Transforming the norm: the future of workspaces.

Designing for post-pandemic well-being.

By Paige Heyneke

Submitted in fulfilment of part of the requirements for the degree Master of Interior Architecture (Professional) in the Faculty of Engineering, the Built Environment and Information Technology.

UNIVERSITY OF PRETORIA

Supervisor: Nonkululeko Grootboom

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Abstract

The pandemic undoubtedly disrupted people's lives worldwide, causing rapid shifts in work typologies and proving that humans are inherently social beings who require some degree of interaction.

The following project is aimed at investigating how interior architectural design can be implemented within workspaces to allow for user well-being and flourishing, particularly within the context of the COVID-19 pandemic.

The project entails transforming an underutilised commercial building, 1157 Francis Baard Street in Hatfield, into a community workspace that fosters connections amongst people of a diverse community. The project becomes an interconnected workspace with a permeable, publicly accessible ground floor offering a range of flexible and adaptable spaces that allow users to appropriate the space to best suit their needs.

The design is intended to make knowledge and opportunities more accessible to the diverse and multi-generational Hatfield community, thereby supporting continual learning, interaction, and development. Social connections and knowledge transfer are encouraged by bridging a workspace and community space, thereby facilitating positive interactions and ultimately human flourishing.

The project is intended to further contribute to the ongoing interior architectural discourse related to well-being and flourishing in design through translating theoretical guidelines into a conceptual physical manifestation. The resultant proposal is grounded in theory and addresses well-being across various scales, including personal, workplace, and community health and flourishing.

Project summary

FULL DISSERTATION TITLE:	Transforming the norm: the future of workspaces. Designing for post-pandemic well-being.
SUBMITTED BY:	Paige Furstenburg Heyneke (u16038704)
STUDY LEADER:	Nonkululeko Grootboom
COURSE COORDINATOR:	Anika van Aswegen
DEGREE:	Master of Interior Architecture (Professional)
DEPARTMENT:	Department of Architecture
FACULTY:	Faculty of Engineering, Built Environment and Information Technology
UNIVERSITY:	University Of Pretoria
TYPOLOGY:	Workspace/ community space
RESEARCH FIELD:	Inhabitation of Place
INTENTION:	Designing an adaptable workspace focussed on well-being and flourishing through creating accessible opportunities for interaction, connection and knowledge transferal for the Hatfield community.
SITE LOCATION:	1157 Francis Baard Street, Hatfield, Pretoria, 0028 *Latitude:* -25.746094 *Longitude:* 28.237979 *GPS Coordinates:* 25° 44' 45.9384" S 28° 14' 16.7244"E

Keywords

Well-being, flourishing, pandemic, workplace design, knowledge transferal

Plagiarism Declaration

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Interior Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma, or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Signed

December 2021

Date

Preface

I recall attending a class early in 2020 before the pandemic wherein the lecturer encouraged us to spend time working together in studio to bounce creative ideas off each other, build camaraderie and motivate one another to work together through the late nights. A few weeks later, we found ourselves completing our postgraduate studies online from the confines of our homes. We were disconnected from our peers and our surroundings. Although I was fortunate enough to have a desk in my bedroom, separate spaces for my family members to work and learn from, and access to the technology I needed, many others did not and had to make do with what they had.

Working from home had its benefits; however, over time, my bedroom was no longer associated with recuperation but had instead become my place of work, my family invaded each other's spaces, distractions were plentiful, and the stress of the virus jeopardising the lives of my loved ones was ever-looming. Struggling to be creative in isolation and attempting to recreate the studio environment that we had become accustomed to, my friend and I video-called each other most days - but online interaction is just not a substitute for in-person engagement.

The pandemic brought with it a myriad of stressors and exacerbated threats to mental health. Each person around me faced their own challenges. Even now, as the dust settles, lockdown levels ease, and vaccinations are on the rise, the uncertainty about our daily lives going forward is still present.

My own experiences, as well as the experiences of those around me, inspired this project. We needed, and still need, a space other than our homes and formal offices where we could work and exchange knowledge, but more importantly, where we could safely reconnect with our peers and community members. A space that catered for our needs and wants, promoted our well-being and allowed us to flourish in the midst of the pandemic and thereafter.

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Part 1- Position & Situation

1.1. Introduction

The COVID-19 pandemic has affected people across the world. The way in which people live and work has undoubtedly had to evolve. In the wake of the pandemic, people have faced unprecedented threats to their physical, mental, and societal health and well-being (Taylor, 2020). With global pandemic restrictions being observed, many people found themselves working remotely, which left commercial spaces and other buildings empty. With so many underutilised spaces emerging, the study proposes that real estate will have to adjust to take on a more community-orientated approach that better meets the needs of the people who reside and work nearby (Erdly & Song, 2020). The acceleration of digital working platforms in the gig economy has led to the creation of additional barriers to entry for potential human capital (Deloitte & Global Business Coalition for Education, 2018:5). The gig economy refers to a labour market that consists of short-term, contracted, or freelance work rather than jobs in established companies (Deloitte & Global Business Coalition for Education, 2018). By proposing workspaces that offer the opportunity for skilled and semi-skilled individuals to network, develop and expand on their knowledge, redundant buildings hold the potential to be transformed into spaces that contribute to the well-being of the surrounding communities. These buildings, such as the chosen site for investigation in Hatfield, can be seen as opportunities to 'reset' the business districts and their relationship to cities and people (Erdly & Song, 2020).

1.2. Real-world issues

1.2.1. General Issue

1

With the onset of the pandemic, the concern for people's well-being has gained new significance (Taylor, 2020). People's health and well-being have taken centre stage with greater emphasis on a healthier, more balanced life. However, user well-being is often neglected in design interventions, with the budget being the main driver. With the digital interface replacing in-person interaction, the pandemic accelerates multiple psychosocial threats and further diminishes people's health and well-being.

1.2.2. Urban issue

2

The workplace is one of the spaces that the COVID-19 pandemic has heavily impacted. Trends in remote working have been accelerated, and whilst this has its benefits, many people report feeling disconnected from their surroundings and peers. In addition to depriving people of in-person interaction and human contact, technology and virtual work have made the working environment less accessible to people with fewer skillsets and limited access to resources. This is particularly relevant in South Africa, where the official unemployment rate for 2021 quarter 1 is 32,6% (Statistics South Africa, 2021:1). Furthermore, 43,6% of youth between the ages of 15-34 are not in employment, training, or education (Statistics South Africa, 2021:14). The diverse Hatfield community has a

considerable human capital potential who will continuously need to adapt and learn to stay relevant to the job market.

1.2.3. Interior architectural issue

3

The pandemic has accelerated changing work typologies such as remote and agile working. Furthermore, technology is enabling more virtual, freelance, or temporary, project-based work. With the shift in work typologies, many existing office buildings are currently vacant as they neither respond to the needs of the surrounding communities nor are they conducive to healthy work environments. With people being separated from space, they are thus also isolated from one another. Interior architecture can be utilised as a strategy to reconnect users both to space and to each other by transforming these buildings into more responsive, inclusive, socially, and environmentally responsible spaces that focus on the health and well-being of the users and encourage them to flourish through opportunities for formal, informal, and social knowledge exchange.

Businesses rely on the productivity and engagement of the workforce, which is strongly related to the well-being of employees (Chenoweth, 2011:1). However, their well-being is often neglected in design interventions. For interior architectural interventions to become more relevant to the changing needs of users, new work typologies and trends, as well as the effects these design decisions have on the users, need to be understood. In order to understand these changes, the impact of the pandemic on how people work, as well as how commercial spaces are used, needs to be considered. Additionally, the way in which workspaces are designed to enhance various levels of well-being of the users needs to be explored. Finally, the needs of the workforce and how these can be accommodated within a design solution need to be determined. Interior architecture can transform these idle buildings into contextually relevant, integrated spaces that better respond to the needs of the community.

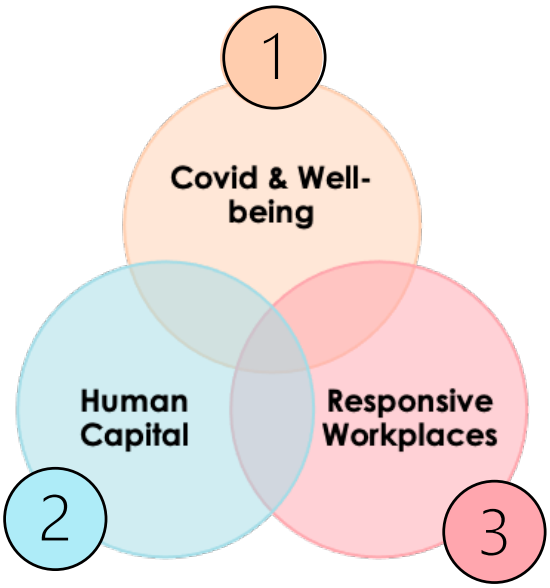


Figure 1. Real-world issues (Author, 2021).

1.3. Theoretical framework

1.3.1. Research questions

Workplace well-being within the context of the pandemic is the focus of the theoretical framework. The research question is:

How can interior architectural strategies be implemented in post-pandemic workspace design to reconnect people back to each other and their environments, support the well-being and needs of the surrounding community, and build human capital through knowledge exchange?

The sub-questions are as follows:

Contextual:
How can a vacant office building become a safe, accessible, relevant space for people to connect within the context of Hatfield and the pandemic?

Theoretical:
How can a post-pandemic workspace be redesigned to support the users' personal, workplace, and community well-being and encourage them to flourish?

Design:
How can interior architecture be implemented within workspace design to make knowledge and opportunities more accessible to the community and encourage safe interaction?

Technical:
How can the design encourage interaction, allow for autonomy, and enable users to flourish through adaptable details of the user interface?

By designing an accessible intervention that allows for the diverse community of Hatfield with different backgrounds and skillsets to come together and exchange knowledge in one space, human capital can be built, and multi-scalar flourishing is encouraged.

1.3.2. (Well-being and flourishing

The research includes investigating how post-pandemic workspace designs can cater for well-being and encourage the flourishing of the workforce through skills development and enabling social connections. Given the relevance of well-being in design, one would expect comprehensive research thereon; however, this is often neglected within workspace design, with research thereon still in its infancy (De Simone, 2014:118; Maccagnan, Wren-Lewis, Brown & Taylor, 2018:217-243). In the past, '*well-being*' has referred mostly to physical health. However, it has subsequently acquired a broader meaning that includes emotional, physical, social, societal, occupational, and intellectual aspects (De Simone, 2014:118; Hettler, n.d.:2). As illustrated in Figure 3, Fisher

(2014:13) provides a framework for well-being consisting of various components, including hedonic, eudemonic, and social well-being. In Figure 4, Fisher (2014:15) further illustrates how these aspects can be translated into workplace well-being through positive affect. Flourishing refers to people who are developing, acting in the best interest of society, and living their best lives (Desmet and Pohlmeyer, 2013:10).

Moreover, flourishing is characterised by developing positive emotions, seeking to understand, appreciate and engage in the world and our work, building meaningful social connections, finding meaning and purpose in our lives, and developing and applying our strengths, skills, and talents to achieve goals (Seligman, 2011). In the context of the study wherein people have been deprived of in-person interaction due to COVID-19 social distancing protocols, social well-being becomes an overarching factor to consider. However, this component of workplace well-being is often overlooked in literature (De Simone, 2014:121). Well-being and flourishing can be addressed across various scales within the intervention; these include personal, workplace, and community levels, as illustrated below in Figure 2.

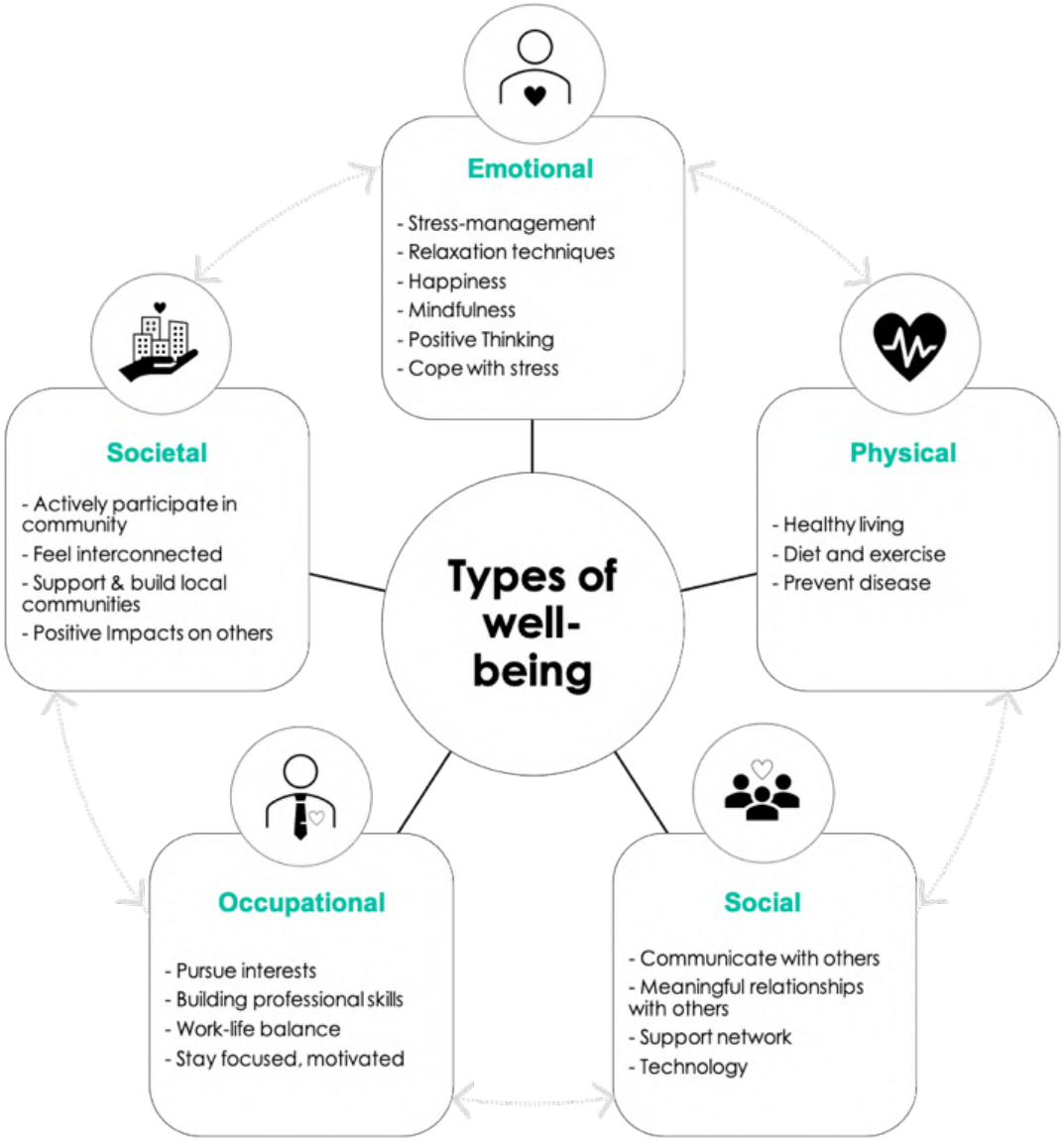


Figure 2. Diagram of different types of well-being (based on information from Hettler, n.d.).

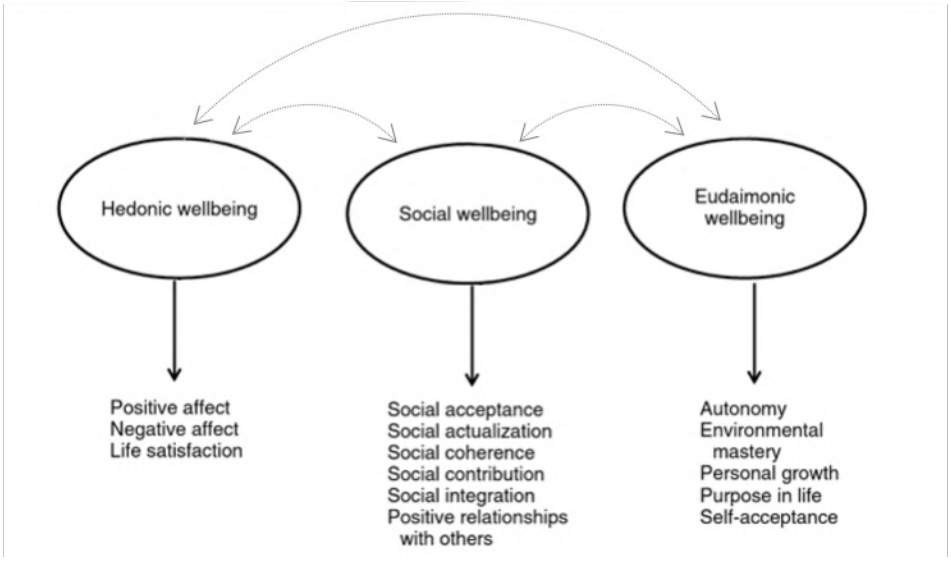


Figure 4. Overall well-being in life (Fisher, 2014:13).

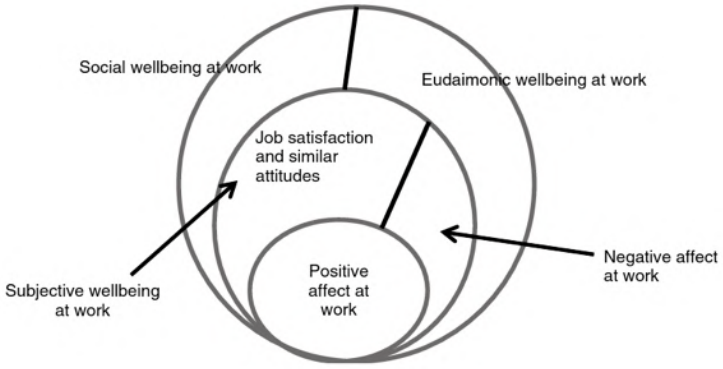


Figure 3. Components of well-being at work (Fisher, 2014:15).

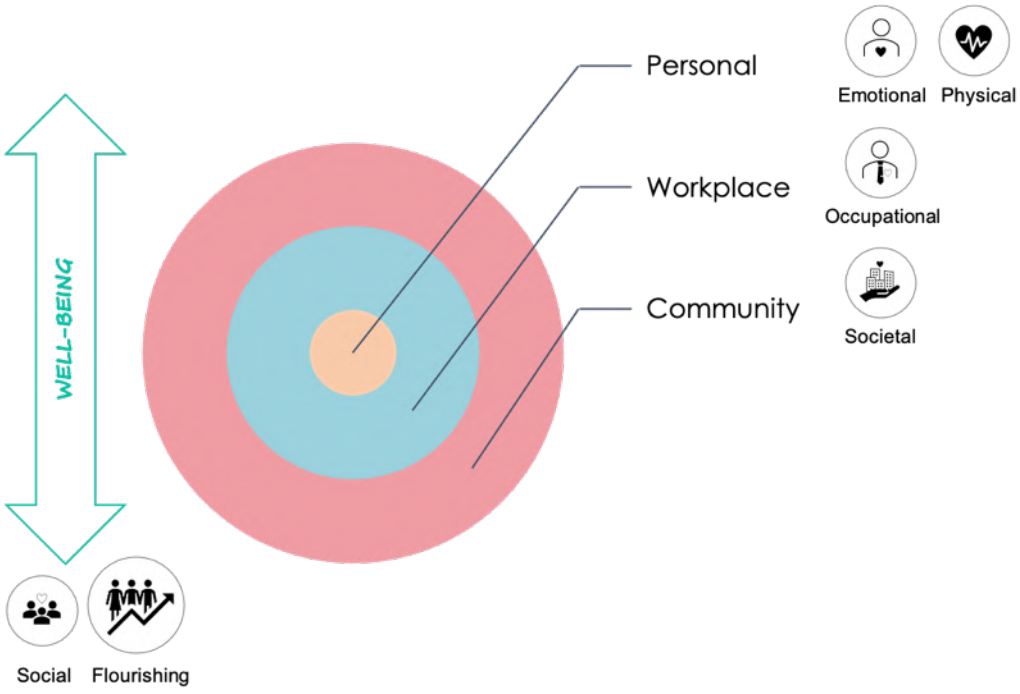


Figure 5. Diagram of well-being across various levels (Author, 2021).

1.3.3. Personal

To ensure wellness amongst the users of the intervention, users' emotional and physical health needs to be protected. The intervention needs to be designed so that the Hatfield community can safely interact with one another in the space. Therefore, COVID-19 protocols need to be integrated throughout the design. These protocols include social distancing prompts, touchless and easily cleaned surfaces, and sanitisers (strategies from the WELL building standard to support the fight against COVID-19, 2020:5-17). Furthermore, to ensure physical health, the intervention can be designed to include WELL standards such as providing sufficient ventilation and lighting, acoustics, maximising connection to nature, and encouraging movement and healthier habits (Wellcertified.com, 2020). Beyond the physical, objective aspects, the space also needs to promote mental health and flourishing by providing access to meaningful activities and programmes that pre-pandemic users in the Hatfield community have lost access to, such as knowledge exchange, opportunities for social interaction, and informal trade. Furthermore, elements of personal well-being such as comfort from ergonomic design, autonomy, and flexibility in the space need to be considered. These aspects further encourage users to flourish by being able to appropriate the space to suit their needs and have a sense of environmental mastery (Wellcertified.com, 2020; Fisher, 2014:13).

1.3.4. (W)orkplace

Approximately one-third of people's lives are spent at work, with their experiences at work affecting their well-being and spilling over into their personal lives (Conrad in De Simone, 2014:118). Commercial spaces have evolved from rigid, individual layouts to more flexible and collaborative typologies, with the pandemic abruptly accelerating the shift to remote working (Chevez & Huppatz, 2017; Kleibrink, 2011). With technology and remote working continuously developing, social interaction and constant upskilling become more significant within the workplace. As per Fisher's (2014) diagram in Figures 3 and 4, social and workplace well-being are inextricably linked. Research suggests that people want to meet, brainstorm, and socialise in person instead of virtually as they struggle to connect online (McLaurin, 2020). Due to COVID-19, the study proposes that the workplace will need to adapt to become a place of social connection that facilitates a variety of work typologies and makes knowledge more accessible to the users of Hatfield.

According to research done by Gensler, there are several aspects of workspace design that need to be addressed- most of which existed before the pandemic but were exacerbated thereby (McLaurin, 2020). Allowing for increased mobility and autonomy and a wider variety of work typology choices seem to yield higher-performing employees, leading to more job satisfaction, a sense of accomplishment and competence, and ultimately flourishing (McLaurin, 2020). Studies show that conditions such as allowing for a sense of control, fostering a social support network, and reducing stressors within the workplace can support or optimise productivity and well-being (Bennett *et al.,* 2017:570-604). By creating a space that facilitates various work typologies that better suit the surrounding community's needs, users are encouraged to engage with the space and each other, which leads to the development of skills and knowledge through social interaction.

1.3.5. Community

Vacant commercial spaces as a result of the pandemic allow for a creative solution that addresses both the new way of working in more flexible and social spaces, as well as expanding on the potential value of properties to become more relevant to the users (Erdly and Song, 2020). For the purposes of this dissertation I will specifically be considering how this relevance relates to the surrounding community of Hatfield.

In line with the workplace becoming a space of connections, the intervention should cater for the larger community's well-being by providing a safe, inclusive space that encourages interaction amongst users and allows for the appropriation of amenities and programmes to suit their needs. To successfully respond to the surrounding community's needs, the space needs to offer elements of permeability, richness, personalisation, and variety (Bently *et al.*, 1985). Overall, well-being is dependent on one's environment and community and how one interacts with or contributes to them in conjunction with the enrichment of one's life through living and playing (Hettler, n.d.:2). Flourishing and multi-scalar well-being can be promoted through creating a contextually relevant community interface that encourages the formation of social networks and the development of skills and knowledge transfer.

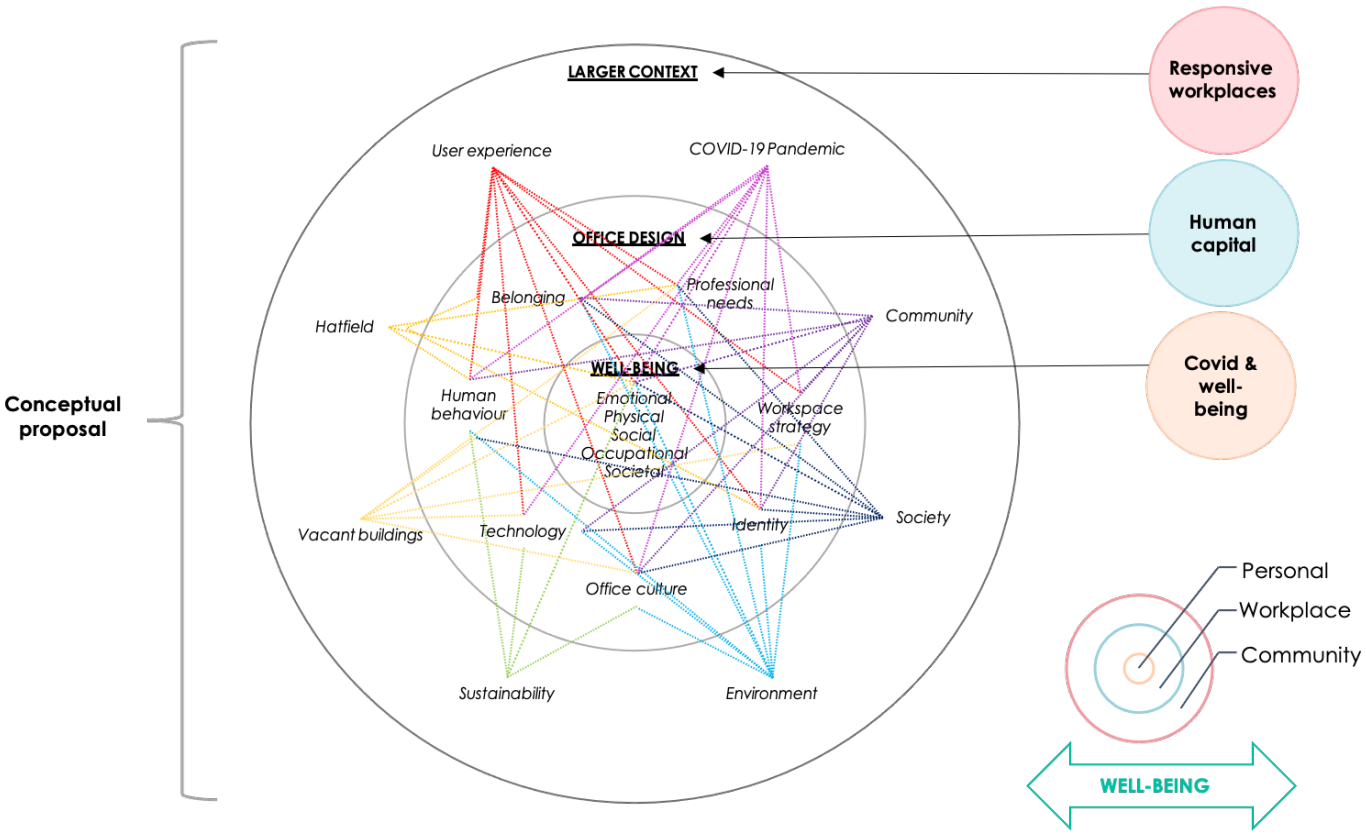


Figure 6. Diagram illustrating well-being within the context of workplace design and larger context (Author, 2021).

