Designing for Connectivity:

Adaptive re-use and reinterpretation of common space in an existing high-rise international style apartment building

By

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Abstract

This thesis takes the position of putting people first, focusing on increasing the social connection and interaction between occupants in a high-rise apartment building. It looks to activate the existing building and strengthen its link to the city. Architecture is a part of a process of accommodating and responding to continually evolving needs and values. In this thesis adaptive re-use is identified as an opportunity to allow the building to respond and adapt to a requirement for social enrichment. Connectivity and being connected is identified as a design driver to achieve social enrichment.

This research questions how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city? Manhattan is the context for this thesis. The city sees and accepts transformation and is ideal for investigating this speculative design inquiry. The research question is specific to the character of the Financial District, its urban density and its architectural development. The aim of this research is to activate 200 Water Street, an existing high-rise apartment building to integrate social space to increase connectivity. The significance of this research is in developing knowledge using a ‘research through design’ approach to design for connectivity to activate an existing building through adaptive reuse.

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1.0

Background

1.1 Introduction

This thesis prioritises social connection to encourage community structures through the adaptive re-use of an existing residential high-rise building in Lower Manhattan. Designing for connectivity is the main design driver in this research, acknowledging the importance of people and their human needs to feel, and be connected with others.

International style architecture's functional and economically driven approach focusses on maximising rentable space. As a result, little importance was placed on non-sellable spaces such as circulation and social areas. This research recognises the opportunity through adaptive re-use to provide an overflow space to facilitate activities and community structures which cannot be accomplished in the existing regulated planning of the selected international style high rise building. The adaptive re-use looks to bring together the users from separate floors to create a more inclusive structure with the inherent potential to envision a different architectural setting for stimulating new social relations.

The literature highlights a new importance and value placed on social and circulation space within buildings for social enrichment and connection with others, as well as feeling connected as a part of the city. In this thesis adaptive re-use is identified as an opportunity to allow international style architecture to respond and adapt to new social values and requirements. The research acknowledges the value of the existing architecture, while bringing a new usage to improve the standard of the environment and its relevance to the current context. This research specifically questions **how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city.**

The **aim** is to activate 200 Water Street, an existing high-rise apartment building, to integrate social space to increase connectivity.

In order to address the research aim and question the key ideas have been broken down into three objectives. Each being acknowledged as an important aspect to influence the research through design process. The objectives of this research are:

1. Appropriately adapt the existing building following a loose fit design approach
2. Use spatial tools to achieve a higher level of connectivity and interaction between building occupants
3. Reinterpret the value of the social and circulation space to reflect its importance

The context for this research is Manhattan, one of the great metropolises of the world. The architecture in Manhattan and particularly in Lower Manhattan around the Financial district is strongly influenced by international style. This research response is specific to the character of the Financial District, its urban density and its architectural development. Manhattan sees and accepts transformation and is ideal for investigating this speculative line of research. The selected building, 200 Water Street, designed by Emery Roth & Sons, has already seen adaptive re-use from an office building to residential apartments, further reinterpretation looks at the value of common space and the social responsibility of architecture as a part of a city.

Initially a literature review is undertaken on international style (section 2.1) to acknowledge the historical and architectural context, and understand the broader influences which shaped international style. This provides insight into how to appropriately reinterpret the existing building through adaptive re-use. Further the review of literature on adaptive re-use (section 2.2) highlights relevant strategies around a 'loose fit' approach for alterations focusing on social enrichment. Key ideas from the international style, and adaptive re-use sections influence the position of this research for the integration of an overflow space for 200 Water Street. The importance of social space to encourage community structures is researched to further develop the position and design direction (section 2.3). Lastly the idea of designing to enhance connectivity between users is researched to identify tactile strategies which can be implemented through design (section 2.4).

The adaptive re-use and connectivity sections are critical to the direction of the research, these sections are summarised into a design framework (section 2.6) to aid design development towards addressing the research question, aim and objectives.

The literature review is carried out alongside the design process to provide a theoretical framework for the research. Further development follows a research through design approach.

The nature of adaptive re-use lead to a strong focus on site analysis of the existing building (chapter 4.0) as well as the effect of the broader Manhattan culture (chapter 3.0). This is undertaken through a study on Manhattan as

well as more specific analysis of the existing buildings floor plan and the opportunities it provides.

Precedents which address aspects of the design question are evaluated through a case study analysis to reflect on how the relevant ideas have been actioned through design (chapter 5.0). Each case study addresses different areas or show a different interpretation. The case studies are analysed against the design objectives to identify implications for design relevant to further research, as well as their strengths, weaknesses, and critical insights they offer for the objectives of this thesis.

Spatial tools to achieve connectivity are then explored separately to the site and context to further develop tools which are not restricted by building factors or space requirements (chapter 6.0).

Key findings from the site and context analysis, and connectivity investigation, are then explored together through massing studies as a part of the preliminary design process in chapter 7.0. Initially focussing on circulation and the relationship to the existing building, but later address a loose fit design approach and flexibility of usage. The developed design is a culmination of the previous research and envisions how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city (chapter 8.0).

1.2 Methodology

‘Research through design’ is the primary methodology to inquire about the research question, aims, and objectives. An iterative approach is used to test and reflect on the appropriateness of the adaption while following a ‘loose fit’ design method, along with the effect of spatial tools in achieving a higher level of connectivity and interaction between the occupants, and how social and circulation space is reinterpreted to reflect its importance.
This investigation requires research through design to sequentially build upon previous experiments to further the design inquiry and speculate how common spaces in an existing residential skyscraper can be reinterpreted to increase social connection between occupants and strengthen their link with the city.
This approach follows Peter Downton’s design research methodology. It is concerned with the action of designing, and the process of reflection, to create new knowledge, that informs and helps further design work (Downton, 2003).
“Design is a way of inquiring, a way of producing knowing and knowledge; this means it is a way of researching” (Downton, 2003, pp.2).
Reflection against the research aim and objectives is critical to measure the success or lack off, within the process. The relationship between the iterative process and reflection develops the research and produces new knowledge through design.

A literature review and case study analysis’ are carried out alongside the design process to provide a theoretical framework for the research. The methodology for this research is pictured in fig. 1.0. The diagram demonstrates how the culmination of previous knowledge is developed to further the research inquiry.

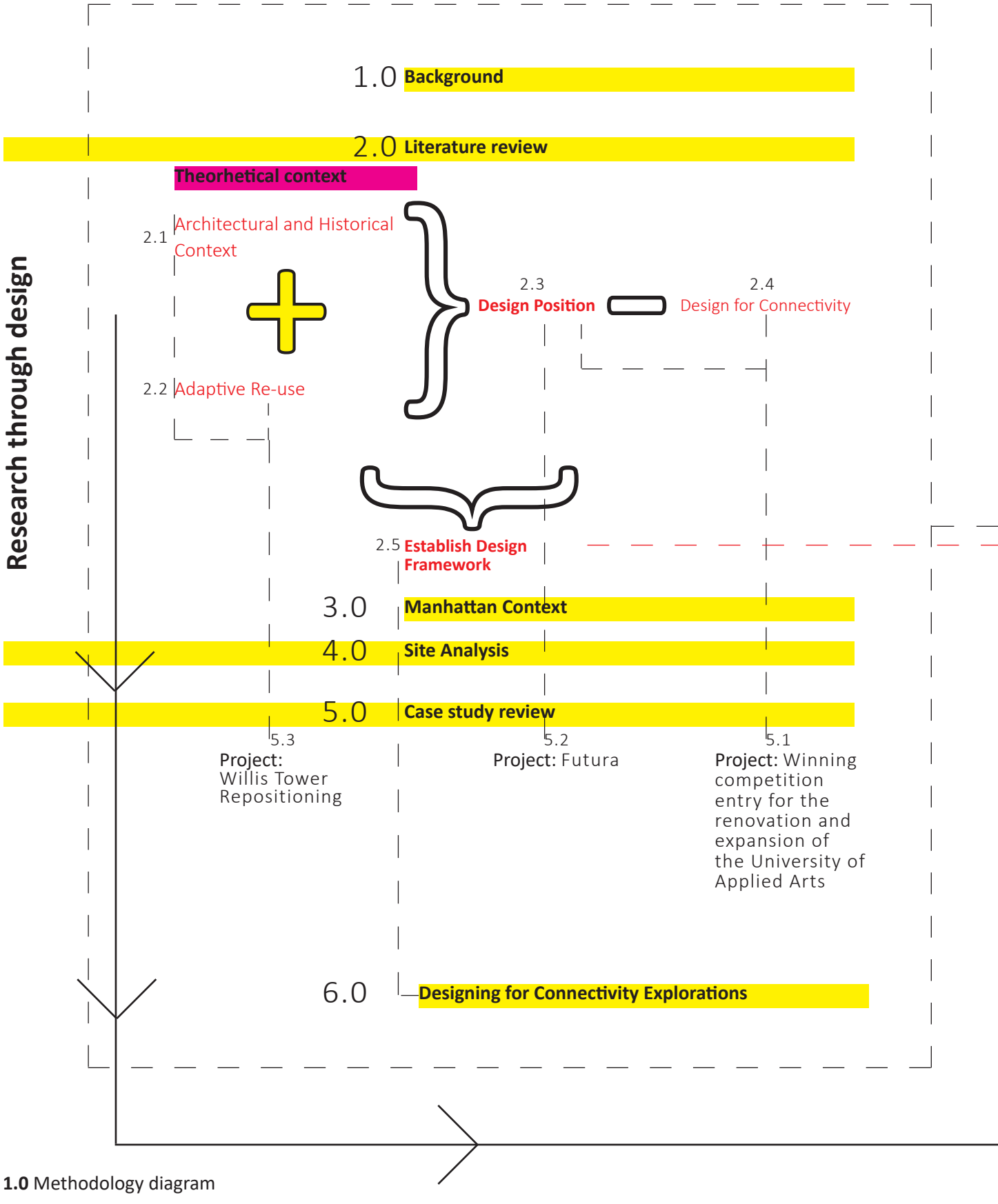

Fig. 1.0 Methodology diagram

Highlights more important areas in the advancement of the research

7.0 Preliminary Design

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7.2 Massing experiments

7.3 Design Iteration

Reflection

8.0 Developed design

Critical reflection against design Framework Q, A, O's

9.0 Discussion

10. Conclusion

1.3 Scope of Research

The primary concerns of this research are broad in terms of the reinterpretation of living environments within the city. It is explored through a specific building to show the inherent potential to envision a different architectural setting for stimulating new social relationships. This project is conceptual and does not address being built, and the concerns of building adaption. Shipley et al. (2006) discuss some constraints and uncertainty in the development of older buildings. Notably these are building code issues, unknown adaption problems with the existing building, shortage of specialised workers with required skill sets, and the cost of adaption. These constraints and more specific design details of adaptive re-use are not relevant to the research question, aim, or objectives, and are beyond the scope of this research.

1.4 Research Question, Aims and Objectives

This thesis questions;

how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city.

1.4 Research Aim and Objectives

The aim of this research is to activate 200 Water Street, an existing high-rise apartment building to integrate social space to increase connectivity.

The following objectives have been created as a measure of achieving the research question and aim. These are;

1. Appropriately adapt the existing building following a loose fit design approach
2. Use spatial tools to achieve a higher level of connectivity and interaction between building occupants
3. Reinterpret the value of the social and circulation space to reflect its importance

1.5 Approach to Design Process

Abowardah and Manal published a conference paper on the design process (2016). Within this paper the authors created a table to compare and review a selection of architects, groups, and theorists, position on the stages of the design process (Abowardah & Manal, 2016). This includes: Asimow's model (1962), RIBA's model (1967), Benett's model (1973), C-B-C model (1979) and Laseau's model (1982). See fig. 1.1 for this table. From this table and the review of the NZIA's "The design process" (n.d.) fig. 1.2 was created. The diagram selected information relevant to this research through design project to diagram the design process. The scope of research for this project (section 1.3) places the development of the research question between the preliminary design and developed design stage. With the primary concern of this research to reinterpret the value of social space within living environments to increase social connection, this conceptual project does not address the concerns of building adaption and the process of being built. A completed detailed design which would be considered in the design development and construction design stages is not relevant to the research question, aim, and objectives and are beyond the scope of this research.

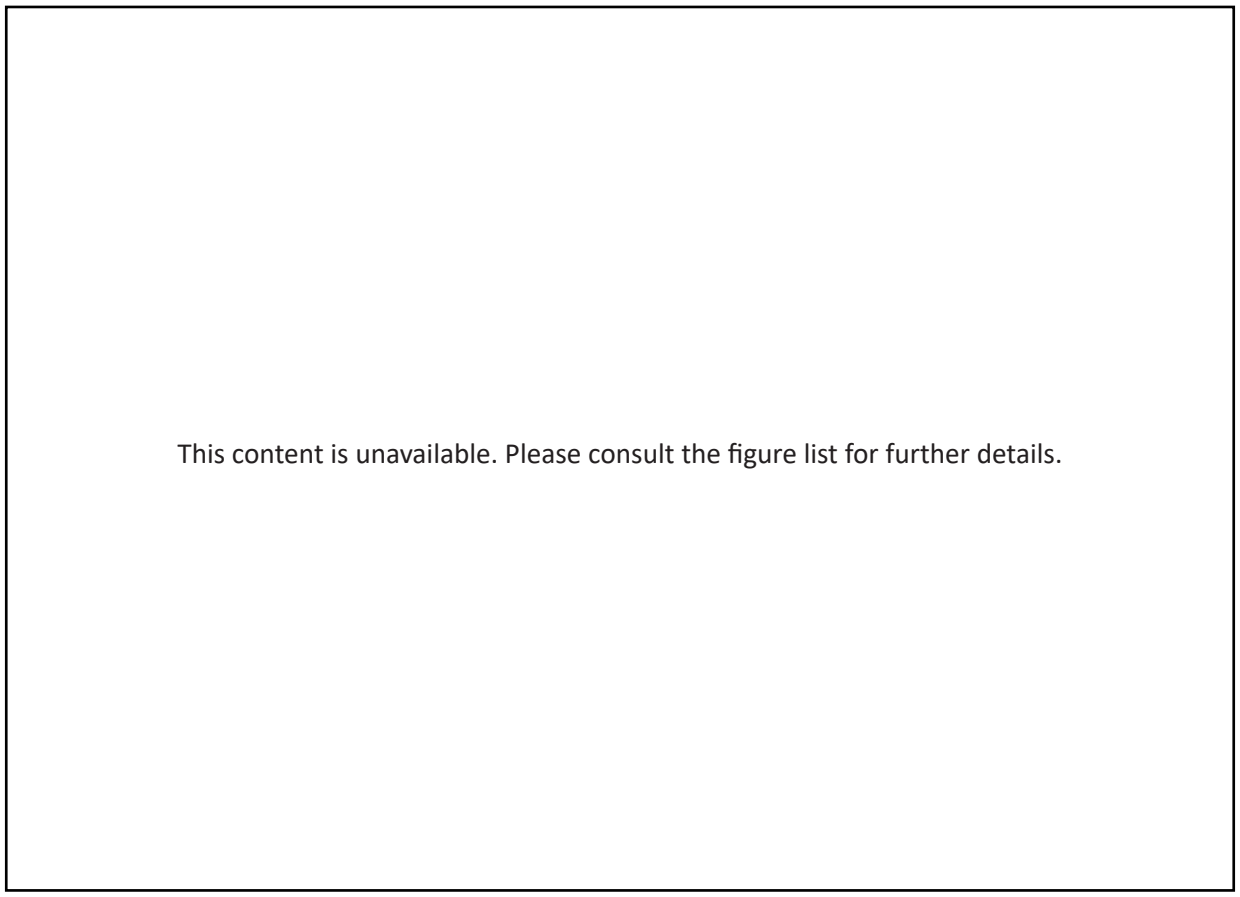

Fig. 1.1 Table 1. Review of some architects and theorists opinions about design process

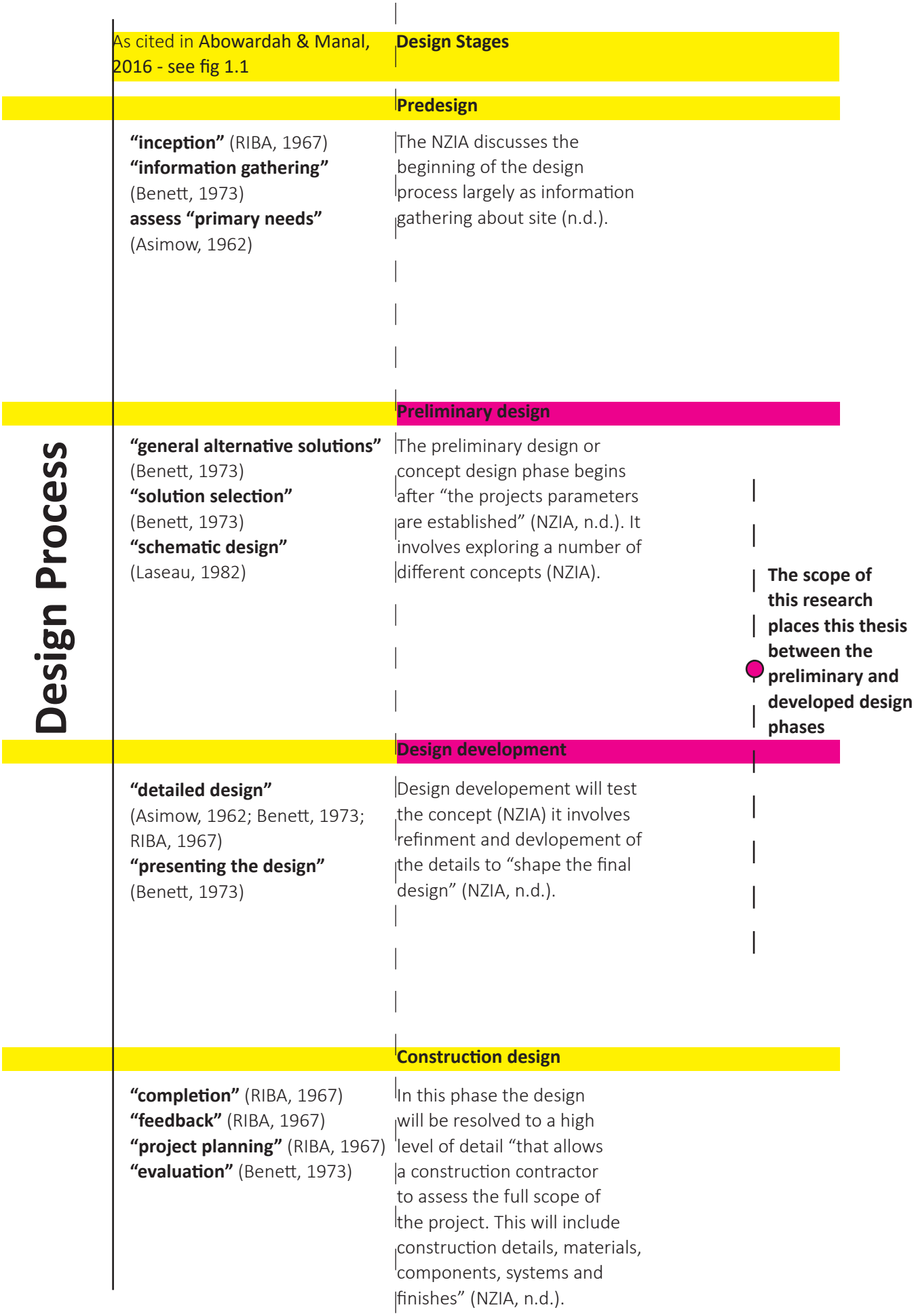

Fig. 1.2 Design process

2.0
Literature Review

2.1 Architectural and Historical Context

This section provides context for adapting and altering an existing international style building. The literature is reviewed in order to acknowledge the historical and architectural context, and understand the broader influences which shaped international style. A balanced representation of international style is presented through comparing the literature of the following authors; Steven Ruttenbaum (1986), Robert A.M. Stern, Thomas A Mellins, and David Fishman (1995), Henry-Russel Hitchcock and Philip Johnson (1966), Joan Ockman (1997), Reinhold Martin (2003), Meredith L. Clausen (2005). This section then more specifically discusses the architects responsible for the selected site 200 Water Street – Emery Roth & Sons.

Henry-Russel Hitchcock and Philip Johnson (1966) outlined the principles of international style as “volume” not through “mass and solidity” but through “thin planes or surfaces” (pp. 29). “Regularity”, and the “technical perfection” and “fine proportions” of materials (Hitchcock & Johnson, 1966, pp. 29). The style moves away from previous decorative and applied ornament, with an overarching focus on functionalism and refined aesthetic qualities (Hitchcock & Johnson, 1966).

International style evolved in America after World War II. Following the war, international style was seen as imperative for “continuing productivity and economic prosperity” (Ockman, 1997, pp. 127). Joan Ockman discusses how the functionalist architecture reflected the industrial trends and technological advances of the time (1997). “Architecture not only gave representation to these realities, but also partook of them in its professional structure and scale of operation” (1997, pp 131). Ockman characterised the style by “good design” and “rational planning” (1997, pp. 127).

Meredith Clausen (2005) discusses international style as “express[ing] the desires of the masses” (pp. 220). The style responded to rules of “supply and demand” (Clausen, 2005, pp. 220). Previously the large apartment house in a decorative building “meet the demands of a rich moneyed class”. Following World War II international style “meet the demands of a corporate society needing modernised working spaces” (Clausen, 2005, pp. 220).

Ockman and Clausen both discuss a broader demand for a new architecture following the War which influenced international style. They make reference to the large-scale development it achieved through the construction of corporate office space. ‘Good design’ aligned with capitalism to improve and develop the built environment (Clausen, 2005; Ockman, 1997).

Reinhold Martin acknowledges the commercialisation of the architecture and refers to the high-rise office buildings in the 1950’s as a “science” (2003, pp. 82). He discusses the direction of international style not as an “assembly line as projected in the seriality of the ubiquitous metal and glass curtain wall” but as an important “reconditioning of the modern subject” (Martin, 2003, pp.4). A distinct point of change which saw real improvement and the introduction of modernity.

In the 1950’s international style architecture was “major” and “normative” according to Ockman (1997, pp. 145). The “glass box” had a “neutral role in the city scape” (Ockman, 1990, pp. 131). International style as a global design solution, removed the social and political ideologies associated with modernist architecture as an “apolitical” movement that “harboured no explicit critical messages” (Ockman, 1997, pp. 128). The ideology of the new architecture moved from social reform to align with the capitalism in America (Ockman, 1997, pp. 127). The image of the style was “sheer technical power and

formidable material presence conjoined with an ideologically neutral aesthetic" (Ockman, 1997, pp. 128). The direction of the current architecture was overhauled by the new advancing technology of steel structure and the curtain wall system. International style set in motion significant style and structural changes within the built environment. The structural frame was seen as "symbol of order" from previous chaos (Rowe, 1956, pp. 289). The new technology and refinement within the style realised the hopes and aspirations for improvement and progress (Clausen, 2005; Ockman, 1997; Martin, 2003).

Externally, international style architecture was recognised through the curtain wall facade. This was generally accepted as a part of its architectural language (Martin, 2003; "High Rise Office Buildings," 1957; "Machine Made America," 1957). Separating the curtain wall from the structure as an external skin was considered "the most economical method to construct tall office buildings" (Ruttenbaum, 1986, pp. 203). The curtain wall system was idealised for its technological development while being functional and economical.

The separation of structure from the internal walls achieved "empty skins" for "individualized consumer-subjects" (Martin, 2003, pp. 7). The development of the curtain wall created a grid for identical internal modules. This internal organization system "accommodate[ed] office partitions, ceiling tiles, lighting fixtures, and furniture, in any number of combinations" (Martin, 2003, pp. 95). The organization complex allowed for individual choices and customisation through modules which were able to be interchanged (Martin, 2003; Ockman 1997; Stern et al., 1995).

Ockman saw international style, and particularly the curtain wall system as becoming an “increasingly homogenous” mainstream production (1997, pp. 127). Publications by Colin Rowe critiqued the “mass reproduction” of the office by commercial architectural firms as a commodity (Rowe, 1956, pp. 2). Rowes’ criticism was largely directed at Emery Roth & Sons (1956).

Emery Roth & Sons are the architects responsible for 200 Water street, the selected site for this research. Ruttenbaum also critiqued the Roth’s for reproducing the curtain walled office building, giving their international style buildings the term “Rothscrapers” (1986, pp. 202). He discussed the widespread dissemination of the ‘Rothscrapers’ in Lower Manhattan as a consumable product (Ruttenbaum, 1986).

Emery Roth & Sons in response to the criticism asserted that their primary focus was on the interior “belly” (Duggan, 1963, pp. 9, as cited in Ruttenbaum, 1986, pp. 203) of their skyscrapers. They were not concerned with “art but utility” (Ruttenbaum, 1986, pp. 203). Providing functional and economical buildings with “maximum rentable space, high speed elevators, flexibility of plan and comfortable interior climate” (Ruttenbaum, 1986, pp. 203). The internal ‘belly’ provided usable rentable space, the focus on this area was economically driven (Ruttenbaum, 1986, pp. 203).

Emery Roth & sons were acknowledged as “superior” planners (Stern et al., 1995, pp. 51). “They perfected a science whereby the interior of each structure, … could be broken down into vertically identical components” (Ruttenbaum, 1986, pp. 203). The functional and economic drivers of international style increasingly aligned with big business (Clausen, 2005; Ockman, 1997; Stern et al., 1995).

Stern et al. (1995) attribute the standardisation and mass production of the office building to the “belief that cities were little more than machines for working in” (pp. 47). International style being aligned with the industrial trends and influenced by economic drivers saw different critique of its role. International style was a symbol of progress and economic prosperity for the masses, as well as a symbol of capitalism aligned with big business. The idea of success and the styles aesthetic image contributed to its influence and general uptake.

2.2 Adaptive Re-use

Adaptive re-use is an important aspect of this research. This section opens with a more general discussion of the adaptive re-use of international style architecture. This is followed by the more specific discussion of the adaptive re-use and its purpose for this project through identifying relevant design strategies. This section then discusses adaptive re-uses effect on a city and its role as a part of the larger urban context.

Schmidt & Austin discuss the “broader context in which buildings are designed, constructed and used” (2016, pp. 114). Architecture is a part of a process of accommodating and responding to the continually evolving conditions “as part of a dynamic interplay between form (building) and context (users and environment)” (Schmidt & Austin, 2016, pp. 47). Adaptive re-use is concerned with a buildings ability to transform and adapt to new demands and add value to the building (Schmidt & Austin, 2016).

Schmidt & Austin specifically refer to the standardization of international style not catering to new needs. The adaptive re-use of international style architecture challenges its conception as an ‘object’, acknowledging that buildings are “a series of layers, which change” (Schmidt & Austin, 2016, pp. 7). Adapting international style architecture allows the building to respond and adapt to changing values and requirements.

Shipley et al. (2006) acknowledge that “older buildings represent an important aesthetic, cultural and economic resource - as well as a non-renewable one” (pp. 505). The importance of older buildings should be recognised, while adaptions should allow these buildings to evolve for modern use (Shipley et al., 2006). They discuss how the representation of different styles and movements in a built

environment add a richness and diversity to the context that should aim to be maintained and not taken away from with new adaption and extensions (Shipley et al., 2006).

Schmidt & Austin acknowledge the opportunities for re-using and adapting international style architecture, in that its “generic order” (2016, pp. 114), and as previously mentioned by Ruttenbaum (1986) organization system, create modules which can be easily interchanged. These buildings have the ability to “tolerate change whilst retaining identity” (Schmidt & Austin, 2016, pp. 14). Working with these modules maintains the planning and aligns with Shipley et al. position for respecting the style of architecture.

The literature (Shipley et al, 2006; Schmidt & Austin 2016) acknowledges considerations which should be acknowledged when making alterations to an existing building. They recognise opportunities in the size of building, available space for extension / alterations, and construction and structural limitations. They provide initial considerations and highlight possible opportunities which can be used as an initial assessment of the building (Shipley et al, 2006; Schmidt & Austin 2016). The potential of available spaces and how they align with spatial requirements for new additions, as well as how to work with the existing structure, and other potential opportunities of a building should be considered at the outset (Shipley et al, 2006; Schmidt & Austin 2016). These considerations are specific to the individual building which allows for site responsive and contextually relevant design.

James Douglas discusses more specifically the definition and purposes for adaptive re-use. He defines adaptive re-use as ”any intervention to adjust, reuse, or upgrade a building” (2006, pp. 1). The adaption changes the capacity, function and or level of performance. These changes are for the purpose of cultural, economic, environmental or social benefits (Douglas, 2006). Acknowledging the

and or level of performance. These changes are for the purpose of cultural, economic, environmental or social benefit (Douglas, 2006). Acknowledging the purpose for adaptive re-use helps in selecting more appropriate design strategies. Herein adaptive reuse is discussed for the purpose of social benefit.

Schmidt and Austin (2016) provide some design strategies which follow a 'loose fit' approach for the adaptive re-use of a building for social purposes:

- Designing spaces and places which are capable of accommodating several different usages and ways of being used
- Give users control and options over how to use the spaces
- Creating versatile easily changeable configurations which can address a varying number of user's activities, new work patterns, and future changes

A 'loose-fit' approach is identified as making spaces more adaptable for a longer period of time. This strategy requires the building and users to respond to the conditions together. Primarily designing for one end of the spectrum (people centric or building centric) does not allow for a range of uses and changes. "This relates to understanding organisational need rather than pre-subscribing physical solutions" (Schmidt & Austin, 2016, pp. 54). 'Loose-fit' design accommodates a continually changing context and usage in that it can evolve and be manipulated "through a combination of physical and human adaptability" (Schmidt & Austin, 2016, pp. 275). Both the physical environment, as well how people use the space, are important for responding to new requirements.

Semes (2009), and Byard (1998) further discuss the effect of adaptive re-use of buildings on a city as a broader scale idea. Semes is primarily concerned with aesthetics, and the appropriateness of any additions within its context. His argument is based around the ideals of 'continuity' and 'wholeness' between the existing building and any further alterations (Semes, 2009).

Architecture has a larger responsibility to the users and general public to be appropriate, while adding new value to the built environment. Byard (1998) similarly discusses the importance of building adaption not “violating the integrity” (pp. 9) of the existing architecture or context. Additions bring together the existing with new design “generating in the process valuable new combined meaning” (Byard, 1998, pp. 4). Adaptive re-use acknowledges the value of the existing architecture while bringing a new usage to improve the standard of an environment and its relevance to current contexts. Adaptive re-use considers the combination of existing, and new architecture to bring a new definition to the space, its appropriateness and lifespan, as well as how the purpose of buildings are viewed (Byard, 1998; Semes, 2009).

The process of adaptive re-use is shaped by our current context and values. It reflects wider changes and needs which “rarely occur in isolation; they often propagate” (Schmidt & Austin, 2016, pp. 47) and are thus not independent to a specific building. Schmidt & Austin discuss architecture as both a “receiver”, accepting and adapting to change, as well as an “agent” of change, taking an active role in the broader context of how buildings are used with wider contextual obligations as part of the built environment. Buildings are linked into the built environment and larger city through their usage and adaption. Building adaption sees “the built environment as an open-ended and long-term process” (Schmidt & Austin, 2016, pp. 273) which is continually evolving.

Semes’ and Byard’s discussion on defining new meaning from a combination of existing and new design, highlight a reinterpretation of a buildings meaning and purpose through adaptive re-use. Additionally Schmidt & Austin (2016) acknowledge that the new meaning is a broader reflection of changing values, that are linked to a city context. This section recognises effective strategies which can be applied to the adaptive re-use of social space to respond to wider changing values.

2.3 Design Position

This section combines previous research on international style and adaptive re-use to form a position for the integration of an overflow space for 200 Water Street. Similar concepts from Gang (2016), Wagner & Watch (2017), and Oldenburg (1989) on the importance of social space to encourage community structures are discussed to further develop the position and design direction. The precedent set by Lebbeus Woods about 'freespace' and design 'parasite' are acknowledged however not influential to this design position.

As previously discussed in section 2.1, international style involved regulated space planning. The style's functional and economically driven approach maximised rentable space, with lesser importance placed on non-sellable, social space. With this structure there is an implicant predetermination in the importance of spaces, and to comply with the way spaces are laid out. While high-rise buildings offer opportunities in housing and the bringing together a multitude of people in one building, these people "live physically close to many others, but in practice [are] limited to those on one's floor" (Gifford, 2007, pp. 12). The 'organisation complex' contributes to a loss of traditional ideas about community (Gifford, 2007; Stern et al., 1995).

Gang (2016) discusses providing opportunities to engage and prioritise social connection to encourage community structures within the city. "the need to design social space in, on, and around tall buildings must be continually examined if we are to have a cohesive urban fabric that supports communities" (pp. 117). This thesis looks to use adaptive re-use to integrate the current social values around community structures and inclusive environments.

Wagner & Watch (2017) interviewed architects, firms and users of designed areas, discussing a new focus on innovative spaces. From these interviews their idea of innovative spaces is attributed to “spaces that strengthen interactions, communication, and collaboration; and spaces that are open, transparent and contextually responsive” (pp. 13). They discuss “a shift away from ‘style’ and more toward embracing core values aimed to help people flourish under new economic and demographic conditions” (Wagner & Watch, 2017, pp. 4).

Gang (2016), and Wagner & Watch (2017), discuss a need to encourage social connections through design. They acknowledge a change in values, and how the way space is designed, needs to support community structures and new social ideas.

Oldenburg (1989) when discussing place in America advocates for the importance of work home and a third place which is “inclusively sociable offering both the basis of community and the celebration of it” (Oldenburg, 1989 pp. 15). This third space has an emphasis on being informal social and flexible, similar to the qualities for social space discussed in section 2.2.

Oldenburg discusses previous values in Greek and Roman structures of community, for gathering space (specifically “agora and the forum”) “should be great, central institutions… that the architecture of cities should assert the worth of the public and civic individual over the private and domestic one” (1989 pp. 17). Oldenburg (1989) refers back to Greek and Roman values to acknowledge an importance he believes should be placed on social gathering space, which he discusses as lacking in America. This third ‘good great’ space is important, and the quality and planning of this space should reflect a level of grandeur in reference to its worth. In contrast to the position of this thesis, Oldenburg (1989) sees these places (home, work, third place) as separate spheres, “distinct places;

each must have its measure of autonomy from the others" (Oldenburg, 1989 pp. 15). The third space for the context of this research blurs these boundaries inline with the current context of how spaces overlap.

Lebbeus Woods, an American architect and artist made significant contribution to the conceptual architecture movement in the 1960's and 1970's (Noever, 2005; Nakamura, 1991) following the period of international style. His work challenged societal ideas and the urban fabric through his unconventional experiments (Noever, 2005). Woods established the term 'freespace' which liberated his designs from conventional and architectural considerations. Woods "refuse[d] to distinguish between making, building, drawing, and architecture" (Nakamura, 1991, pp. 9). He is well known for his experimental designs and radical concepts through the dissemination of his images and manifestos (Noever, 2005; Nakamura, 1991). The introduction of concepts of 'parasite' and 'freespace' draw parallels to this thesis position to use adaptive re-use integrate social space. While this research is not influenced by his radical approach and ideas he is acknowledged as a precedent.

This research recognises the opportunity through adaptive re-use to provide an overflow space to facilitate activities and community structures which cannot be accomplished in the existing regulated planning of the selected international style high rise building. The adaptive re-use looks to bring together the users from separate floors to create a more inclusive structure with the inherent potential to envision a different architectural setting for stimulating new social relations. The position of this thesis is that an addition should acknowledge the importance of social space for creating connections and be designed to encourage interaction and community.

2.4 Designing for Connectivity

The position of this thesis advocates for enhancing the connectivity of the existing building through adaptive reuse. This thesis looks at designing for connectivity as a means to support and encourage community structures and new social values. The design of the overflow space will be driven by increasing social connection between occupants. This section identifies tactile strategies to achieve connectivity through design.

Wagner & Watch (2017), refer to the idea of interlinking multiple floors horizontally as well as vertically to create stronger connections within a space. They acknowledge how developing vertically can create separation and hinder connections and social opportunities. Ross describes twentieth-century office buildings as “inflexible”, and “isolating” with “departmental, static division of space” (2005, pp. 145). He instead suggests “buildings are planned in both dimensions” (Ross, 2005, pp. 154) to interlink multiple floors. A stronger focus on interlinking multiple floors has the potential to create a greater social engagement (Wagner & Watch, 2017; Ross, 2005).

Further Wagner & Watch (2017) place an importance on circulation space to create interactions and connections. In innovative environments circulation space “has become a place for people to collide and collaborate” (pp. 39). Combining the circulation and social space encourages a more integrated and social environment. There is an emphasis on circulation being informal, generous in size, accessible, and “aesthetically pleasing” (Wagner & Watch, 2017, pp. 32). The circulation as a space itself should attract usage and occupation. The literature suggests a fluidity and integration between circulation areas and other spaces for a more connected environment.

Alongside physical and social connectivity, there is a focus on visual connectivity between different areas and floors through openness and transparency. Gang (2016), and Wagner & Watch (2017) link the idea of visual connectivity to social inclusion. Open and visually connected environments create “spaces where people are willing to enter and own” (Wagner & Watch, 2017, pp. 39). Visual access to the space encourages higher usage and further occupation of the space. Through openness it is clear that the “activities and opportunities inside [the building] are for all people” (Wagner & Watch, 2017, pp. 39). Open and transparent spaces are socially more inclusive and support the interactions and social exchanges (Gang, 2016; Wagner & Watch, 2017).

Flexibility increases opportunities and choice within a building. It allows free movement and encourages occupation of spaces. Neutral informal and flexible spaces is advantageous to “mixing of different types of people from different backgrounds” (Wagner & Watch, 2017, pp. 34). Connecting users and encouraging occupation is attributed to offering flexible unrestricted spaces.

This section evaluates tactile concepts to achieve a higher level of connectivity. The literature largely focuses on circulation space which has the opportunity to physically connect users. Other design strategies have been identified to be investigated further;

- Interlinking multiple floors horizontally and vertically
- Actively using circulation as a designed space and a tool to create interactions and connections
- Generous and accessible circulation that creates fluidity between circulation and different areas
- Openness and visual connectivity
- Flexibility offering multiple options for circulation and spaces so users are not forced or re-stricted to using a particular space or route

Section 2.3 discussed why designing for connectivity is important for current social values. This section reviewed literature on how to design for connectivity. The review on designing for connectivity is general and not specific to the position of this research or adaptive re-use. The resulting design strategies can be inquired about further through the action of designing and the process of reflection against the objectives of this research. Research through design can develop new knowledge in designing for connectivity specific to this research inquiry.

2.5 Design Framework

A literature review on international style, and adaptive re-use provided the theoretical context for this research. A position was established for how common spaces in an existing residential skyscraper might be reinterpreted. Further research into designing for new social values established a focus on designing for connectivity.

Successful design strategies for adaptive re-use have been identified in section 2.2. Section 2.4 determined design strategies for enhancing connectivity. These strategies have been further analysed in relation to the proposed project. Critical ideas from these strategies have been developed into a design framework. This is pictured in fig. 2.0. The design framework will be used to test outcomes at critical points in the investigation to measure their success and direct the research towards addressing the thesis objectives.

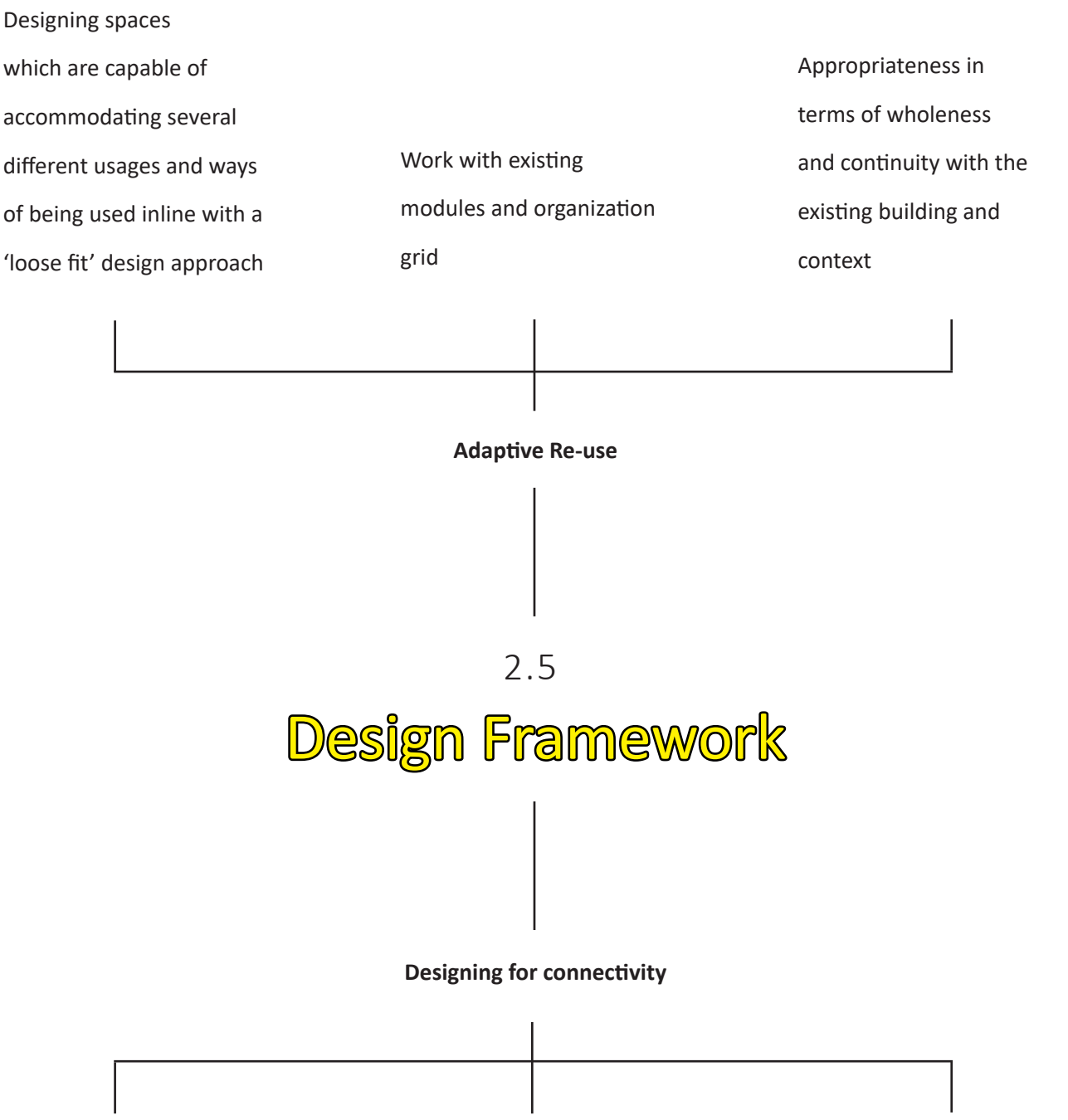

Fig. 2.0 Design process

3.0

Manhattan Context

3.0 Manhattan

Manhattan as one of the great metropolises of the world is the context for this research. The culture of Manhattan is embedded in the large-scale architectural development of the areas post World War II, the urban density (see fig. 3.0 – Figure ground study Manhattan), as well as the capitalism and economic progress. Stern et al. (1995) assert that this culture is seen most vividly within the selected area of focus, Lower Manhattan (see fig. 3.1 – Figure ground study Lower Manhattan).

Following the depression and then World War II architecture was a symbol of the transition to economic prosperity and enterprise (Ruttenbaum, 1986). Manhattan particularly between 1890 and 1970 saw the effect of building booms, where periods of large-scale architectural development quickly transformed the city. The construction was “accompanied by large-scale destruction” (Stern et al., 1995, pp. 8). Entire areas within Manhattan were almost entirely rebuilt. Shown in fig. 3.2 & 3.3 is a page from the New York Times Newspaper. This is published in 1970 and depicts the changes occurring in Lower Manhattan and how they were represented. According to Stern et al. the process of redefinition saw a disregard for the past as a part “of the city’s evolution” (1995, pp. 1091). Buildings “would give way to one which is not only bigger but also better” (Stern et al., 1995, pp. 1091).

The large-scale architectural intervention and quick redefinition of Manhattan was of interest to Rem Koolhaas. In his book Delirious New York: A Retroactive Manifesto for Manhattan (1978) the island is referred to as a mythical laboratory where “invention and testing of a metropolitan lifestyle and its attendant architecture could be, pursued as a collective experiment” (pp. 9-10).

Koolhaas discusses the experimental nature of Manhattan as a fast-moving entirely man manmade city (1978).

Koolhaas (1978) along with Stern et al. (1995) celebrate the urban density of Manhattan as a part of its unique culture - “the culture of congestion” (Koolhaas, pp. 293). Manhattan was considered a manmade event populated with people and activity (Koolhaas, 1978). This diversity and activity saw the city regarded as “the highest representation of cultured life in America” (Stern et al. pp. 8). Manhattan possesses both a high people and infrastructure density, this condition was “inextricably linked to the advantages and aspirations of a progressive civilization” (Stern et al., 1995, pp. 8). Manhattan embodied the metropolitan ideal of urban development. The human, social, and cultural development was strongly ingrained in, and could not be separated from the urbanisation and infrastructure.

Capitalism was a part of Manhattans culture, “some of America’s mightiest corporations” sort to build bigger and better buildings to house their fast-growing workforces and demonstrate their success (Ruttenbaum, 1986, pp. 202-203). Returned servicemen and women saw opportunities in the city and wanted to be part of this growing economy (Stern et al., 1995). The Cities trade and industries were increasingly controlled by private enterprises. For Manhattan “wartime brought new life to its precincts as capitalists and brokers devised a vast panoply of techniques to democratise business ownership and create a financial industry of unprecedented size and value to the city’s economy. By the wars end the city was the world’s financial capital” (Stern et al., 1995, pp. 14).


41

Fig. 3.1 Figure ground study Lower Manhattan @ 1:5000

The war had Manhattan positioned well to take advantage of the post war boom. Factories which had previously produced many of the essentials of war, such as ship and munitions, were adapted to continue production of the new necessities post war (Stern et al., 1995). Many other world cities such as Japan and London were in ruins. It was quickly apparent that Manhattan could, and would lead the way as the forefront of big business. Manhattan "was not only physically intact, it was prosperous and optimistic, symbolising the best American values" (Stern et al., 1995, pp. 46). The economic development of Manhattan is embedded and represented in its architecture. International style "perfectly expressed the corporate giantism that dominated American business practice" (Stern et al., 1995, pp. 46).

The buildings that were to come out of this era were devised primarily for their speed of construction and utility of space. As mentioned when discussing international style in section 2.1, the rising commercialism lead to a primary focus on "maximum rentable space" (Ruttenbaum, 1986, pp. 203). Emery Roth & Sons in particular, were said to be in the "Business of designing business buildings for businessmen who put up business buildings for other businessmen" (Ruttenbaum, pp. 204). As a result non-commercial space which was not sellable within a building was seen as of less importance. The economically driven development had a social effect within the buildings, and the wider city as a place. Following the 1960's "the physical fabric of the city would never be the same again; not only would the character of the streets and blocks change, but also the very idea of community" (Stern et al., 1995, pp. 9). Previous blocks of buildings were taken over by a single building, changing the structure and perception of the street (Stern et al., 1995).

International style dominated Lower Manhattans architecture, with a mass of steel and glass curtain walled office buildings (Prudon, 2008, pp. 25). Emery Roth

& Sons were acknowledged as directly contributing to this development. Melvyn Kaufman, from the Kaufman Organization who worked with the architectural firm in developing many skyscrapers, referred to one of their international style buildings as a "non building" as "you can pull it right out of a catalogue" (Kaufman, n.d., pp. 69, as cited in Stern et al., 1995, pp. 185). Pictured in fig 3.4 is a 'catalogue' of Emery Roth & Sons buildings. The firm were responsible for 37 office buildings in Lower and Mid Manhattan between 1947-1957 (Martin, 2003). The corporation directly contributed to the large-scale architectural turnover and changes towards international style. The Lower Manhattan transformation progressed rapidly with the Emery Roth & Sons being "one of the most prominent [firms] to determine the character of that transformation" (Ruttenbaum, 1986, pp. 197).

The selected building 200 Water Street, was designed by Emery Roth & Sons and developed by the Kaufman Organization for leasing out office space. It exemplifies Emery Roth & Sons work, following typical international style skyscrapers with the curtain wall façade system, and steel structure. Construction began on the 32 storey building in 1969, and was completed in 1971. Renovations in 1998 changed the use from office to residential apartments.

The period following the 1980's saw many high-rise office buildings in Manhattan renovated or altered (Prudon, 2008). New technology and the higher quality spaces of new builds, as well as economic factors, and a demand for housing in Lower Manhattan, were factors which contributed to this. The recession resulted in a low demand for office space (Stern et al., 1995). Many tenants moved premises from Lower Manhattan to Midtown Manhattan where newer buildings of higher quality were more attractive (Remøy & Voordt, 2014).

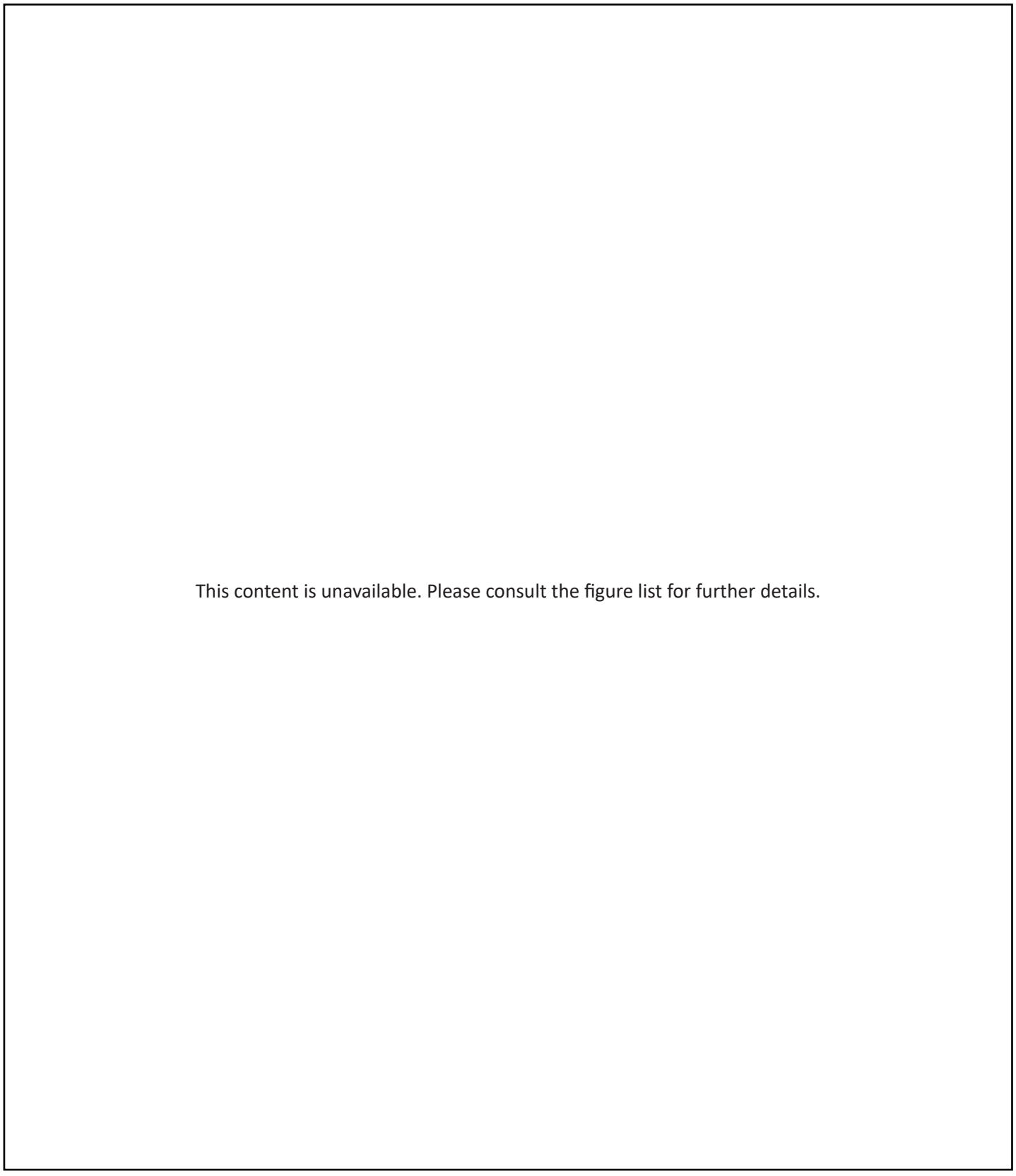

Fig. 3.2 A New City Is Emerging Downtown

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Fig. 3.3 A New City Is Emerging Downtown continued

Remøy & Voordt (2014) refer to office buildings in Lower Manhattan after 1980 as “obsolete” (pp. 4). New York City government in response to the lower demand and value of these buildings introduced the “Lower Manhattan Revitalisation Plan” which subsidised the conversion of “obsolete” Lower Manhattan office buildings completed before 1975 into residential accommodation (Remøy & Voordt, 2014, pp. 4). 1995 to 2005 saw over 60 office buildings converted for residential use. The area saw a significant increase of people living in the city. Lower Manhattan which was once primarily office buildings did not have the public amenities and facilities expected of an urban area (Remøy & Voordt, 2014).

