1

The redundancy of the Tshwane Public Works Department Workshops

Fig. vi *time-lapse of a maquette being made and unmade*

A built artefact persists through time. Its material sheds, accretes, stays useful, takes on new uses, persists, decays, becomes ruinous or is razed or celebrated as a monument or memorial. All the possibilities become a palimpsest of a 'text' encoded in its fabric, traces of its existence, or memory that it once was or might have been.

*(Clarke and Fisher 2018:16-23).*

Introduction

In the past 100 years, the Department of Public Works and Infrastructure Workshops in Minnaar Street, Pretoria CBD, have been built, demolished, adapted, and abandoned on numerous occasions. As a place always on the edge of development in the city, the site has constantly been overlooked (Le Roux, Botes and Pretoria City Council, 1993; City of Tshwane,2021). In some town planning frameworks, the site had (apparently unintentionally) been consolidated with its neighbours (ARUP, 2012). In other frameworks, roads cut through the middle of the site (Die Volkstem, 1930). Thus, there is an appeal to the disregard of the Workshops, however unintended.

Stance

The context is the origin of every architectural design project. From the context, the opportunities and challenges of the project can be identified. The context includes understanding the historical narratives and fabric, the physical conditions, the social and architectural significance, and the functional role. In summary, contextual studies uncover the site's origins, life, and functions (Peres, 2015: 89). From this perspective, a nuanced approach to space-making can be developed that suits the context (Pallasmaa, 2000: 84).
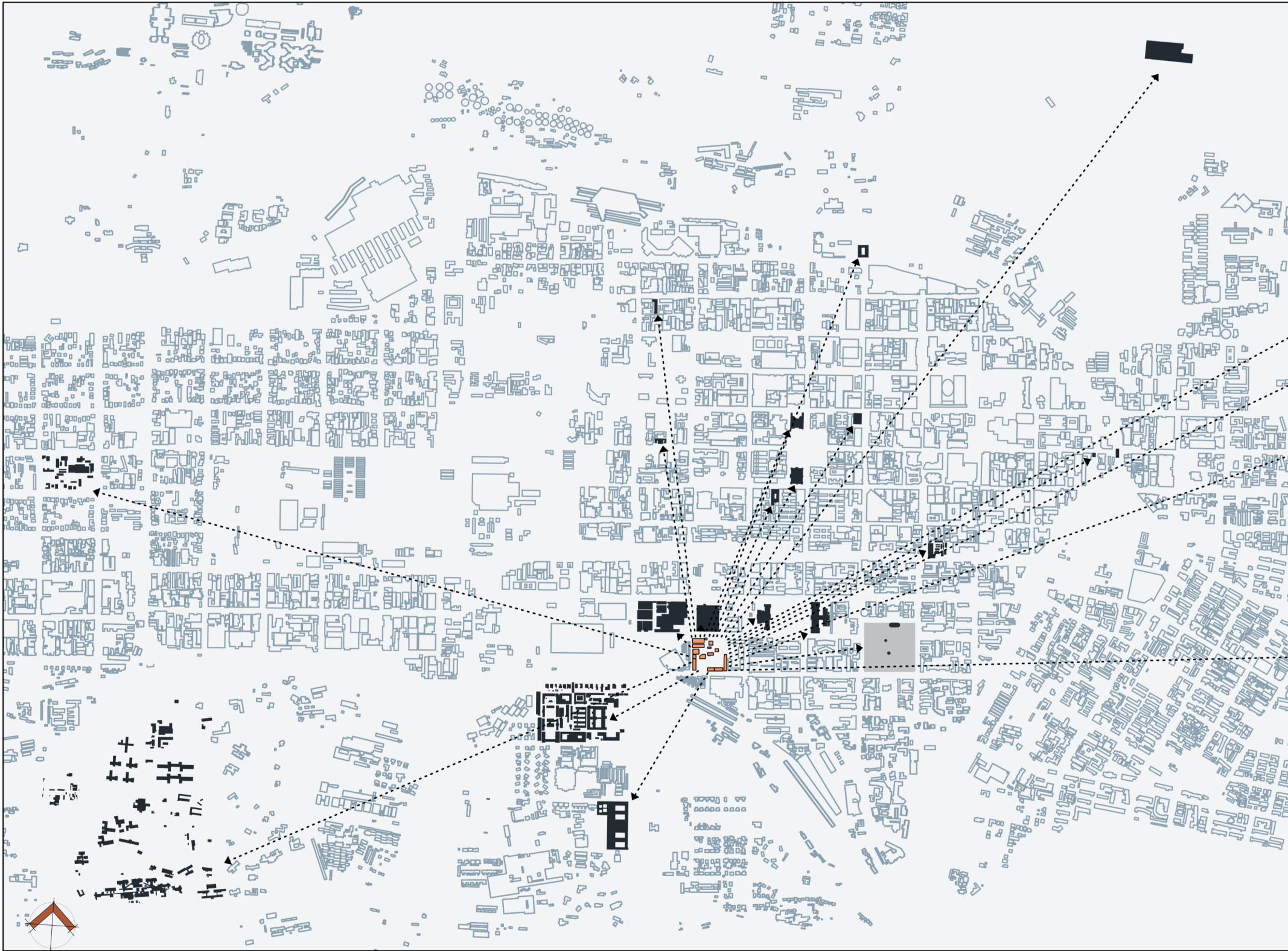
1 . BACKGROUND
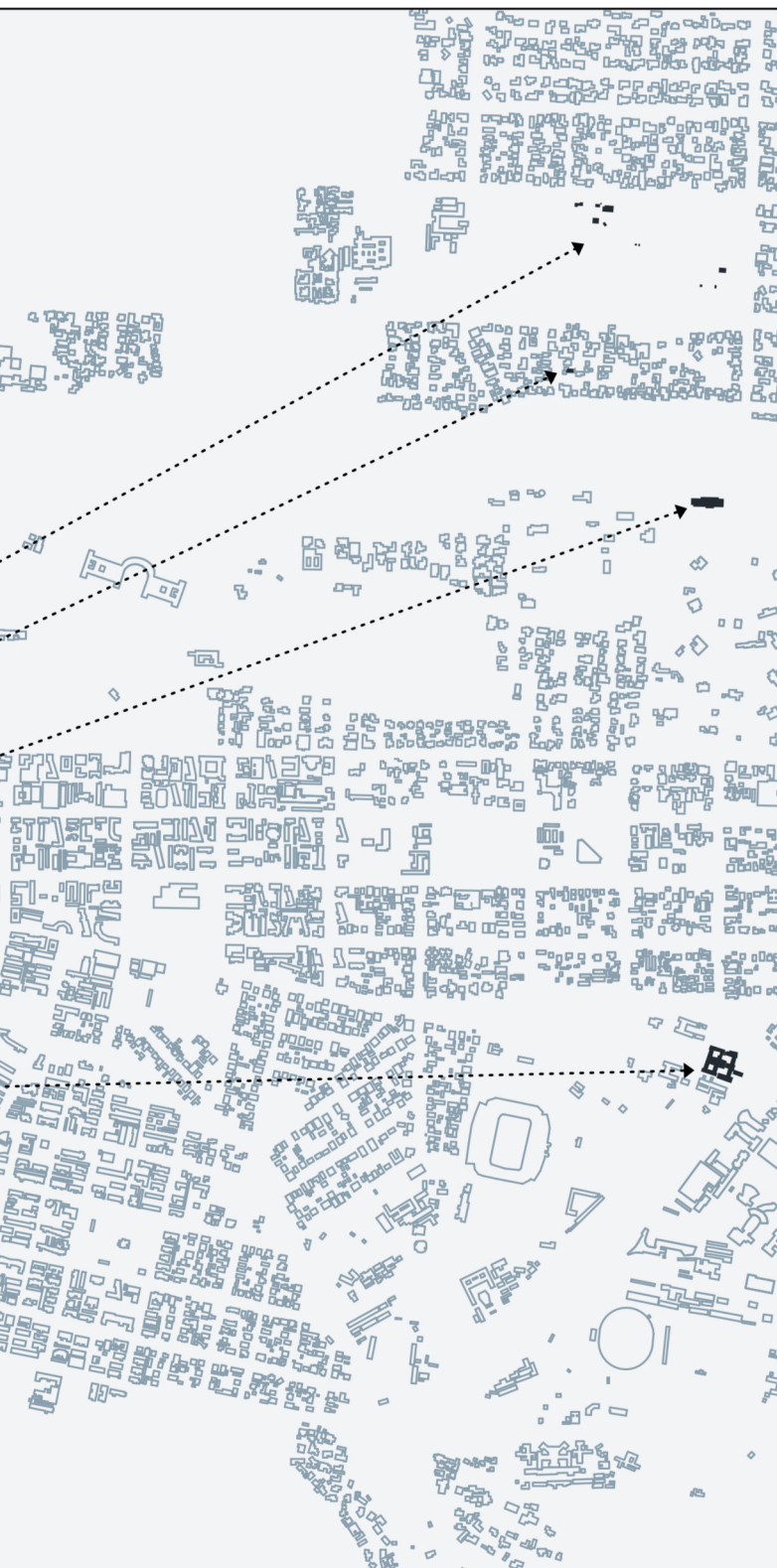
1.1   DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

The Department of Public Works and Infrastructure (DPWI) has significantly contributed to the development, historical identity, preservation and maintenance of public assets in Tshwane. DPWI originated in Pretoria as the Departement Publieke Werken in 1887. In its 15 years of operation, DPWI instilled the European continental-influenced character of public buildings in the city, with a preference for brick as a building material (Fisher, 1998: 129-130).