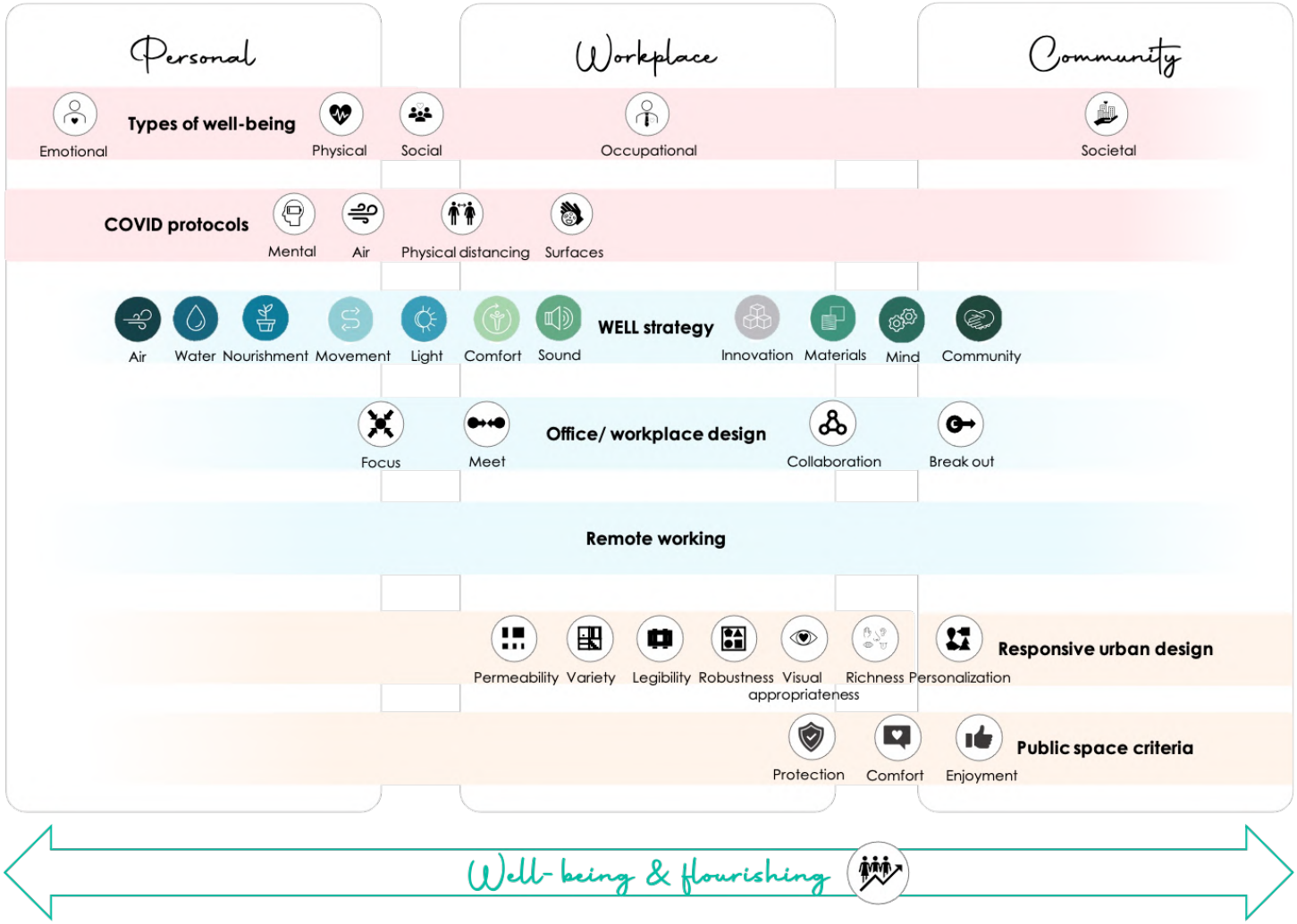


Figure 7. Diagram showing the overlaps of different theories across the different levels of well-being (Author, 2021).

1.4. Research methodology

1.4.1. Ethical statement

The research falls within the University of Pretoria's Department of Architecture's MProf blanket ethical clearance (reference number: EBIT/79/2021) and complies with all guidelines and regulations for ethical research undertakings. The project does not involve participant interaction but relies primarily on secondary data from relevant, reliable literature.

1.4.2. Design approach

In an urban society wherein more than 70% of people's lives are spent indoors, an essential role of designers is to provide environments that sustain users' well-being (Al-Akkam, 2013:21). Architecture should not be merely functional but should contribute to the users' lives by facilitating well-being and encouraging them to flourish. The intervention should be designed with a holistic, multi-layered approach to support flourishing and knowledge transfer through various interfaces.

1.4.3. Research paradigm

The main intention throughout the study is to gather information that will aid in creating a proposal tailored to the health and well-being of people in post-pandemic workspace environments. The research is intended to aid in developing a conceptual intervention that encompasses more than just workspace design but also addresses flourishing and wellness in various contexts. The study falls within the interpretivist research paradigm centred around subjective human meaning-making within a particular context wherein the world is seen as being socially constructed (Pham, 2018:4). The interpretivist paradigm, illustrated in Figure 8, includes research topics pertaining to social sciences and humanities and features a relativist ontology wherein an occurrence may have numerous interpretations rather than a calculable 'truth' (Pham, 2018:3). The research intent within the interpretivist paradigm seeks to understand the diverse, unique intricacies between objects, humans, and events within a social context (Pham, 2018:3). To better understand the intangible, subjective concepts of well-being and flourishing, qualitative methodologies such as case studies, naturalistic observation, and analysis of existing documents are the most appropriate approaches to support the topic's relevance (Merriam, 1998; Pham, 2018).

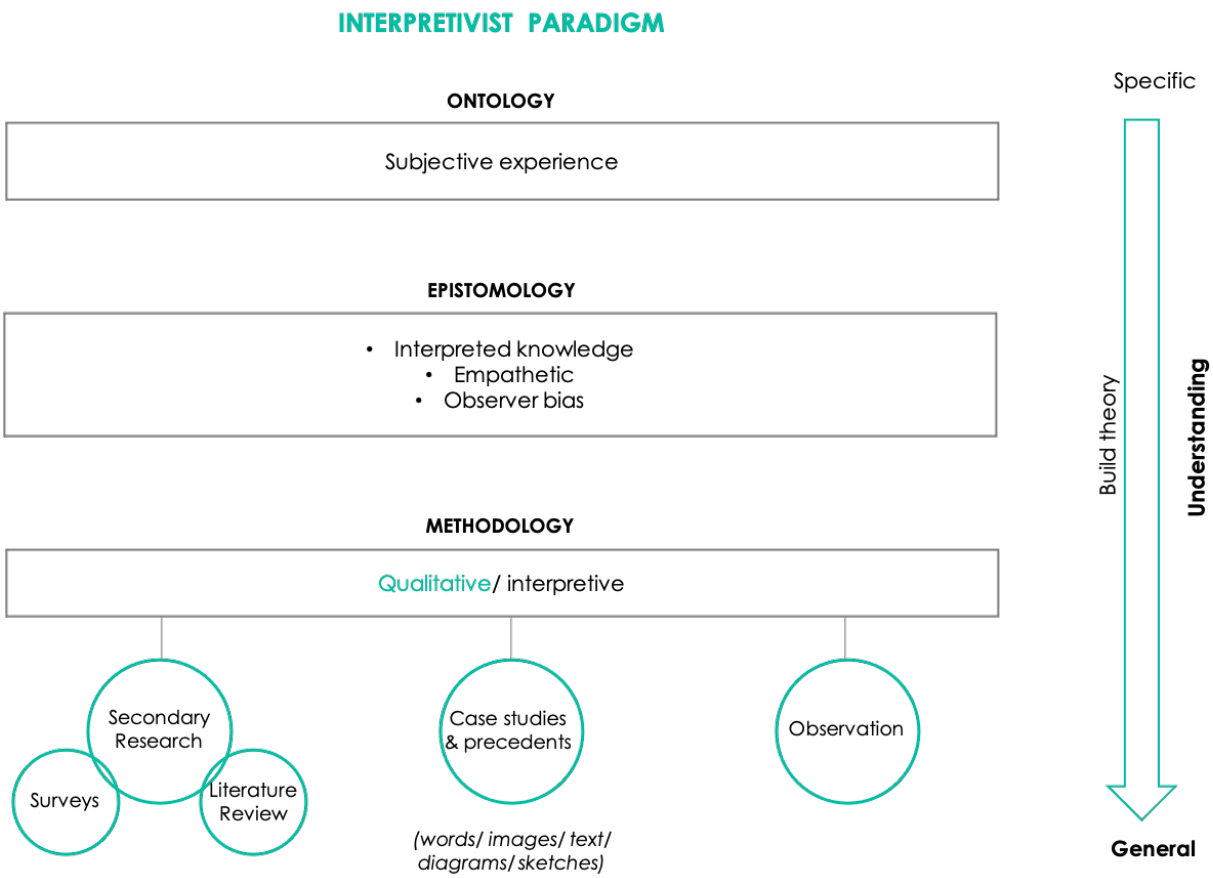


Figure 8. Diagram illustrating research within the interpretivist paradigm (Based on information from Pham, 2018).

The research methodology entails the development of a theoretical framework through consulting relevant secondary data gathered through the review of appropriate literature, as illustrated in Figure 9 below. Alongside an investigation into well-being and flourishing, an inquiry into the evolution of commercial spaces is to be undertaken to understand workplace concepts better. In Part 2 of this document, case studies of flexible commercial designs will be conducted to understand how these spaces cater for user experience, autonomy, and other aspects associated with well-being. Case studies of post-pandemic workplace strategies will be examined to determine the technologies and protocols that can be implemented to ensure workplace safety and well-being. Additionally, to better inform the design, sketch and photographic observations are to be created to understand the relationship of the site to its users and surroundings. In Part 3, a conceptual design will be developed, tested, and iterated based on the information consulted. Due to the subjective ontological nature of the interpretivist paradigm, the validity of the outcomes cannot be verified or repeated through scientific procedures (Pham, 2018:4).

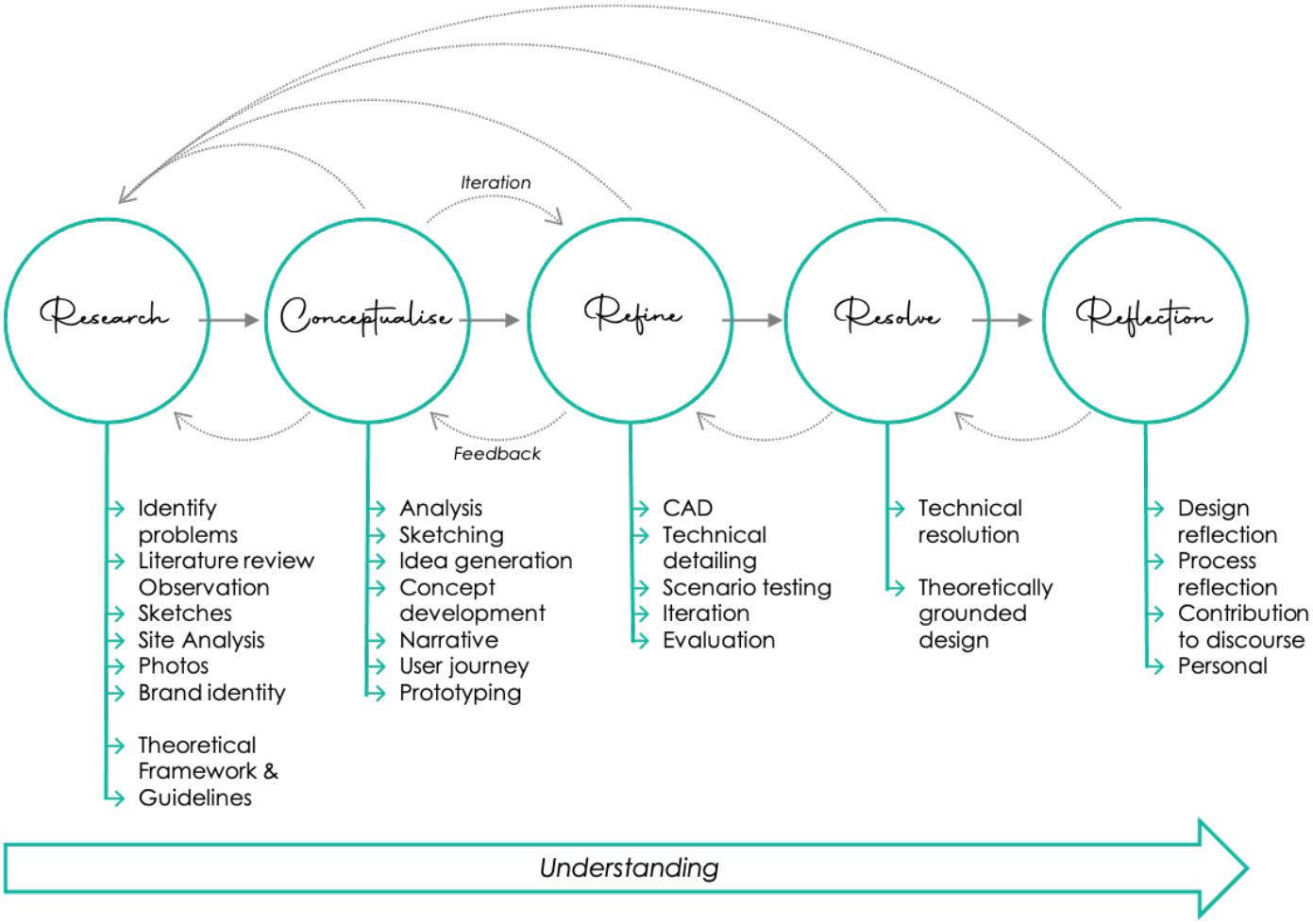


Figure 9. Research methodology sketch (Author, 2021).

1.5. Site and programme

Research suggests that most South African workers want to return to a workplace at least a few times a week as they miss the interaction between colleagues and find that virtual interaction does not suffice (Atiku, Jeremiah and Boateng, 2020). Gensler's research also suggests that post-pandemic workplaces must be strategically adjusted by incorporating new practices, protocols, and technologies (Tranel, 2020). The spaces will need to respond to the heightened concern for user health and well-being going forward. These spaces will also need to offer the same degree of flexibility, comfort, and autonomy that workers grew accustomed to at home. Furthermore, workers have realised their ability to use technology to their advantage and work remotely and have also adapted to not commuting to work in densely packed spaces (Tranel, 2020). Research suggests that people prefer a flexible workspace where they can efficiently collaborate and interact with their colleagues and project teams, and socialise with new people (Tranel, 2020).

1.5.1. Site selection

The criteria for site selection, in this case, included a commercial building which, at the time of writing, was underutilised due to COVID-19. Further criteria included access to information such as architectural drawings as well as physical access. In terms of location, the site needed to be surrounded by a variety of diverse user groups. The building required direct access to the street with the opportunity to engage with the community and connect the building to the context. Due to the beforementioned criteria, the chosen site for investigation is 1157 Francis Baard Street in Hatfield, Pretoria.

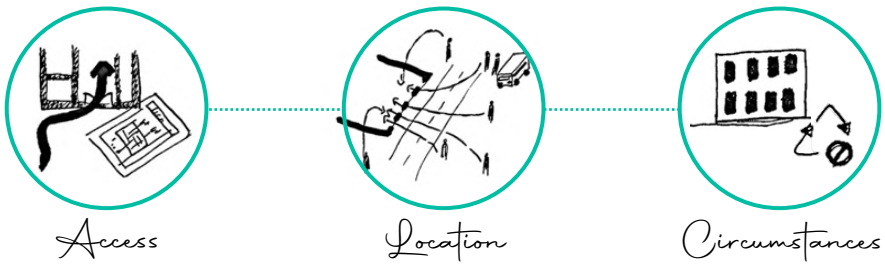


Figure 10. Criteria for site selection (Author, 2021).

1.5.2. Site Analysis

The site is located in the uniquely diverse Hatfield CBD in Pretoria and is close to the Gautrain Station, the University of Pretoria, residential areas, and many other businesses. The site falls within the Gauteng Regional Spatial Development Framework (n.d.), which includes the vision of an inclusive, integrated community with walkable neighbourhoods and vibrant spaces. The building consists of basement parking, three stories with various interconnected office spaces, outdoor areas, and rooftop terraces. The building is currently isolated and underutilised, but the site creates an opportunity to explore how commercial spaces are designed and used. The building has direct access to the streets on the northern and southern sides and offers an opportunity for a creative solution that reintegrates the site back into its surroundings and reactivates the currently dead space.

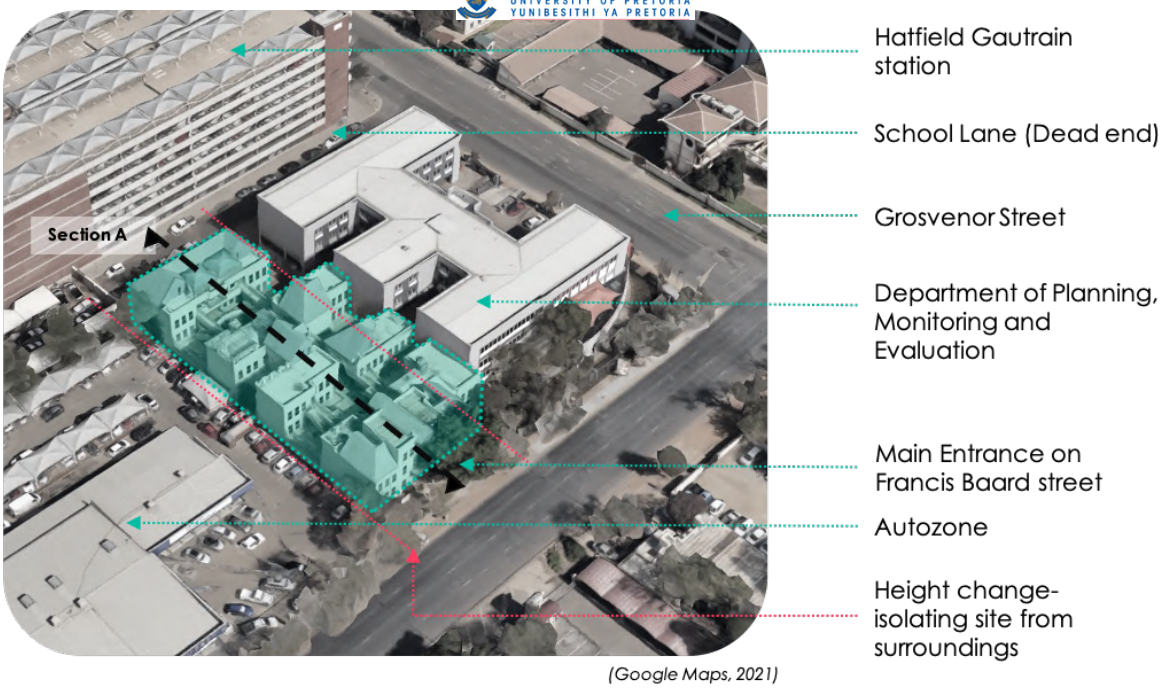


Figure 11. Illustration of site in context (Author, 2021).

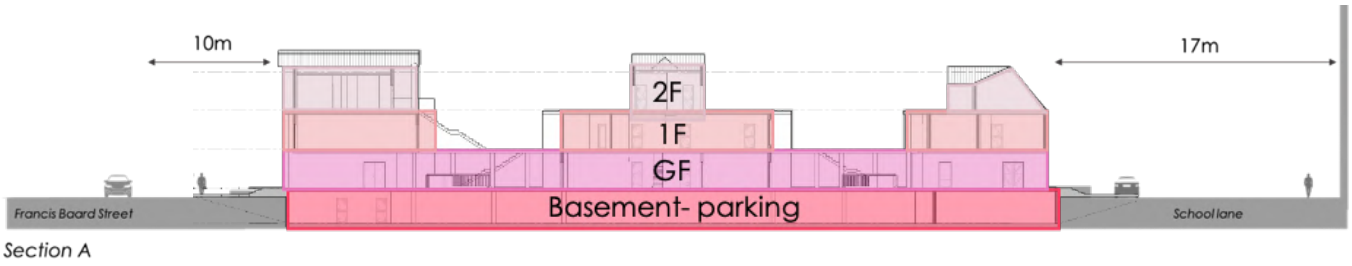


Figure 12. Indicative section highlighting wide sidewalk on Francis Baard Street, and dead-end on School Lane for activities to spill out (Author, 2021).

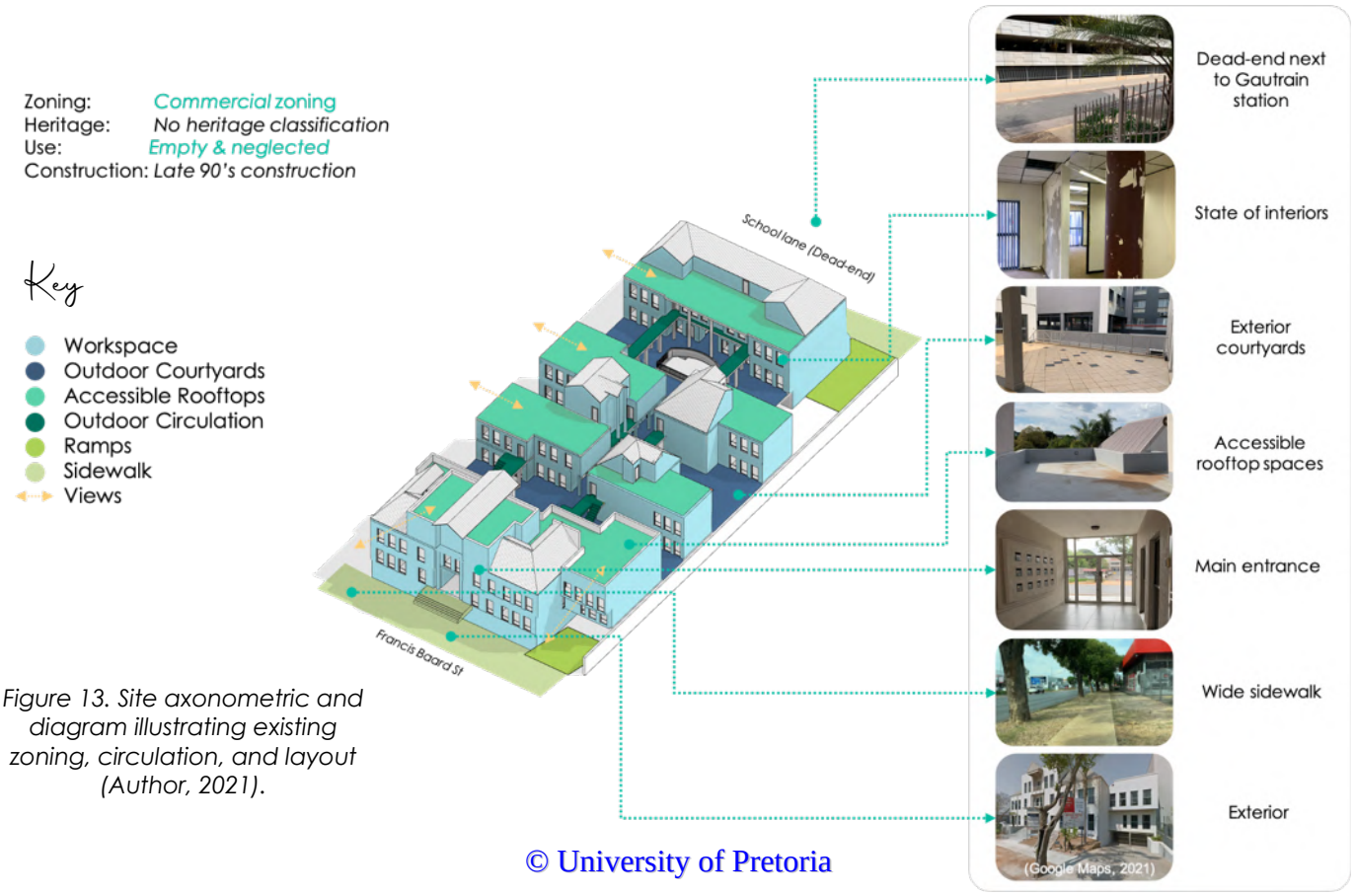


Figure 13. Site axonometric and diagram illustrating existing zoning, circulation, and layout (Author, 2021).

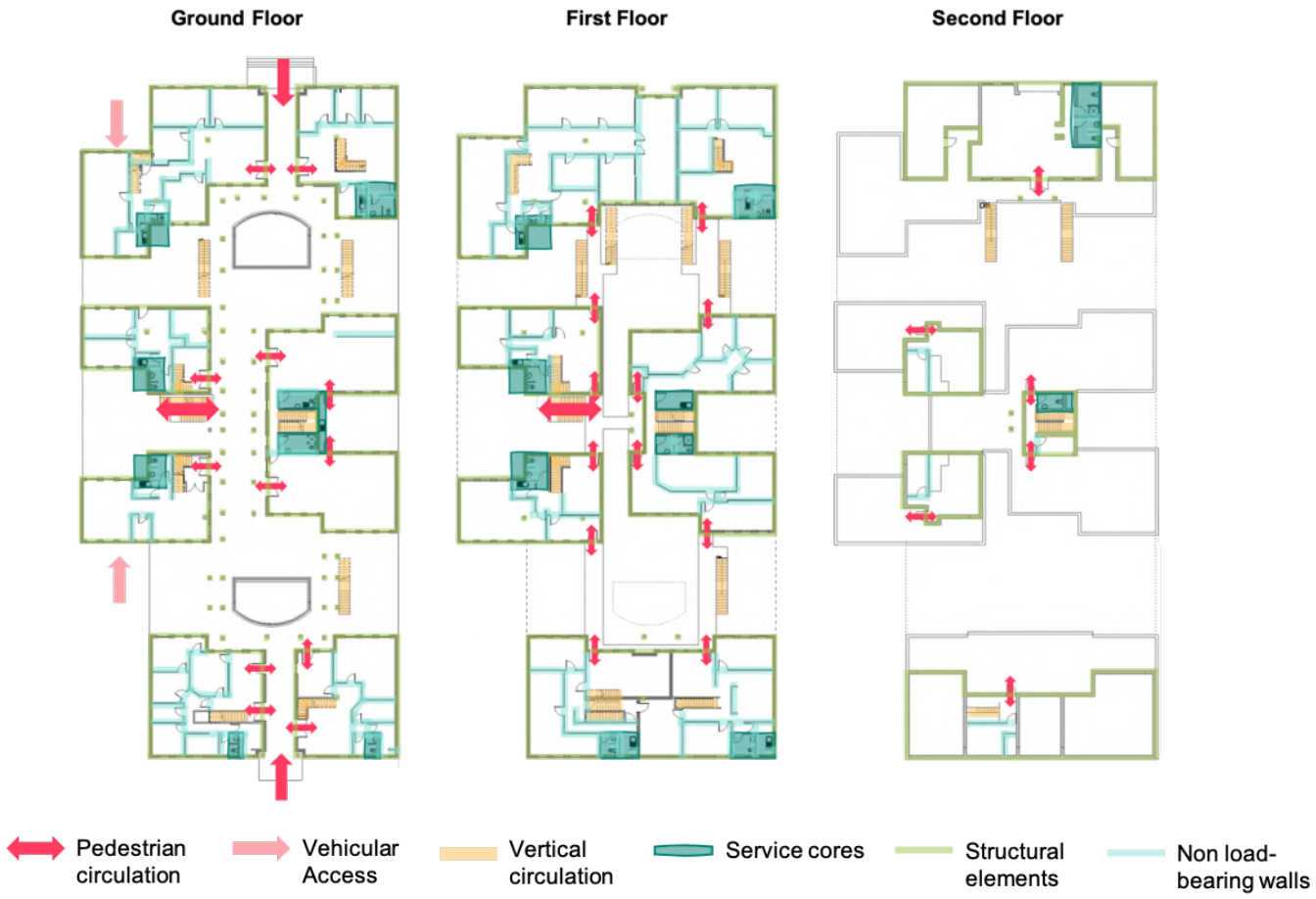


Figure 14. Diagram illustrating existing layout of GF, 1F and 2F highlighting entrances, circulation, service cores and structural elements (Author, 2021).

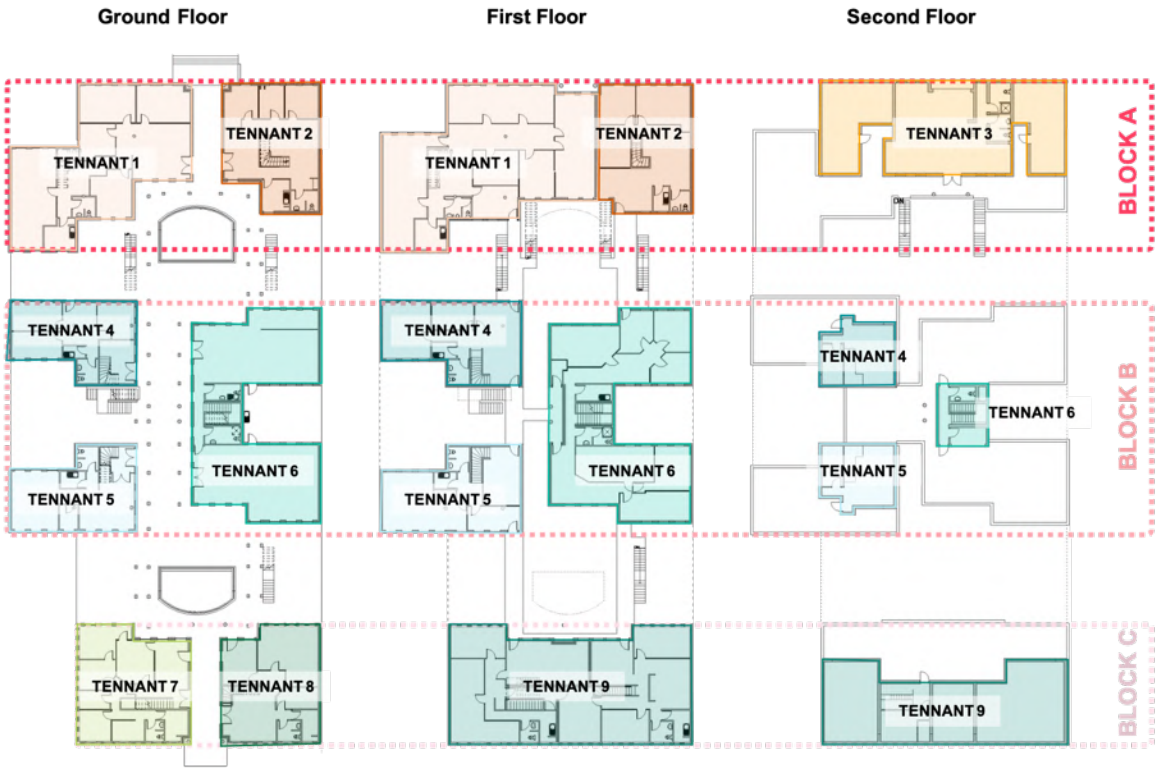


Figure 15. Diagram illustrating existing space allocation of previous 9 tenants (Author, 2021).