Although it is unclear if the selected building was apart of this plan, the government intervention to address the “high supply of obsolete office buildings” (Remøy & Voordt, 2014, pp. 4) speaks to the context and influences on this building. The adaption of 200 Water Street to apartments reflected the wider contextual changes and influences as discussed in section 2.2.

This research response is specific to the character of the Financial district, its urban density and its architectural development. Aligned with capitalism, the financial districts primary focus was developing what could be sold. The result being lesser importance placed on the design of social free space. This thesis looks to use adaptive re-use to integrate an overflow space which responds to a multiplicity of pressures and opportunities for strengthening the existing urban fabric. The specific building in question was selected as it has already been adapted to new needs. The reinterpretation looks at the value of common space and how the social responsibility of architecture might be fulfilled within this building as a part of a city. Manhattan sees and accepts transformation and is ideal for this research proposition.

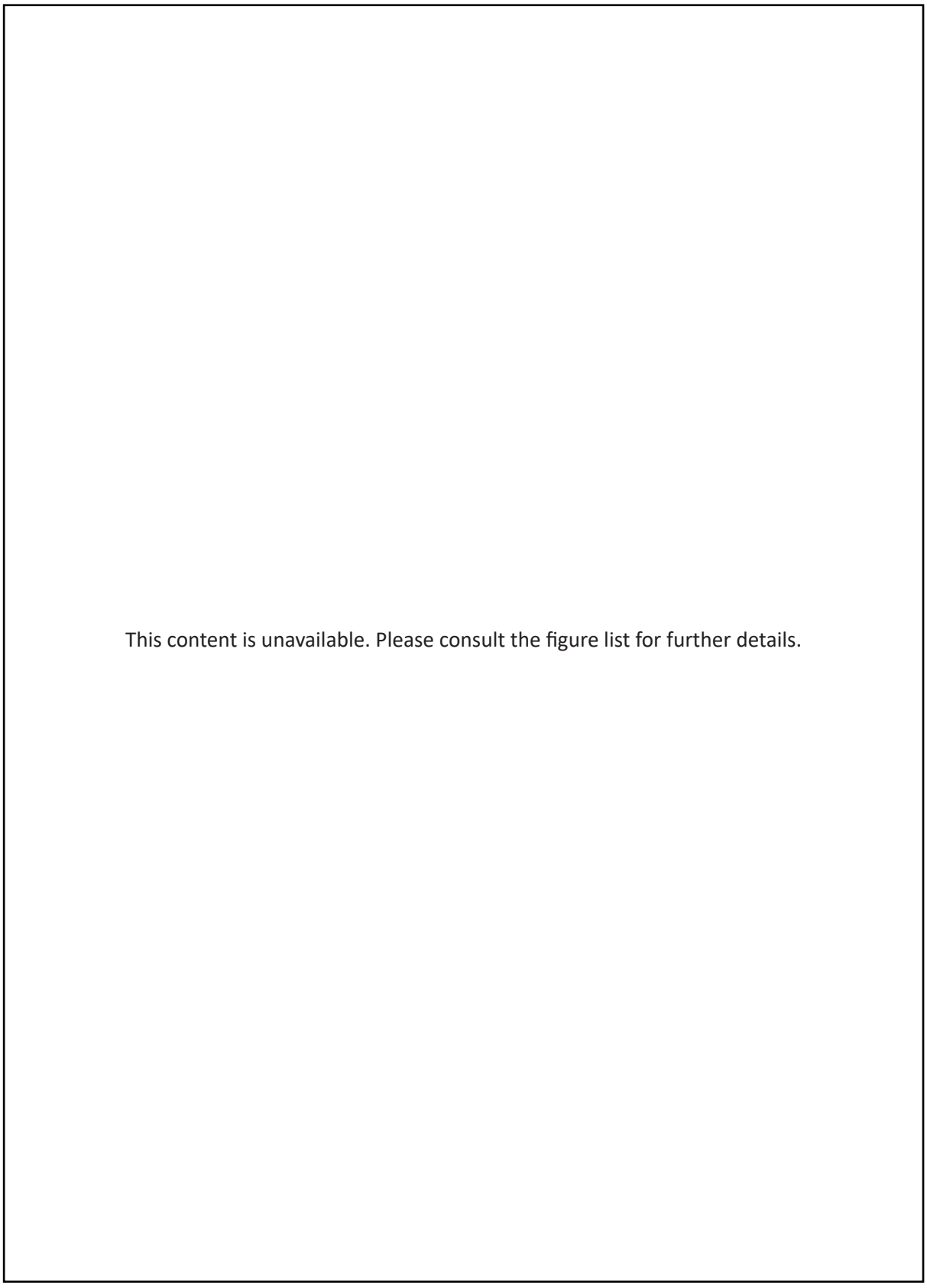


Fig. 3.4 Emery Roth & Sons ‘catalogue’ of buildings 1959 - 1972 in Lower - Mid Manhattan

4.0

Site Analysis

4.0 Site Analysis

The following addresses the intention to adaptively re-use 200 Water Street, through an analysis of the building and its context. Initially the vertical context and relationship within the city as well as the site lines are diagrammed. An initial assessment of the building is made in terms of a floor area breakdown and study of the floor plans potential and weaknesses. Previous analysis made clear the need to understand the effect of the density and height of surrounding buildings on the sunlight. The effect of the sun on the existing building is analysed through sun path data, radiation, and sunlight hours. Sun analysis' are created in the ladybug plug in for grasshopper and are specific to Manhattan data using the EPW file with the surrounding buildings modelled.

4.1 Sun path analysis

This annual data establishes the general context through visualizing different sun paths and the temperature range for Lower Manhattan.

As shown in fig. 4.0 and fig. 4.1 the south east face of the building where there is available space for extension is optimum positioning in terms of the sun paths.

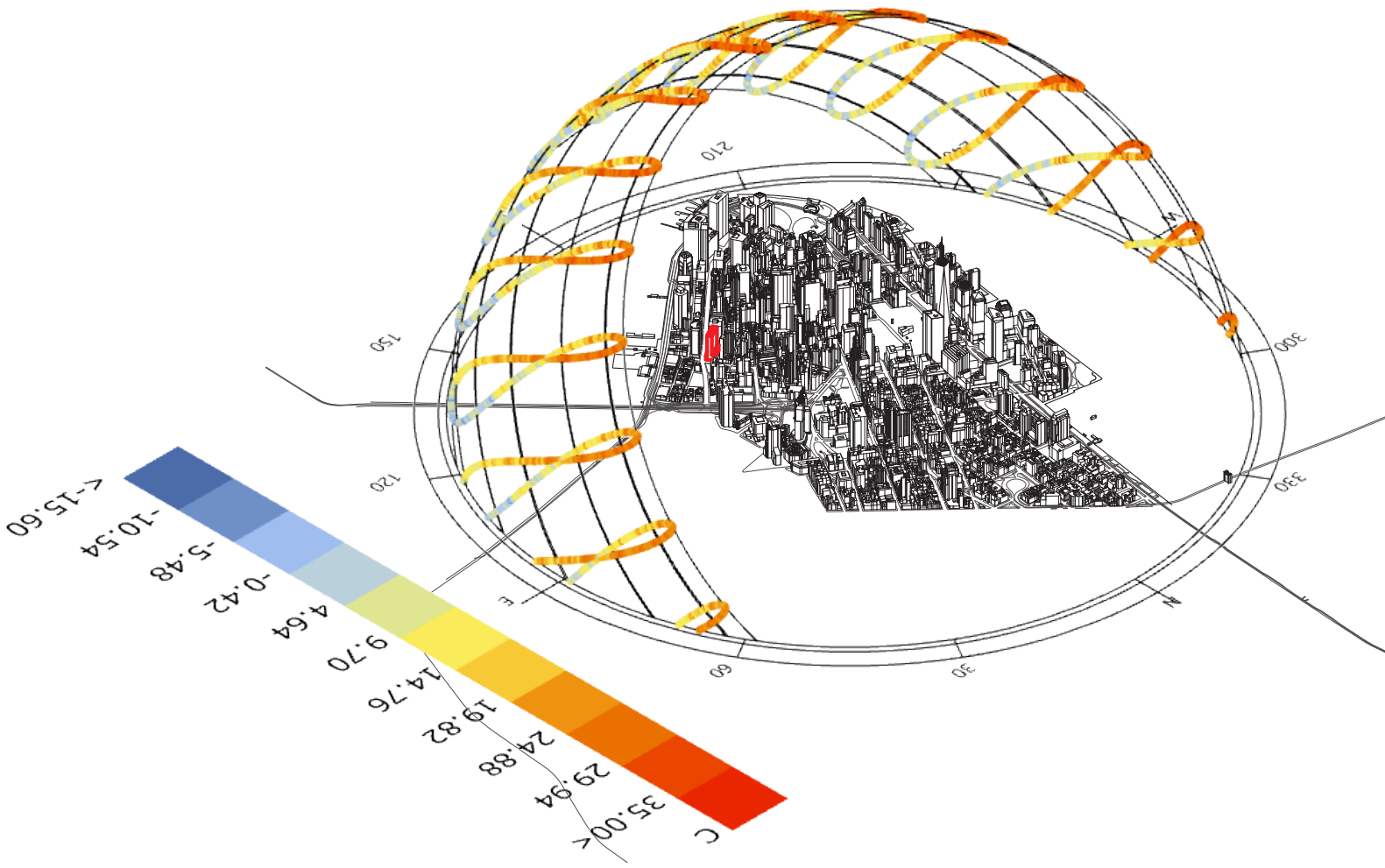


Fig. 4.0 Annual data on sunpath for Lower Manhattan context 3d

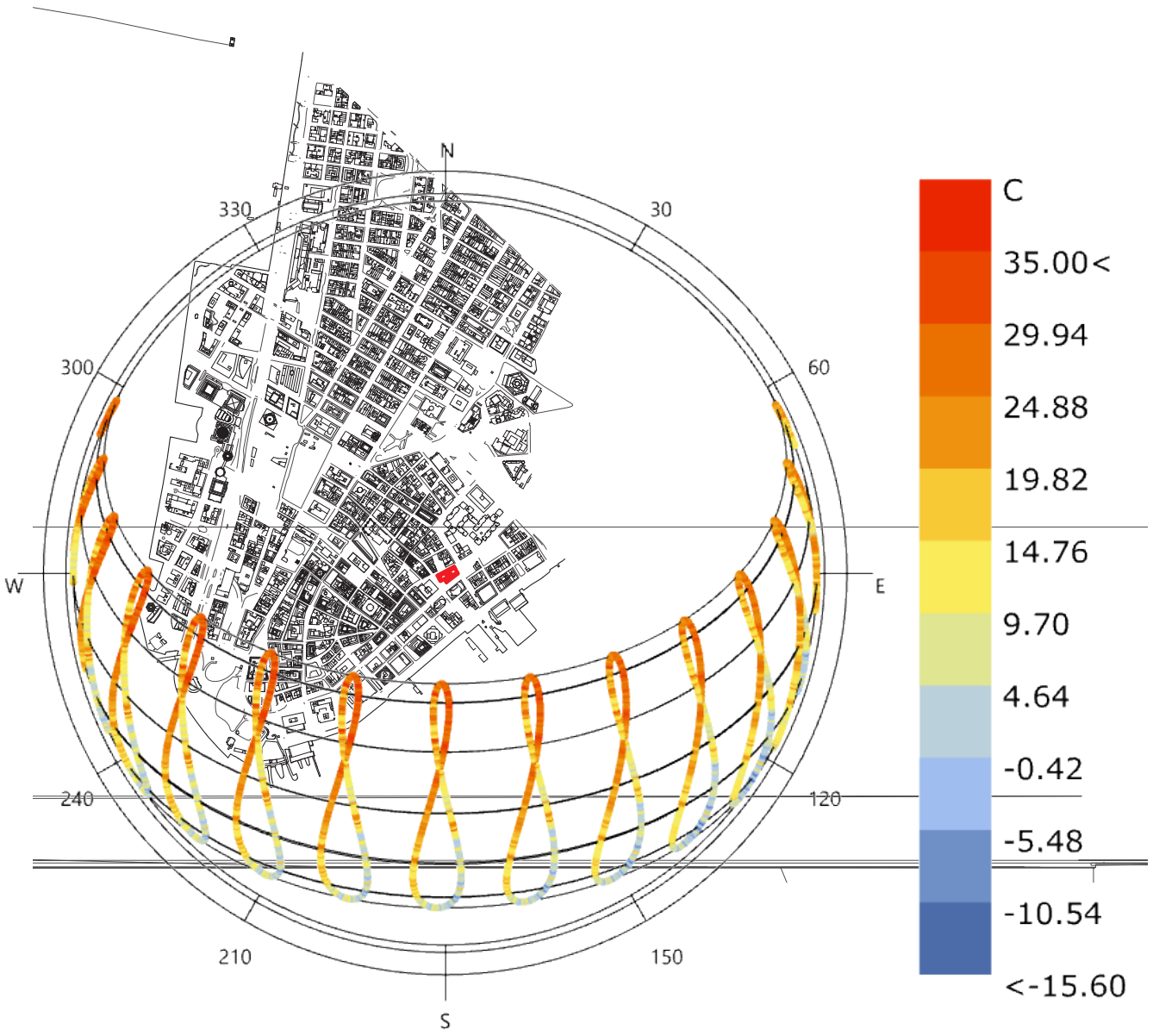


Fig. 4.1 Annual data on sunpath for Lower Manhattan context plan

4.2 Vertical context and site lines

Fig. 4.2 shows the sites vertical context within lower Manhattan. The building site lines diagram (fig. 4.3) shows the obstruction of existing buildings and the uninvaded site lines diagrammed in blue. This knowledge will impact further design work. Site lines will look to be maintained or have minimal obstruction to the view. While the already obstructed areas have a less valuable view where adaption could improve or add value to this view.

This site research makes clear the need for further analysis on what the effect of the urban density and proximity of surrounding buildings, as well as their heights have on the sunlight, radiation and shading for the building.

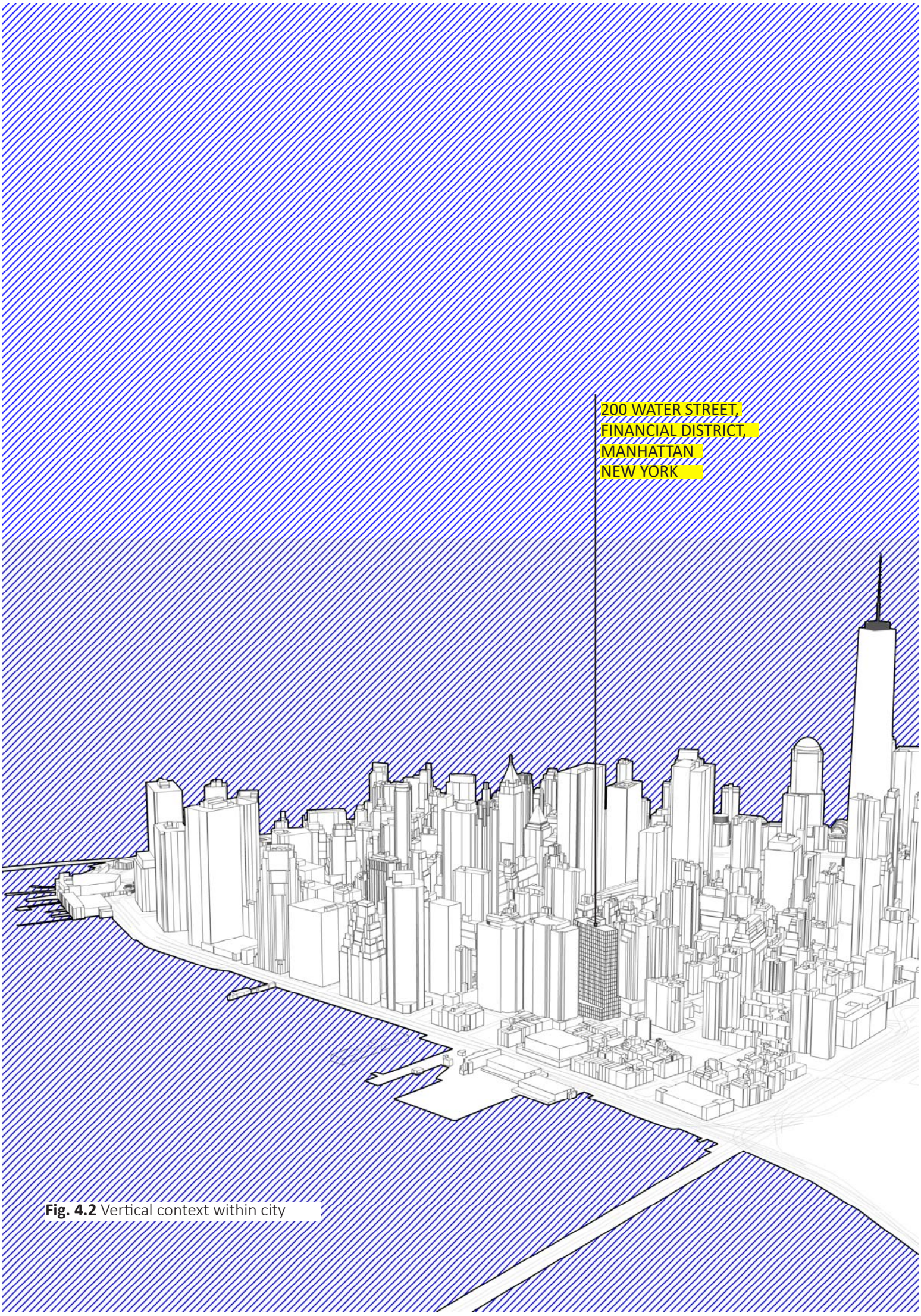


Fig. 4.2 Vertical context within city

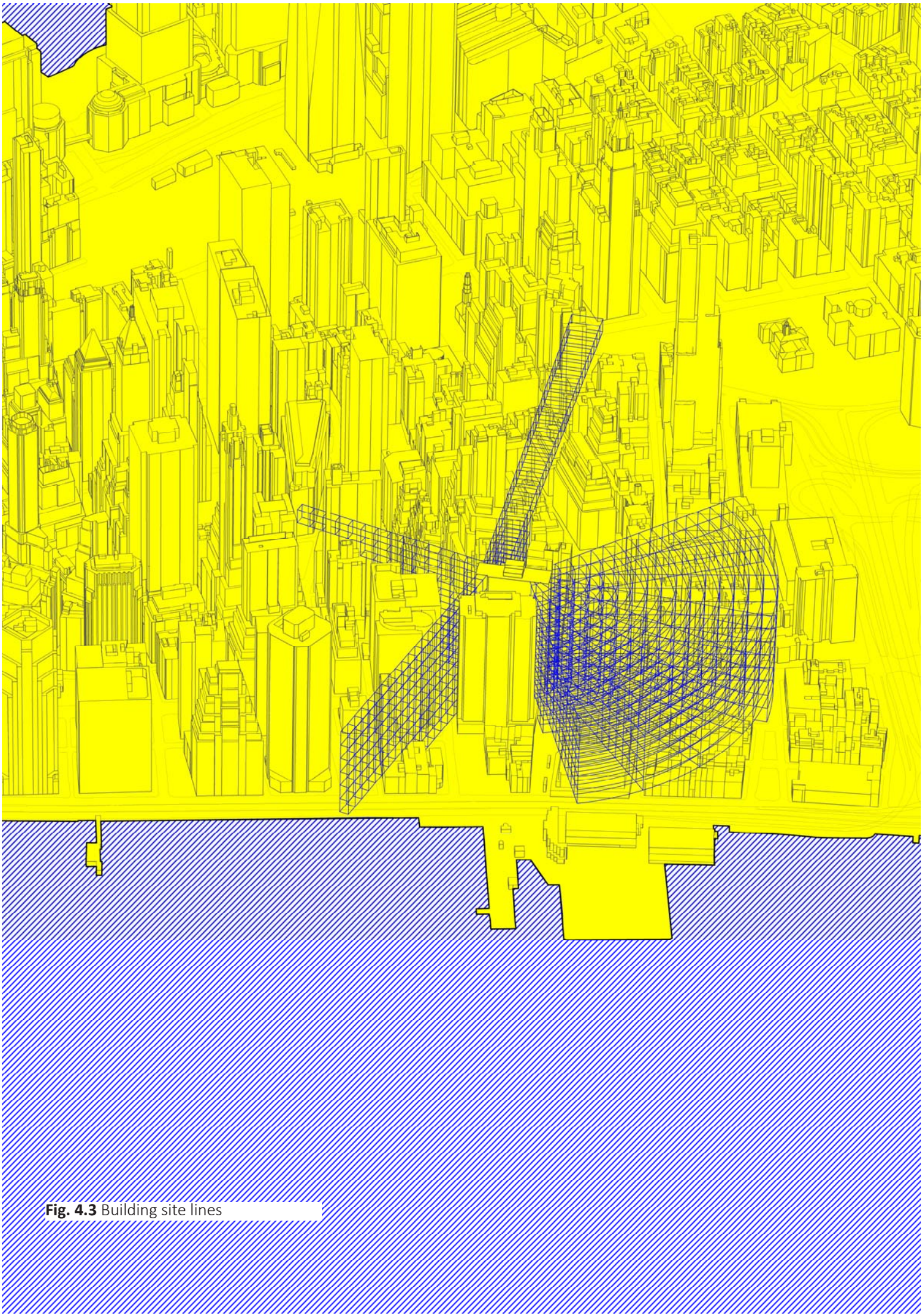


Fig. 4.3 Building site lines

Site - 200 Water Street

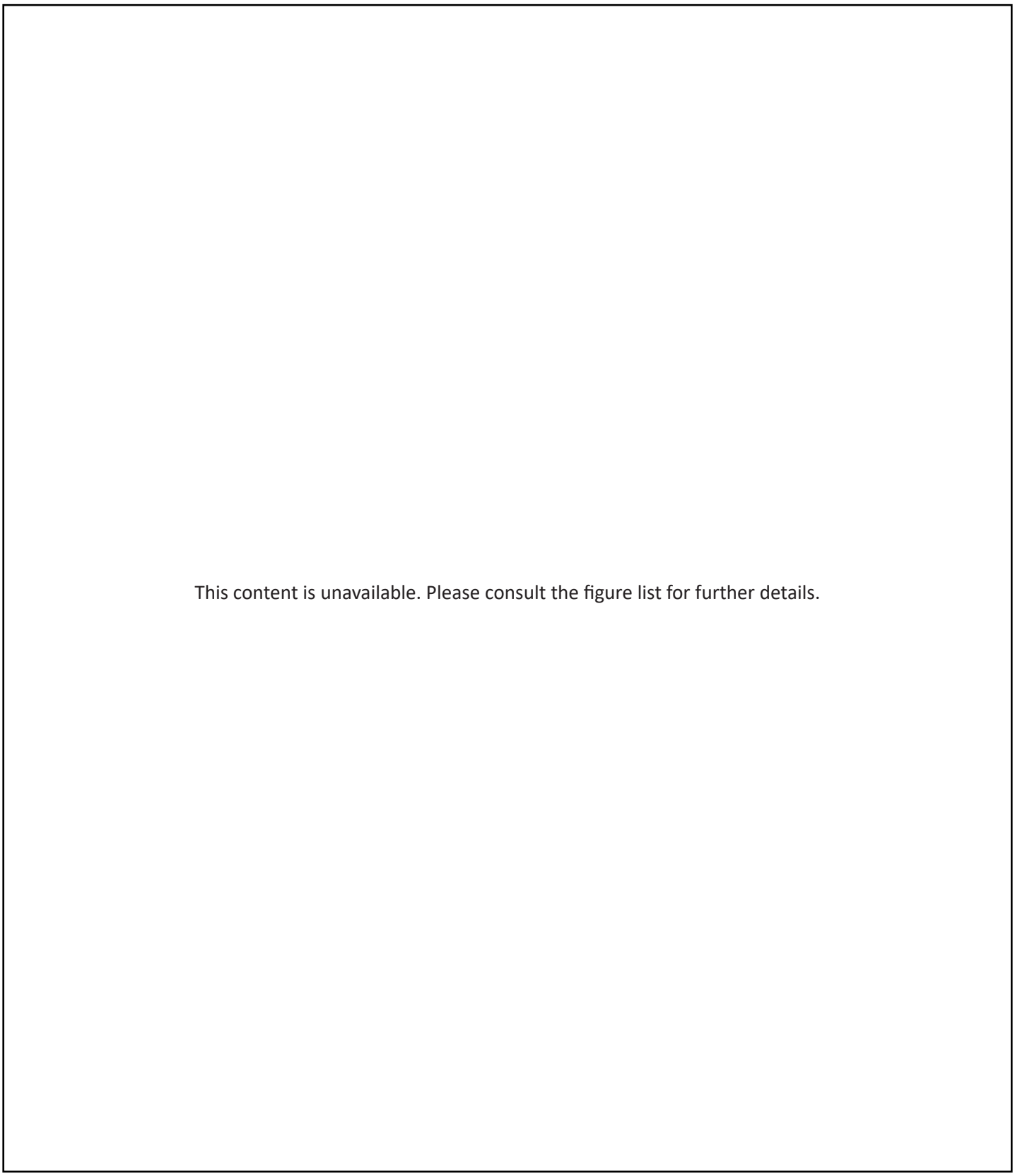


Fig. 4.4 Building (yellow) in context

4.3 Building Analysis

Fig. 4.6 – 4.10 show indicitive typical floor plans and rooms in 200 Water Street based on available documentation from RockRose (n.d.). This is a limitation to this research in the availability of information. A typical floor plan has been used to base further analysis on. The rooms within the building in terms of size, type, and quantity have been generally identified for an initial assessment. The floor area breakdown does not equate to 576 units (Emporis, 2020) there is likely differentiation between levels. A typical level is used for the purpose of this research. This information is shown in the floor area breakdown. The ground floor is double height and used for commercial purposes.

Of note from the floor area breakdown is that the building has been developed with many studio apartments having no separate lounge or entertainment space. While there are communal and social spaces these are separated from each other on different levels. Existing separated spaces could be reinterpreted to add social value to the building to focus on people through increasing the social connection between occupants.

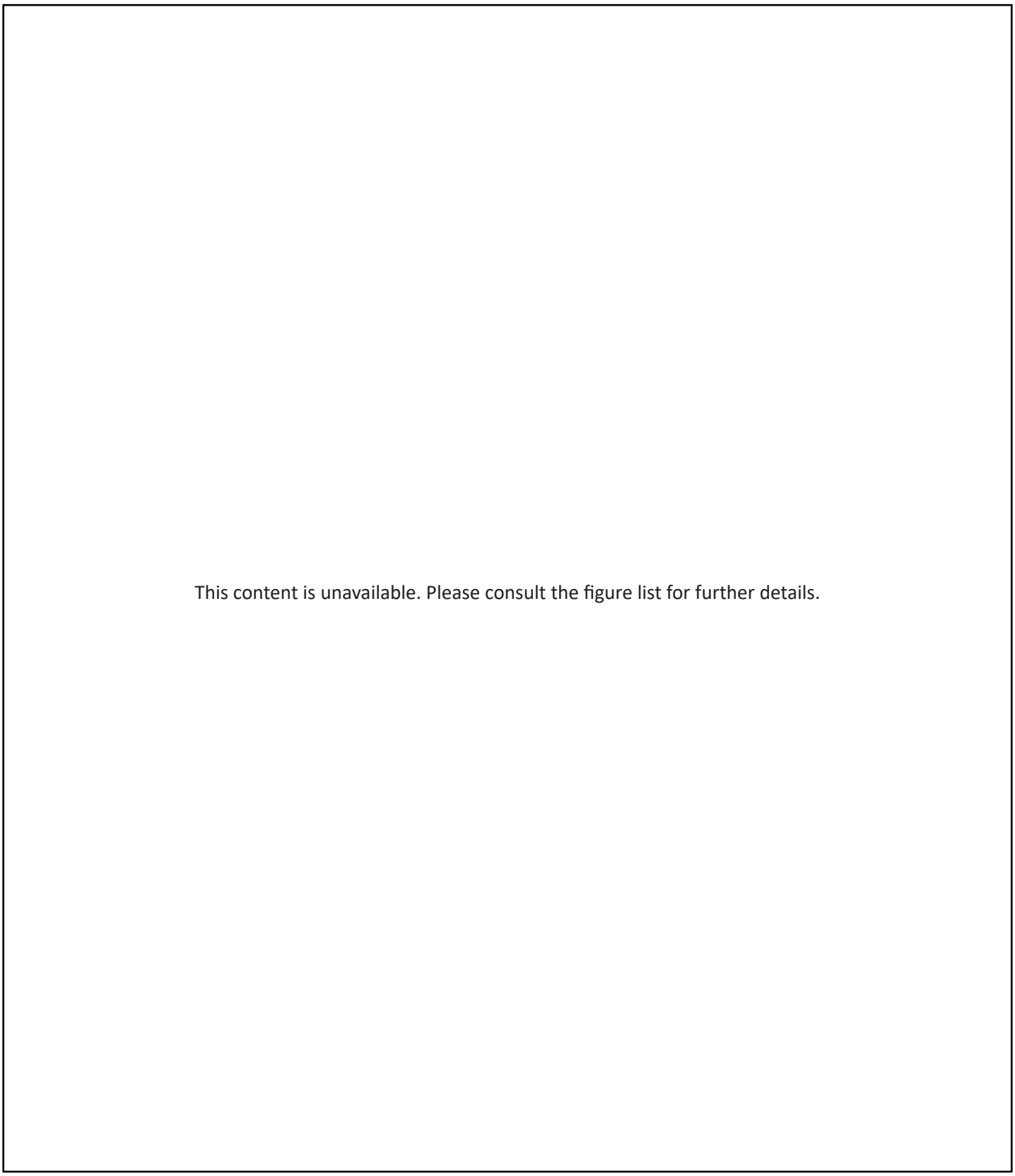


Fig. 4.5 Selected building (yellow)

Floor area break down

Total facility:	576 units (Emporis, 2020)

Median room size for types:	Number	Size m^2
Studio apartment:	149 (aprox)	$50m^2$
Single bedroom apartment:	198 (aprox)	$62m^2$
Double bedroom apartment:	124 (aprox)	$87m^2$

Break down floor levels 3-8

Total floor area and rooms	145 units
Rooms per floor:	29
Studio apartments	15
Single bedroom apartments	9
Double bedrooms apartments	5

Break down floor levels 9-12, 14-31

Total floor area and rooms	336 units
Rooms per floor	16
Studio apartments	6
Single bedroom apartments	6
Double bedrooms apartments	4

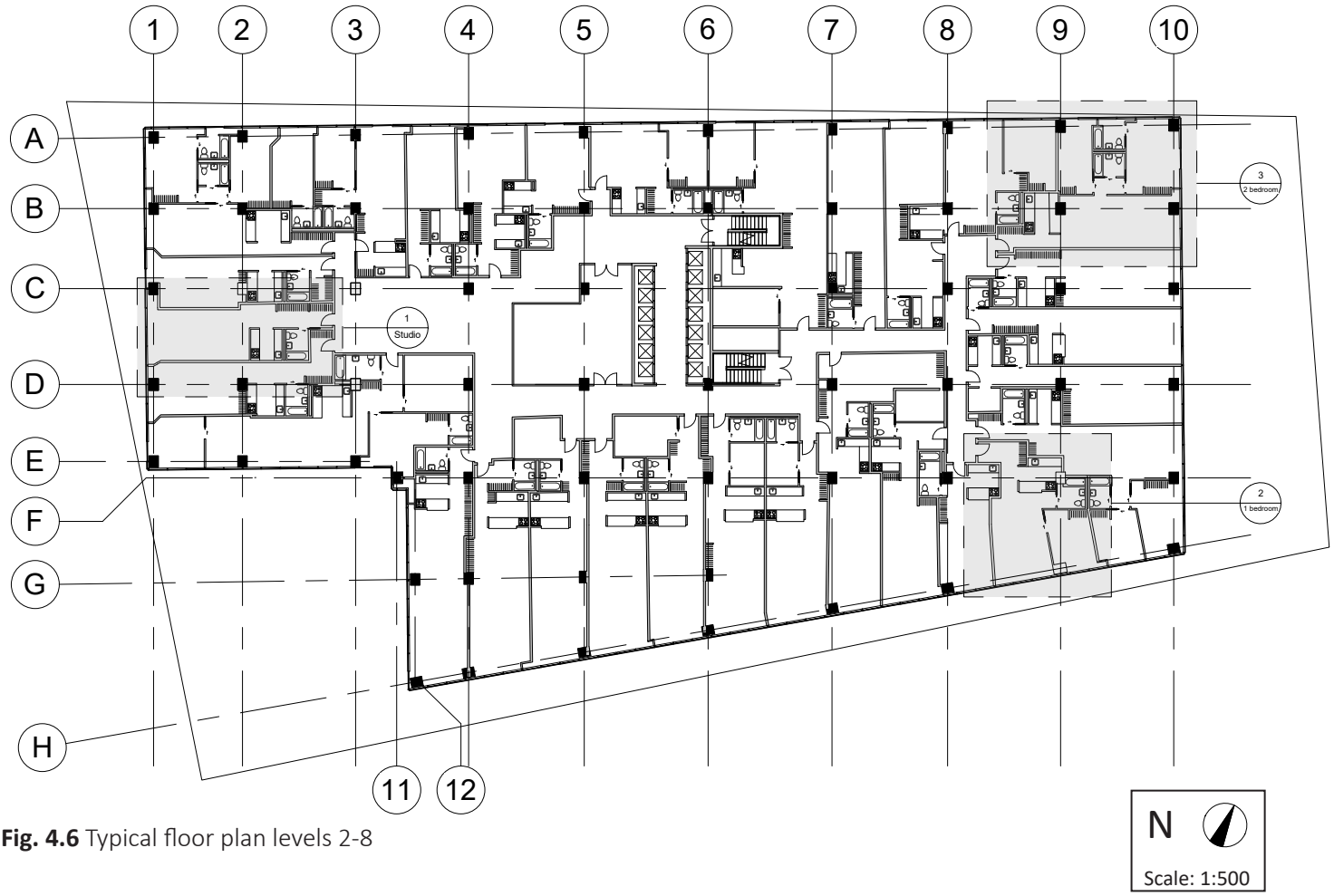


Fig. 4.6 Typical floor plan levels 2-8

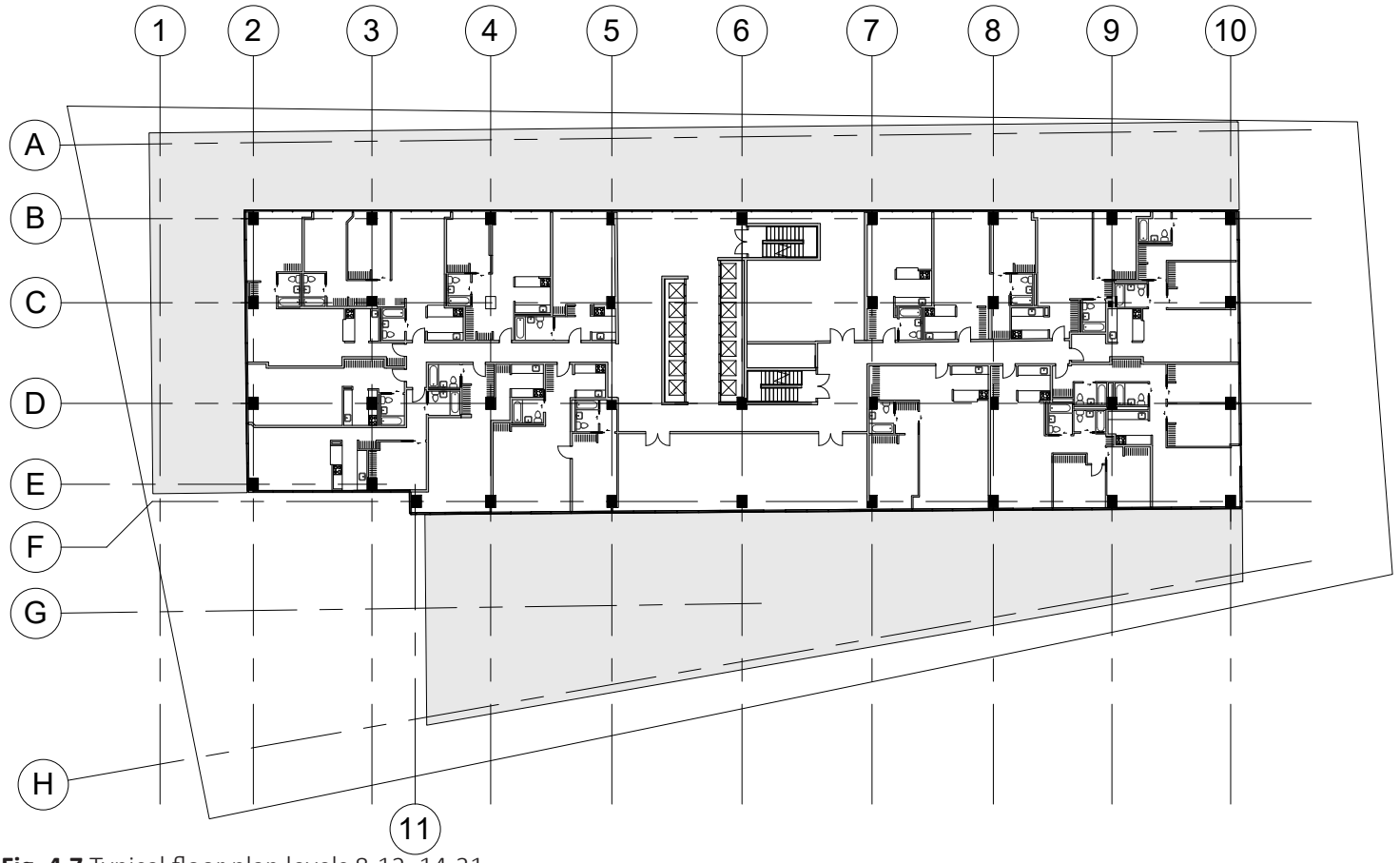


Fig. 4.7 Typical floor plan levels 8-12, 14-31

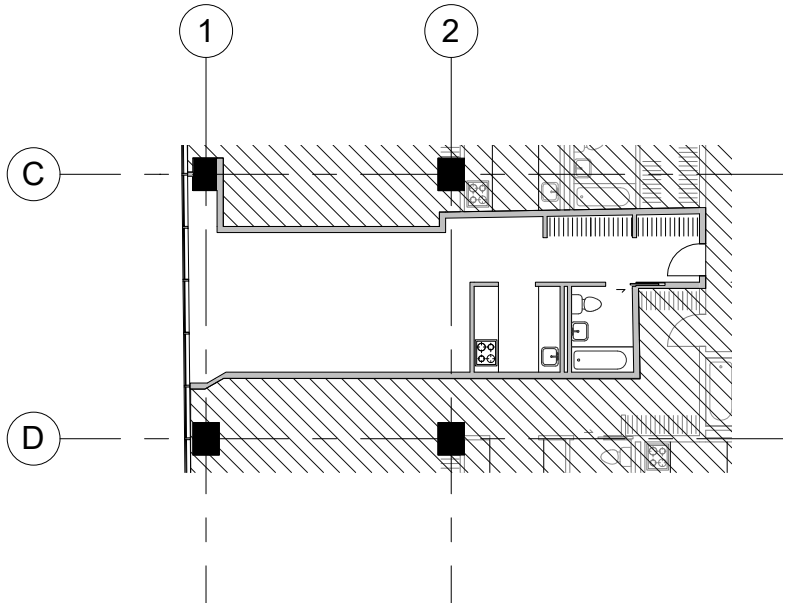
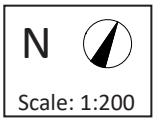


Fig. 4.8 Typical studio apartment room



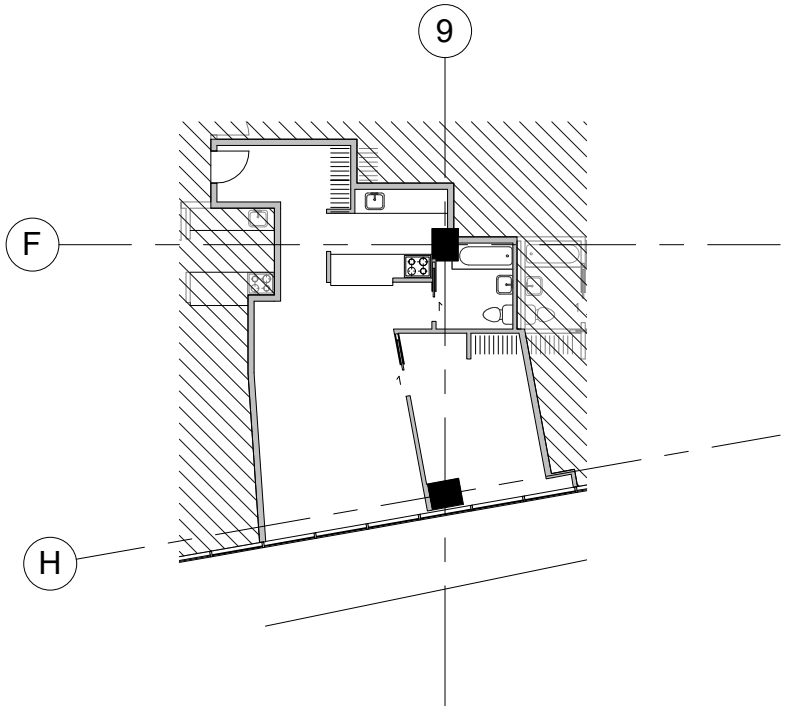


Fig. 4.9 Typical single bedroom apartment

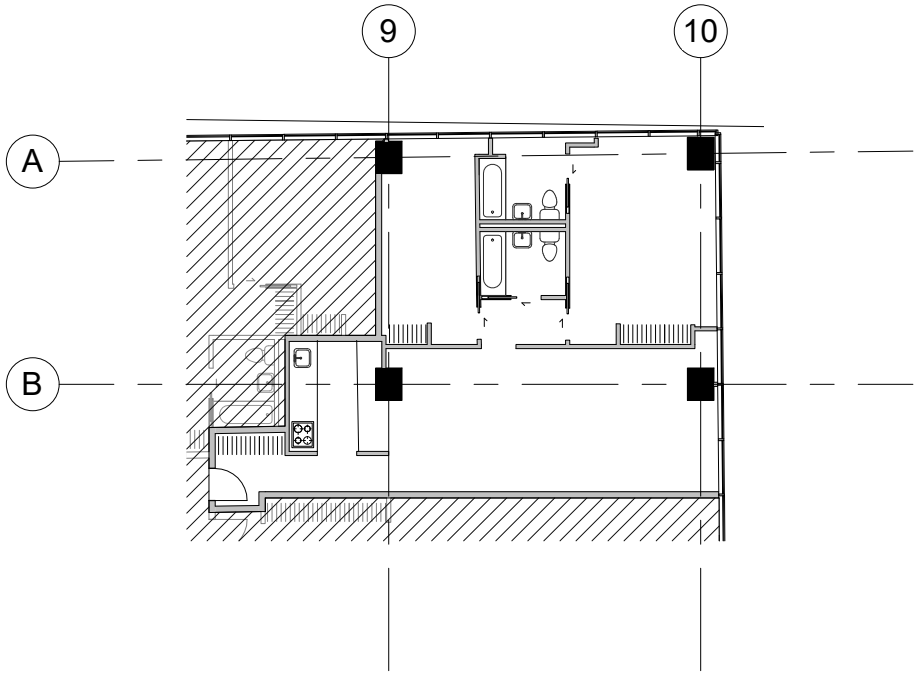


Fig. 4.10 Typical double bedroom apartment

N

Scale: 1:200

4.4 Radiation Analysis

Solstice days are used as a measure of the maximum and minimum extremes in the radiation and hours of sunlight analysis. The rest of the days within the year will fall within these extremes. In these studies the surrounding buildings are modelled and their shading effect is taken into account. The analysis does not include radiatioin reflection from surrounding buildings.

Radiation shows the intensity of energy hitting the building. This is generally consistent across each surface with low variance along the proposed side of building (see fig. 4.12 & 4.14). The radiation rose analysis (fig. 4.11 & 4.13) aids this information in showing the direction of the radiation and its intensity. This is strong from the east on the day of the summer solstice and more dominant from the south on the day of the winter solstice. The winter solstice shows a lower range of radiation intensity, which is also more evenly distributed. In terms of usage, in the summer the radiation is stronger in the morning while in winter there is more radiation at mid-day. The consistency of the radiation allows for a more controllable internal environment, the lack of extremes is beneficial for adaptive re-use.

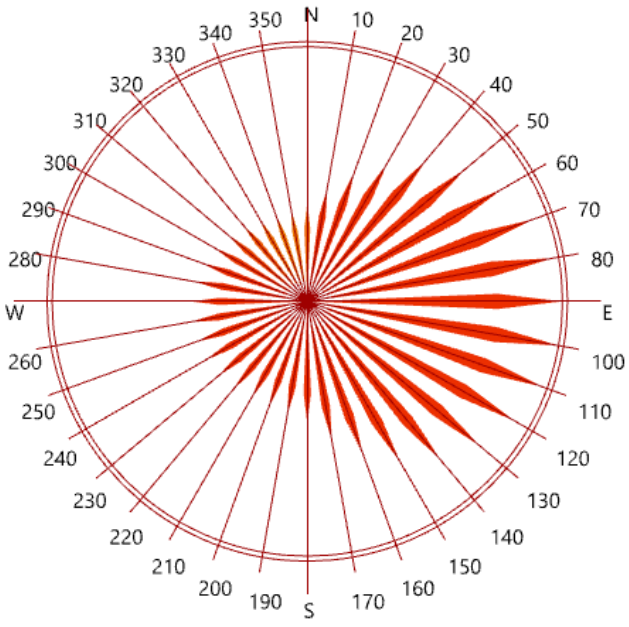


Fig. 4.11 Radiation rose analysis for radiation direction for New York summer solstice 20th June 7am- 7pm

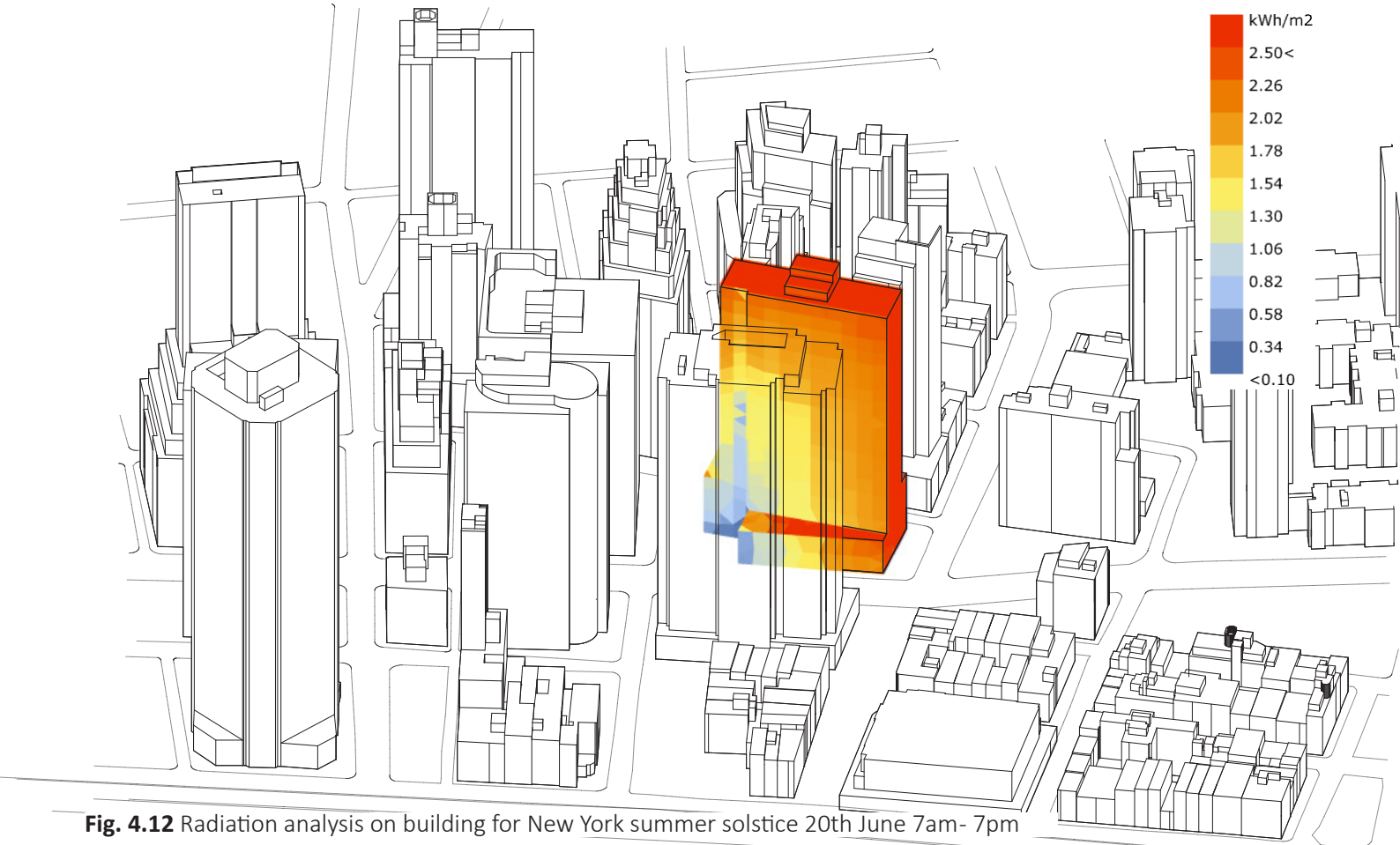


Fig. 4.12 Radiation analysis on building for New York summer solstice 20th June 7am- 7pm

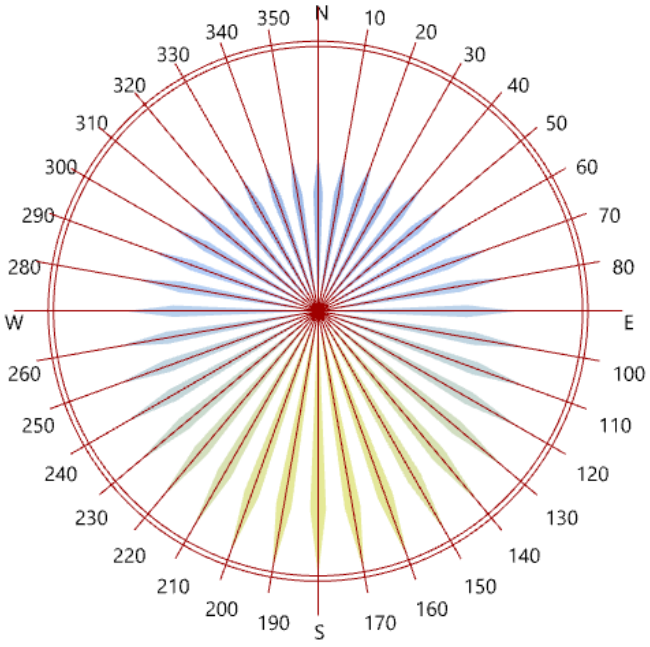


Fig. 4.13 Radiation rose analysis for radiation direction for New York winter solstice 21st December 7am- 7pm

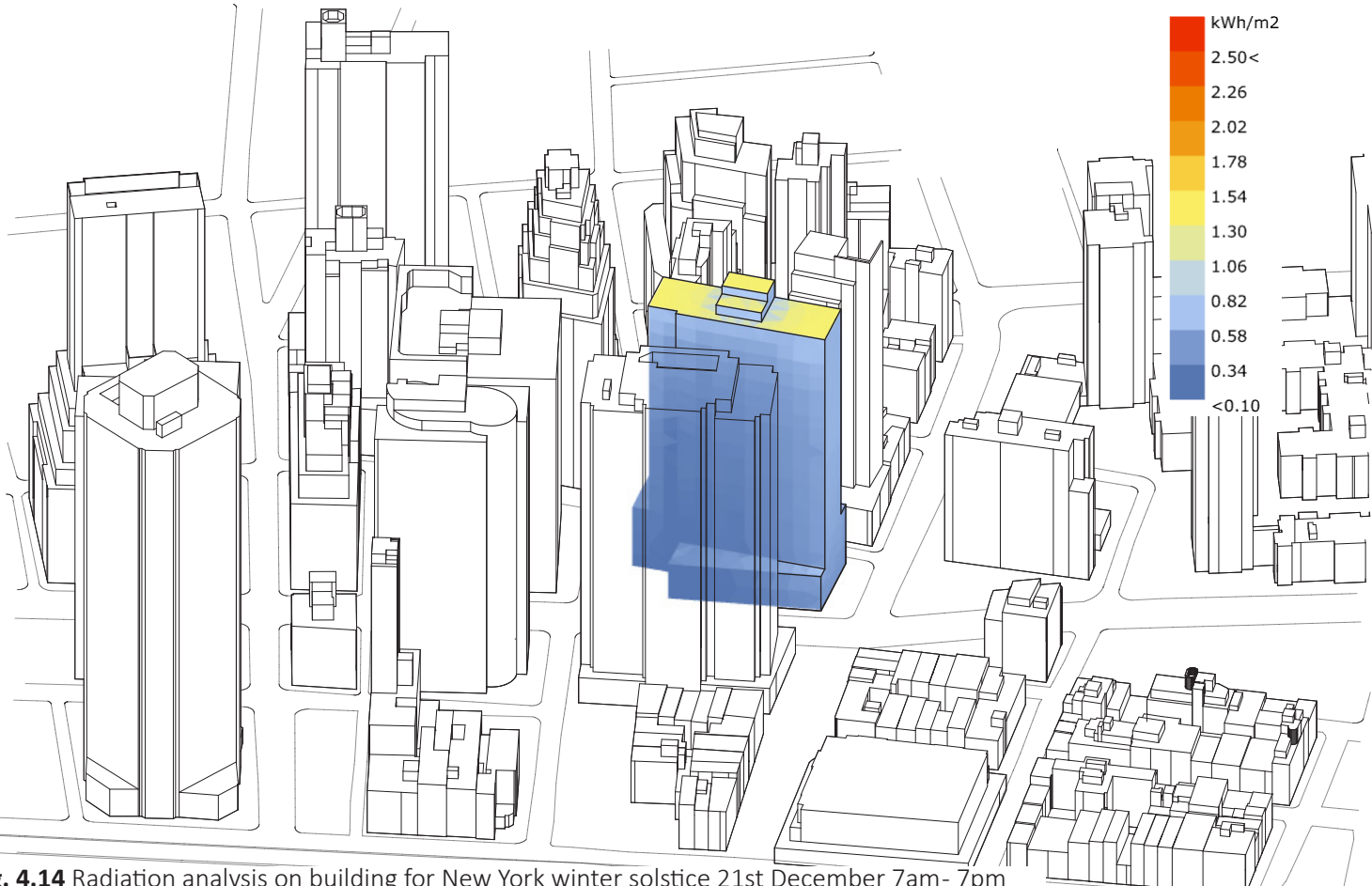


Fig. 4.14 Radiation analysis on building for New York winter solstice 21st December 7am- 7pm

4.5 Sunlight Hours Analysis

Solstice days are used as a measure of the maximum and minimum extremes in the radiation and hours of sunlight analysis. The rest of the days within the year will fall within these extremes. In these studies the surrounding buildings are modelled and there effect is taken into account.

