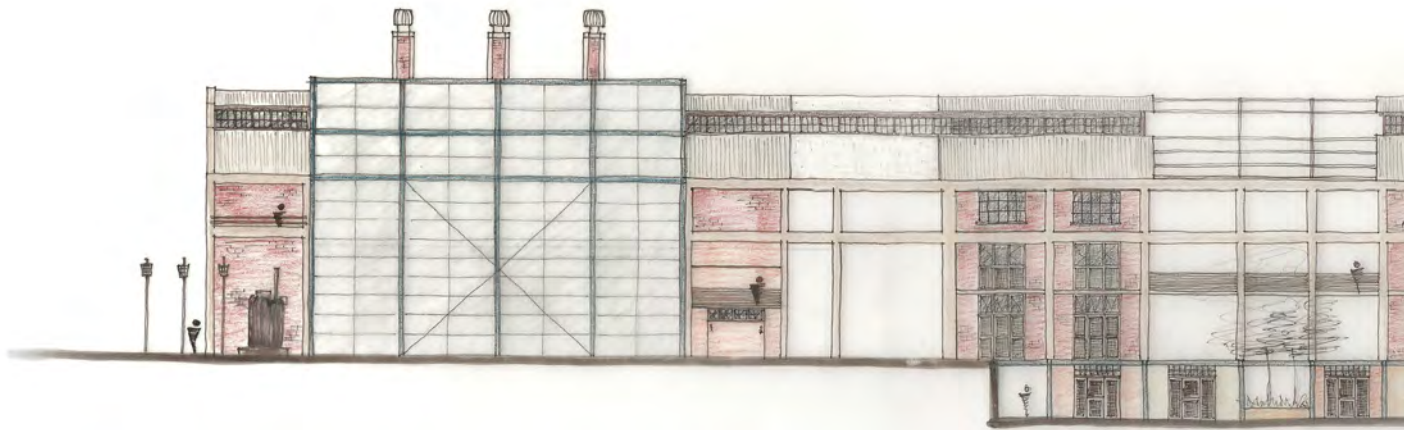
[north elevation]

[Fig. 146] North Elevation (not to scale)



[south elevation]

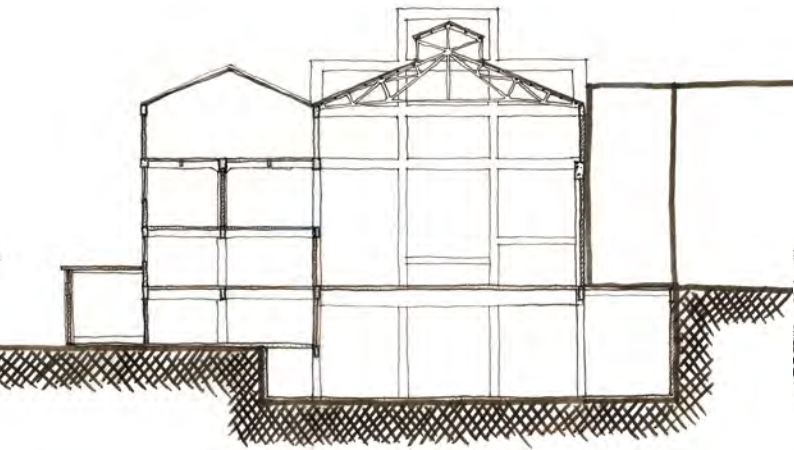
[Fig. 147] South Elevation (not to scale)



[east elevation]

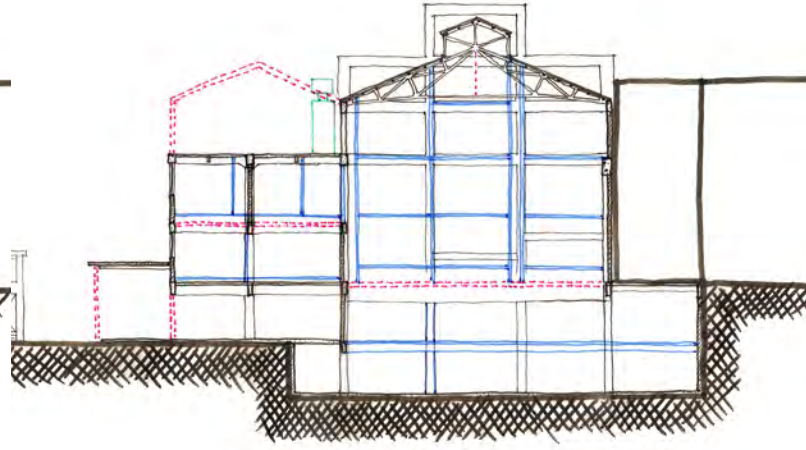
[Fig. 148] East Elevation (not to scale)





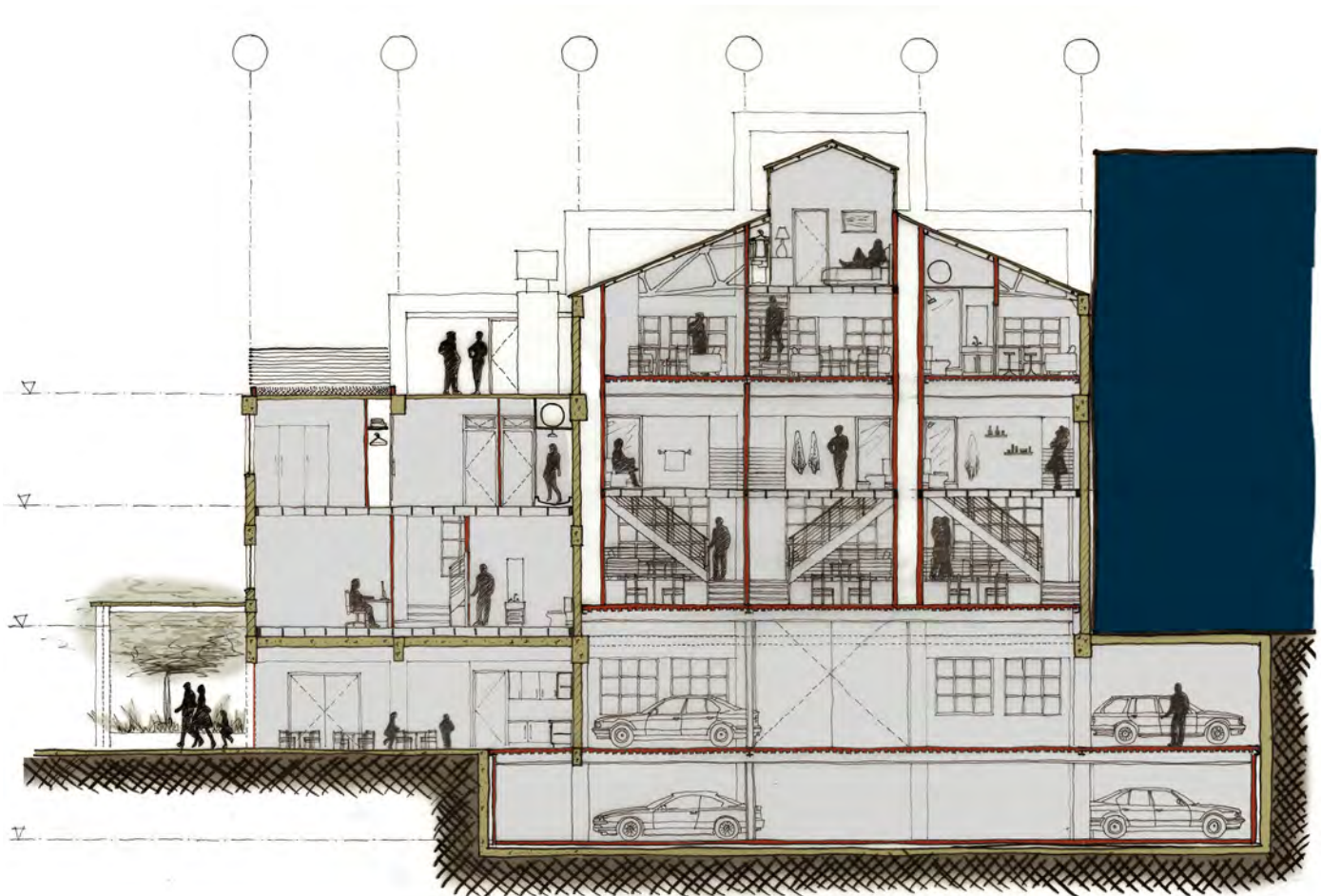
[existing section]

[Fig. 149] B1 - B1 section through existing building



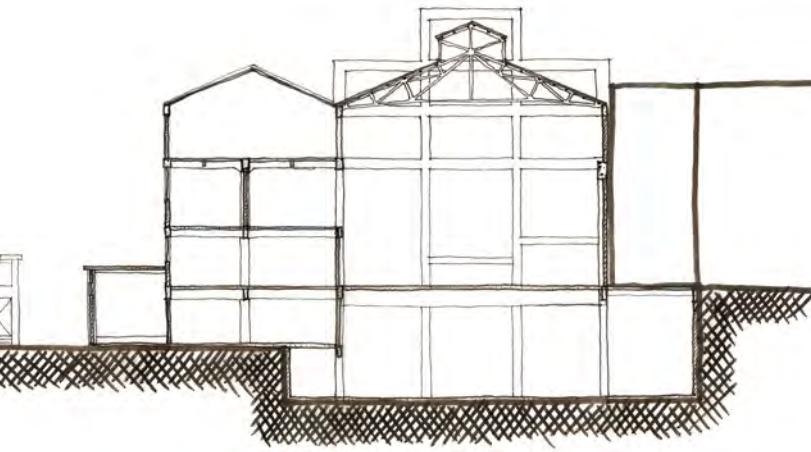
blue [new] red [demolished]

[Fig. 150] B1 - B1 section showing new and demolished work



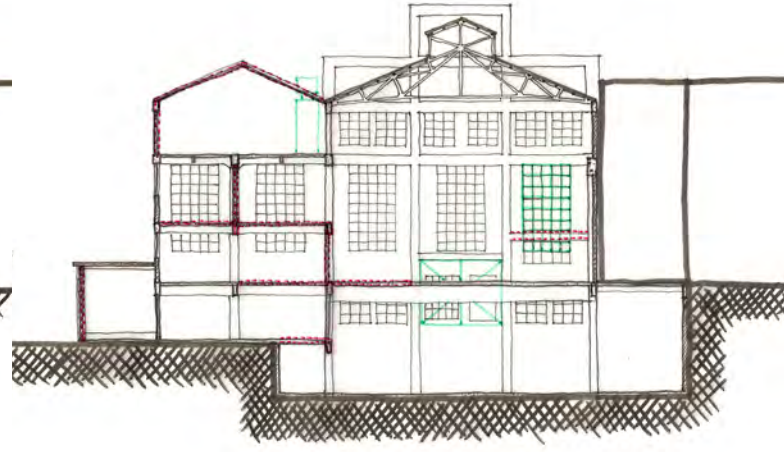
[B1 - B1] section

[Fig. 151] B1 - B1 Section (not to scale)



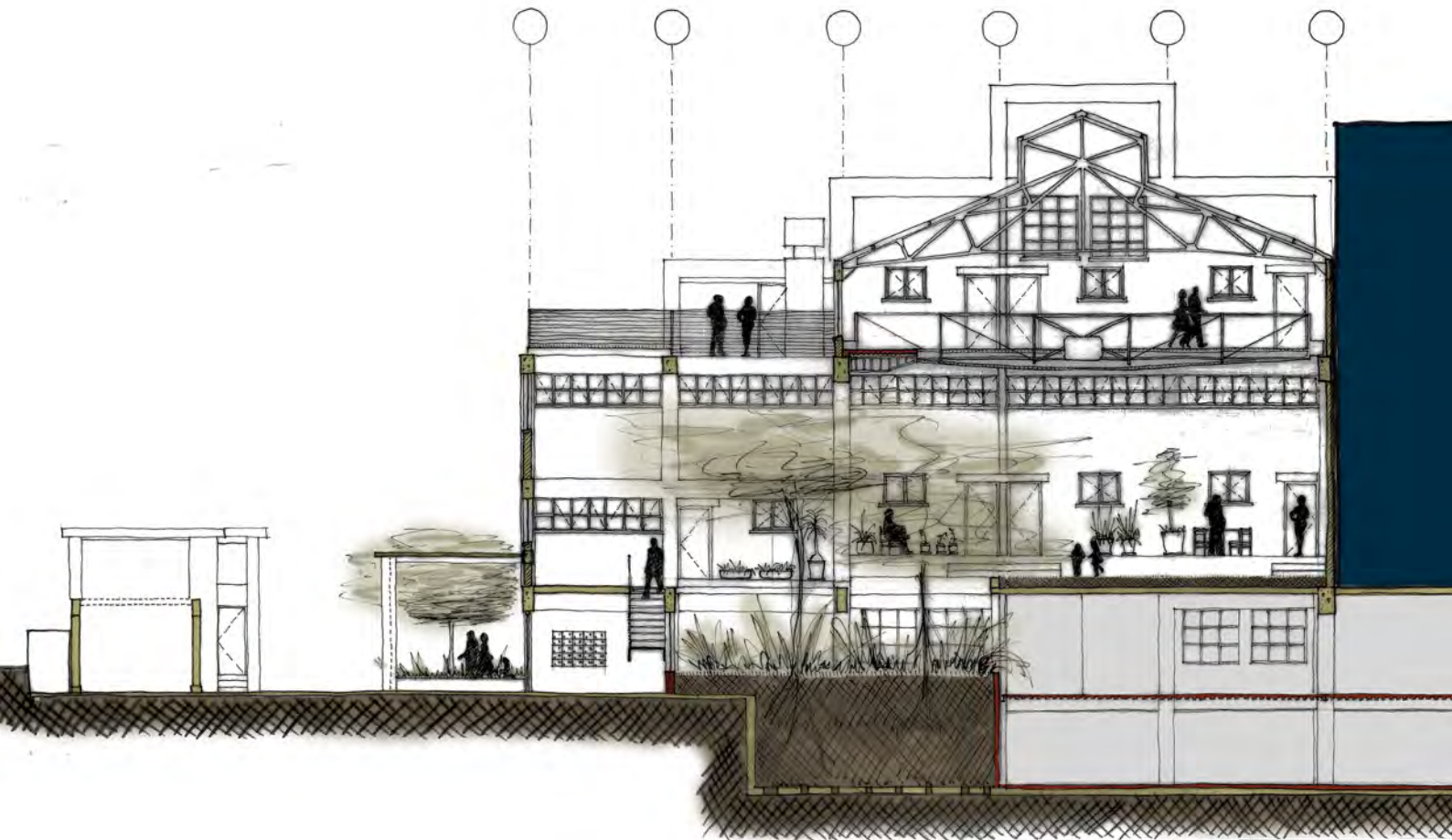
[existing section]