After the first Anglo-Boer War, DPWI reestablished itself as the Public Works Department in 1912. Many training and job opportunities for artisan builders were created to alleviate poverty. The widespread popularity of the Kirkness brick is partly due to Public Works' support (Fisher 1998: 129).

The involvement of DPWI with the Council for Scientific and Industrial Research (CSIR) and the National Building Research Institute (NBRI) during the 1950s and 1960s produced essential developments in climate centred design. The research contributed to the transition from street-centred design towards supporting climate control devices (Ibid.: 136).

The current role of DPWI encompasses implementing the Tshwane Regeneration Project and the maintenance and management of public assets. Additionally, Public Works serves as a regulator of the built environment and is heavily involved in poverty alleviation through programmes like the Extended Public Works Program (EPWP). However, DPWI is no longer an advocate for innovation (Clarke and de Villiers, 2015:63-83; Public Works Department, n.d).

Fig. 1.1 *Locations of buildings historically constructed by DPWI (Artefacts.co.za. n.d.; 2021) adapted from City of Tshwane base drawing (Pienaar, M. n.d.)*
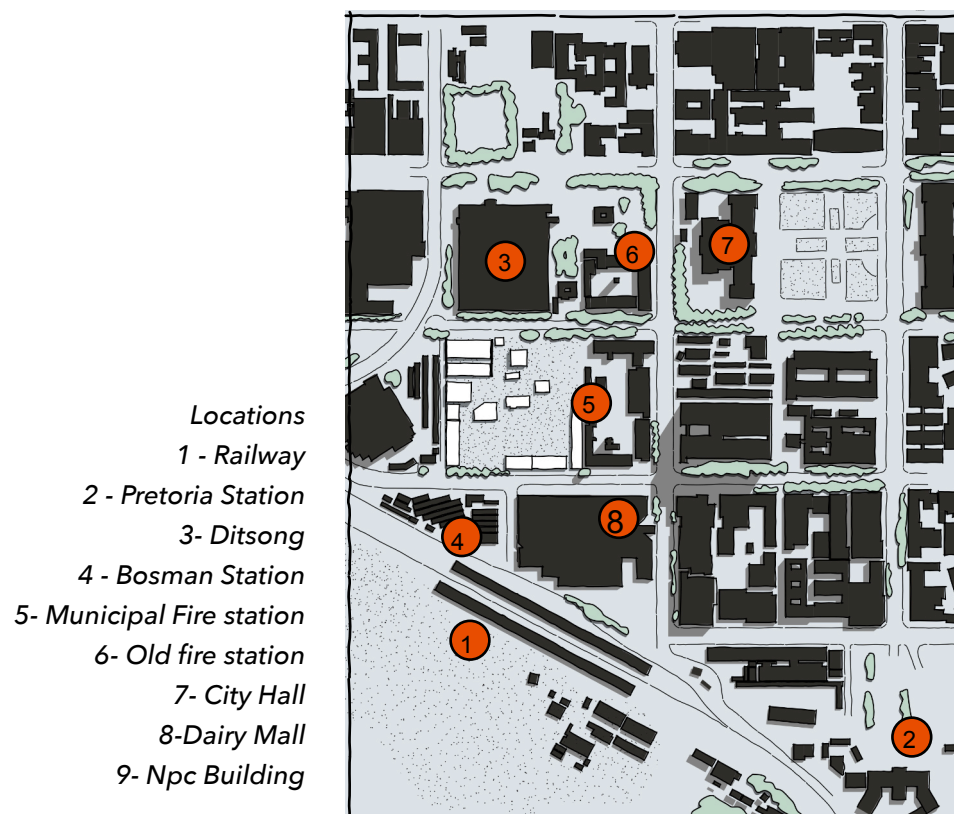
Locations
1 - Railway
2 - Pretoria Station
3- Ditsong
4 - Bosman Station
5- Municipal Fire station
6- Old fire station
7- City Hall
8-Dairy Mall
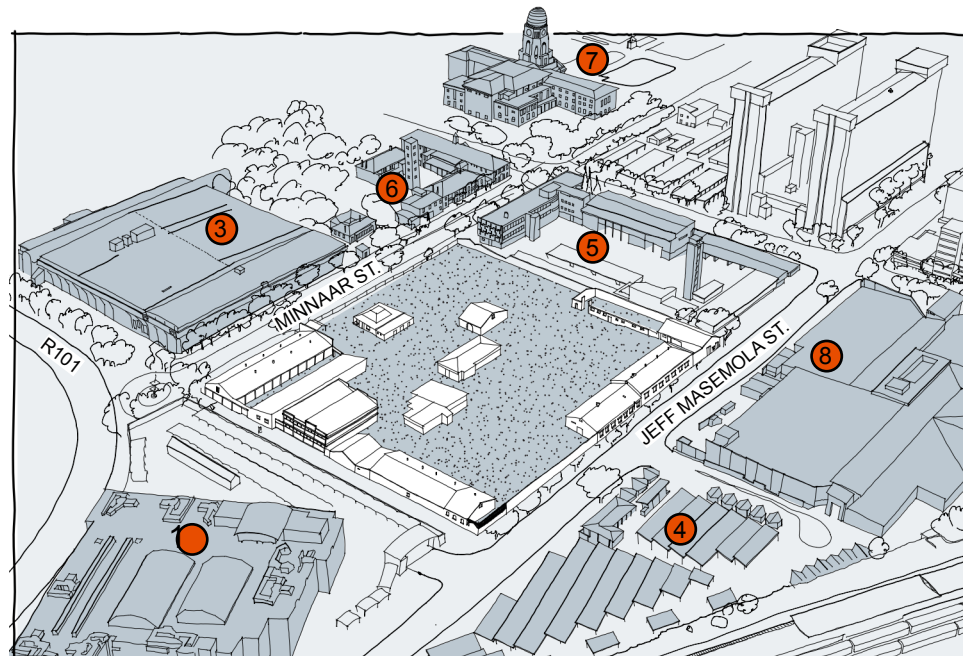*9- Npc Building*

Fig. 1.2 *context map*

Fig. 1.3 *Context perspective*

1.2 THE MINNAAR STREET WORKSHOPS

Site and context

The location of the Workshops is at 115 Minnaar Street, on the edge of the Pretoria CBD. The city's southwest quadrant is known for its abundance of governmental and municipal buildings (Le Roux, Botes and Pretoria City Council, 1993: 63-64).

Additionally, the proximity of the railway and the Pretoria Station to the site has resulted in a confluence of the light industrial, commercial, public transport and civic contexts.

Figures 2 and 3 show the site is situated between the Ditsong Museum of Cultural History to the north and Bosman Station (a long-distance taxi rank) to its south, with the Fire Station to its east and the NPC Building (South African Post Office) to its west.

An informal north-south pedestrian axis along the western boundary connects Bosman Station with the inner city. The R101 (Sophie de Bruyn Street) abruptly cuts through Minnaar Street, resulting in a weak termination of the partially implemented Museum Park (Le Roux, Botes and Pretoria City Council, 1993: 64; Jordaan, 1995).

As illustrated in fig. 1.4, since the establishment of the Workshops on the site in the early 1900s, they served as supportive infrastructure to the surrounding context with various additions, adaptions and demolitions to suit the city's changing needs (Google Earth, 2021; Jansen, 2014: 9-12).

In 2014 an expansion and upgrade of the workshops was undertaken, which resulted in the workshops relocating temporarily. However, by 2018, all activity was halted on the site. As a result, the Workshops gradually fall into disrepair due to neglect, although the site remains well-guarded.