A sunlight hours analysis is performed on the selected building. This base analysis will also be used to assess the impact of the proposed design on the sunlight hours and reflect upon the validity and successfulness of the design outcome as an adaption.

On the day of the summer solstice proposed area gets between 1- 7 hours sunlight. On the day of the winter solstice the proposed area gets between 1 – 5 hours of sunlight.

There are large variances on the façade faces because of the obstruction from the surrounding buildings. On the day of the winter solstice the base of the building gets little sunlight.

How to allow natural light into the building and minimise the effect of an extension will be important to consider in the design as areas of the proposed façade for extension already have low sunlight hours.

Curtain walled glass facades are often used within Lower Manhattan, this takes maximum advantage of sunlight in the obstructed vertical condition. This is already seen as a means of increasing sunlight and should be taken advantage of.

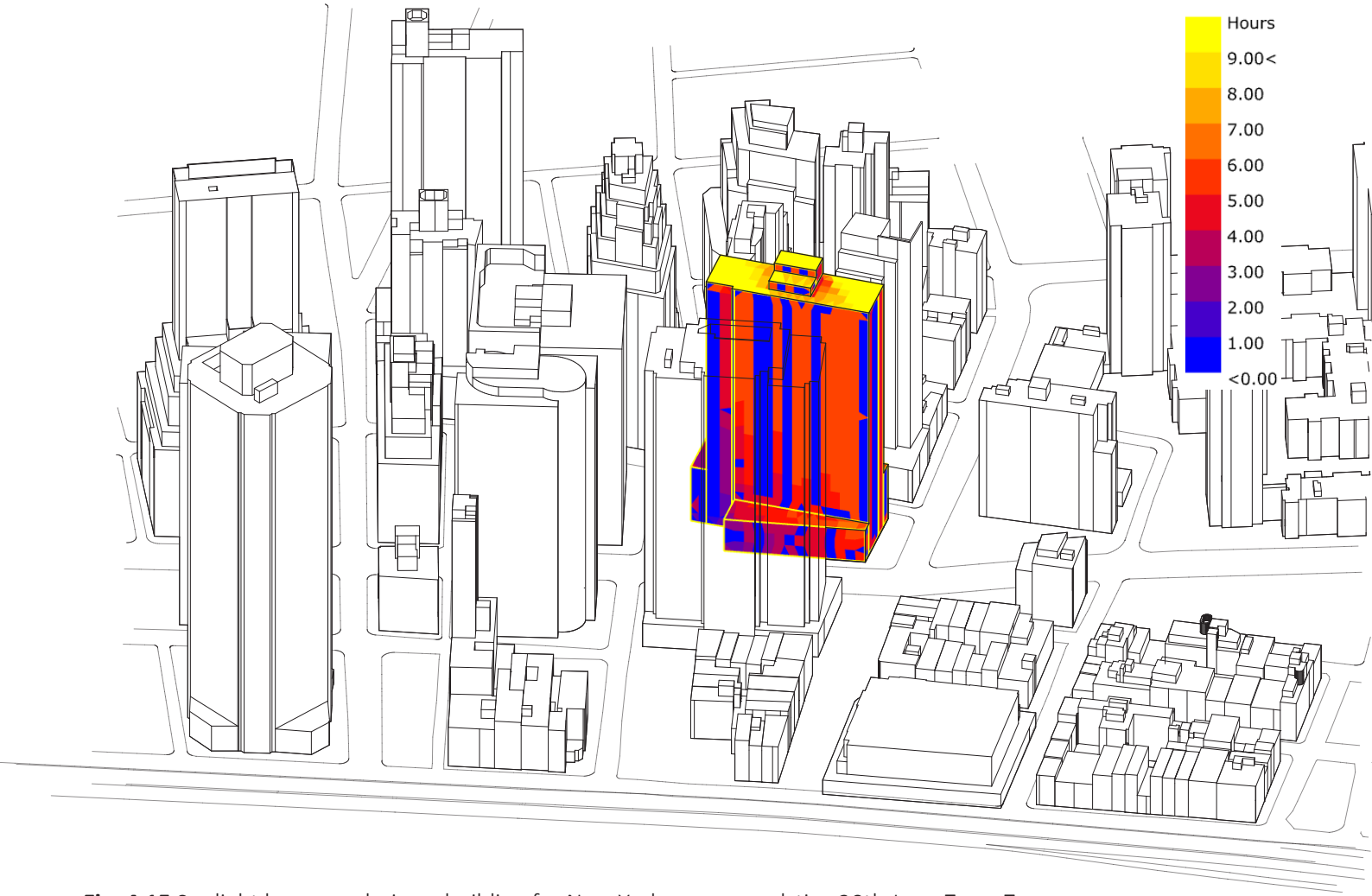


Fig. 4.15 Sunlight hours analysis on building for New York summer solstice 20th June 7am- 7pm

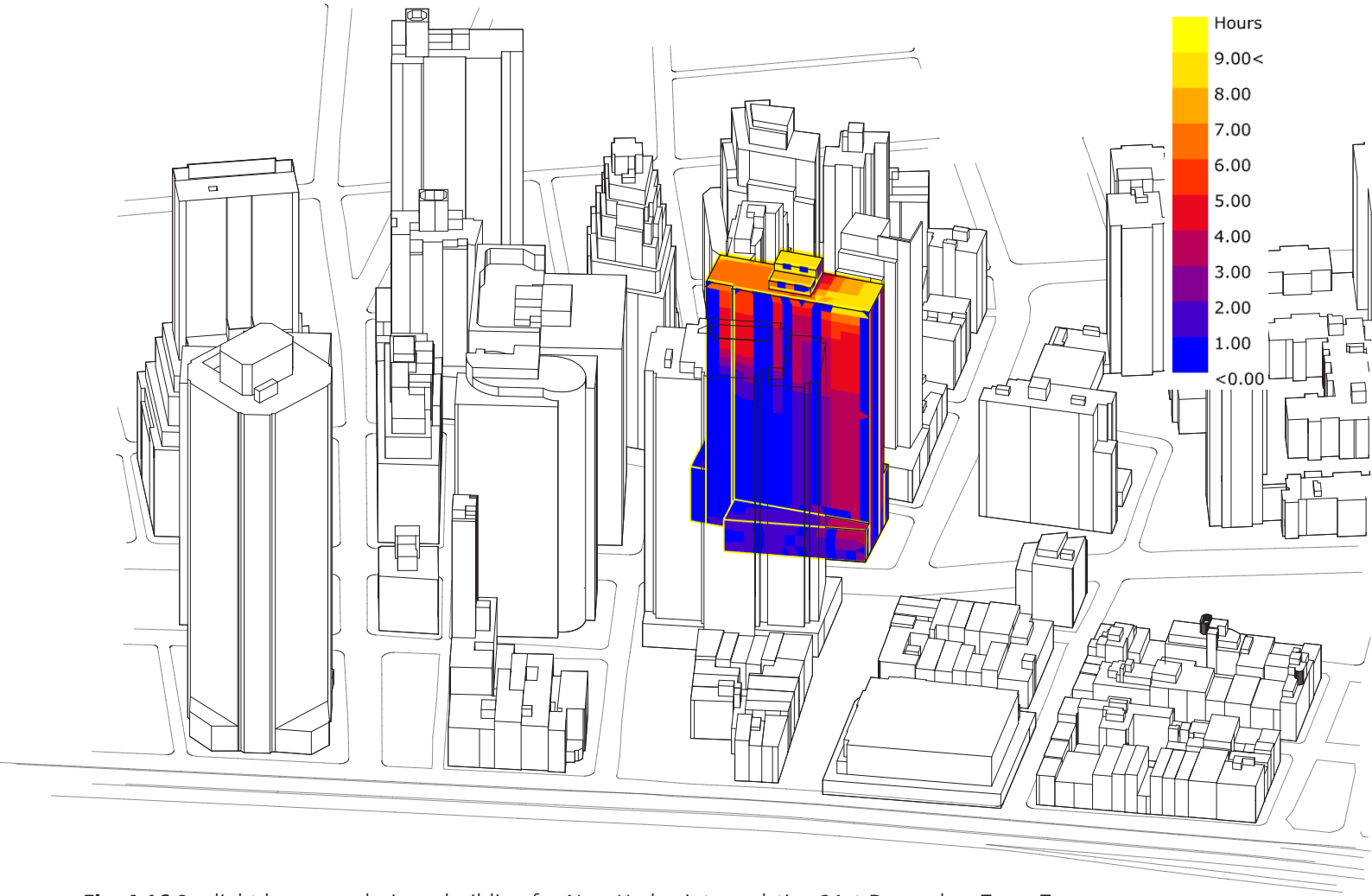


Fig. 4.16 Sunlight hours analysis on building for New York winter solstice 21st December 7am- 7pm

4.6 Floor Plan Analysis

Strengths, weaknesses, and opportunities have been diagrammed on fig. 4.17-4.21. This analysis aims to help inform massing and initial sketches.

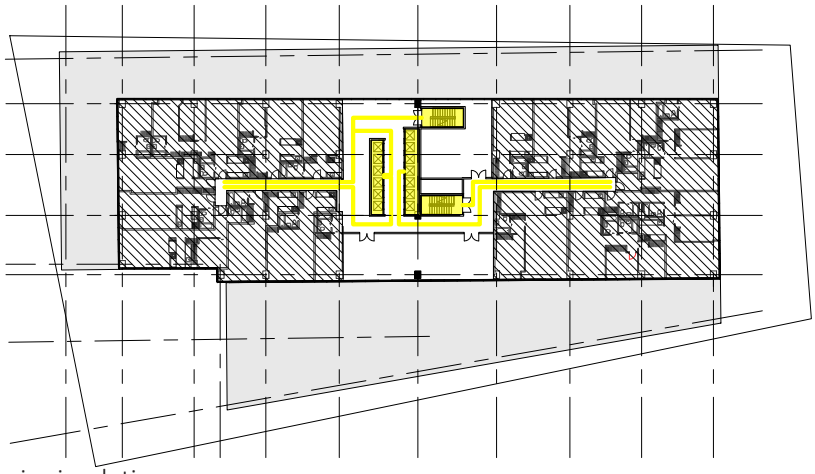


Fig. 4.17 Floor plan analysis circulation

Existing circulation

- 13 lifts in total which are main source of circulation these go up to the 32 floor rooftop bar
- Horizontal circulation is through corridors which are minimal, narrow and unsocial
- Stairways are for fire exits and are basic

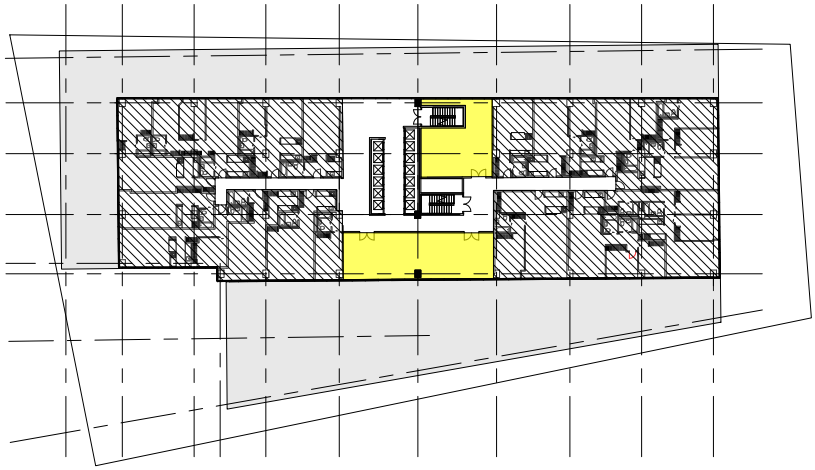


Fig. 4.18 Floor plan analysis internal opportunities

Internal opportunities

- Current communal spaces (laundry room, gym, tenant lounge, deli, pharmacy) are within highlighted areas and spread between different floor levels. The exact location of each and their space usage is unknown. On a typical level these spaces are closed of from the rest of the floor which could be opened to reduce corridors. There is also a rooftop bar on the 32nd floor and rooftop outdoor space on top of the 8th floor
- The circulation does not allow for visual connection or socialising between multiple floors however the distribution of shared spaces encourages use of other floors

N

Scale: 1:1000

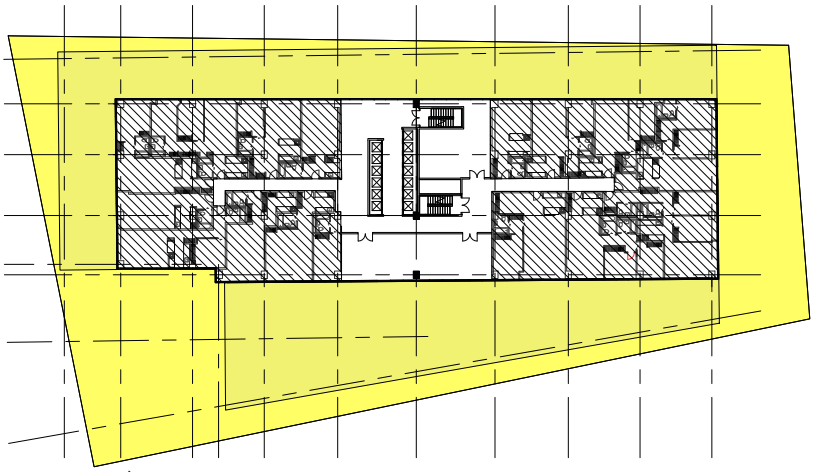


Fig. 4.19 Floor plan analysis external opportunities

External opportunities

The building does not use the whole footprint as shown. Floors 9-32 are set back which provides an opportunity to extend out existing public spaces however these set backs are for light so, this will need to be considered

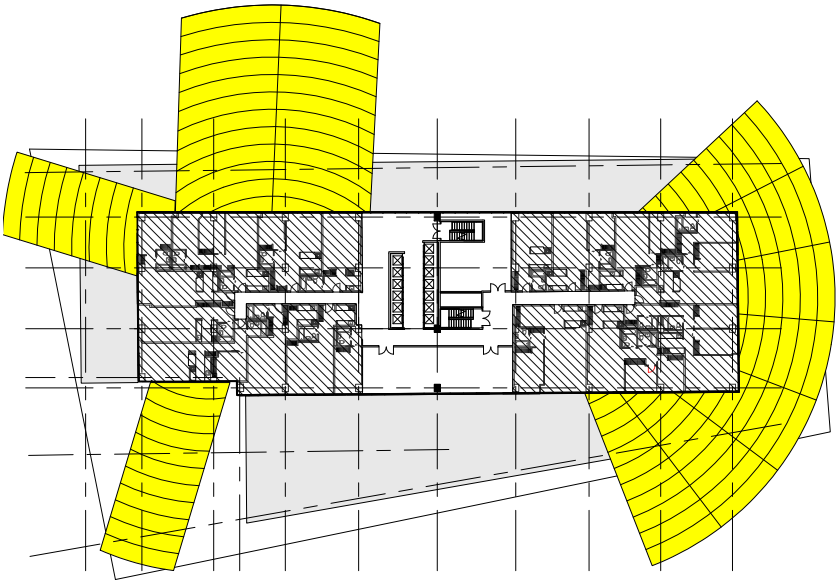


Fig. 4.20 Floor plan analysis site lines

Sight lines

- Minimise the amount of the facility that need to be in front of site lines and apartments
- Site already in close proximity to other buildings which block view (excluding site lines) so additional infrastructure could be used to add to/ improve visual environment for tenants
- There needs to be a focus on transparency in front of existing apartments perhaps double height spaces to allow more light and larger view range. Possibly thoroughfare areas so not occupied for long periods of time

N

Scale: 1:1000

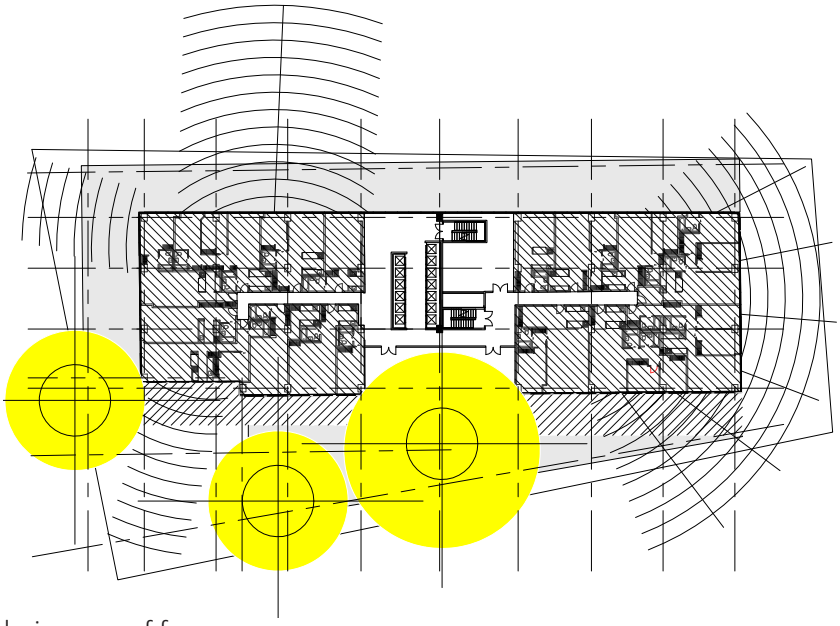


Fig. 4.21 Floor plan analysis areas of focus

Extension space - Site parameters

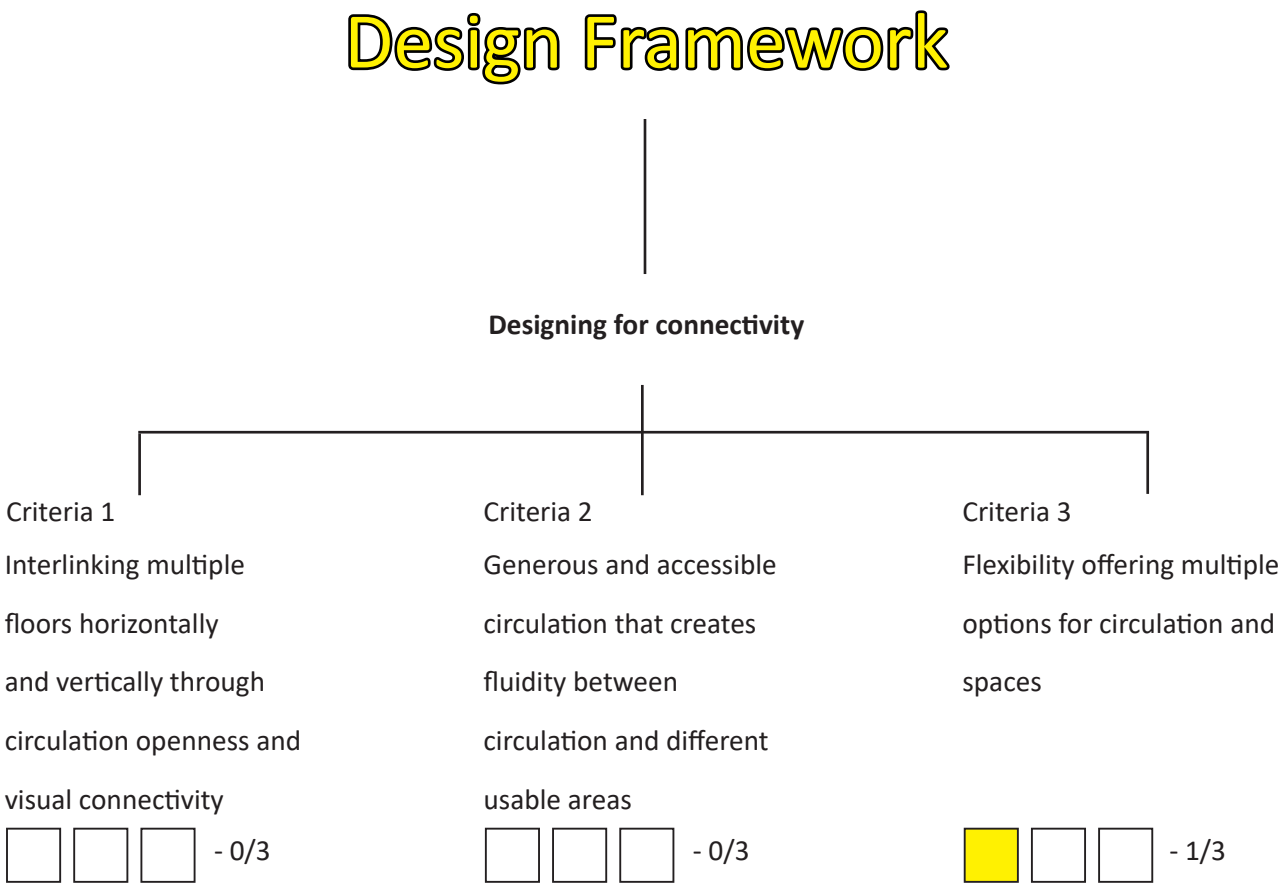
- 5m minimum distance in front of existing apartments (see hatch)
- Maintain existing site line areas
- Three highlighted yellow areas show potential space for further exploration

N

Scale: 1:1000

4.7 Reflection against Framework

The existing space planning of the building is compared to the identified design framework to give a measure of the level of connection within the building. The existing planning does not address the designing for connectivity criteria 1 and 2. It does offer some flexibility in that there are stairs and elevators for circulation. The facility offers a rooftop bar, outdoor space, and ground floor commercial space. These are kept separate from apartment space.



4.8 Initial Sketches

Fig. 4.22 - 4.27 are initial design sketches influenced by the site analysis undertaken. The proposed addition is located on the optimum south east face of the building based on the sun analysis' and available space for extension. The addition looks to connect with the existing outdoor space as an opportunity to integrate with an identified existing strength of the building (see fig. 4.22 & 4.23). The adaption looks to integrate with the existing lifts and open out to two main areas which have been identified as promising (see fig. 4.24 & 4.25). Following the initial assessment of the building the adaption looks to follow the column layout from the floors below shown in fig. 4.26. Fig. 4.27 looks at how site parameters of the void in front of the existing apartments and structural layout might effect the proposed floor space.

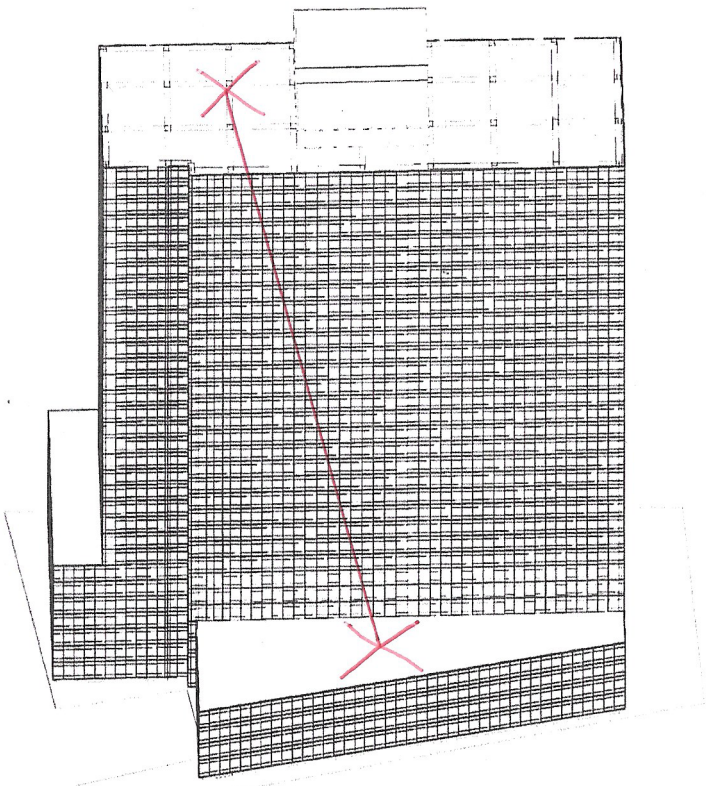


Fig. 4.22 Opportunities to design with- rooftop bar and rooftop outdoor space

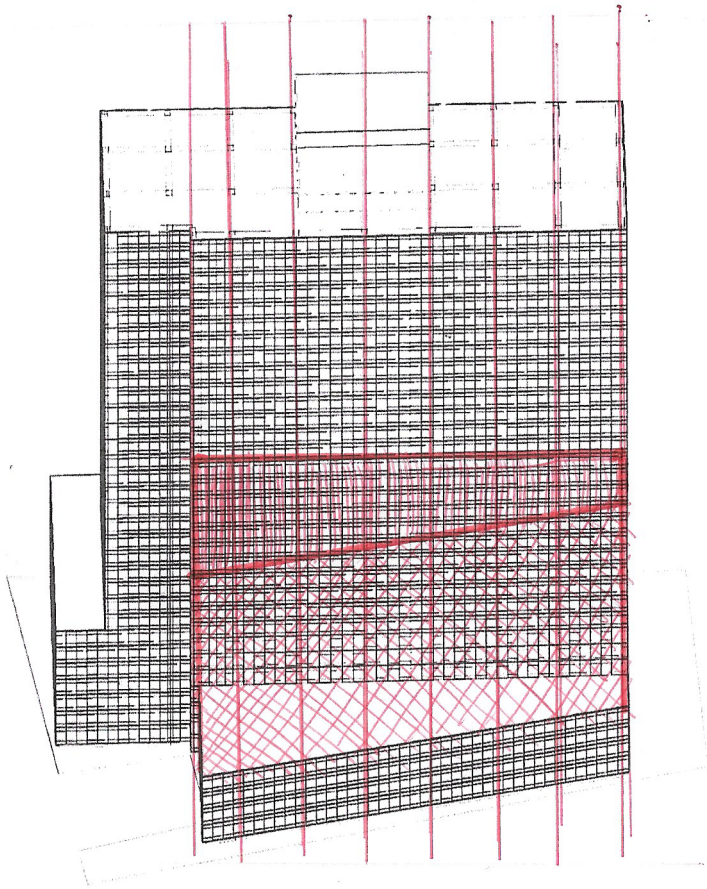


Fig. 4.23 Focus of addition around base with existing grid

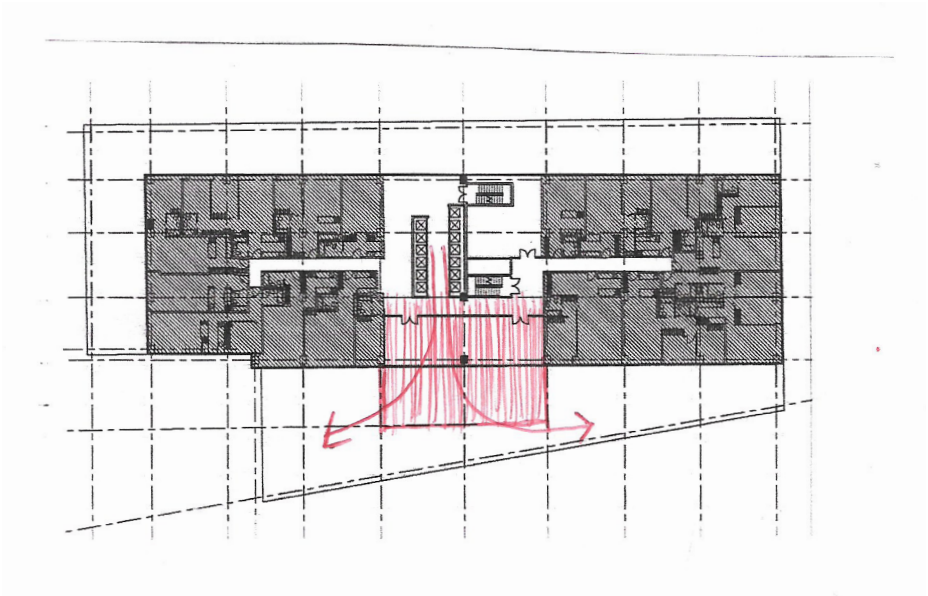


Fig. 4.24 Opening existing main circulation (lifts) to extension space

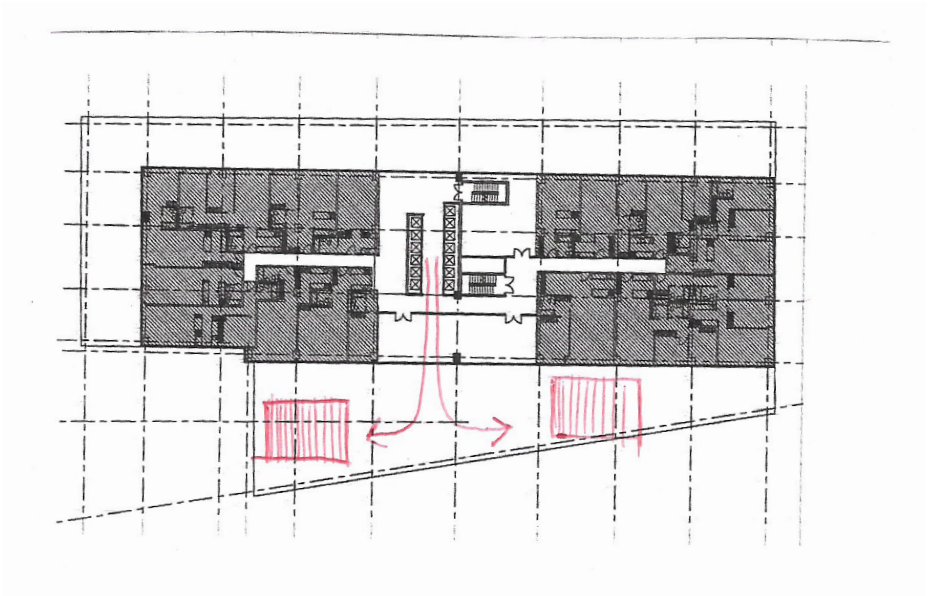


Fig. 4.25 Opening to two main areas

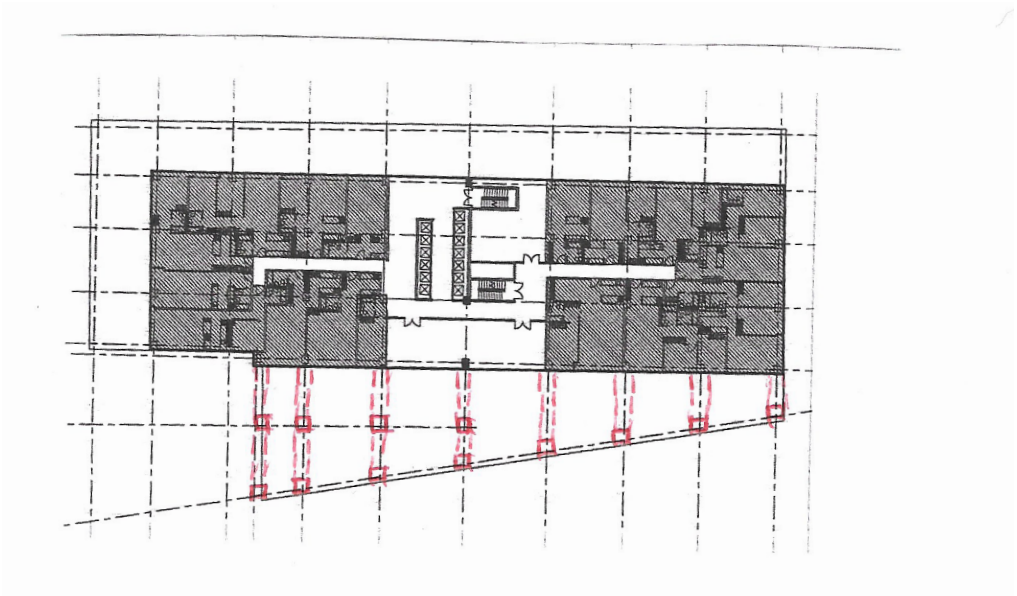


Fig. 4.26 Proposed columns and beams

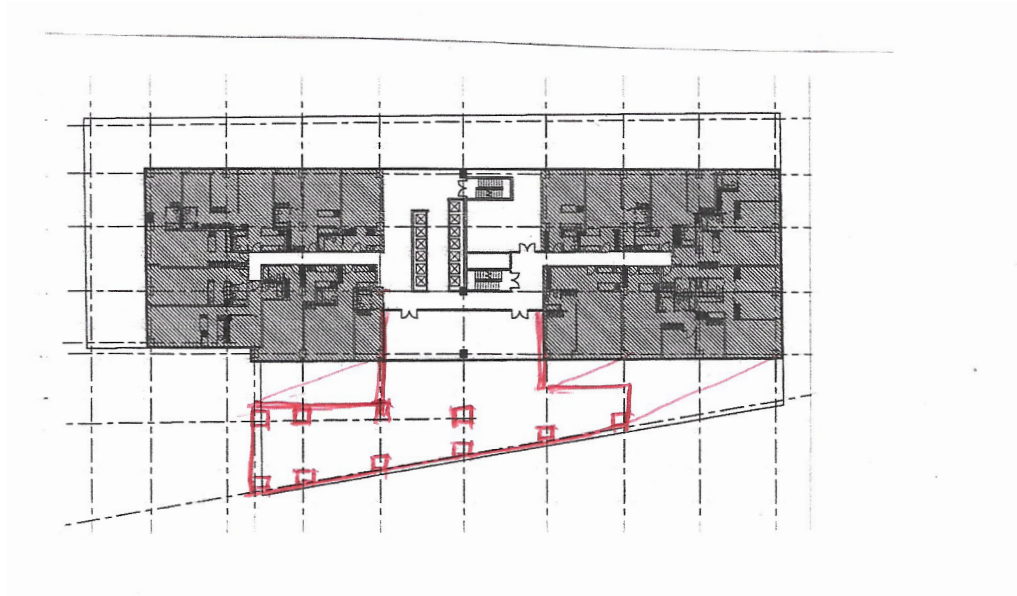


Fig. 4.27 Proposed floor outline with voids in front of apartments

4.9 Site Analysis Reflection

The site and building analysis undertaken following a research through design approach created new knowledge which has developed the direction of this research. The consideration of the effect of the sun on the location of the addition, the radiation (section 4.4), and the sunlight hours (section 4.5) will be influential in developing a more enjoyable and appropriate adaption. The knowledge of the site lines sets a parameter to influence and improve the design outcome. This site analysis as a base for further research makes the design responsive to the specific building and urban context. Section 4.8 began to use this knowledge to develop an initial response.

This knowledge will be developed further and referred back to in the following chapters to influence and improve the design.

5.0

Case Studies

5.0 Case Studies

Precedents which address aspects of the research objectives are evaluated through a case study analysis to reflect on how the relevant ideas have been actioned through design. The case study chapter sequentially builds upon ideas researched in the literature review to further the design inquiry. Each of the three case studies addresses different areas or show a different interpretation.
Case study 1 – the renovation and expansion of the University of the Applied Arts addresses designing for connectivity through adaptive re-use.
Case study 2 – Futura, takes a similar position in creating an overflow space in front of residential apartments. Case study 3 – Willis Tower Repositioning is a precedent for the adaptive re-use of international style architecture. These case studies are analysed against the design objectives to identify implications for design relevant to further research, as well as their strengths, weaknesses, and critical insights they offer for the objectives of this thesis.

5.1

Project:	Winning competition entry for the renovation and expansion of the University of Applied Arts
Architect:	Wolfgang Tschapeller ZT GmbH
Location:	Vienna, Austria
Year:	2012

Fig. 5.0 Scheme a

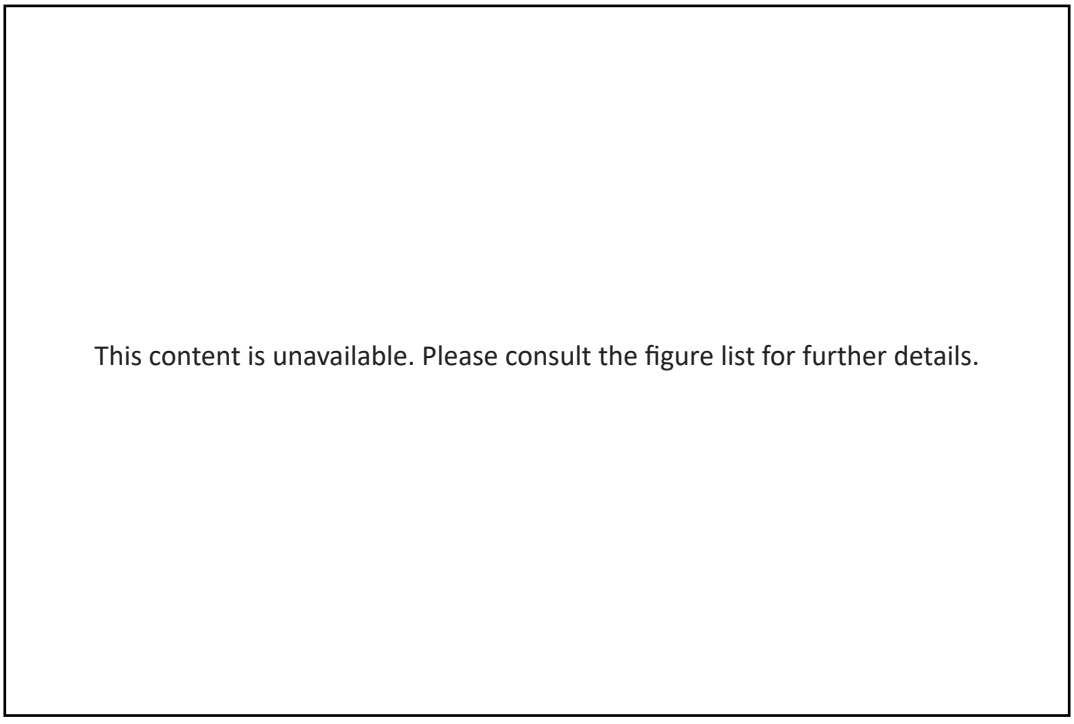


Fig. 5.1 Scheme b

Fig. 5.2 Views

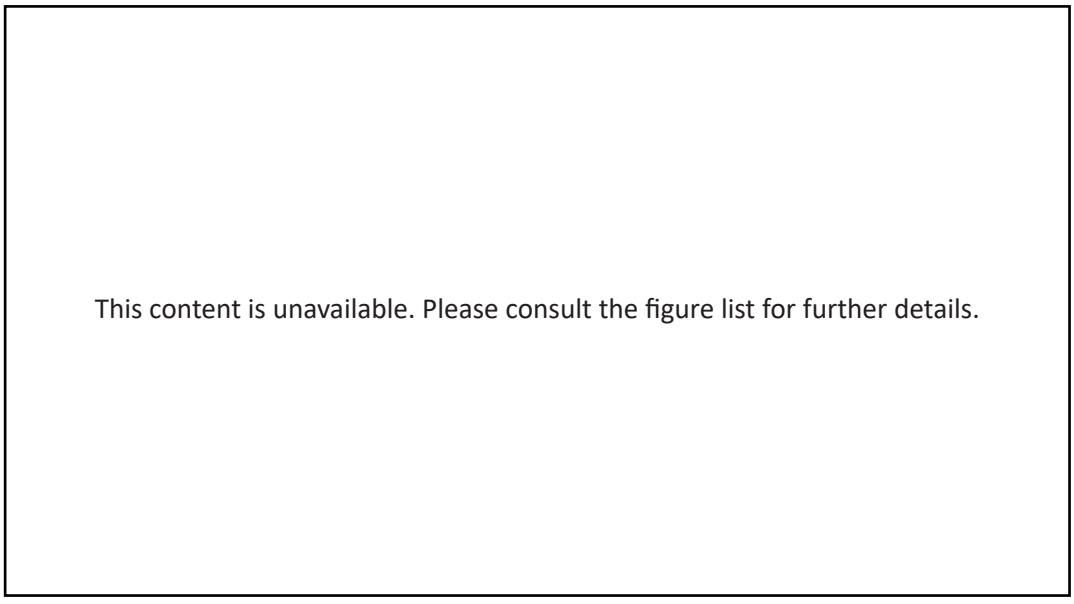


Fig. 5.3 Scheme

This case study is relevant to the scope of research in that it is speculative in showing how adaptive re-use can activate and reinterpret the definition of the existing building. It takes a similar position in creating a social space and demonstrates an approach to enhancing connectivity through design. It is acknowledged that the context is entirely different to Lower Manhattan as well as the scale of the existing building.

Description:

The brief for this proposal asked for the renovation and expansion of the Wörle-Schwanzer-Bau and Ferstel buildings to incorporate new facilities (lecture theatres, seminar rooms, workshops and warehouses, technology workshops) while connecting the different student groups that occupy separate specialised buildings (Wolfgang Tschapeller ZT GmbH, n.d.; Furuto, 2012).

Fig. 5.3 shows the internal space created and the transition between the existing building and proposed extension. The proposal involves joining two of the existing buildings at basement level (see fig. 5.0) and using this additional space to facilitate the new programmatic requirements (Wolfgang Tschapeller ZT GmbH, n.d.). It is also proposed that the existing stairwells and lifts are removed to create “an empty shelf” of high quality uninterrupted internal space (86 x 16 m) (Wolfgang Tschapeller, n.d.). This circulation is then relocated and redesigned as a ‘Broadway’ (see fig. 5.1) (Wolfgang Tschapeller ZT GmbH, n.d.; Furuto, 2012). A generous staircase which runs the length of the front façade to connect the levels in the building addition.

Connection between different student cohorts is further encouraged through creating desirable space (public gardens or flexible space) for no specified user or any specific program to invite any student to use the space how they please Wolfgang Tschapeller ZT GmbH, n.d.).

Strengths

- A focus on connection drove the design. The linking of floors through circulation aided connectivity
- Scheme has integration with existing building in also making modifications to the planning in line with design drivers
- Transparency allows connection with broader context
- Reinterprets the value of social space

Weaknesses

- Lack of accessibility of primary circulation
- Strong forms and smaller volumes presubscribe how spaces are used
- Not an 'appropriate' adaption

Implications for design

- Consider how 'appropriateness' could offer a new meaning to the old and new architecture of respecting the existing building and responding to new needs
- Consider primary circulation as ramps as an option, or make the existing lifts the primary focus as this provides accessible circulation
- The suitability of stairs in that they occupy less space (which is limited) but are not an inclusive means of circulation

Critical reflection against the aims and objectives of this investigation

Objective: Appropriately adapt the existing building following a loose fit design approach

The extension on the front façade is intentionally chaotic and whimsical in comparison to the existing building which shows a strong grid (see fig. 5.2). The façade, materiality, and organisation does not seem to refer to the existing architecture (Furuto, 2012). The extension purposefully opposes the idea of continuity and wholeness identified in section 2.2 which are attributed to

integrated and appropriate extensions. For Byard (1998) this might be considered as “violating the integrity” (pp. 9) of the existing architecture. This speculative project intentionally challenges the idea of appropriateness. “The new combined meaning” (Byard, 1998, pp. 4) of the project seems to be a rejection of the existing, in favour of a new direction.

The social space does not have specified usage and is under specific with a programme to allow for flexibility. The strong forms of the smaller volumes seem to presubscribe how spaces are used as opposed to offering spaces which can be organised and used differently to offer greater versatility.

Objective: Use spatial tools to achieve a higher level of connectivity and interaction between building occupants

‘The Broadway’ interlinks the separate vertical levels horizontally. The proposal actively uses circulation as its own informal space. Previously minimal stairwells which were separated from the building by walls are replaced with circulation which improves connectivity and creates desirable open spaces (Wolfgang Tschapeller, n.d.).

The Broadway turns circulation into a social space. It recognises the importance of creating attractive collective areas which fulfil social needs. It encourages chance encounters and interaction between a diversity of individuals. The main circulation is excluding and isolating to others who are unable to use stairs.

Objective: Reinterpret the value of the social and circulation space to reflect its importance

New facilities (lecture theatres, seminar rooms, workshops and warehouses, technology workshops) were the purpose for the renovation. The designers located these below ground, while prioritising social space at the front façade of the building facing onto main courtyard (Wolfgang Tschapeller ZT GmbH, n.d.).

This shows a higher value for this space. Its location, strong design focus, and the primary representation of this space in the drawings and renderings shows a reinterpretation of the value of social space. Additionally the removal of the existing basic staircase in favour of a designed staircase at the front of building is critical to the overall concept and acknowledges the role of circulation for achieving connectivity.

The social space was not a required within the brief but is designed to fulfil the requirements of connecting the different cohorts.