[Fig. 152] B2 - B2 section through existing building



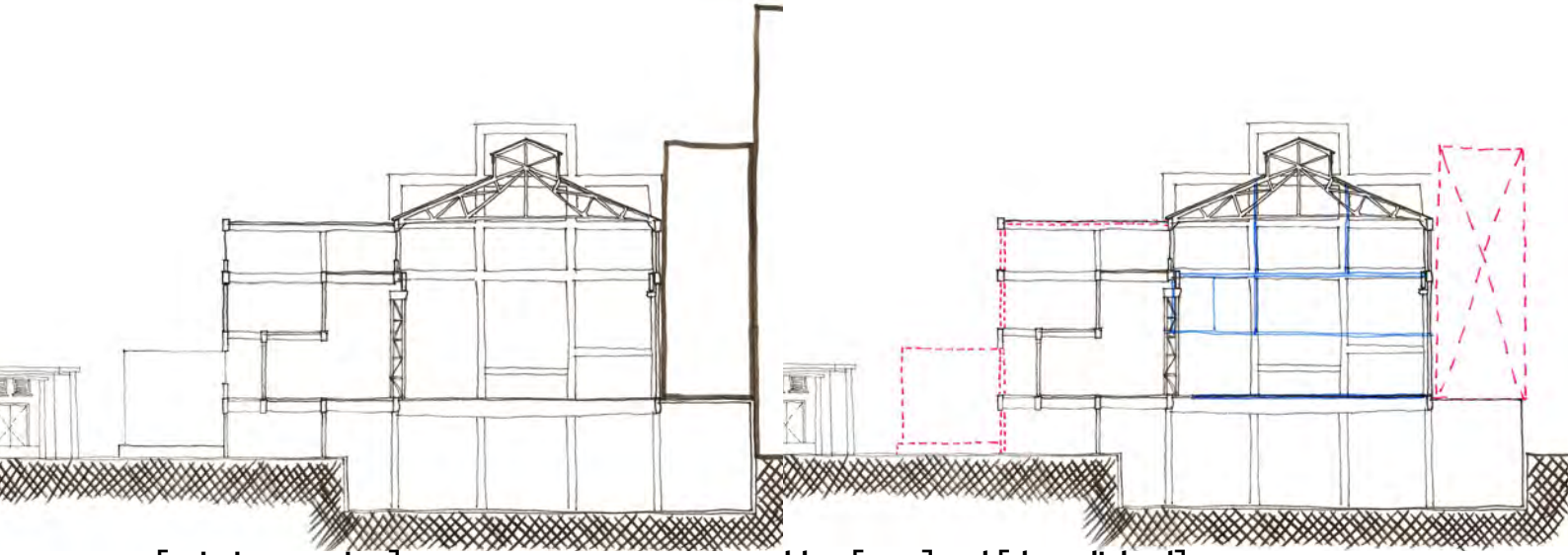
red [demolished]

[Fig. 153] B2 - B2 section showing new and demolished work



[B2 - B2] section

[Fig. 154] B2 - B2 Section (not to scale)

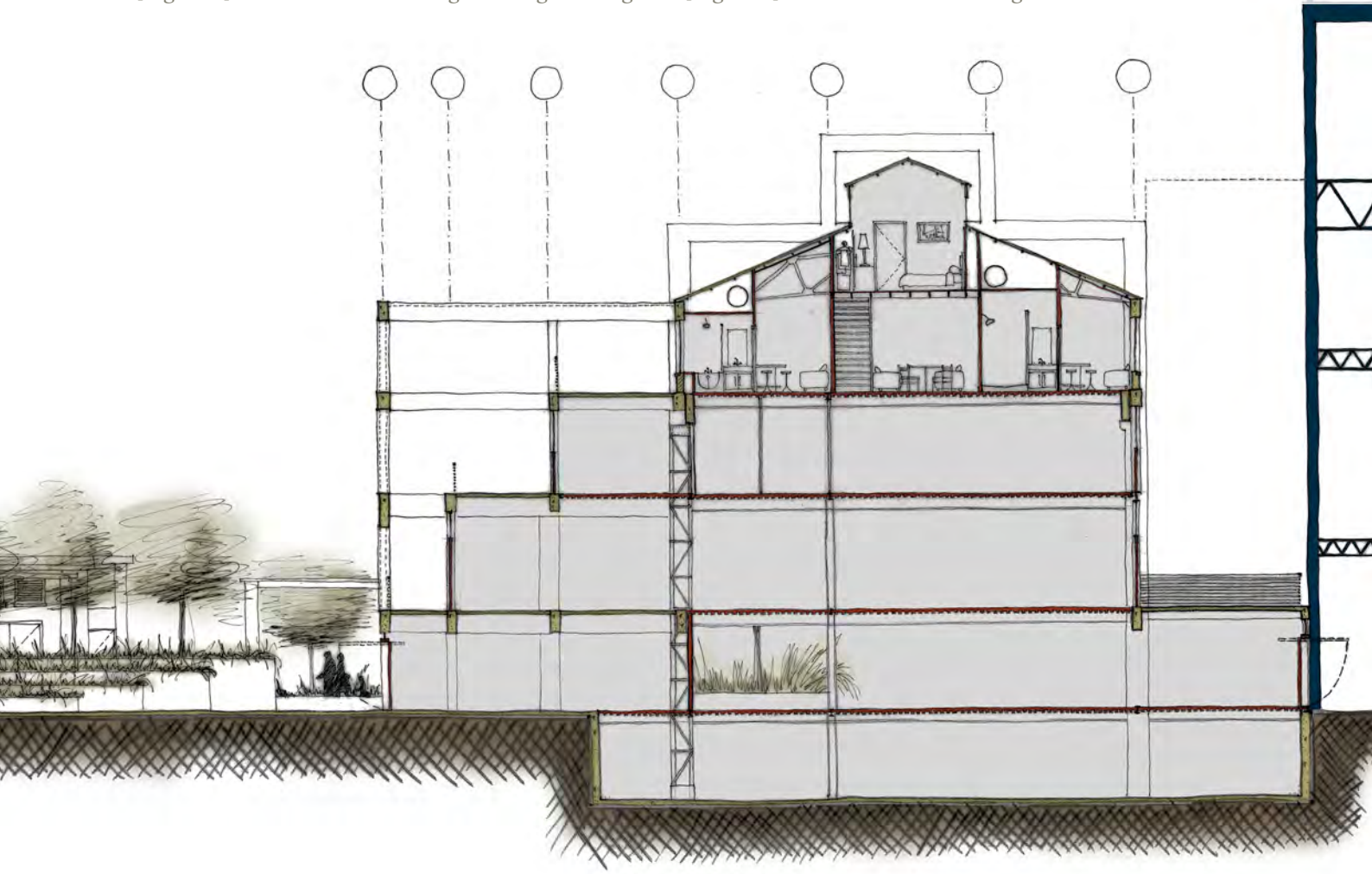


[existing section]

[Fig. 155] C1 - C1 section through existing building

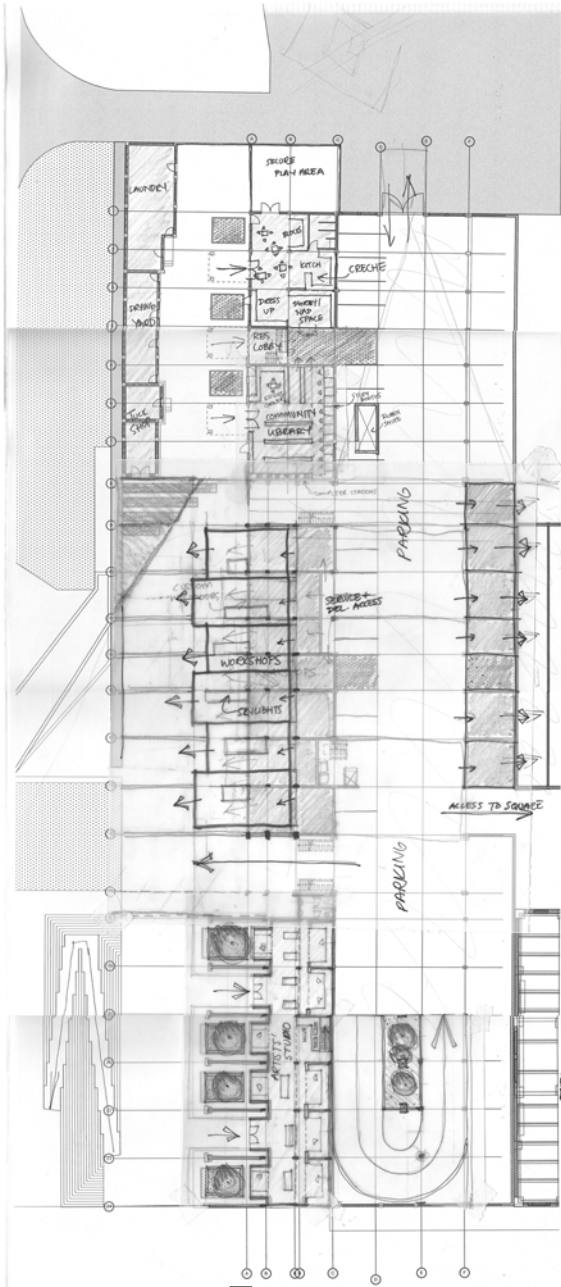
blue [new] red [demolished]

[Fig. 156] C1 - C1 section showing new and demolished work

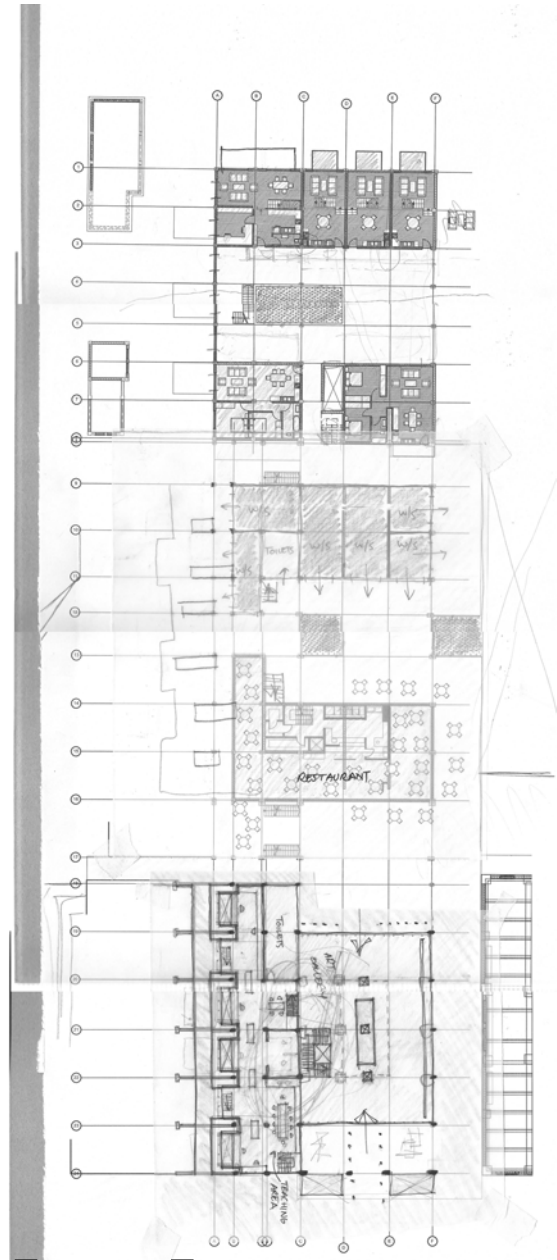


[C1 - C1] section

[Fig. 157] C1 - C1 Section (not to scale)



[ground]



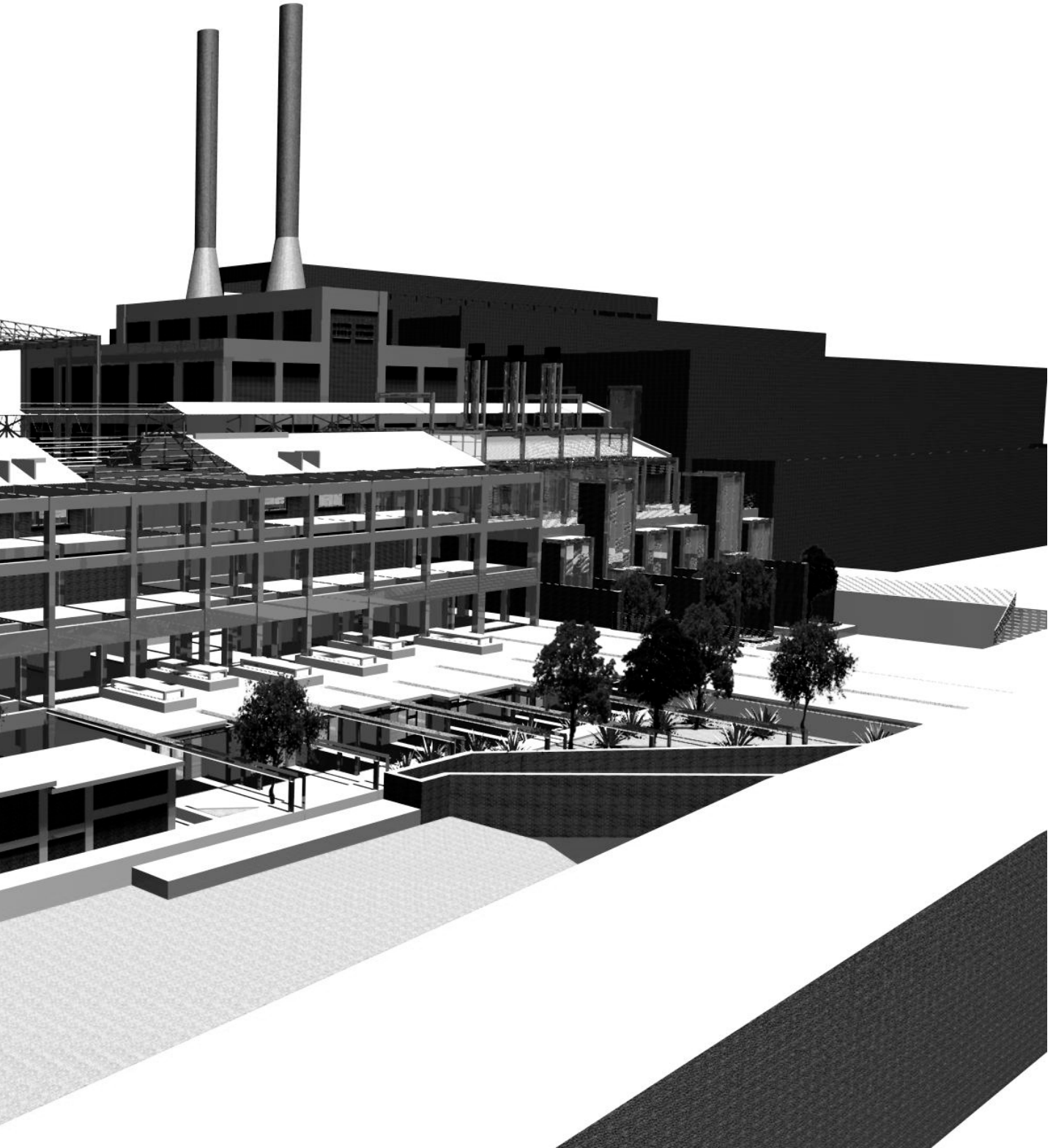
[first]