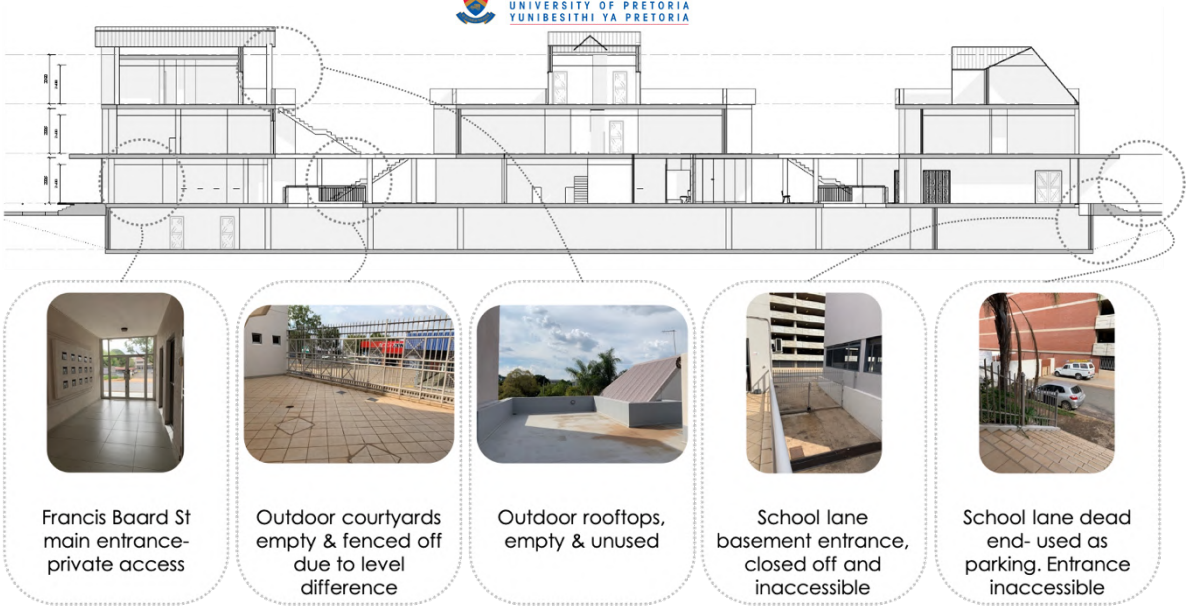


Figure 16. Images illustrating vacant and inaccessible site (Author, 2021).

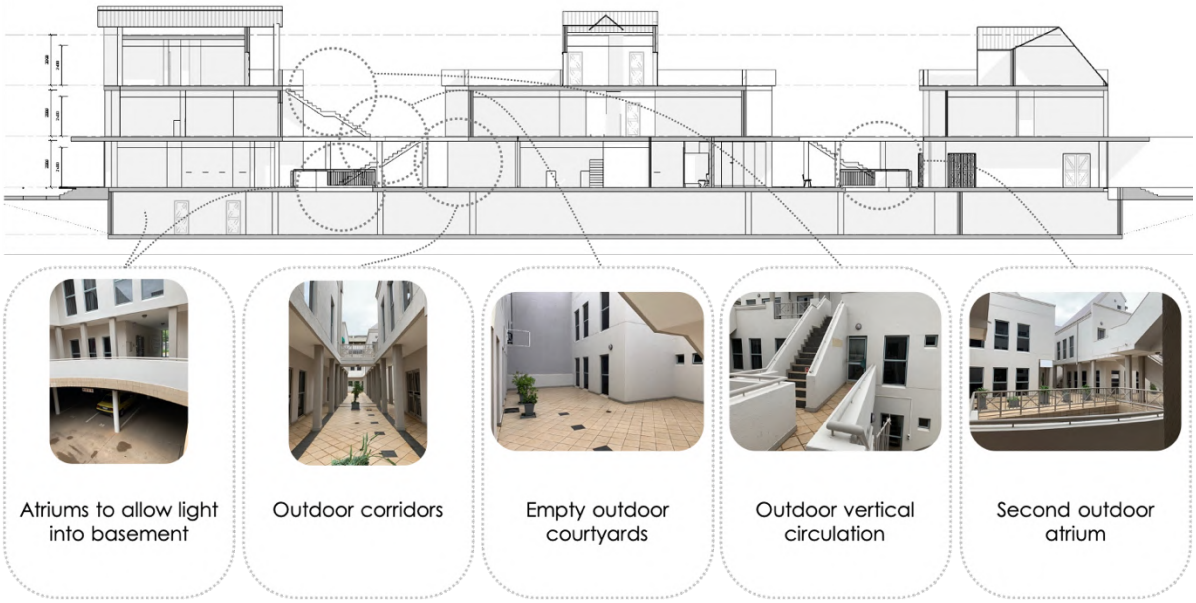


Figure 17. Images showing unprogrammed outdoor areas (Author, 2021)

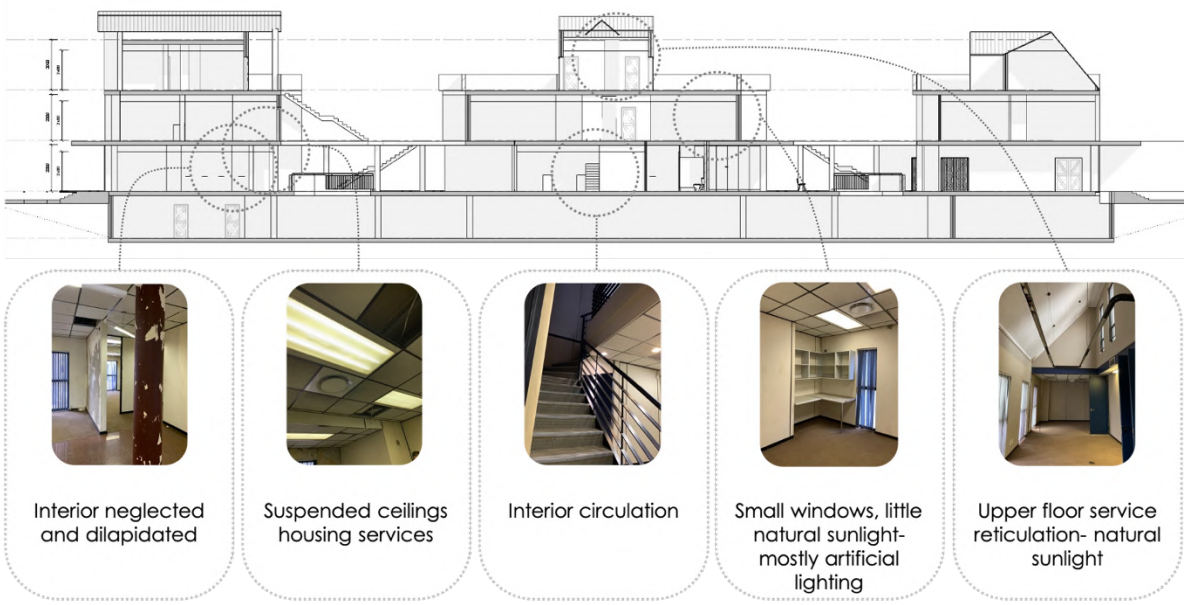


Figure 18. Images indicating neglected condition of interiors (Author, 2021).

1.5.3. Postulation of programme

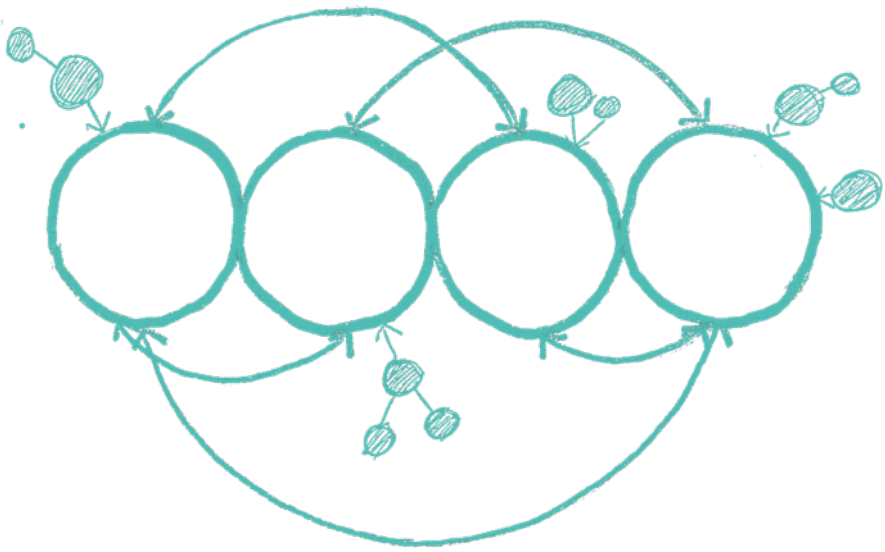
The design is to cater for the Hatfield community who has been isolated by the pandemic. The diverse area lends itself to the introduction of a space where the community can reconnect and partake in various activities that encourage personal, physical, social, occupational, and societal well-being. The building offers an opportunity to adapt the vacant space to create a more relevant and interconnected workspace that includes an array of different programmes that support interaction, knowledge transferal, and flourishing. The site allows for integration with the street, providing favourable circumstances for activities in the space to spill out onto the wide sidewalks. This, along with a permeable ground floor, allows for public access or circulation through the site, which will promote social interaction and societal well-being by reconnecting people in one space. The design intervention can cater to the community's needs by offering a workspace equipped to safely facilitate collaboration and interaction between users and provide a distraction-free space for individual work. The upper floors can serve as an accessible, centralised workspace wherein the Hatfield community can work remotely and productively. The design intervention is to employ a common design language of connectedness and adaptability which allows for more autonomy and social engagement. This makes knowledge more accessible to the community and promotes various levels of well-being and flourishing, which will positively affect the community.

1.6. Conclusion

The concept of well-being needs to be addressed in design interventions, particularly now when the challenges of the pandemic have emphasised the importance thereof (Erdly and Song, 2020). Several investigations into workplace well-being suggest that many contextual work conditions such as the individual, environment, and community can affect well-being (Bennett *et al.,* 2017). It is clear that as humans, we value the experience of social interaction now more than ever. Isolated commercial spaces can be transformed into integrated, environmentally and socially responsible buildings that connect community members. The spatial design can prompt the diverse people in Hatfield to utilise the building by allowing users the agency to appropriate the space to suit their needs. The intervention promotes well-being and flourishing in the workplace by encouraging users to engage with the space and each other in order to acquire new skills and knowledge through social interaction.

"Architecture can't force people to connect; it can only plan the crossing points, remove barriers, and make the meeting places useful and attractive" (Brown in Cutieru, 2020).

Part 2- Design Research



2.1. Introduction

The global COVID-19 pandemic has accelerated a shift in the way public spaces are used. Workers have been mandated to work remotely. Whilst working from home, the vast majority of people often find themselves isolated from others and disassociated from their surroundings (Paterson & Finn, 2020). Companies are risk-averse to having employees on office premises, yet employees are isolated working from home. The increased number of remote workers has resulted in office spaces being drastically underutilised and provides an opportunity for these spaces to be redesigned to be more responsive to the current and future needs of the users in the surrounding communities (Henderson, Clay & Simet, 2020). Additionally, in the aftermath of the pandemic, work has become less accessible to un- or semi-skilled individuals who need to learn new skills to better transition into the workforce.

Virtual gatherings are replacing in-person interactions as well as outings to places of work, entertainment, retail, and other events. It is widely acknowledged that virtual interaction cannot adequately replace human interaction in the long run (Paterson & Finn, 2020). Despite all that technology has accomplished, it does not alter our fundamental human nature to seek connection with others through spontaneous experiences (Howder, 2020). Through these chance interactions, new ideas are sparked, and a shared sense of purpose is developed (Howder, 2020). Being apart during the pandemic has further emphasised the significant role public spaces play in fostering community and promoting society's health and well-being (Paterson & Finn, 2020).

Part 2 of this document includes an investigation into design explorations through framing the theoretical positioning, unpacking the design informants and intentions, and analysis of multiple relevant precedents in order to develop a design approach that results in a spatial manifestation.

2.2. Theoretical Positioning

Due to the pandemic, people were forced to vacate the spaces they typically frequented, thereby also losing out on the experiences provided by those spaces (Cohen, Hoskins, Shick & Taylor, 2021). The pandemic has intensified multiple psychosocial challenges and has resulted in new importance being placed on the health and well-being of individuals.

In the context of the project, the concept of well-being takes on a multi-layered definition. First, the Design-for-Wellbeing (DFW) approach by Marc Steen (2016) is a socially responsive design approach aimed at bringing positive social change and promoting well-being. This approach to well-being includes enabling people to engage in meaningful activities that include bettering one's skills and talents, building relationships, and improving one's health (Toledo, 2019). Desmet and Pohlmeyer (2013) describe flourishing as individuals who are acting in the best interest of society and who are developing and living their lives to the fullest potential. Furthermore, their definition of designing for well-being includes: being possibility-driven, striving for balance, accommodating a personal fit, promoting active user involvement, and offering the means for long-term impact. Lastly, Martin Seligman's (2011) Well-being theory includes five elements: positive emotion, engagement, meaning, accomplishment, and positive relationships.

Overall, these definitions all involve a eudaimonic perspective (human flourishing and cultivating meaningful interactions) and a hedonic approach (pleasure-giving activities, fostering social connections, and avoidance of negative aspects) (Toledo, 2019:1-7). All these aspects can be addressed across multiple levels of well-being, including an emotional, physical, social, occupational, and societal level, as explained in Part 1 of this document.

The theoretical positioning is that workspaces can be designed to support multi-scalar well-being and flourishing amid the pandemic through applying responsive design techniques to create a more supportive, integrated environment.

A theoretical framework diagram was developed by adapting the World Green Building Councils' health and well-being framework and introducing additional points based on further research regarding well-being and flourishing to create academically grounded design guidelines.

Figure 19. Theoretical health & well-being framework (Adapted from World GBC, n.d.; Desmet & Pohlmeyer, 2013; Seligman, 2011; Steen, 2016; Toledo, 2019).

2.3. Informants and Intentions

2.3.1. Hatfield & users

The site is located in Hatfield, Pretoria. Hatfield has a uniquely diverse and multi-functional character (du Plessis, 2003), as illustrated below.

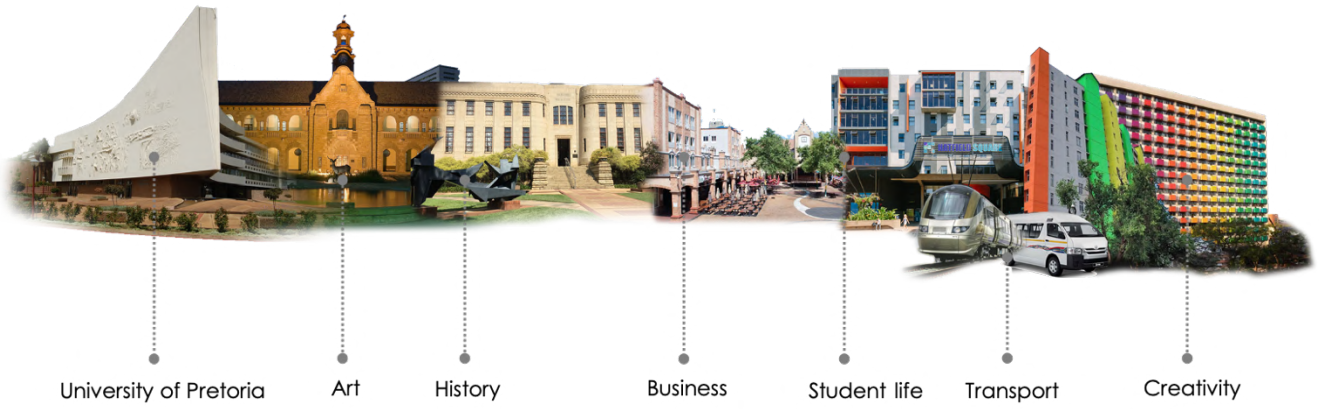


Figure 20. Hatfield identity (Author, 2021).

The suburb includes a variety of users with a particularly high concentration of students and younger professionals. Hatfield falls within the Regional Spatial Development Framework for 2030, which aims to create an integrated community and promote inclusivity. The framework includes the intention of making streets more liveable and developing sustainable, walkable, accessible neighbourhoods. The vision involves upgrading the spatial quality of the built environment to create more diverse, vibrant, valued spaces that promote activity and job opportunities (Regional Spatial Development Framework, n.d.). The site presents an opportunity to create a space that satisfies aspects of the 2030 vision and positively contributes to the surroundings, as illustrated below.

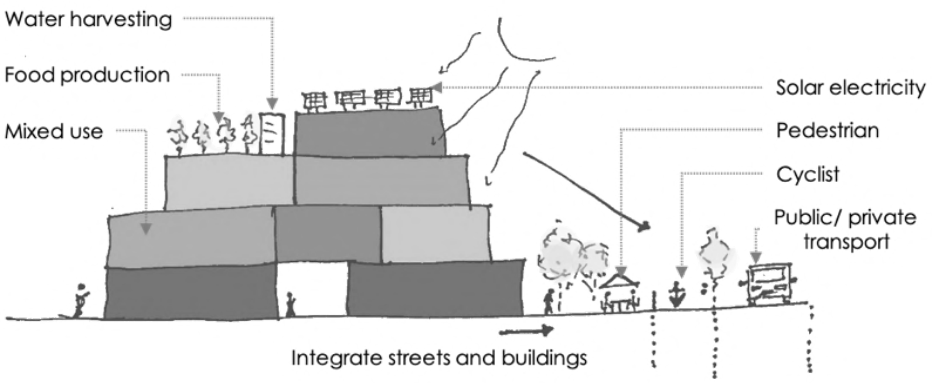


Figure 21. 2030 framework response sketch (Author, 2021).

The site is located in Hatfield, which features a diverse demographic. Therefore, the intervention needs to consider the varied user group and ensure that the space features activities that attract users from various backgrounds and activities that users in Hatfield can relate to. To make the design more contextually relevant and better inform these activities, six user archetypes inspired by real individuals living in Hatfield were derived. These users and their needs are explored in the images below.

THANDO
Trendy trader
31

Occupation:
Informal trader

Work Circumstances:
- **Sells food items** and **various products** that he makes from **recycled materials**.
- Relies on **exposure to commuters** along Francis Baard street to sell his goods but is now **struggling** to make ends meet due to people **working remotely**.
- Is a social person but feels **disconnected** from his friends due to covid restrictions.

Personality traits:
Social, has an artistic flare and **encourages** people to **reuse and recycle** through creating **art installations** out of recycled materials.

PRISHA
Focused freelancer
29

Occupation:
Freelance graphic designer

Work Circumstances:
- Moved from **Durban to Hatfield** and **doesn't know anyone** in the area.
- Works **remotely** on a **project basis** and **doesn't have any bonds with her colleagues** as all interaction is online.
- Unfamiliar with the area and is **struggling to meet new people** due to covid restrictions.
- Feels **lonely** and feels like an **outsider**.

Personality traits:
Would love to change her lifestyle to be more **balanced, healthy and active** and would like to **meet new people** in the area.

CHARLOTTE
Social student
20

Occupation:
2nd Year **fashion student** at TUKS

Work Circumstances:
- Lives in a **small bachelor's apartment** in Hatfield with no access to a balcony or garden
- Has **limited access to WIFI** and has all classes online
- **Misses her classmates** and is struggling to work in isolation as she feels **disconnected and lonely**

Personality traits:
Social butterfly, enjoys art/**design**/drawing and making her own clothes

SIBA
Eager employee
25

Occupation:
First job at Deloitte as a CA during covid

Work Circumstances:
- Has **never met his colleagues** in person and **struggles to bond** with them online.
- **Shares a small house** in Hatfield with 3 other people who all work around the dining room table.
- Has **limited access to WIFI** and must sit on his bed for calls in order to not hear his room-mates in the background
- Feels **overwhelmed**

Personality traits:
Enjoys **music and performance**, is an advocate for **sustainability**, and loves **reading** and sharing books.

TERRI
Marketing mom
33

Occupation:
Social media manager

Work Circumstances:
- Works from **home with 2 young children.**
- **Adapted the spare bedroom** to be an office space and has adequate access to technology.
- **Can't concentrate** due to the kids being distracting and **struggles to balance work and home life**.
- Misses **socialising** with her colleagues.

Personality traits:
Loves yoga, the **outdoors**, and **gardening**. Is a foodie and advocate for **healthy lifestyles** and is always keen to try new recipes.

BEN
Lively lawyer
52

Occupation:
Associate at a law firm

Work Circumstances:
- Lives in Hatfield but **used to commute** to the office in Johannesburg every day via the Gautrain, now works from home.
- Has a **designated office space** in his home with access to all the technology needed for work purposes.
- Feels as though he is **constantly working and can't switch off** or spend time with his family.

Personality traits:
Enjoys **cycling** with friends. Is an avid traveler and loves **meeting new people and sharing stories**.

Figure 22. User archetypes based on the Hatfield community (Author, 2021).

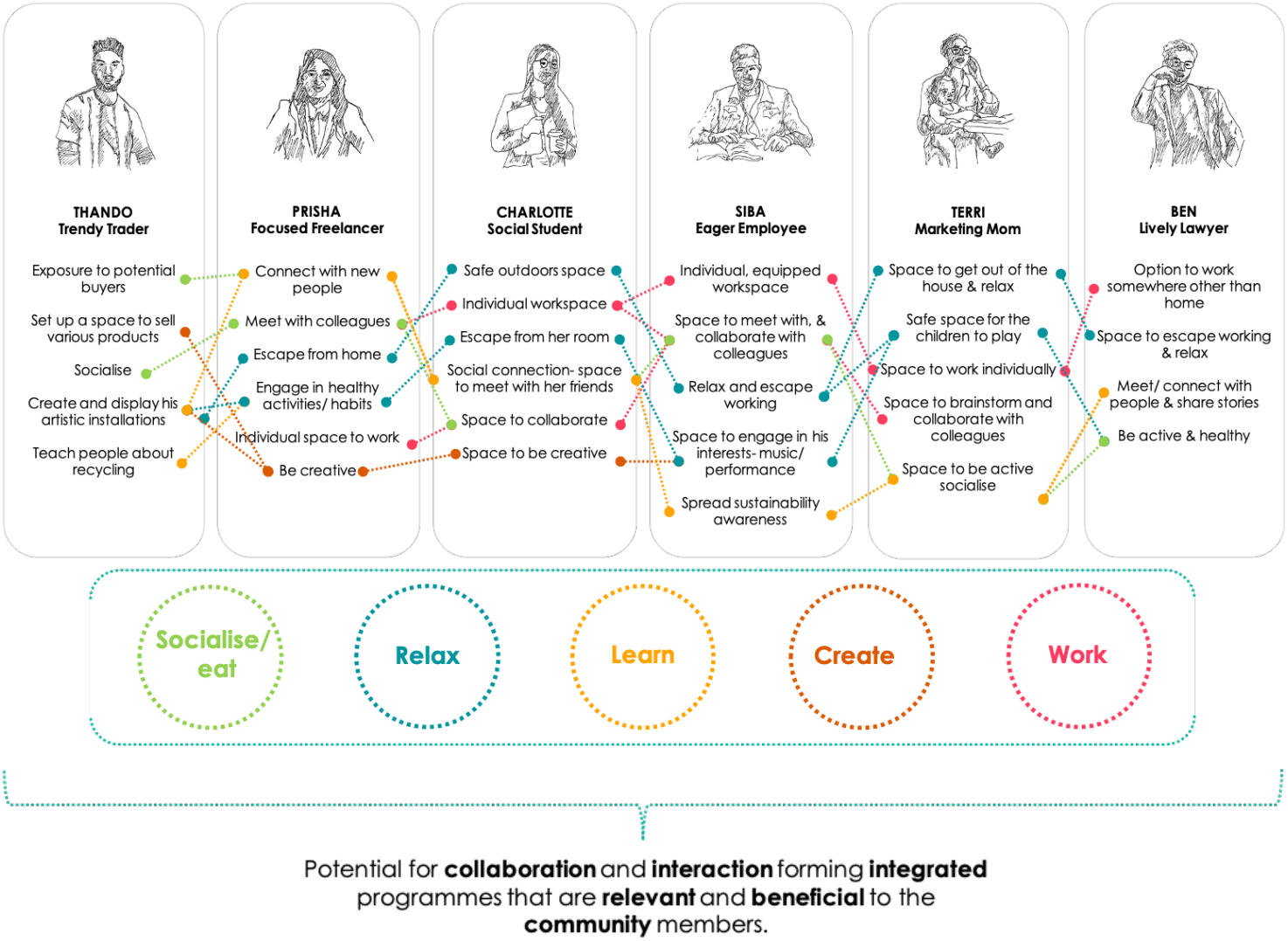


Figure 23. Hatfield archetype spatial needs (Author, 2021).

The space creates a shared urban experience by introducing new programmes and better facilitating existing programmes in one diverse space. In essence, the design contributes to the surrounding society by offering a connected space designed for people to live, work, socialise and ultimately flourish in. The below table indicates the various programmes as well as the design considerations for each. The ground floor can be separated into different zones according to the types of programmes that occur throughout. These zones can be arranged similarly to branches and leaves on a tree and become activity nodes along different pathways.

Table 1. Programme exploration (Author, 2021).

Zone	Programmes	Requirements
	Formal Meetings	• Desks and seating- more formal • Privacy • Access to WIFI and presentation equipment
	Collaboration zones/ studios	• Various flexible seating and desk typologies • Digital and physical brainstorming and presentation equipment
	Individual/focus	• Privacy- acoustic & visual • Seating & work surfaces for various tasks
	Reading/ focus	• Privacy- acoustic • Various comfortable seating & work surfaces
	Training	• Teach/ present - equipment • Types of learning - seating/ work surfaces • Individual vs various sized groups • Accessible
	Create/ art exhibition	• Access to water and electrical outlets • Seating/ work surfaces for different tasks • Creations- display/ hang/ stick/ pin • Specific lighting for art display • Exposure to viewers
	Informal trade	• Flexible, appropriable design • Creation & display • Ease of mobility • Storage
	Eat/ café	• Café/ small kitchen- equipment, storage, delivery • Coffee bar- customer Interface, equipment & display • Flexible seating/ tables for groups/ individuals
Other	Planting/ outdoors	• Irrigation • Exposure to sunlight • Appropriate plant types/ species - indigenous • Access, indoor & outdoor • Real vs artificial • Care- organic (no harmful chemicals) • Community engagement micro-scale farming- edible
	Pause/ break-away	• Food prep - water/ electrical appliances/ disposal • Flexible group or individual seating & tables
	Exercise/ relax	• Open, unprogrammed space • Groups vs individual, children, animals

2.3.2. Brand identity

The last design informant includes the brand identity of the space. The intervention is to be designed as a partnership between the City of Tshwane and Regus. It is to be a publicly accessible workspace that allows the Hatfield community the opportunity for a safe workspace wherein to gather. The Regus brand identity is to be respected in terms of its brand values of a global network of spaces that enable people to work, make meaningful connections, and encourage interaction with other professionals to build skills (Regus, n.d.). However, the intervention is to take on a more contextually relevant and more accessible approach and respond to the identity of Hatfield by taking on a vibrant, fresh, creative identity that uses colours derived from Hatfield.

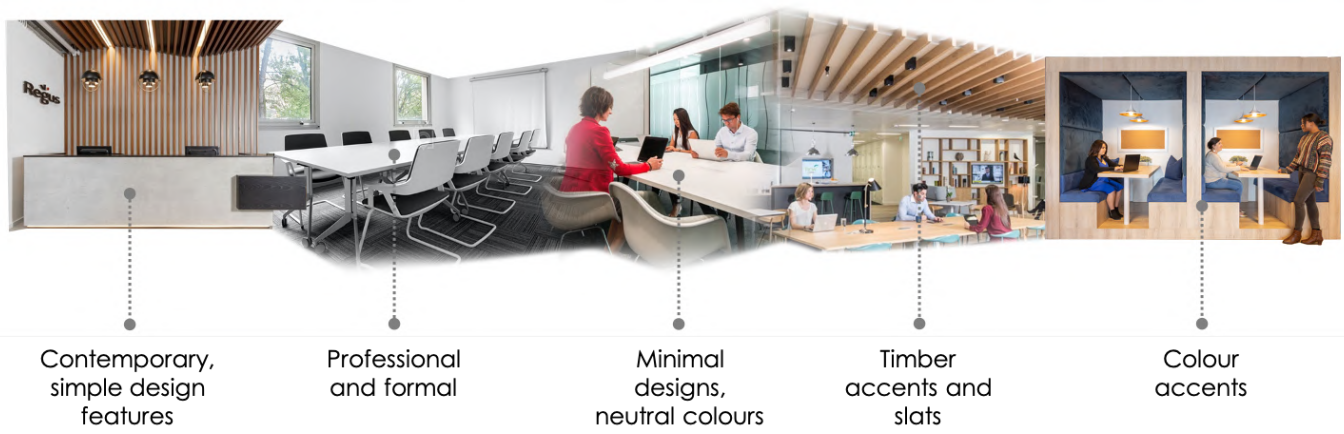


Figure 24. Graphic illustrating the existing Regus brand identity (Author, 2021).