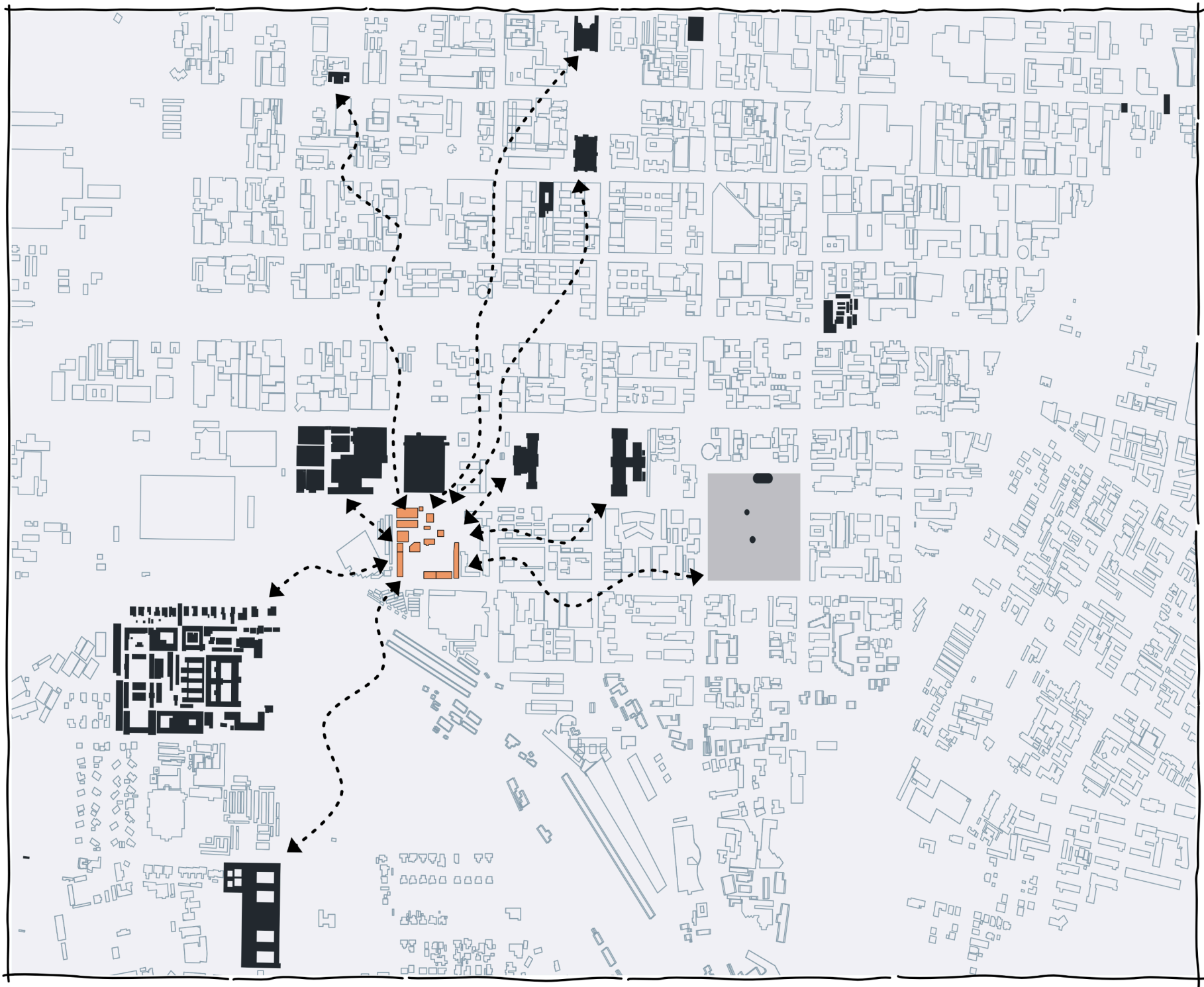**Fig. 1.4** *Timeline of changes to the DPWI Workshops since 1937*

1937
2002
2008
2018
2021

1939
2001
2009
2014

1947
1991
2013
2013

1948
1968
2013
2020

1958
1964
2015
2020

NEW

EXISTING

DEMOLISHED

60 YEARS & OLDER

TRACING PERSISTENCE

2. BUILDING THE ARGUMENT

2.1   IN SERVICE OF THE CITY

General Context, Concerns and Intentions

The DPWI plays an essential role in the city: the regulator of the built environment, public assets manager, and job creator and educator (Public Works Department, n.d).

Part of the scope of DPWI is the supervision and implementation of the City of Tshwane Inner City Regeneration Programme proposed in 2011 (Department of Public Works, 2012).

Although DPWI is currently involved in numerous projects in the city, historically, the site responsible for making, maintaining, and training the city's citizens no longer serves that purpose.

Therefore, the general concern is that the site no longer actively contributes to the remaking of the city. This dissertation intends to tie into existing DPWI frameworks and actively engage the public in the urban regeneration of the City of Tshwane.

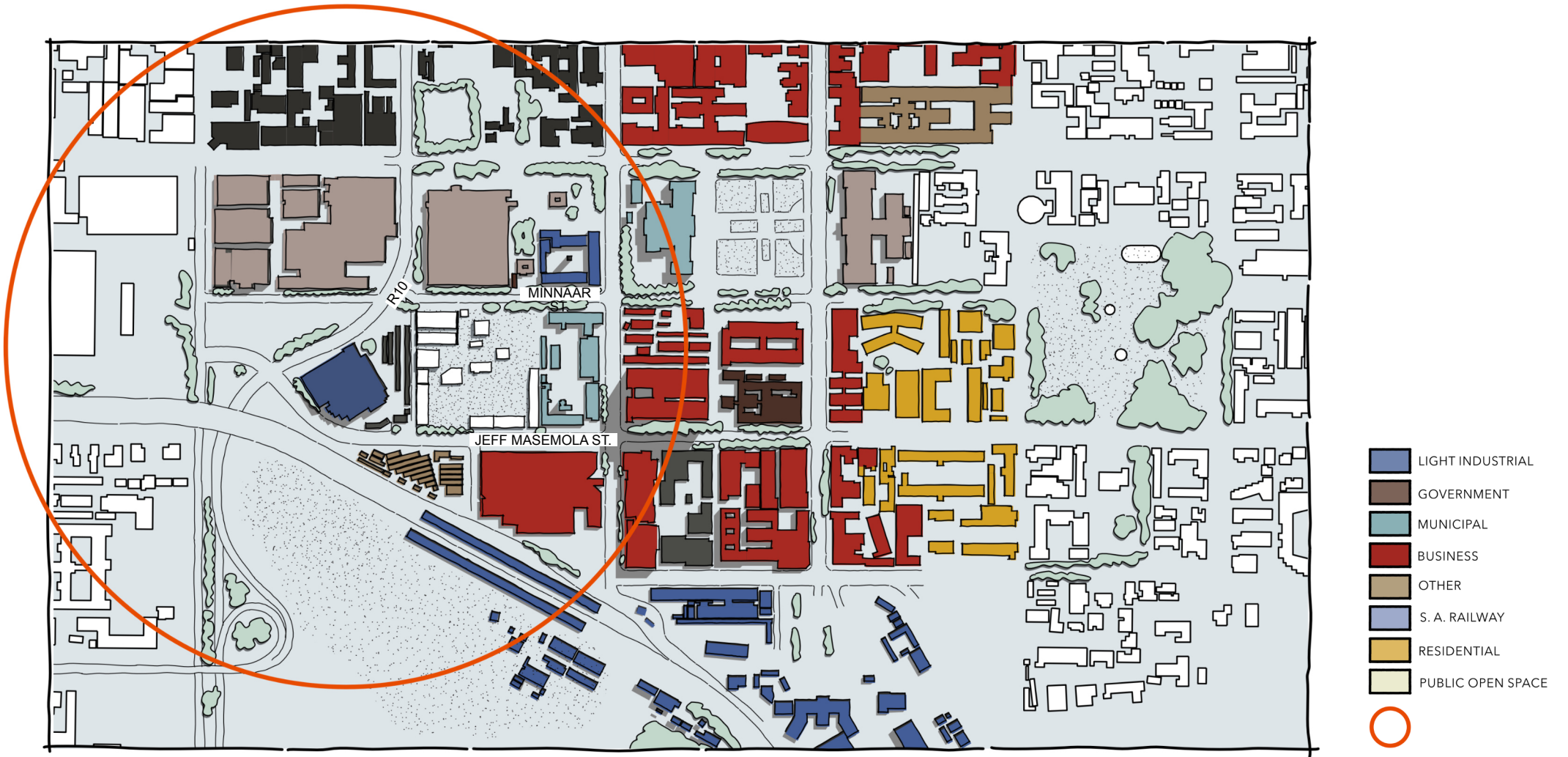**Fig. 2.1**   *1937 Aerial Photograph of the Department of Public Works Workshops (Adrian de Villiers)*