[Fig. 158] Diagrammatic ground floor plan (not to scale) [Fig. 159] Diagrammatic first floor plan (not to scale)



[3d perspective view]

[Fig. 160] 3D perspective view (not to scale)



[8]



[chapter 8] technical approach

While the approach to construction abides by the concept of 'Restore, Integrate and Intervene', and each section has a slightly different approach to new construction, certain general principles apply to the redevelopment of the whole building:

General

All new work must be easily identifiable

Throughout the Turbine Hall the structural integrity of the old building must be preserved; infill may be removed where appropriate but the existing concrete structural frame must be preserved

It must be ensured that the legibility of the existing envelope remains

Strictly no imitation of existing construction

Restore

New elements to touch the old lightly

Emphasis on the existing

Reuse restored elements from deconstructed parts of the building

Integrate

Pull away from and expose the existing structure

Work within the existing envelope

New work draws on memory of the old

Emphasis on the interplay between the new and the old

Intervene

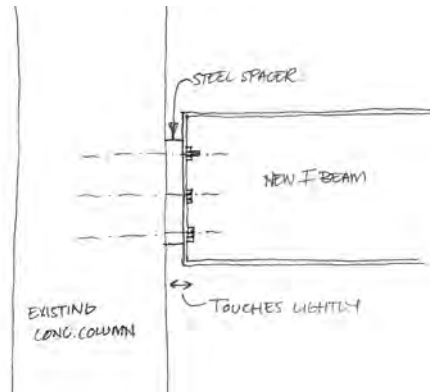
Pop out of existing building

Materials contrast with the existing

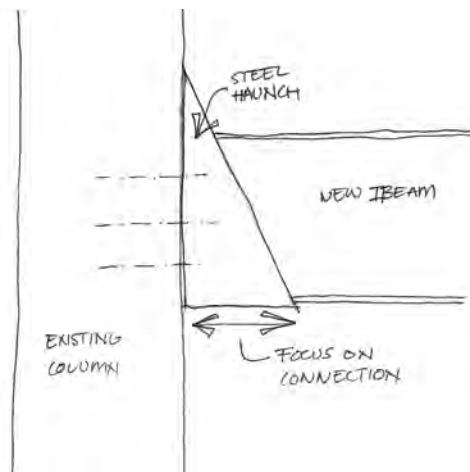
Emphasis on the new

How new structural steel connects with the existing concrete structure varies in each third of the building and is a good example of the different tectonic approach for the different sections.

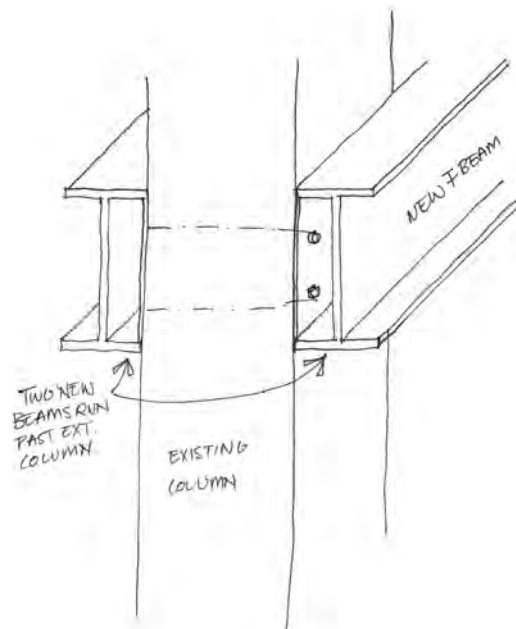
[Fig. 161] Restore - The new steel touches the existing concrete lightly, a steel spacer separates the two making it seem like they do not even touch



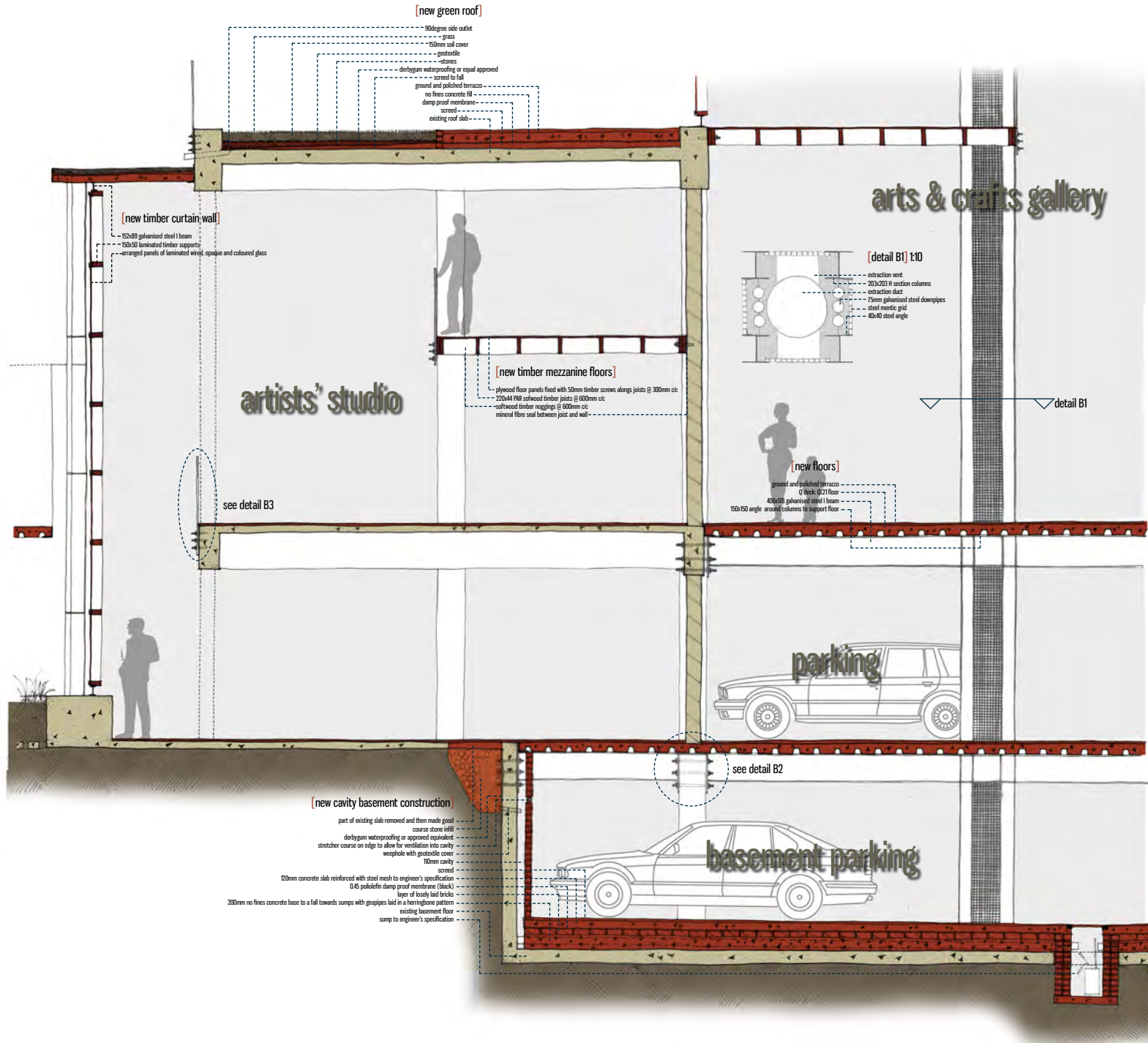
[Fig. 162] Integrate - A steel haunch is fixed to the existing column to support the new beam, this emphasises how the two are connected



[Fig. 163] Intervene - In this instance two beams are used and run past the column making it seem like they are not even directly connected

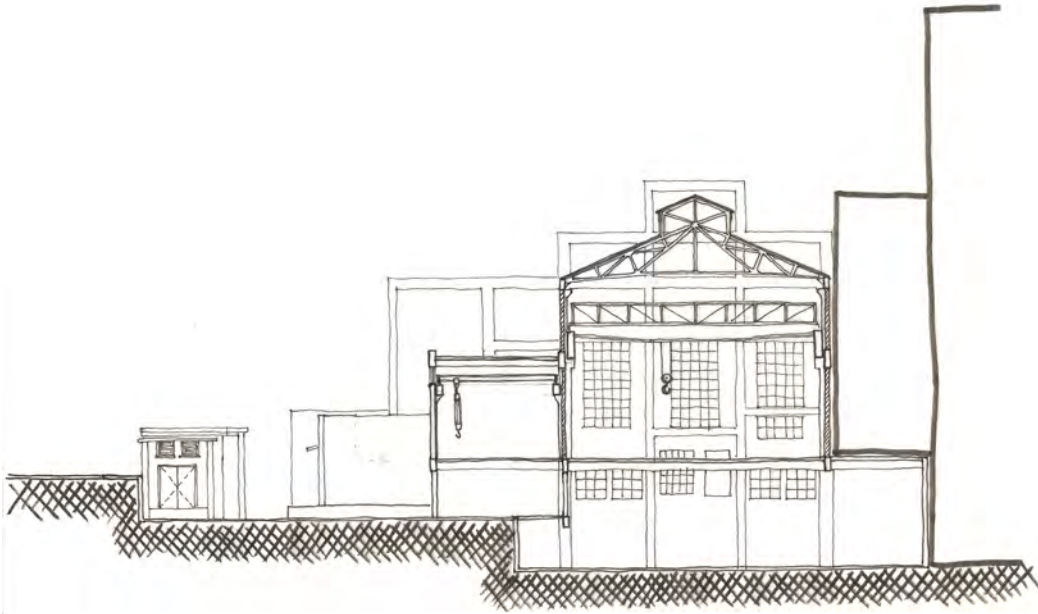


[intervene] arts



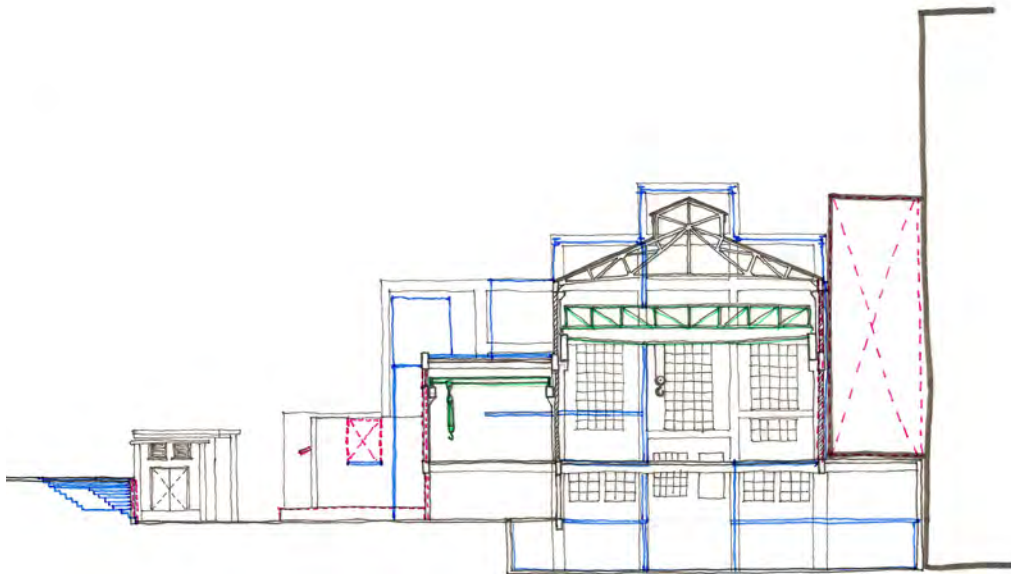
[D1-D1] section showing typical new construction

[Fig. 164] 1:20 Technical section



[Fig. 165] D1 - D1 section through existing building

[existing section]



[Fig. 166] D1 - D1 section showing new and demolished work

blue [new] red [demolished]

[9]



[chapter 9] design resolution



[Fig. 167] North West perspective





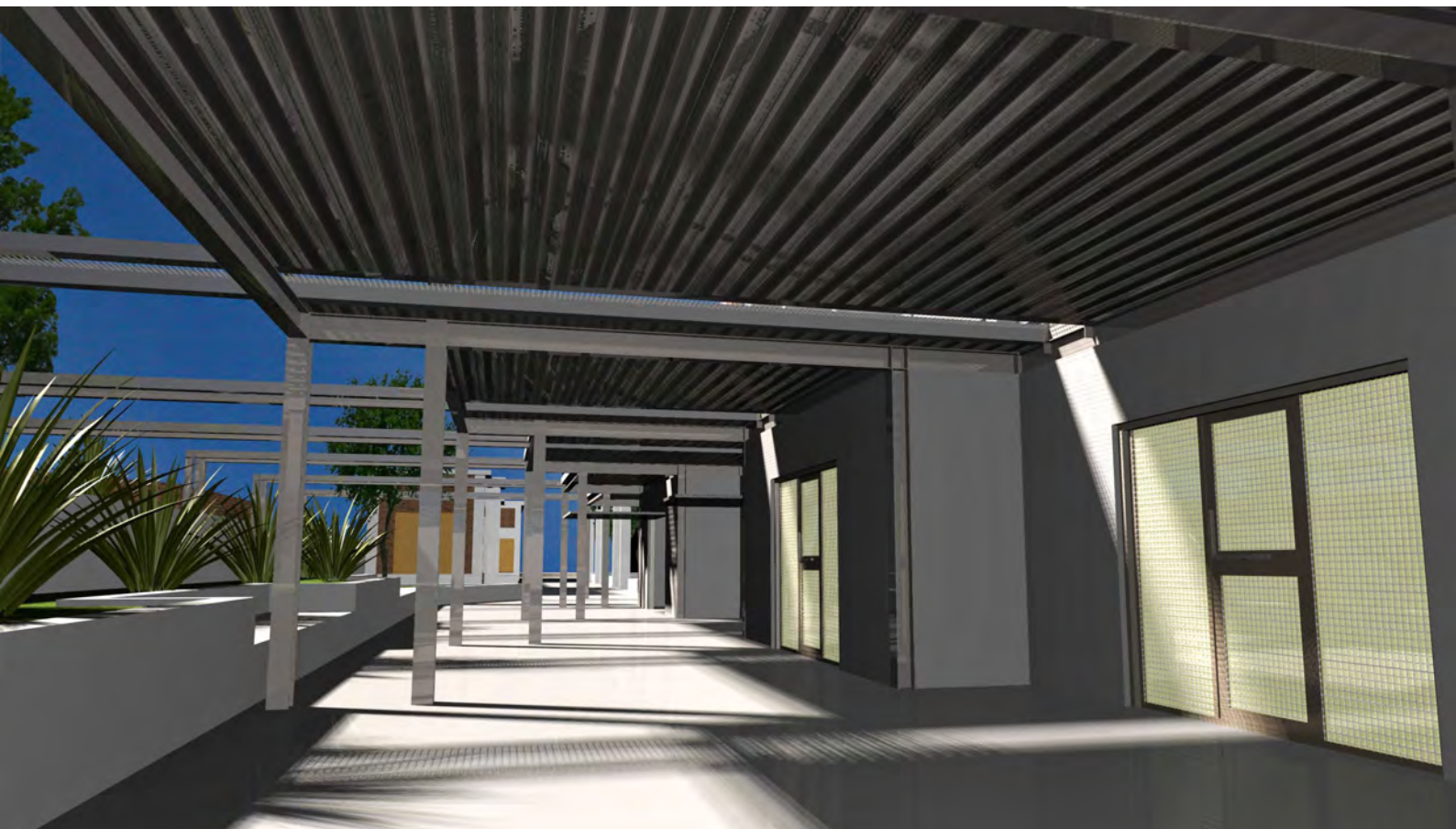
[Fig. 168] North Elevation [Restore]