5.2

Project:	Futura
Architect:	Klunder Architecten in collaboration with Donker Groep
Location:	Netherlands, Sweeter Lake
Year:	2015

Fig. 5.4 Atrium from street view

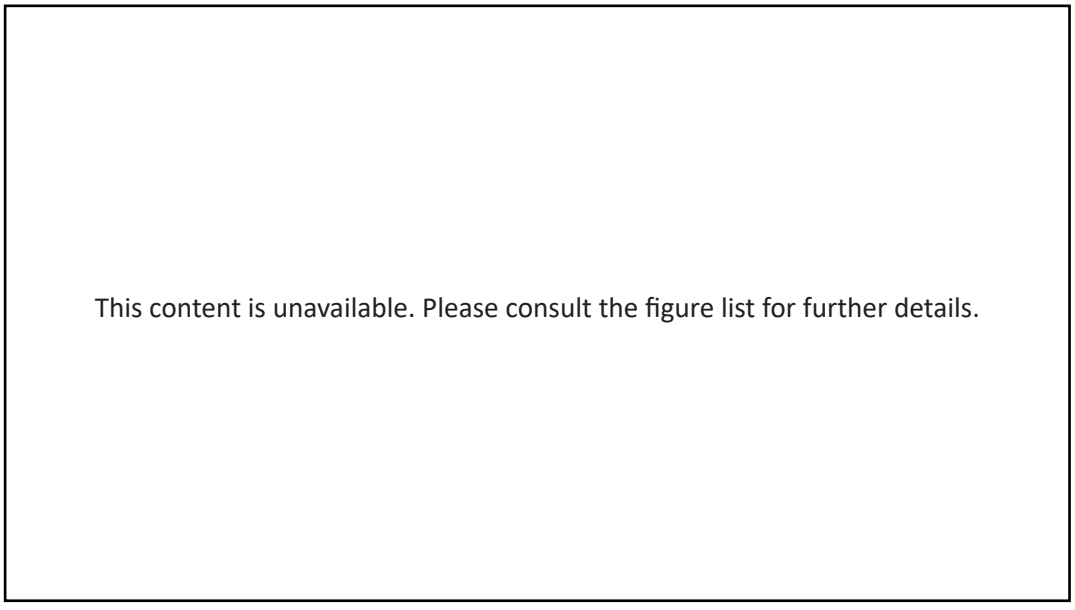


Fig. 5.5 Interior atrium view

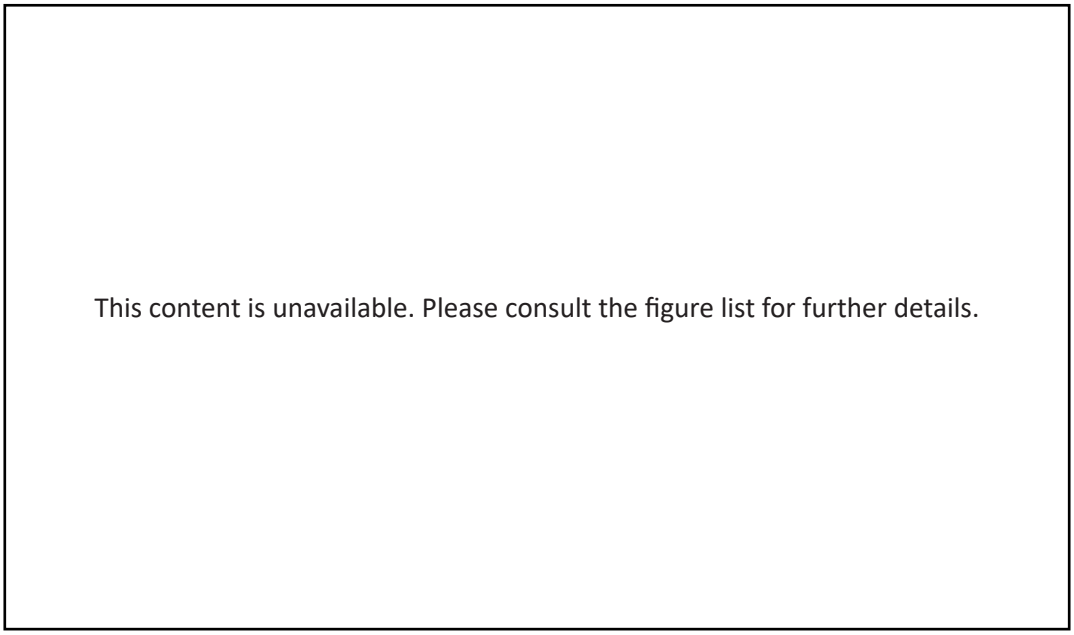


Fig. 5.6 Apartment facades

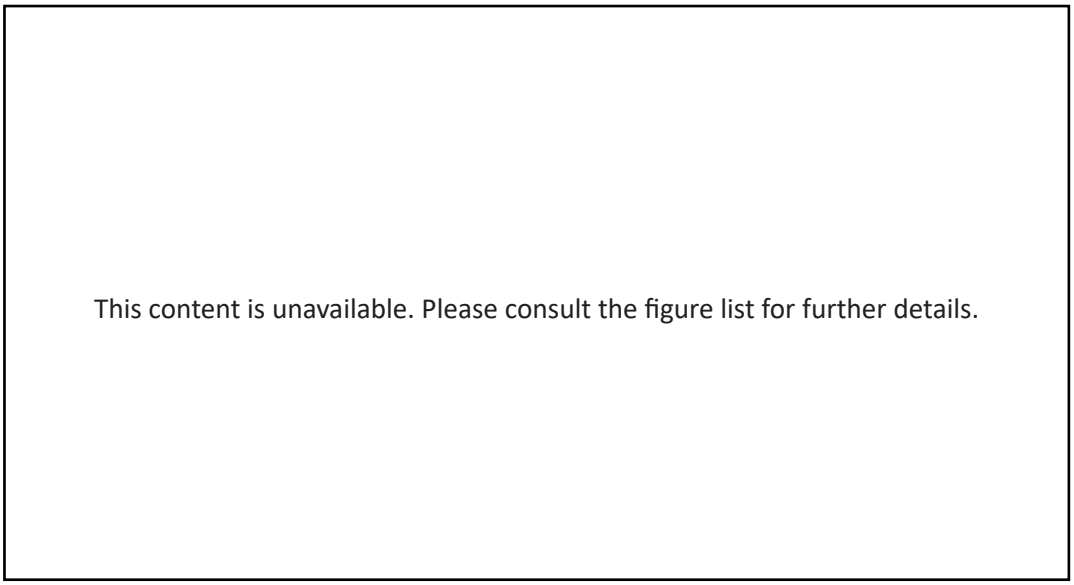


Fig. 5.7 Atrium in context

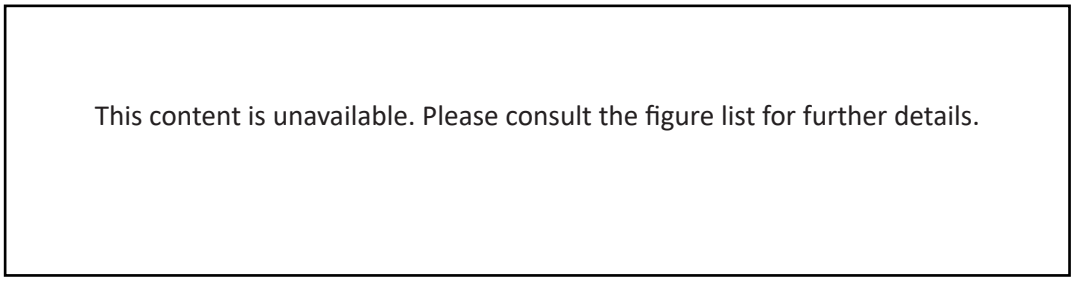


Fig. 5.8 Facade grid

This is a strong case study demonstrating the value of social space, and how this has been achieved in front of residential apartments. The aesthetics, materiality and structure of the atrium is of interest in adapting international style architecture. This is highly relevant to the design proposal for 200 Water street.

Description:

This new build consists of 69 apartments over 6 floors (see fig. 5.6) (donker groep, n.d.). The design was completed in two phases. Phase one was the design of the apartments by Klunder Architecten. Phase two was the design of the atrium by donker groep (donker groep, n.d.). The atrium is the main focus of this case study. Although this project is not adaptive reuse, it demonstrates an initial design, which was then in phase 2 added to by a different party.

Donker groep's design of the atrium was driven by sustainability, the main intention of the atrium was for heat capture to then regulate the temperature (Eilo, n.d.). The materiality as large part of the design was driven by sustainability (Eilo, n.d.). Further development of the design looked at the idea of integration with the existing building (see fig. 5.4 & 5.7). Although the apartments and glass atrium read as one building there is a distinct separation between these two phases, partially because of the materiality, but another factor is a distinguishable line of separation between the social space and apartments, with no blurring of this boundary (see fig. 5.5). The overall building has won multiple awards for its quality. For sustainability Futura attained a BREEAM certificate at very good for new design (Eilo, n.d.). This was the first residential building in the Netherlands to gain this achievement. The atrium also won a third place award from European Interior Landscaping Organization (donker groep, n.d.).

Strengths

- The curtain wall façade and glazed roof are a strength for appropriateness, daylight, and sunlight
- Visual connectivity and unobtrusiveness through void / atrium
- Strong precedent for a successful unobtrusive social space in front of apartments

Weaknesses

- Fixed furniture / planters restricting
- No strong focus on utilising circulation as a designed occupiable space.
- Stairs are not an accessible form of circulation.

Implications for design

- Materiality of façade and continuity with roof aesthetically of interest to adapting international style architecture
- Value in further exploring voids and atriums for visual connectivity

Critical reflection against the aims and objectives of this investigation

Objective: Appropriately adapt the existing building following a loose fit design approach

Aesthetically the large curtain wall façade atrium was of interest aesthetically for adapting international style architecture. It is clean simple and appropriate as an addition (phase 2) to the existing architecture (see fig. 5.8). The curtain wall façade in combination with the glazed roof attribute to the daylight and sunlight allowed into the atrium. It is unobtrusive and makes the space feel like an "interior garden" (donker groep, n.d.). The plants also provide seating and seem to make the atrium visually more appealing. For the context of this thesis these may not fit within a 'loose fit' design approach in that they are restricting.

Objective: Use spatial tools to achieve a higher level of connectivity and interaction between building occupants

This atrium is also a reception area and provides the only entry to the apartments (donker groep, n.d.). The separate floors are all visually and physically linked through this social space with shared open stairwells interlinking separate floors. This is a generous space within the building, and with the entry for the apartments being located within it, there are informal opportunities for connections and interactions. The corridors in front of the apartments are another opportunity for interaction. All levels look onto the same communal space and are connected to it. The openness and visual connectivity is a success in this design. The circulation being open and within this space aid connectivity otherwise there is no strong focus on circulation.

Objective: Reinterpret the value of the social and circulation space to reflect its importance

The communal courtyard / social space is a generous intentionally designed space. The design of this space shows value in the purpose of informal shared space for people to interact and feel connected. This five level high atrium could have made for larger or more apartments but instead adds social value for its residents.

5.3

Project:	Willis Tower Repositioning
Architect:	Skidmore Owings and Merrill responsible for Willis Tower with Gensler responsible for building repositioning
Location:	Downtown Chicago, Illinois, USA
Year:	Building completed 1973, with repositioning scheduled to be completed mid 2020

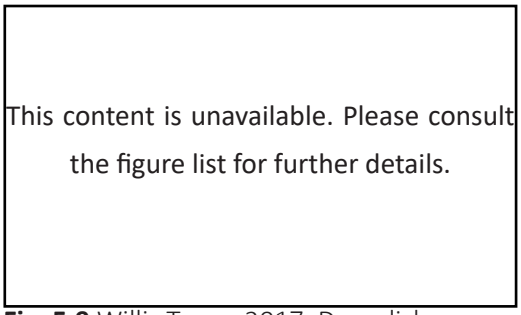


Fig. 5.9 Willis Tower 2017. Demolish existing pavilion

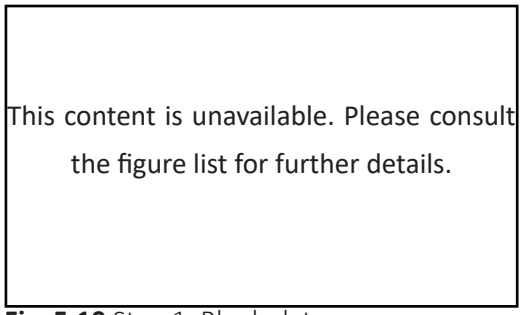


Fig. 5.10 Step 1. Blank slate

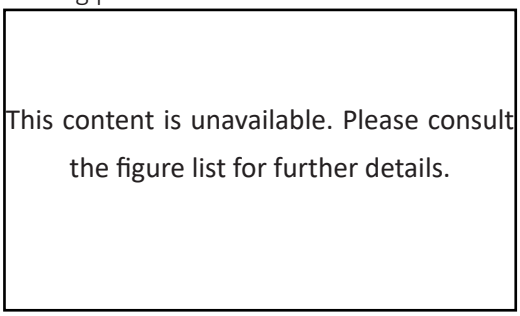


Fig. 5.11 Step 2. Add green space

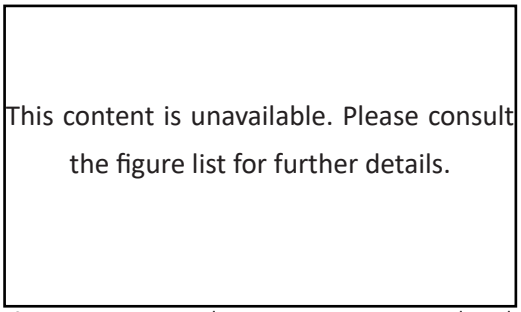


Fig. 5.12 Step 3. Elevate green space 4 levels

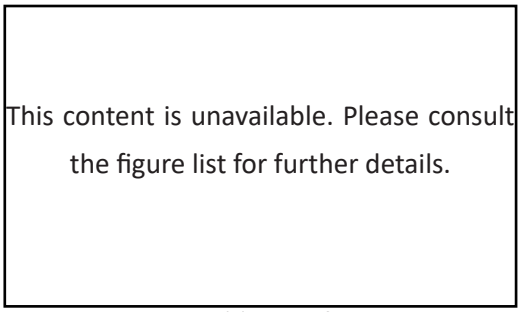


Fig. 5.13 Step 5. Addition of amenities

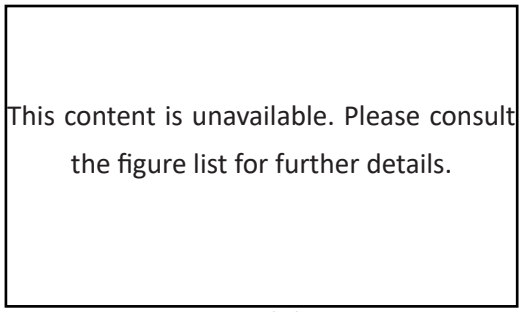


Fig. 5.14 Step 6. Reveal the tower

Fig. 5.15 Podium exterior changes

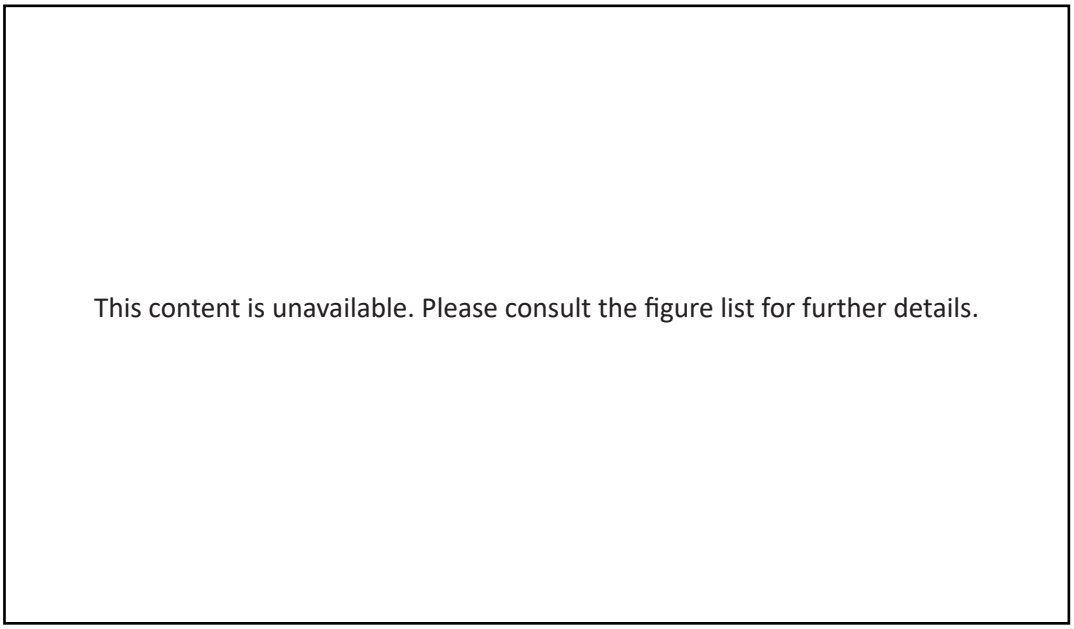


Fig. 5.16 Entrance

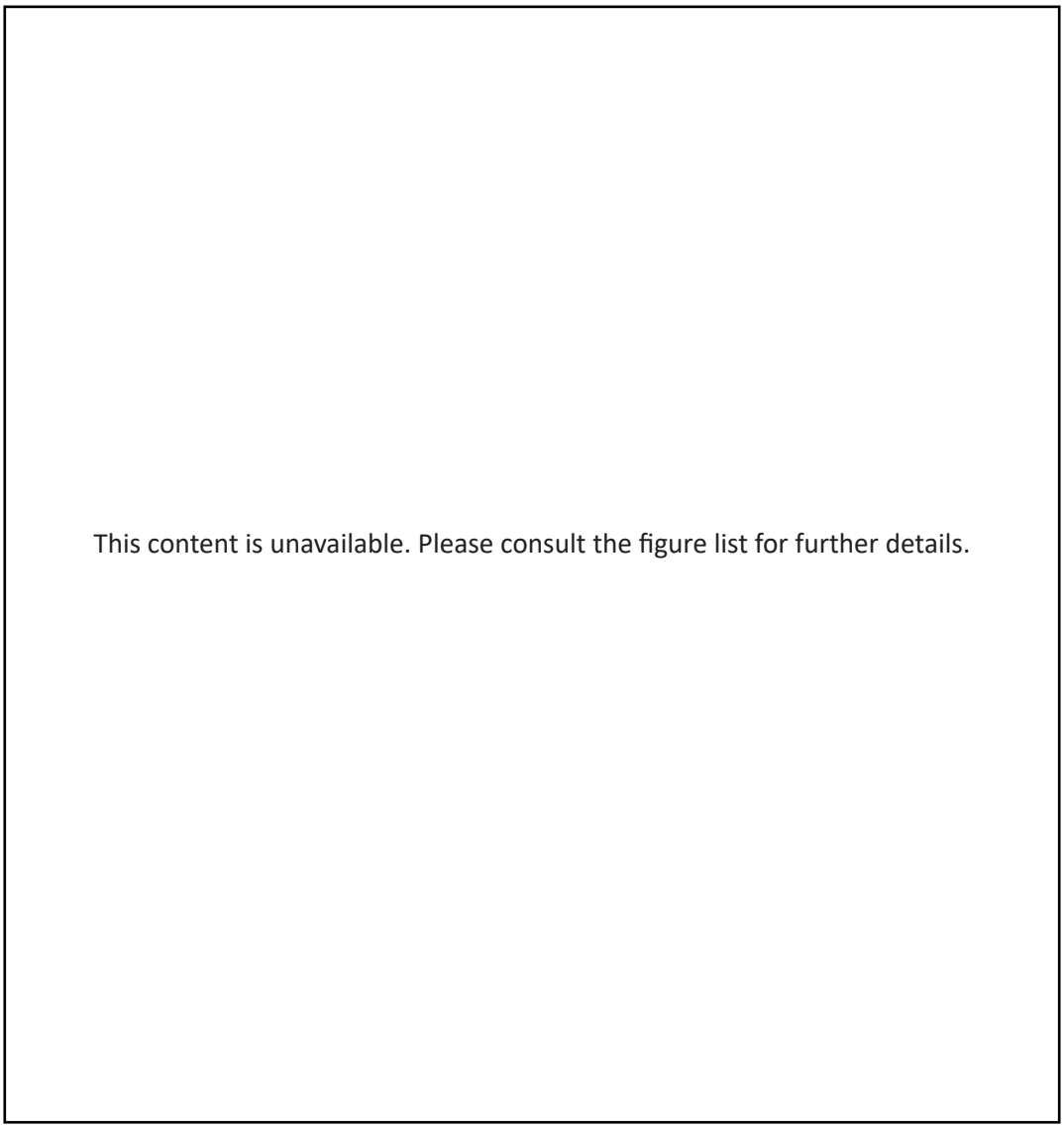


Fig. 5.17 Willis Tower repositioning

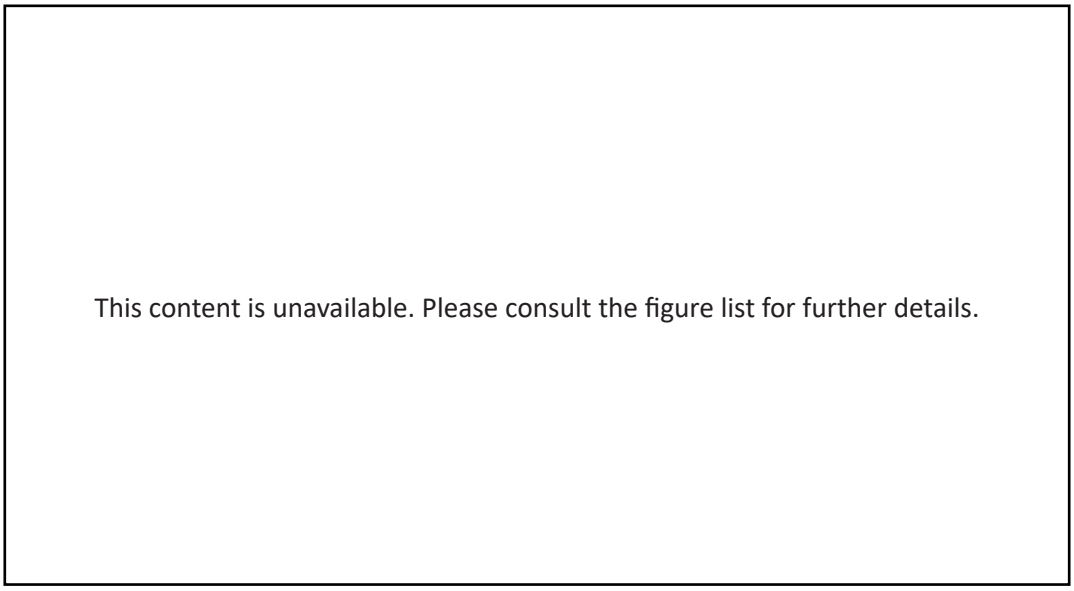


Fig. 5.18 Internal atrium view

This case study is selected as it demonstrates the added value of community space through adaptive re-use. Being located in Chicago and completed in 1973 Willis Tower, formerly Sears Tower shares some architectural and historical context and influences. Scheduled for work to be completed mid 2020 Willis Tower provides a current example of adaptive re-use for community space in the USA.

Description:

Willis Tower is an international style building which was acknowledged as "a site that is not currently realizing its full potential" (Ward, 2020). The repositioning looks to adapt the base of the building "for new purposes in line with contemporary technological and social needs" (Heiser & Ward, 2020). This project adds 150,000 square feet of amenities at the base of the building, as well as adapting levels 1-3 of the existing building (Willis Tower, 2018). The scheme can be seen in fig. 5.9-5.15 where the existing plaza is demolished, green space is added, and lifted to provide 3 levels of amenities within this, and 2 levels below ground, as well as green roof top space (Koziarz, 2018). The design cuts the added space for entrances and to allow light into the building (see fig. 5.16 & 5.17). Feature skylights in combination with atriums also allow light into the below ground level areas (see fig. 5.18).

The project looks to create a neighbourhood within for the existing mass of people working in the building, as well as those from the surrounding area as a public place (Koziarz, 2018). The repositioning uses adaptive re-use with the intention to “create community” within the base of the building (Willis Tower, 2018).

Strengths

- Uses materiality, proportion, and the existing grid to be appropriate with existing building, while still introducing hierarchy and using new design techniques.
- Design features oppose the design style showing these aspects as important
- Uses a combination of programmed and unprogrammed space to support each other as a public space.
- Atriums effective in showing value of social space and increasing connectivity
- Provides outdoor rooftop space

Weaknesses

- Floor plans not available - difficult to reflect on some aspects of the design

Implications for design

- Important aspects can intentionally oppose the style and not follow the order with the overall concept still appearing appropriate
- Reinterpret general proportions and divisions generally in respect to existing building but design following new techniques and technology to acknowledge the new addition

Critical reflection against the aims and objectives of this investigation

Objective: Appropriately adapt the existing building following a loose fit design approach

The focus of the adaptive re-use is at the base of the building and offers a lot of free space centrally within the base. Surrounding the base is programmed areas with retail entertainment food which encourage occupation of the free space (Heiser & Ward, 2020). Design features such as the green space, skylights and stairs (see fig. 5.15 & 5.18) seem to intentionally separate themselves from the style of the existing building. These are key aspects of the design and stand out against the majority of the addition - which both internally and externally follow the grid, proportions and materiality of the existing building. This makes the addition seem appropriate to the existing building and context, while larger expansions of glass, double height floors and hierarchy within the design for entrances, and differentiation of components separate the new addition from the existing ordered and uniform building.

Objective: Use spatial tools to achieve a higher level of connectivity and interaction between building occupants

The proportions of the reimagined podium seem both horizontally and vertically balanced, where a vertical focus can create separation as discussed in section 2.4. This vertical and horizontal connection is enhanced through the central atrium. The stairways are centralised landing in the main atrium space. While the skylight helps below ground levels feel open. The openness of the atrium and visual transparency between levels contribute to being inclusive and encouraging interaction (refer section 2.4). Externally the porosity from street level acts as an invitation encouraging usage as well as creating a visual connection with the broader context.

Objective: Reinterpret the value of the social and circulation space to reflect its importance

The adaptive re-use and new podium does not follow the order and organisation of the existing international style building. The space is reinterpreted with a focus on intentionally designed quality public space at the base of the building for the building users as well as broader public. This space is designed with a community focus with its value for social and circulation space reflected in the design of the atrium spaces.

6.0
Connectivity Explorations

6.0 Connectivity Explorations

This chapter builds upon the designing for connectivity strategies identified in section 2.4. These strategies are explored further through the action of designing to create new knowledge. This exploration is intentionally general as to not prescribe a specific solution. This chapter aims to develop these strategies and ideas initially uninfluenced by spatial requirements or complications with adaptive re-use.

6.1 Interlinking Multiple Floors

Fig. 6.0 addresses the interlinking of multiple floors to achieve a more connected environment in planning vertically and horizontally. The use of circulation is one way to address this where it is integrated with the designed spaces.

Design implications:

How to interlink levels in a strongly vertical building. The verticality physically distances the levels.

6.2 Openess and Visual Connectivity

Fig. 6.1 depicts the idea of openness and visual connectivity in planning.
It shows how this can connect the separate floors. Staggering floors is one technique which visually links multiple levels.

Design implications:

The use of multiple atriums and or staggering of levels is a design technique to be explored further in relation to the selected building

What might the circulation for this be?

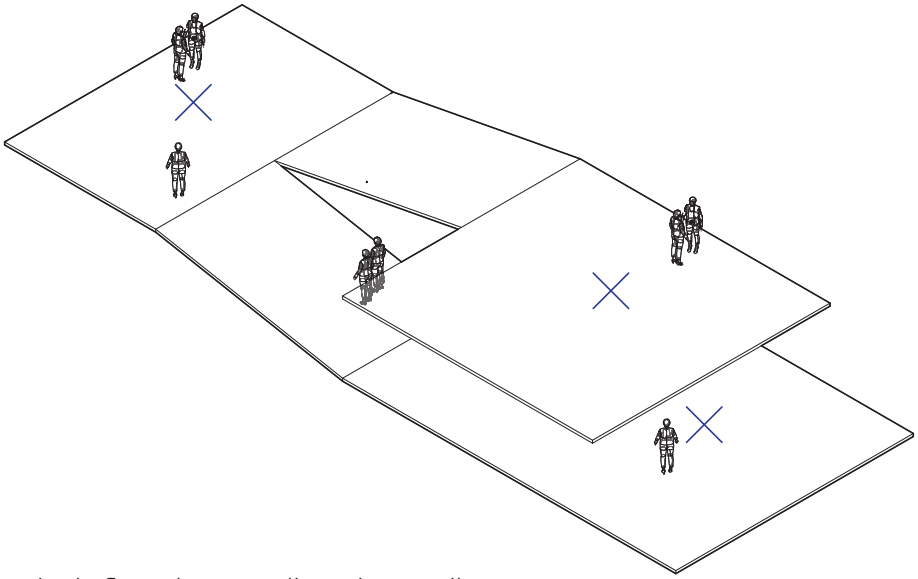


Fig. 6.0 Interlinking multiple floors horizontally and vertically

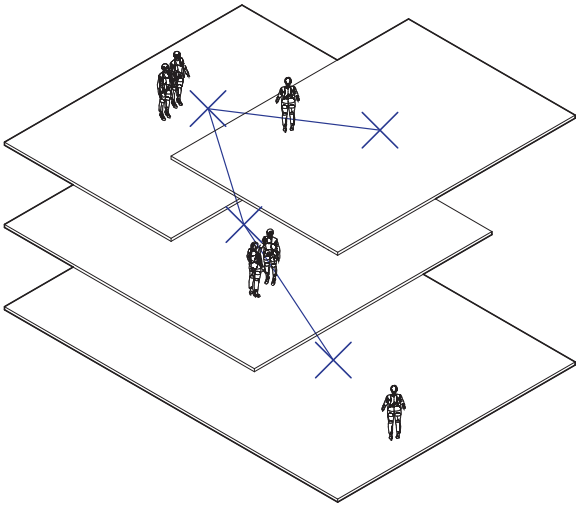


Fig. 6.1 Openess and visual connectivity

6.3 Flexibility within spaces and Circulation

Fig. 6.2 looks at offering flexibility in both circulation and space to occupy. Flexibility is linked to inclusivity and encouraging greater usage. This initial concept integrates both space and circulation flexibility to create informal areas.

Design implications:

Feasibility given changing levels.

Flexibility not offered in creating identical spaces.

6.4 Fluidity with Generous Circulation

Fig. 6.3 addresses designing for fluidity. There are similarities with fig. 6.0, this design technique could be developed and integrated with interlinking multiple floors.

Design implications:

This envisioning of the design technique is effective creating informal and generous circulation as a space for interaction. As a design outcome which is circulation as opposed to the arrangement of floors this could be integrated with other techniques.

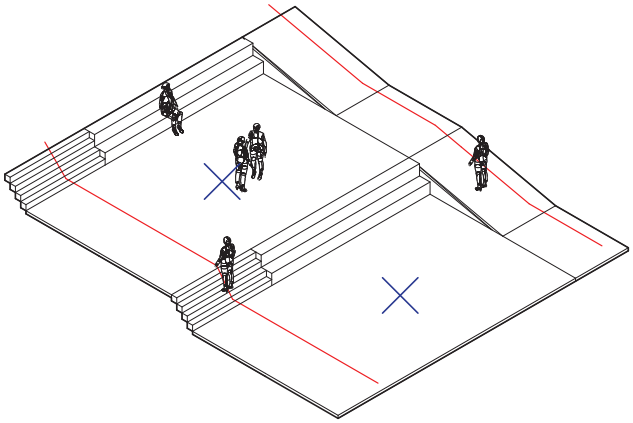


Fig. 6.2 Flexibility in offering multiple options for circulation

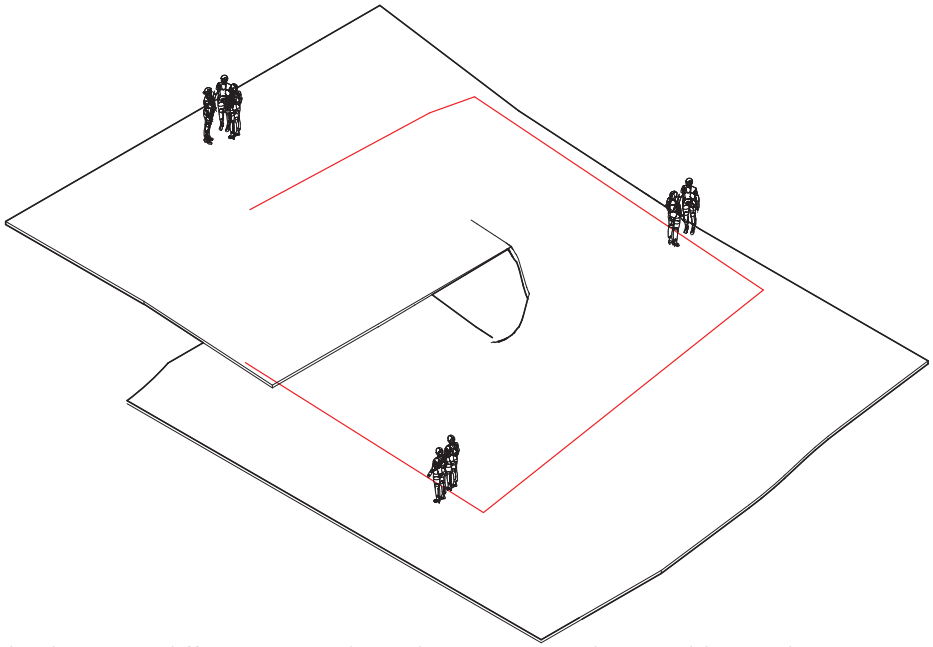


Fig. 6.3 Create a fluidity between different areas through generous and accessible circulation

6.5 Informal Large Space from Smaller Areas

Fig. 6.4 & 6.5 develops fig. 6.2 in offering flexibility of spaces and how this might affect their usage and offer more opportunities for connecting with others. In this concept smaller spaces attribute to a larger spaces. This allows the area to be used as individual spaces as in fig. 6.4 or as one larger space as shown in fig. 6.5. Both offer opportunities for enhancing connectivity and different ways of connecting.

Design implications:

Feasibility given changing levels. How could this concept be taken into more appropriate design work? Combining concepts from fig. 6.4 and 6.1 in trying to offer similar opportunities and flexibility through mezzanine levels.

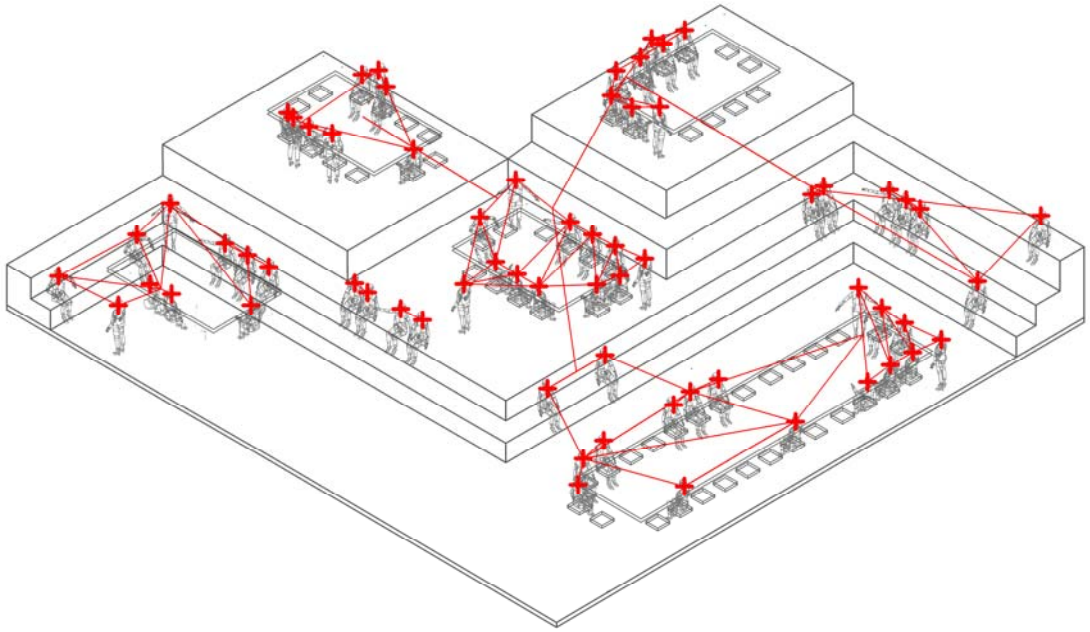


Fig. 6.4 Smaller spaces contributing to one larger space connecting people visually

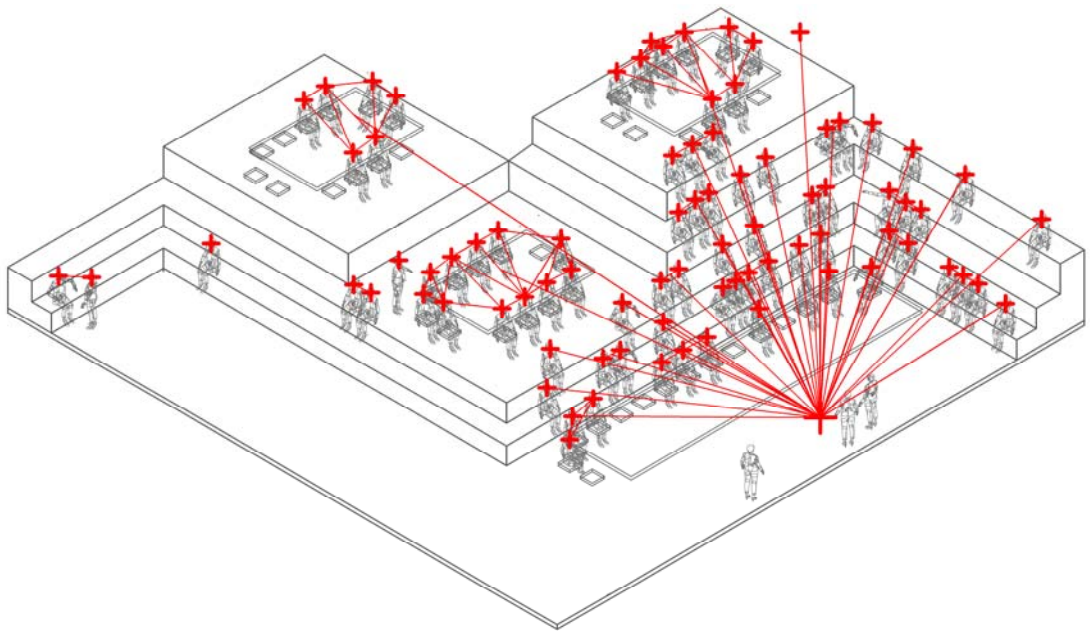


Fig. 6.5 Smaller spaces contributing to one larger space connecting people through one main focus / function

6.6 Connectivity Explorations Reflection

This was an effective initial inquiry to develop design techniques from the literature review. This chapter offered concepts rather than presubscribed solutions which can be further developed in the preliminary design phase. The reflection on these ideas further developed how these design techniques might be used and acknowledged considerations for further designing.

7.0

Preliminary Design Explorations

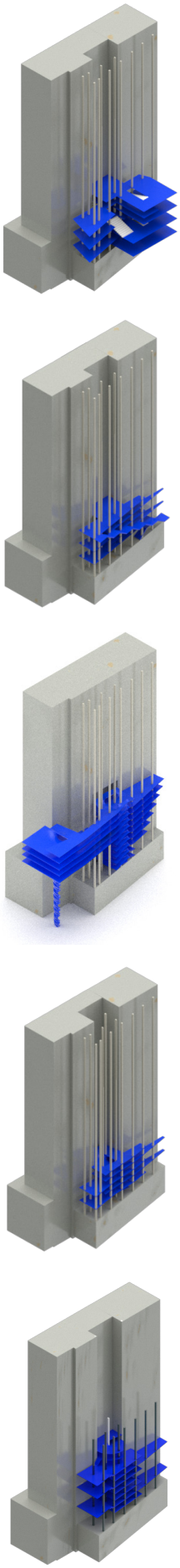


Fig. 7.0 Massing study explorations overview

7.1 Design Parameters

The preliminary design explorations began with setting the parameters shown in fig. 7.1 – fig. 7.3. These parameters are influenced by previous research from section 4.0 – site analysis. Fig 7.1 shows the identified common space which is currently underutilised and isolated by each separate floor (highlighted in blue). It is of focus in these massing studies as the point of connection between the existing building and proposed new extension. Additionally shown in fig 7.1 is the columns from the podium of the building below extended. It is set as a parameter to be designed with, and to influence massing experiments from the beginning of the design process. The grid inherently begins to organise the space and creates a continuity with the existing building.

Fig 7.2 offsets the existing perimeter of the building by 5 meters where the façade is occupied by apartments. This is an initial distance to be explored further through massing. The intention of this setback is to allow daylight into the apartments and create some separation and privacy from the proposed extension.

Fig. 7.3 shows the maximum use of space for the massing, where each floor extends to the outer envelope restrictions in blue. The blue and red floors are also cut back 5 meters from the apartments set by the fig 7.3 parameter. The red floors are double height floors which set a maximum use of space within the site line area shown by the black lines. This is an initial parameter to minimise obstructions to the site lines identified in chapter 5.0. The red floors initially begin to respond to the design framework of openness. Acknowledging this as a parameter highlights an opportunity to work with the parameters and explore the design strategy of openness discussed in chapter 6.0.

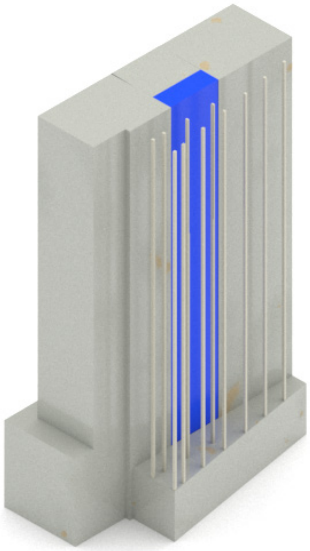


Fig. 7.1 Extension of existing columns from grid below and internal area to join into adaption

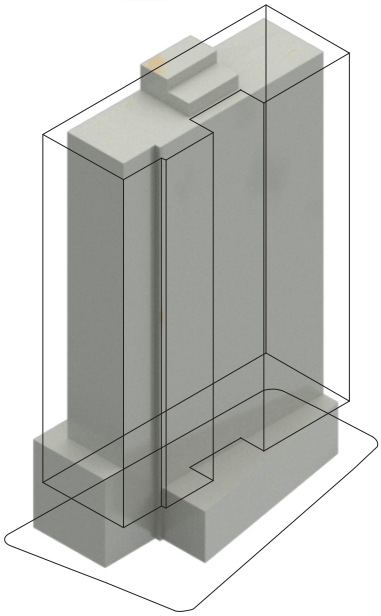


Fig. 7.2 Void envelope of 5m from existing apartments

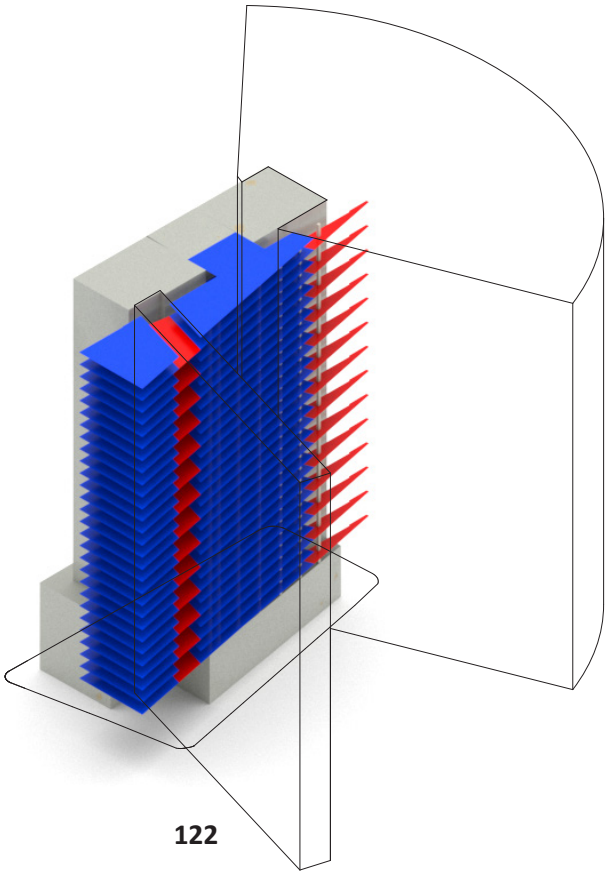


Fig. 7.3 Potential usable floor outline with double height floors in front of view site lines

Massing experiment 1

Fig. 7.0 gives an overview of the massing process. Massing experiment 1 (see figs. 7.4 – 7.6) begins by focussing at the base of the building as indicated as the ideal location for the extension in chapter 5.0. The location is due to the structure, shading, and to connect to the existing communal rooftop space. Fig. 7.4 shows the massing experiment following the outline of the architecture below, with double height spaces in front of the apartments (shown in red). Fig 7.5 then shows the stairs which connect all floors. This circulation is influenced by the University of applied arts case study in section 5.1. Although the circulation was critiqued for not being accessible, this was used as an initial starting point to explore this circulation in relation to the proposed building with the effect of the parameters for this massing study.

Fig. 7.6 gives an overview of the massing study and its relationship to the existing building for further analysis please see notes on fig. 7.6.

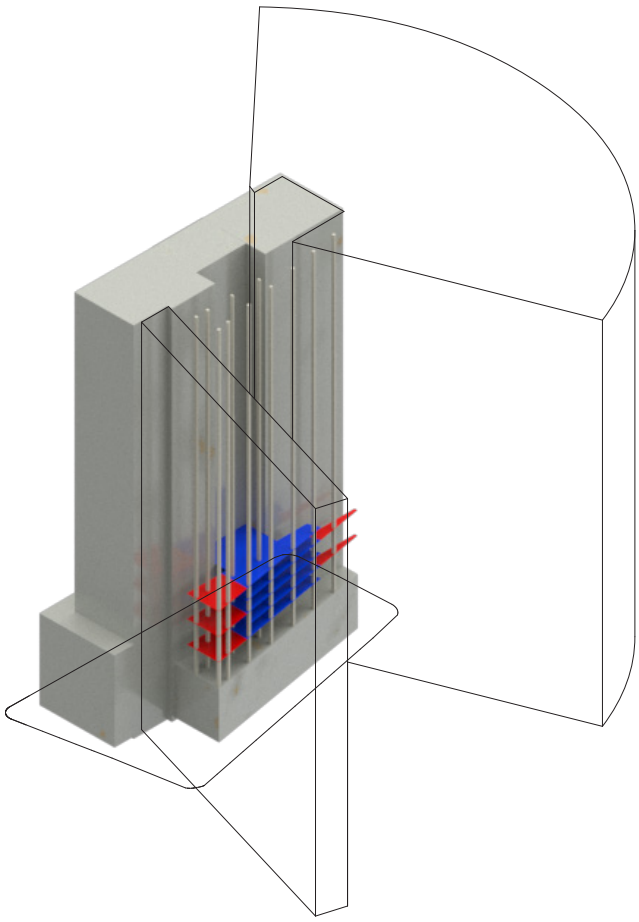


Fig. 7.4 Centralised focus of space with double height areas

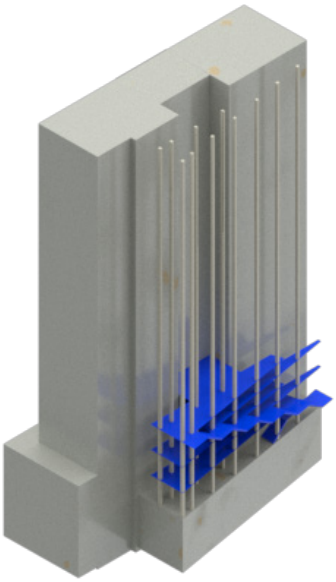


Fig. 7.5 Larger stair connecting all levels

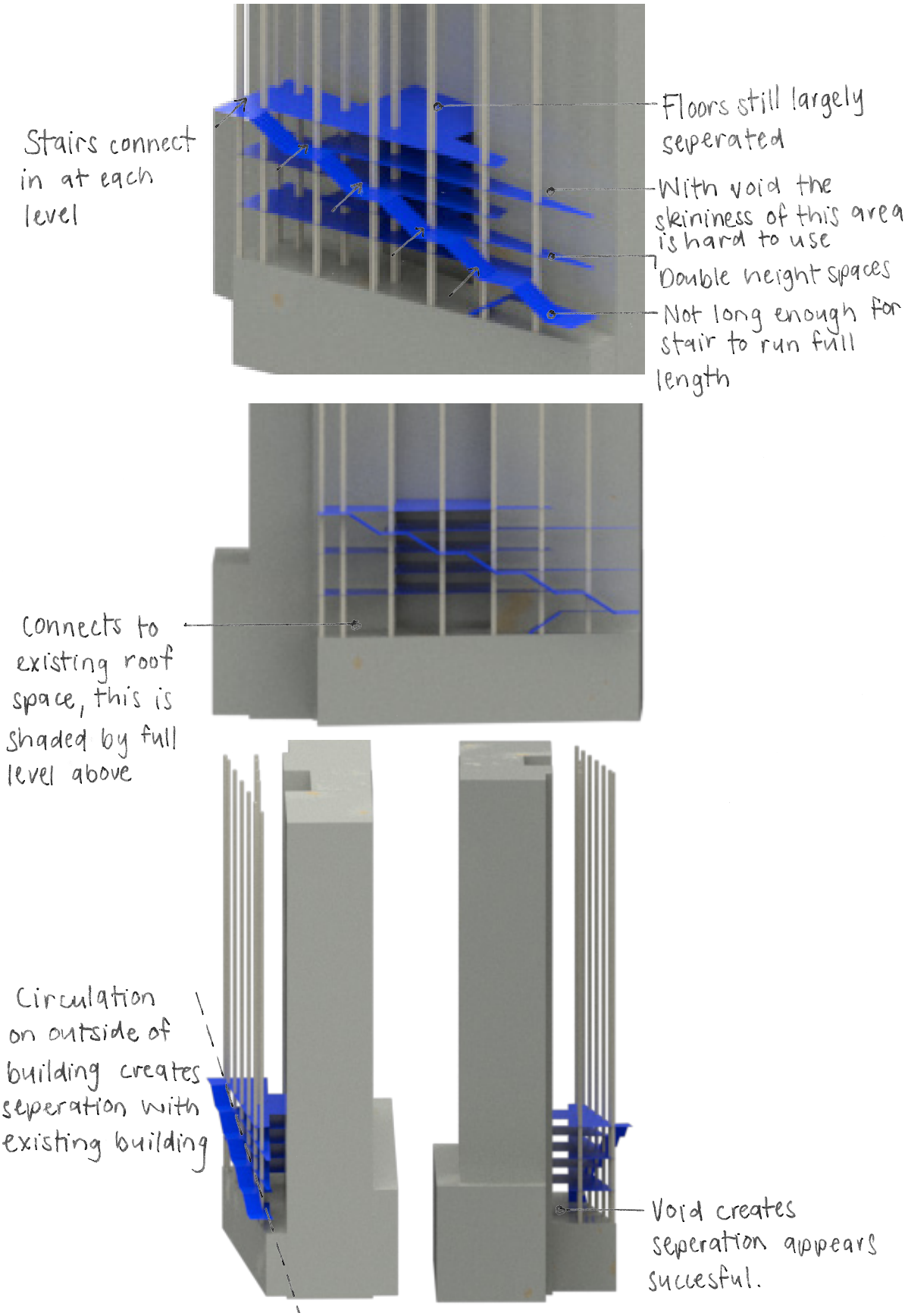


Fig. 7.6 Massing in relation to existing building

Massing Experiment 1 - Reflection

At each end of the massing because of the alternating double height floors there is some visual connectivity, but these floors are still quite separated. The design does not consider the existing grid. Floors should end in line with columns.
As noted in fig 7.6, with the parameter of 5 meter void from the apartment is restricting where some of the floor area and has less usability. The organisation is consistent and as such does not provide a variety of different space sizes and types.

Mainly the new circulation on the outside of the proposed massing is not integrated with the existing building this is a missed opportunity in terms of using circulation as a designed space to enhance connectivity. This concept which will look to be developed further within the massing study.

Massing Experiment 2

Massing experiment 2 (see figs. 7.7 – 7.9) is influenced by massing experiment 1, and adjusted to create a stronger integration with the existing building with a centralised circulation. In response to the lack of usability of floor space in some areas, this massing reduces its footprint in said area, and extends beyond the footprint below (see fig 7.9). The footprint of the massing is kept simple with a rectangular outline.