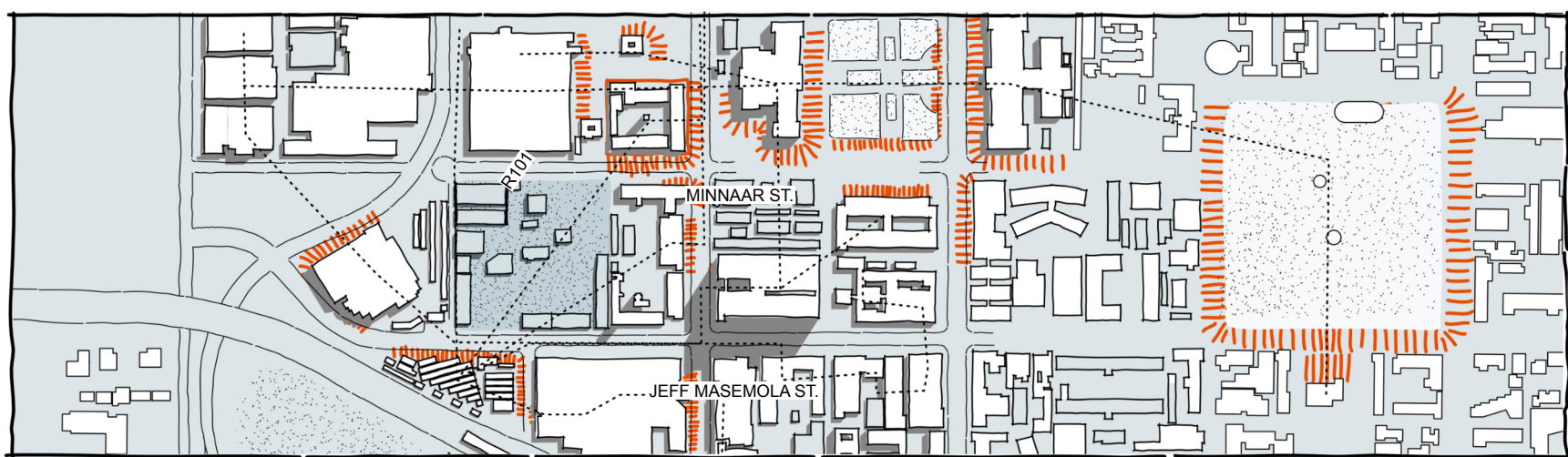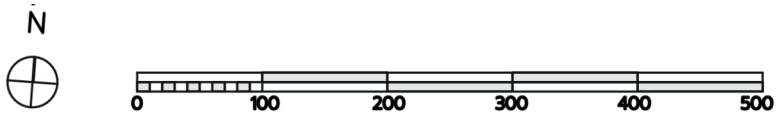**Fig. 2.3** *Site in context indicating the use of the surrounding buildings*

LIGHT INDUSTRIAL
GOVERNMENT
MUNICIPAL
BUSINESS
OTHER
S. A. RAILWAY
RESIDENTIAL
PUBLIC OPEN SPACE

Fig. 2.5 *Site in context with landmark buildings with active edges*

N

0   100   200   300   400   500

2.2   A DISCONNECTED SITE

Urban Context, Issue and Intention

The Pretoria Station is situated approximately 500m from the DPWI Workshops. As mentioned earlier, due to the proximity of the railway lines and other associated infrastructure, the edge of the southwestern city quadrant has largely

Locations
3- Ditsong
4 - Bosman Station
5- Municipal Fire station
6- Old fire station
7- City Hall
8-Dairy Mall
9- Npc Building
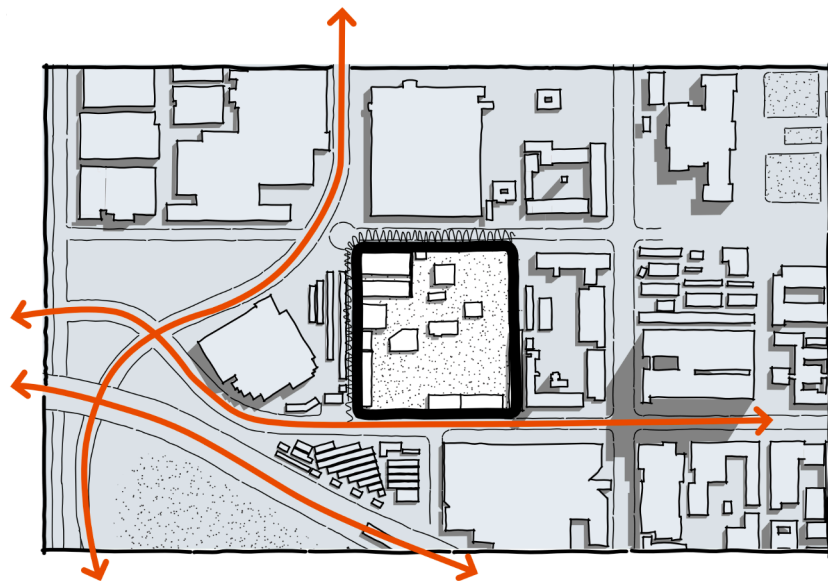
Fig. 2.4   *Urban context of the DPWI workshops*

Fig. 2.6   *Isolation of the site due to roads*

remained defined by its industrial legacy (Le Roux, Botes and Pretoria City Council, 1993: 59).

Figure 2.6 indicates the 1967 ring road directly impacts the site's disconnection (Jordaan, 1989: 29) since the western link (the R101 or Sophie de Bruyn Street) cuts through Minnaar street, which reduces the possibility of east-west pedestrian movement. The combined effect of Minnaar Street as a dead-end, the untraversable four-lane regional road (Sophie de Bruyn Street) towards the city and the high congestion of taxis around Bosman Station (Jeff Masemola Street)is the isolation of the site.

The Dairy Mall's service entrance fronts on Jeff Masemola Street, resulting in a dead public edge. Despite the notable public interface, the NPC Building (South African Post Office) has no linkages towards Minnaar Street and Sophie de Bruyn Street.

Figure 2,5 shows the site is surrounded by landmark buildings such as the Distong Museum of Cultural History, the Old Fire Station and the Municipal Fire Station, Bosman Station and Pretoria Station. The City Hall and the Ditsong: Museum of Natural history is within walking distance from the site, linking within Burgers Park. The Dairy   Mall could be considered a commercial anchor.

The urban concern is that the site is isolated from its immediate context despite being surrounded by prominent landmarks and everyday destinations. The urban intention of the design is to revitalise the site as an active contributor to the city's built context and reveal the change that has taken place represented on the site.
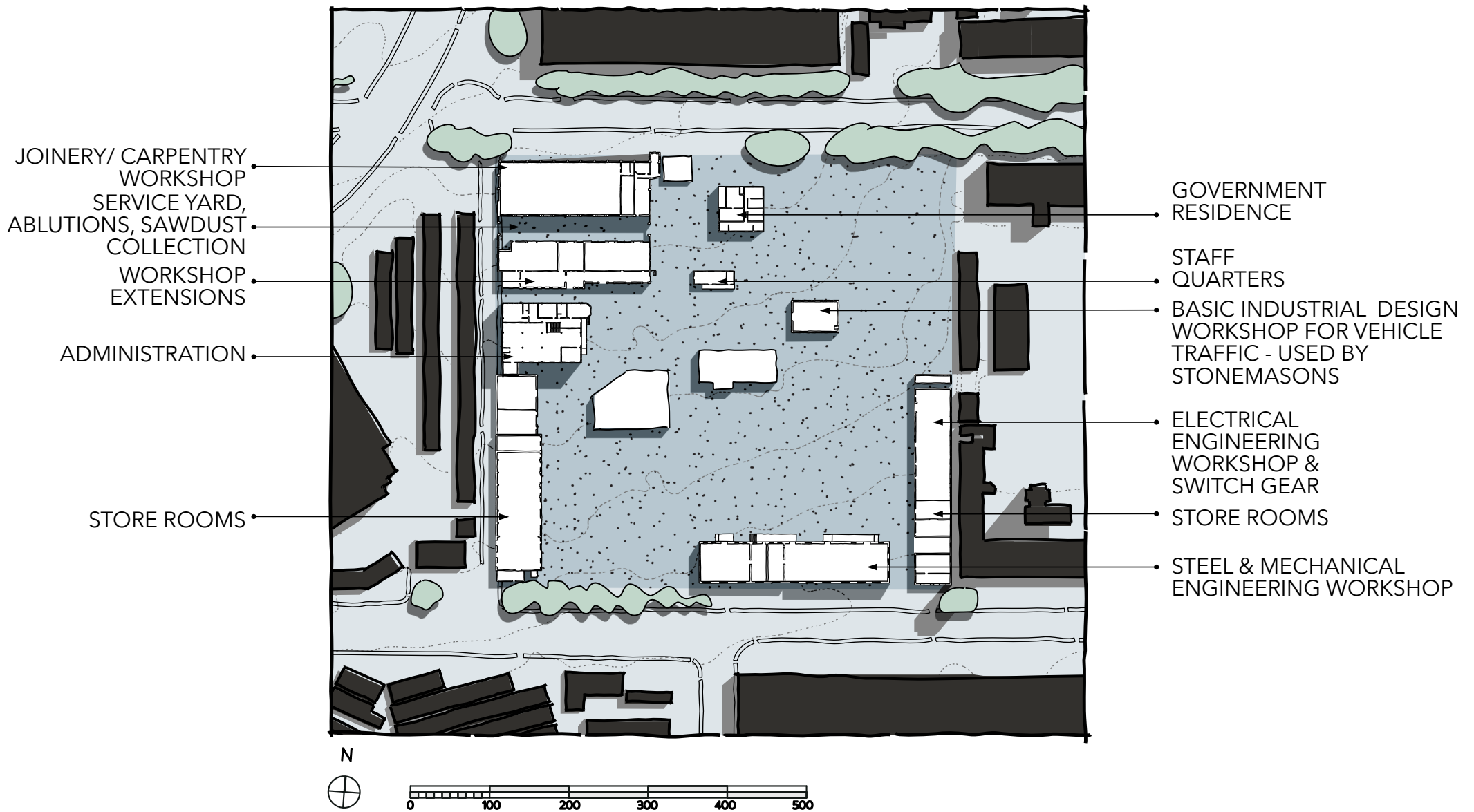
Fig. 2.7 *Locations of existing buildings on site*