[Fig. 169] North West perspective [Restore]



[Fig. 170] Western perspective [Integrate]



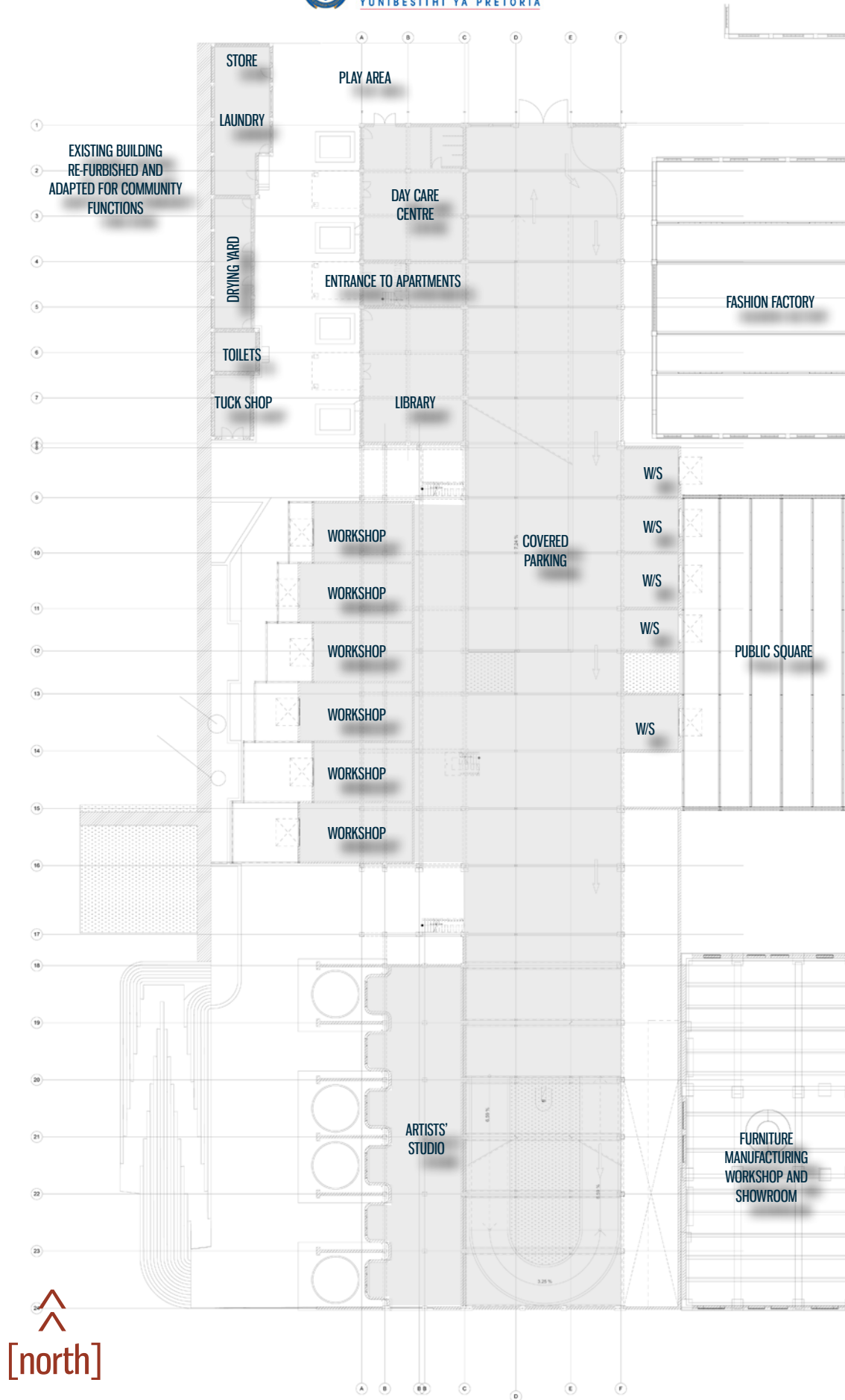
[Fig. 171] Perspective view of ground floor workshops [Integrate]



[Fig. 172] South Elevation [Intervene]



[Fig. 173] North Western perspective of the Artits' Studio and Arts and Crafts Gallery [Intervene]



[Fig. 174] Ground Floor Plan (Not to scale)



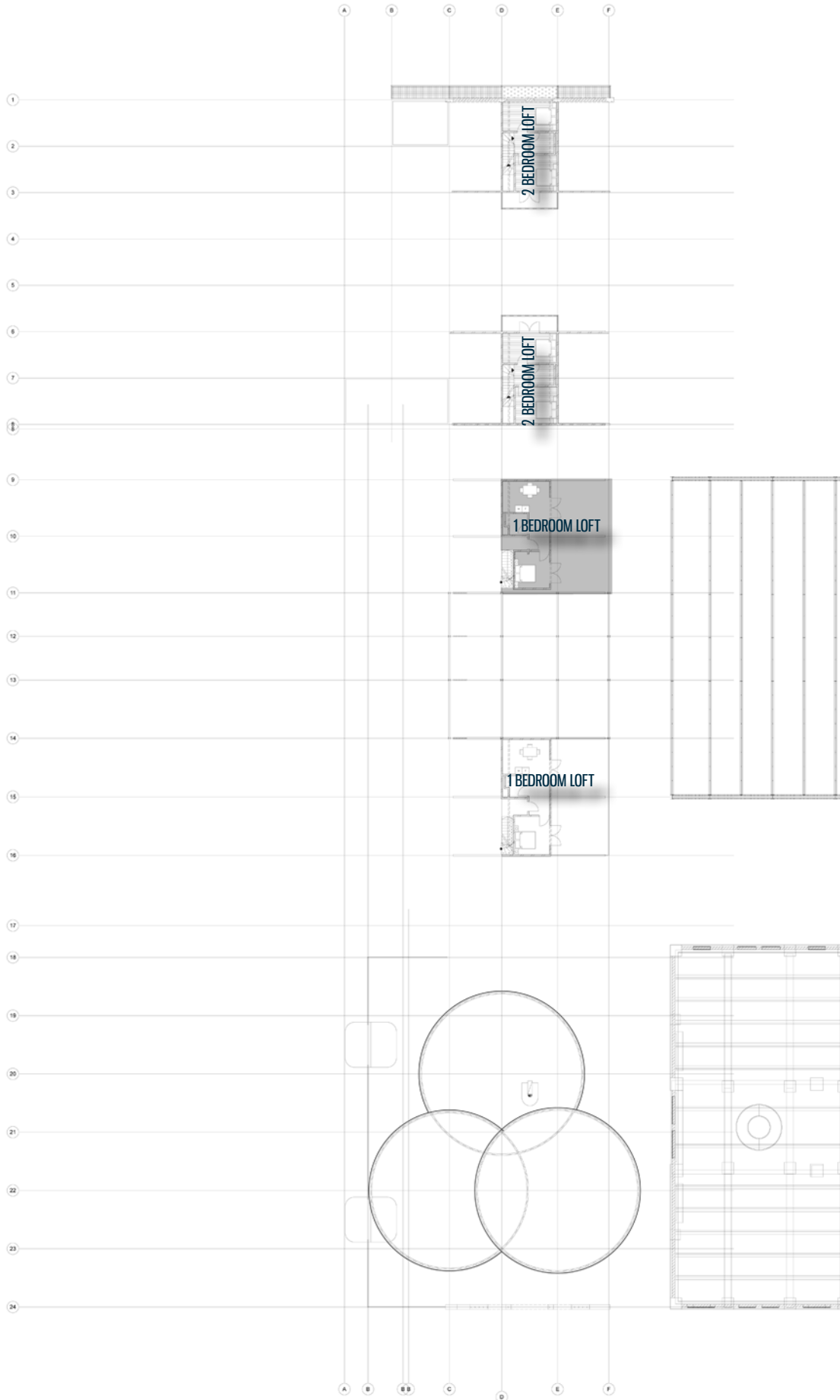
[Fig. 175] First Floor Plan (Not to scale)



[Fig. 176] Second Floor Plan (Not to scale)



[Fig. 177] Third Floor Plan (Not to scale)



[Fig. 178] Loft Level Plan (Not to scale)



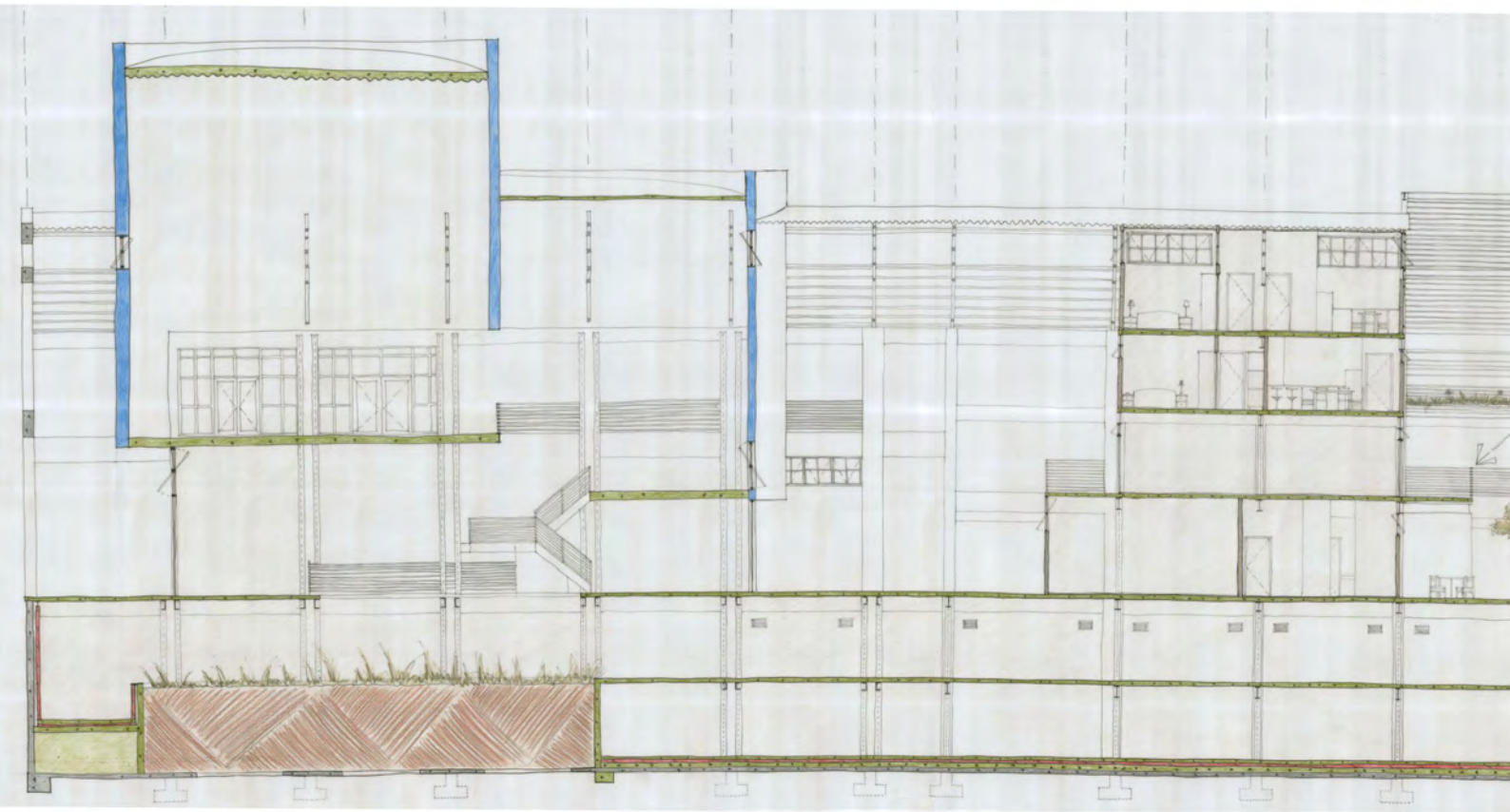
[Fig. 179] Western Perspective



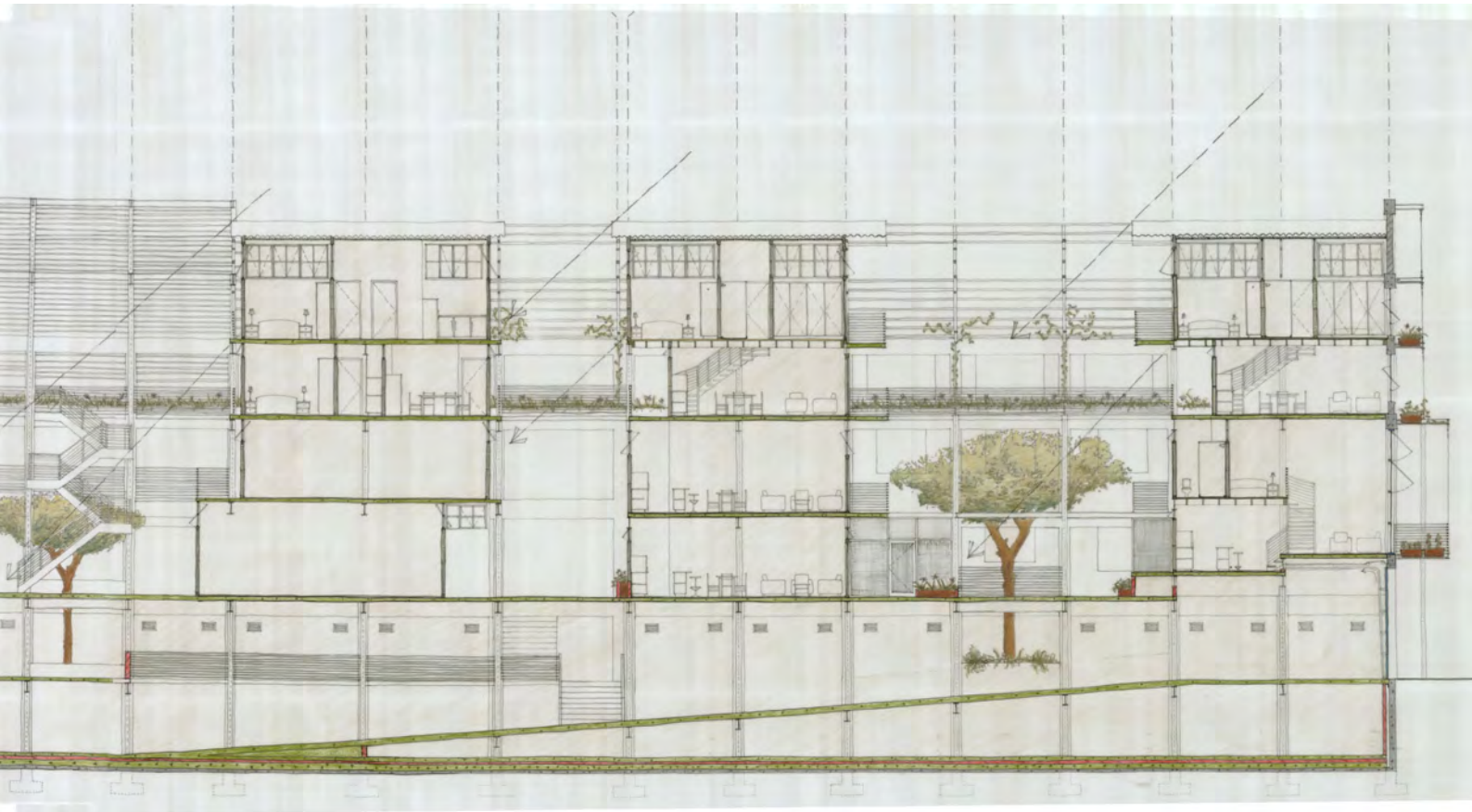
[10]