Regus

What?

Network of **office, co-working and meeting spaces** to support every business opportunity.

Go flexible

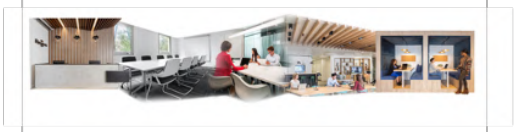
Brand colours:

Primary

Secondary

Aesthetic:

Professional, Formal, Minimal



Values:

Global network - work **wherever, whenever**, and **however** you need with access to the largest **network** of office space in the world.

Flexible commitment - office space management that puts you **in control**, with **freedom to grow**, without risk or commitment.

Packaged solutions - **easy to use**, **all-inclusive** solutions.

"A place to thrive"

(Iwgplc, 2019)

Expand from business to ***include community***

Secondary colour to become primary colour, but with a ***new, vibrant look*** *inspired by Hatfield.*

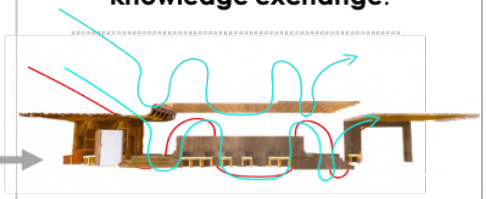
Contextually relevant, fresh approach ***inspired by Hatfield community & surroundings.***

Updated approach using the ***same brand values*** *but* ***expanding*** *on* ***connections to knowledge and opportunities*** *by introducing an adaptable space that caters for* ***both work and other contextually relevant activates for the community to engage in.***

The Net[work] Node

What?

Network of **workspace and community spaces** to support **interaction** and **opportunities** for **knowledge exchange.**



Brand colours:

Primary

Secondary

Aesthetic:

Vibrant, fresh, positive

Values:

Interconnected Network- work or indulge **wherever, whenever**, and **however** in **one adaptable space** and **connects people** to each other, to knowledge, and to opportunities.

Flexible space- appropriable space that allows users **control and freedom to grow.**

Simple interface- an **inclusive** space that is **easy to interact** with.

"A place to thrive"

Figure 25. Diagram illustrating how the Regus brand identity informs the Network Node brand identity (Author, 2021).

2.3.3. Concept

The ideas that inform the conceptual approach are inspired by the theoretical framework discussed in Part 1 and concepts of well-being and flourishing, social connections, knowledge propagation, and nature. Therefore, the design concept becomes an ***interconnected spatial network*** as a metaphor for organising knowledge and connections. The tree is used as a symbol to represent the spatial network as this is a more accessible symbol in people's psyche. Furthermore, the tree is a universal symbol of a gathering or meeting place, a place of storytelling and knowledge sharing, connection, a place of refuge, protection, and comfort, life, and health and is associated with Biophilia and nature (Joye, 2007). These are all strategies that can be translated into the design approach of well-being, social sustainability, and flourishing of the Hatfield community.

Research suggests that biophilic design has psychological and physiological benefits and that people can relate to, and feel comforted by natural elements (Joye, 2007). The conceptual interpretation of the spatial network and tree informs aspects such as the design aesthetics, form, spatial layout, circulation, and materiality of the design, as illustrated in the below images.

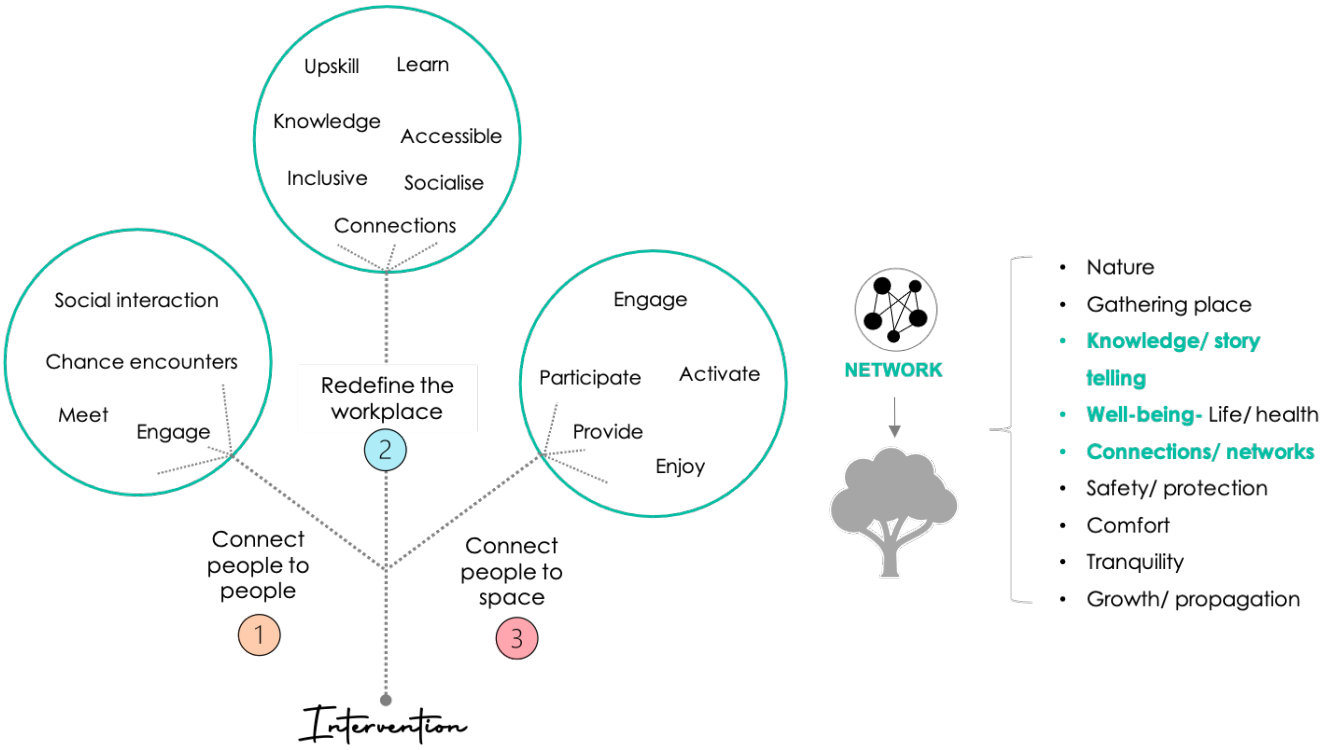


Figure 26. Symbolism of the tree (Author, 2021).

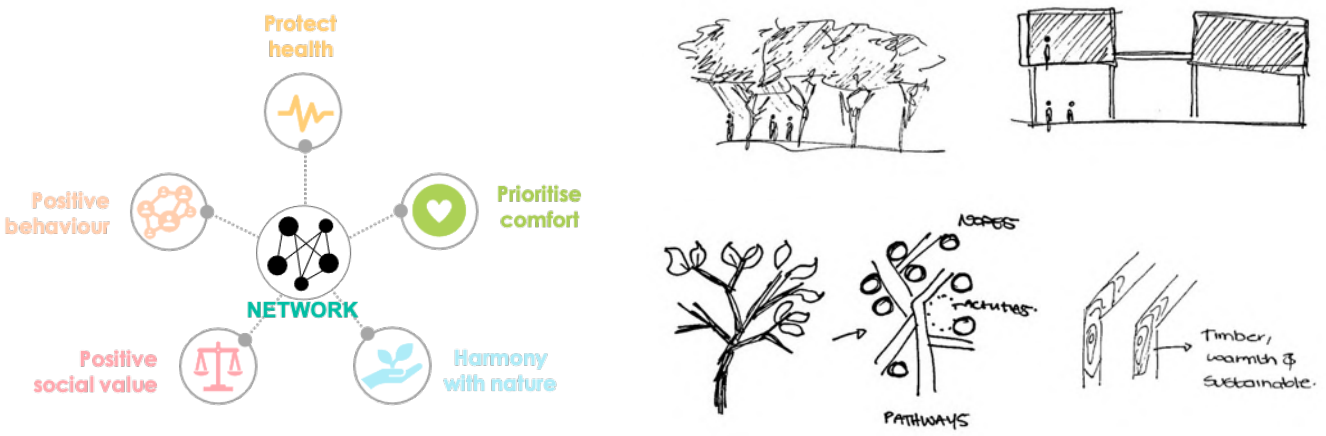


Figure 27. Images showing the initial conceptual sketches of the concept of the spatial network (Author, 2021).

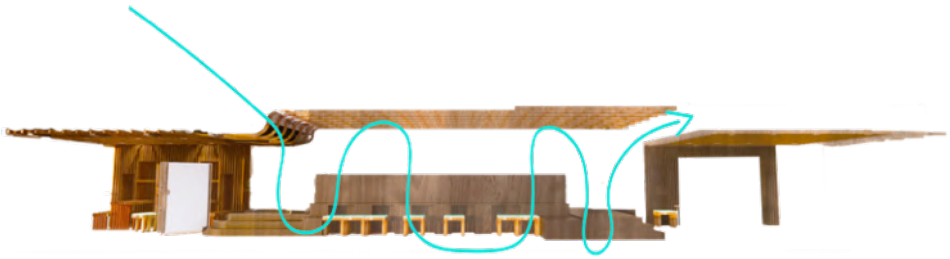


Figure 28. Diagram illustrating Regus brand value of a flexible network translated into an interconnected spatial device with an adaptable user interface (Author, 2021).

2.3.4. (Well-being & flourishing

Wellness refers to more than just an individual experience, but rather to a collective experience that integrates the well-being of communities as well as the planet (Cohen *et al.*, 2021). Wellness needs to be addressed on different levels throughout the design, from the interior to the exterior, public spaces, and the surroundings. To design for well-being, guidelines such as the World Green Building Council and WELL Building standards are to be implemented. The WELL standard is a performance-based system for measuring features of the built environment that affect health, such as air, water, light, sound, materials, and comfort. The standards also address other aspects of well-being, including biophilic design, nature, outdoor spaces, and factors relating to the mind and community. There is no one-fits-all approach to well-being; however, it becomes important to design for multiplicity and choice to create an inclusive, diverse space that caters for different peoples' needs (Cohen *et al.*, 2021). The project aim is to create a space tailored to the users' health, well-being, and flourishing; therefore, each design decision must be undertaken with these concepts in mind.

2.3.5. COVID- 19

The risk of transmission of the Coronavirus within the working and public environment needs to be considered throughout the intervention. Covid protocols require social distancing and measures to minimise the risk of the virus spreading. The space will need to feature standard protocols such as those listed in Figure 30 throughout. Furthermore, the design can implement innovative technology such as touch-less surfaces, health checks, sensors, and voice activation to reduce transmission risks. Additional ways this can be achieved include improving air quality, designing for physical and psychological barriers between spaces, and ensuring surfaces feature anti-microbial properties and are easily cleaned. Beyond just designing for physical health concerns, the covid pandemic also calls for spaces to address mental, social, and societal well-being.

In the context of the COVID-19 pandemic, the space needs to be designed to facilitate social interaction and participation but still create a sense of safety and peace of mind. The design intention is to create barriers in ways that are integrated into the design language and are still capable of allowing for some level of connection. The barriers need not be physical separations but can take on a more psychological approach, including material changes, transparent elements, differences in heights, and using trees or other features to suggest permeable separations, as illustrated below. Another essential aspect to consider becomes circulation through the space- this needs to be planned to ensure that people have a variety of ways to move through a space to reduce the risk of having to pass nearby one another. This can be addressed through the spatial concept as various 'branches' forming pathways between activity nodes, as suggested in Figure 31 below. This design allows users various routes that encourage engagement with the surroundings whilst lowering the risk of passing by in close proximity.

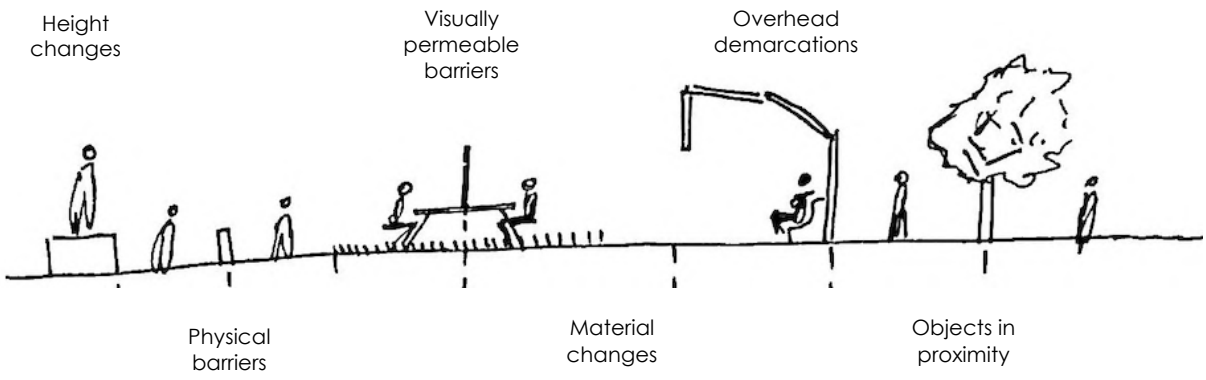


Figure 29. Conceptual barrier exploration sketch (Author, 2021).

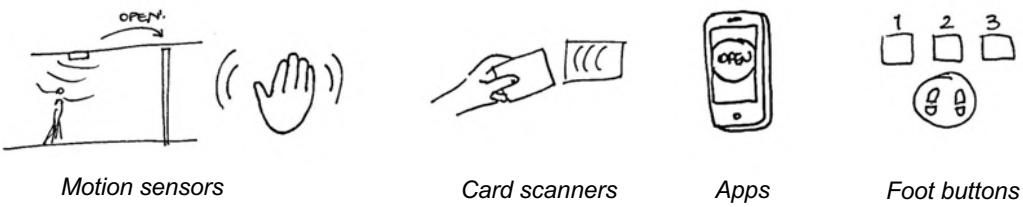


Figure 30. COVID-19 protocol explorations (Author, 2021).

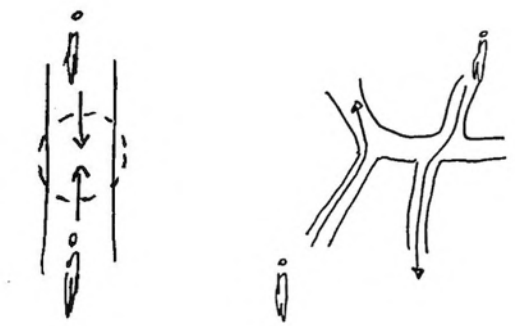


Figure 31. Circulation exploration (Author, 2021).

2.3.6. Office typologies

The acceleration of flexible work styles due to the gig economy along with the pandemic restrictions, has led to more remote working, which measures productivity by outcomes rather than by hours worked (Malhotra, 2021). Due to this shift in the nature of work, many young people worldwide are un- or under-employed as youth's skills are discordant with employer demands (Armstrong, Burley, Parmelee, Santifort & van Fleet, 2018:8). Globally, by 2030, approximately 50% of youth will not have the skills or qualifications they need to compete in the emerging global workforce, according to the Education Commission (Armstrong *et al.*, 2018). Having a sense of control of one's career and feeling empowered through knowledge and skills contributes to human flourishing and well-being.

Research suggests that the death of the office has been greatly exaggerated and that workplaces will still exist in the future but will need to adopt a new approach (Bacevice, Mack, Tehrani & Triebner, 2020). Gensler's research indicates that most people want to return to office spaces as they desire human interaction and the opportunity to leave the house (Cohen *et al.*, 2021). However, they expect these spaces not just to house workers but rather to offer a hybrid lifestyle wherein the workplace becomes a space that strengthens relationships, encourages learning, builds community, and gives a sense of purpose. Although people want to return to workplaces, corporates are risk-averse to allowing workers to return to offices. This suggests that a third opinion wherein to work, other than homes and offices, becomes a viable alternative to remote working.

The design intention is that the site becomes a multi-use space that offers more than just a healthy workspace but includes other amenities and programmes that focus on building community well-being - a '*collective*' work paradigm. The site will become a centralised space in the area that caters for more flexible working and allows for a more extensive variety of working typologies- from individual private stations to more collaborative informal settings. In essence, the intention is that the space takes office design one step further and combines the workplace with a community space in order to foster connection, address various levels of well-being, and bridge the divide between work and community spaces. This facility is also intended to narrow the educational gap between workspaces that are becoming less accessible and those that do not possess the necessary skills to work. This will be addressed by allowing for non-formal, next-generation workforce training facilities, encouraging interactions with others, and facilitating knowledge sharing throughout, ultimately making knowledge more accessible to the community (Townsend, 2021).

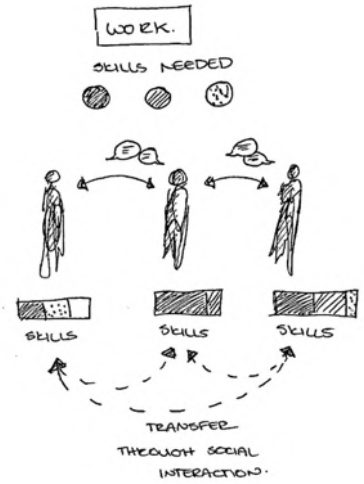


Figure 32. Skills transfer diagram (Author, 2021).

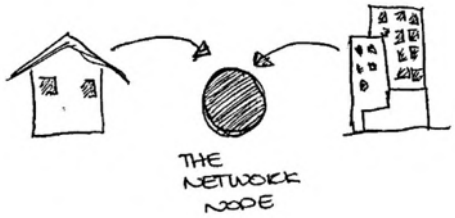


Figure 33. Intervention as a mediator between home and office working (Author, 2021).

To better understand how the beforementioned intentions can become spatial, three precedents were considered in relation to well-being and flourishing theories and COVID-19 protocols as criteria for analysis.

2.3.6.1. Pre-covid office well-being

The first precedent, the Discovery Headquarters in Johannesburg, is investigated through the lens of wellness in office environments before the pandemic. The Discovery building was designed to align with the company's core values of a holistic approach to health and wellness (1 Discovery Place, n.d.). The interiors were designed with flexible, agile layouts to improve the efficiency of the users. The building features two large atriums which allow natural sunlight to fill the open office spaces. The expansive atriums enable users to connect visually, giving a sense of activity within the spaces. A more comfortable human scale was achieved by playing with different atrium edge conditions and levels (1 Discovery Place, n.d.). The design approach was to view the building as a series of interconnected spaces that one moves through instead of one large space (1 Discovery Place, n.d.). The permeability and accessibility of Discovery's ground floor allows for this building to connect to the street and surroundings (1 Discovery Place, n.d.). People are encouraged to visit the site to make use of the restaurants, cafés, retail spaces, and event auditoriums on the ground floor. The building also boasts a 5 star Green Star rating and features passive strategies, LED lighting, automated blinds, as well as indigenous planting throughout (1 Discovery Place, n.d.). The space ultimately promotes well-being across multiple levels by encouraging healthy habits and creating a vibrant, comfortable, multi-use space that connects community members and creates a pleasant experience.

The proposed intervention caters for a more diverse user group who do not belong to one company but rather include users from different businesses with different backgrounds. Furthermore, the intervention will also facilitate knowledge sharing by integrating a range of different programmes that users can participate in on the ground floor.

Figure 34. Discovery building interior (1 Discovery Place, n.d.).

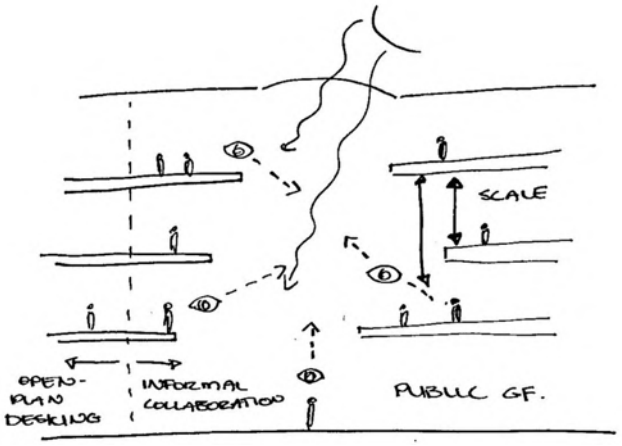


Figure 36. Discovery atrium sketch (Author, 2021).

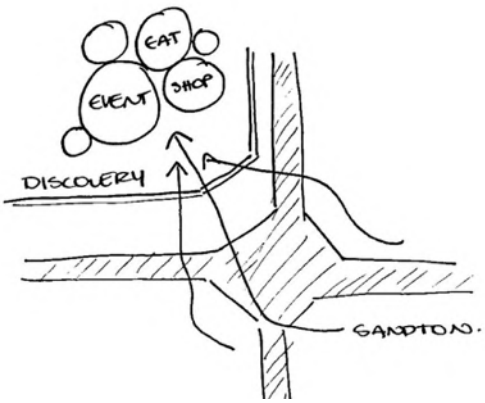


Figure 35. Permeable ground floor sketch (Author, 2021).

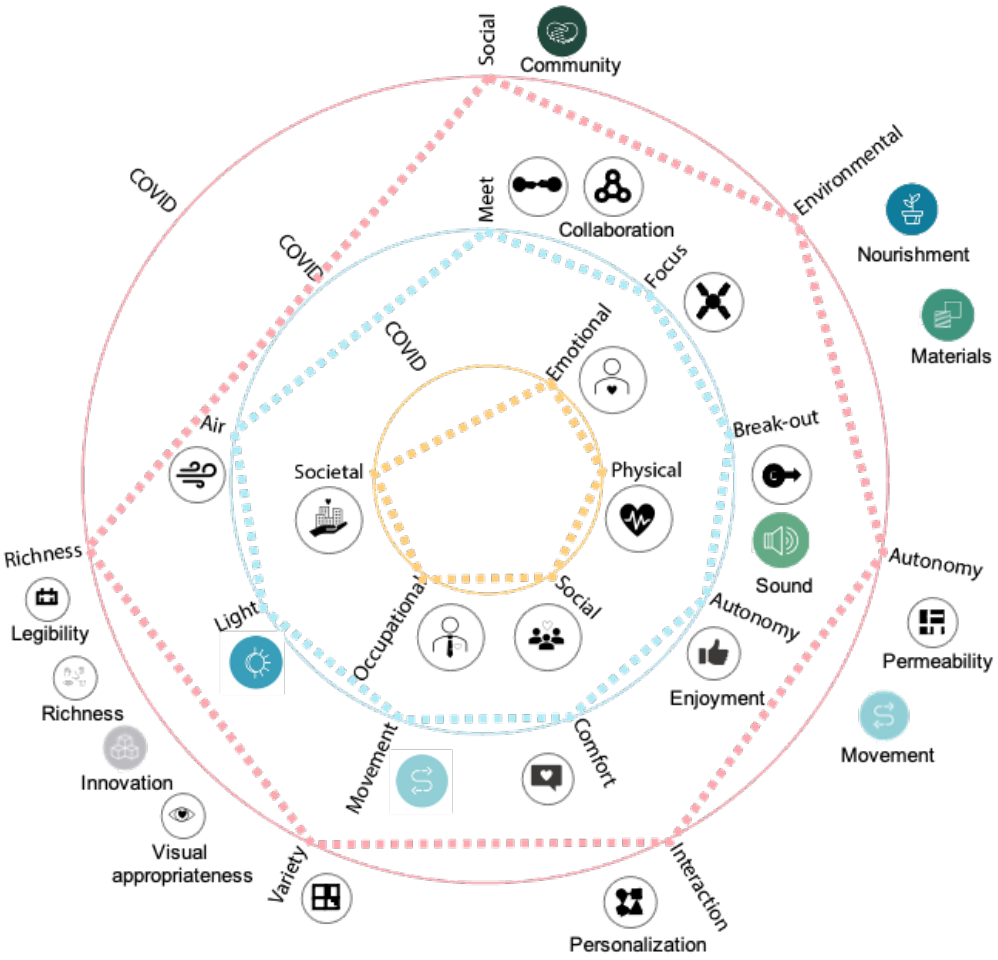


Figure 37. Diagram indicating how the precedent relates to personal, workplace, and community well-being (Author, 2021).

2.3.6.2. Covid office precedent

The following precedent is the Cushman & Wakefield *'six-feet-office'* designed to respond to covid protocols within commercial spaces. The space was designed to minimise the risk of transmission within the office settings. It employs the standard covid protocols such as hand sanitisers at entrances and exits and signage and physical barriers to indicate social distancing. The air-filtration system was upgraded to ensure fresh air throughout the building. The space also includes pedestrian lanes that circulate counterclockwise to reduce close interaction whilst moving through the space (6 Feet Office, n.d.). The office design features visual/ psychological barriers in the form of circles on the floor to indicate social distancing and demarcate spaces. The office design also features technology such as no-touch sensors. The result is a safer, less crowded space that encourages social distancing and allows people to feel safe (6 Feet Office, n.d.).

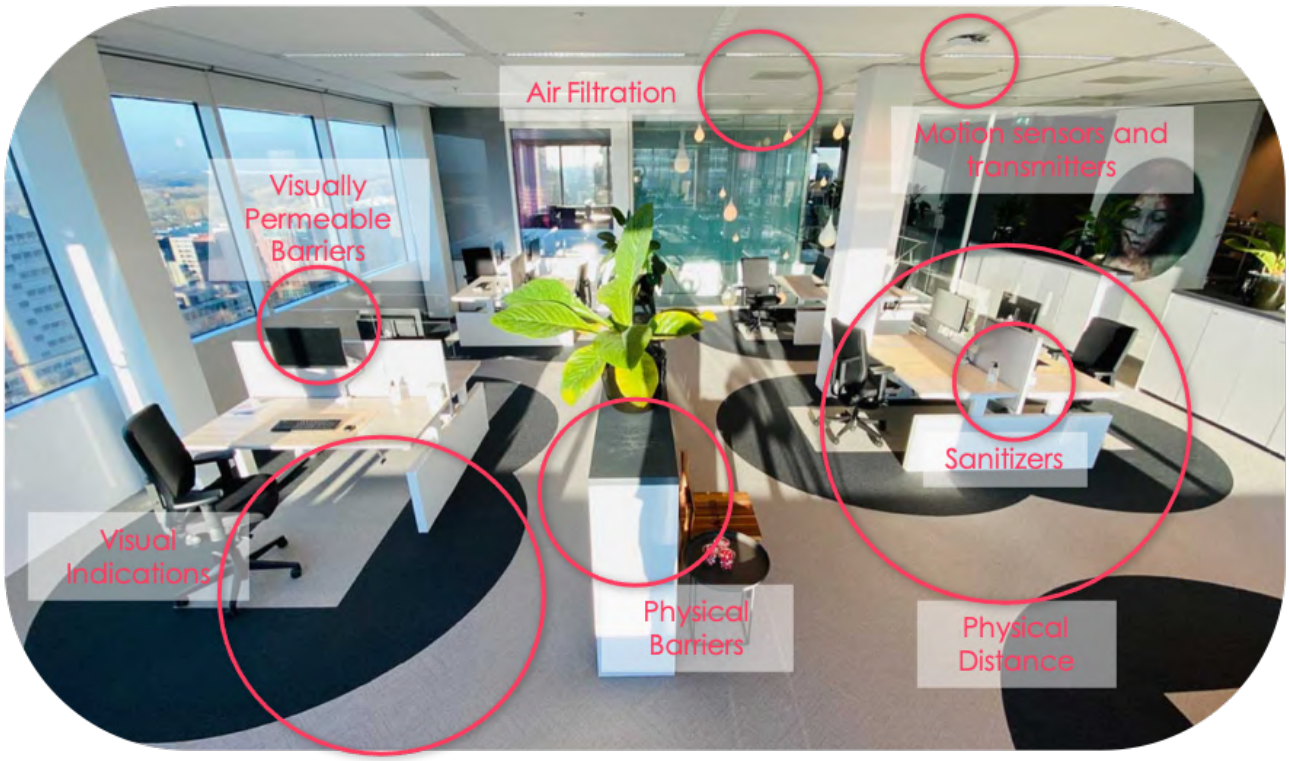


Figure 38. Six-feet-office interior (6 Feet Office, n.d.).

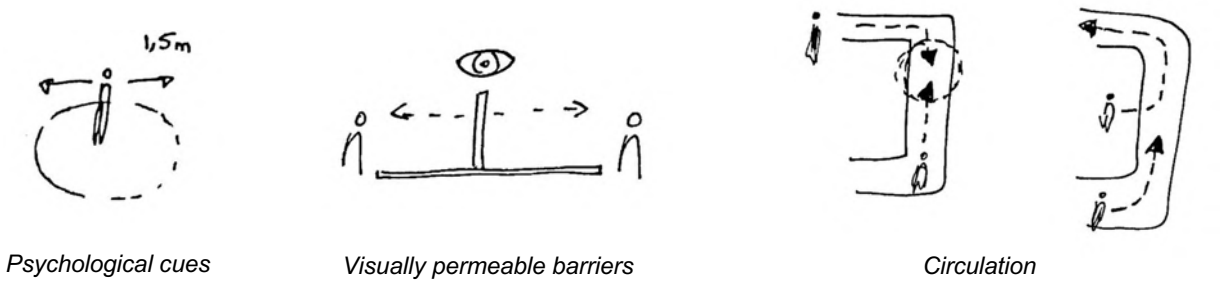


Figure 39. Sketches to illustrate Covid protocols (Author, 2021).