JOINERY/ CARPENTRY WORKSHOP

SERVICE YARD, ABLUTIONS, SAWDUST COLLECTION

WORKSHOP EXTENSIONS

ADMINISTRATION

STORE ROOMS

GOVERNMENT RESIDENCE

STAFF QUARTERS

BASIC INDUSTRIAL DESIGN WORKSHOP FOR VEHICLE TRAFFIC - USED BY STONEMASONS

ELECTRICAL ENGINEERING WORKSHOP & SWITCH GEAR

STORE ROOMS

STEEL & MECHANICAL ENGINEERING WORKSHOP

N

0   100   200   300   400   500

© University of Pretoria

2.3   REMAKING AND THE HISTORY OF THE EVERY DAY

Architectural Concern

The buildings on site were consistently adapted, demolished, and modified due to the predominantly industrial purpose of the site, as seen in Figure 8 (Jansen, 2014: 12).

Therefore, the site has been valued more for its utilitarian purpose than its architectural representation (Clarke and Fisher, 2018:16-23). In this ever-changing environment, consideration of the historical context of the site becomes the primary imperative.

The Smithsonian-inspired urban framework (for Minnaar Street) from the 1990s was only partially implemented through street furniture. The Ditsong Cultural History Museum was built concurrently with South Africa's transition to democracy, but it did not critically engage with representations of historical identity (Swart and Proust, 2019: 220).

As illustrated in figure 2,9, the site contains historic buildings representing various eras in the city's industrial development and the DPWI (Fig. 9). It also illustrates the ever-changing utilitarian nature of industrial technologies (Jansen, 2014), which is the main challenge of most industrial heritage sites in the country (Clarke and Fisher, 2018: 16-23).

Since the 2014 HIA conducted by the DPWI, significant changes have occurred (Jansen, 2014: appendix). Two historical storerooms were demolished to make room for new buildings, the asphalt that covered most of the site was removed, and all temporary shading structures were torn down (Refer to Figs 8&9). Since the preparations for further development on the site halted in 2018, grass, shrubs and small trees sprouted, covering the exposed soil (Fig. 2.8.

The main architectural concern is that the site's neglect has led to the decay of its industrial heritage. The continual changes to the industrial buildings also mean little remains of the narrative of the changes on the site. Recent interventions either demolished or altered the historical buildings in an insensitive and inconsiderate manner.

The architectural intention is to continue the narrative of remaking on the site by investigating the intersection between an industrial architecture that has to be functional, adaptable and revitalising, but simultaneously fragile, subtle and responsive to the context.
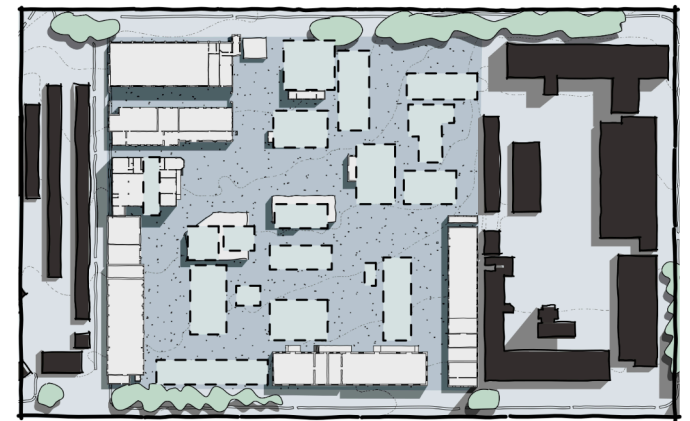

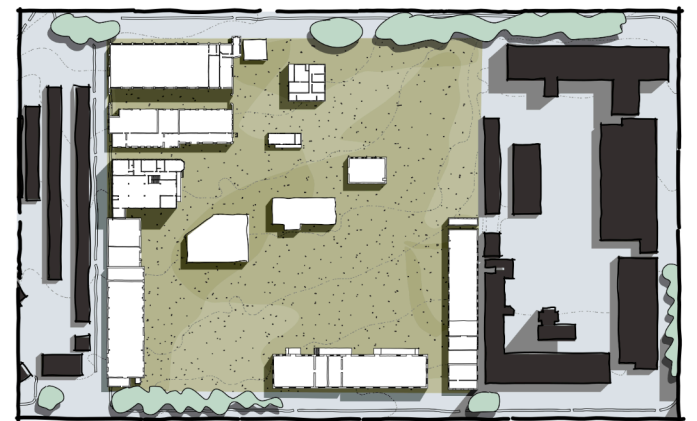**Fig. 2.7**   *Loss: resulting footprints of modified and demolished buildings*

Fig. 2.8   *Reclaimed natural landscape*

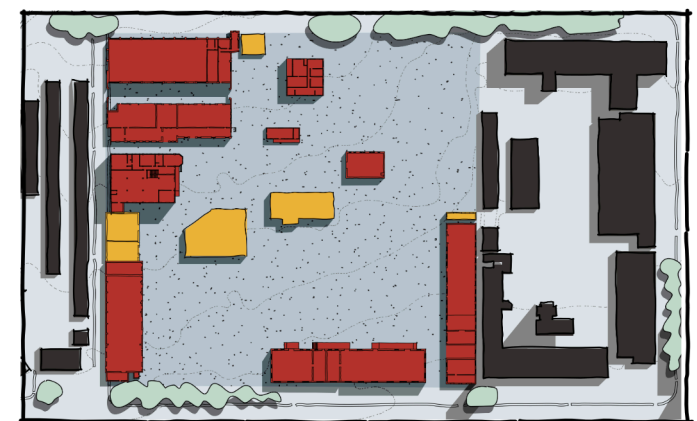**Fig. 2.9**   *Buildings in red - of historic significance.   Buildings in yellow - recent changes*

3 . THE DISSERTATION

3.1   PROJECT STATEMENT

The dissertation investigates a subtle approach to revitalising the industrial legacy of the Workshops in the City of Tshwane through a deliberate focus on contextual appreciation, public value and utility.

3.2   RESEARCH QUESTIONS

How does one mediate between existing industrial heritage, revitalised industrial utility and public service programs? Can the mediation be done sensitively yet actively improve the value of the site?

How can the reclaimed natural condition of the site inform the design process? Can the reclaimed natural condition of the site's landscape be protected and encouraged alongside the appreciation of the industrial heritage?

How can industrial programs be reintroduced to the site in a way that directly engages the public?

How can the continuous change of the industrial site be celebrated without inhibiting the progression of technology?

Can the industrial legacy for the City of Tshwane be reframed to focus on the undervalued history of the everyday people involved in making the city?

3.3   PROGRAM INTENTIONS

The key programmatic intent of the dissertation is to serve the public interest regarding work opportunities relating to the DPWI Expanded Public Works Program.

The framework will address the legacy of local craft by proposing a commemorative craft repository with a series of demonstration spaces to invite public participation. It will include facilities with varying public engagement, from a works application office to a resource centre.

The design focus will be on the vocational training of EPWP participants.

3.4   METHODOLOGY

The research design intends to allow for creative freedom and non-chronological development. The research aims to inform a framework for an integrated assessment and design response to the existing condition of the site (Hofstee, 2011: 124-126; Wang and Groat, 2013: 387,392).

Context study

An initial comparative analysis of change of the context will be made through layering historical material such as maps, urban frameworks, and available aerial photographs. The condition of the public interface to the site will become the initial informants to an urban framework to identify the research problems for the dissertation.

Site Visits

Multiple site visits will contribute to the integrated assessment and understanding of the spatial potential of the site and its context. Throughout the design process, it will also serve as a gauge to critically reflect on the appropriateness of the developing design.

Desktop Studies

Information about the site's current role in the city will be gathered through the consultation of existing HIAs, relevant literature, previous urban frameworks for the CBD, government documents relating to the Tshwane Regeneration Project, and the DPWI Extended Works Program to develop a programme.

Theoretical Lens

Existing heritage strategies and approaches to design in existing contexts will be critiqued. Literature about Urban Regeneration, Palimpsest and Fragile Architecture will be consulted to inform the assessment criteria of the Integrated Assessment and inform the approach to a design response.