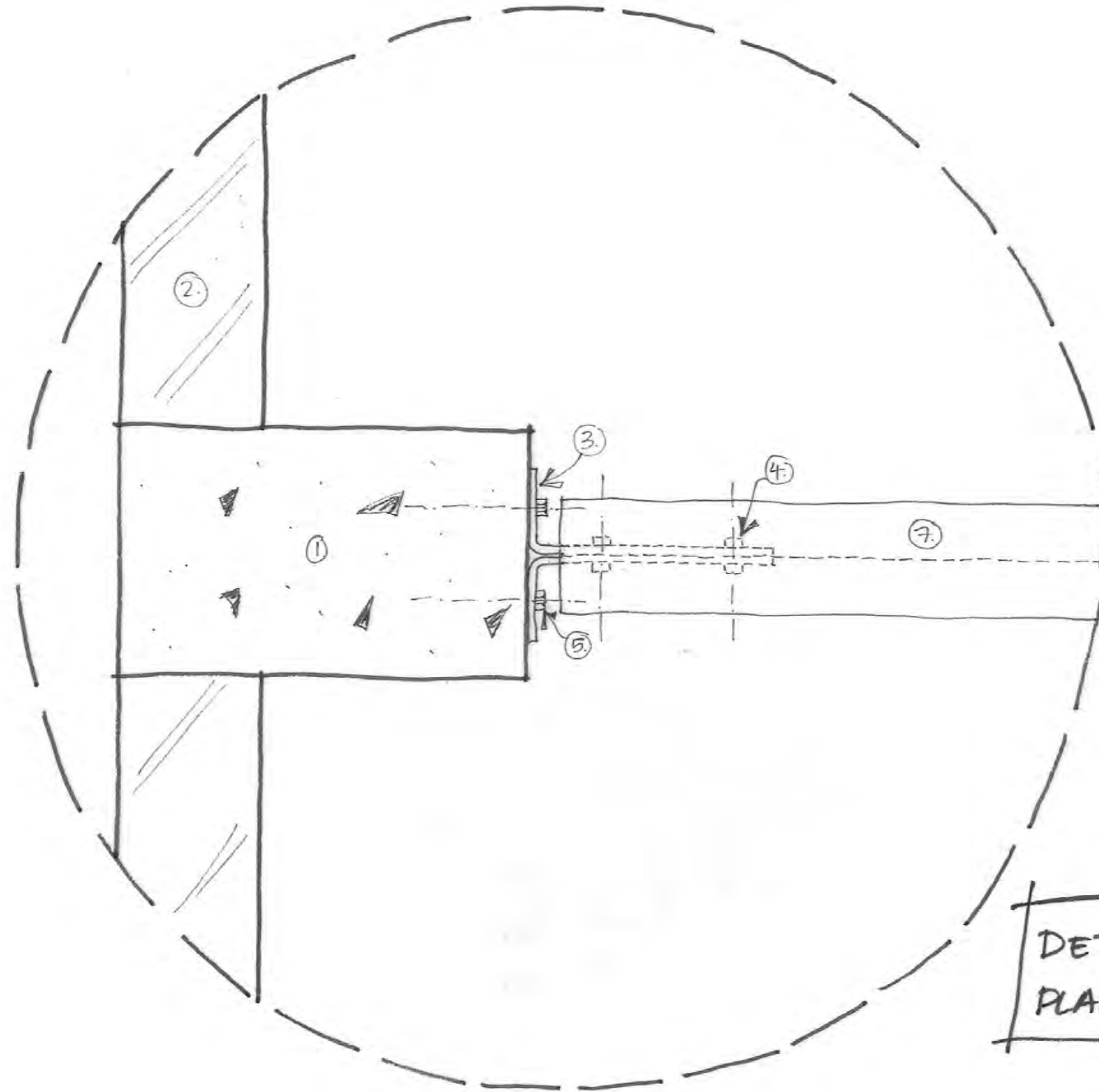


[chapter 10] technical resolution

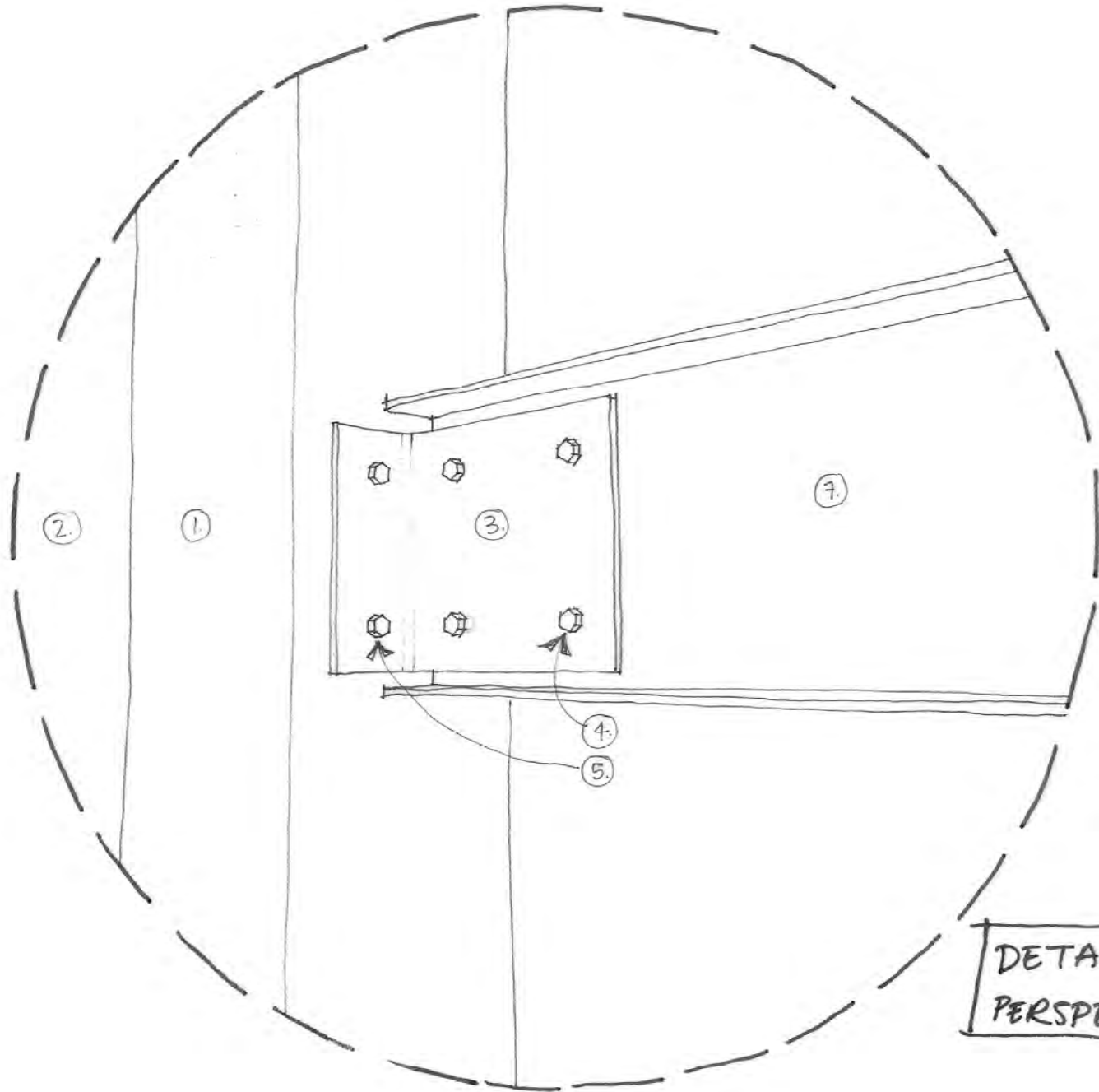


[Fig. 180] Longitudinal Section (Not to scale)

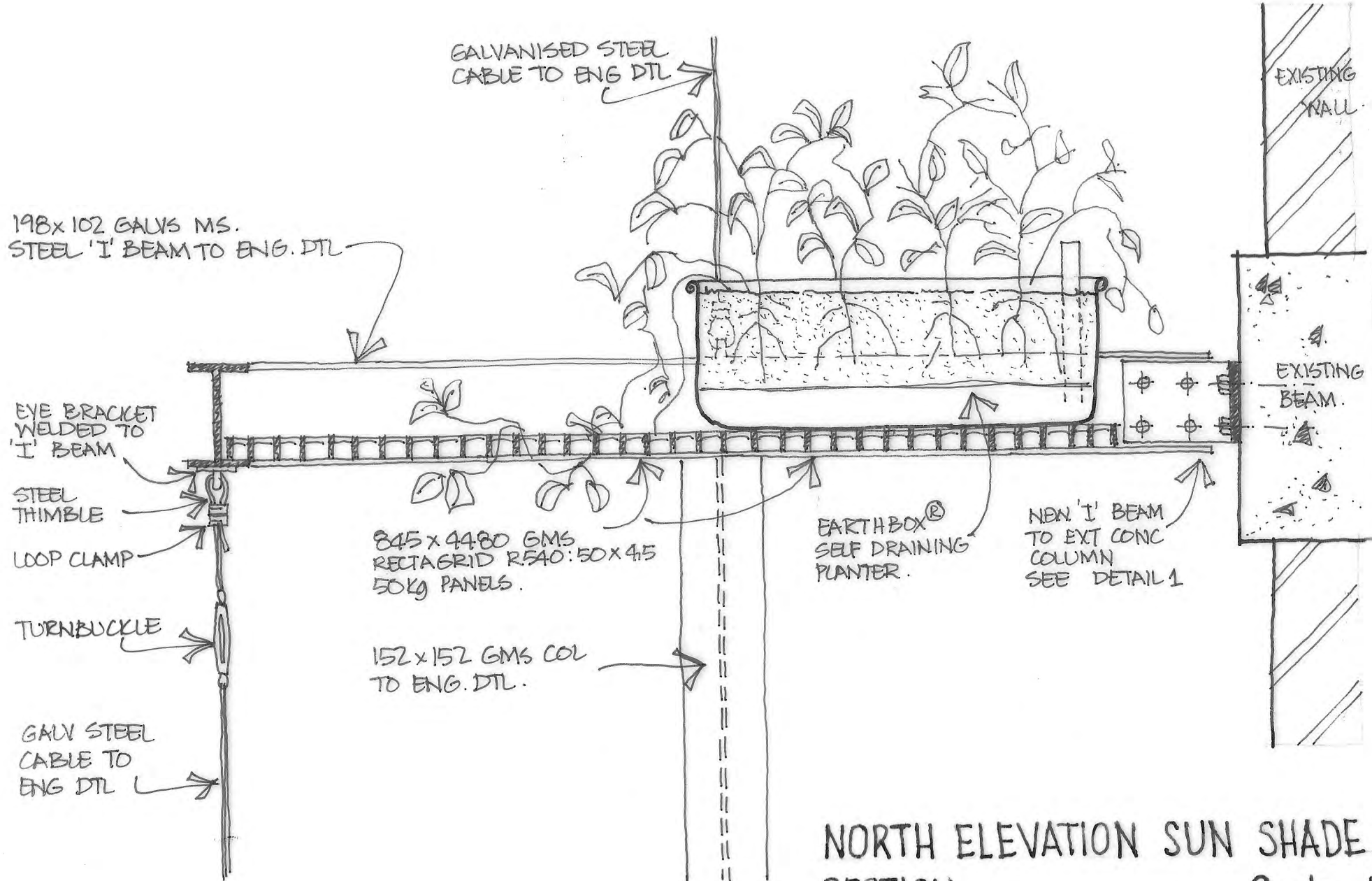




DETAIL B1
PLAN 1:10



DETAIL B1
PERSPECTIVE



NORTH ELEVATION SUN SHADE DETAIL SECTION
Scale 1 in 10



185x8 CONTINUOUS GMS HEADPLATE & DRIP FIXED TO EXT. R.C. LINTOL BEAM WITH CHEMICAL ANCHOR BOLTS - ALL TO ENG DTL.

100x50 GMS CHANNEL WITH FLANGES FACING OUTWARDS.

EXPANDED GMS MESH SPOT WELDED TO 350 GMS TUBES.