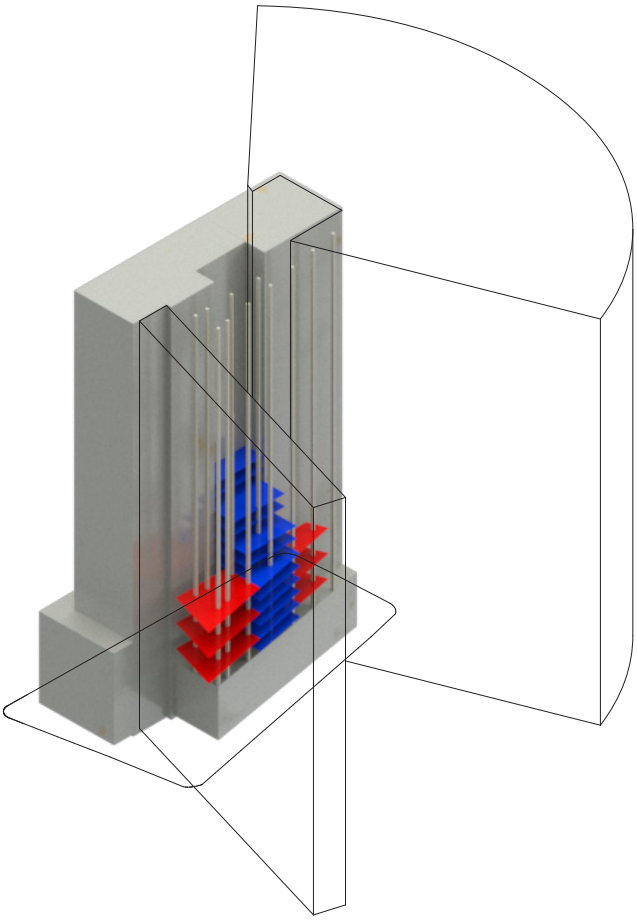


Fig. 7.7 Staggered centralised focus of space with double height areas

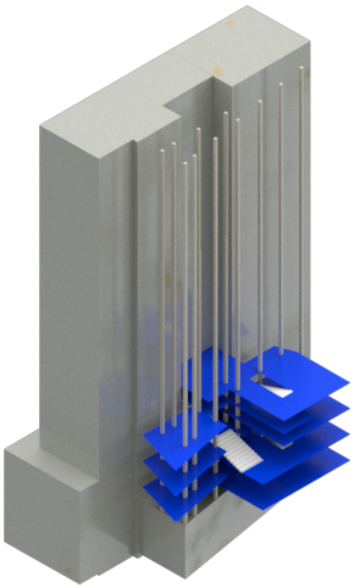


Fig. 7.8 Centralised stairs connecting all levels and focusing use outward to view

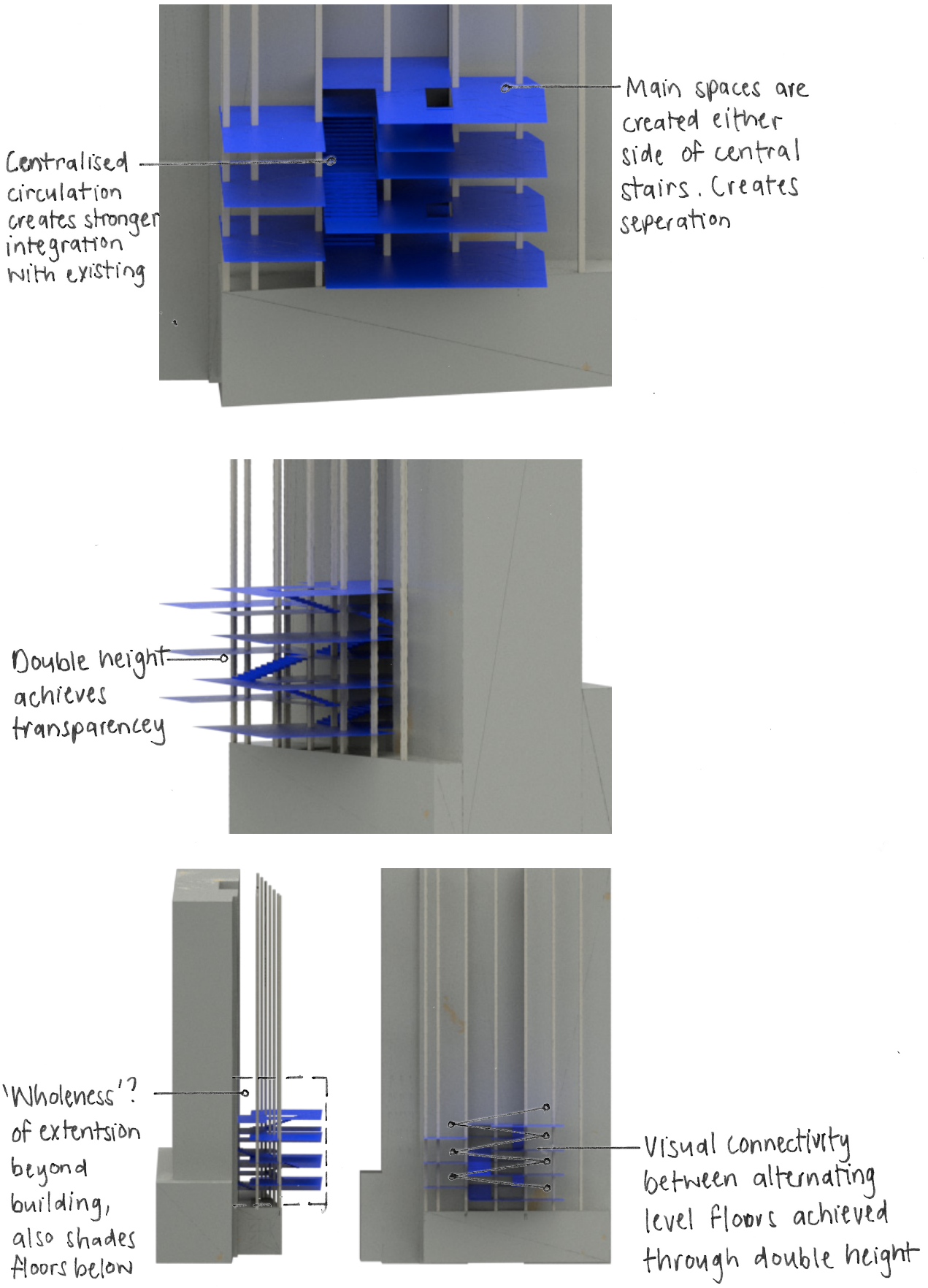


Fig. 7.9 Massing in relation to existing building

Massing Experiment 2 - Reflection

Centralising the stair creates a strong visual connection, and 'openness' with the circulation and looking onto alternating floors (see fig. 2.10). The central circulation focusses the design outward, however created a physical division between the floor spaces either side (see fig. 7.9). Massing experiment 1 in following the footprint of the architecture below appeared more appropriate and is less of an obstruction to floors below.

Massing experiments 1 and 2 explored the use of stairs as circulation for the extension. The initial thinking being a reaction to the restricted available space and their use being in conjunction with the existing elevators. On reflection creating a new space with stairs is not inclusive and will not address the framework in terms of offering fluidity and accessibility in circulation. In chapter 6.0 in exploring the circulation framework separately to site, the outcomes primarily involved ramps. Further massing studies will explore using ramps as circulation in attempt to address the design framework.

Massing Experiment 3

Massing experiment 3 (see figs. 7.10 – 7.12) utilises ramps for the intention of creating fluidity between different floors through circulation which is accessible and acts as a designed social space in itself. The massing pushes this idea, and utilises all available space on the left side where there is a larger usable area. While on the opposite right side cuts back the less usable area to allow for light. The massing experiment takers a fluid approach carving out a curved atrium in front of the apartments, while only allowing 2 meters on the opposite side see fig. 7.12.

Massing experiment 3

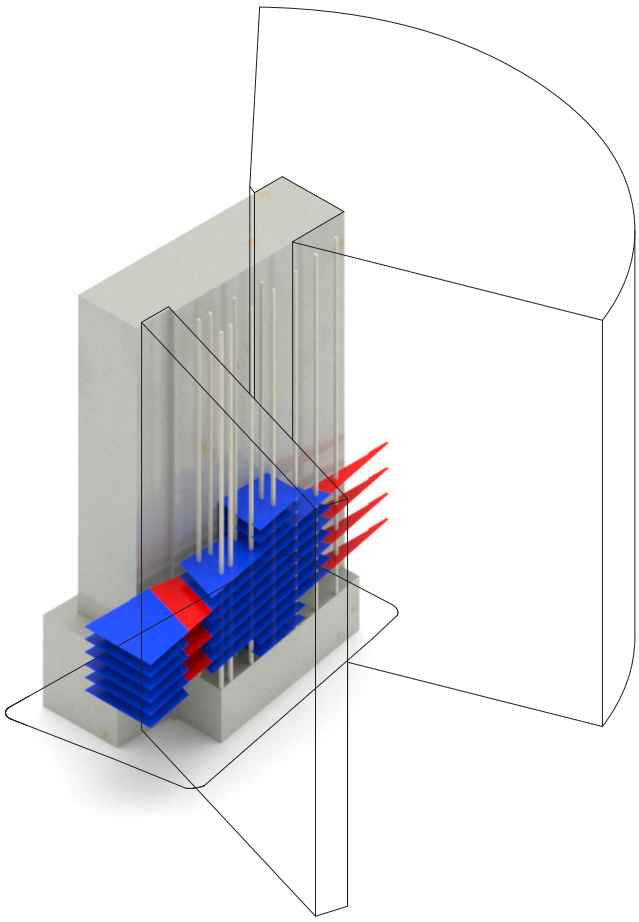


Fig. 7.10 More extensive massing using all available horizontal space for less vertical focus and stronger connection

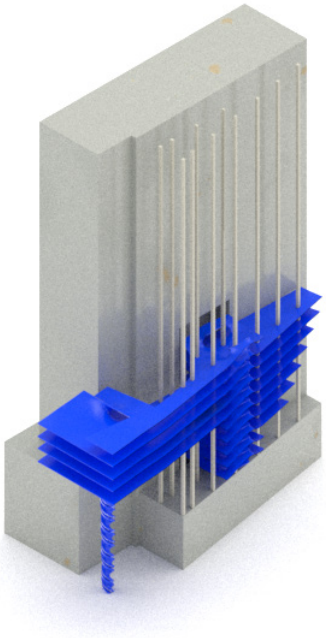


Fig. 7.11 Free flowing ramps to create fluidity between levels

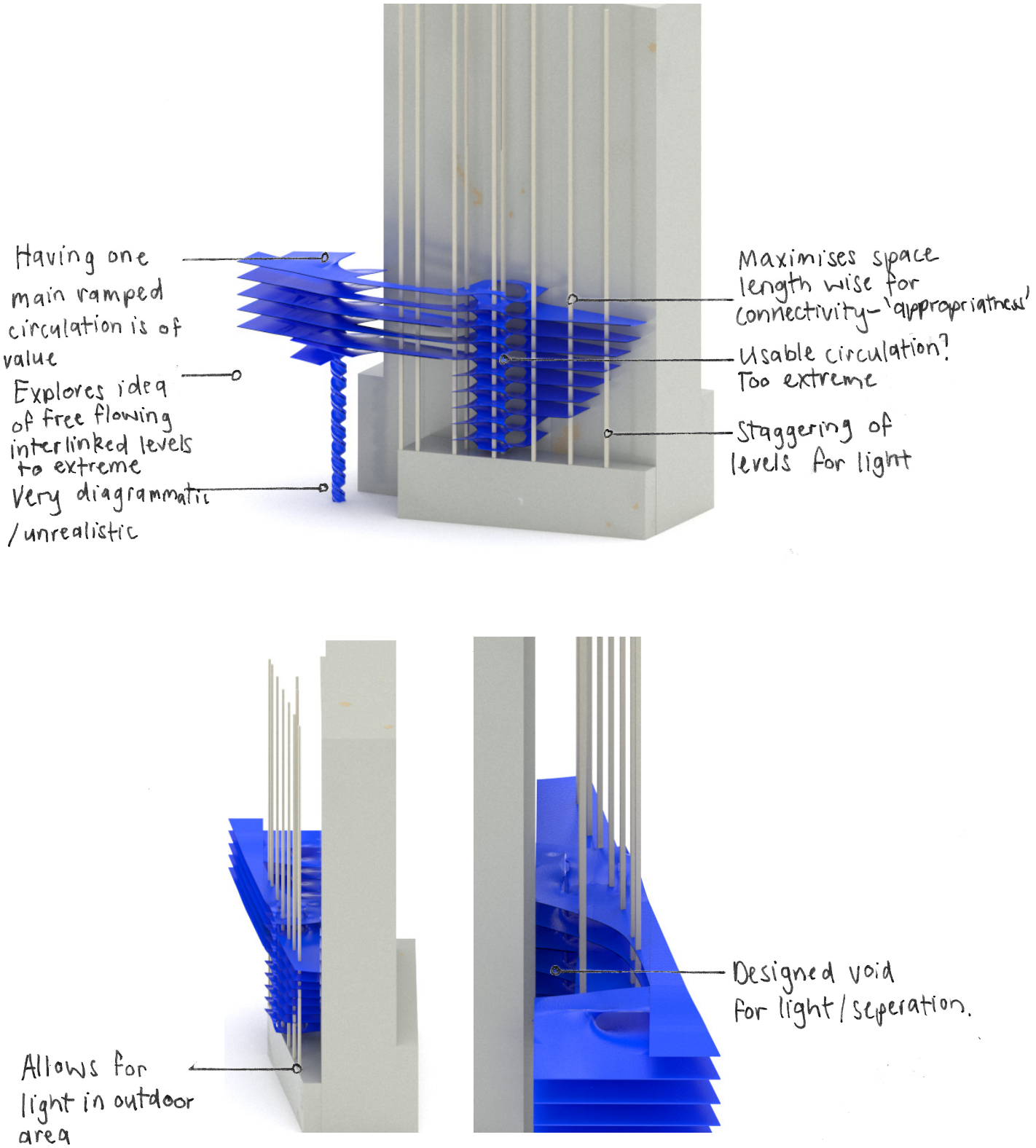


Fig. 7.12 Massing in relation to existing building

Massing Experiment 3 - Reflection

This study focusses more on the designing for connectivity framework and offering multiple options for circulation. This is diagrammatic in interlinking the floors with generous ramped (accessible?) circulation which has a fluidity. Openness and visual connectivity is lacking with the sheer bulk of massing.

The adaptive re-use framework was not of focus in this experiment and resulted in a poor representation in addressing this. Further exploration will look to simplify this concept for appropriateness and work with the existing organisation and grid.

Further measures of analysis are developed to aid in reflecting on the designs spatial planning. In fig 7.14 this is diagrammed through smaller areas of $4m^2$ represented by red crosses, which make up larger areas of $49m^2$ and greater represented by the blue crosses. This shows where the main usable spaces are, and how they are connected to each other. In this analysis it shows how the excessive circulation interrupts these spaces and that there is no visual connection between the larger spaces between the floors. Diagramming this through an exploded axonometric allows each separate level to be viewed and the floors connection to each other.

Fig. 7.13 highlights the circulation paths – these are demonstrated as being excessive and needs to be simplified.

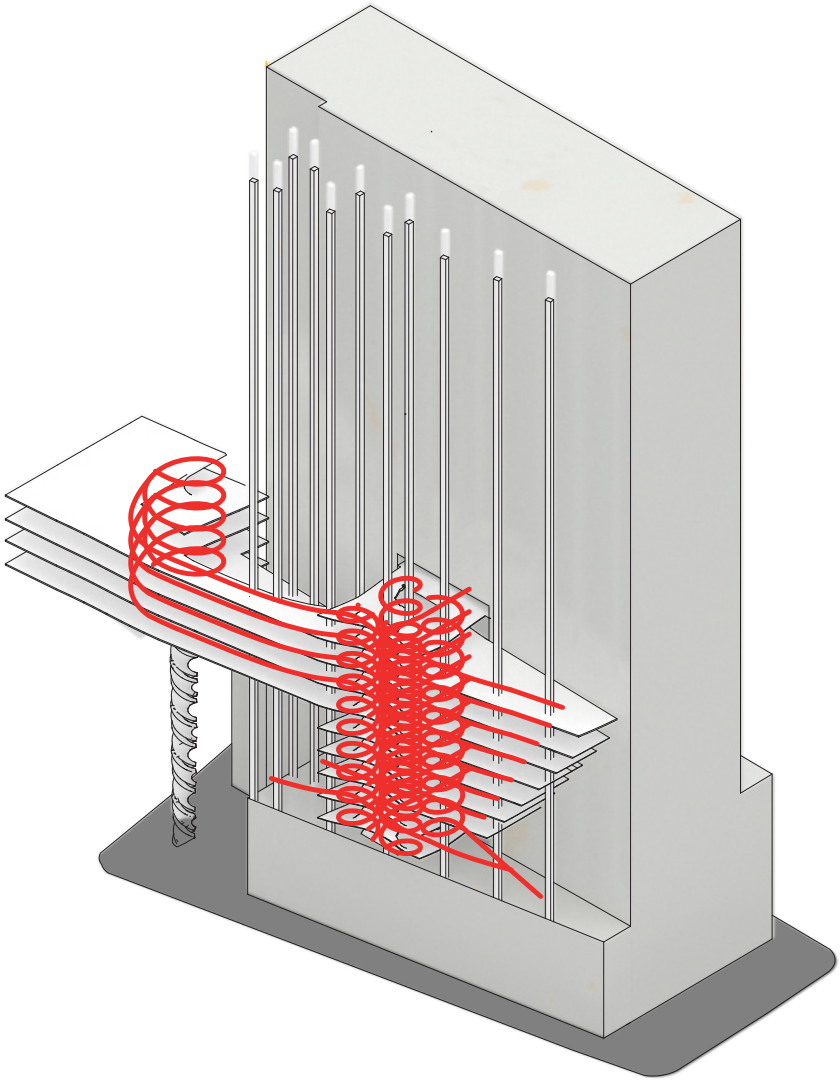


Fig. 7.13 Circulation analysis

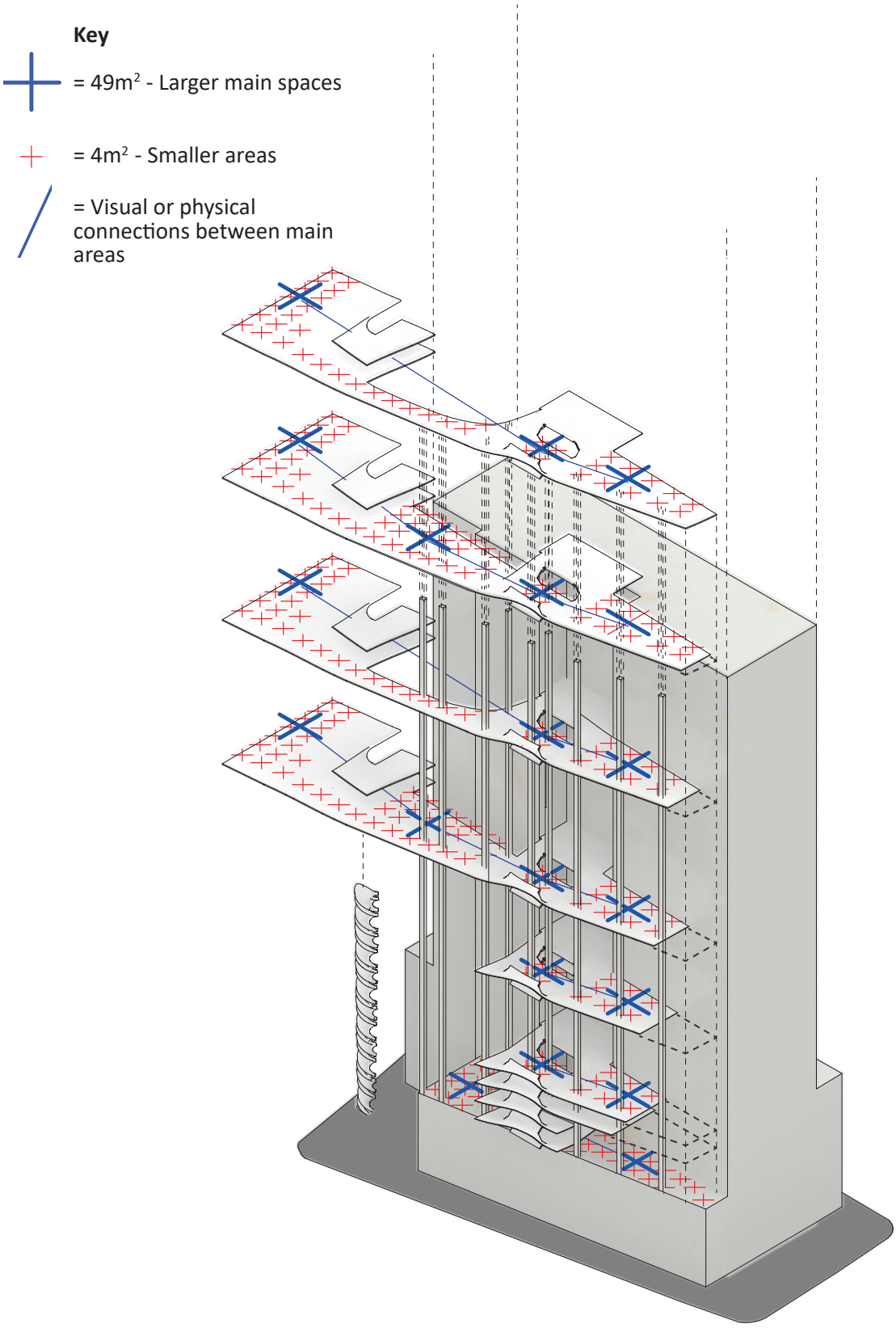


Fig. 7.14 Space and connectivity analysis

Massing Experiment 4

Massing experiment 4 (see fig. 7.15 – 7.17) moves back to the more successful centralised focus for circulation. This is more suitable for the amount of space. The previous massing study is simplified with one main ramp integrated partially into the existing building and extends to join the new added floors. The ramp spirals around the existing column. The created spaces have some variation through using openness and visual connectivity.

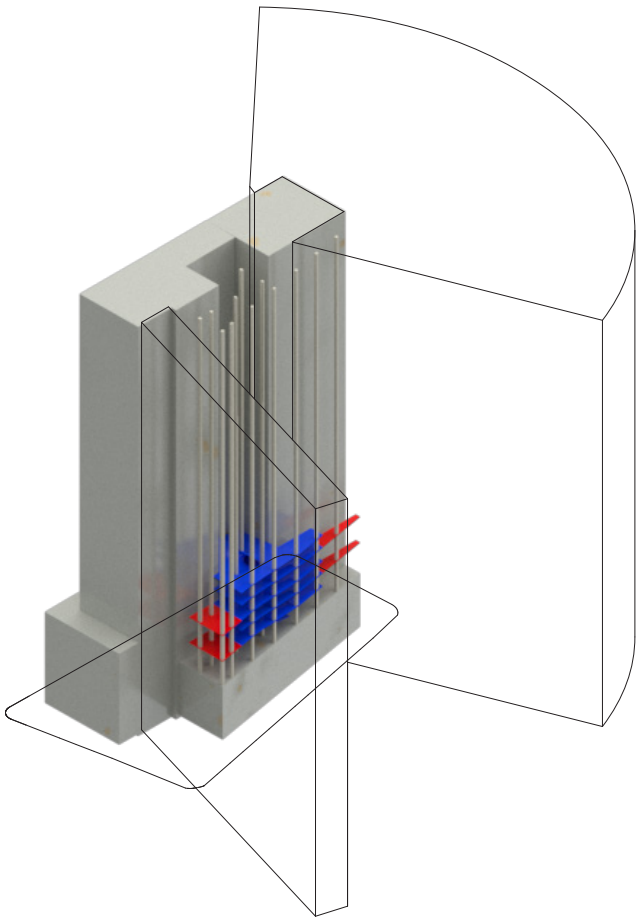


Fig. 7.15 Centralised focus of space using reduced horizontal space with double height areas

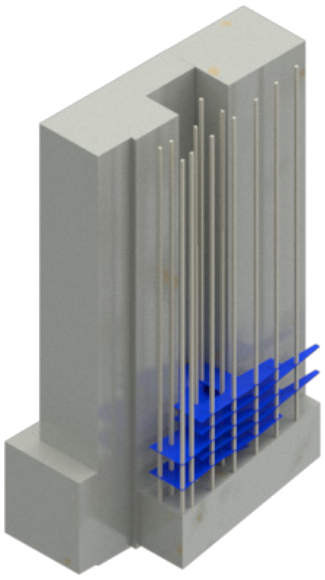


Fig. 7.16 Free flowing ramp connecting different areas

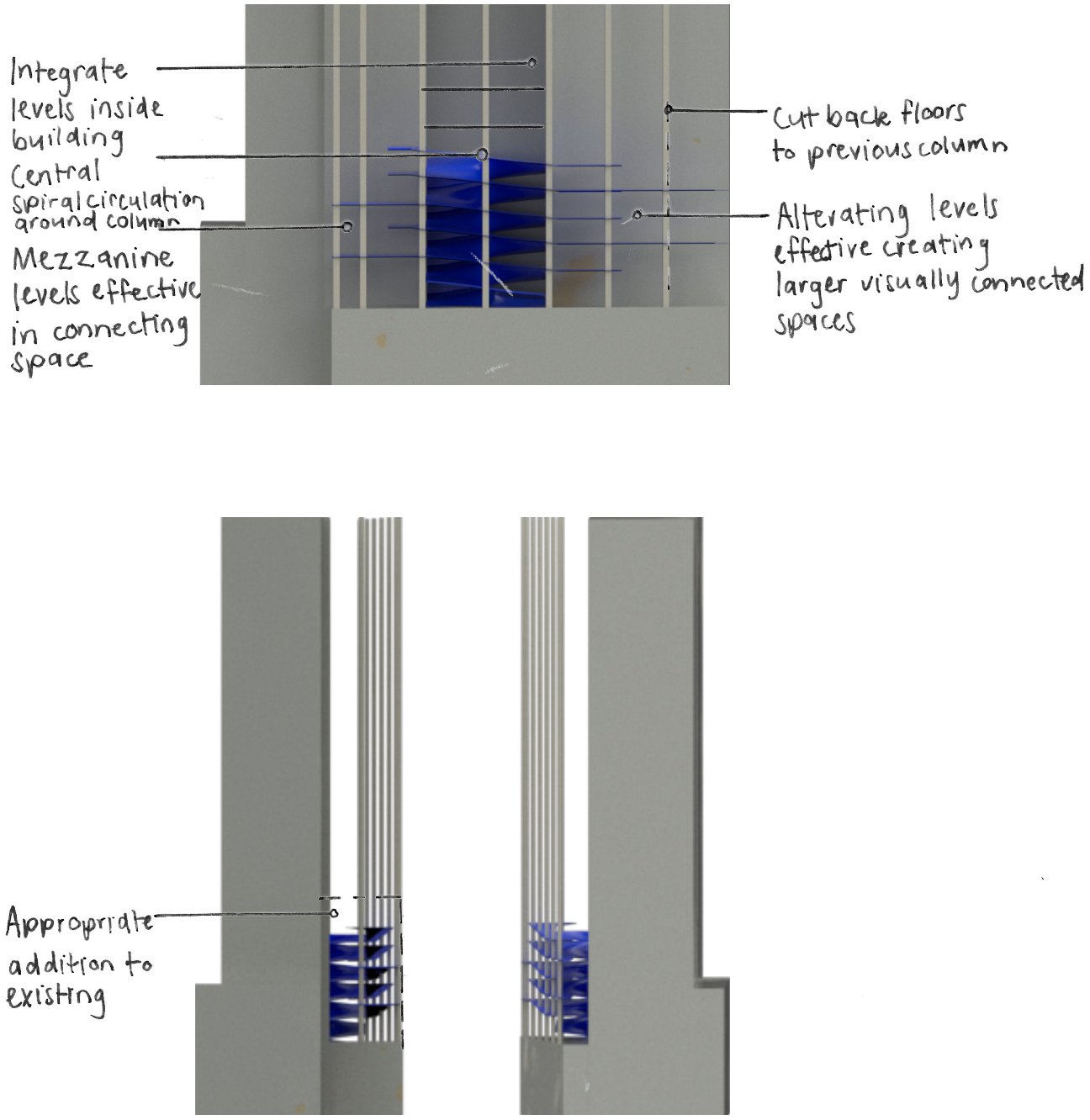


Fig. 7.17 Massing in relation to existing building

Massing Experiment 4 - Reflection

Further exploring how mezzanine levels could be used to connect the spaces and create a variety of space types and sizes is something to consider with further development. The massing experiment is the most successful against the design framework, being consistent across the criteria and balancing addressing the connectivity and adaptive re-use framework (see fig. 7.18). Massing experiment 4 is still conceptual requiring more development towards a design outcome to evidence addressing the design framework more strongly. Further development is needed in working with the existing modules, organisation grid and demonstrating how the spaces might work and their flexibility.

Fig. 7.19 demonstrates the successful central circulation dispersing out to different areas. Fig. 7.20 gives a general idea of the amount of space provided and the location of the large main areas. These are highlighted with blue crosses which are consistently distributed throughout the floors. Many of these areas connect to each other - shown by the blue connection lines. The areas without blue crosses are identified as being less usable.

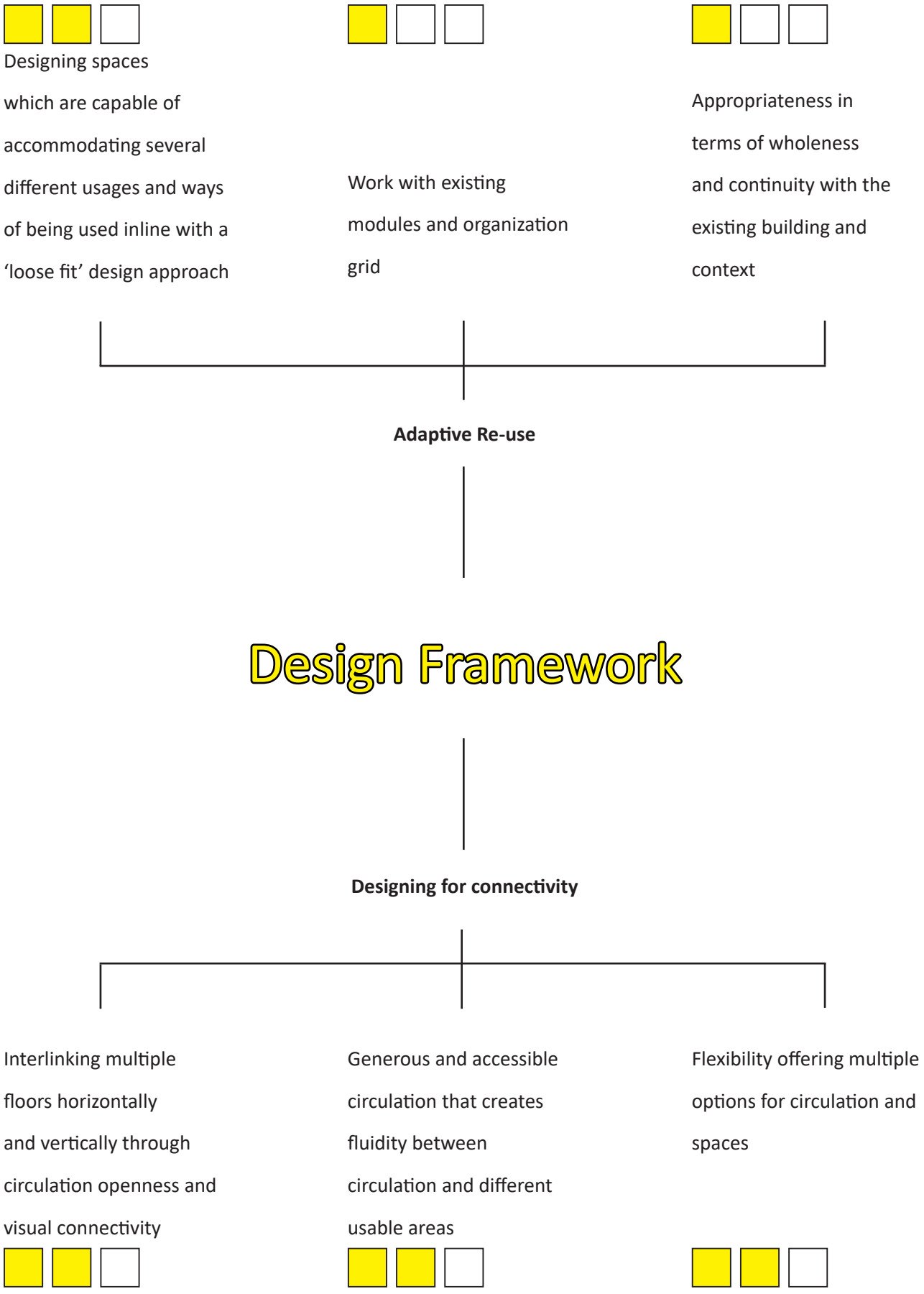


Fig. 7.18 Design framework evaluated against massing experiment 4

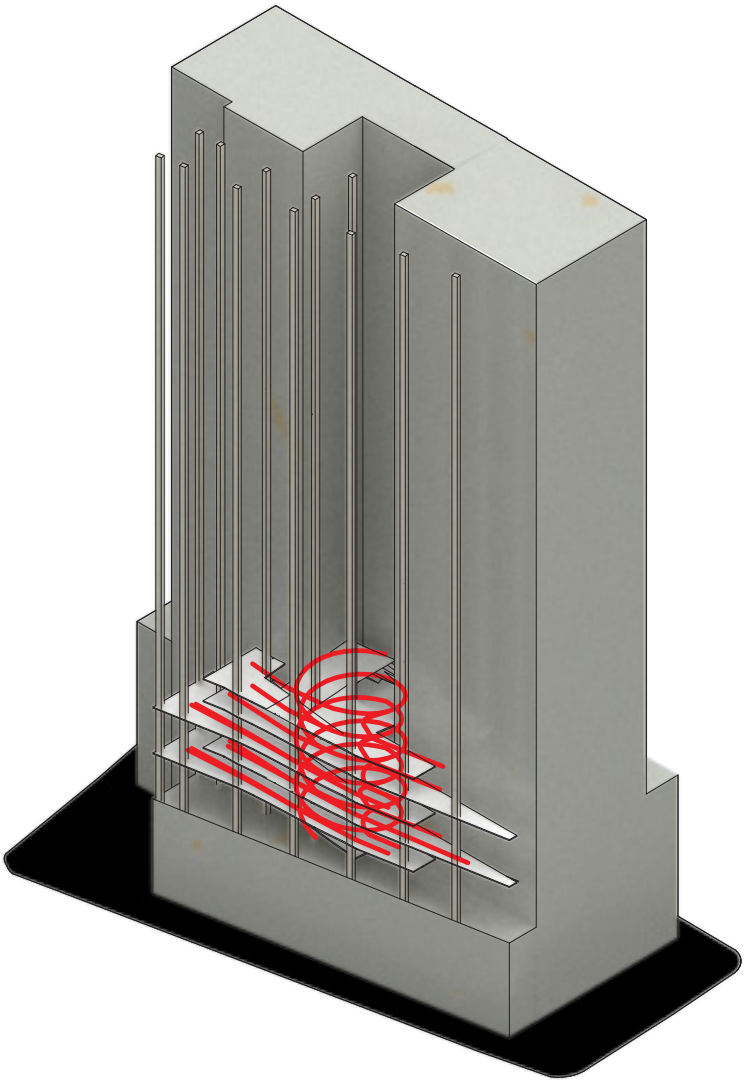


Fig. 7.19 Circulation analysis- massing experiment 4

Key

= 49m² - Larger main spaces

= 4m² - Smaller areas

= Visual or physical connections between main areas

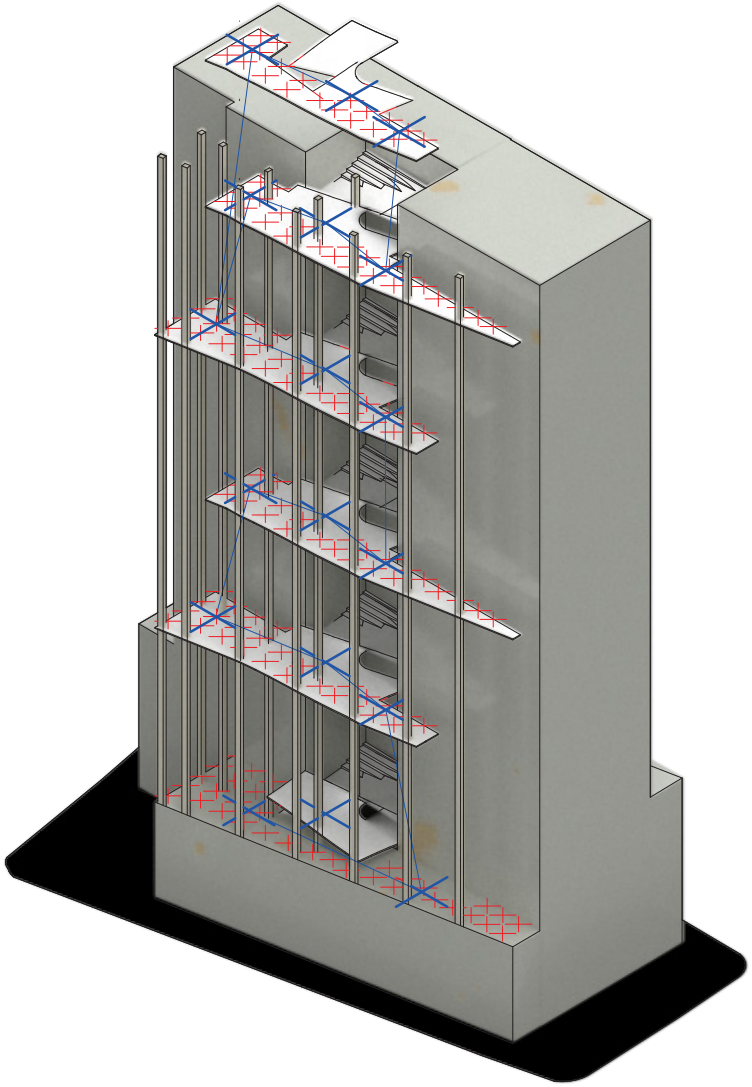


Fig. 7.20 Space and connectivity analysis- massing experiment 4

7.3 Design Development

Massing experiment 4 showed progress against the design framework, it was acknowledged that this concept needed more focussed development. Further iteration focuses on the process of reflection. Three-dimensional development was continued for its usefulness in exploring the connection between different levels and is valuable for this research which is concerned with social space for occupation. This method of creating visuals of the areas gives an indication as to what spaces will feel like, their proportions, and how they can be used. This combination of working methods aims to develop a more comprehensive response which addresses the design framework.

Fig 7.21 shows massing experiment 4 in comparison to fig. 7.22. The later is more refined from the process of reflection. The main changes, seen in fig. 7.23 and fig. 7.24 are the addition of stairs to connect the mezzanine spaces as well as a change in columns for transparency. The central ramp continues past the top floor to connect in additional levels which can overlook the goings on. Further discussion is on fig. 7.23 & 7.24.

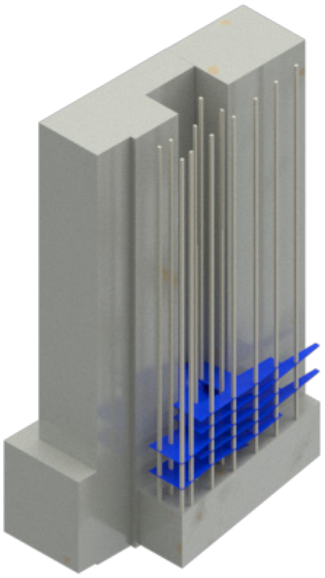


Fig. 7.21 Previous massing experiment

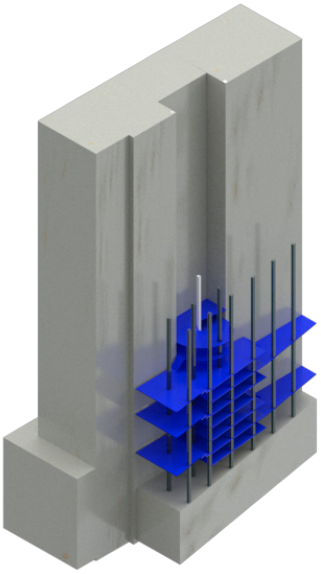
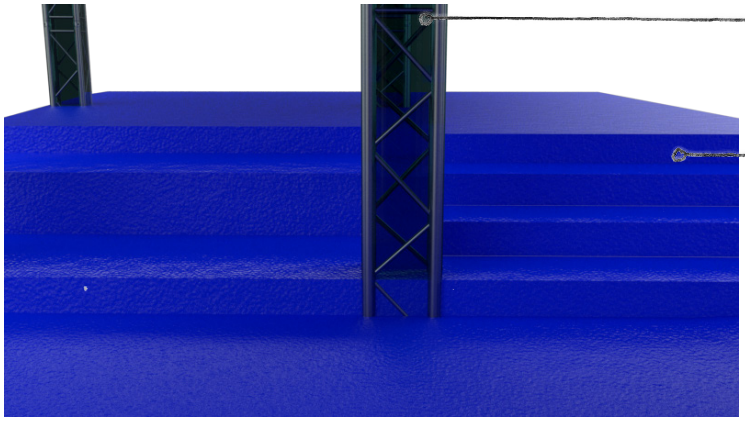
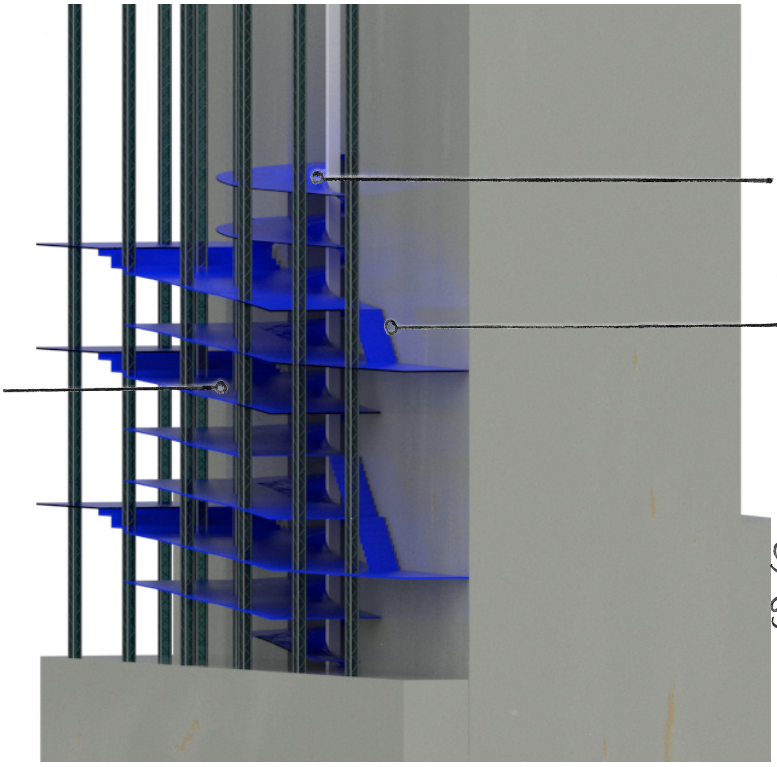


Fig. 7.22 Refined floor usage based on analysis





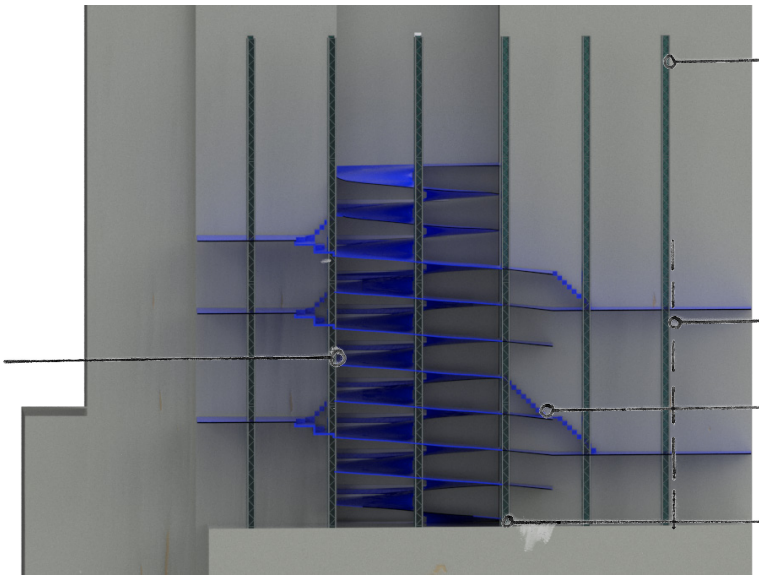


Fig. 7.23 Massing in relation to existing building

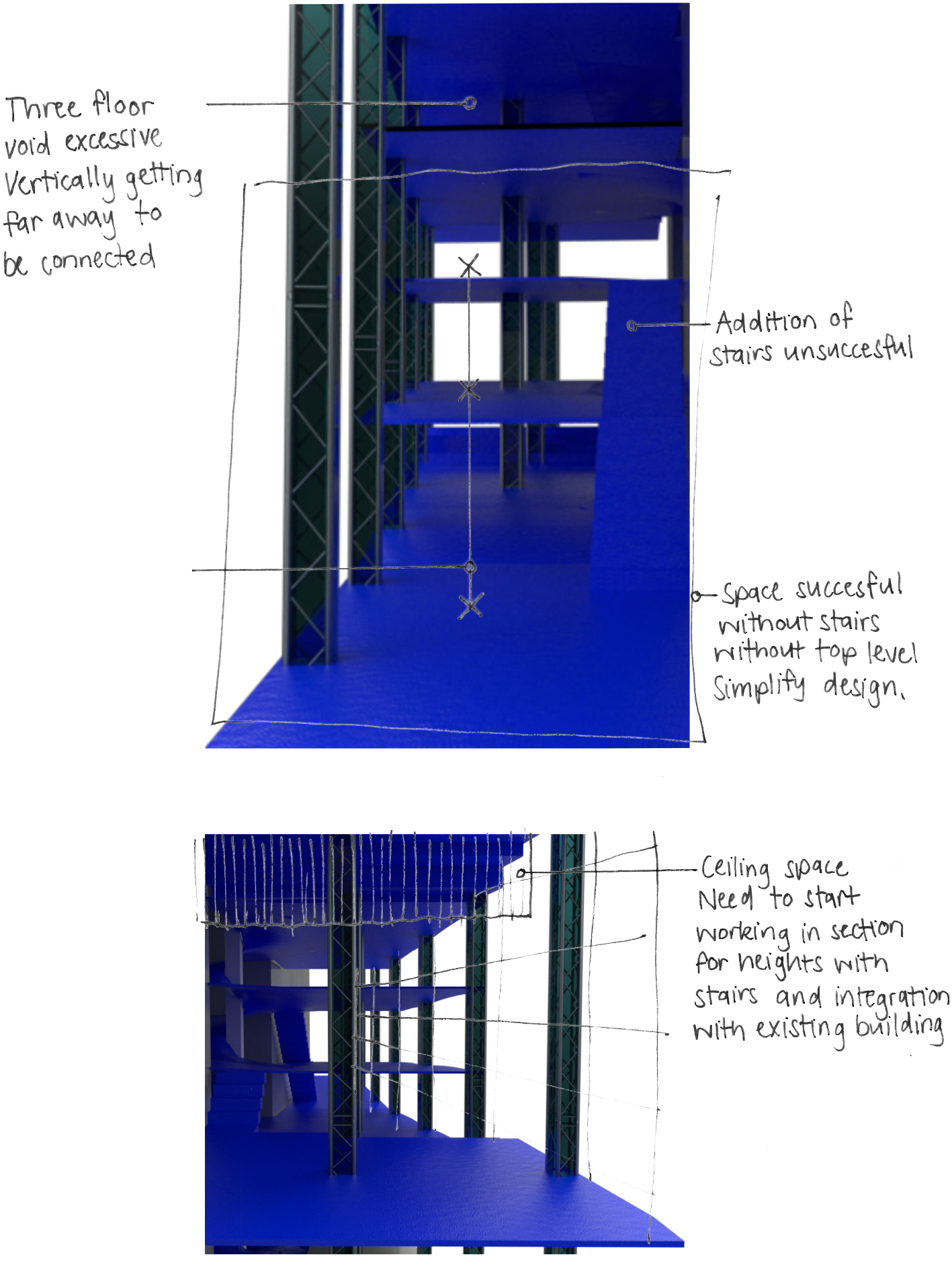


Fig. 7.24 Massing in relation to existing building front elevation

Iteration - Reflection

Fig 7.23 shows the strong main circulation centralised in between the existing and proposed addition. The diagram also shows the circulation along the lengths of the floor levels. In the centre this is sloped following the slope of the central ramp. This needs to be flat with stairs to make the area more usable. Fig. 7.24 shows where the larger spaces for use are. Between these areas are where steps will be located to flatten the floor area and have informal divisions in the space where smaller more inviting areas make up larger areas as explored in section 6.0.

The circulation diagram (fig. 7.25) shows an unresolved issue at the base of the ramp where it cannot continue as there will not be access underneath, this needs further focus. Fig. 7.25 compared to fig. 7.19 shows a greater level of connectivity with more blue lines showing connections between areas.

Fig. 7.27 -7.29 address the flexibility of the spaces and the different ways these could be used. Fig. 7.27 shows each floor individually as one larger area which provides seven spaces. Fig. 7.28 shows the smaller spaces influenced by the columns or stairs creating 22 separate areas. Fig. 7.29 show how the atriums and mezzanine floors could be used as one area creating three large spaces.

Fig. 7.30-7.33 show comparatively the number of sunlight hours on the façade as existing, to with the addition. The effected areas have been labelled A,B,C for discussion. Area A is to some extent effected. Section B shows the central area where the addition connects to the existing building. There are no apartments in area B so the effect on sunlight hours is not as critical. In section C there is also a reduction on sunlight hours to this area. Comparatively the changes are not drastic. The influence of the voids double height spaces has minimised the impact.