Integrated assessment of the value of the site

The value of each existing building will be assessed and analysed through the constructed theoretical lens. Appropriate design responses to each building will then be suggested. Finally, the individual assessments and analyses will be considered parallel to their context to construct a map of significance.

Statement of value

The Statement of value will follow the Integrated Assessment, which will identify the design constraints of the existing site (Mason, 2002: 23-25).

Site Framework

An informed response will be established through the theoretical lens, desktop studies, site visits, and integrated assessment. The framework will include a broader programmatic intent for the site and interventions that involve existing buildings, and the public interface and integration of the site will be established. The delimited site for the design moving forward will also be identified. The framework will be refined through continually revisiting the site framework as the architectural design develops.

Precedent studies

A better understanding of design approaches to similar contexts can be gained through critical studies of relevant precedents and insight into an informed application of industrial programs in the design. These will include precedents relating to a South African heritage landscape with connections to an industrial origin, industrial heritage projects in an urban context and contemporary expressions of industrial projects that could be interpreted as fragile architecture.

Application, iteration and interpretation

An initial response to the integrated assessment within the site framework will be made. A series of iterations, informed by the precedent studies and critical reflection, will develop and be integrated to develop the design moving forward.

Assumptions

The assumption is that changes to the broader context can be made as long as it falls within the public realm. This includes minor changes to pedestrian routes and access to the site, especially on Sophie De Bruyn Street. It is also assumed that the informal washing and maintenance of taxis on Jeff Masemola Street will be accommodated within a proposed transport hub. It is assumed that the DPWI Workshops are relocated permanently and that the site as-is is considered redundant for its original purpose. It is assumed that accommodation for black labourers has historically been provided on the site, as the HIA conducted by the DPWI speculated (Jansen, 2014).

Limitations and delimitations

The project will centre around the design of industrial workshops. Therefore the elements that fall outside the scope of architecture should be considered indicative of the intention of the design. The proposed design intervention will be situated within a larger framework. The detail-development of the design will be limited to the identified site and its immediate context. The site framework will be sufficiently resolved to provide context for the project's generator.
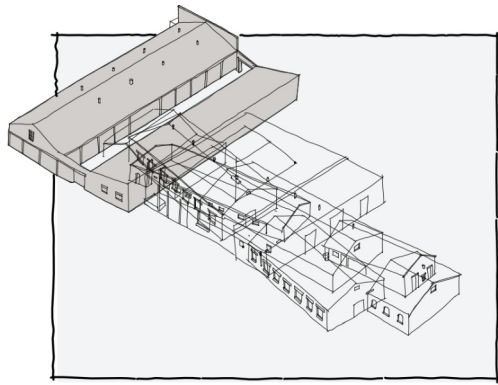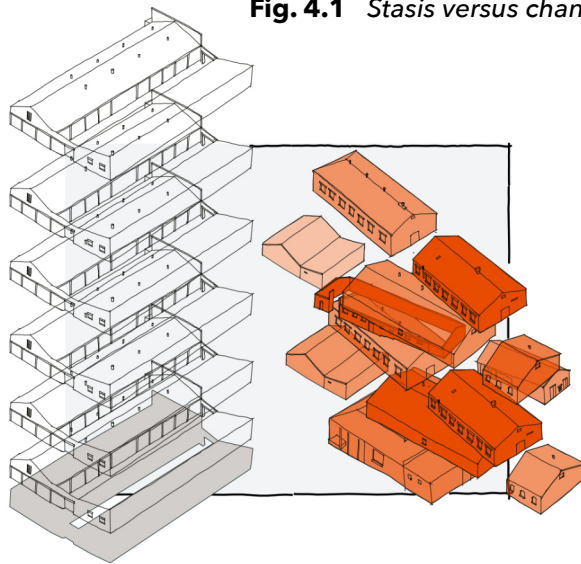
Fig. 4.4 *Recovery*

Fig. 4.1 *Stasis versus change*

Fig.4.2 **Value**-*neutral*
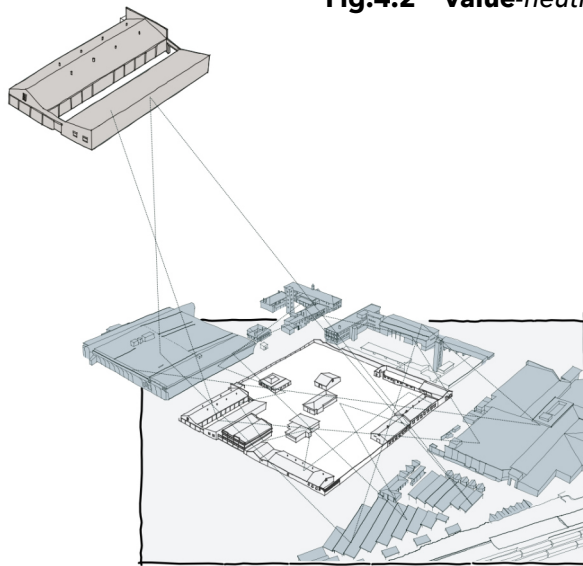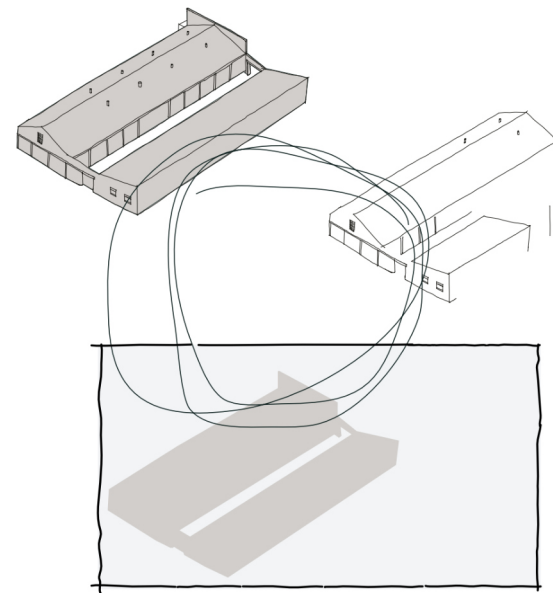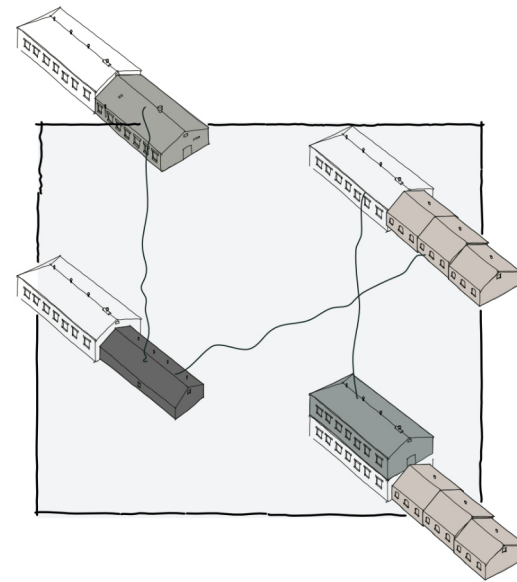
Fig. 4.5 *Evolution*
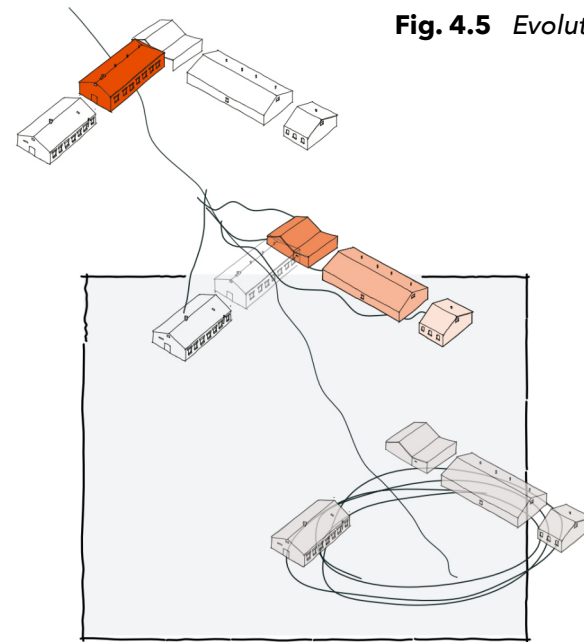
Fig. 4.6 *Transformation*

Fig.4.3 **General** *resilience*

The literature review intends to introduce theories of urban resilience, remodelling and fragile architecture. The goal is to inform the assessment criteria for the Integrated Assessment and guide the design response.

4.1 URBAN RESILIENCE

The investigation of the theory of urban resilience applied to the City of Tshwane intends to guide a programmatic and urban response to the site. Peres (2016: 96-107) highlights the core principles of urban systems resilience.

As illustrated in Figure 4.1, stasis and change are both considered characteristics associated with resilience. Systems can persist despite the changing conditions (stasis) or evolve or transform to suit the current context (Peres 2016: 97).