EXISTING R.C. LINTOL BEAM

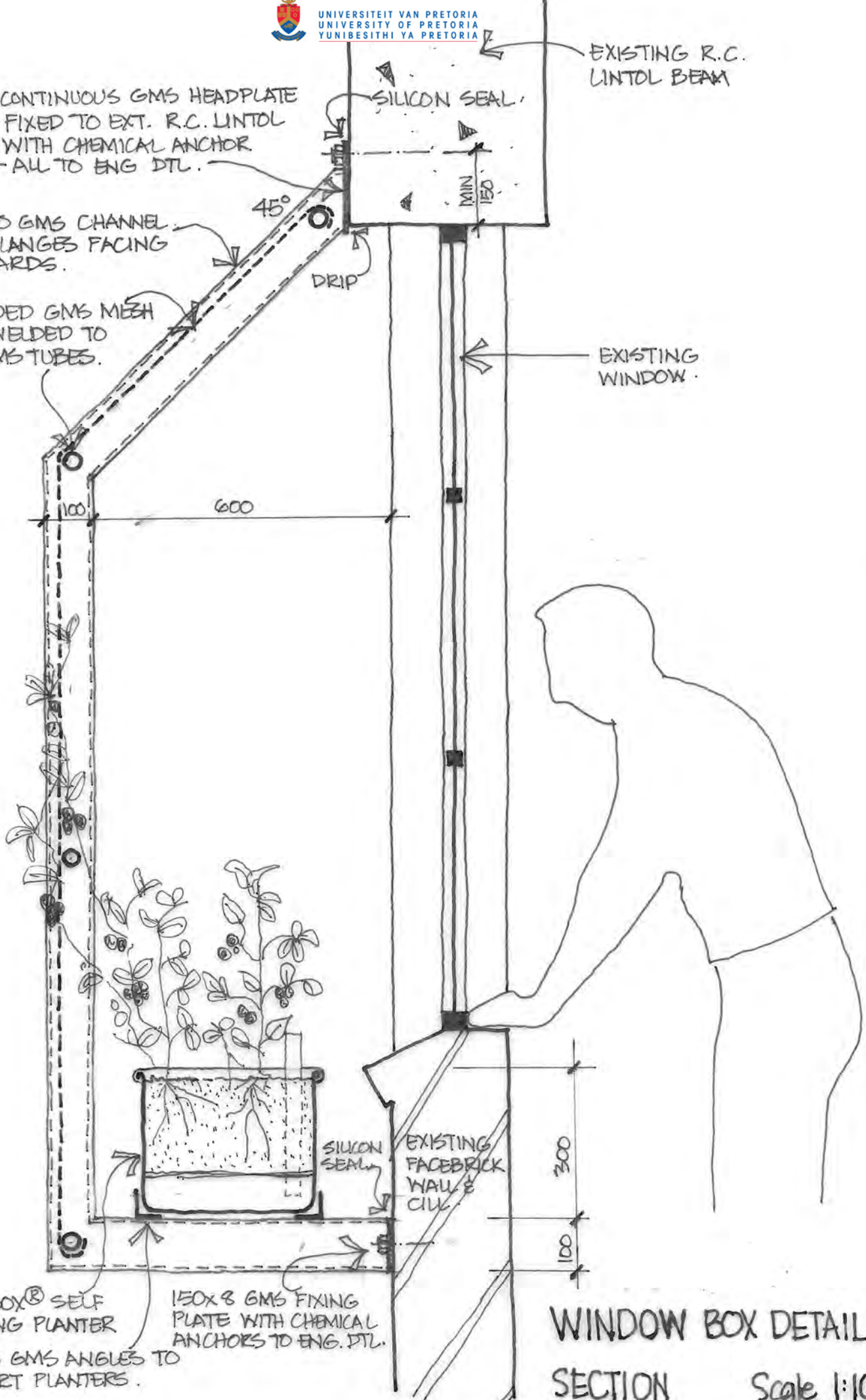
SILICON SEAL

MIN 150

45°

DRIP

EXISTING WINDOW



EARTHBOX® SELF DRAINING PLANTER

50x50 GMS ANGLES TO SUPPORT PLANTERS.

150x8 GMS FIXING PLATE WITH CHEMICAL ANCHORS TO ENG. DTL.

SILICON SEAL

EXISTING FACEBRICK WALL & SILL

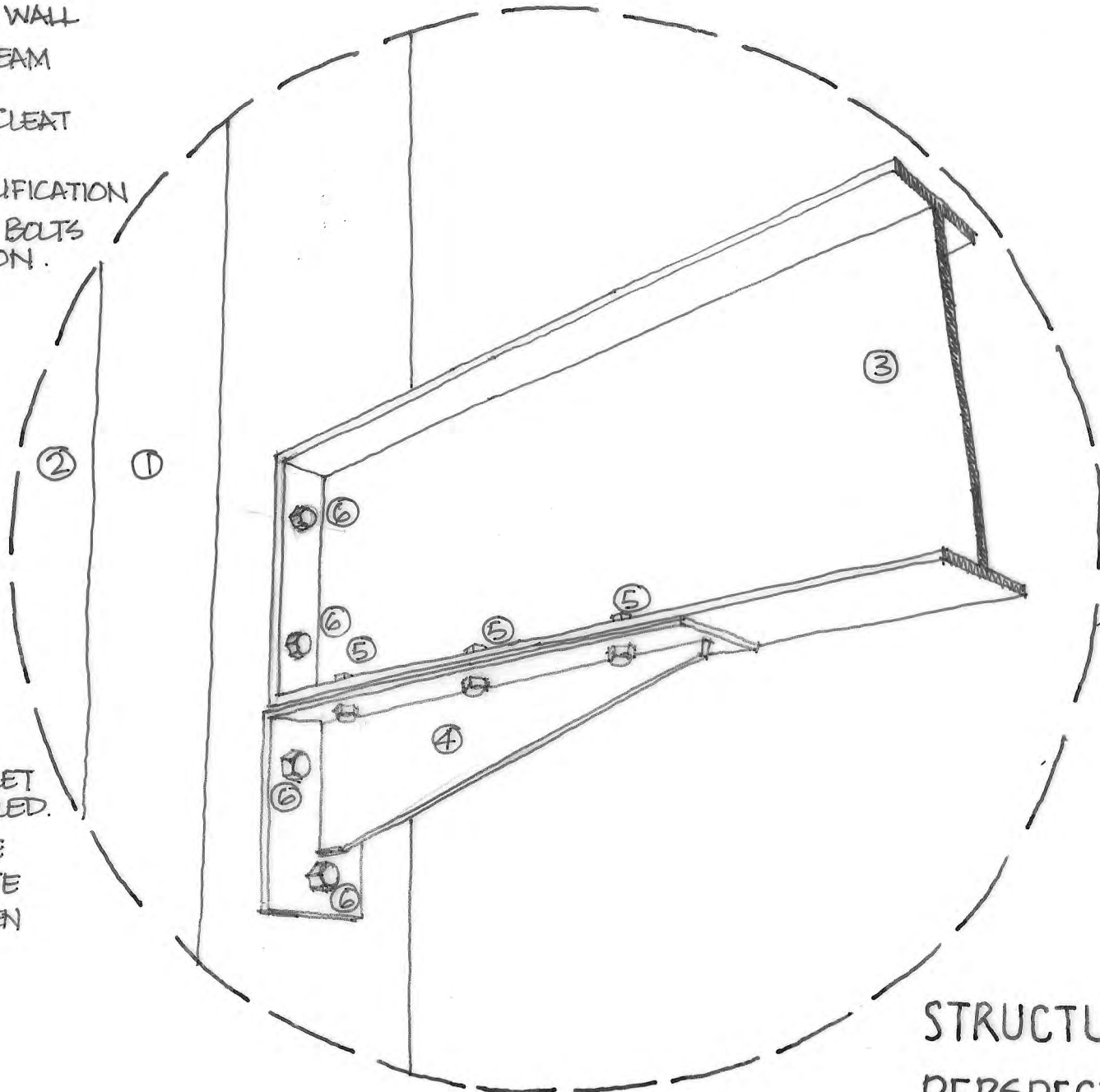
300

100

WINDOW BOX DETAIL
SECTION Scale 1:10

KEY

- ① EXISTING CONCRETE COLUMN
- ② EXISTING MASONRY WALL
- ③ 400x170 STEEL 'I' BEAM TO ENG DTL.
- ④ 600x300 GUSSET CLEAT TO ENG DETAIL.
- ⑤ BOLTS TO ENG SPECIFICATION
- ⑥ CHEMICAL ANCHOR BOLTS TO ENG SPECIFICATION.

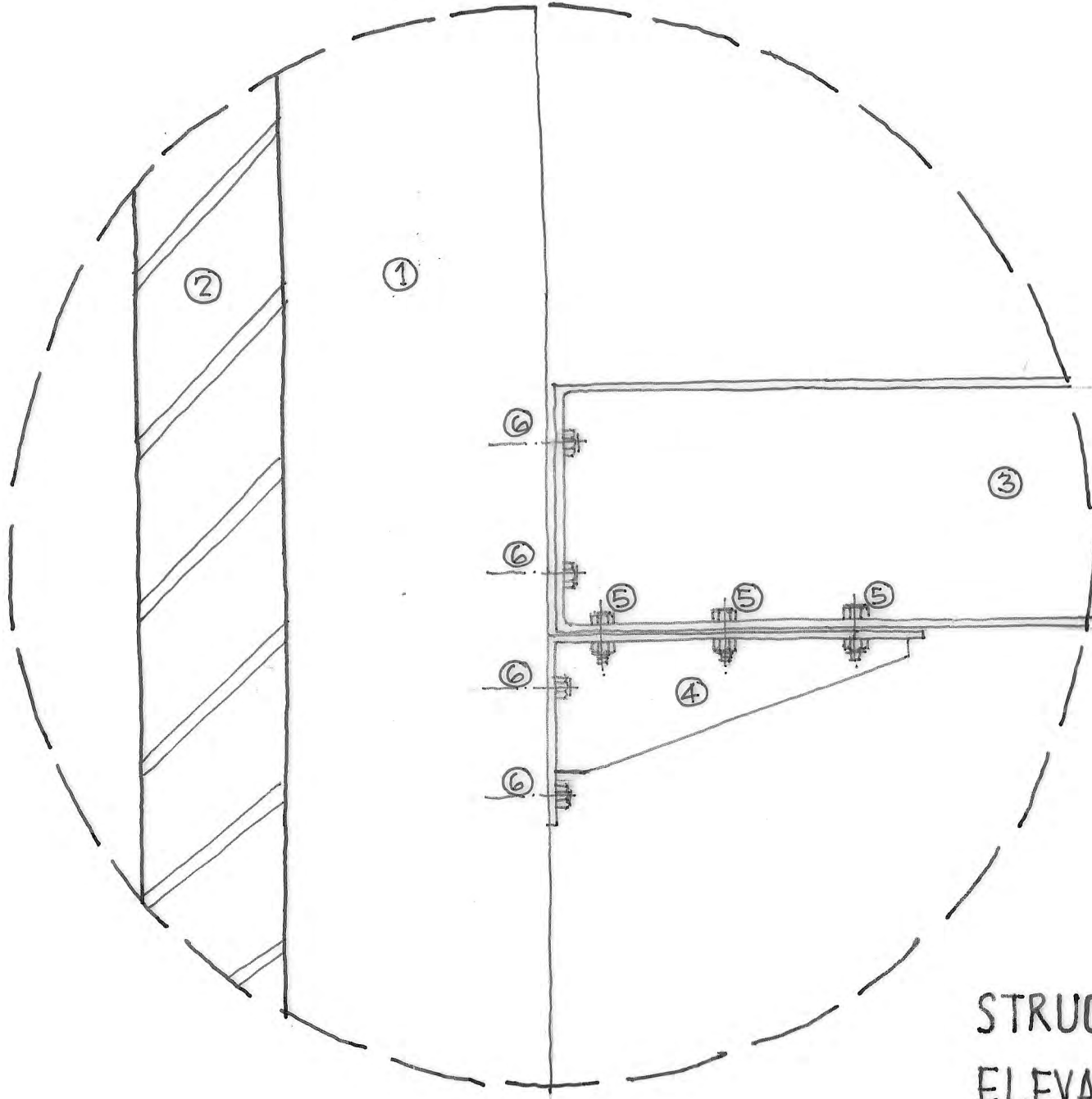


GENERAL NOTE

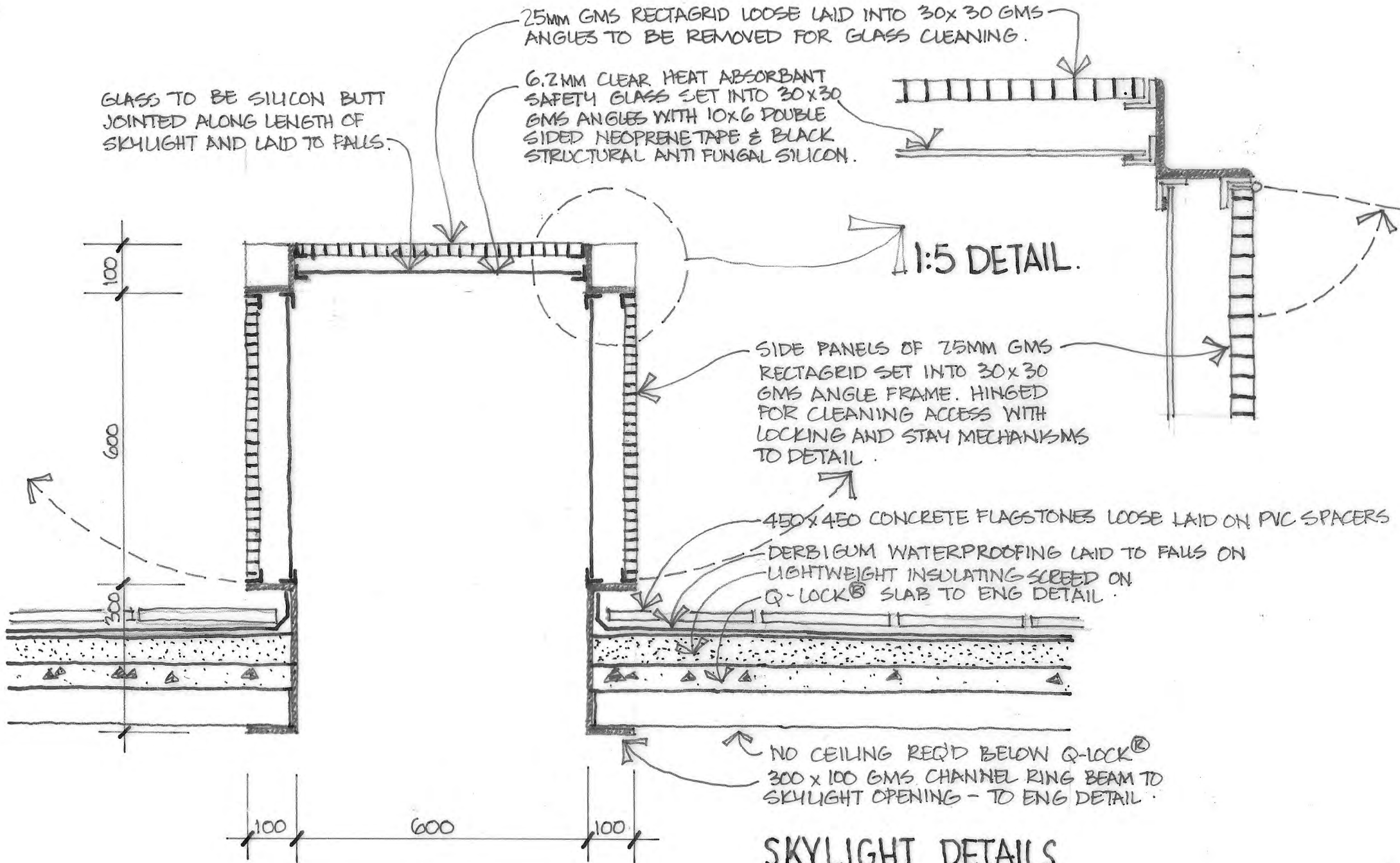
HOLES IN CLEAT BRACKET ARE TO BE PRE DRILLED.