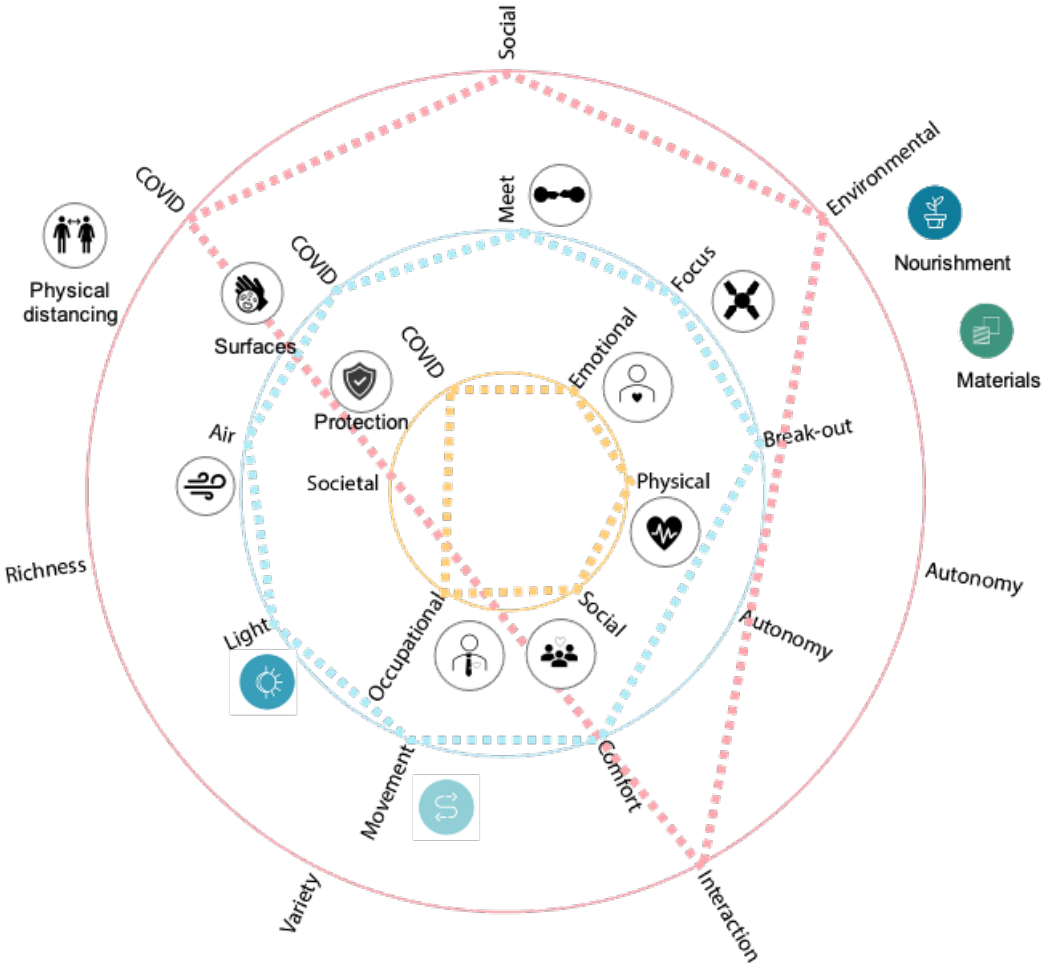


Figure 40. Diagram indicating how the precedent relates to personal, workplace, and community well-being (Author, 2021).

For the intervention in Hatfield to properly facilitate both workspace and community connections, the ground floor of the building becomes more open and permeable for a more public interface, and the upper floor becomes the more formalised workspace. The ground floor becomes a community-facing space with various programmes throughout, with the upper floors becoming meeting rooms, collaborative spaces, and more private workspaces. To attract people, the space will also feature a café/ restaurant, which will be located adjacent to the dead-end street next to the Gautrain Station for that space to feature as spill-out space. This location also encourages users entering the site from the Francis Baard side to move through the space before reaching their intended destination, thereby increasing the likelihood of chance encounters and interaction with others. Using the same logic, the pause areas for the workspaces are located in the same building as the café, which means users need to move through a series of interlinking spaces, encouraging movement and thereby chance interaction and social connection leading to knowledge transfer.

2.4. Design approach

As pandemic restrictions ease, it is clear that spaces are not going to fill with people overnight. As our communities are slowly reconnected, the architecture defining them will be embedded with optimism (Goldstein, 2020). The design approach includes creating a neighbourhood-oriented workspace. The idea of the intervention is that it takes on a fresh approach to office design wherein fostering connections, and ultimately flourishing, becomes the main driver. People need a space to develop their careers, build relationships with others, and feel connected to society (Bacevice *et al.*, 2020). The aim of the project is to create an inclusive knowledge transferral hub. The intention is to create a space focused on well-being that allows users to work, socialise and flourish during the pandemic. The intervention takes on a socially responsive design approach that encourages positive social change and enables people to engage in various meaningful activities that can improve one's skills, create relationships with others, and improve one's health. The intent of the intervention is to create a user experience that takes into account the different users and provides opportunities for engagement in various activities that allow for meaningful interactions and encourage social connections that promote happiness and flourishing.

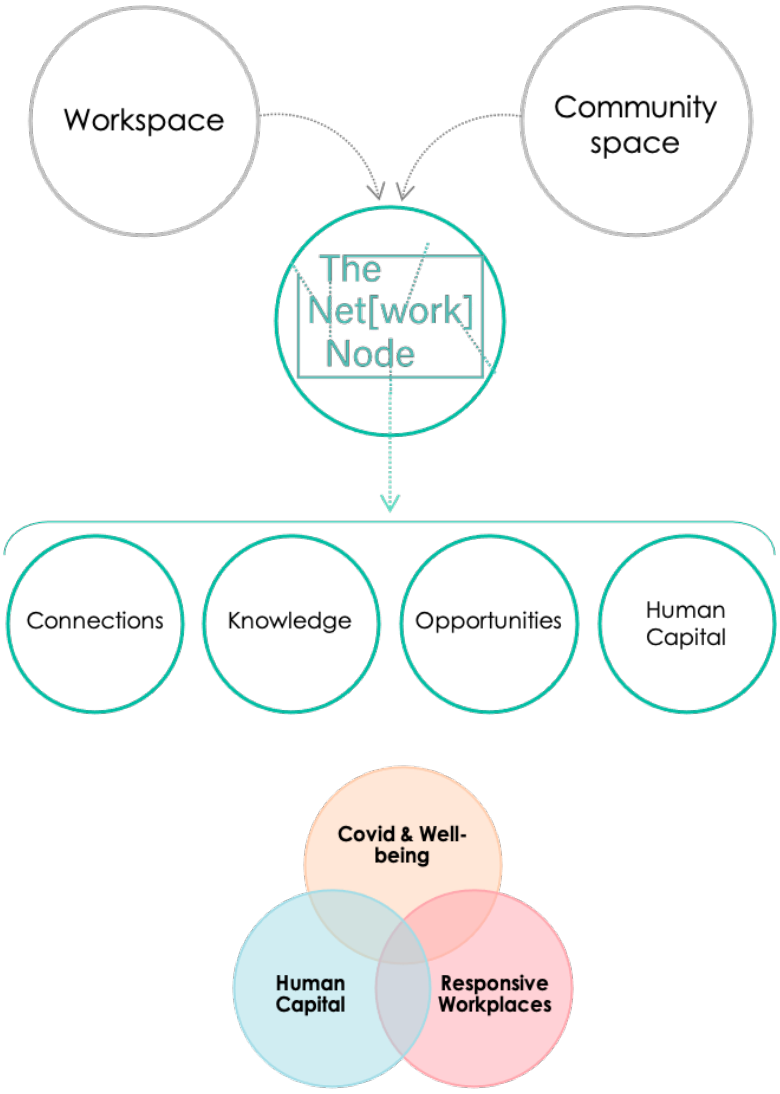


Figure 41. Design approach diagram (Author, 2021).

2.5. Spatial manifestation

The main driver of the spatial manifestation is that both the workspace and the community spaces are connected through a common language. This is envisioned as a matrix or spatial network that morphs into various arrangements throughout the space, such as ceiling, wall, and furniture elements both on the interior and exterior of the building. This network then becomes a system of fixed and mobile parts that work in conjunction with each other, with an adaptable interface. The idea involves using the spatial network to define spaces within the intervention and for the interplay between object and space to occur. The network also speaks to the concept of a tree and branches out into different nodes of activity. The spatial matrix can feature natural elements related to biophilic design. The system is also to include an element of planting throughout the design that can includes micro-scale farming that people can engage with.

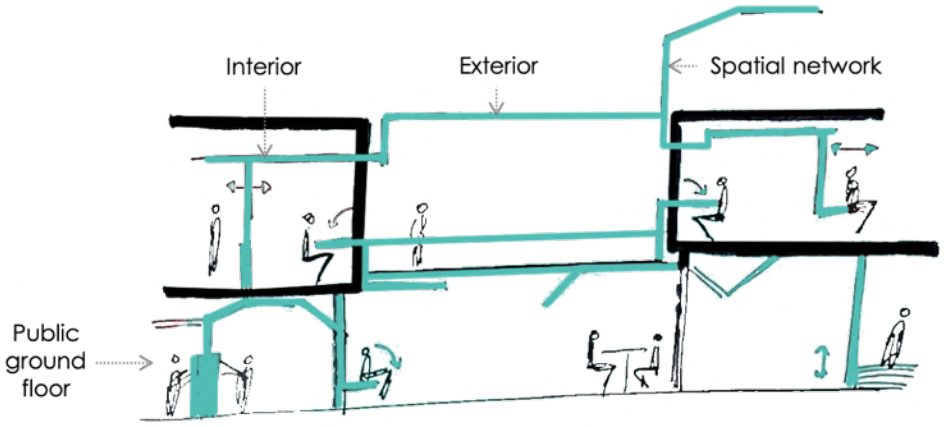
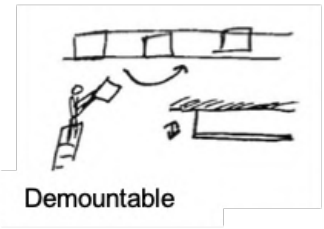
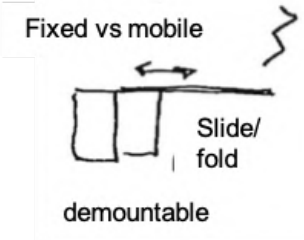
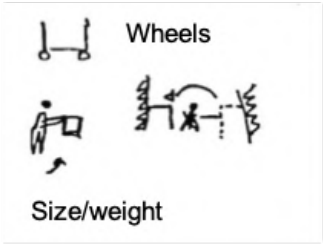
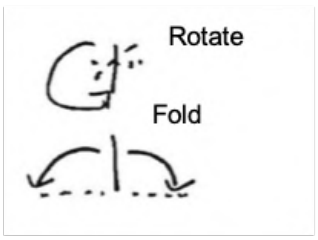
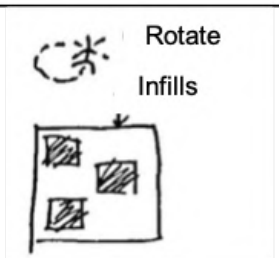
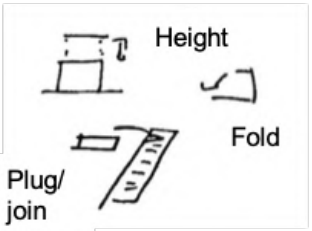
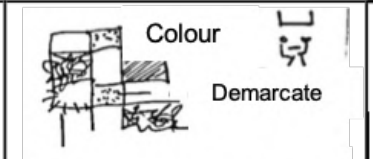
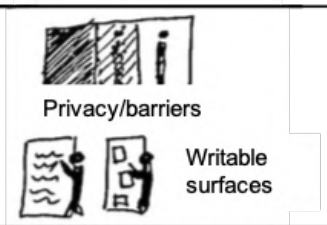
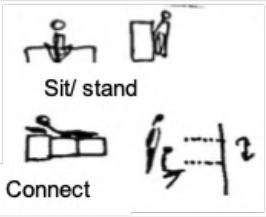
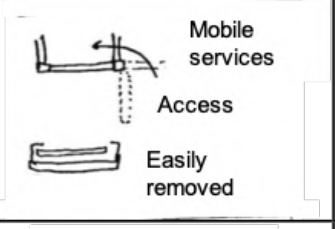
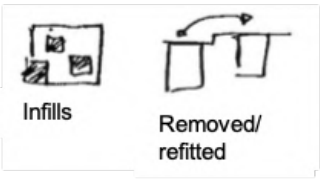
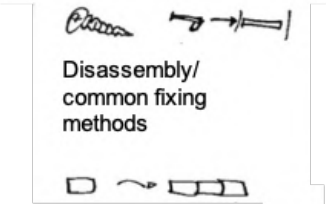
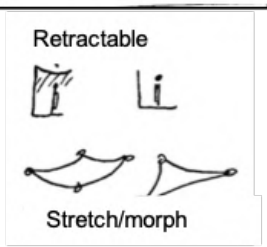
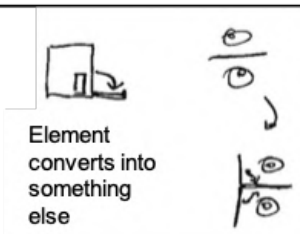
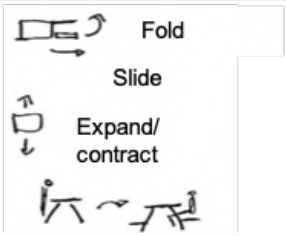
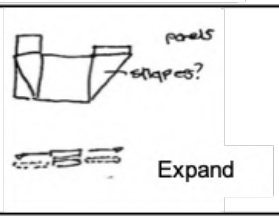
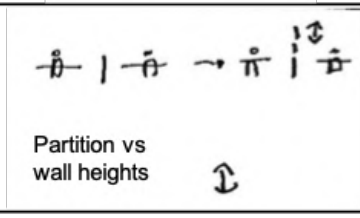
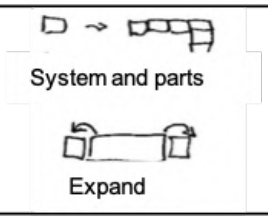


Figure 42. Conceptual sketch to illustrate spatial network connecting different spaces (Author, 2021).

The space is to be designed with sustainability in mind and is to implement passive strategies throughout. Research by Heinly (2020) suggests that people feel healthier and safer outdoors and can benefit from interior environments being linked to the outdoors through open balconies, interconnected spaces, and views to outdoor spaces. This spatial device is also to be designed in such a way as to be easily modified by users and easily adapted or reconstructed to suit future spatial requirements. The network can be used in various ways, from a ceiling element that houses different services to a fold-down work surface to suit different needs.

The below table serves as an initial investigation into the different ways in which the spatial system can adapt and be appropriated by users. The spatial network could also change in some ways between each different zone to cater specifically for each different programme, thereby adding another layer of richness to the network instead of it becoming a monotonous feature throughout. To ensure accessibility or legibility of the design features, the adaptable elements should include standard or similar details throughout so that users can easily engage with the elements.

Table 2. Table showing investigation into adaptable mechanisms of spatial device (Author, 2021).

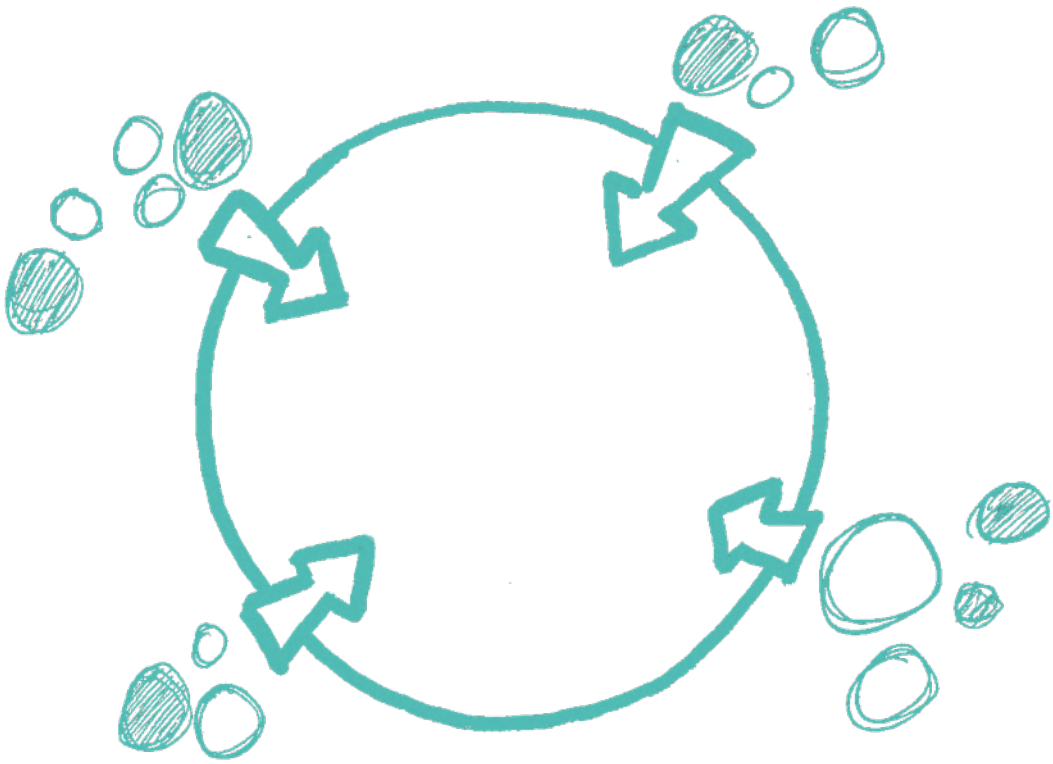
Adaptable Considerations	***Ceiling***	***Wall***	***Furniture***
Moveable -Weight/ scale -Floor finish -Connections			
Adjustable -Plug & play -Control -Non-fixed/ detachable			
Versatile -Variety of uses -System & relation -Flexible			
Refit -Access -Shapes & system -Interchangeable			
Convertible -Simplicity -Multi-function -Connections & services			
Scalable -Materials -Structure -Modular			

2.6. Conclusion

In today's world, great experiences create a sense of continuity and adaptability that accommodate people's needs on a physical and emotional level (Cohen *et al.*, 2021). The public realm plays a valuable role in layering cities with experience. These spaces serve as the connective fabric that weaves the cities and the communities together (Ahmadzadegan, 2019). The idea is that the space weaves together diverse typologies into a holistic, active space. The site is to be redesigned to be a place of togetherness, health, and well-being through supporting the human experience at every scale. The space becomes a mixed-use development that encourages people to gather and experience community- thereby contributing to a sense of well-being.

The intention of the design is to reconnect people to each other and their surroundings and to encourage knowledge transferral and lifelong learning throughout. When individuals are encouraged to interact, their knowledge and skillsets are expanded on, and not only is their desire to learn satisfied, but they become more employable (Kraaijenbrink, 2020). The presence of a safe, multipurpose destination within walking distance can foster a more connected community by creating a place where people can socialise (Paterson & Finn, 2020). The user experience needs to be designed in such a way as to take into account the diverse users and provide opportunities for safe engagement in various activities that promote happiness and satisfaction from an emotional, physical, occupational, social, and societal perspective, and allow the users to live their lives to the fullest potential.

Part 3 Synthesis



3.1. Introduction

Flexible work styles and the desire for more purposeful office experiences will result in tomorrow's workplaces prioritising health and wellness, sustainability, and social responsibility (Design Forecast 2021, 2021). The *Network Node* design focuses on recreating the workplace to encourage user well-being and flourishing by creating engagement and social re-connection opportunities. The conceptual approach involves an interconnected spatial network that links the different aspects of the design into one unified intervention.

Part 3 of the document entails design synthesis, and technical details are explored as an extension of the design investigation. The design is unpacked through the use of the theoretical guidelines considered in Part 1. The design process is explained in more detail, and the resultant design is presented. Design aspects related to protecting health are first discussed, followed by considerations for comfort. Then, ways in which the design achieves harmony with nature, such as material choices, are explained. Thereafter, aspects related to healthy behaviour and positive social value are presented.

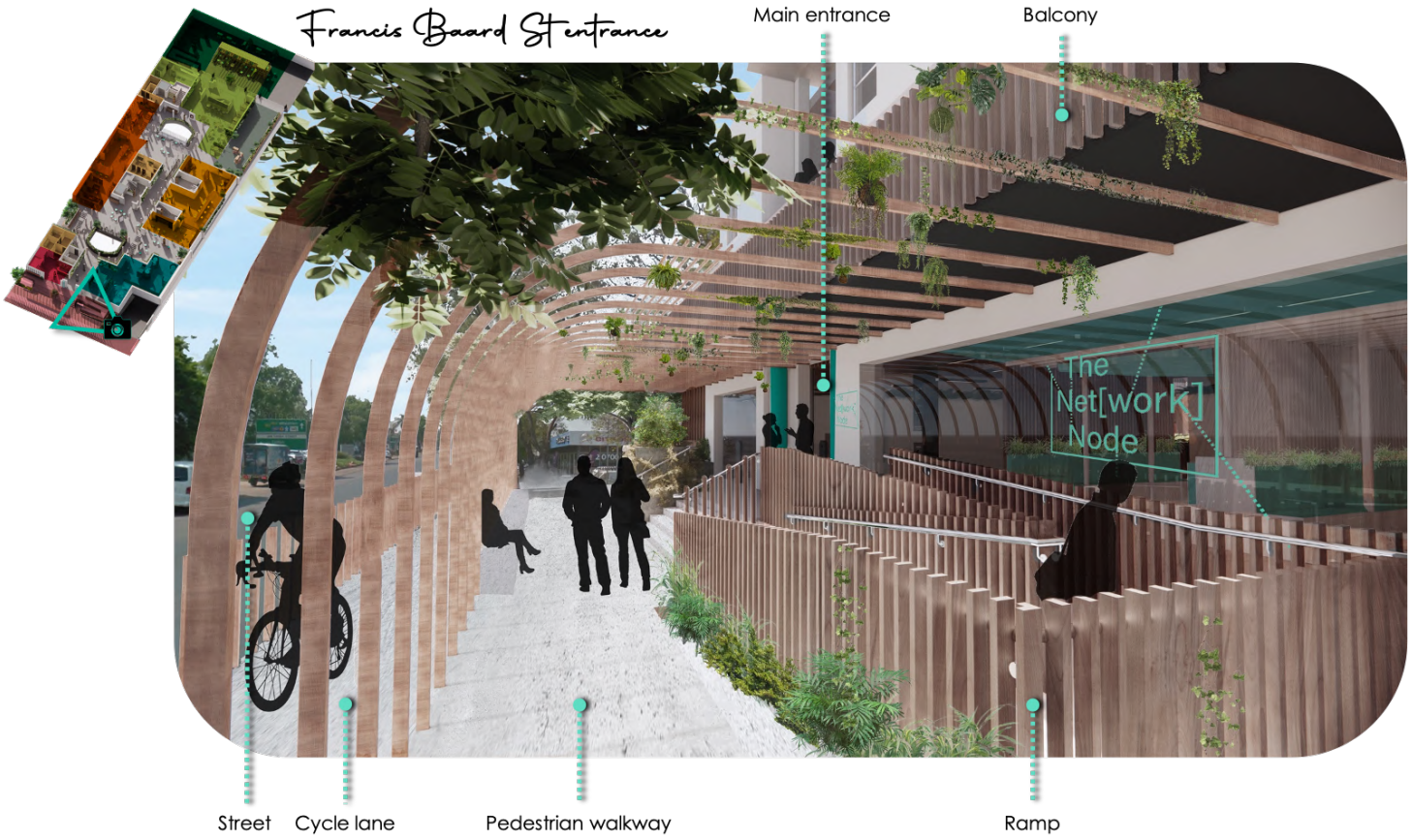


Figure 43. The Network Node entrance conceptual visualisation (Author, 2021).

3.2. Programme

The intervention is intended to be a redesigned workplace wherein work, knowledge, and opportunities are more accessible and relevant to the community members. The *Network Node* design features a permeable ground floor with different zones and activities derived from the community to encourage engagement. The intention is for these elements to be connected through the adaptable, interconnected spatial network.

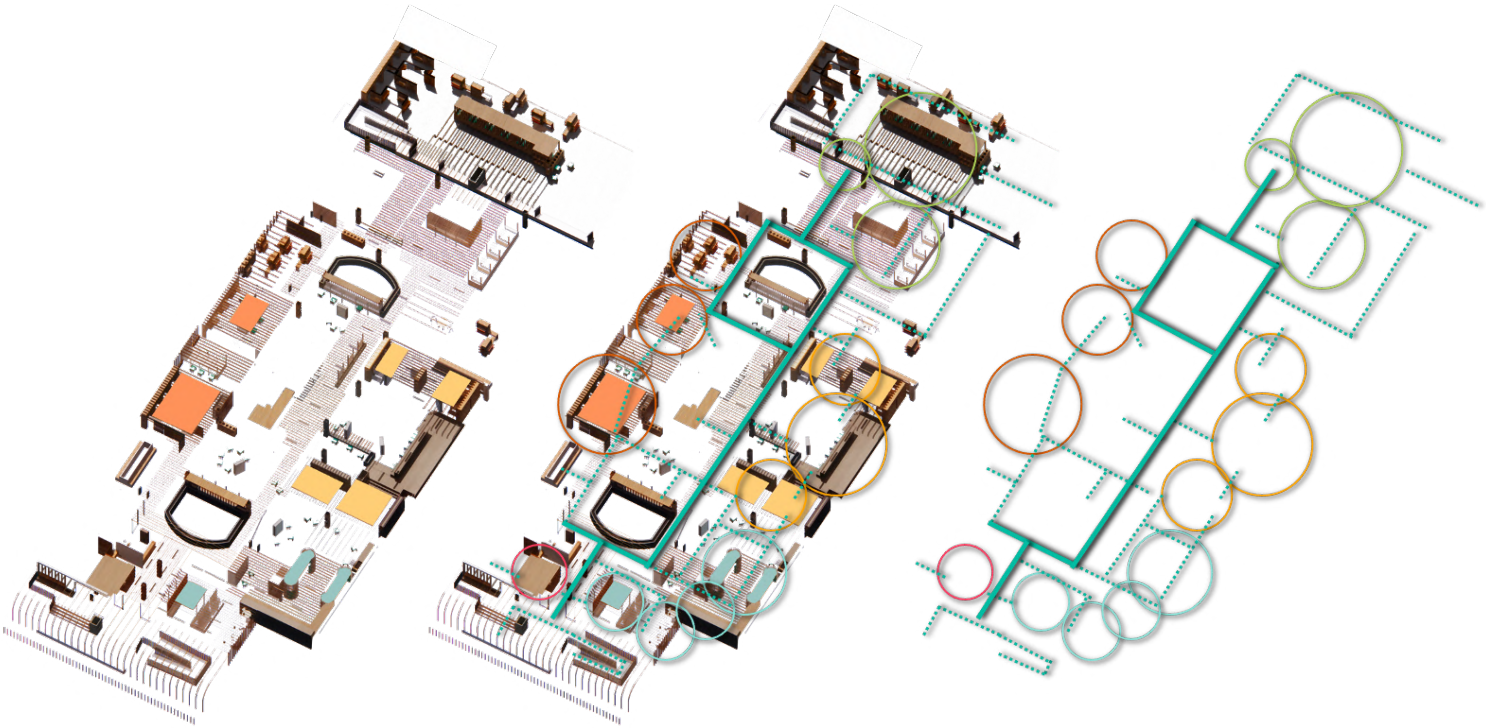


Figure 44. Axonometric showing the spatial device that forms a spatial network of circulation paths and destination areas (Author, 2021).

As illustrated in Figure 45 below, the upper floors feature more controlled, formalised workspaces that cater for individual, collaborative, and formal work. The ground floor becomes the project's focus as the primary threshold between the community and the more private, formalised workspaces. The ground floor, illustrated in Figure 46, becomes a permeable, accessible space that connects the site to the surroundings and creates a network of pathways and experiences that allow community members to engage with the space and, thereby, each other. The zoning of the space is designed to encourage movement through the intervention, thereby encouraging interaction with various aspects of the design and increasing the likelihood of chance encounters and connections between users. The activities on the ground floor can spill out into the streets, with the dead-end on School Lane being reclaimed and pedestrianised. The permeable ground floor features multiple spaces that users can adapt for various working purposes as well as leisure activities- for example, seating spaces in the *Learn Zone* can function as a single workstation, a group workstation, or purely as a social setting. The intention is that the ground floor becomes a space of knowledge sharing and interaction through encouraging engagement in various activities and with other community members.