A resilient system is value-neutral (Figure 4.2). It can add value to its context while also diminishing the context depending on the perspective. However, a resilient system does not imply a healthy system (Ibid.: 97, 102-105).

Figure 4.3 illustrates aiming to design a condition for a specific resilience in a context might undermine the overall resilience within its system. It is thus advisable to consider the condition from a holistic standpoint and aim to design for a general resilience. (Ibid.: 98, 100-102).

According to Peres (Ibid.: 99), three manifestations of Resilience Theory in urban settings are interpreted as recovery, evolution and transformation.

Recovery is when the whole system is maintained. This manifestation has a quality of persistence, where a system manages to bounce back to a similar or the same condition after times of stress. (Fig.4.4)

They maintain that evolution is a form of internal flexibility within systems. It allows for unreliable sub- systems to be replaced by other sub- systems to fill the needs of the context without a complete collapse. (Fig. 4.5)

As illustrated in fig.4.6, transformation takes place when an entire system collapses or drastic changes to systems take place. If the context changes enough and the system no longer serves a resilient purpose, some systems change or collapse altogether (Ibid.).

Mechanisms for enhancing adaptive capacity include diversity, redundancy and modularity (Ibid.).

As illustrated in fig. 4.7, diversity allows for a variety of options or paths in a system, which encourages flexibility with the available options (Ibid.: 162).

Redundancy (fig.4.8) provides a fallback if circumstances change. The contextual changes are independent of time and scale (Ibid.: 173).

Modularity, as described in fig. 4.9, focuses on strengthening internal connections to allow for versatile use of the same module (Ibid: 178).
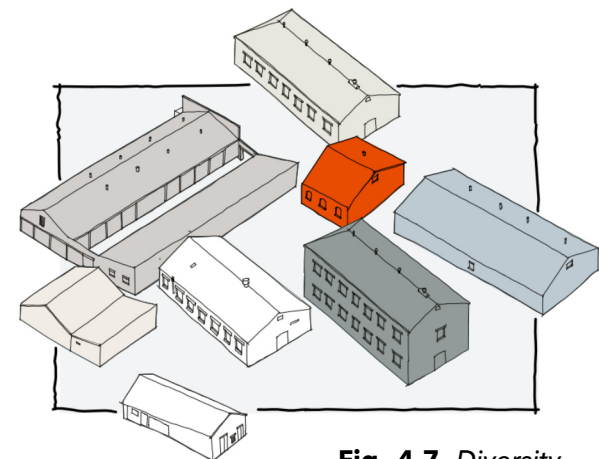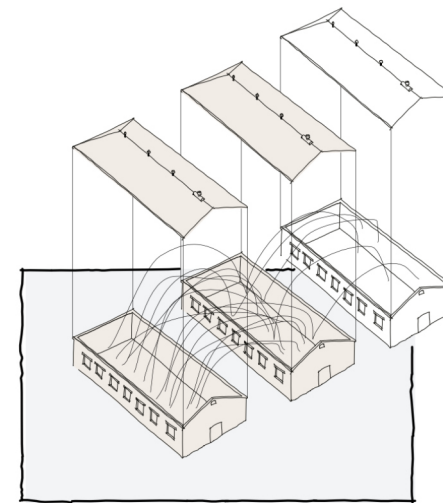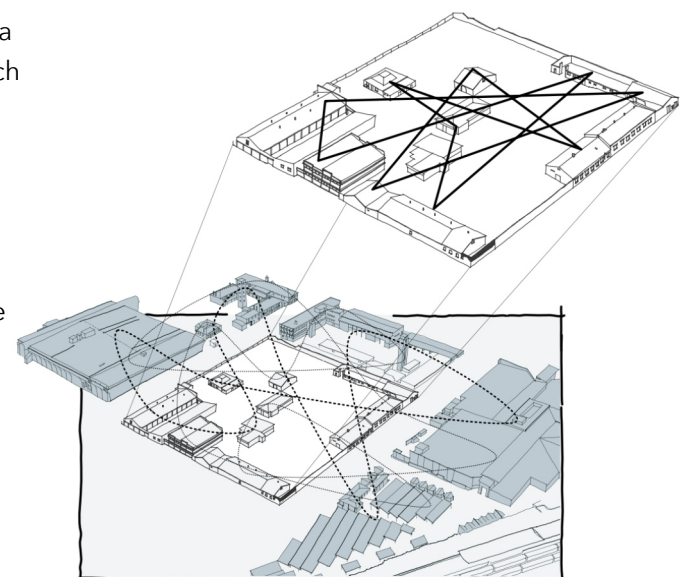

Fig. 4.7 *Diversity*

Fig. 4.8 *Redundancy*

Fig. 4.9 *Modularity*

1937-1964   *1968-2021*   *Combined*
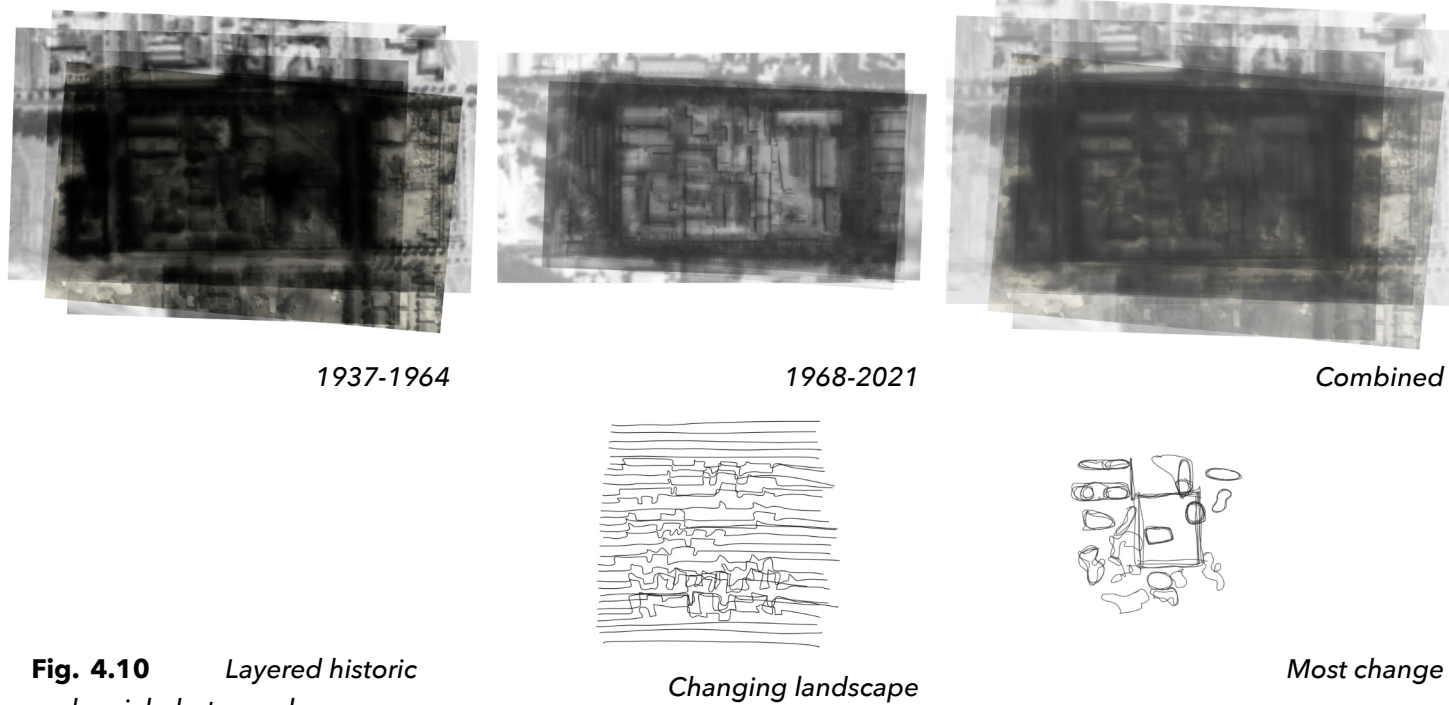
Fig. 4.10   *Layered historic and aerial photographs*

Changing landscape   *Most change*

4.2   REMODELLING THROUGH PALIMPSEST

History as an informant is considered either a repository or the same material to be altered (Machado, 1976: 48-49). The past as a repository can act as a restrictive force to the design process as it frames the historical context as a set of rules to follow. Instead, Machado proposes a process of remodelling the past. By remodelling, Machado suggests applying palimpsest to change the material while still maintaining its essence. (Ibid.: 46-48). Through this process of remodelling the site or building, how it does or does not acknowledge the cultural context over time becomes apparent (Ibid.: 49).

4.3   PRESERVATION-CONSERVATION CONTINUITY

The current emphasis on heritage protection in South Africa focuses on safeguarding previously neglected histories (Fisher et al., 2003: 74-45). However, this intent is not evident in the immediate urban context and is not evident on site.