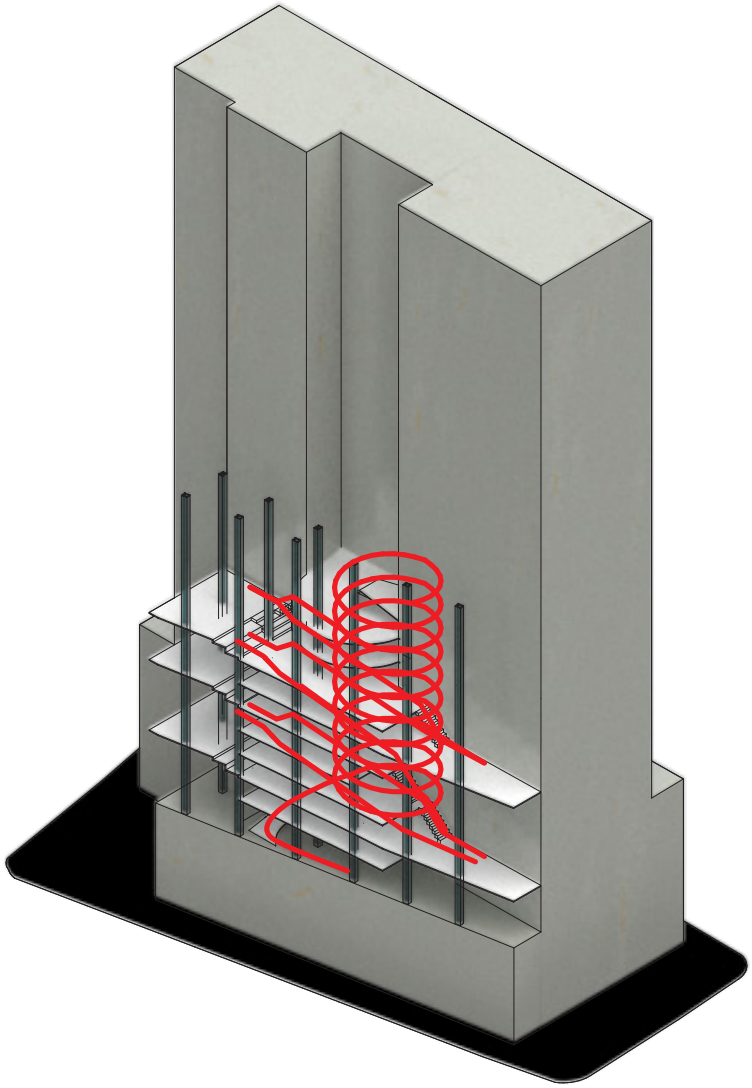


Fig. 7.25 Circulation analysis

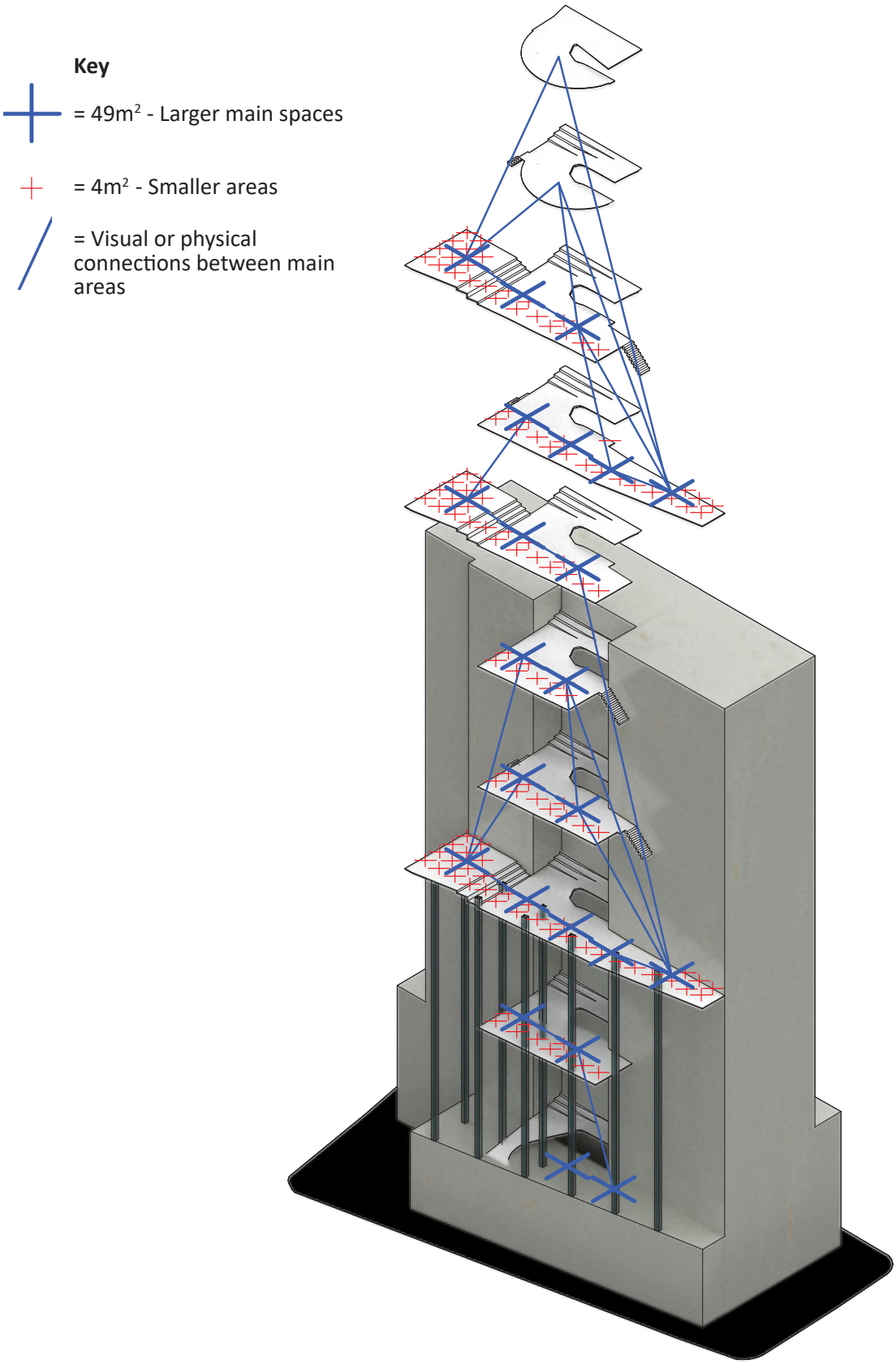


Fig. 7.26 Space and connectivity analysis

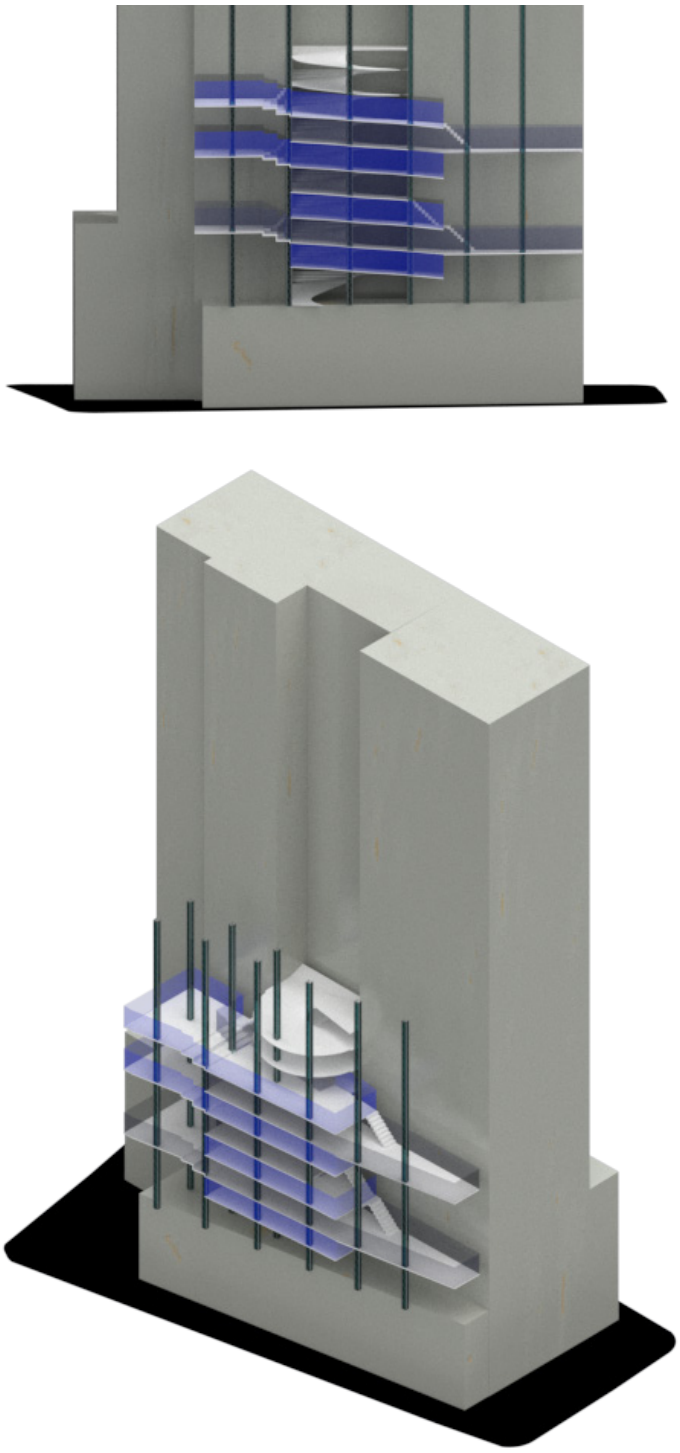


Fig. 7.27 Usage of space as whole individual levels

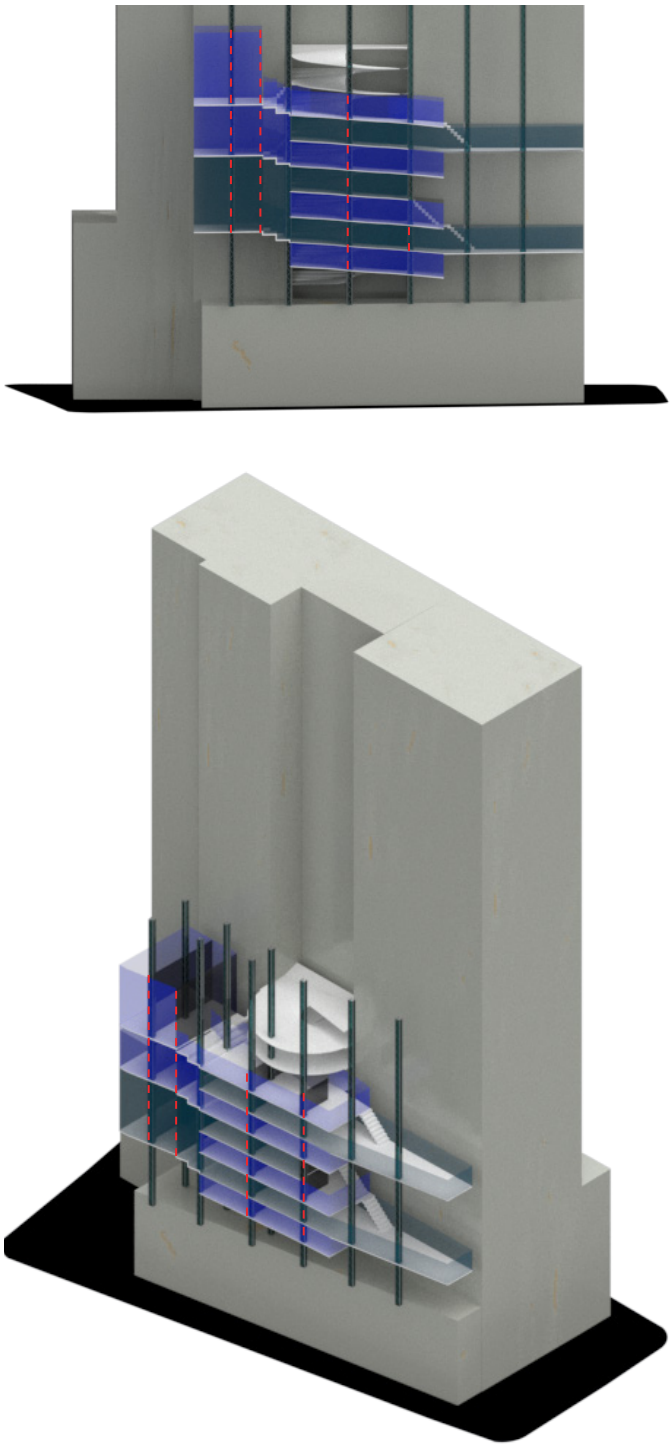


Fig. 7.28 Smaller breakdown of spaces influenced by columns and stairs

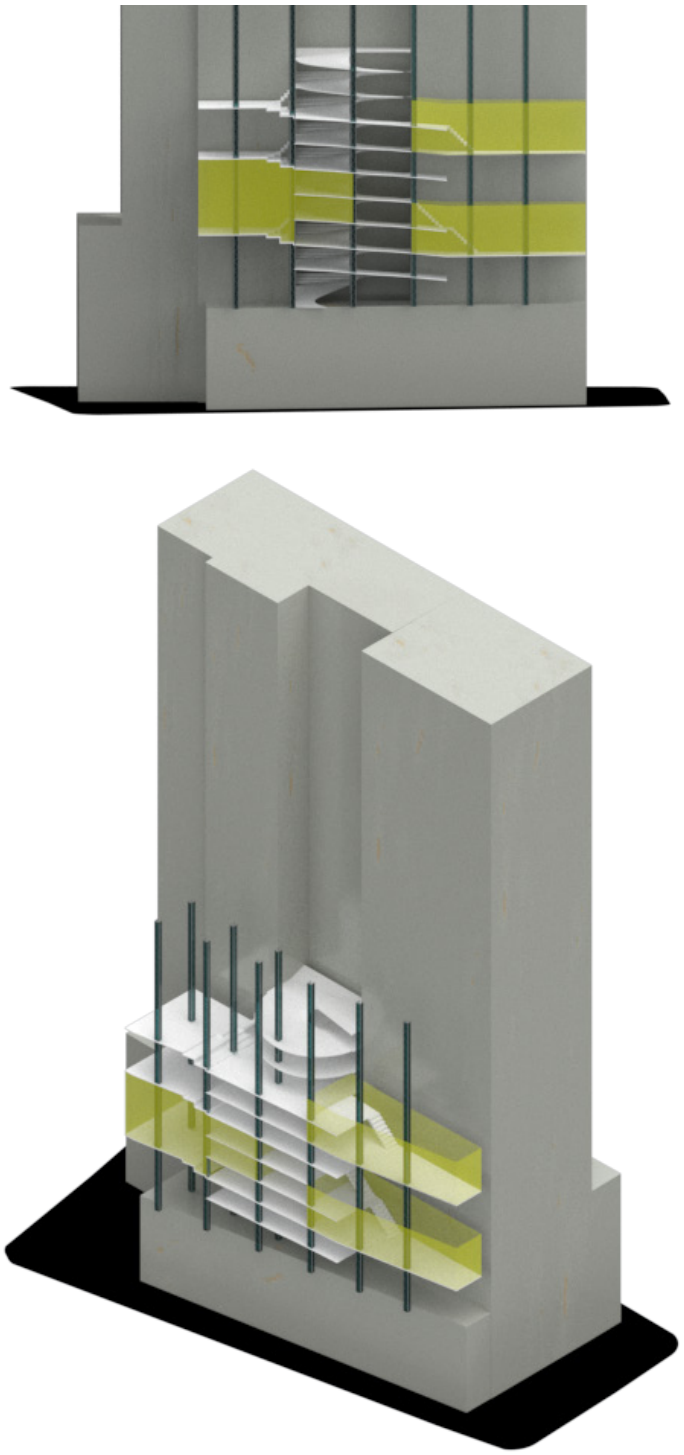


Fig. 7.29 Usage of multiple floors as a large area

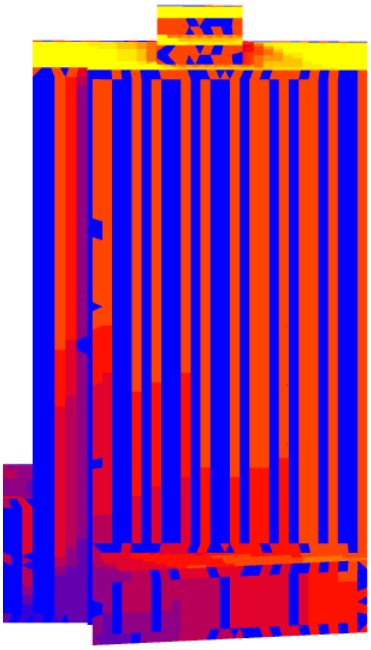


Fig. 7.30 Summer solstice sunlight hours analysis before extension

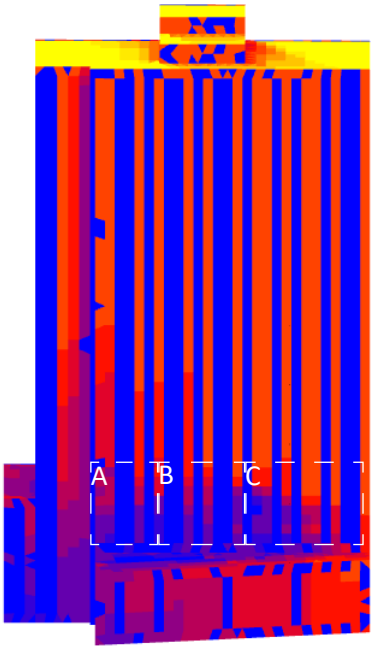
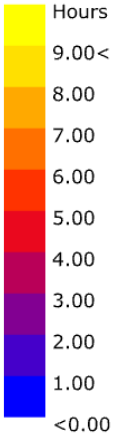


Fig. 7.31 Summer solstice sunlight hours analysis with extension



Between
7:00 am - 7:00 pm

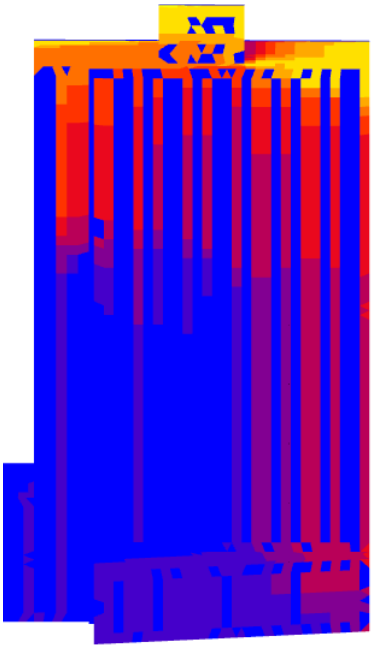


Fig. 7.32 Winter solstice sunlight hours analysis before

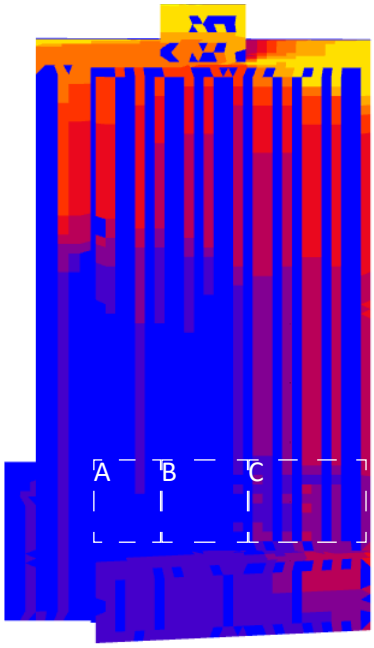


Fig. 7.33 Summer solstice sunlight hours analysis with extension

7.4 Preliminary Design Reflection

Exploring a range of massing ideas was appropriate in not setting a concept then developing it to make it work with the existing parameters. Different circulation options, planning and envelope options were tested, and their effect reflected upon. Exploring the concepts through massing allowed the existing building and addition to effect each other and develop the outcome through the iterative process. The exploration through massing and reflection came to an outcome which could be considered a suitable solution by comparing to other options and the design framework. Initially massing was intended as a quick method to explore different ideas, however this may not have been efficient. This method was beneficial in working to scale with the existing building (its floor levels, dimensions) and seeing the proportions of the concept to the existing building.

The nature of working both horizontally and vertically in planning as suggested in section 2.4 was realised when massing and diagramming in an axonometric view. This was effective for deigning for connectivity while plans and sections were more suitable for the adaptive reuse framework in working with the existing module and organisation grid. Initially working through axonometric lead to a solution which was more strongly designed focussing on connectivity. Later in introducing new forms of analysis helped to develop the design.

Rendering these areas through the view of people in the space will further help to develop how common spaces might be reinterpreted to increase social connection between occupants.

8.0

Developed design

8.0 Developed Design

The literature review as well as case studies have informed the direction of this research. The site research and building analysis informed further design work which was then iterated and refined to arrive at a more developed design. The developed design is a culmination of the previous work undertaken in this research through design project. The more developed design is represented visually through axonometric drawings to see the appropriateness of the reinterpretation in context (section 8.1). Floor plans are used to clearly show the planning, and atriums (section 8.2). Sections cut through the existing architecture, and proposed addition to show the level of integration (section 8.3). Along with internal visuals (section 8.4) of selected spaces which address and support the design framework to aid in evaluating the work. The presentation of this research through a developed design is critical to addressing the research question. The reinterpretation is demonstrated through presenting the developed design. This chapter is then ended with a reflection against the design framework and objectives of this thesis.

The developed design addresses the research question demonstrating

how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city

8.1 Design in context

Fig. 8.0 pictures 200 Water Street as a figure ground map showing the density and surroundings. Fig. 8.1 shows the selected building within its vertical context with the proposed addition in red. The addition is a simple mass which fits within the footprint of the existing building below. Fig. 8.2 shows the added floors and circulation informed by the existing grid. The addition does not follow the presubscribed order and uniformity of space planning. It allows free flow of movement. The floors are interlinked and encourage greater connectivity. There is no hierarchy instead offering a variety of spaces which can be used for a multiplicity of purposes and adapt to changing space requirements.

The building through adaptive re-use provides opportunities to connect the residents in line with the more contemporary planning discussed in the case studies chapter 5.0, to support the inclusive social values of society now. Fig 8.3 explains the space planning decisions and the resulting potential of these spaces.

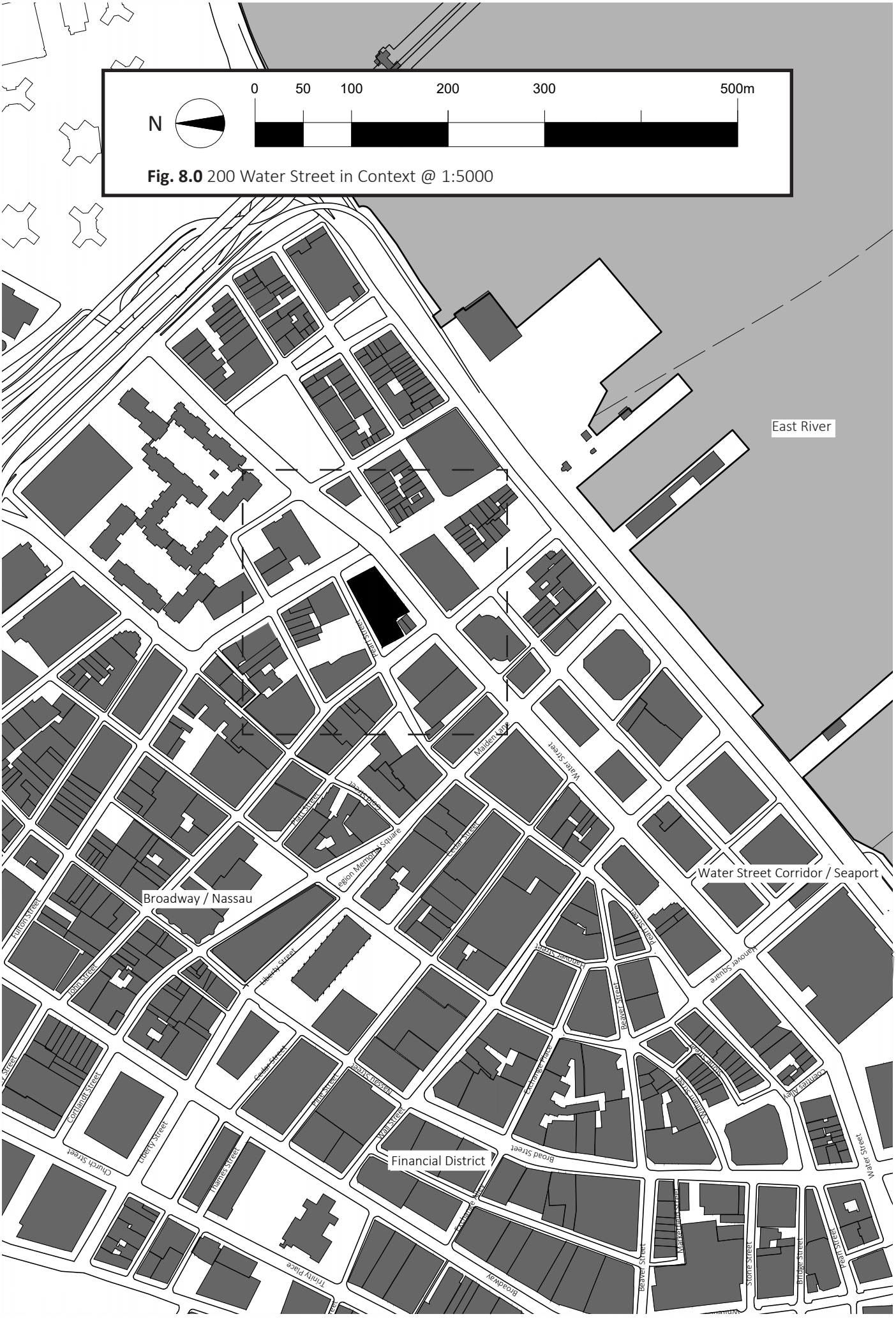


Fig. 8.0 200 Water Street in Context @ 1:5000

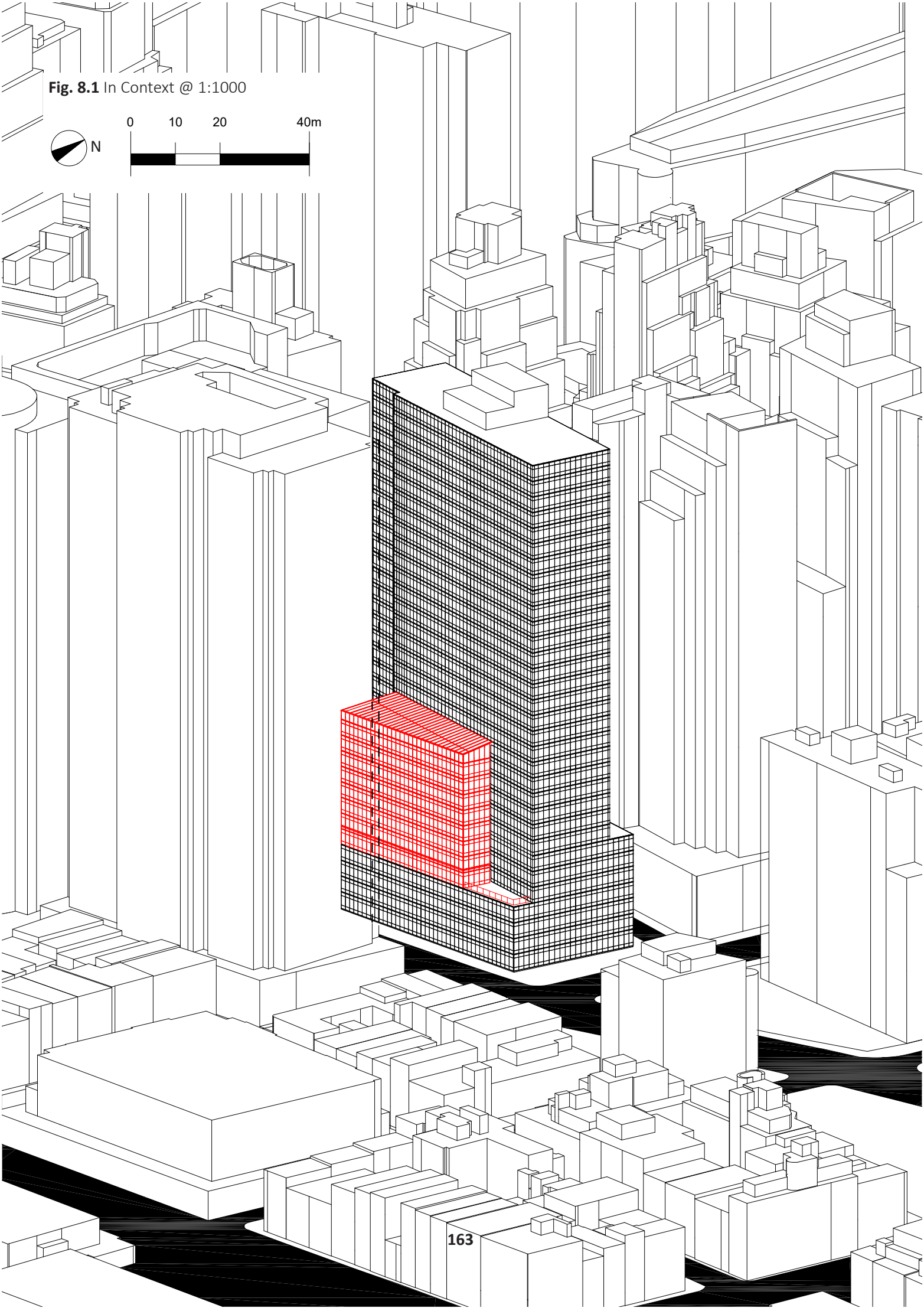
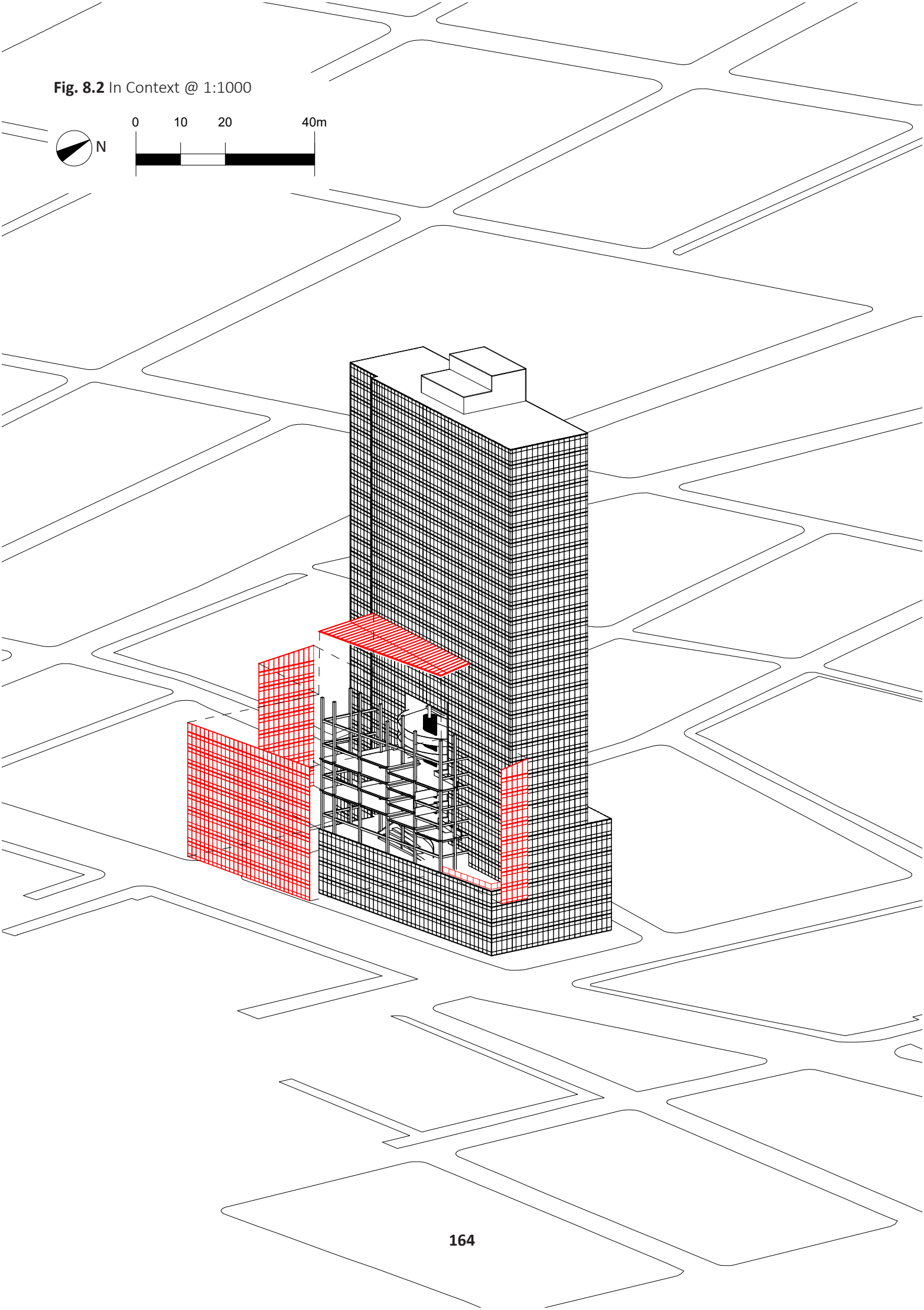
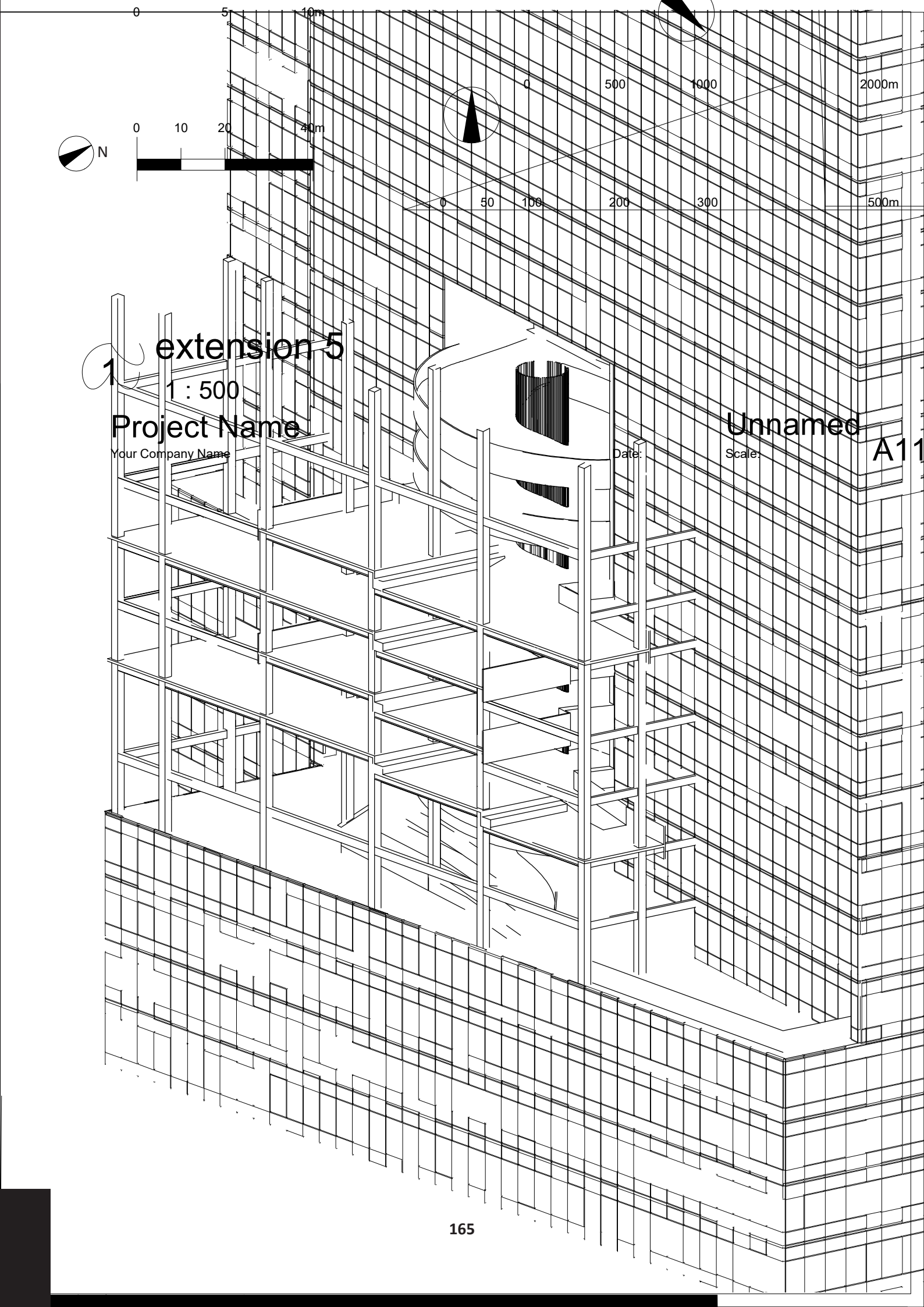


Fig. 8.1 In Context @ 1:1000

Fig. 8.2 In Context @ 1:1000

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Grand space with two levels of ramping over looking space and visually connecting other users. This space has the most direct sunlight out of the areas from the glazed roof above. The floor is intentionally cut back to allow sunlight into the level below. The grandeur of the space, has potential for holding events and get togethers. See fig. 8.30- 8.32 where this space is envisioned.

The top section receives good sunlight with a void above. The floor consists of a more open large area, connected down to a smaller intimate area, which makes up one larger space. This space might work well as a parent area looking down onto a childrens area below. This usage of space is depicted in fig. 8.26-8.29.

The most intimate space, made up of two smaller areas both connected visually to the floors below. A good vantage point to see what is going on, as a well connected smaller space.

The largest three tier level which is well connected visually and open to other floors. As the largest space this is ideal as a purely social space to be used freely. Its size allows for high occupancy, while the division of areas creates smaller more inviting spaces. This space being used as an overflow space by occupants is demonstrated in fig. 8.234-8.25.

This floor transitions in with the existing open space already provided to integrate with the building. The open design of the space allow for it to be developed further in the future to needs and requirements. The lack of development is influenced by limited information of the existing building to integrate with and inform the layout. The stair perhaps could be restricting.

Existing rooftop outdoor space integrated with the new addition.

8.2 Design Plans

Fig. 8.4 through to 8.19 show the floor plans in relation to the existing building at a scale of 1:500, as well as at 1:250 to give a better idea of the scheme including the location of beams. The addition is nine stories high and adds 830m^2 of flat usable new floor space (excludes existing adapted area and main ramp). Within the plans you can see the use of four modules labelled in fig. 8.20. These are arranged in different combinations on different levels with their arrangement focused on creating a variety of spaces and maximizing visual connections. The modules are influenced by the grid. But intentionally challenge the presubscribed regularity of the building.

Each floor which connects into the new addition provides communal toilets as well as open storage space to aid flexibility in catering to different uses. Furniture is indicative and can be manipulated and altered with aid of the storage area. The central spiral ramp is consistent through out each level, it is generous in size and flows around a central timber slated void. This ramp is intended to be a quality space, as it is of importance for physically connecting all levels. The general measurements of the areas are given in fig. 8.20.