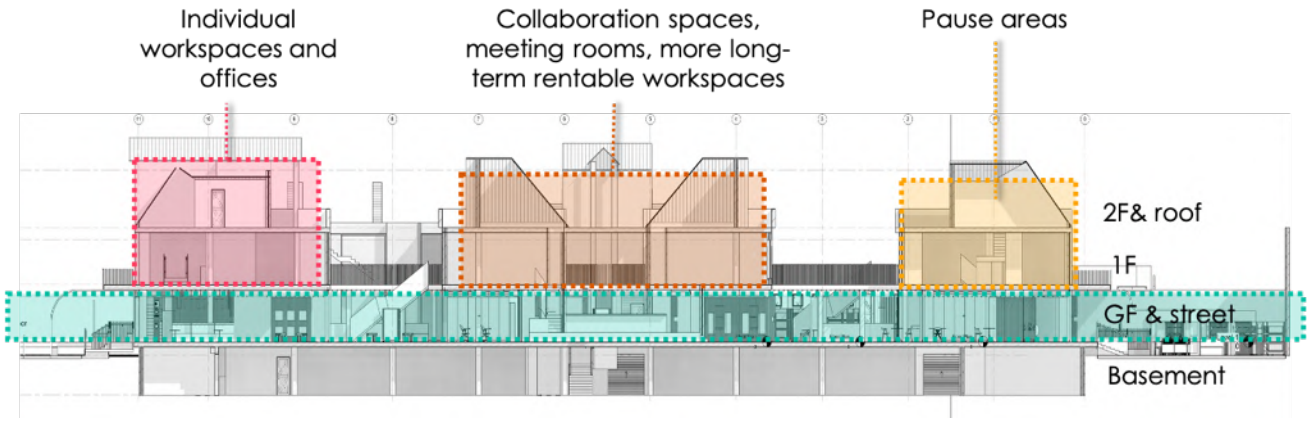


Figure 45. Ground floor focus zone (Author, 2021).

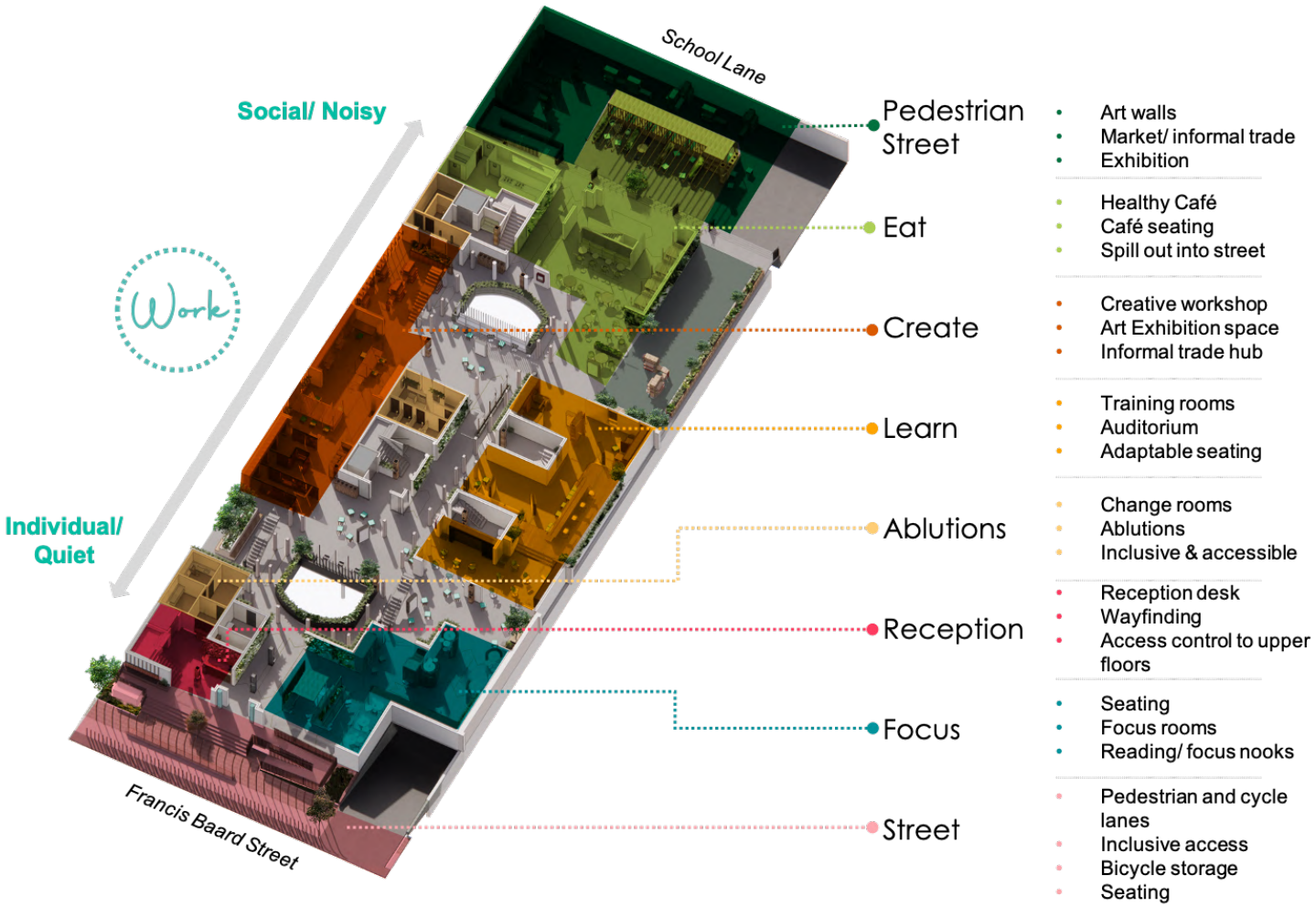


Figure 46. Zoning (Author, 2021).

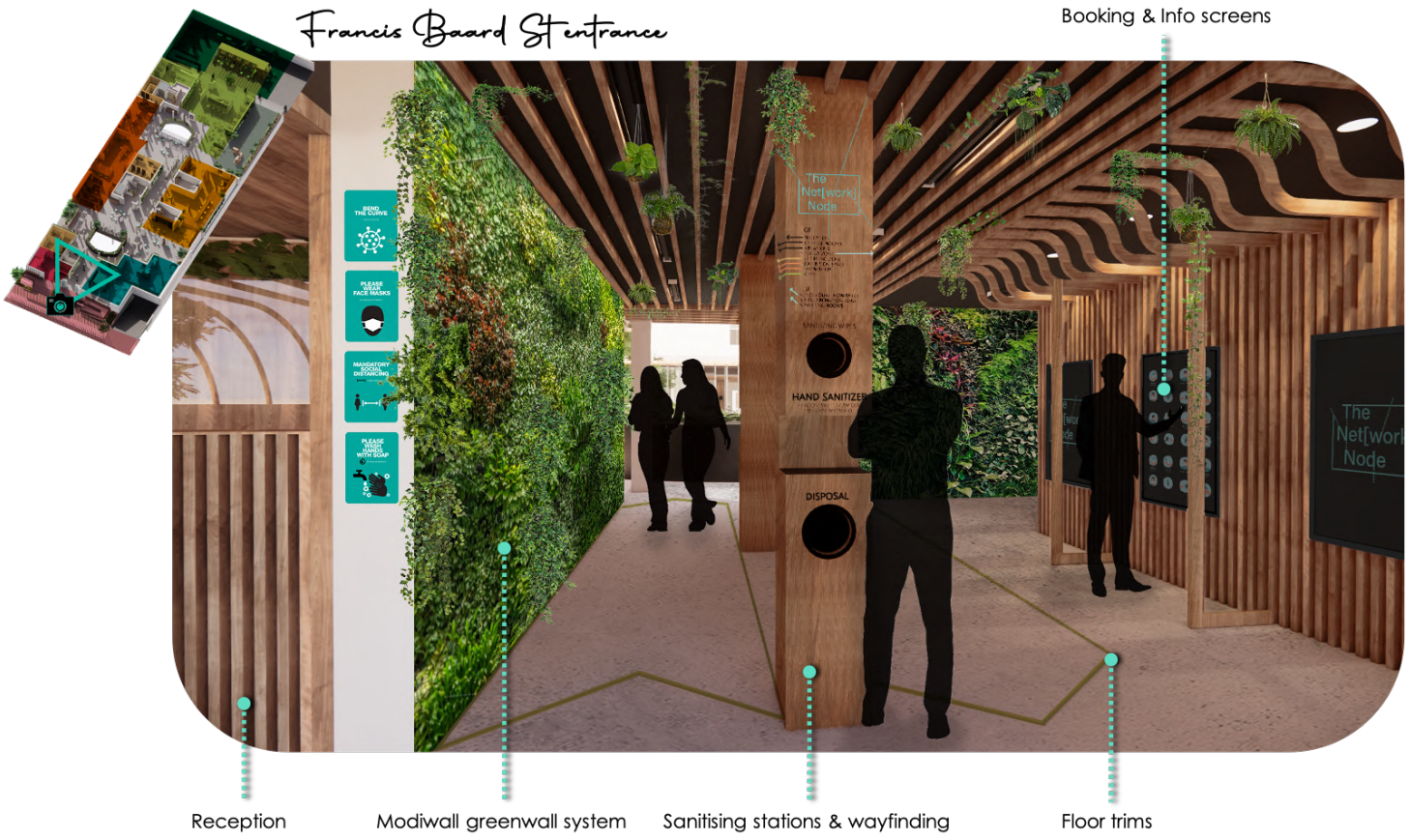


Figure 47. Design explanation diagram- Francis Baard Street entrance (Author, 2021).

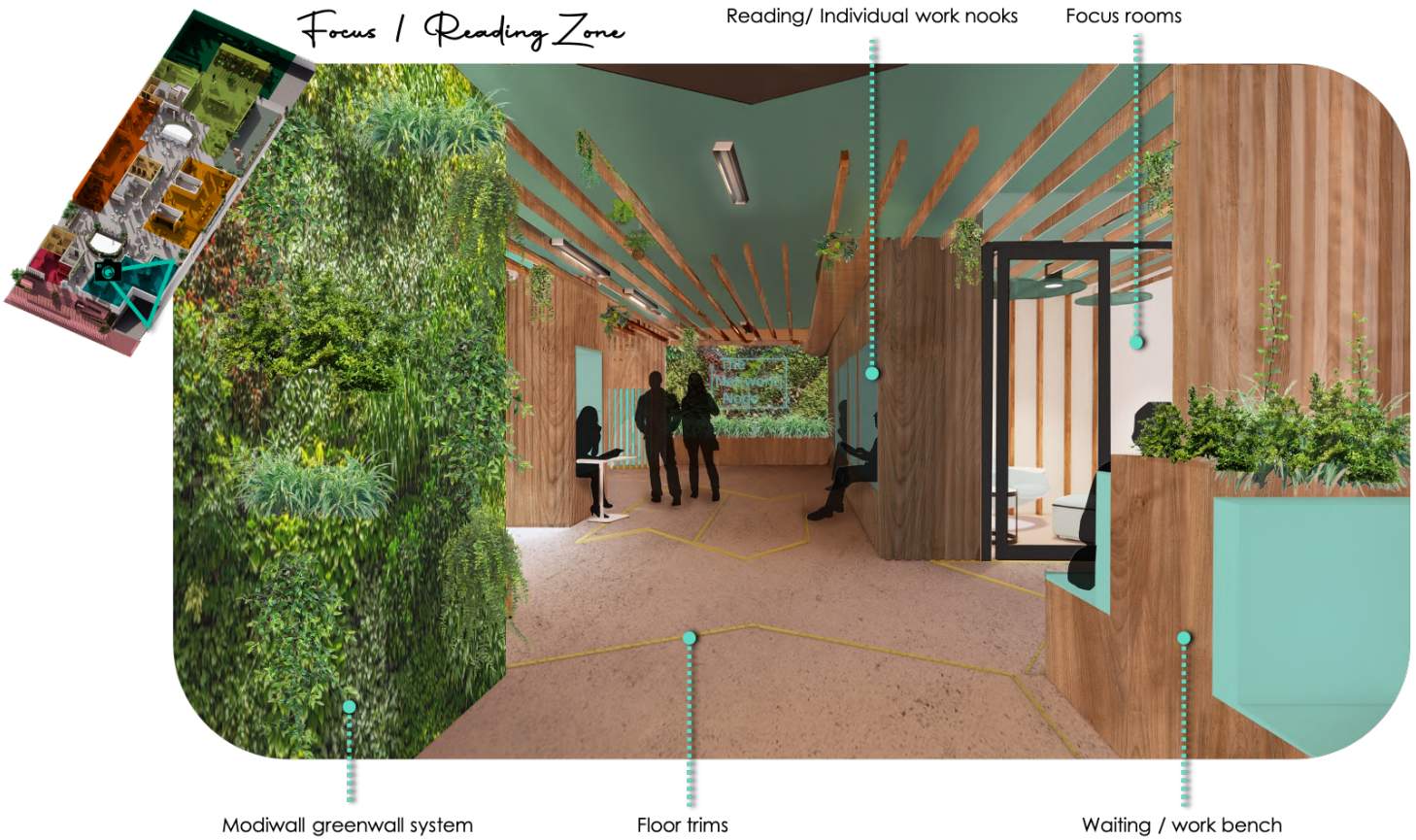


Figure 48. Design explanation diagram- Focus/ reading zone (Author, 2021).

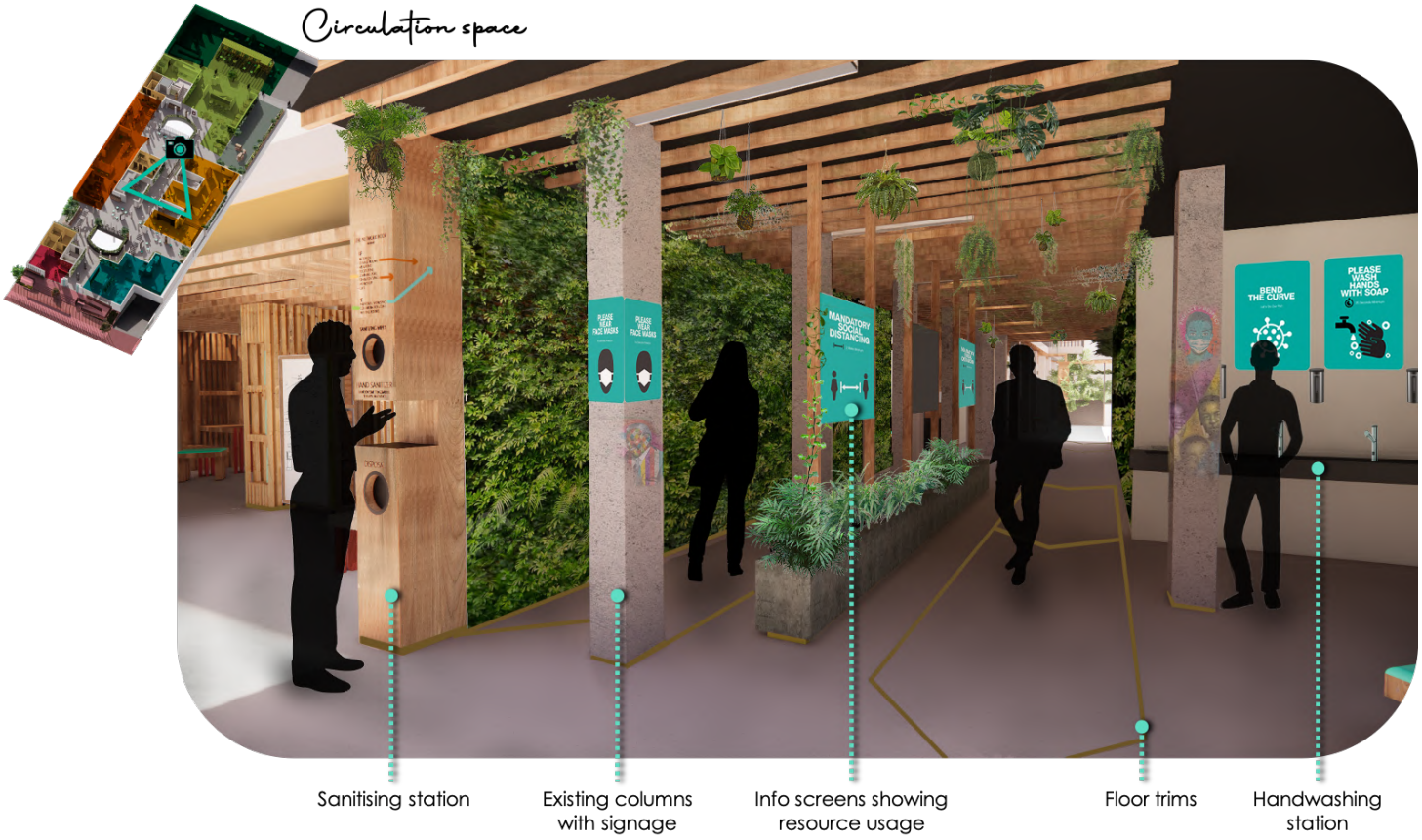


Figure 49. Design explanation diagram- circulation space (Author, 2021).

Figure 50. Design explanation diagram- exhibition space (Author, 2021).

Figure 51. Design explanation diagram- creative workshop (Author, 2021).

Figure 52. Design explanation diagram- informal trade hub (Author, 2021).

Figure 53. Design explanation diagram- learn workshop (Author, 2021).

Figure 54. Design explanation diagram- training rooms (Author, 2021).

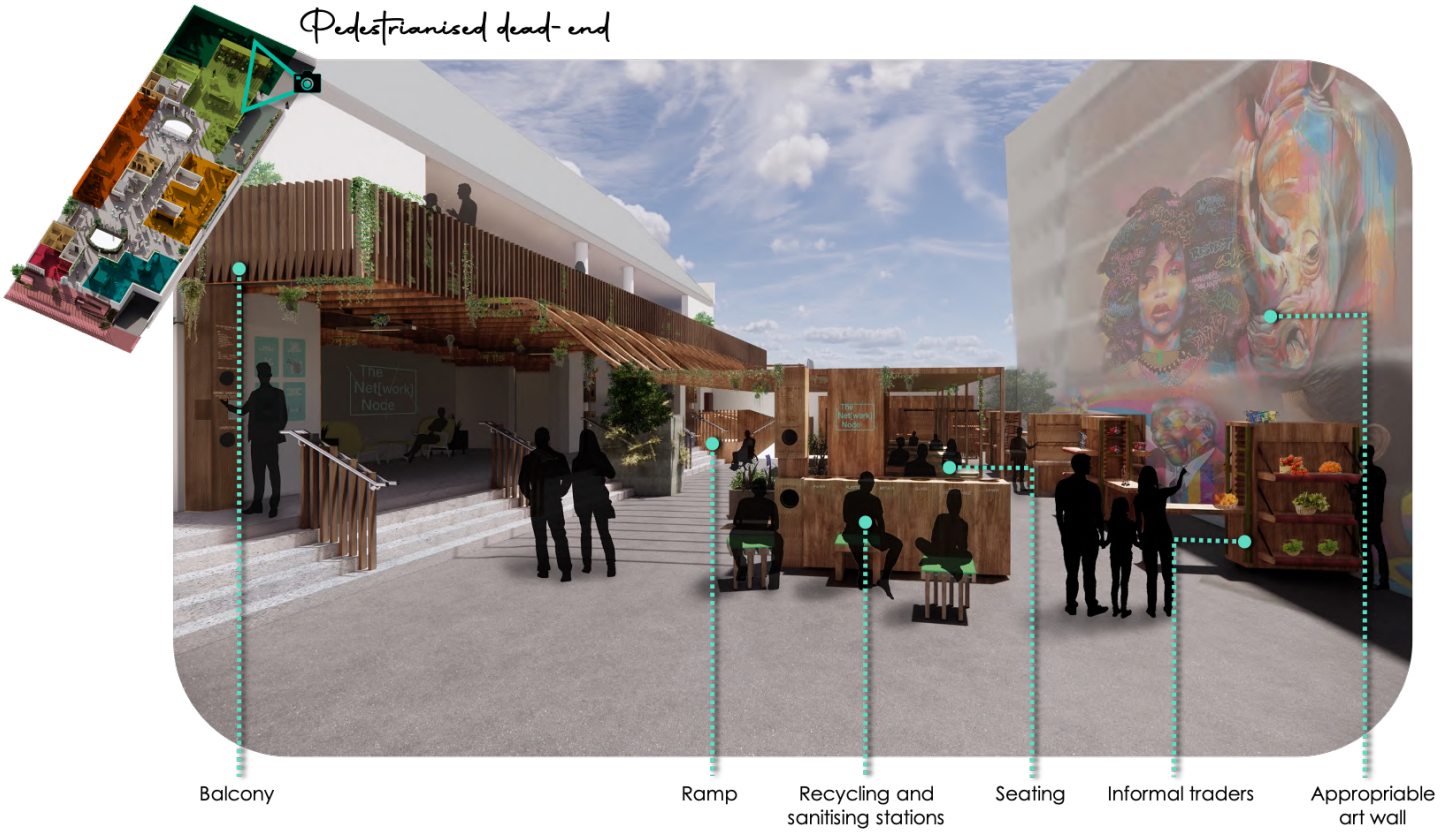


Figure 55. Design explanation diagram- pedestrianised dead-end street (Author, 2021).

3.3. Process

The design and technical investigation thereof are driven by a process of exploration and refinement through multiple iterations, as depicted in Part 1. The design is explored through scenario testing based on user archetypes of Hatfield and their needs. The space is then analysed through sketches and computer-aided drawings according to SANS10400 standards. The technification of the design follows a similar process whereby the concept is tested through scenario testing, illustrations, 3D computer-aided design tools, and maquettes and prototypes to test the different mechanisms and the effects these have on the space.

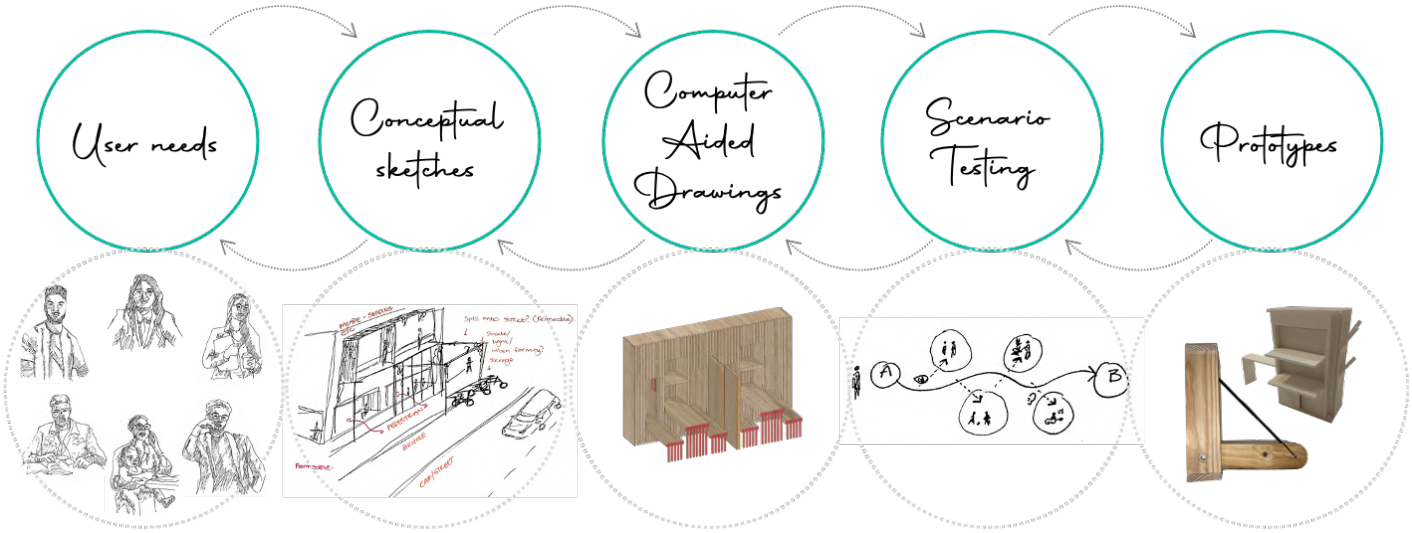


Figure 56. Design and technification process (Author, 2021).

The technical question guiding detail development is:

How does the adaptable user interface of the multi-scalar spatial device encourage interaction, autonomy, and enable flourishing?

Interaction, autonomy, and flourishing, therefore, become the design criteria for the technical detailing. The theoretical framework reiterated below guides the design and technical resolution to ensure the project is grounded in theory. The application of the guidelines supports the legibility and use of space. Although all aspects of the guidelines are important and considered in the design, particular emphasis is placed on preventing infectious disease and promoting healthy behaviour and positive social value- as these are more contextually relevant and significant given the pandemic.

Figure 57. Theoretical health & well-being framework (Adapted from World GBC, n.d., Desmet & Pohlmeyer, 2013, Seligman, 2011, Steen, 2016, Toledo, 2019)

3.4. Protect and improve health

Figure 58. Framework point 1 (Author, 2021).

3.4.1. COVID- 19

A significant contributor to the drive toward workplace well-being is the pandemic. The space needs to be designed to reduce the risk of transmission between users to cater for their health. Along with standard COVID protocols such as health checks at entrances, sanitisers, social distancing, and regular cleaning, the space is to feature more innovative approaches to ensuring the safety of the users.

The design intention of the space is that people are connected, however with COVID, this connection will need to be strategically implemented. The space employs both physical and intangible barriers to enforce social distancing. The aim within the space is to utilise alternative distancing techniques such as visually permeable and psychological barriers as opposed to only physical spatial divides, thereby ensuring that an element of connectivity is maintained throughout the intervention. To combat Covid-19 transmission, all circulation paths must be 2m wide, 1,5m for staircases, and pedestrian movement must be controlled via floor trims indicating the direction of flow. Health checks are to be completed on arrival with sanitising stations located at the main entrances and integrated throughout the design. The upper floors are access-controlled, with different membership types and access cards available. Additionally, to minimise physical interaction with the built environment, technology such as sensor-activated lighting, doors, lifts, fixtures, and security control is to be implemented.

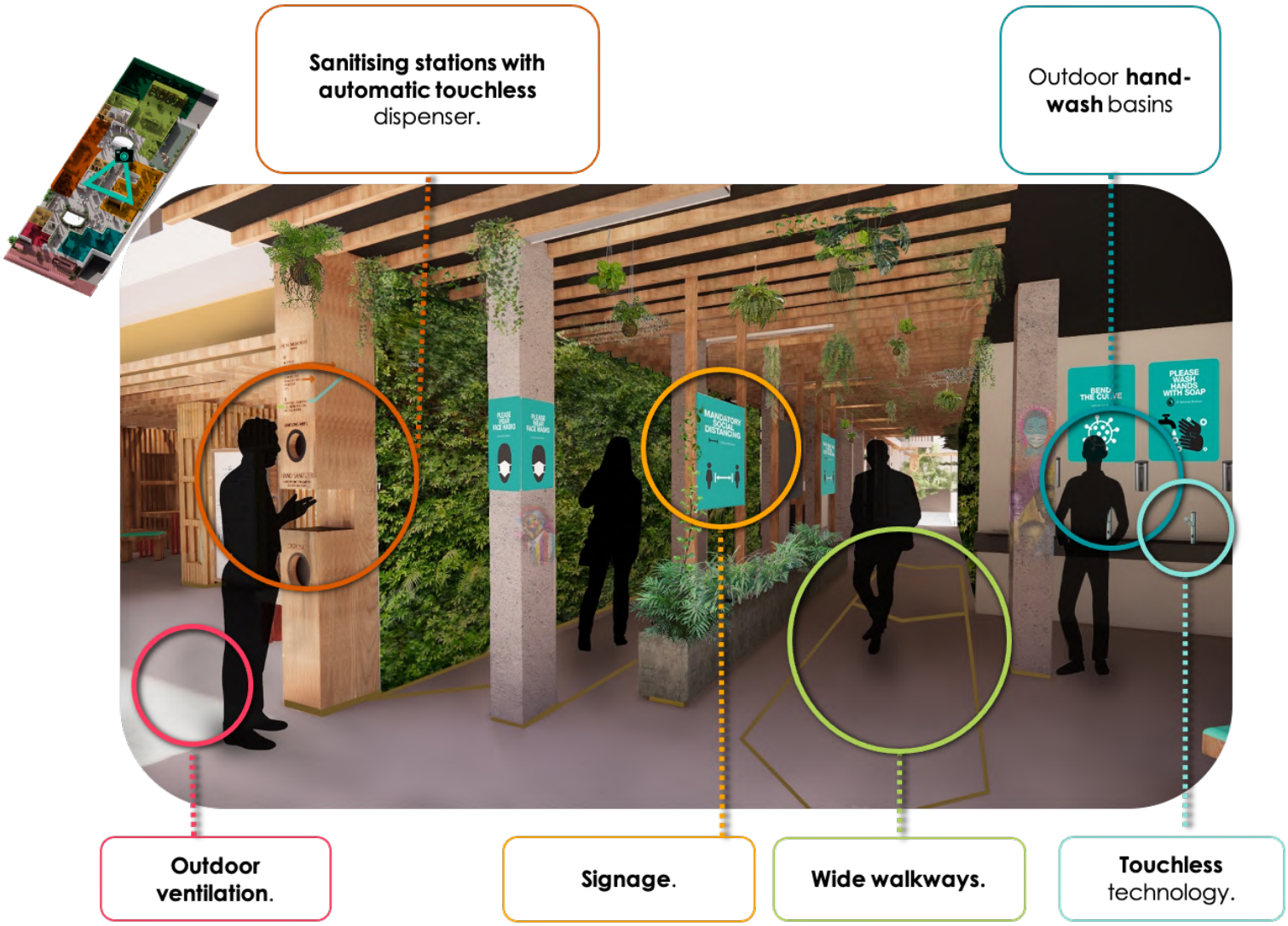


Figure 59. COVID-19 protocols (Author, 2021).