Postcolonial thought has transformed the reasoning supporting heritage value to appreciate multiple- and hybrid perspectives best understood through the layering of meanings and identities (Hosagrahar, 2012: 82-83). Considering heritage architecture as a scaled approach allows one to consider interventions on historic sites fluidly, according to Barker (2020: 144).

The scale is adapted into a graph that allows a non-dialectical approach to built heritage to be formed (fig. 4.11). On the x-axis the attitude towards

	BASE CASE
	NEW
	HERITAGE BUILDINGS

Fig. 4.11   *Graph depicting design attitudes and approaches to built heritage*

17

heritage preservation or conservation is made, with the y-axis determining the approaches to the interventions towards the built heritage, from continuity to contrast (Barker 2020:134).
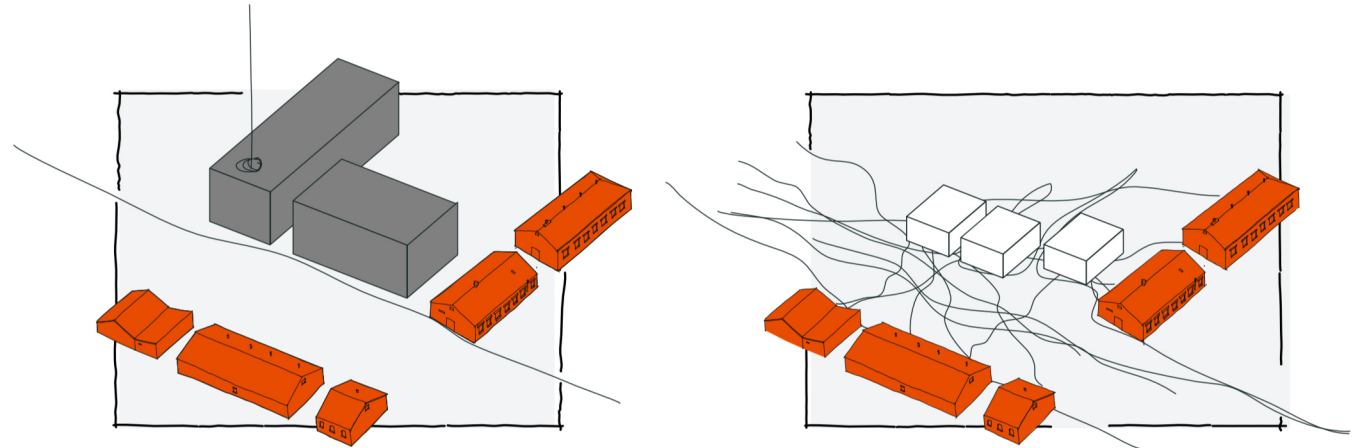

Fig. 4.12 *Fragile architecture as described by Palasmaa (2000:81-83)*

4.3 DE-EMPHASIS

Pallasmaa (2000:81-83) describes the idea of fragile (or weak) architecture as an approach that is responsive and contextual. Where "architecture of strong structure and image" is characterised by its powerful or controlling impact on the spaces it creates, "architecture of weak structure and image" encourages a substantial contextual subtlety, nuance and imperfection (Pallasmaa 2000:81-83).

(Fig. 4.13) De Sola-Morales (1987:622) recognises that 'weak' architecture relegates architecture to a secondary position. This position of secondary importance is what is understood as 'weak', and what is ultimately considered the most significant.

Fragile architecture is explored further in fig. 4.14 with the description of monitu as moments of recollection. This is the recollected memory after the architecture has been seen (De Sola-Morales 1987:621-622).
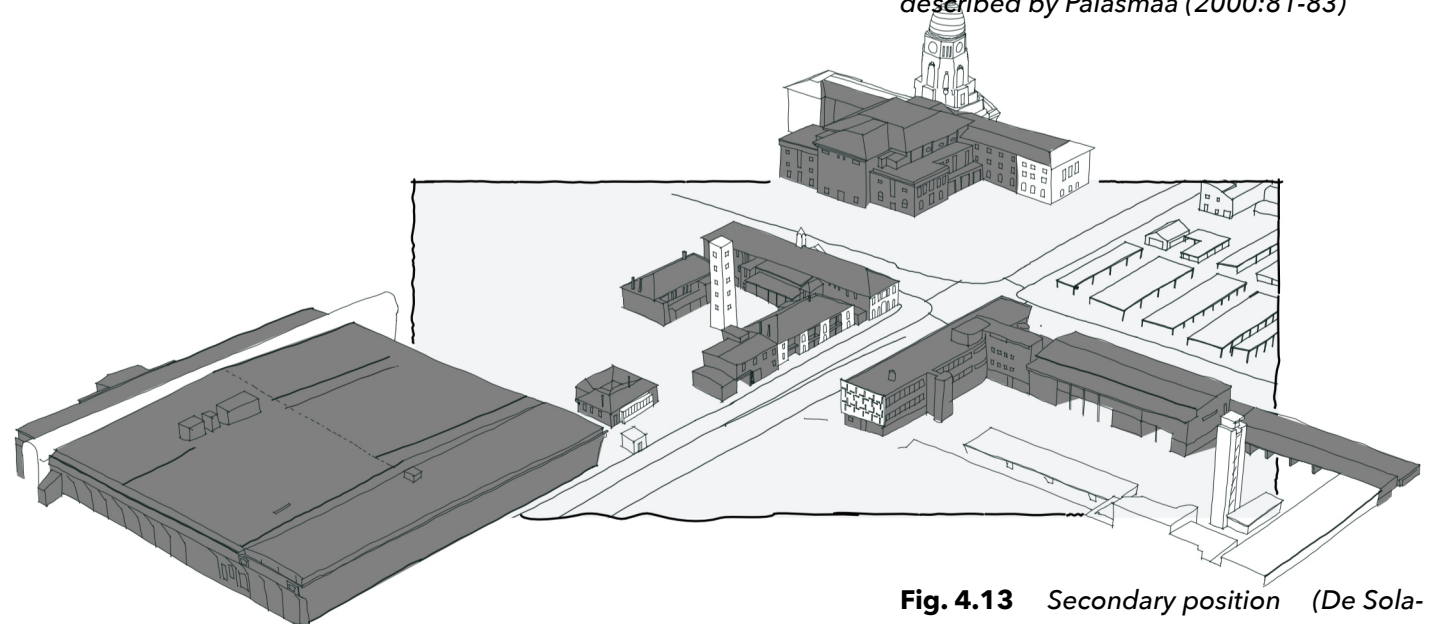

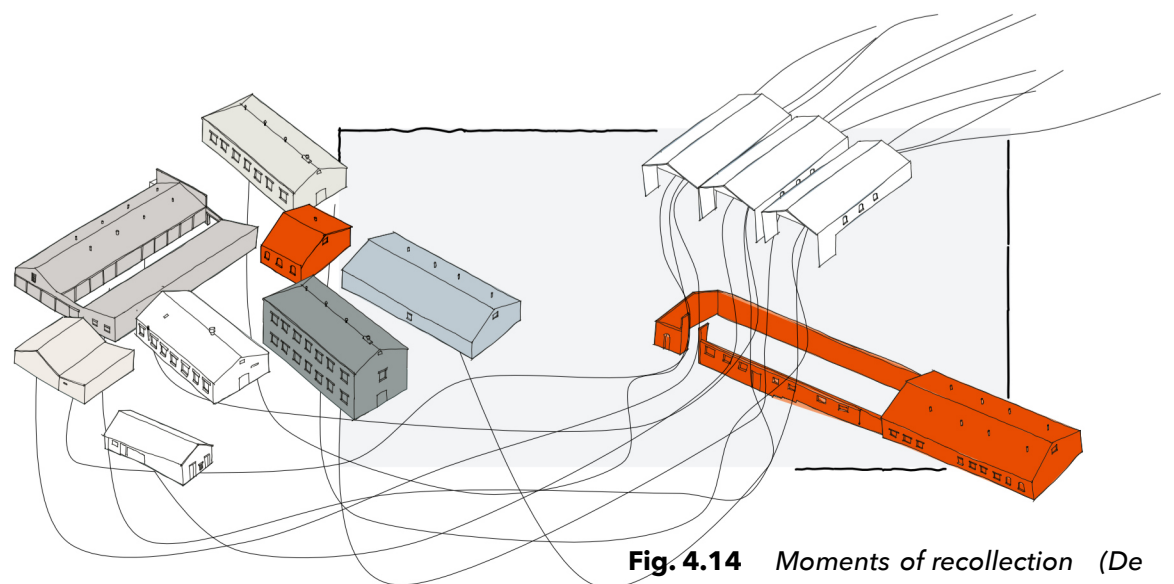**Fig. 4.13** *Secondary position (De Sola-Morales 1987:621-622)*

Fig. 4.14 *Moments of recollection (De Sola-Morales 1987:621-622)*