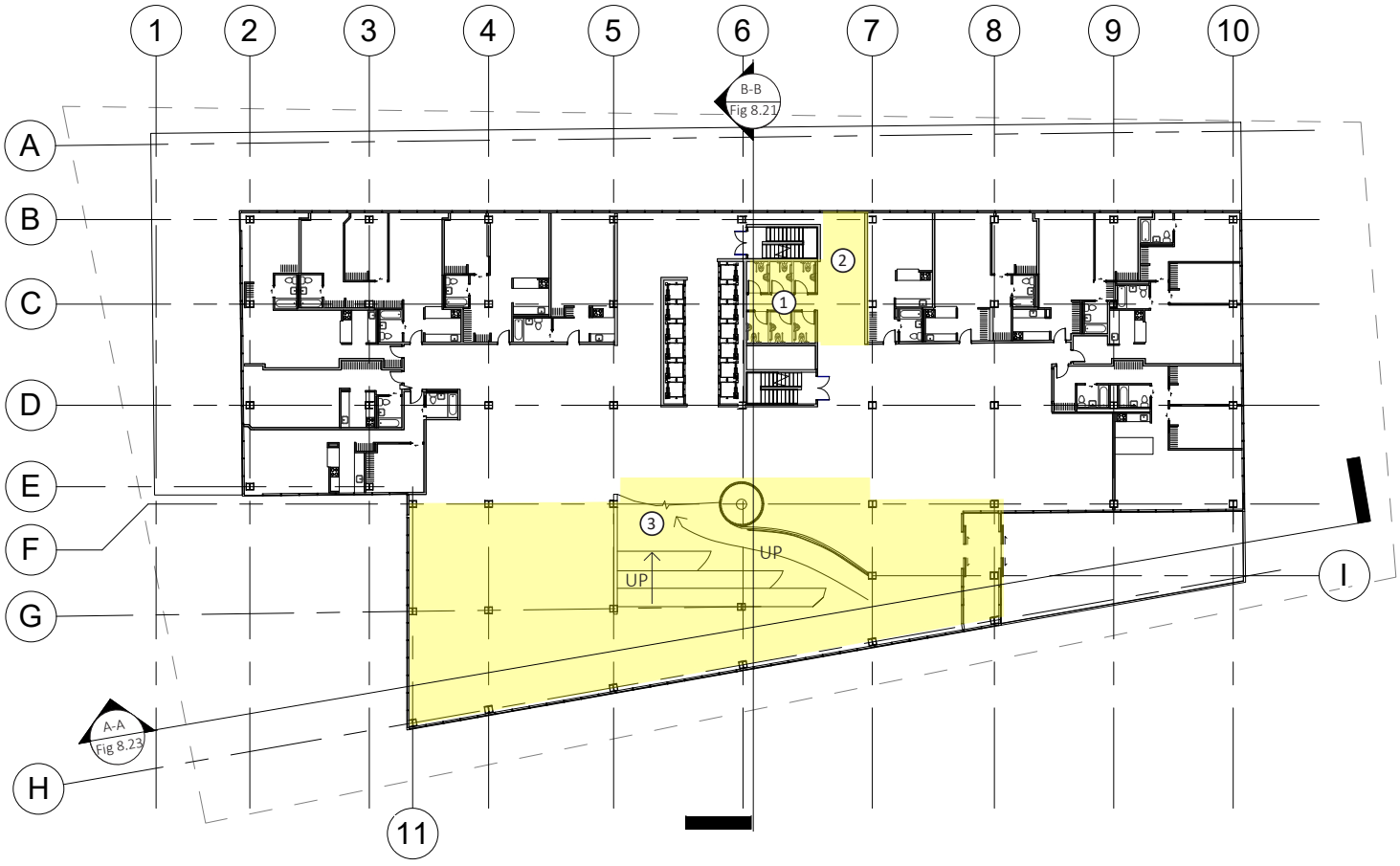
Key

① Communal toilets

② Open storage space

③ Central spiral ramp

Adapted from existing



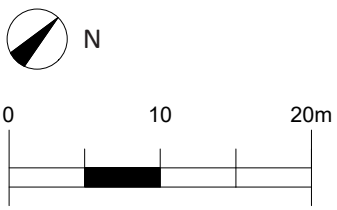


Fig. 8.4 Level 9a @ 1:500

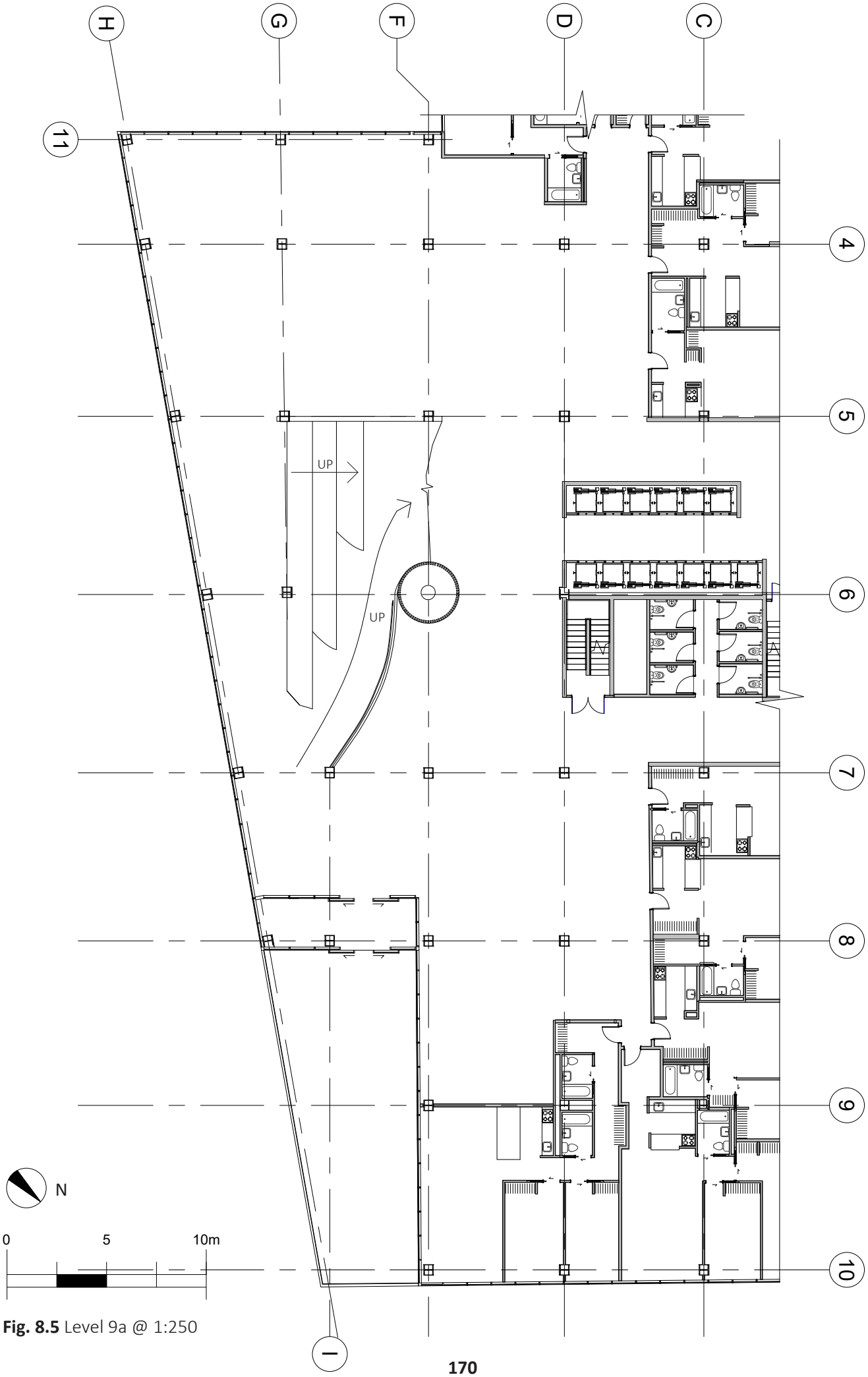


Fig. 8.5 Level 9a @ 1:250

Key

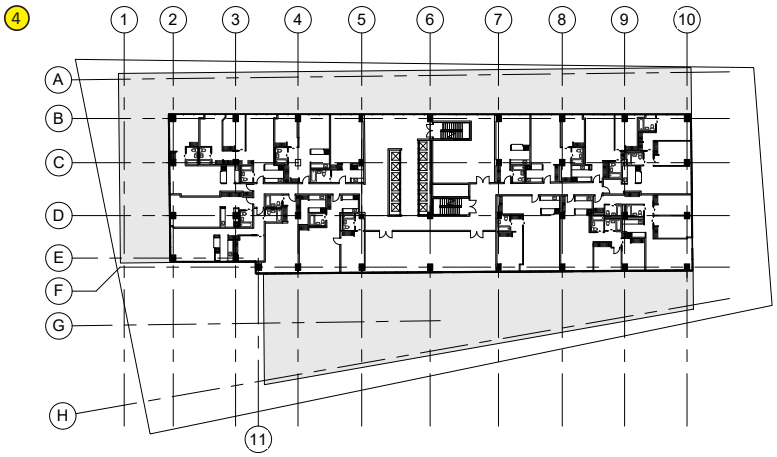
① Communal toilets

② Open storage space

③ Central spiral ramp

④ Existing typical floor plan for reference @ 1:1000

Adapted from existing



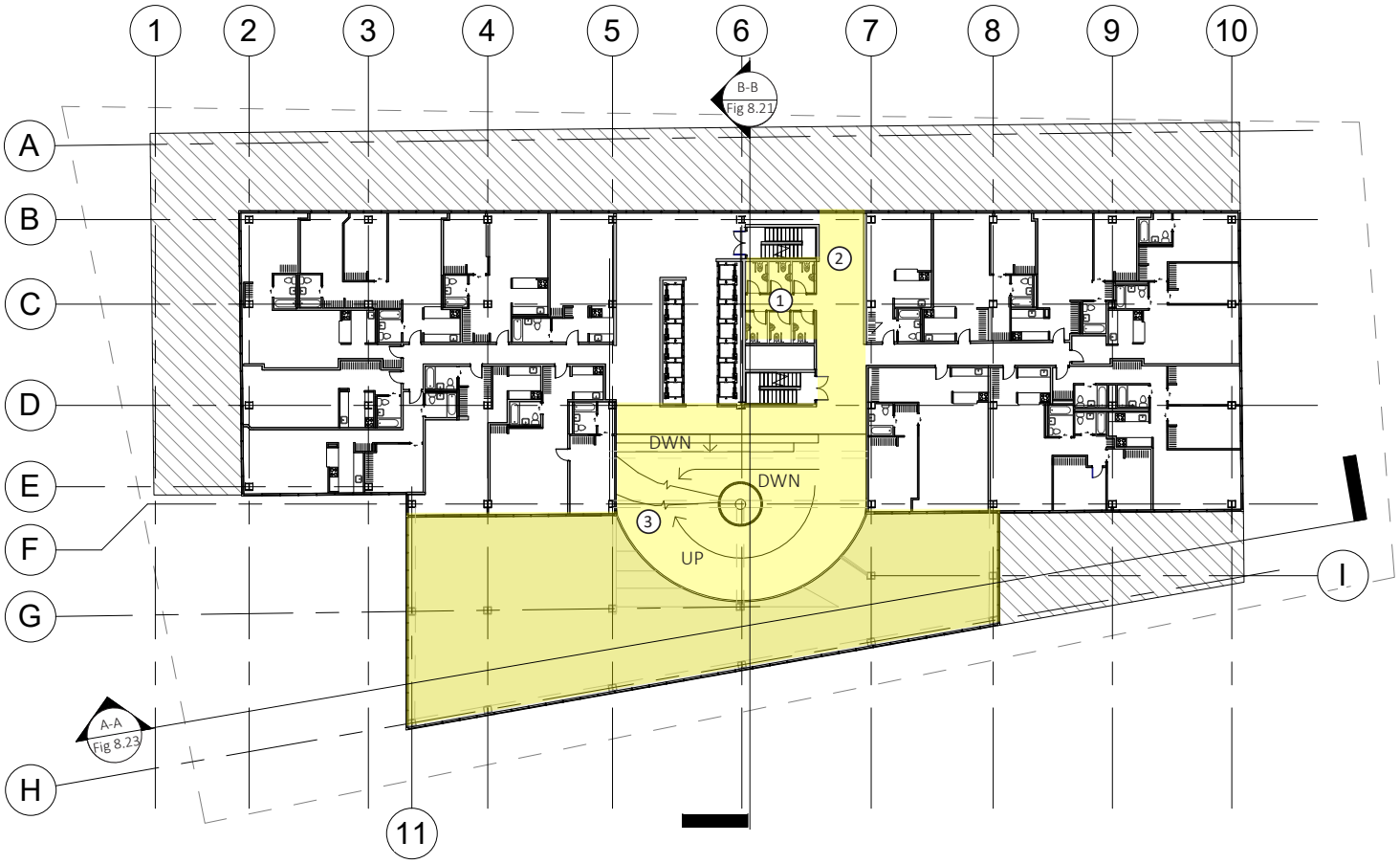


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Fig. 8.6 Level 10a @ 1:500

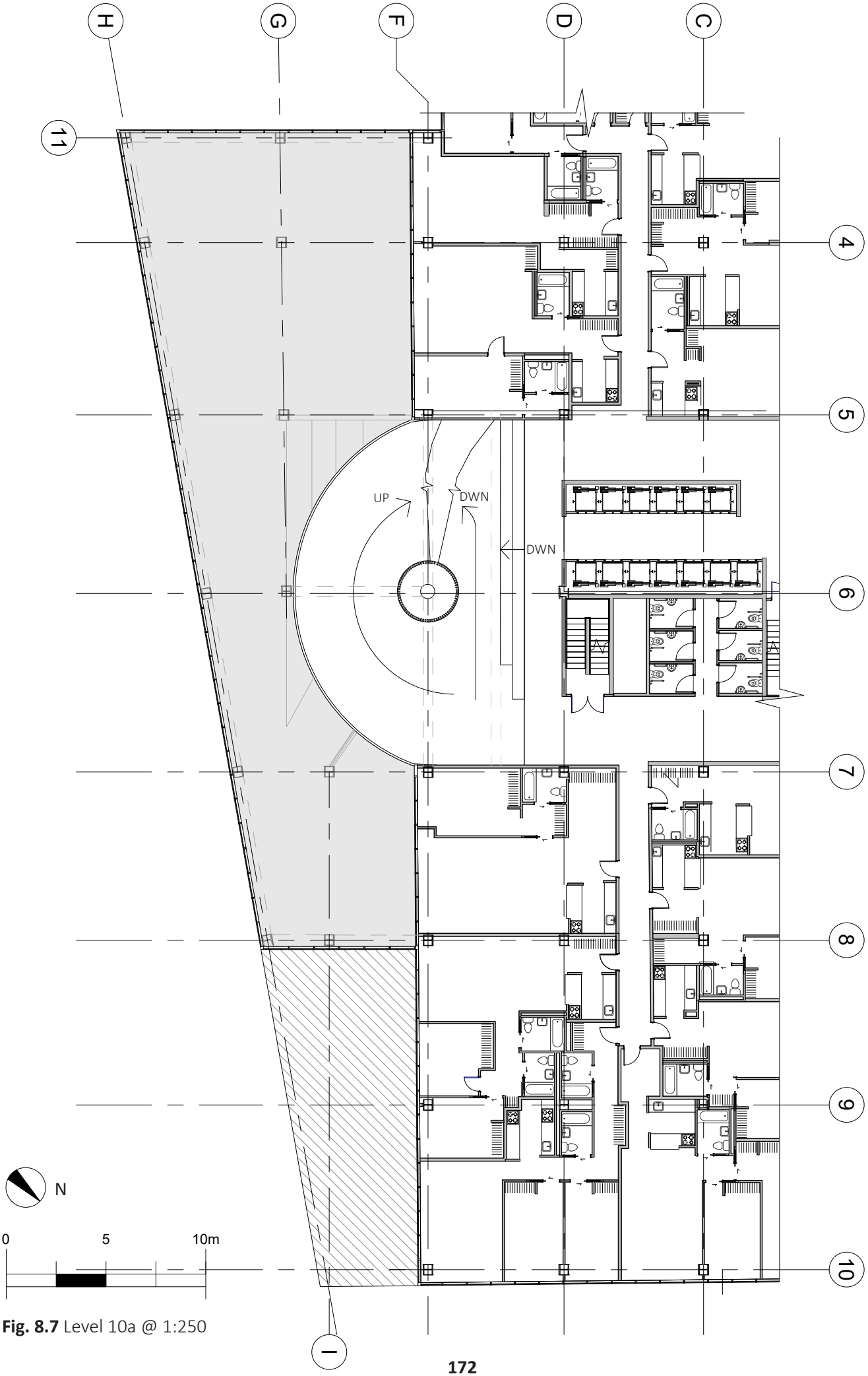


Fig. 8.7 Level 10a @ 1:250

Key

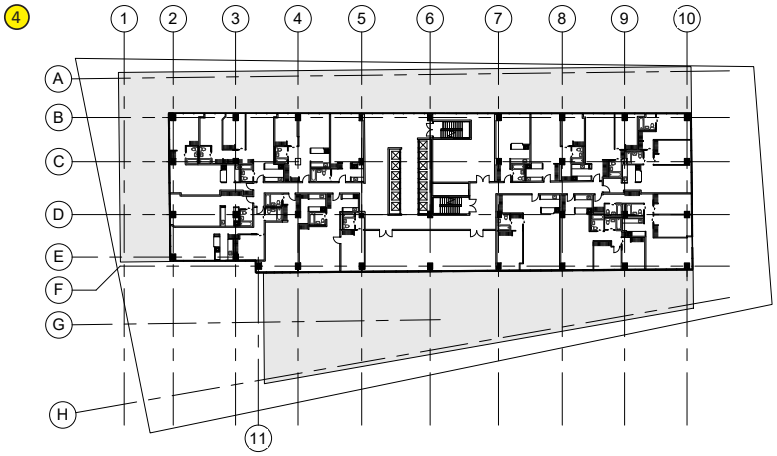
① Communal toilets

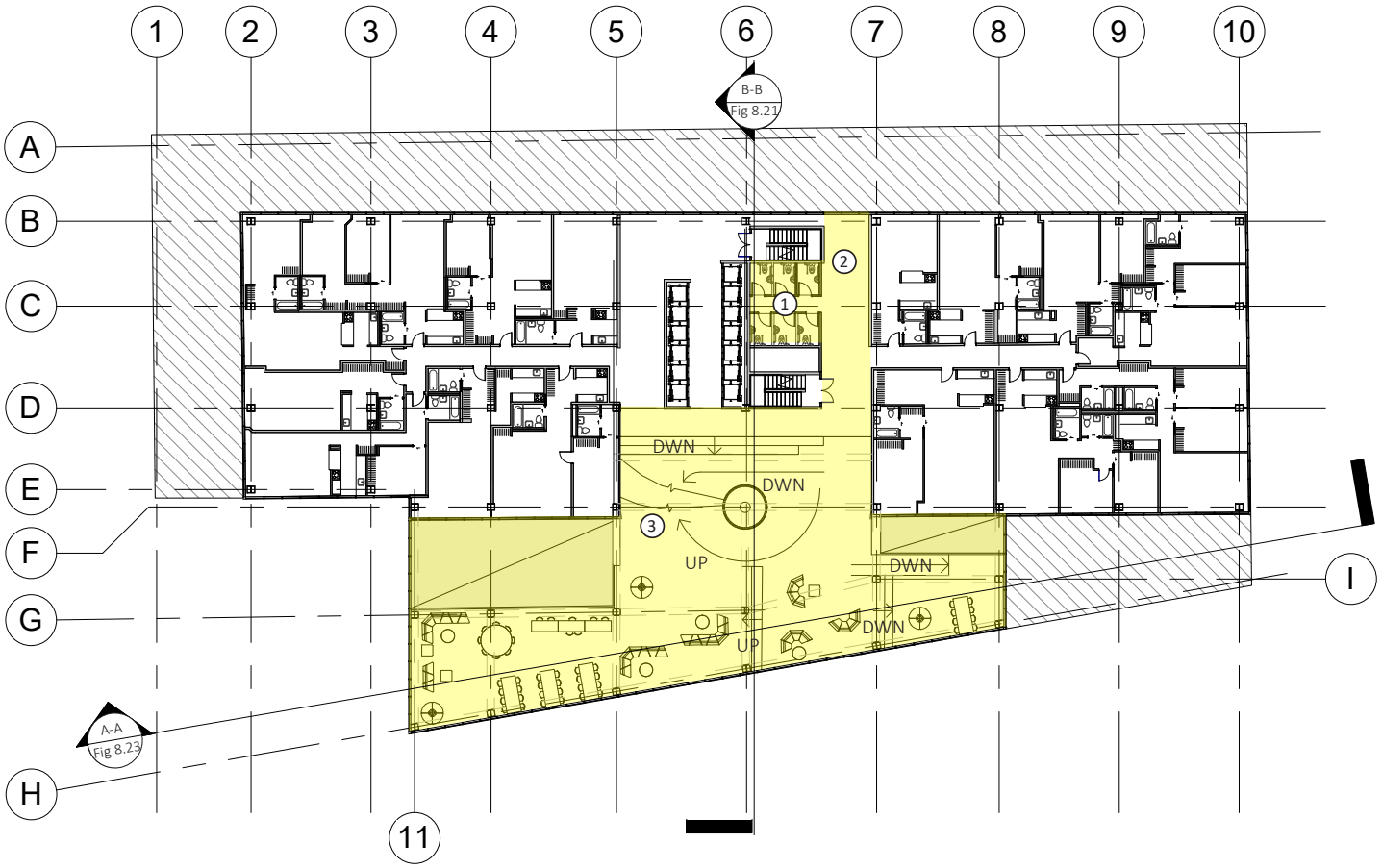
② Open storage space

③ Central spiral ramp

④ Existing typical floor plan for reference @ 1:1000

Adapted from existing





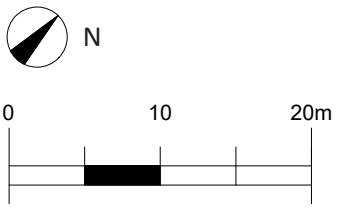


Fig. 8.8 Level 11a @ 1:500

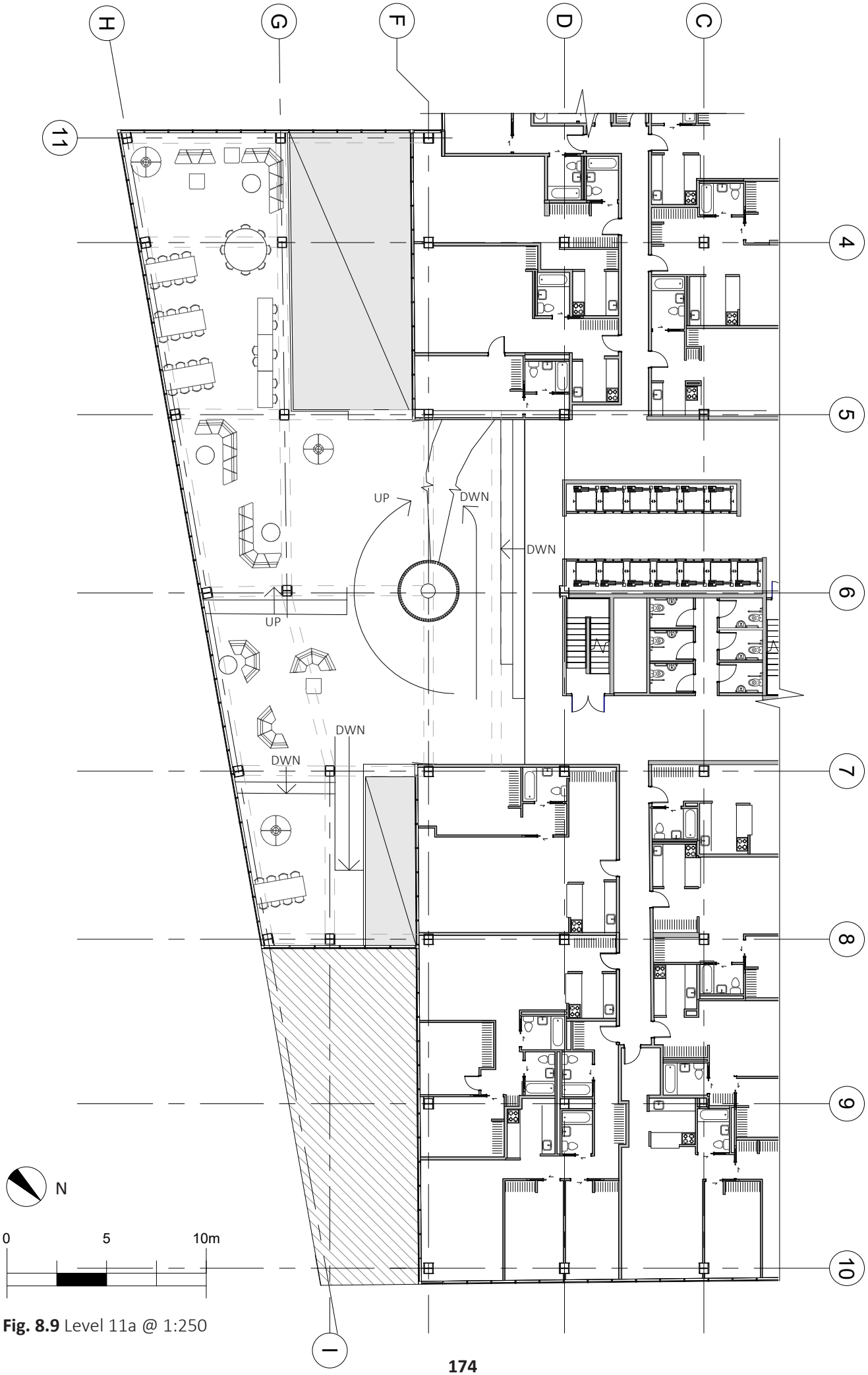


Fig. 8.9 Level 11a @ 1:250

Key

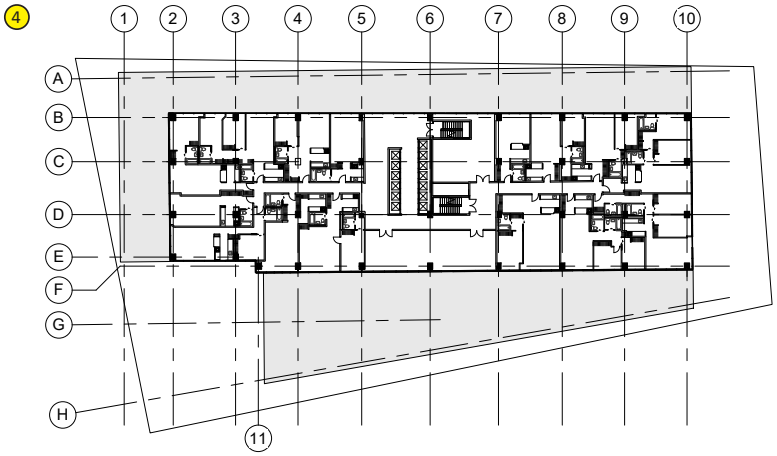
① Communal toilets

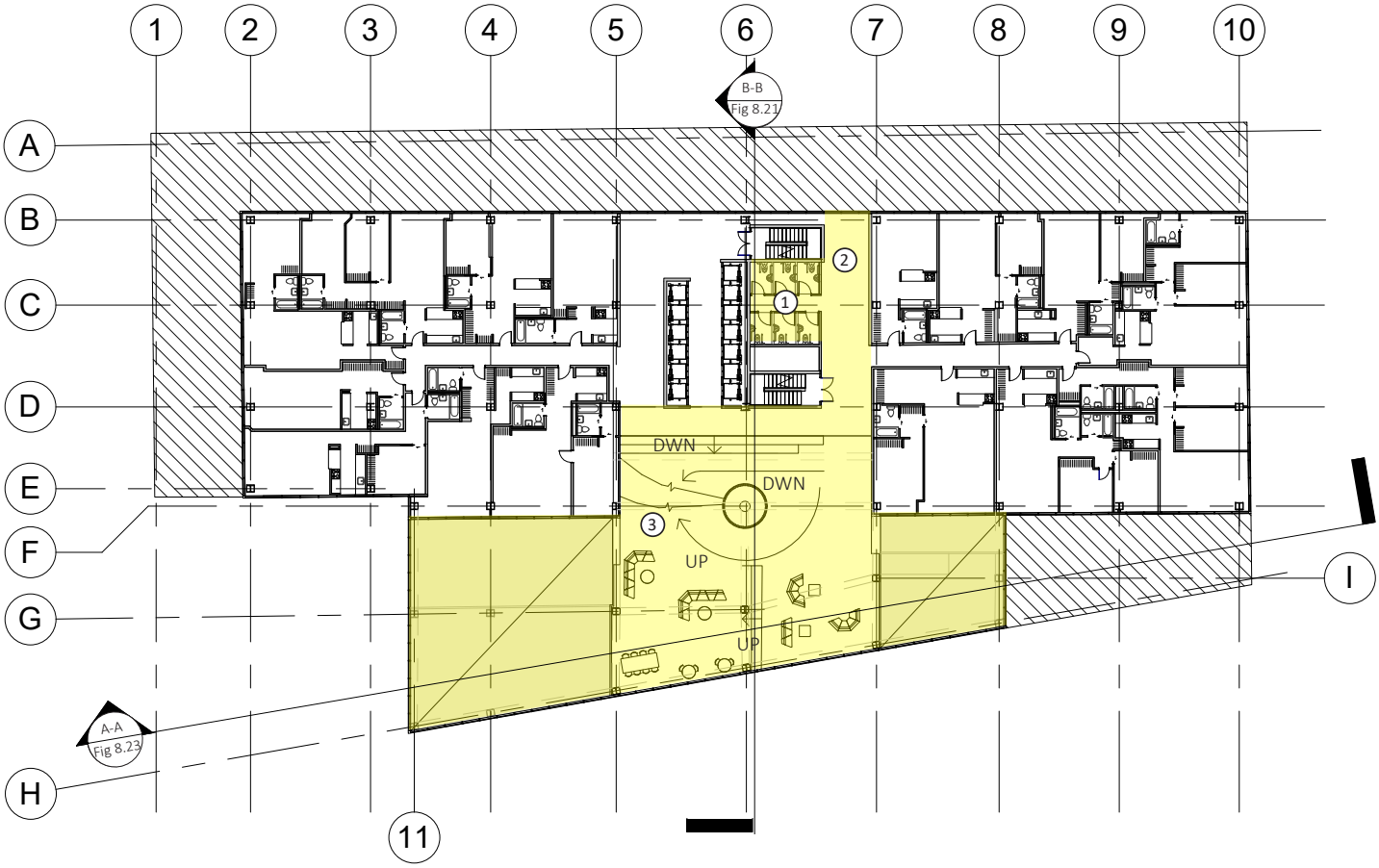
② Open storage space

③ Central spiral ramp

④ Existing typical floor plan for reference @ 1:1000

Adapted from existing





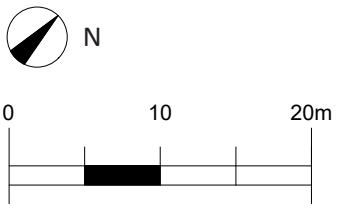


Fig. 8.10 Level 12a @ 1:500

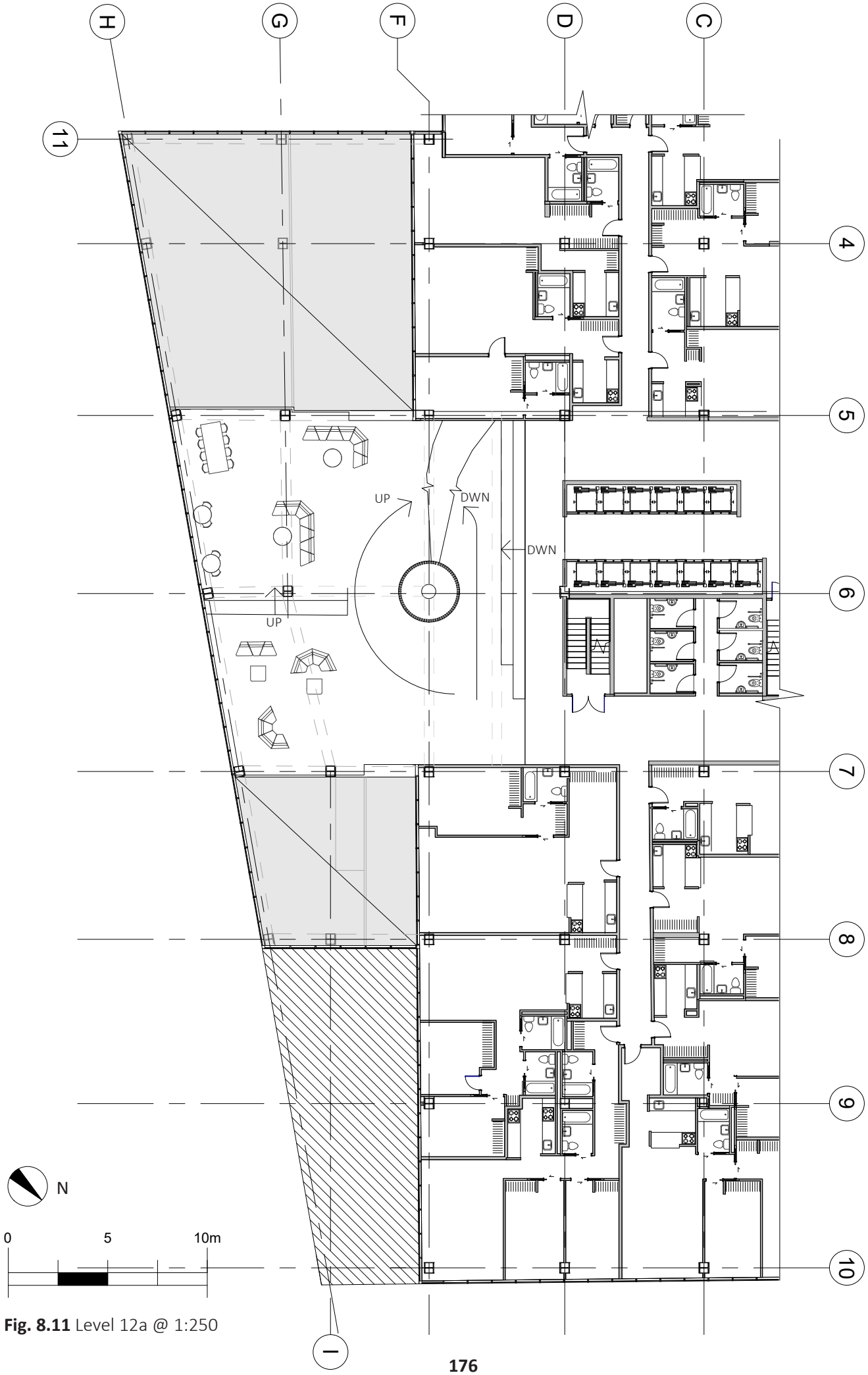
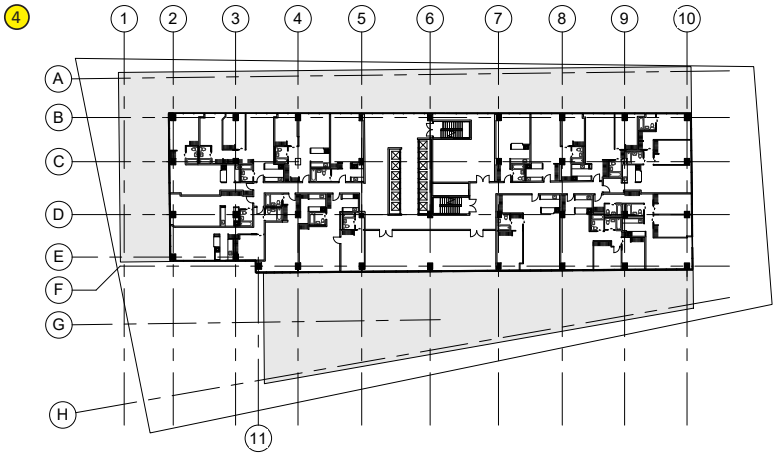


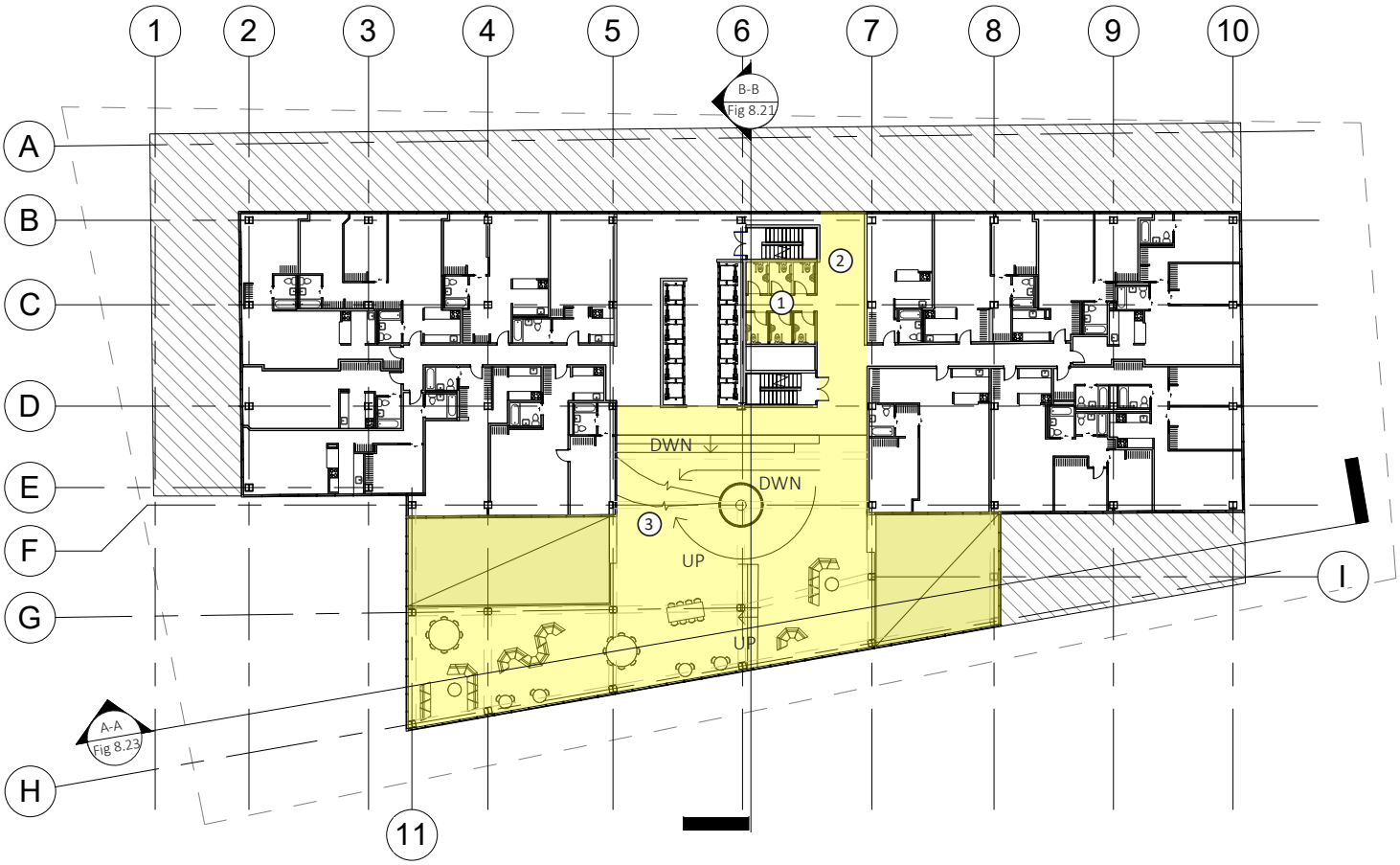
Fig. 8.11 Level 12a @ 1:250

Key

1. Communal toilets
2. Open storage space
3. Central spiral ramp
4. Existing typical floor plan for reference @ 1:1000

Adapted from existing





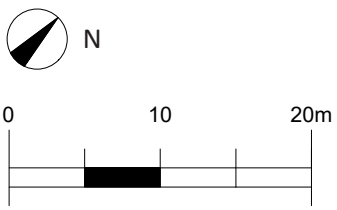


Fig. 8.12 Level 13a @ 1:500

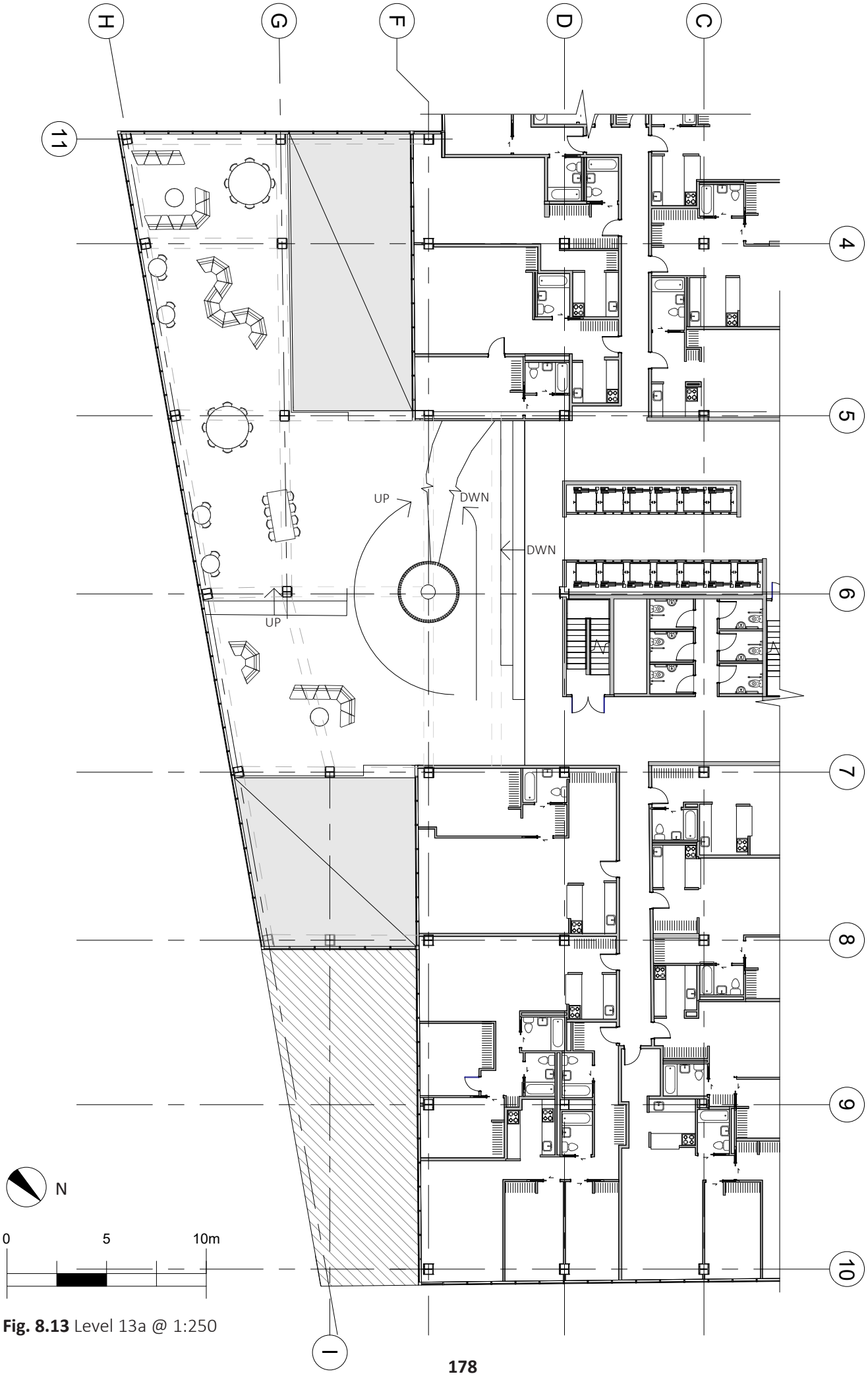


Fig. 8.13 Level 13a @ 1:250

Key

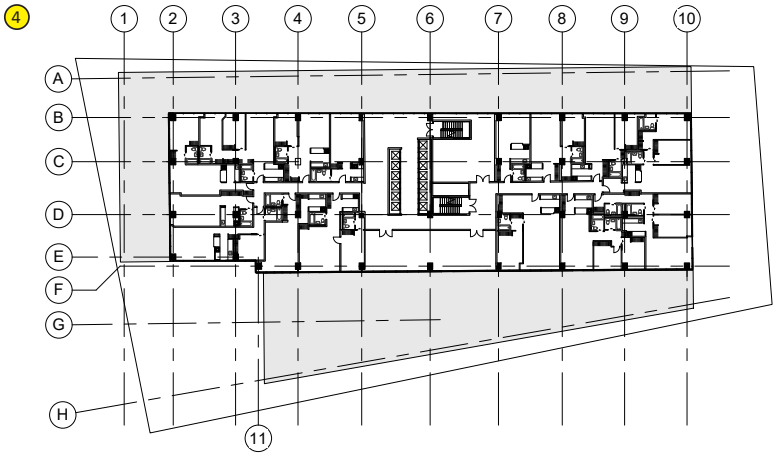
① Communal toilets

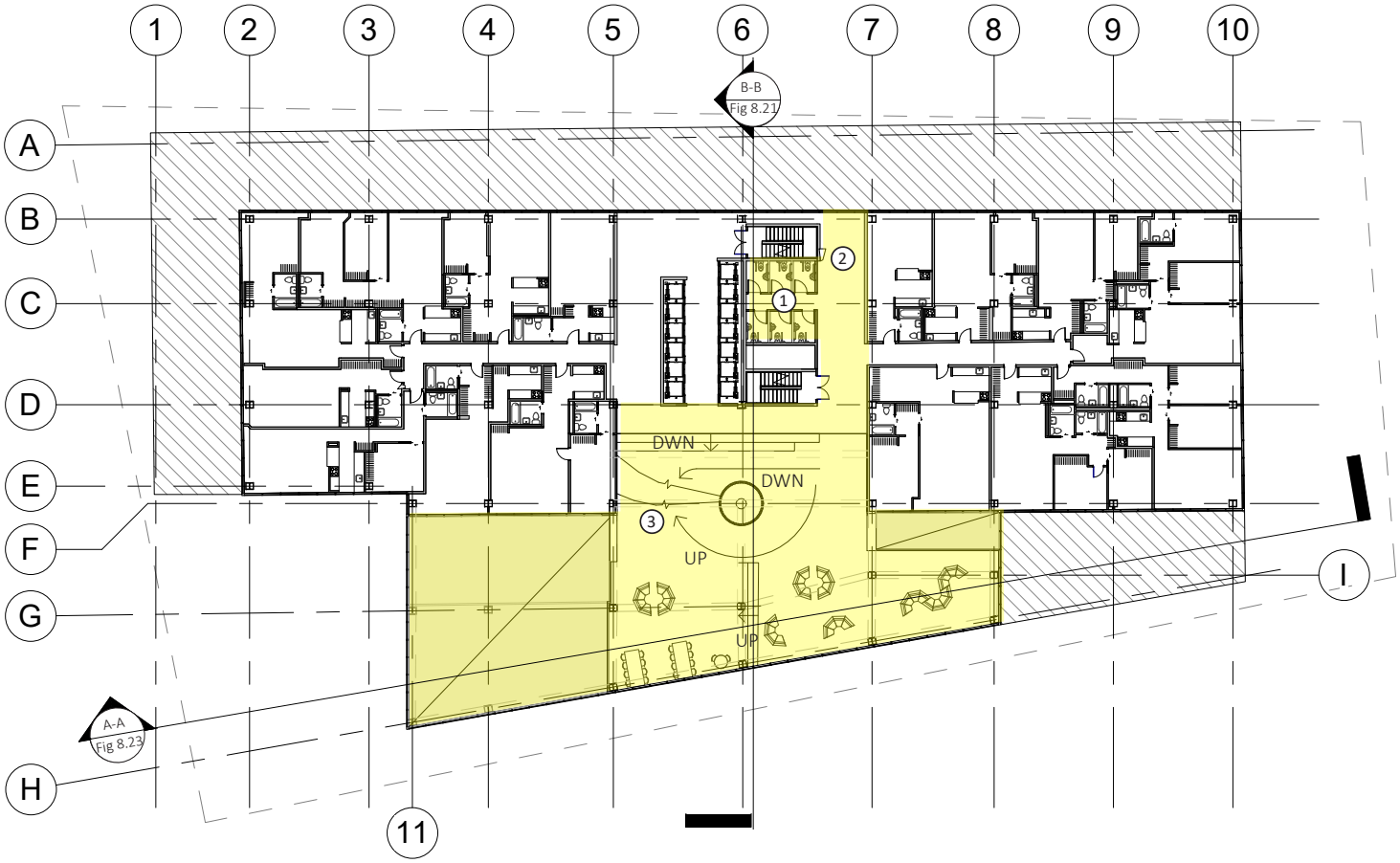
② Open storage space

③ Central spiral ramp

④ Existing typical floor plan for reference @ 1:1000

Adapted from existing





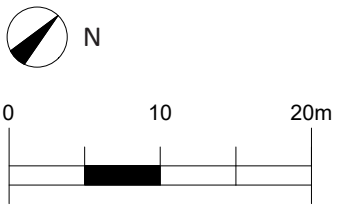


Fig. 8.14 Level 14a @ 1:500

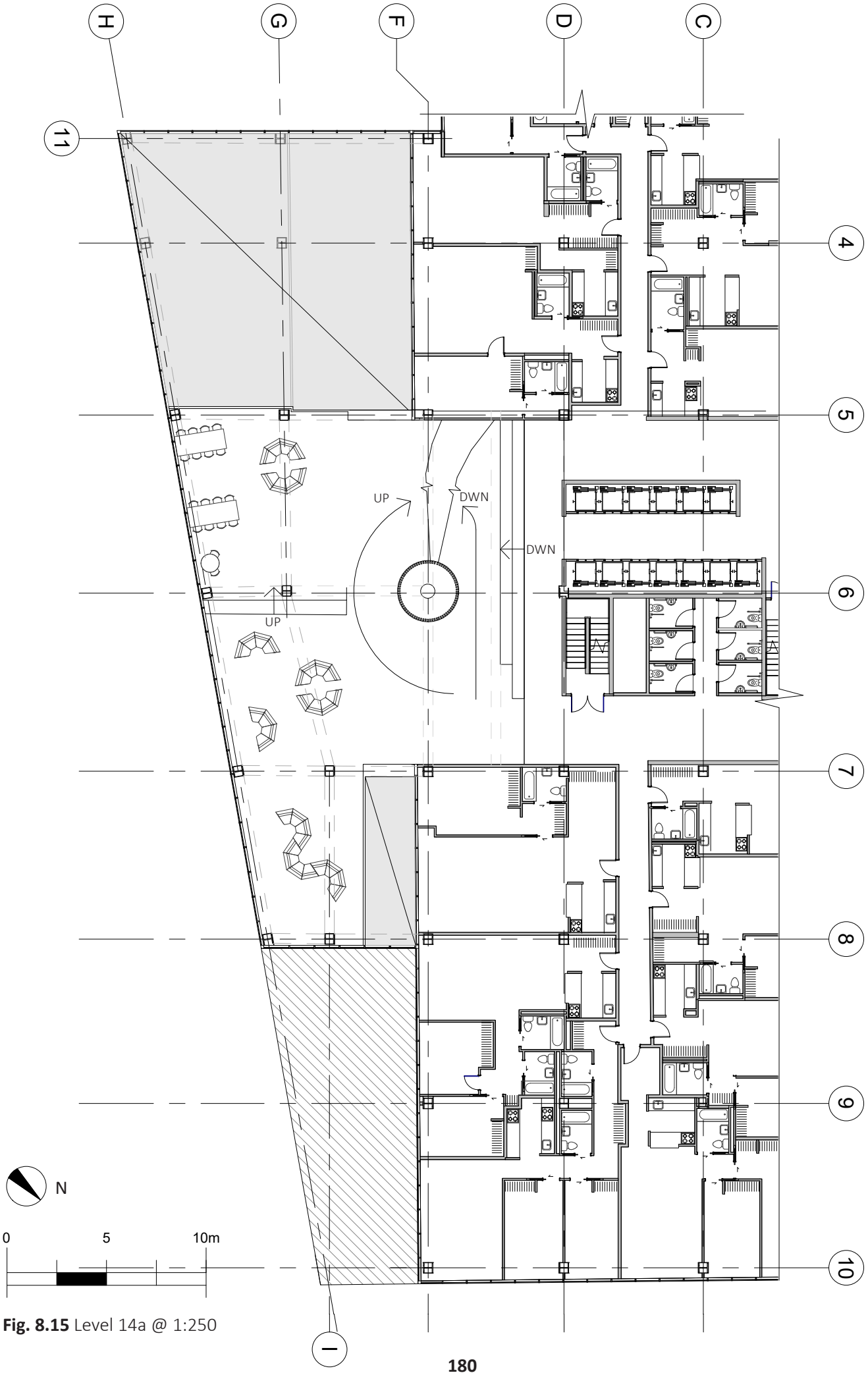


Fig. 8.15 Level 14a @ 1:250

Key

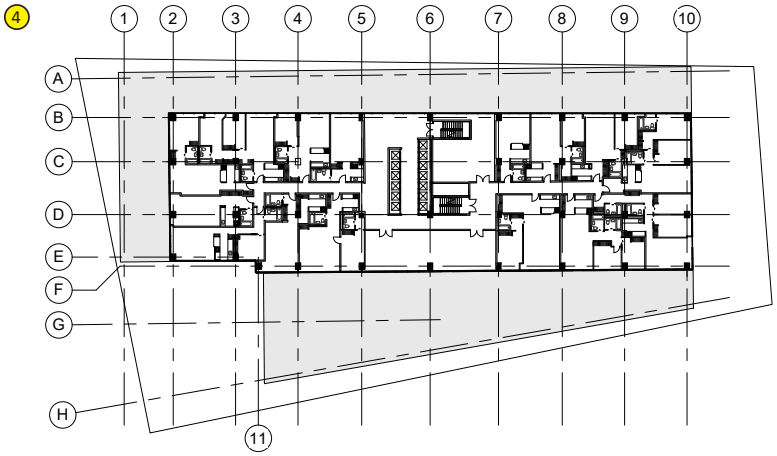
① Communal toilets

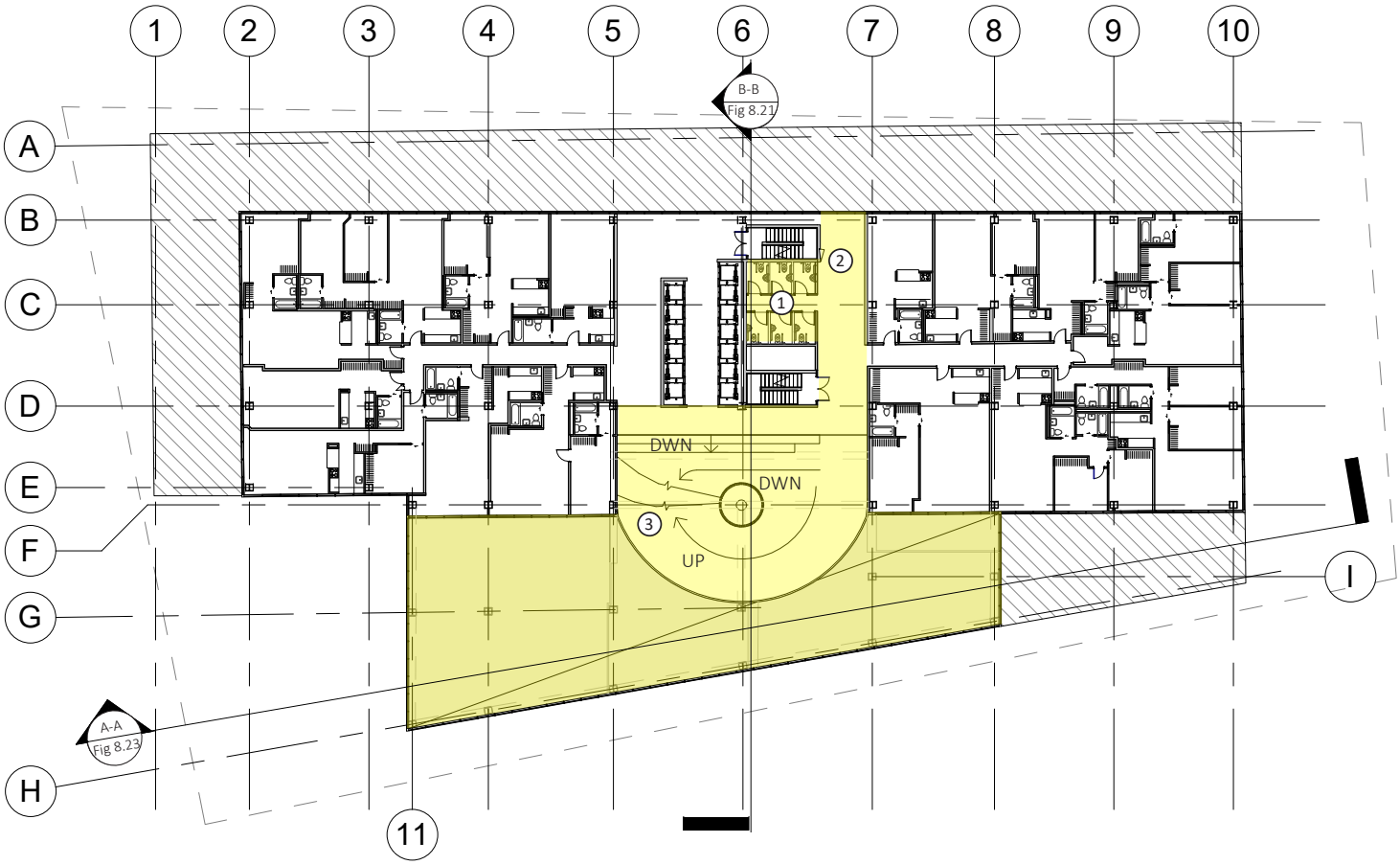
② Open storage space

③ Central spiral ramp

④ Existing typical floor plan for reference @ 1:1000

Adapted from existing





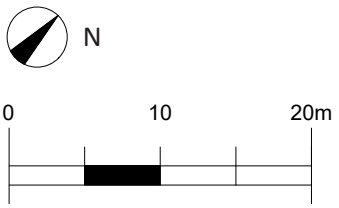


Fig. 8.16 Level 15a and 16a @ 1:500

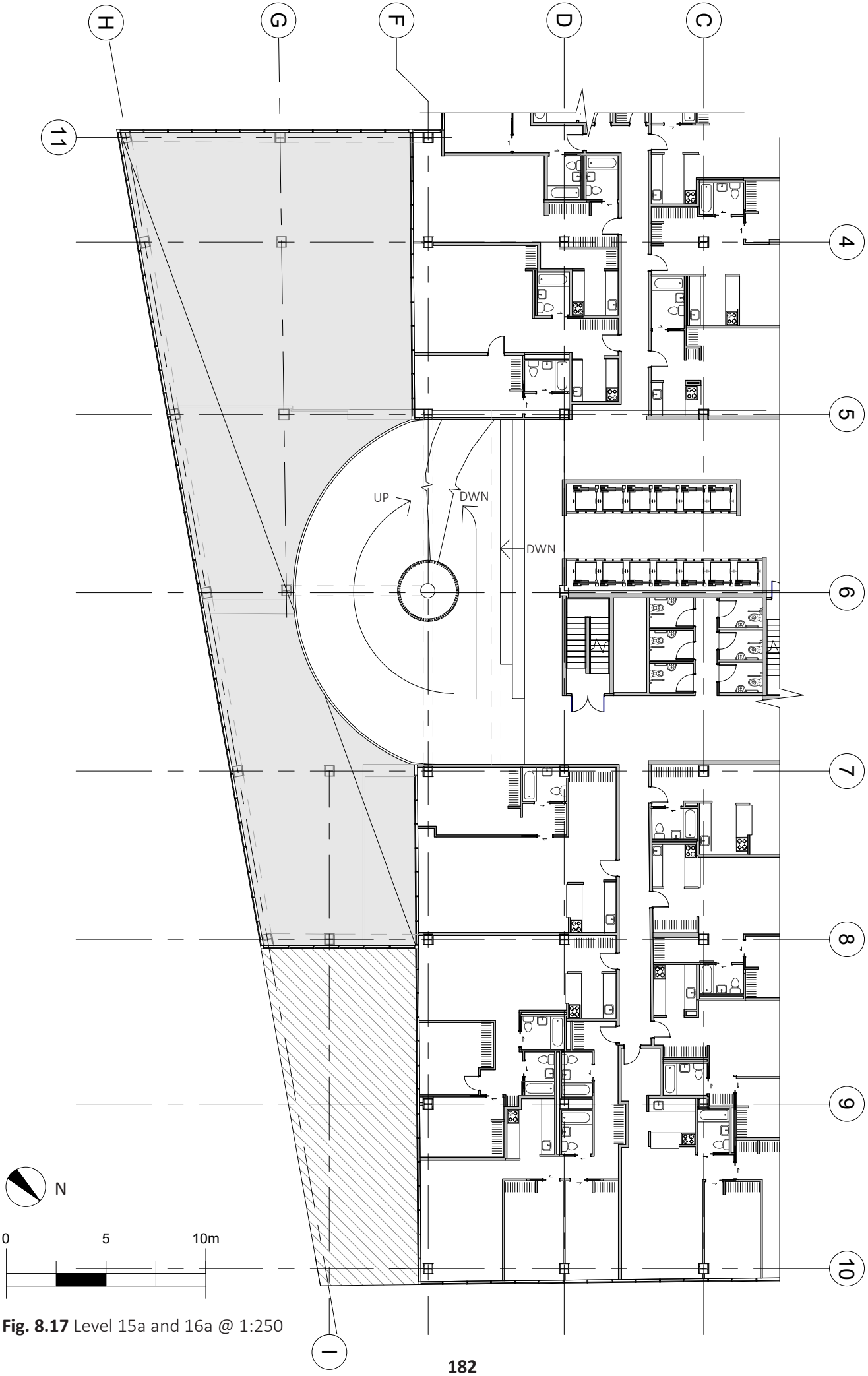
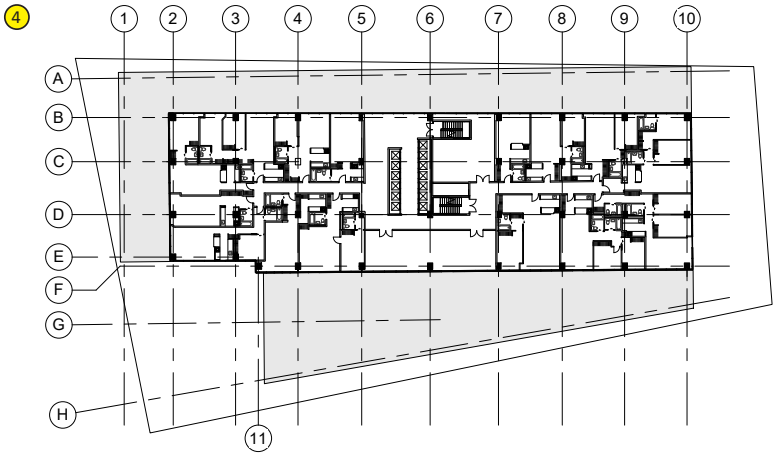