Furthermore, non-toxic chemicals and finishes are selected to ensure a safe environment, and air quality is to be addressed. The intervention is to ensure adequate ventilation by implementing permeable facades and access to open outdoor areas. Exposure to harmful chemicals and other elements that may be detrimental to health is minimised, with natural, sustainable, safe materials and construction techniques implemented throughout the design- such as sustainably sourced timber with an organic sealant. These materials used throughout are also to aid in reducing COVID transmission by being able to be easily, quickly, and regularly cleaned and sanitised. All high-touch zones are to be further reinforced by using self-cleaning materials as specified in the technical drawings and discussed in more detail later on.

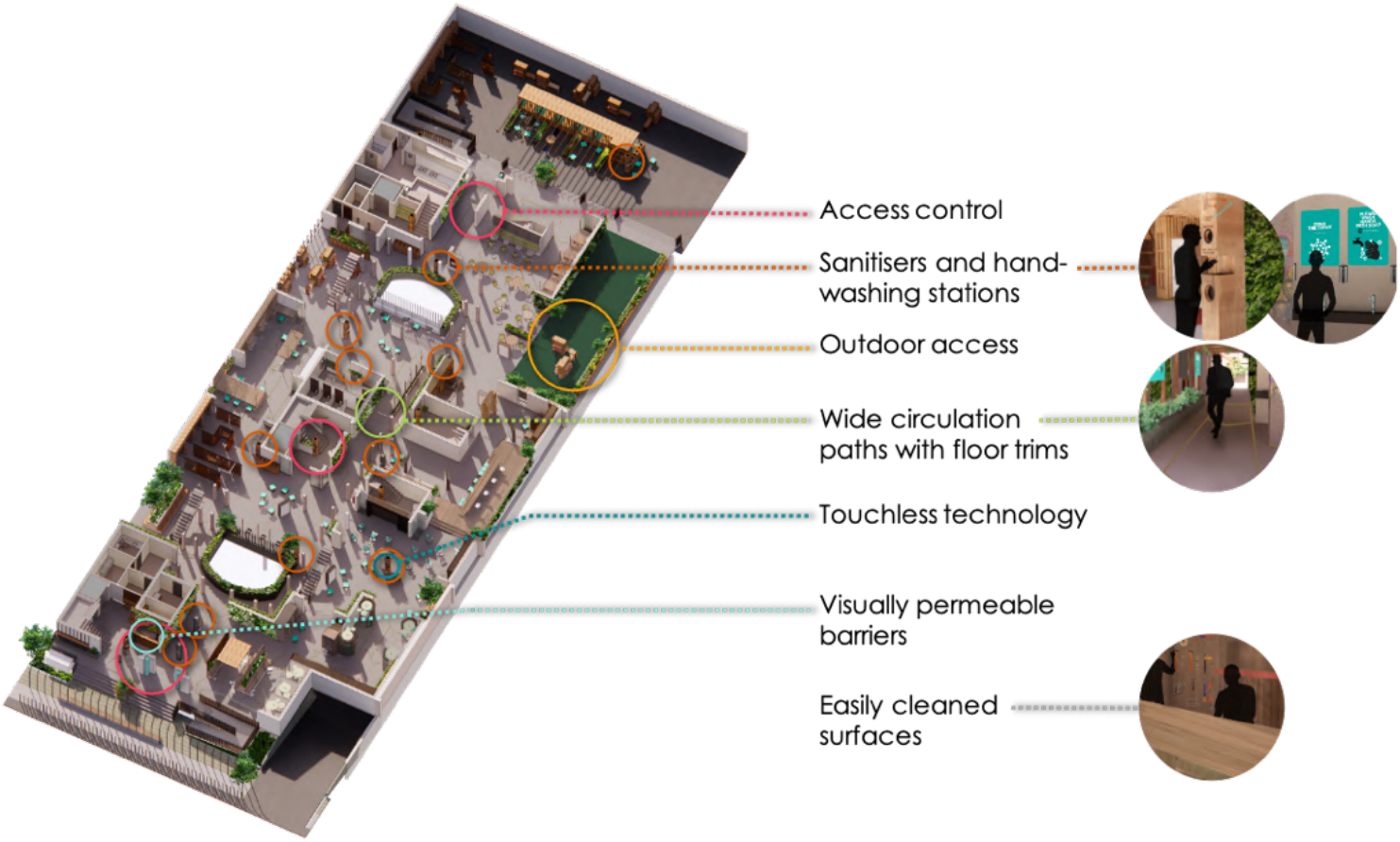


Figure 60. COVID considerations indicated throughout the space (Author, 2021).

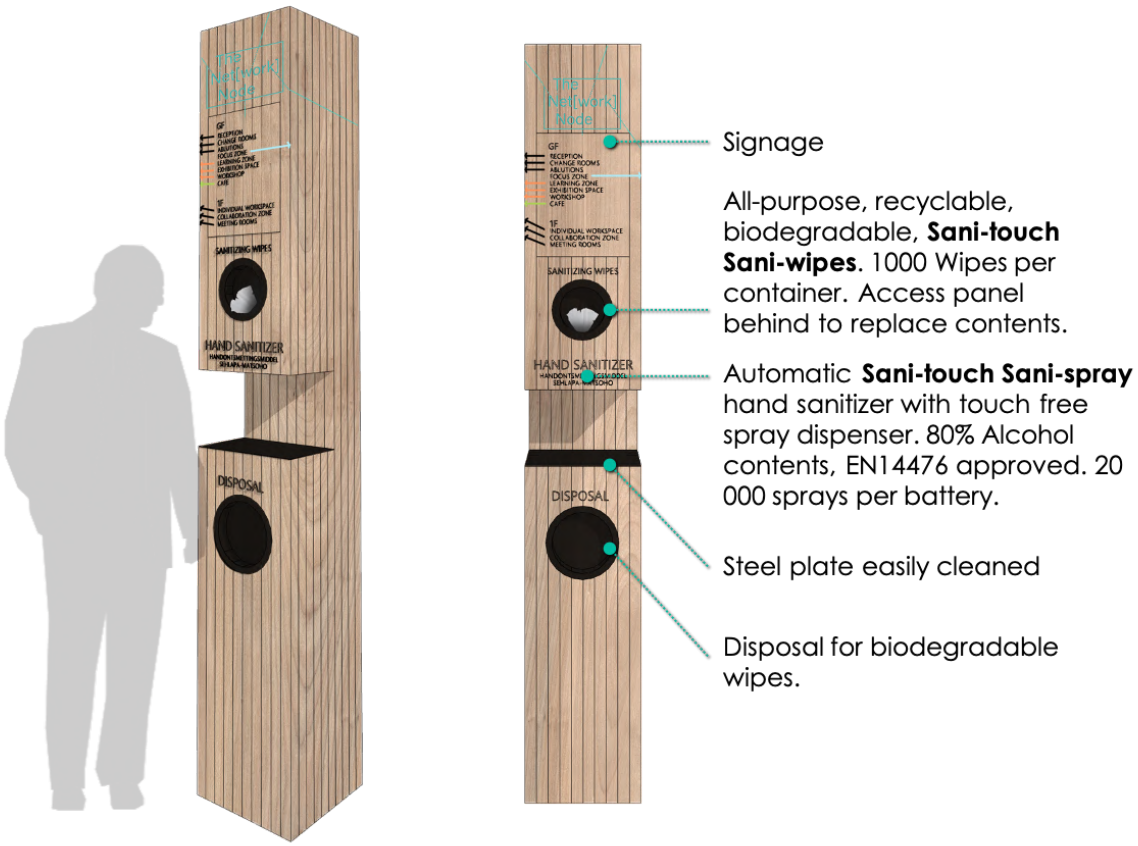


Figure 61. Sanitising stations (Author, 2021).

3.5. Prioritise comfort

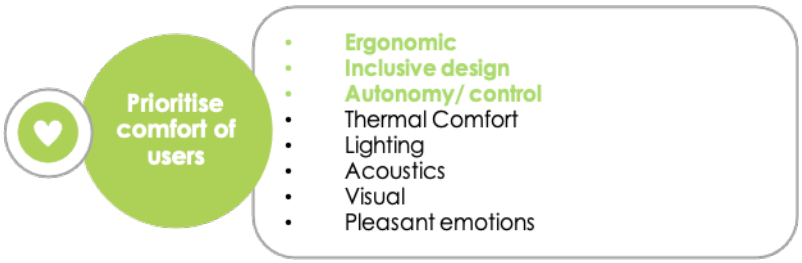


Figure 62. Framework point 2 (Author, 2021).

To ensure that users have a comfortable experience in the intervention, aspects such as thermal comfort, acoustics, lighting, and ergonomics need to be addressed.
The design aim is to create a space wherein knowledge is more accessible to the community; therefore, the intervention needs to be physically accessible and inclusive. The original building had narrow staircases and only one ramp to access the ground floor. Consequentially, wider staircases, ramps at both sides of the building, and elevators are proposed to make the site more accessible. Ablution facilities are to be gender neutral to further aid in creating an inclusive environment.

3.5.1. Adaptability / autonomy

The project approach toward well-being and flourishing is a multi-scalar investigation. Future office spaces will need to allow for a higher degree of choice and autonomy, catering for how, when, and where people choose to work. Adaptability, autonomy, and appropriation become crucial design informants for the design of *The Network Node*. The design needs to be able to accommodate a wider variety of programmes and activities within the workplace. The intervention is to feature an adaptable interface that users can appropriate to suit their needs. Throughout the design, adaptability takes on different approaches- from a fixed element that can be adapted for numerous uses/ functions to features that can be physically adapted into various configurations to entirely mobile elements. The intention is for the spaces to be appropriated to suit the users' different working, learning, and relaxing styles. The intention is that these are all in some way linked to the interconnected spatial device- forming a holistic sculptural network with adaptable parts to accommodate different uses and allow users a sense of environmental mastery.

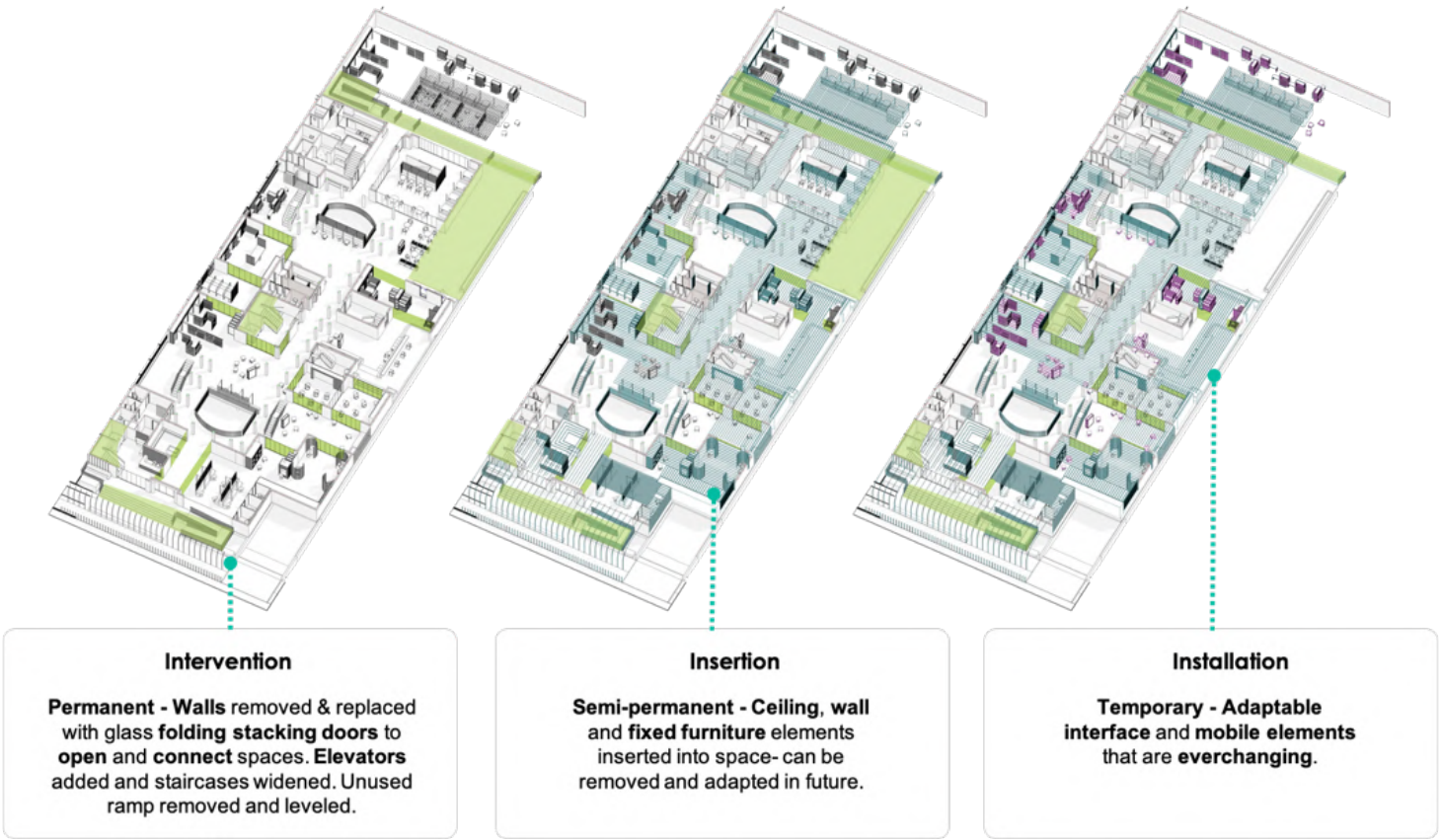


Figure 63. Spatial device axonometric (Author, 2021).

Since the network is intended to be perceived as one integrated element, the legibility thereof becomes essential. The different parts are to be connected through similar materials or finishes to be understood in their entirety (discussed in detail in point 3.6). Another critical factor to consider with the adaptable details is how people interact with the device. The concept is that the adaptable elements all include similar, simple details so that users can easily engage with and adapt them. Furthermore, colour is used to indicate similar adaptable details. The use of colour in the built environment has been shown to affect people's behavior and decision-making and can stimulate positive mood, boost performance, and contribute to a sense of well-being (Savavibool, Gatersleben and Moorapun, 2018). Therefore, each type of adjustable mechanism is to be colour-coordinated with the brand colours to indicate similar adaptability throughout the design, as illustrated below.

Several adaptable features of the spatial device in the focus zone are discussed in detail to demonstrate the technical focus better. These adaptable user interface details illustrate how the space can be appropriated for users to work or partake in leisure activities individually, in groups, digitally or by hand, by doing, creating or observing.

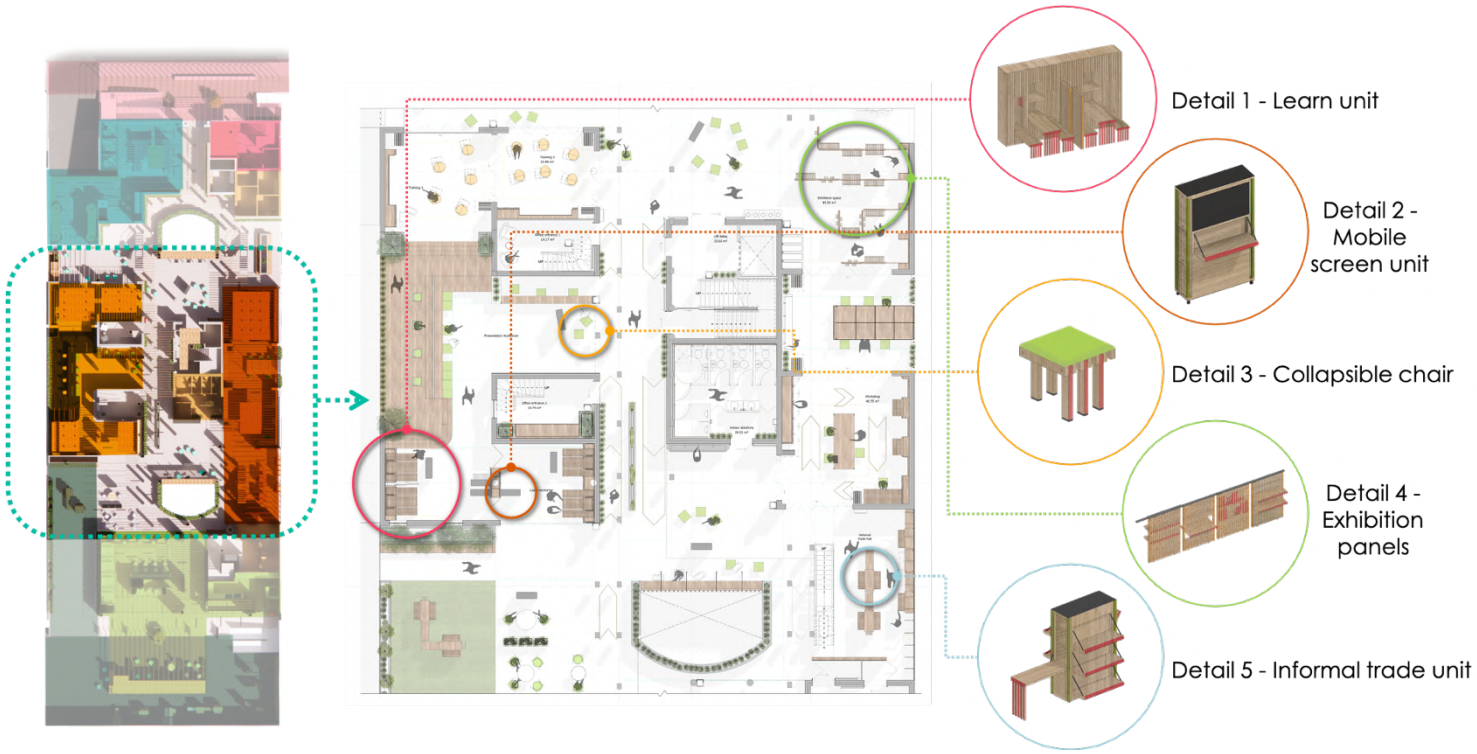


Figure 64. Focus zone and adaptable elements (Author, 2021).

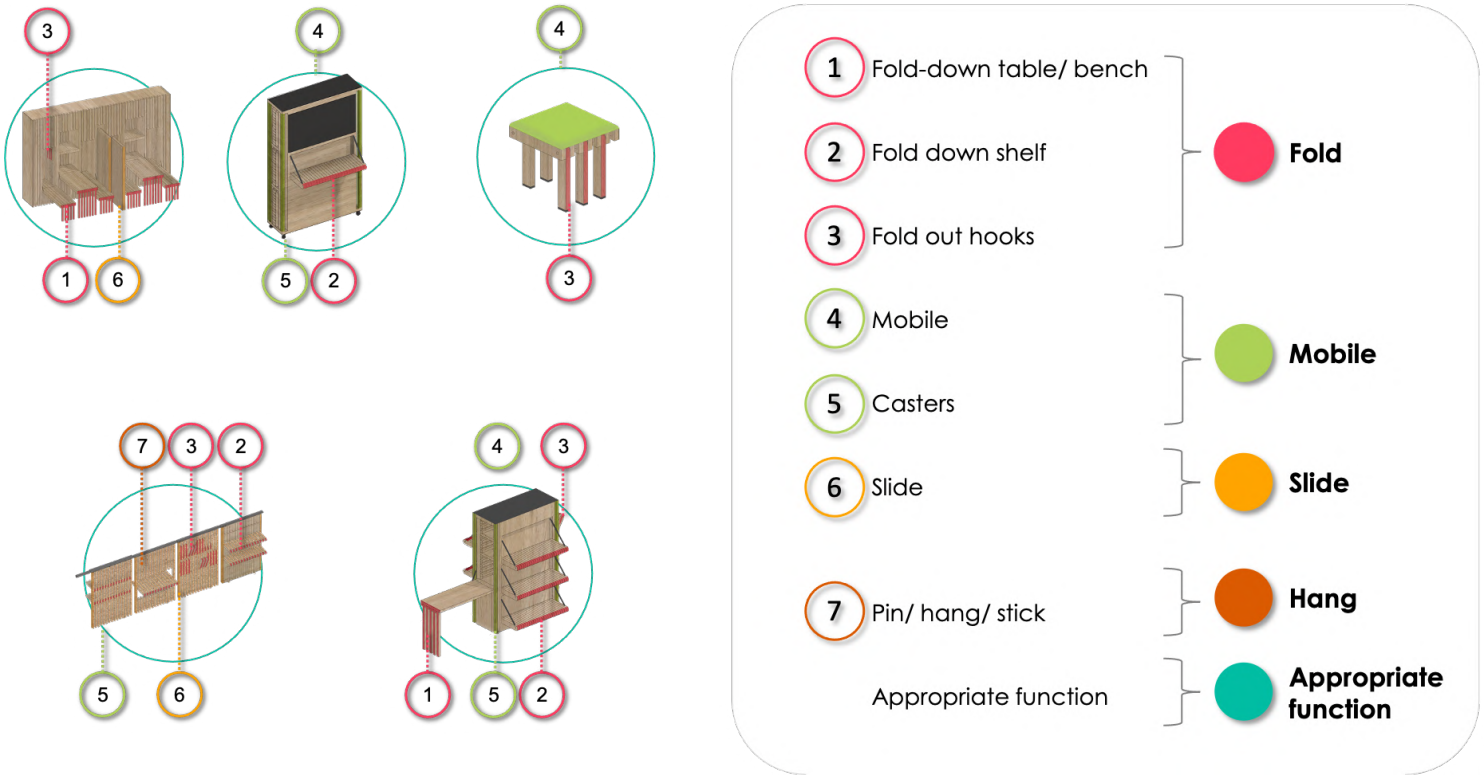


Figure 65. Diagram showing common details and colour designation of adaptable elements (Author, 2021).

The weight and mechanisms of the adaptable elements are to be designed to ensure ease of engagement with minimal user effort. In terms of ergonomics- all aspects of the design are to be planned according to human body proportions and the variety of different uses. The space, therefore, includes elements such as desks that are comfortable for sitting and eating or working at various heights.

The *Learn Zone* features training rooms, a presentation/ auditorium space, flexible desking options, and mobile screens and chairs. The *Learn Zone* is intended to cater for different learning styles including visual, aural (auditory), verbal, physical, logical, social, and solitary learning, as illustrated in Figure 66 (The Seven Learning Styles, 2013). Knowledge is intended to be more accessible to the Hatfield community through accommodating for various opportunities for exchange throughout the design.

Figure 66. Sketch illustrating how the different learning types happen in the Learn Zone (Author, 2021).

Figure 67. Conceptual illustration of the training rooms in the Learn Zone and how the space encourages well-being and flourishing (Author, 2021).

The *Create Zone* accommodates more creative engagement and includes an exhibition space, a workshop, and informal trade units to enable people to creatively express themselves, explore interests, build new skills, and share these with others.

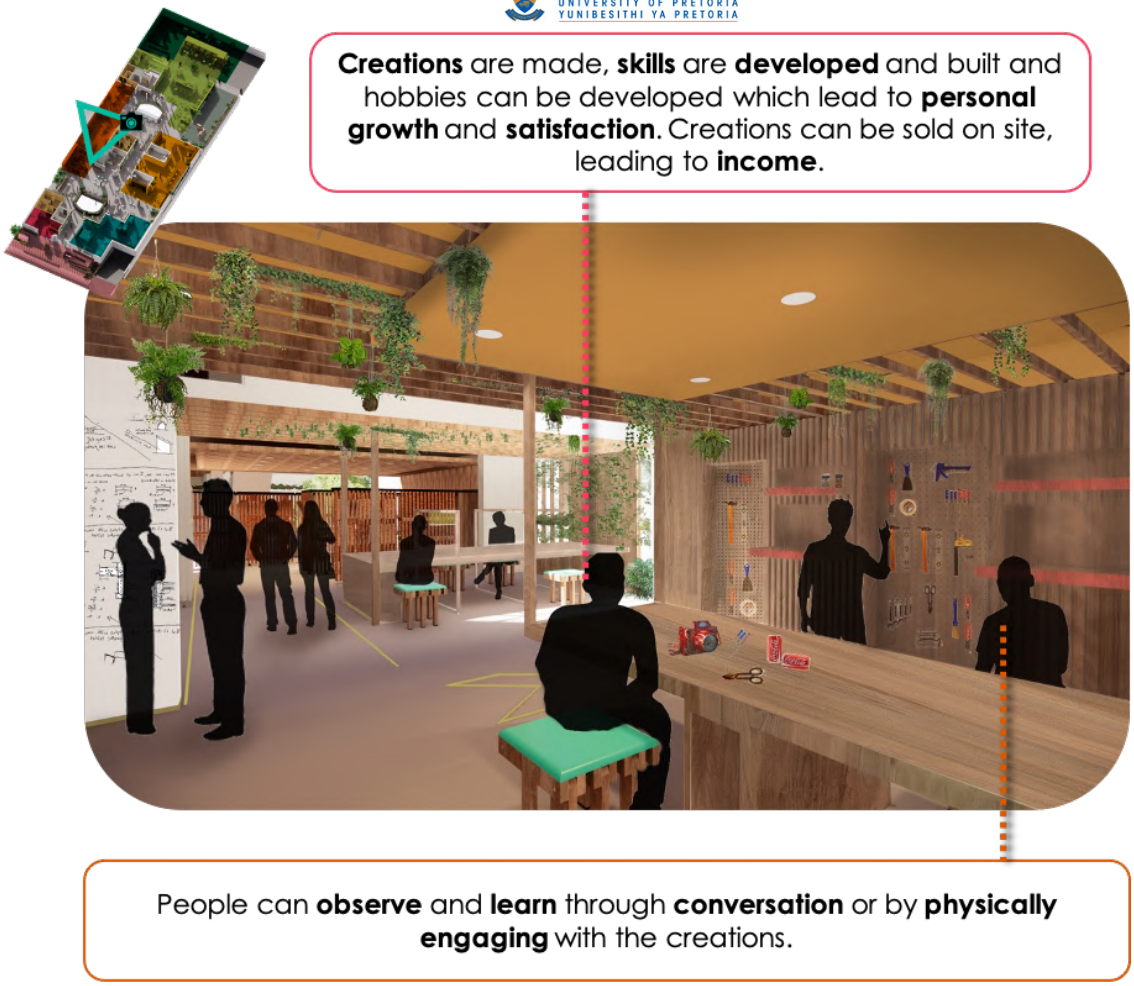


Figure 68. Conceptual visualisation showing the Create Zone workshop and how flourishing is encouraged (Author, 2021).

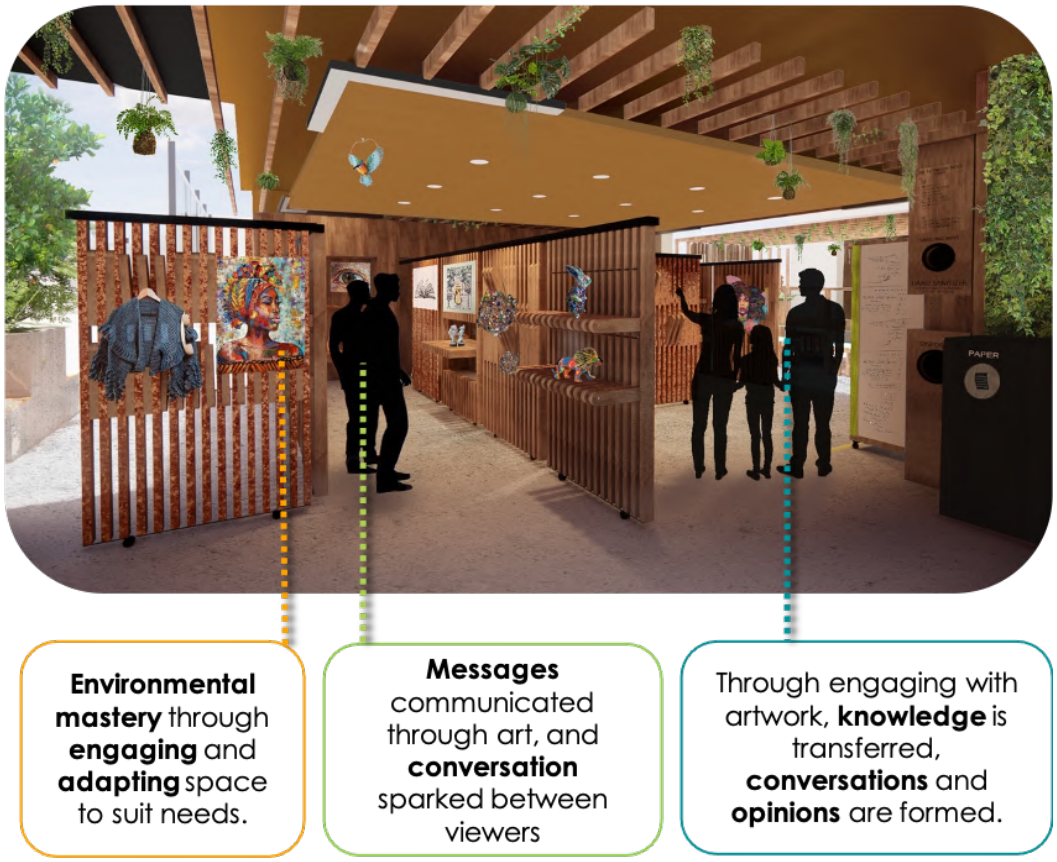


Figure 69. Conceptual visualisation illustrating the exhibition space in the Create Zone and how flourishing is encouraged (Author, 2021).