HOLES IN 'I' BEAM ARE TO BE DRILLED ON SITE AFTER BEAM HAS BEEN SET IN PLACE.

STRUCTURAL DETAIL C1
PERSPECTIVE



STRUCTURAL DETAIL C1
ELEVATION Scale 1:10



GLASS TO BE SILICON BUTT JOINTED ALONG LENGTH OF SKYLIGHT AND LAID TO FALLS.

25MM GMS RECTAGRID LOOSE LAID INTO 30x30 GMS ANGLES TO BE REMOVED FOR GLASS CLEANING.

6.2MM CLEAR HEAT ABSORBANT SAFETY GLASS SET INTO 30x30 GMS ANGLES WITH 10x6 DOUBLE SIDED NEOPRENE TAPE & BLACK STRUCTURAL ANTI FUNGAL SILICON.

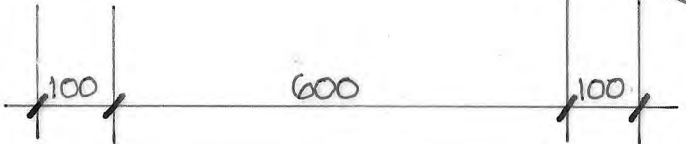
1:5 DETAIL.

SIDE PANELS OF 25MM GMS RECTAGRID SET INTO 30x30 GMS ANGLE FRAME. HINGED FOR CLEANING ACCESS WITH LOCKING AND STAY MECHANISMS TO DETAIL.

450x450 CONCRETE FLAGSTONES LOOSE LAID ON PVC SPACERS

DERBIGUM WATERPROOFING LAID TO FALLS ON LIGHTWEIGHT INSULATING SCREED ON Q-LOCK[®] SLAB TO ENG DETAIL.

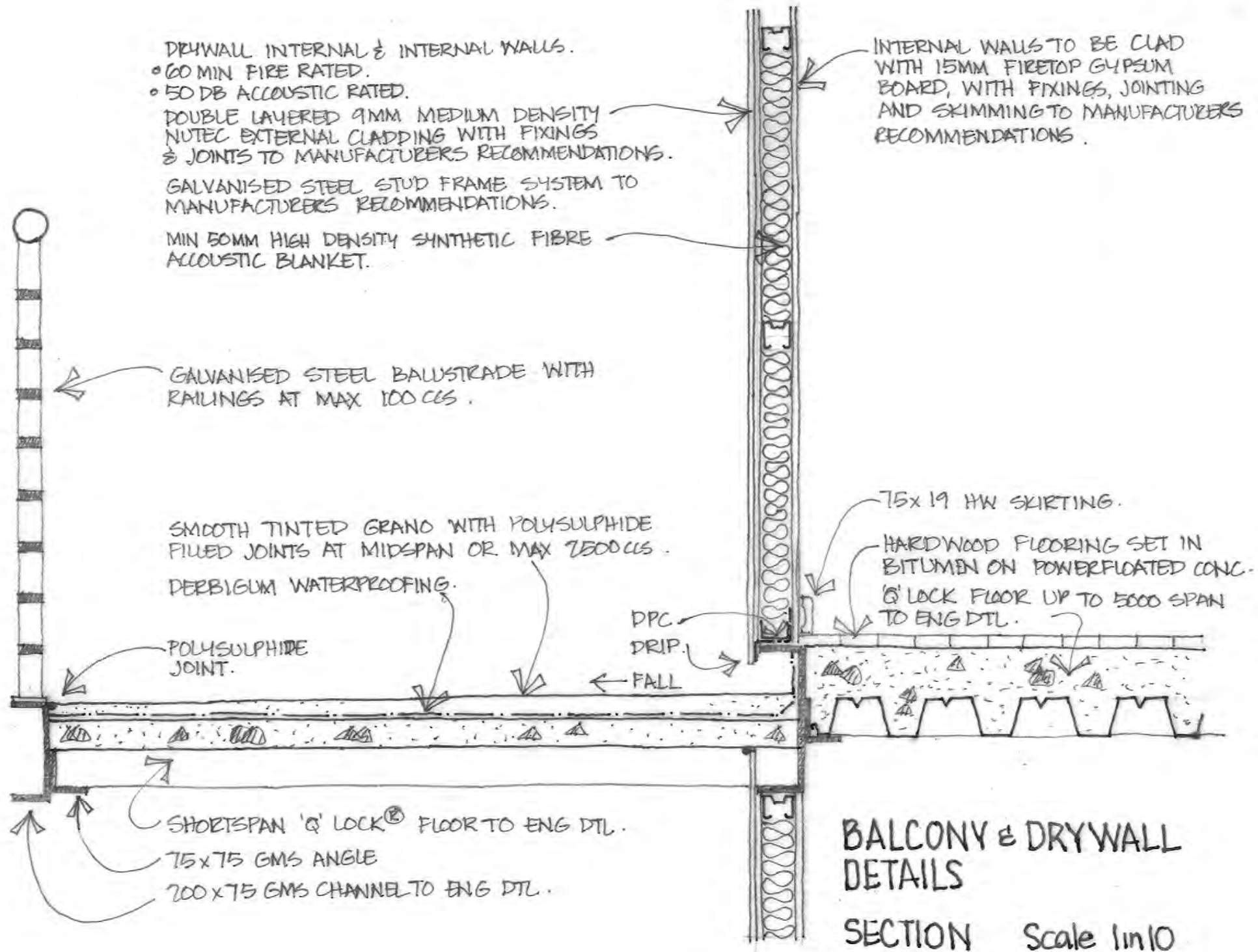
NO CEILING REQ'D BELOW Q-LOCK[®] 300 x 100 GMS CHANNEL RING BEAM TO SKYLIGHT OPENING - TO ENG DETAIL.



SKYLIGHT DETAILS

SECTIONS Scale 1/10 & 1/5

[155]



- DRYWALL INTERNAL & INTERNAL WALLS.
- 60 MIN FIRE RATED.
- 50 DB ACOUSTIC RATED.
- DOUBLE LAYERED 9MM MEDIUM DENSITY NUTEC EXTERNAL CLADDING WITH FIXINGS & JOINTS TO MANUFACTURERS RECOMMENDATIONS.
- GALVANISED STEEL STUD FRAME SYSTEM TO MANUFACTURERS RECOMMENDATIONS.
- MIN 50MM HIGH DENSITY SYNTHETIC FIBRE ACOUSTIC BLANKET.

INTERNAL WALLS TO BE CLAD WITH 15MM FIRETOP GYPSUM BOARD, WITH FIXINGS, JOINTING AND SKIMMING TO MANUFACTURERS RECOMMENDATIONS.

GALVANISED STEEL BALUSTRADE WITH RAILINGS AT MAX 100 C/S.

SMOOTH TINTED GRANO WITH POLYSULPHIDE FILLED JOINTS AT MIDSPAN OR MAX 7500 C/S.
DERBIGUM WATERPROOFING.

POLYSULPHIDE JOINT.

DPC DRIP.
FALL

75x19 HW SKIRTING.

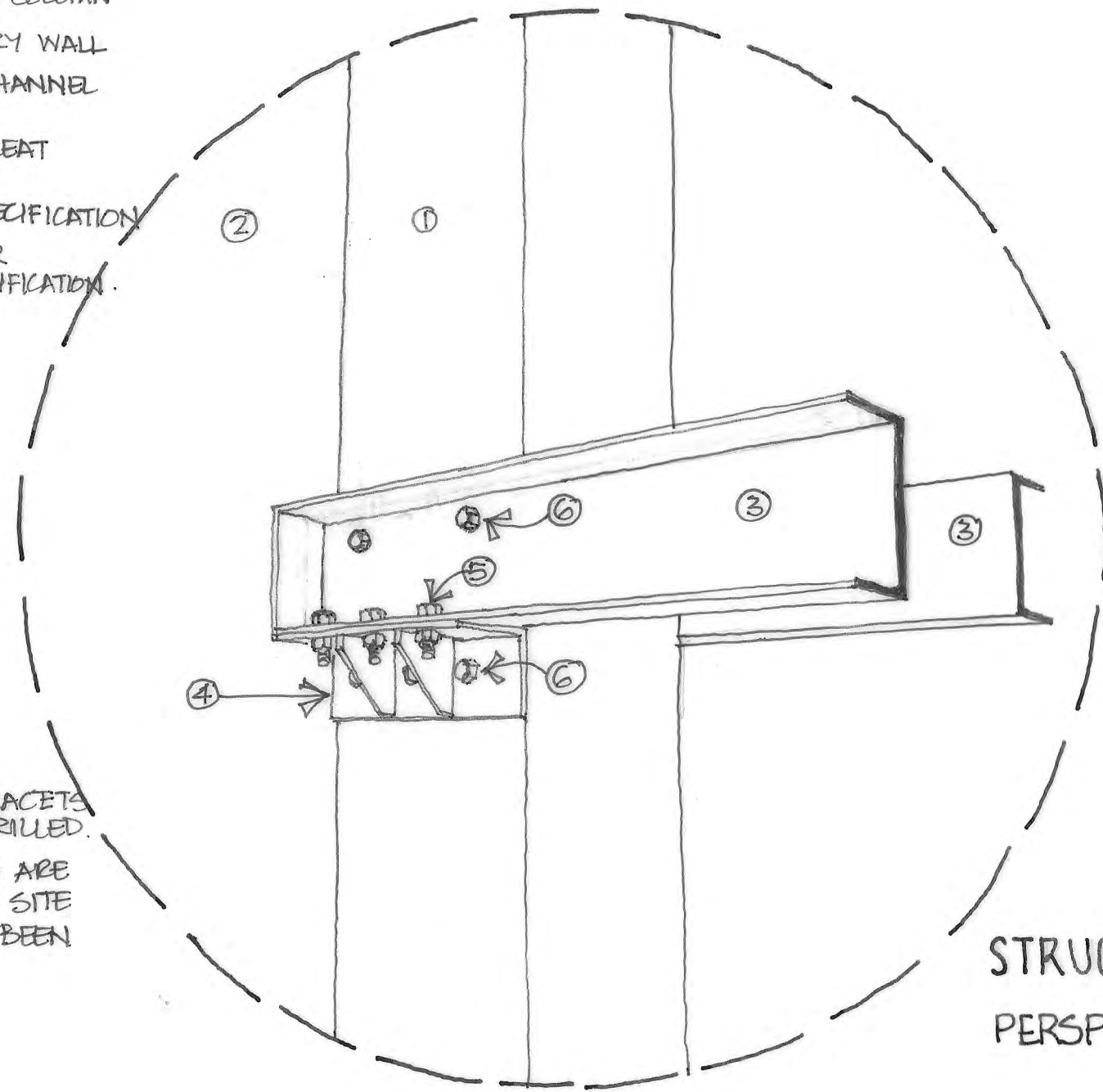
HARDWOOD FLOORING SET IN BITUMEN ON POWERFLOATED CONC. 'G' LOCK FLOOR UP TO 5000 SPAN TO ENG DTL.

SHORTSPAN 'Q' LOCK® FLOOR TO ENG DTL.
75x75 GMS ANGLE
200x75 GMS CHANNEL TO ENG DTL.

**BALCONY & DRYWALL
DETAILS**
SECTION Scale 1 in 10

KEY

- ① EXISTING CONCRETE COLUMN
- ② EXISTING MASONRY WALL
- ③ 300 x 100 STEEL CHANNEL TO ENG DTL.
- ④ 90 x 150 ANGLE CLEAT WITH GUSSETS.
- ⑤ BOLTS TO ENG SPECIFICATION
- ⑥ CHEMICAL ANCHOR BOLTS TO ENG SPECIFICATION.

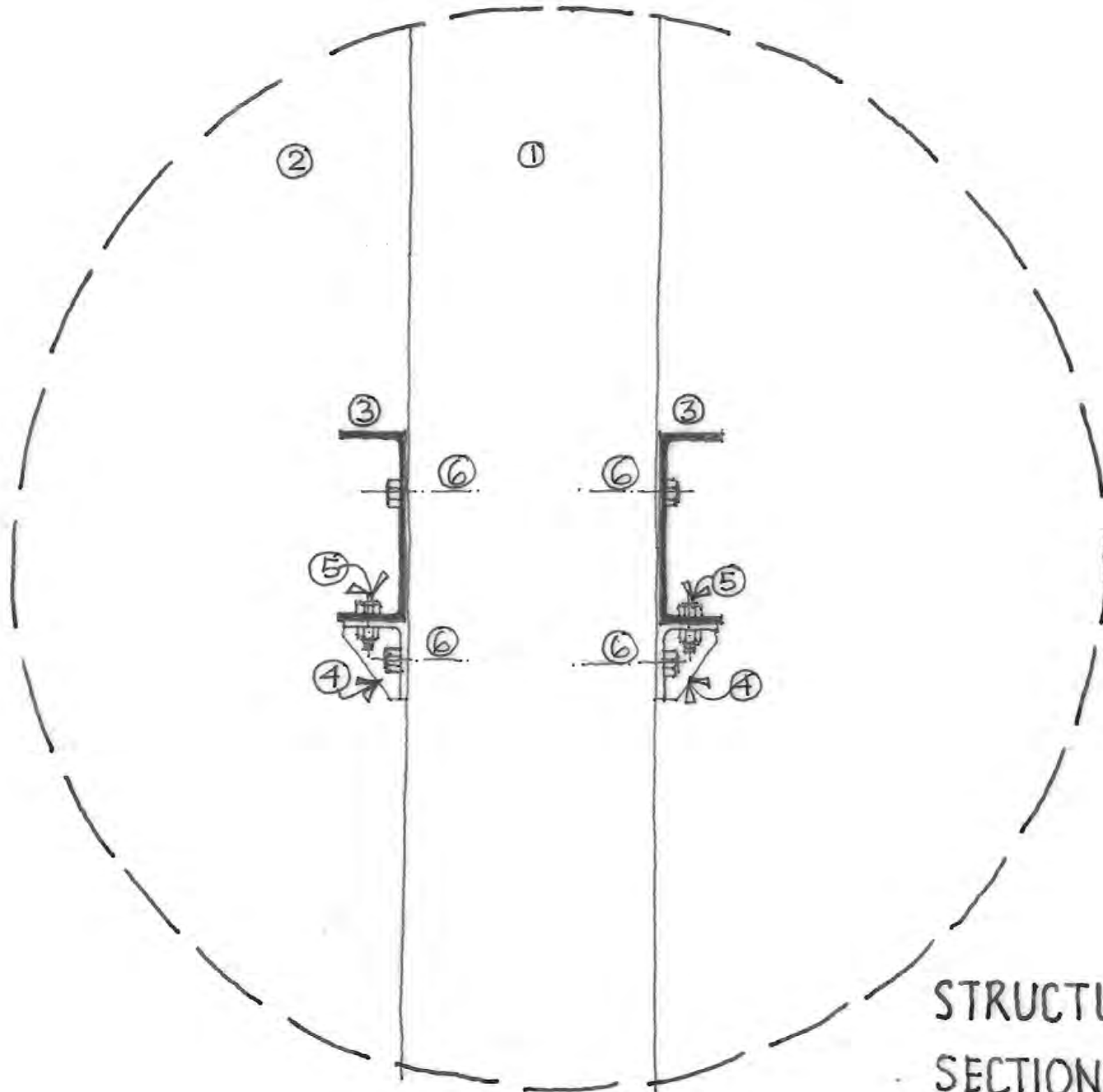


GENERAL NOTE

HOLES IN CLEAT BRACETS ARE TO BE PRE DRILLED.