Fig. 8.17 Level 15a and 16a @ 1:250

Key

1. Communal toilets
2. Open storage space
3. Central spiral ramp
4. Existing typical floor plan for reference @ 1:1000

Adapted from existing



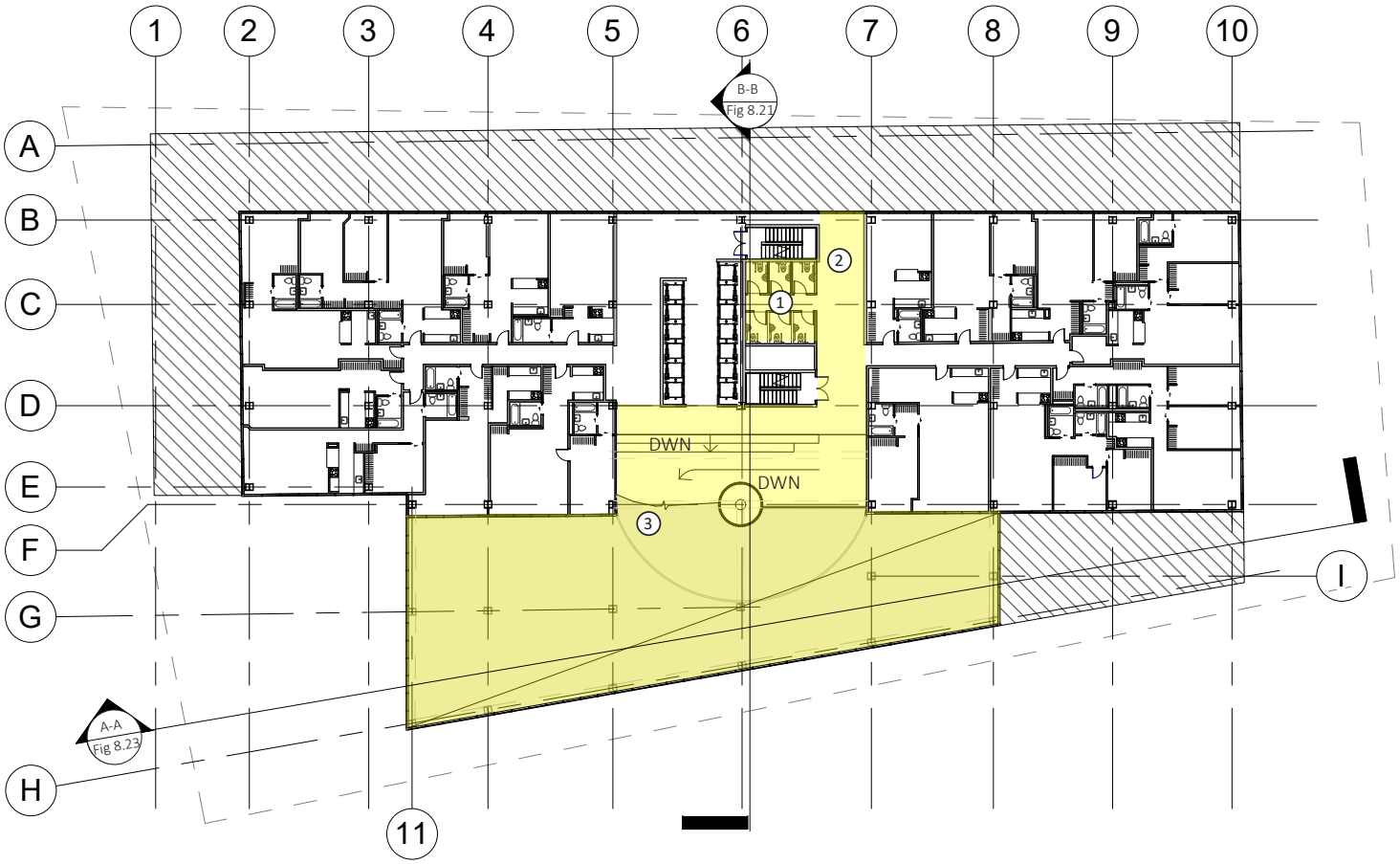


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Fig. 8.18 Level 17a @ 1:500

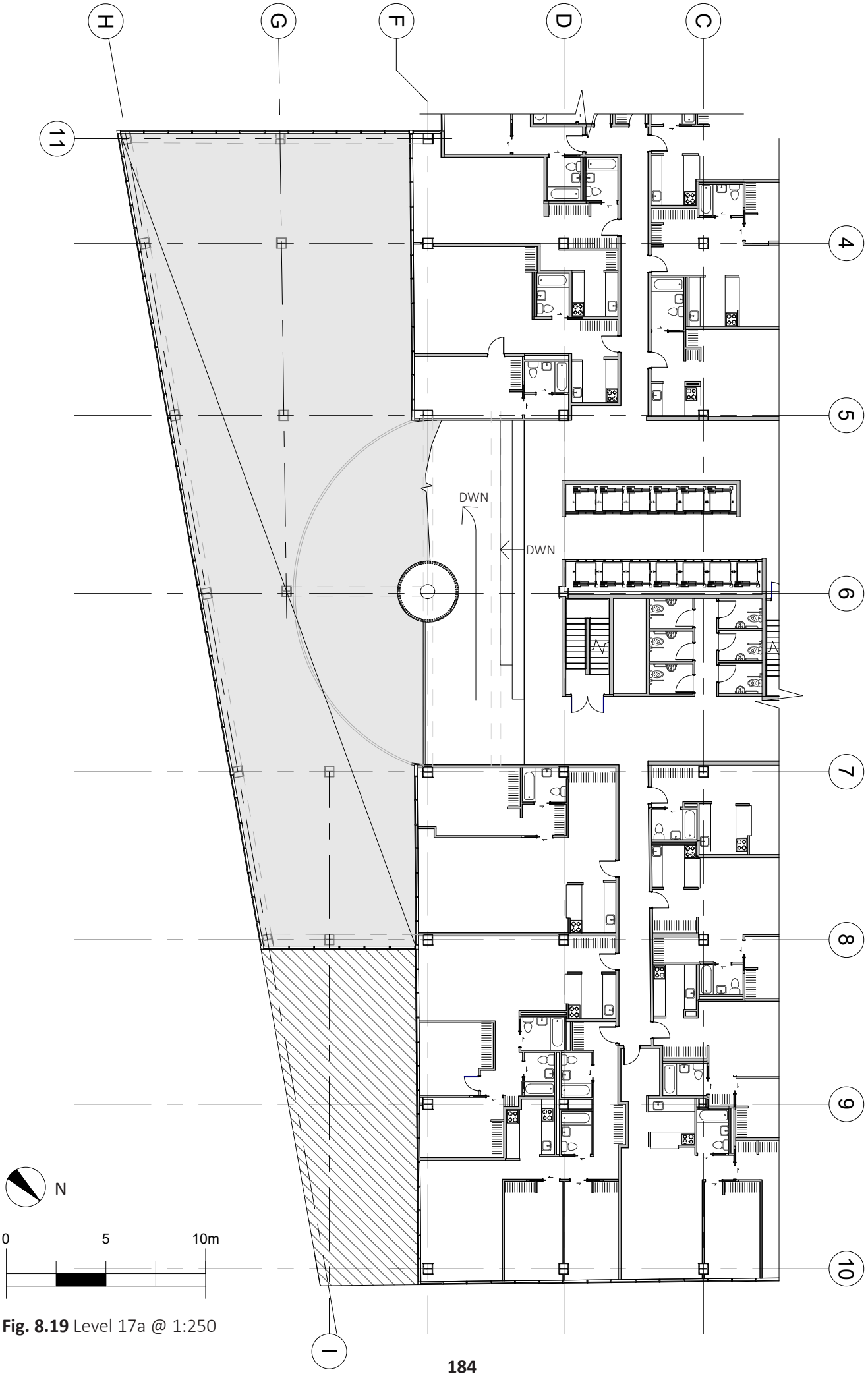


Fig. 8.19 Level 17a @ 1:250

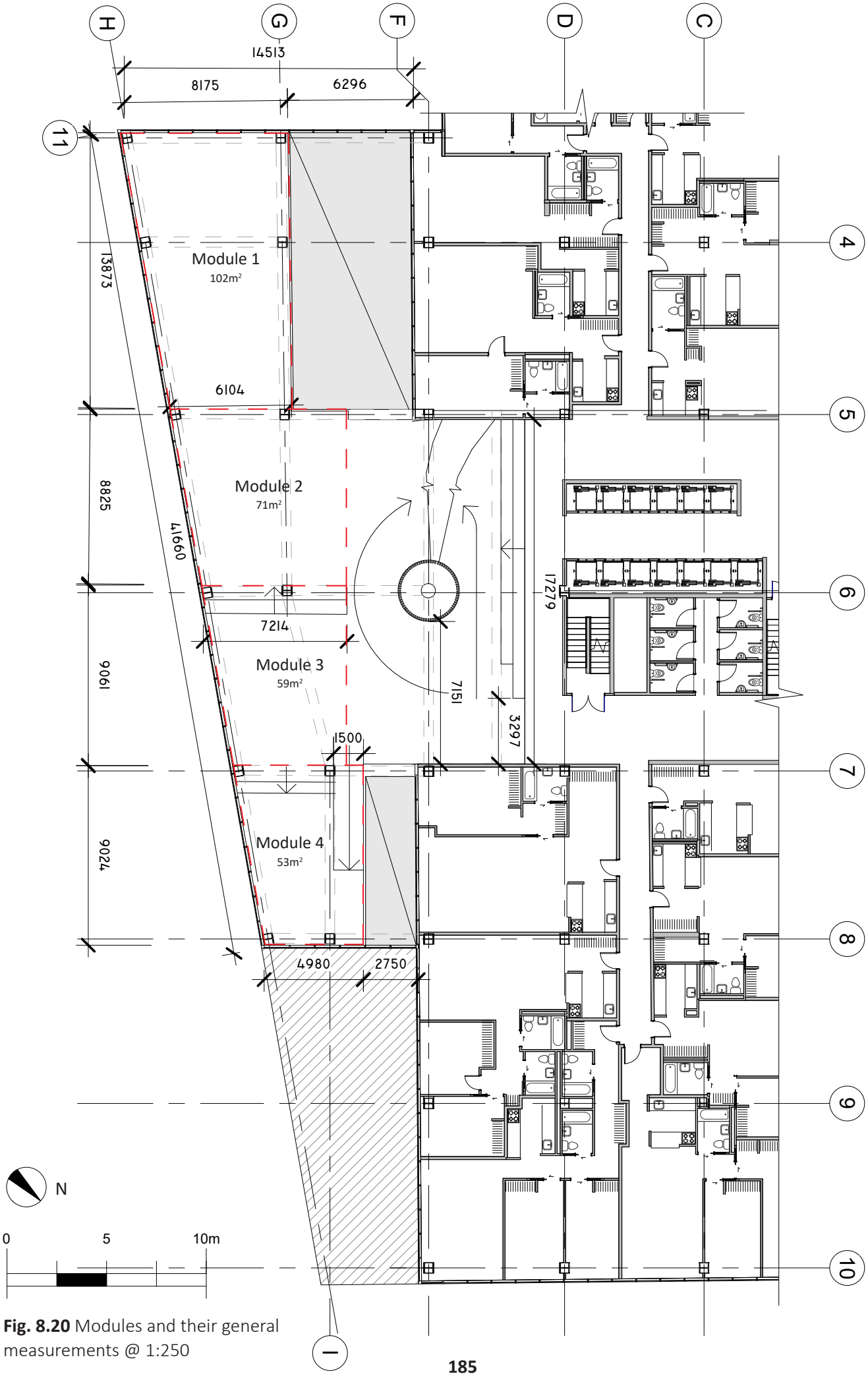


Fig. 8.20 Modules and their general measurements @ 1:250

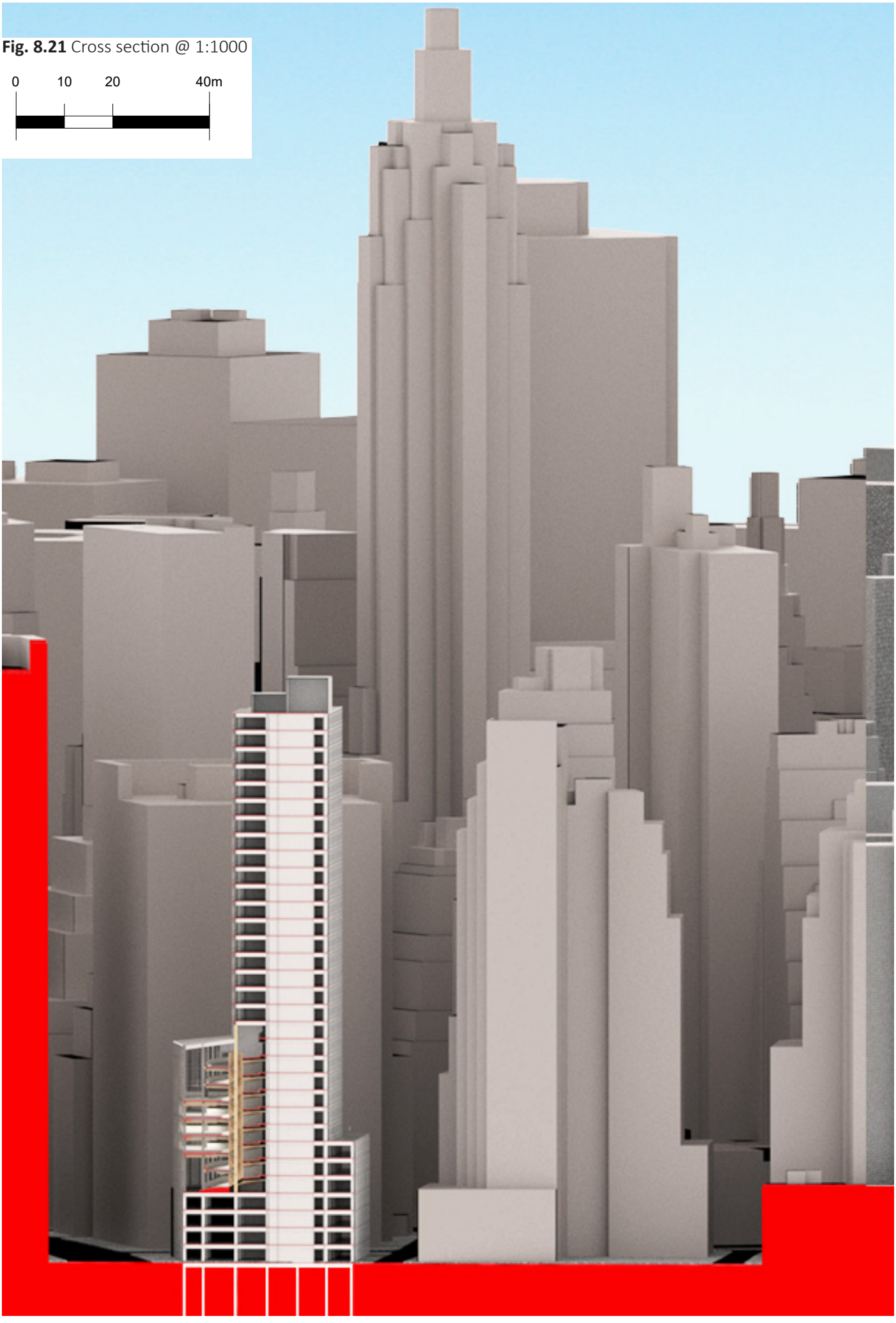
8.3 Design Sections

The sections for this research are rendered to best represent the reinterpretation of the social spaces as to how the spaces might feel, and how the integration of the new and existing might be perceived. These sections are at a scale of 1:1000, as well as 1:250 to show the building with the addition within the city, and to also represent the concept of the design outcome to an appropriate scale.

Fig 8.21 shows a cross section and fig. 8.23 shows a long section, both at a scale of 1:1000. These larger scale sections relate to the discussion in section 2.3 on the separation which can come from feeling unconnected from the street in a large dense city and limited by separated floor levels. “the need to design social space in, on, and around tall buildings must be continually examined if we are to have a cohesive urban fabric that supports communities” (Gang, 2016, pp. 117). The design looks to integrate this social overflow space to feel connected within the city. Fig 8.22 at a scale of 1:250 shows the strong focus on the central circulation for interlinking these separate levels to aid in physically mixing and connecting the users within this designed space.

Fig 8.24 is effective in showing the spatial tools which are used to encourage connectivity. Firstly, the interlinking of the new floors in planning vertically through visual site line connections, atriums and ‘openness’. The design makes use of smaller stepped levels to make up larger areas to provide flexibility in the multiplicity of ways the areas can be used (as explored in section 7.3). The section also depicts the fluidity of the design as one lager space which is interlinked by the generous and accessible ramped circulation.

Fig. 8.21 Cross section @ 1:1000



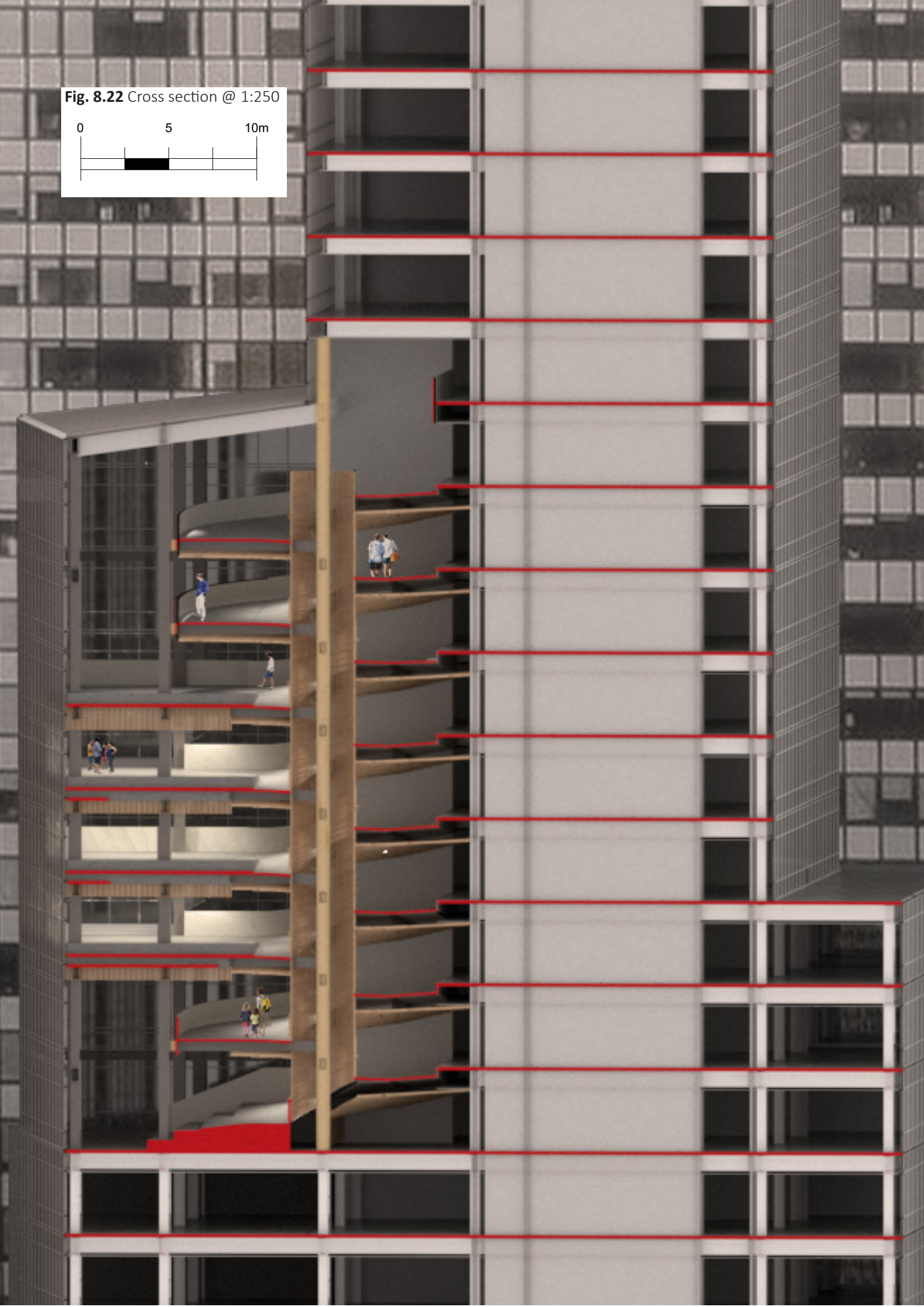


Fig. 8.22 Cross section @ 1:250

Fig. 8.23 Long section @ 1:1000

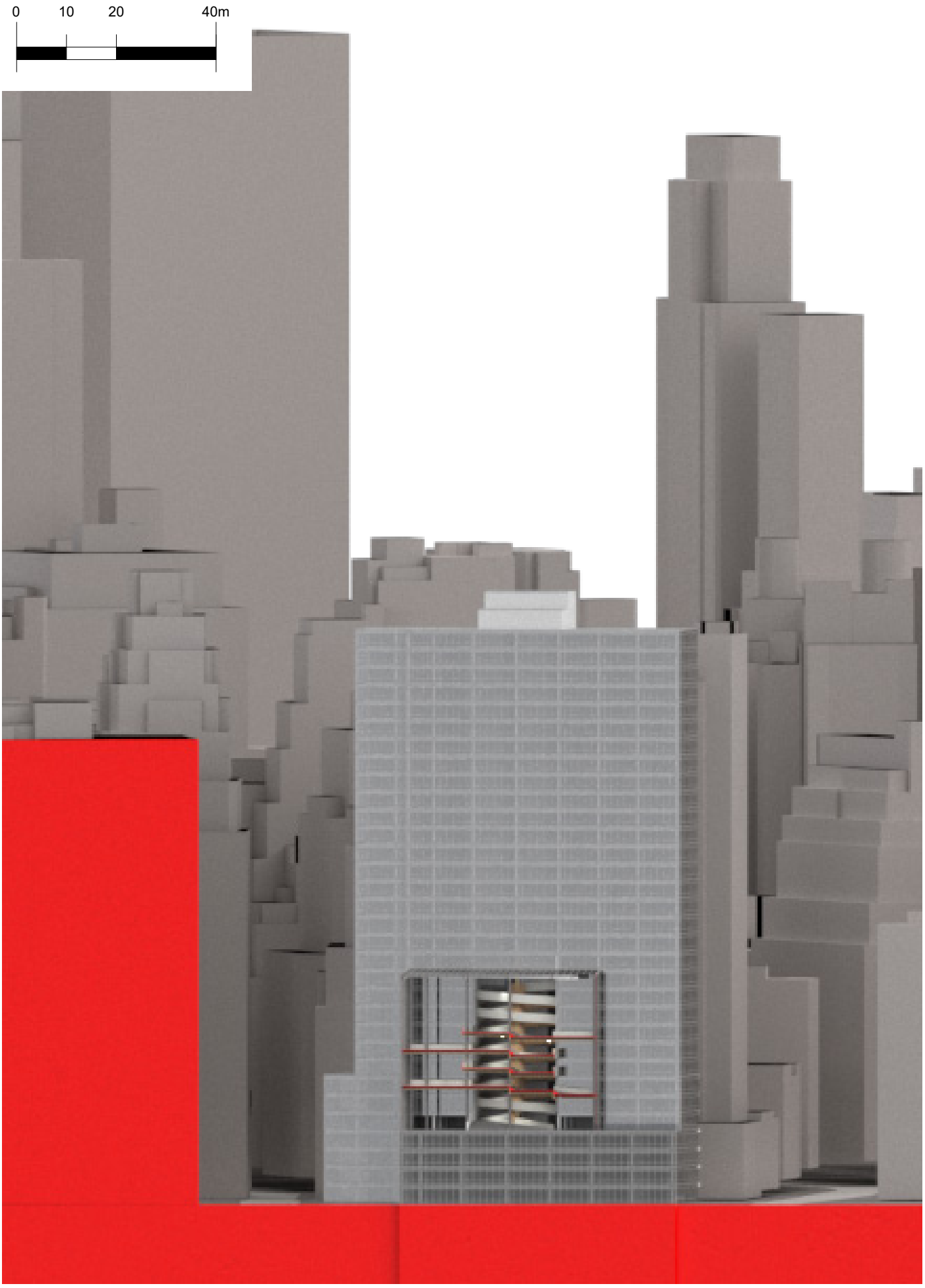


Fig. 8.24 Long section @ 1:250

8.4 Design Visuals

Section 8.3 envisions how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city. The furniture and usages within these spaces are indicative and not set as to how the spaces are used. The overflow space intends to facilitate activities and community structures which cannot be carried out within apartments. Previous communal space resided on separate floors. The reinterpretation of this common space provides new opportunities for the occupants in a shared social environment. The following show the potential to enrich and strengthen the existing building as a part of the larger urban fabric.

Fig. 8.25 and 8.26 show large open and connected space. The interlinking between different floors is evidenced by users overlooking the floors below. There is an overarching focus on visual connectivity between different areas and floors through openness and transparency. The idea of visual connectivity is linked to social inclusion which is discussed in section 2.4. which provides the opportunity for greater social engagement and to feel connected as a part of the city. Fig. 8.25 and 8.26 are on the same level showing two different valuable social areas, that are connected to each other.

Fig. 8.25 Double height large open connected space

Fig. 8.26 Visual connectivity in space good for presentation / high viewage

Fig 8.27 and 8.28 demonstrate the variety created through the modules. Where the outer modules with double height or atrium space above are open and vast (see fig. 8.27) with the central module on the same floor feeling more intimate, pictured in fig. 8.29 and 8.30. Fig. 8.27 through to 8.30 are of the same floor level and could be used as one larger floor or as separate areas. An example of how this space might be used is pictured, where kids play on the lower more intimate area while parents can socialize or work and look down on this play area. This demonstrates the flexibility offered through the modules, and changing height of areas within a level.

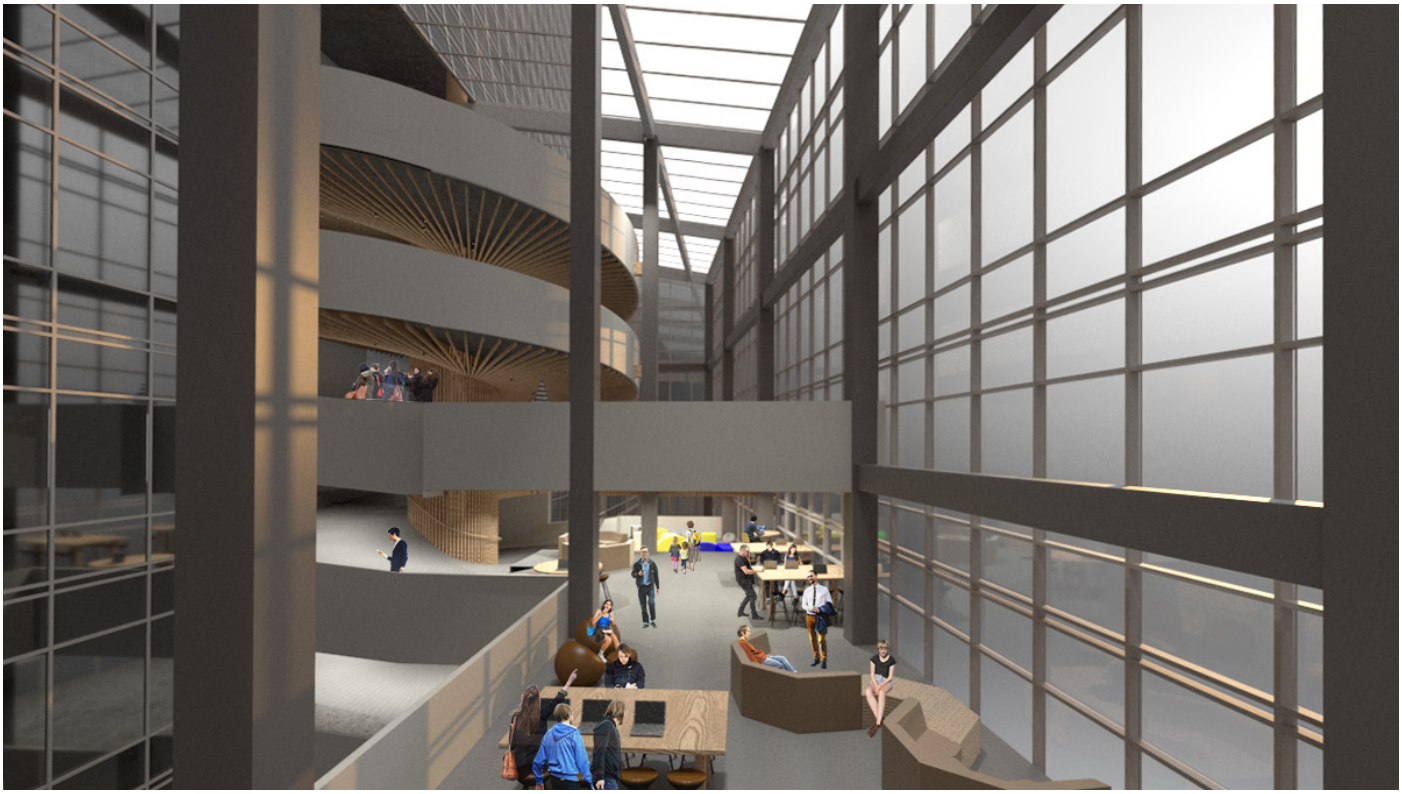


Fig. 8.27 Two levelled space could be used for kids play area looked down on by working area

Fig. 8.28 Two levelled space could be used for kids play area looked down on by working area

Fig. 8.29 Two levelled space could be used for kids play area looked down on by working area

Fig. 8.30 Two levelled space could be used for kids play area looked down on by working area

Fig. 8.31 - 8.33 are also on the same level and show how the space might be used for events. The ramp continuing two levels above the usable space is a feature for this area, and connects more levels into the addition. It allows people to visually see the goings on, and acts as an invitation to enter the space. Although incorporating the same modules, with a similar ramp layout, this area offers variety in the type of spaces provided in its grandeur.

The main circulation ramp flows onto each area of the level to provide accessible circulation, while the stairs offer another circulation option. The multiple options for circulation is consistent across all floors. These stairs could also be used as informal seating or dividers between different areas. The circulation is used as a designed space in itself, and elevates the importance for communal areas.

Fig. 8.31 Triple height grand space could be used for events

Fig. 8.32 Triple height grand space could be used for events

Fig. 8.33 Triple height grand space could be used for events

8.5 Critical Reflection

The developed design addressed the connectivity framework as discussed through section 8.4. The design outcome is more developed in designing for connectivity compared to the adaptive reuse framework (see fig. 8.34). The design framework directed the research towards developing the research objectives the reflection on the framework is further expanded within the discussion on addressing the objectives of this research.

Firstly the objective to:

Appropriately adapt the existing building following a loose fit design approach.

Section 2.2 discussed ideas of 'wholeness' and 'continuity' with the existing to appropriately adapt a building. The cohesion with the new façade and existing building façade did not take away from the integrity of international style aesthetically in terms of looking out of place. The façade does need further development in acknowledging the added space as new. Copying the existing façade is not a reflection of the current time period or technology. With the areas within a floor level changing, the mullion layout is not relevant to covering the floor slab and ceiling space. This development of the façade would strengthen the appropriateness of the design outcome.

The design planning was influenced by the existing grid from the column layout from levels 1- 8 below. This grid influenced the transition of areas through developing four modules. Working with these modules formed an organization system which addressed the grid planning to achieve a more appropriate outcome for encouraging social interaction and connectivity. The organization of the modules were a result of set parameters to reduce obstruction in front of the existing building sight lines and to let in sunlight.

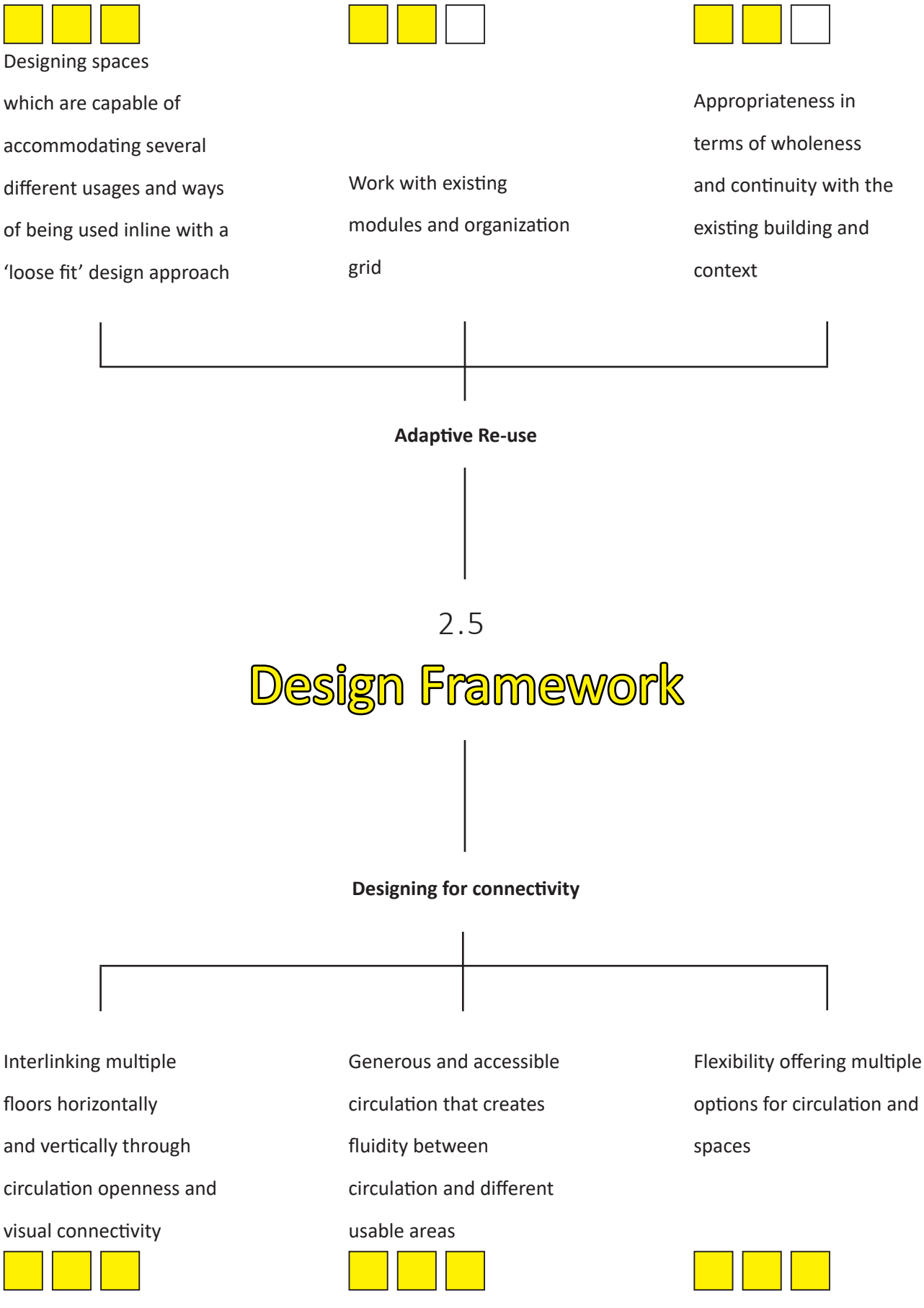


Fig. 8.34 Evaluation against the design framework

The different formation of the modules created a variety of areas which could be used in a multiplicity of ways to cater to different needs or user expectations. Larger areas were made up of smaller spaces for separation or connection between spaces. This provides both intimate as well as open and connected spaces. In this way the design follows a loose fit approach. It fulfills the "organisational need rather than pre-subscribing physical solutions" (Schmidt & Austin, 2016, pp. 54). This gives users control over how to use the space. Both the physical environment as well how people use the space can evolve and change to needs. The outcome is appropriate to the larger context in activating the existing building and strengthening the urban fabric.

Secondly:

Use spatial tools to achieve a higher level of connectivity and interaction between building occupants.

There was a strong focus on using design tools to enhance connectivity throughout the research process (chapter 6.0 and 7.0 connectivity massing and explorations). These tools are aligned with social inclusion as discussed in section 2.4. The view and connection between different levels allows users to see activities as open to all, and acts as an invitation to join / interact with others. The circulation is strongly integrated into the designed spaces and encourages social behaviour opportunities for interaction. The existing elevators as a main circulation route integrate with the extension to provide multiple options for moving between floors. There is also a diversity in circulation in designed stairs or ramps to transition between the different floor areas. The use of spatial tools achieves a higher level of connectivity and interaction between building occupants to address the design objective.

Thirdly:

Reinterpret the value of the social and circulation space to reflect its importance.

The adaptation responds to changing values in designing an overflow space with an inclusive and connected spatial structure for stimulating new social relations. Circulation and flexible common space were addressed throughout the research, design process and developed outcome, asserting the worth of these spaces and strongly influencing the designed space. The result seeing multiple main spaces which connect and overlap. The developed design is inclusive and inviting bringing together multiple floors in a high-quality connected space.

Through addressing the design framework and objectives of this research the design outcome has made progress in providing a suitable solution for activating 200 Water Street. The aim of this research has been realised through the developed design and envisions how might common spaces in an existing residential skyscraper be reinterpreted to increase social connection between occupants and strengthen their link with the city. In the research through design process the initial inquiries have sequentially developed and advanced to reach a design outcome. The research through design methodology was strong in the massing analysis in chapter 7.0 where a variety of responses were tested to arrive at the design concept. The process of reflection has been critical to developing a suitable outcome for the research objectives, aims, and question.

Acknowledged in the evaluation against the design framework and sequentially the critical reflection against objective 1, there is room for further development on this design outcome in the integration and appropriateness of the design.

The conceptual design outcome is not fully refined, nor have the details of the outcome been developed. The outcome does not address being built and the detailed concerns of building adaption. As discussed in section 1.3 the more specific details of the design are not relevant to the research question, aim, and objectives and are beyond the scope of this research. In placing the design outcome in the preliminary to developed design stage in section 1.5 the design concept might be further refined and detailed with further research. The critical reflection on the design outcome in this stage is insightful for further refining the concept. A limitation to the progression of this research is in acquiring information on the existing building for further detailed development. This is reflected in the scope of research. This research is of value in showing the inherent potential of adaptive re-use for stimulating new social relationships.

9.0
Conclusion

9.0 Conclusion

A literature review on international style and adaptive re-use developed a position for designing to enhance connectivity. The critical strategies from the adaptive re-use and designing for connectivity literature aided in establishing a framework to direct this thesis towards developing the research question, aim, and objectives. A case study analysis was undertaken to identify design responses which addressed aspects of the research in order to reflect, and further establish a position to help inform additional research.

The literature has identified a greater focus on designing for connectivity as having positive social benefits for creating more interactions between users and improving social structures towards a community focus. This literature was general, and not specific to the position of this research, or for adaptive re-use projects. Similarly, case studies which combined these ideas were limited. This research might be of further interest to architects and designers as a case study for how common spaces might be reinterpreted through adaptive re-use to support the inclusive social values of society now. This reinterpretation of the value of social space is a relevant line of inquiry to address through design.

This thesis in using a research through design approach developed knowledge, on how designing for connectivity might activate an existing building through adaptive re-use. The design outcome in meeting the framework for designing for connectivity and developing toward an appropriate adaptive re-use project, showed strength for progressing the research objectives, aim, and question. In section 8.5, the critical reflections on the design outcome identified strength in the following concepts for progressing how common spaces in an existing residential skyscraper might be reinterpreted to increase social connection between occupants and strengthen their link with the city:

- Creating a variety of areas which could be used in a multiplicity of ways through the arrangement of modules influenced by the existing column grid
- Larger areas made up of smaller spaces for separation or connection between spaces
- Creating a network of high-quality spaces which overlap
- A strong integration of circulation into the designed spaces

The increased social value of the design outcome is subjective. There are opportunities for further research in an approach where the users / residents might provide feedback. This would contribute to addressing the value of the adaption. The design outcome did address the research question in that it speculatively reinterprets the value of social space. In presenting this outcome in section 8.0 there is a design which could be used to gain this feedback. Placing this outcome in the preliminary design to design development stage (see section 1.5), the outcome could be used for this purpose before further development.

A limitation to this research is in the lack of information on the existing building. With this information the existing building and new adaption might have a stronger integration. The existing lift circulation, and the addition of public toilets on each floor, as well as the added storage space to help with flexibility, were the main links between the spaces. The intentional open concept when designing also aids in integrating these spaces. It is acknowledged that the integration between the old and new might have been stronger with more information. A typical floor plan was used in designing. In the existing building there are communal spaces such as the laundry, gym, delicatessen, pharmacy, and common lounge(s). With information on their locations, layout, and space requirements available, these spaces might have been integrated into the design

planning. Integrating the existing communal spaces might strengthen the design, bringing higher usage as well as more opportunities to intersect and overlap for the occupants.

It is difficult to achieve the connectivity set out by the design framework through altering existing stairwells and circulation. There are limitations in working with confined spaces, as well as stairwells often following fire escape guidelines. This resulted in a large addition to address the research question aims and objectives. This was a challenge of ideology in that this thesis is a critique on the maximising of space for economic purposes. The context has been identified as dense (see chapter 3.0 and 4.0). This project involves adding further volume however with a different design driver for social enrichment. This might have been achieved more appropriately (smaller addition / less volume) with a stronger integration between the existing and new architecture.

In relation to the disciplinary body of knowledge on adaptive re-use, the idea of a strong integration between the planning of the old and new architecture is acknowledged (see section 2.2). This research further supports this focus on integration as important in a successful adaptive re-use project.

The significance of this research is in approaching adaptive re-use from a humanistic view. Demonstrating how existing architecture could be appropriately adapted to address a need for social connection, which might not be facilitated in the organisation and implicit predetermination of how spaces are used within an international style building. The overflow space envisions a different spatial structure for stimulating new social relations. There is value in

providing an overflow space in a densely built up urban context where there is unsuitable space for engaging with others or activities which are increasingly becoming more aligned with the home, such as working.

10

Source of Figures

10 Source of Figures

All Figures not attributed in this list are authors own

Chapter 1

Fig. 1.1 Table 1. Review of some architects and theorists opinions about design Abowardah, E., & Manal, O. (2016). From *Design Process & Strategic Thinking in Architecture*. Retrieved 22 Feb 2020 https://www.researchgate.net/publication/328130631_Design_Process_Strategic_Thinking_in_Architecture

Chapter 3

Fig. 3.2 A New City Is Emerging Downtown
Boenzi, n. (1970). The coming of New York's Second Skyscrapper Age. From The New York Times Company.

Fig. 3.3 A New City Is Emerging Downtown continued
Boenzi, n. (1970). The coming of New York's Second Skyscrapper Age. From The New York Times Company.

Fig. 3.4 Emery Roth & Sons 'catalogue' of buildings 1959- 1972 in Lower- Mid Manhattan- Authors own collage, images sourced from (reading left to right 1-20)

1. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1959. Adapted from *2 Broadway*. Retrieved 20 May 2020 https://www.skyscrapercenter.com/building/2-broadway/11646

2. Pubdog. (2012). 10 Lafayette Square designed by Emery Roth & Sons completed 1959. Adapted from *Tishman Building Apr 12*. Retrieved 20 May 2020 https://en.wikipedia.org/wiki/File:Tishman_Building_Apr_12.JPG

3. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1959. Adapted from *Lorillard Building*. Retrieved 20 May 2020 https://www.skyscrapercenter.com/building/lorillard-building/18098

4. LoopNet. (2020). Designed by Emery Roth & Sons completed 1960. Adapted from *80 Pine St*. Retrieved 20 May 2020 https://www.loopnet.com/Listing/80-Pine-St-New-York-NY/9990383/

5. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1961. Adapted from *850 3rd Avenue*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/850-3rd-avenue/16204

5. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1961. Adapted from *850 3rd Avenue*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/850-3rd-avenue/16204

6. J, Robbie. (2012). Designed by Emery Roth & Sons completed 1961. Adapted from *Diamond National Building*. Retrieved 20 May 2020 http://wikimapia.org/247159/Diamond-National-Building#/photo/2798427

7. 42 Floors. (2020). Designed by Emery Roth & Sons completed 1963. Adapted from *1212 6th Ave*. Retrieved 20 May 2020 https://42floors.com/us/ny/manhattan/1212-6th-ave

8. Fisher Brothers. (2020). Designed by Emery Roth & Sons completed 1963. Adapted from *605 3rd Avenue*. Retrieved 20 May 2020 https://www.fisherbrothers.com/properties/605-3rd-avenue

9. Assembly. (n.d.). 110 Wall Street designed by Emery Roth & Sons completed 1965. Adapted from *Assembly*. Retrieved 20 May 2020 https://assemblystudio.net/WeLive-on-Wall-Street

10. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1964. Adapted from *277 Park Avenue*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/277-park-avenue/1481

11. LoopNet. (2020). Designed by Emery Roth & Sons completed 1964. Adapted from *641 Lexington Ave*. Retrieved 20 May 2020 https://www.loopnet.com/Listing/641-Lexington-Ave-New-York-NY/3938765/

12. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1964. Adapted from *Harcourt Brace & World Building*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/new-york-city/harcourt-brace--world-building/16202/

13. Glassdoor. (2020). 299 Park Avenue designed by Emery Roth & Sons completed 1967. Adapted from *Prospect Equities*. Retrieved 20 May 2020 https://www.glassdoor.co.nz/Photos/Prospect-Equities-Office-Photos-IMG343812.htm?countryRedirect=true

14. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1969. Adapted from *1345 Avenue of the Americas*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/1345-avenue-of-the-americas/1961

15. Paramount Group Inc. (2020). Designed by Emery Roth & Sons completed 1970. Adapted from *1633 Broadway*. Retrieved 20 May 2020 https://sigearth.com/1633-broadway/

16. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1971. Adapted from *888 7th Avenue*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/888-7th-avenue/1945

17. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1971. Adapted from *200 Water Street*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/200-water-street/13736

18. C.J, Hughes. (2010). 1700 Broadway designed by Emery Roth & Sons completed 1969. Adapted from *Real estate world adapts business to new reality: bedbugs*. Retrieved 20 May 2020 https://therealdeal.com/issues_articles/real-estate-world-adapts-business-to-new-reality-bedbugs/

19. L, Schram. (2015). 747 Third Avenue designed by Emery Roth & Sons completed 1972. Adapted from *Personal Injury Law Firm Moves Within Midtown East.* Retrieved 20 May 2020 https://commercialobserver.com/2015/01/personal-injury-law-firm-moves-within-midtown-east/4582/

20. J, Cahill. (2020). Designed by Emery Roth & Sons completed 1972. Adapted from *1 Dag Hammarskjold Plaza*. Retrieved 20 May 2020 http://www.skyscrapercenter.com/building/1-dag-hammarskjold-plaza/1863

Chapter 4

Fig. 4.4 Building (yellow) in context- edited
Majidali. (2018). Adapted from *200 Water Street, NYC New York City*. Retrieved 12 Dec 2019 https://steemit.com/newyork/@majidali/200-water-street-nyc-new-york-city

Fig. 4.5 Selected building (yellow)
Horsley, C. (2020). Adapted from *200 Water Street*. Retrieved 12 Dec 2019 https://www.cityrealty.com/nyc/financial-district/200-water-street/review/45791

Chapter 5

Fig. 5.0 Scheme a
A, Hess. (2012) Proposed addition in blue. From *University of Applied Arts Vienna*. Retrieved 22 Feb 2020 https://www.tschapeller.com/de/#!/uak-wien/texte

Fig. 5.1 Scheme b
A, Hess. (2012) Diagrammatic planning. From *University of Applied Arts Vienna*. Retrieved 22 Feb 2020 https://www.tschapeller.com/de/#!/uak-wien/texte

Fig. 5.2 Views
A, Hess. (2012) Proposed addition external render. From *University of Applied Arts Vienna*. Retrieved 22 Feb 2020 https://www.tschapeller.com/de/#!/uak-wien/texte

Fig. 5.3 Scheme c
A, Hess. (2012) Proposed addition internal render. From *University of Applied Arts Vienna*. Retrieved 22 Feb 2020 https://www.tschapeller.com/de/#!/uak-wien/texte

Fig. 5.4 Atrium from street view
Klunder Architecten. (n.d.). Atrium from street view. From *Sweeter Lake Futura*. Retrieved 22 Feb 2020 https://www.klunderarchitecten.nl/klunder_portfolio/futura-zoetermeer/

Fig. 5.5 Interior atrium view
donker groep. (n.d.). From *Futura, Zoetermeer*. Retrieved 22 Feb 2020 https://donkergroep.com/nl/projecten/futura-zoetermeer

Fig. 5.6 Apartment facades
a.s.r. real estate. (n.d.). From *Zoetermeer, Futura*. Retrieved 22 Feb 2020 https://asrrealestate.nl/woningen/portefeuille-woningen/zoetermeer-futura

Fig. 5.7 Atrium in context
Sustainable Futura residential building in Zoetermeer (n.d.). http://www.cae.nl/project-item/duurzaam-woongebouw-futura-te-zoetermeer/

Fig. 5.8 Facade grid
Nelec. (n.d.). From *Futura Zoetermeer 78 won*. Retrieved 22 Feb 2020 https://www.nelec.com/producten/futura-zoetermeer-79-won/

Fig. 5.9 Willis Tower 2017. Demolish existing pavilion
Fig. 5.10 Step 1. Blank slate
Fig. 5.11 Step 2. Add green space
Fig. 5.12 Step 3. Elevate green space 4 levels
Fig. 5.13 Step 5. Addition of amenities
Fig. 5.14 Step 6. Reveal the tower
Willis Tower. (2018). Exterior redevelopment. From *Willis Tower : Chicago from Street to Sky : About the Willis Tower Transformation*. Retrieved 22 Feb 2020 https://www.willistower.com/upload/WillisTower_FactSheet%20September%2013th%202018.pdf

Fig. 5.15 Podium exterior changes
Fig. 5.16 Entrance
Fig. 5.17 Willis Tower repositioning
Fig. 5.18 Internal atrium view
Willis Tower. (2018). Retrieved 22 Feb 2020 https://www.willistower.com/media/press-kit

11

References

11 Reference List

Abowardah, E., & Manal, O. (2016, March 26-27). *Design Process & Strategic Thinking in Architecture* [Paper presentation]. International Conference on Architecture & Civil Engineering, London. https://www.researchgate.net/publication/328130631_Design_Process_Strategic_Thinking_in_Architecture

Ballantyne, A. (2003). *Architectures : modernism and after*. Blackwell.

Berens, C. (2010). *Redeveloping industrial sites: A guide for architects, planners, and developers*. John Wiley & Sons.

Byard, Paul. *The Architecture of Additions: Design and Regulation*. New York: Norton & Co, 1998.

Cho, A., Willis, S., & Stewart-Weeks, M. (2011, August). *The Resilient Society : Innovation, Productivity, and the Art and Practice of Connectedness*. Cisco Internet Business Solutions Group.

Clausen, M. L. (2005). *The Pan Am building and the shattering of the modernist dream. Massachusetts Institute of Technology*. https://www.cisco.com/c/dam/en_us/about/ac79/docs/ps/The-Resilient-Society_IBSG.pdf

donker groep. (n.d.). *Futura, Zoetermeer.* donker groep. Retrieved 12th February 2020 https://donkergroep.com/nl/projecten/futura-zoetermeer

Douglas, J. (2006). *Building Adaption* (2nd ed.). Routledge.

Downton, P. (2003). *Design research / Peter Downton*. Melbourne: RMIT Publishing.

Eilo. (n.d.). *FUTURA ATRIUM*. Eilo. Retrieved 12th February 2020 https://www.eilo.eu/futura-atrium/

Emporis. (2020). *200 Water Street*. https://www.emporis.com/buildings/115204/200-water-street-new-york-city-ny-usa

Furuto, A. (2012). *University of Applied Arts Extension Proposal. Arch Daily*. https://www.archdaily.com/212745university-of-applied-arts-extension-proposal-wolfgang-tschapeller

Gang, J. (2016). Three Points of the Residential High-Rise: Designing for Social Connectivity. *International Journal of High-Rise Buildings, 5*(2), 117-125. https://global.ctbuh.org/resources/papers/download/2805-three-points-of-the-residential-high-rise-designing-for-social-connectivity.pdf

Gifford, R. (2007). The Consequences of Living in High-Rise Buildings. A*rchitectural Science Review, 50*, (2-17). 10.3763/asre.2007.5002.

Heiser, T., Ward, B. (2020). *Adaptive Reuse Strategies for a Net-Zero Future*. Gensler. https://www.gensler.com/research-insight/publications/dialogue/35/adaptive-reuse-strategies-for-a-net-zero-future

High Rise Office Buildings. (1957). *Progressive Architecture*, June(38), 159-224

Hitchcock, H., & Johnson, P. (1966). *The international style : architecture since 1922* . Norton.

Koolhaas, R. (1994). *Delirious New York : a retroactive manifesto for Manhattan* (New ed.). Monacelli Press.

Koziarz, j. (2018). *Willis Tower addition shows off new food hall, dramatic entrances in latest renderings. Curbed Chicago*. Retrieved 20th February 2020 https://chicago.curbed.com/2018/9/13/17854866/willis-tower-catalog-food-hall-renderings

Machine Made America. (1957) *Architectural Review, 121*(724), 299-300.

Martin, R. (2001). Atrocities. Or, Curtain Wall as Mass Medium. *Perspecta, 32,* 67–75. https://doi.org/10.2307/1567284

Martin, R. (2003). *The organizational complex : architecture, media, and corporate space*. Massachusetts Institute of Technology.

Nakamura, T. (Ed.). (1991). *Lebbeus Woods : terra nova 1988-1991* . a+u Publishing.

Noever, P. (Ed.). (2005). *Lebbeus Woods : System Wien (M. Strand, Trans.). MAK Vienna Wien*. (Original work published 2005).

NZIA. (n.d.). *The design process*. New Zealand Institute of Architects. Retrieved 22nd December 2019 https://www.nzia.co.nz/connect/working-with-an-architect/the-design-process

Ockman, J. (1997). Toward a Theory of Normative Architecture. In S. Harris & D. Berke (Eds.), *Architecture of the everyday* (pp. 122-152). Princeton Architectural Press.

Oldenburg, R. (1989). *The Great Good Place : Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community*. Paragon House.

Prudon, T. (2008). P*reservation of modern architecture*. Wiley.

Remøy, H. T., & Vander Voordt, D.J.M. (2014). *Adaptive reuse of office buildings: opportunities and risks of conversion into housing. Building Research & Information 42*:3, 381-390.

RockRose. (n.d.). *200 Water Street*. https://rockrose.com/building/200-water-street/

Ross, P. (2006). Technology for a New Office. In J. Worthington (Ed.), R*einventing the Workplace* (2nd Rev. ed, pp. 143-156). Oxford: Architectural.

Rowe, C. (1956). CHICAGO FRAME. *The Architectural Review (Archive : 1896-2005), 120*(718), 284–289. http://search.proquest.com/docview/1366886415/

Ruttenbaum, S. (1986). *Mansions in the clouds : the skyscraper palazzi of Emery Roth*. Balsam Press, Inc.

Schmidt, R., & Austin, S. (2016). *Adaptable architecture : theory and practice*. Routledge.

Semes, S. W. (2009). *The future of the past: A conservation ethic for architecture, urbanism, and historic preservation.* W.W. Norton & Co.

Shipley, R., Utz, S., & Parsons, M. (2006). *Does Adaptive Reuse Pay? A Study of the Business of Building Renovation in Ontario, Canada. International Journal of Heritage Studies, 12*(6), 505–520. https://doi.org/10.1080/13527250600940181

Stern, R. A. M., Mellins, T., & Fishman, D. (1995). *New York 1960 : architecture and urbanism between the Second World War and the Bicentennial*. The Monacelli Press, Inc.

Wagner, J., & Watch, D. (2017). *Innovation spaces : The New Design of Work*. Washington, D.C.: The Anne T. and Robert M. Bass Initiative on Innovation and Placemaking at Brookings.

Wardah, A., Khalil, M. (2016, March 26-27). *Design Process & Strategic Thinking in Architecture [Paper presentation]*. International Conference on Architecture & Civil Engineering, London. https://www.researchgate.net/publication/328130631_Design_Process_Strategic_Thinking_in_Architecture

Ward, B. (2020). *Re-Imagining an American Icon*. Gensler. Retrieved 22nd February 2020 https://www.gensler.com/research-insight/blog/re-imagining-an-american-icon

Willis Tower. (2018). *Willis Tower : Chicago from Street to Sky : About the Willis Tower Transformation*. https://www.willistower.com/upload/WillisTower_FactSheet%20September%2013th%202018.pdf

Wolfgang Tschapeller ZT GmbH. (n.d.). *University of Applied Arts Vienna Austria 2012*. Retrieved 22nd February 2020 https://www.tschapeller.com/en/#!/uak-wien/texts

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