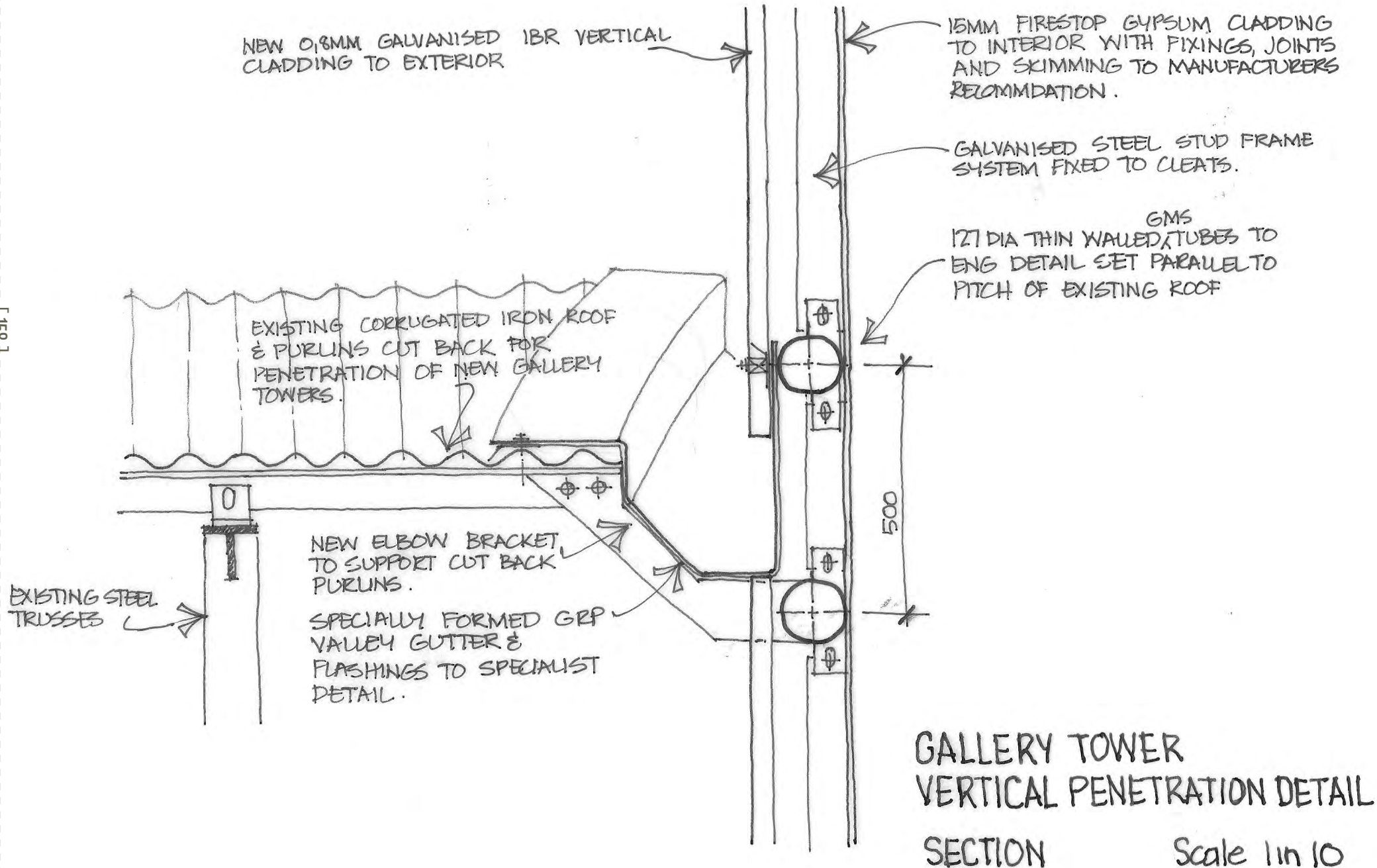
HOLES IN CHANNELS ARE TO BE DRILLED ON SITE AFTER THEY HAVE BEEN SET IN PLACE

STRUCTURAL DETAIL D1
PERSPECTIVE



STRUCTURAL DETAIL D1
SECTION Scale 1:10

[158]



[159]

NEW 0,8MM GALVANISED IBR VERTICAL CLADDING TO EXTERIOR OF GALLERY TOWERS. FIXED TO: -

127 DIA THIN WALLED GMS TUBES SET PARRAUEL TO EXISTING ROOF PITCH AT MAX 1800CCS - ALL TO ENG. DETAIL.

127 DIA TUBES BOLTED TO GUSSET PLATES ON 300x100 'I' BEAM COLUMNS TO ENG DTL.

GALVANISED STEEL STUD FRAMES FIXED TO CREATS & SET VERTICALLY AT MAX 500CCS BETWEEN 127 DIA TUBES.

100 MM COMPRESSED SYNTHETIC FIBRE THERMAL & ACCOUSTIC INSULATION.

15MM FIRESTOP GYPSUM CLADING TO INTERIOR WITH FIXINGS, JOINTS, AND SKIMMING TO MANUFACTURERS RECOMMODATION.

NOTE.

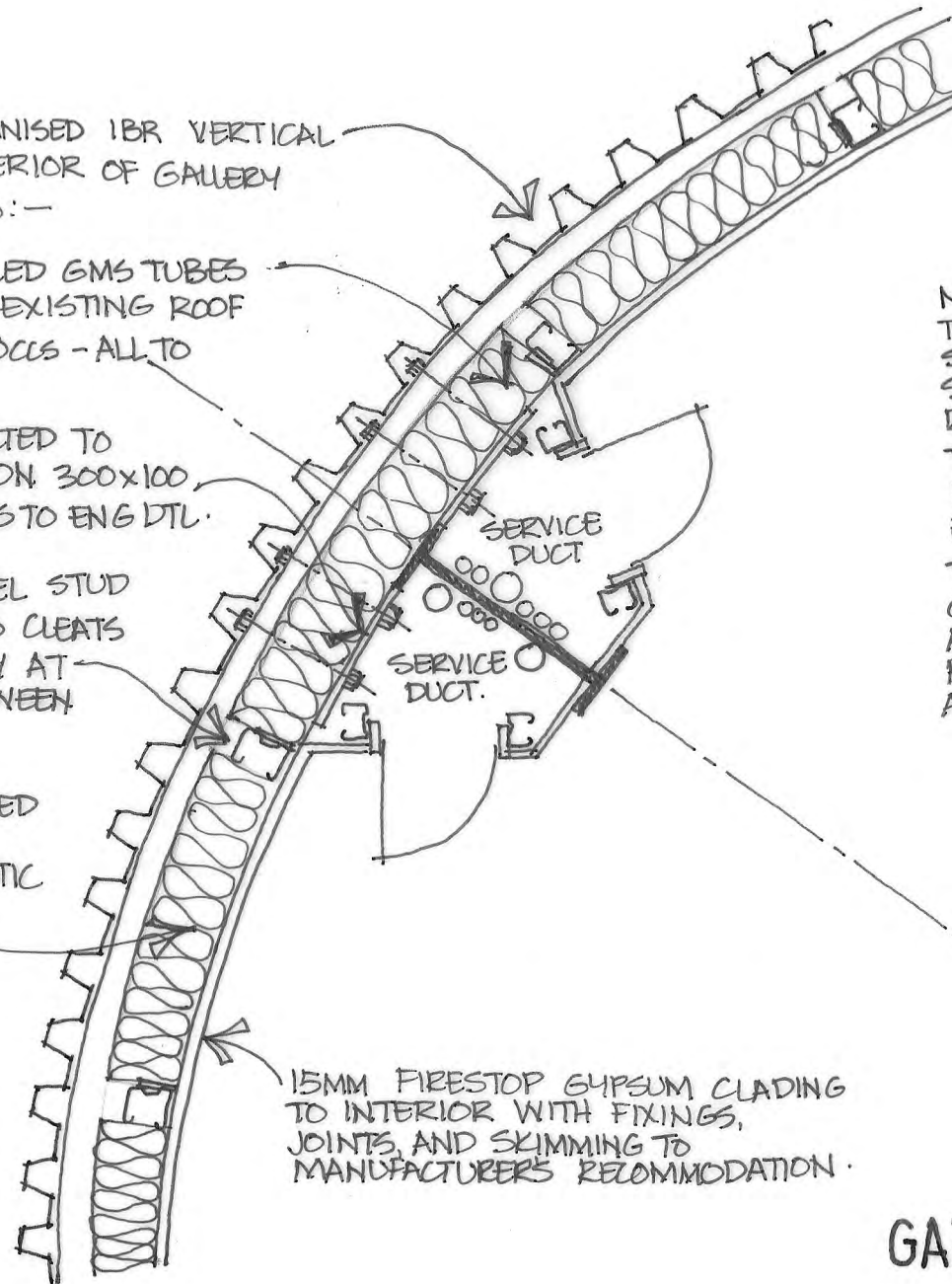
THE ENTIRE GALLERY TOWERS STRUCTURE WILL BE TO STRUCTURAL ENGINEERS DETAIL.

THE STRUCTURE WILL REQUIRE PROPING AND SUPPORT DURING ERECTION.

THE EXTERNAL VERTICAL IBR CLADDING WILL BE DESIGNED AS A STRUCTURAL SKIN TO PROVIDE THE REQUIRED BRACING AND SUPPORT.

RADIUS NOT TO SCALE.

GALLERY TOWER WALL DETAIL
PLAN
Scale 1in10



[new cavity basement construction]

part of existing slab removed and then made good
course stone infill

derbygum waterproofing or approved equivalent
stretcher course on edge to allow for ventilation into cavity

weep hole with geotextile cover
110mm cavity

screed

120mm concrete slab reinforced with steel mesh to engineer's specification

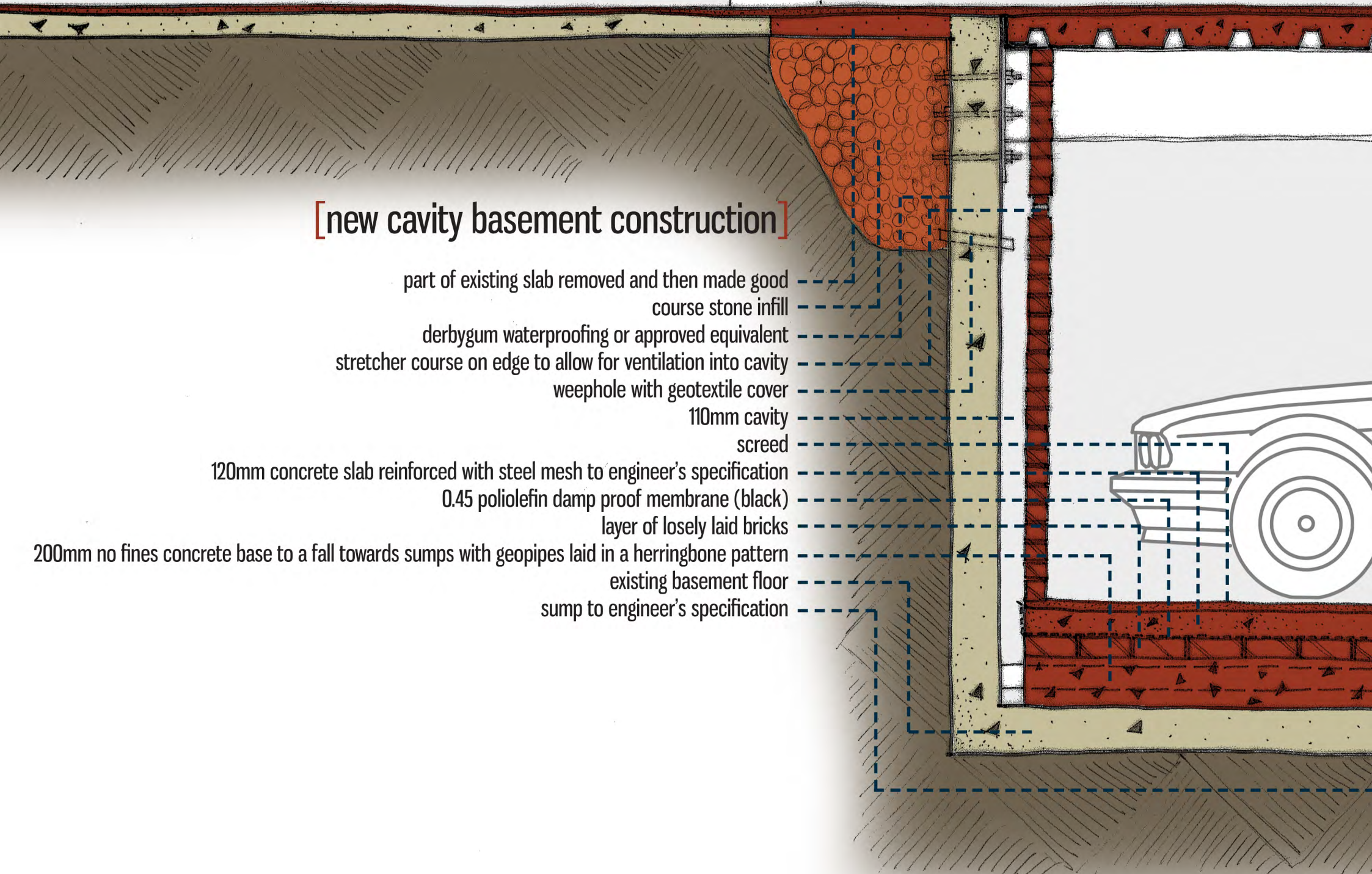
0.45 polyolefin damp proof membrane (black)

layer of loosely laid bricks

200mm no fines concrete base to a fall towards sumps with geopipes laid in a herringbone pattern

existing basement floor

sump to engineer's specification



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