Scaled maquette explorations

Closed shelf with finger grip detail

Open shelf with strap support

Magnetic catcher latch

Open hook detail

Closed hook detail

Figure 70. Scaled maquettes and 1:1 prototypes to test user interface and adaptability (Author, 2021).

3.5.2 Service reticulation

The spatial device connects through ceiling elements that branch out into the wall and furniture elements. Aside from physically connecting the different spaces - the ceilings aid in wayfinding, service reticulation, lighting, and acoustics. The existing dilapidated suspended ceilings are to be removed, exposing services and the concrete soffit. The ceilings are to be painted in each zone according to environmental colour psychology and the brand identity to demarcate certain areas and assist in creating different atmospheres in the respective spaces, as illustrated in the ceiling plan technical drawing sheet and below.

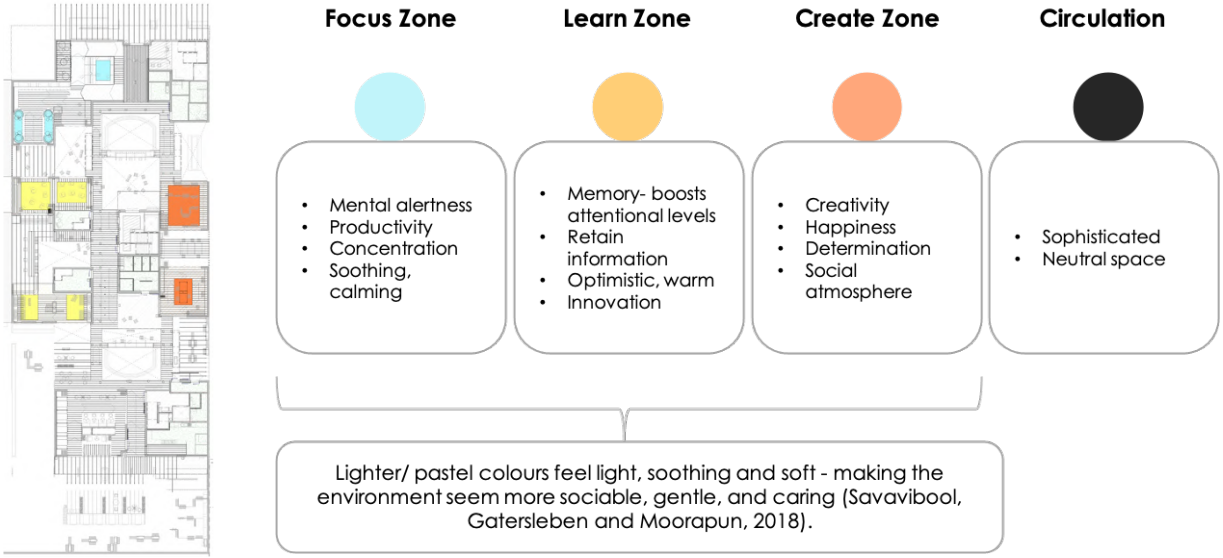


Figure 71. Exposed ceiling colour allocation and association (based on information from Savavibool, Gatersleben and Moorapun, 2018).

Furthermore, the ablution facilities are proposed in the exact locations as the existing ablutions and use existing service reticulation through the basement (refer to technical drawing sheet with drainage callouts). In terms of thermal comfort, natural ventilation is to be used where possible through permeable facades, and interiors are to be fitted with mechanical ventilation to aid in heating and cooling as well as air filtration when required.

3.5.3 Lighting

Light plays a prominent role in the health and well-being of users. Insufficient lighting and prolonged exposure to artificial lighting can cause eye strain and headaches and interfere with the human body's circadian rhythms, impacting sleep quality and overall health (Health & Wellbeing Framework, 2020:16). A combination of energy-efficient, adequate artificial lighting as well as natural lighting is to be incorporated. The facades of the intervention can be opened with glass bi-fold stacking doors creating an open ground floor. Additionally, glass facades also maximise sunlight spilling into the spaces. To avoid uncomfortable lighting circumstances, matte finishes are to be used to reduce glare, lighting is to be dimmable, and shading devices are to be used to avoid harsh sunlight.

Suspended TrueLine LED battens and Master LED spotlights from Phillips will be incorporated into the interior timber ceiling, either suspended between slats or placed in acoustic ceilings to ensure adequate lighting levels, as illustrated below. Outdoor lighting consists of IP65 Smartbright Waterproof battens incorporated into the overhead slats where necessary. The slats are to be suspended from steel cross-braces painted to match the ceiling colours.

Application:	Name	Lumens (lm):	Image:
Indoor	Phillips LED Trueline	3400	
Indoor	Phillips Master LED spot	1850	
Outdoor	Phillips Smartbright waterproof LED batten	3600	
Circulation	Phillips LED Trueline	1500	

Figure 72. Summarised lighting information (Author, 2021).

3.5.4 Acoustics

The long-term effects of noise exposure can be severe. Side effects include a sense of discomfort, sleep disturbances, and cognitive impairments, as well as mental health problems that affect health in general (Health & Wellbeing Framework, 2020:17). Acoustics are to be controlled through the use of absorbent materials incorporated into the ceilings. Echophon panels are suspended from the exposed soffit using steel braces painted to match the respective ceiling colour. The acoustic panels are to be colour-matched to the painted exposed ceilings and used to lower ceiling levels and demarcate destination areas in the different zones. Furthermore, reverberation is decreased through the use of slats and outdoor courtyard areas with green walls. The intention with acoustic control is not to deaden the sound in the space entirely but rather to ensure that an audible level of conversation is maintained throughout to ensure that people do not need to raise their voices or move closer to each other to hear, thereby potentially further spreading COVID.

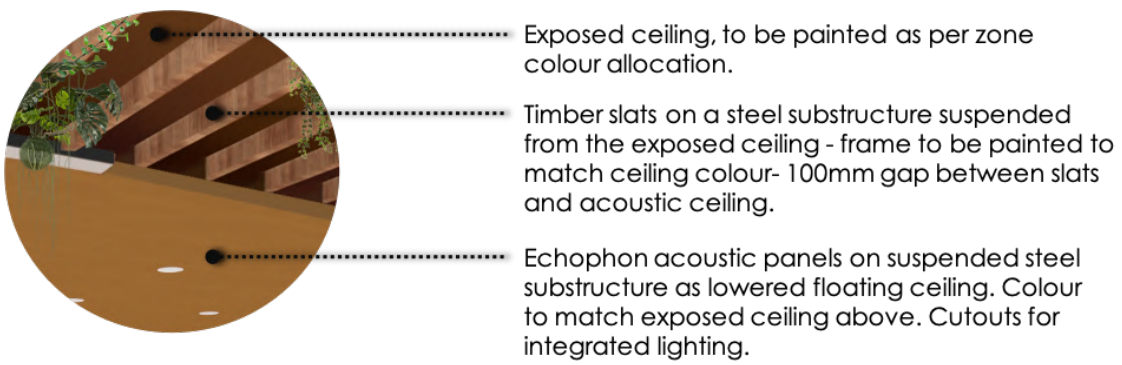


Figure 73. Diagram illustrating acoustic ceiling panels and timber slats with exposed painted soffit (Author, 2021).

3.6. Harmony with nature

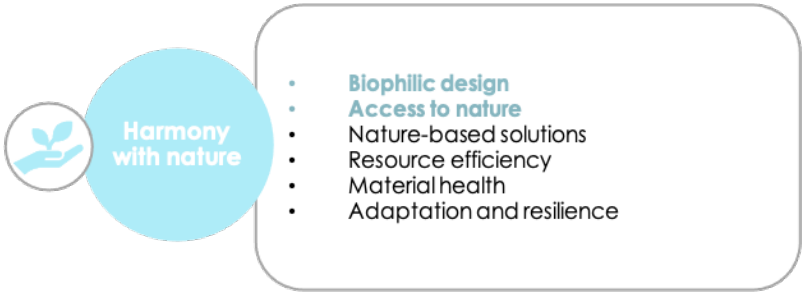


Figure 74. Framework point 3 (Author, 2021).

3.6.1. Materiality

The site features both indoor and outdoor spaces- all to be connected by the spatial network. Therefore, the network needs to be constructed out of similar materials to read as a cohesive structure. The space is to be connected to nature and needs to be durable for user adaptation. Through an investigation into potential materials (Figure 75), it was decided that sugar gum timber, aided by steel structures, was the best approach. The sugar gum timber will be treated with Rubio Invisible Protector, which is based on a high-quality plant-based emulsion and preserves the natural appearance of the timber (Rubio Invisible Protector, 2020). Sugar gum was selected due to its durability indoors and outdoors, its connection to nature and biophilia, sustainability and local abundance, as well as the ability to be cleaned and sanitised.

Material	Durability (interior & exterior)	Sustainability	Link to nature	Ability to be cleaned	Appearance	
Plywood (Plywood, 2021)	• High strength • Resistant to water • Structural	• Timber, renewable resource	• Natural material	• Easily cleaned if sealed.	• Layered appearance	
SA Pine (Pine - South African, n.d.)	• Soft wood • Needs to be treated	• Locally grown • Abundant	• Natural material	• Easily cleaned if sealed	• Yellow/ white • Characteristic knots	
Sugar gum *(Eucalyptus Cladocalyx)* (Eucalyptus Cladocalyx, n.d.)	• "Class 1 Heavy Hardwood" of exceptional durability and is well suited to external building applications • Stable in drying	• Locally grown but invasive so being cut down and in abundant supply	• Natural material	• Easily if sealed	• Few defects • Pale white to light brown but turns silvery grey over time	
Composite (Wood Plastic Composite, n.d.)	• Good indoors and outdoors • Easy to maintain • Durable • Weather resistant	• Recycled timber and plastic • Larger carbon footprint • Recycled	• Can mimic timber • Cold to touch	• Easily cleaned, small grooves in wood grain texture can collect dirt	• Stock but can be altered on request • Looks like plastic	
Steel (Steel, n.d.)	• Highly durable • Coating required for corrosion	• High carbon footprint • Can be recycled	• No	• Easily cleaned	• Can be coated in various finishes	

Figure 75. Materials matrix (Author, 2021).

Although the sealed sugar gum timber can be easily cleaned and sanitised, high-touch areas such as mobile elements and handles can be further protected by implementing a self-cleaning material called Nanoseptic. This sustainable, non-toxic material is a protective self-cleaning film that can be custom printed and adhered to high-touch areas for added protection against surface transmission. "Powered by light, NanoSeptic surfaces utilise mineral nano-crystals which create a powerful oxidation reaction. Working 24/7, the surface continually oxidises organic contaminants (Learn About NanoSeptic Self-Cleaning Surfaces, 2016)". This becomes a viable option as all areas in the intervention are exposed to either natural light or interior lighting at all times.

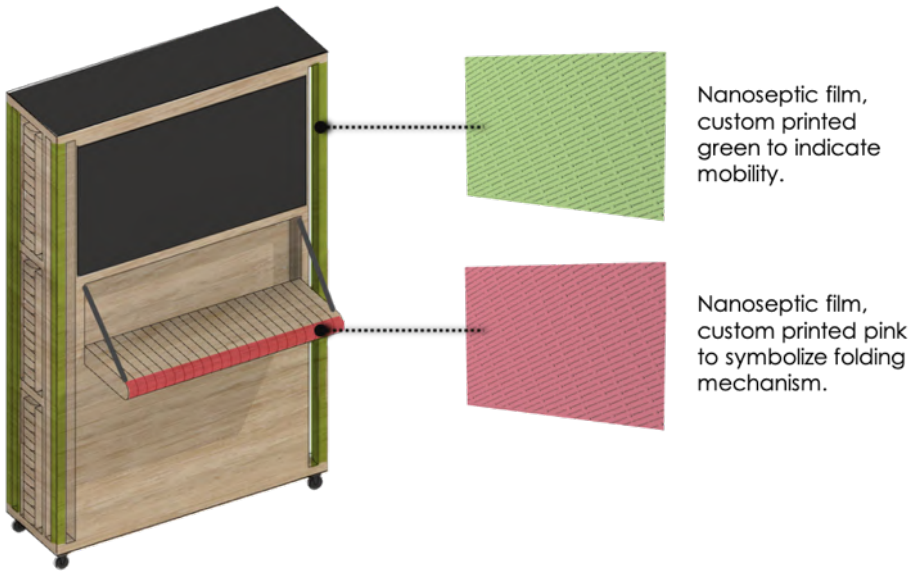


Figure 76. Example of detailed element showing custom coloured Nanoseptic film on high touch zones (Author, 2021).

3.6.2 Biophilic design

Biophilic design refers to the incorporation of nature and natural elements into the built environment. Biophilic design strategies in buildings can improve mental health and enhance comfort, well-being, and happiness (Health & Wellbeing Framework, 2020:18). Researchers have found that biophilic design reduces stress, enhances creativity, improves concentration, and facilitates healing and well-being by responding to our innate psychological drive to belong to nature (Health & Wellbeing Framework, 2020:18). Furthermore, biophilic design refers to the symbiotic relationship between nature and the built environment through elements such as sustainable design.

Biophilic design is addressed by maximising connection to outdoors and nature through permeable facades, passive strategies such as natural lighting, incorporating natural materials and patterns into the design, and allowing opportunities for people to engage with nature physically. Biophilic design, in this case, also includes planting integrated into the ceiling and wall features (as depicted in Figure 77) and green walls (Figure 78) that also function as small-scale subsistence farming that users can engage with- thereby further contributing to knowledge propagation and flourishing. The planting is to include edible plants and a variety of indigenous, waterwise plants that grow in both sun and shade and will thrive in Hatfield.

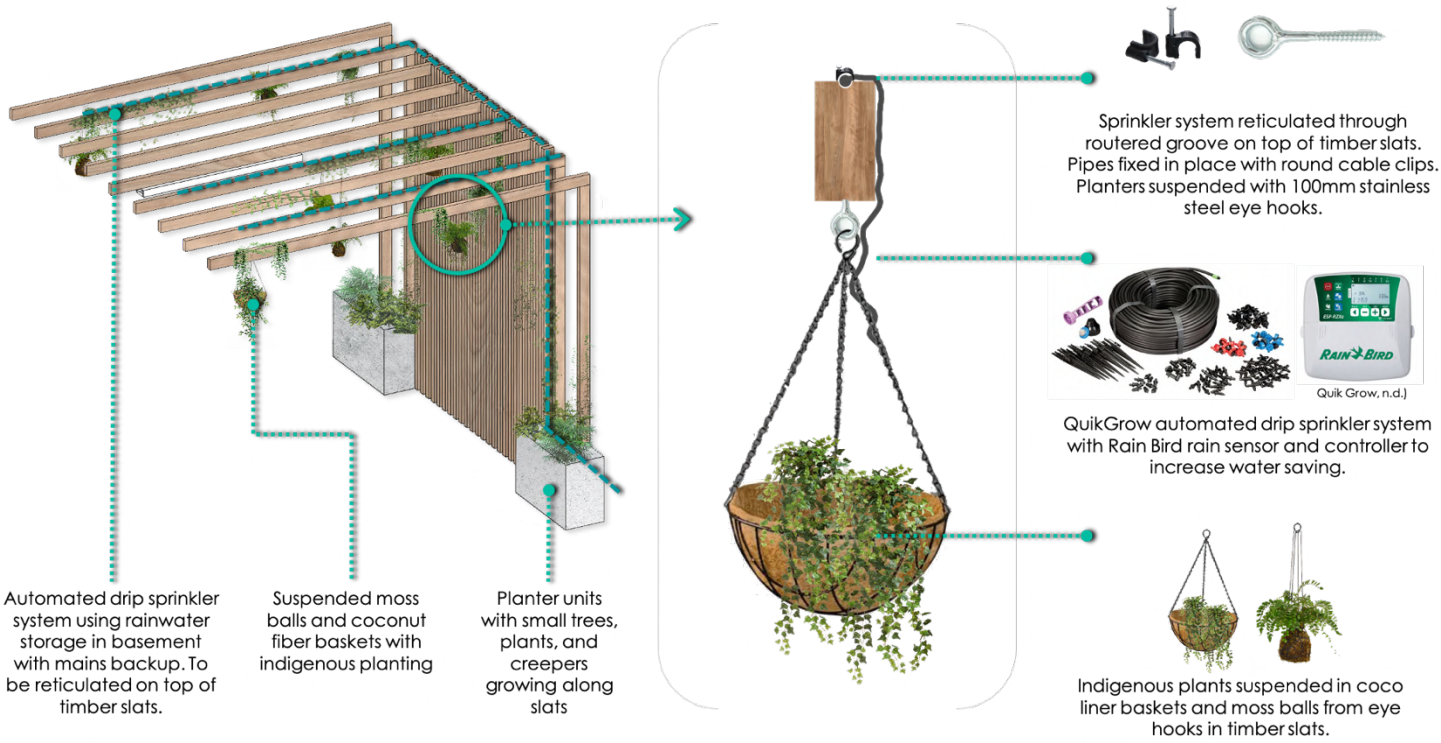


Figure 77. Conceptual diagram indicating general approach to planting and sprinkler systems (Author, 2021).

Figure 78. Modiwall system (Author, 2021, Modiwall, n.d.).

Figure 79. Planting palette (Author, 2021).

3.6.3. Resource efficiency

Resource-saving techniques are to be integrated into the design where possible. For example- water-saving sanitation fixtures are to be implemented in the ablutions and hand-washing stations. In conjunction with the abovementioned points, designing in harmony with nature also includes reducing energy usage, employing sustainable energy production, and encouraging recycling. Therefore, another contributing factor includes future-proofing the design to minimise the need for future reconstruction or demolition. Thus, the interface is designed with screws and bolts or more temporary fixings instead of chemical or permanent connections so that the intervention can be adapted and easily removed for future tenants or circumstances.

3.7. Facilitate healthy / positive behaviour

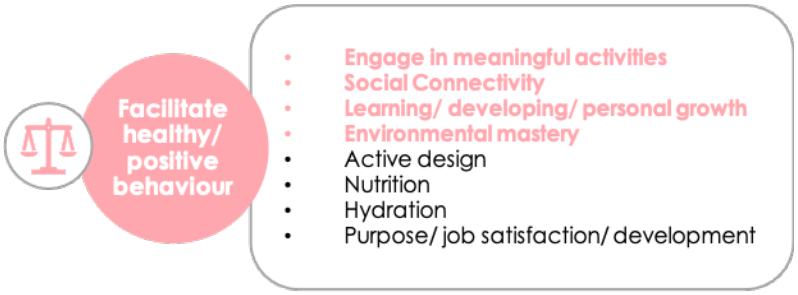


Figure 80. Framework point 4 (Author, 2021).

The design features adaptable spaces that allow for a multitude of different activities to take place in the space. Through creating a variety of opportunities for engagement and housing these activities in one place, the community is encouraged to socialise. A significant contributor to flourishing includes personal growth and development. Through encouraging engagement in various activities or allowing exposure to multiple activities, exposure to knowledge is increased.

Environmental mastery refers to one's ability to have control over one's surroundings and being able to appropriate the space to suit their needs (Wellcertified.com, 2020; Fisher, 2014:13). The interface is designed to allow for user autonomy; users can freely move and adapt elements for various uses to suit their needs- thus allowing them a sense of control over the space.

Figure 81. Conceptual visualisation showing informal trade section in Create Zone and how it encourages flourishing and chance interaction (Author, 2021).

In terms of active design, the spatial layout is proposed from more individual/ quiet spaces to more social spaces. Most community members would likely meet at the café located on the opposite end to the main entrance on Francis Baard Street, thereby encouraging users to move through the space. The upper floor pause areas are also located near the café, meaning that users will need to move through the space, thereby encouraging interaction and chance encounters. The café is intended to be a healthy alternative to fast foods, selling healthy foods and incorporating produce grown on-site. Furthermore, the intervention provides access to facilities such as bicycle storage and changing facilities to further encourage physical activity and healthy habits.

All these aspects combined in one intervention lead to a place that fosters a healthy work environment, allowing users to have a more purposeful journey to the workplace.

Figure 82. Sketch illustrating community needs being catered for in one place (Author, 2021).

3.8. Create positive social value

Figure 83. Framework point 5 (Author, 2021).

Positive social value refers to protecting human rights, health, and well-being, providing long-term value to communities, and improving local quality of life (Health & Wellbeing Framework, 2020:19). By creating a space that allows for various working typologies and autonomy for community members to use and adapt the space, the communities' rights to free choice, favourable, secure working conditions, and free participation in the

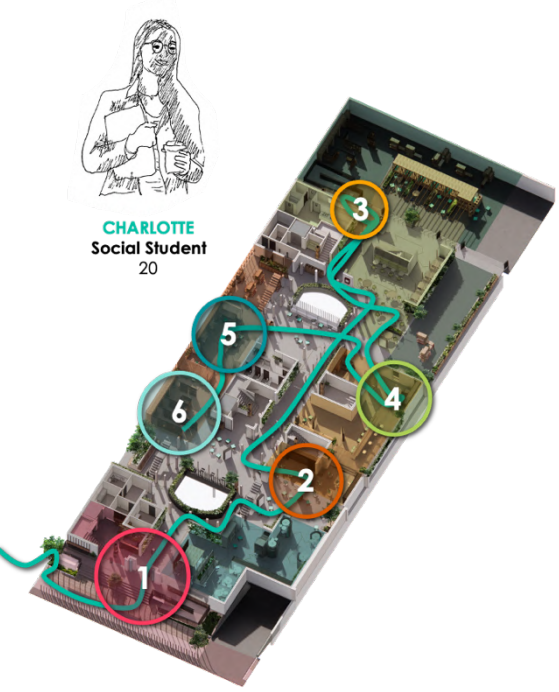
community's cultural life are supported (Health & Wellbeing Framework, 2020:19). Though the built environment directly affects occupants' health, well-being, productivity, and other aspects of their lives, it also has broader and less tangible effects on the local communities. This is addressed through the intervention by making knowledge and access to resources more accessible, thereby increasing the employment potential for the local youth and semi-skilled persons.

The space will also need staff for the café, cleaning, and maintenance of the site, which leads to job creation in the area. In addition to providing opportunities for knowledge accumulation, the presence of community engagement on-site will ultimately lead to more community engagement and connections off-site- which will result in a greater sense of community identity and belonging. Furthermore, by allowing for activities that would already have taken place in the surrounding areas but have been affected by changes in workplace typologies such as informal trade; the likelihood of the community participating in the activities is increased. This leads to a positive shift in quality of life, identity, and community culture, thereby further supporting the flourishing of the users and local community.

Additionally, the building contributes to the local community by encouraging more sustainable and healthier habits such as promoting small-scale subsistence farming, small businesses (informal trade), job creation (café staff, gardeners, and cleaners), reducing and recycling waste, and making use of clean energy and passive strategies. The site also supports the local community by proposing that the sidewalks in the area are designed to make provision for cycling and walking, thereby improving the neighbourhood's walkability.

Creating a space wherein all community members can convene increases the likelihood of more positive social connections. This, in turn, further encourages the flourishing of the community.

Figure 84. User narrative 1 (Author, 2021).



Rides her bicycle from her flat nearby. Stores the bicycle on provided bike racks and undergoes **COVID checks** and **sanitises** her hands.

Makes her way to the **training rooms** to **attend a talk** on the fashion industry.

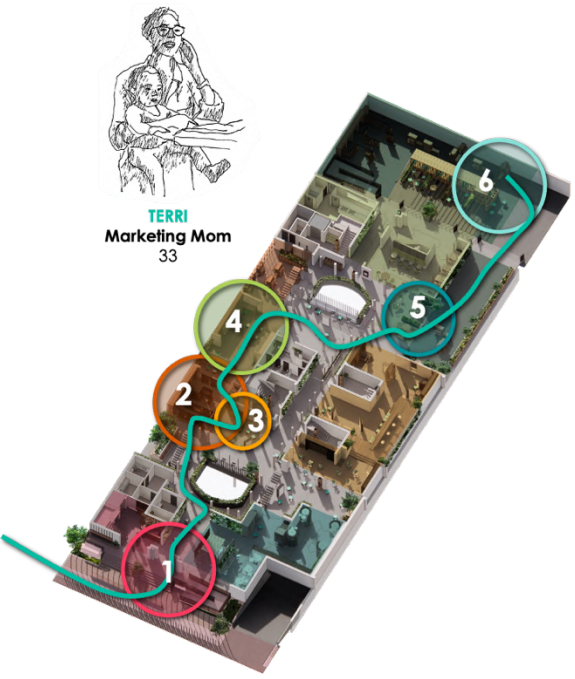
Goes to the Grab&Go **coffee** counter where she **bumps into a friend.** The two then sit down in the Eat Zone and **catch-up**.

She then meets her university **colleagues** in the **Learn Zone** where they **brainstorm** ideas for their upcoming design projects and **discuss** their garments.

She then stops at the **Create Workshop** to add some finishing touches to her garment.

She **displays** her garment in the **Exhibition** space where **Prisha** approaches her and asks her to **teach** her how to make garments. The two **become friends** and **meet** on site once a week for coffee.

Figure 85. User narrative 2 (Author, 2021).



Parks in the basement and comes upstairs where she undergoes **safety checks and sanitises.** She goes **upstairs** for a **formal meeting** and her husband takes the **kids** for a **picnic** on the grass.

On her way back, she walks past the **green walls** and remembers she needs mint for a new recipe and **picks** some. A **passerby** stops to ask if the plants are edible, and the two **share** planting **knowledge** and **recipes**.

After the meeting, she walks down to the **Focus Zone** to **read** over some documentation. She sees **Siba** reading a **book** she's been **curious** about and **asks** about it - the two discover their **mutual love for books**.

On her way back to her family, she walks past the **Learn Zone** where she **overhears** a group talking about Social media and stops to **listen**.

She joins her family on the **open grass** and decides to do some stretches. She has the idea to **lead** a **yoga class** in the open grassy area once a week.

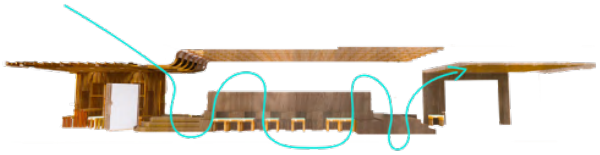
The family decides to take a stroll through the pedestrianised dead-end street and **browse** the small market where they **discuss** graffiti on the walls.

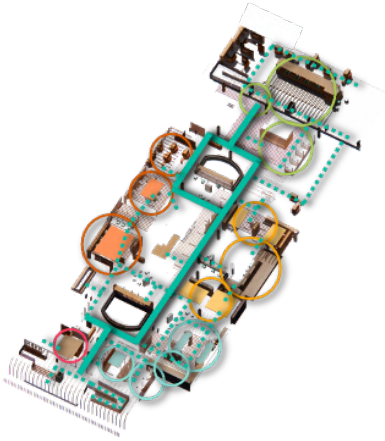
Figure 86. User narrative 3 (Author, 2021).

Connections

Tangible

Physical spatial device





Adaptable spatial device physically connected through walls, furniture & ceilings & to surroundings.

People to interface & space

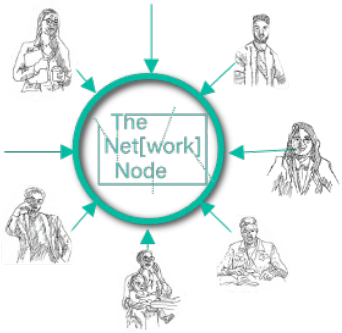
- Providing a range of **meaningful activities.**
- Allowing users to **engage with & appropriate** the **adaptable** space to suit their **workplace and personal needs**.

Intangible

People to people

Providing a **safe space** for people to **gather** in. **Encouraging social connectivity** and the building of **meaningful relationships**. Innovative barriers approach with **visual connections** also maintained throughout.

People to knowledge & opportunities



By **bringing diverse people together** in one space, and allowing for **engagement in various activities**, the likelihood of **chance encounters** and thereby **knowledge transfer** is increased. Knowledge transfer leads to **personal development and growth** and also **builds human capital**.

Brand to context

Contextually relevant response with activities that the Hatfield community will make use of and benefit from.

Figure 87. Diagram summarising connections (Author, 2021).

Figure 88. Diagram illustrating various activities in one place that lead to interaction, social connections, and knowledge transferral which result in personal, workplace, and community well-being and flourishing (Author, 2021).

3.9. SBAT Rating

The Sustainable Building Assessment Tool is used to test the design proposal to demonstrate the project's overall performance. The SBAT score indicates the holistic sustainability approach of the building and includes social, economic, and environmental criteria. Please refer to the appendix for an in-detail checklist of criteria.

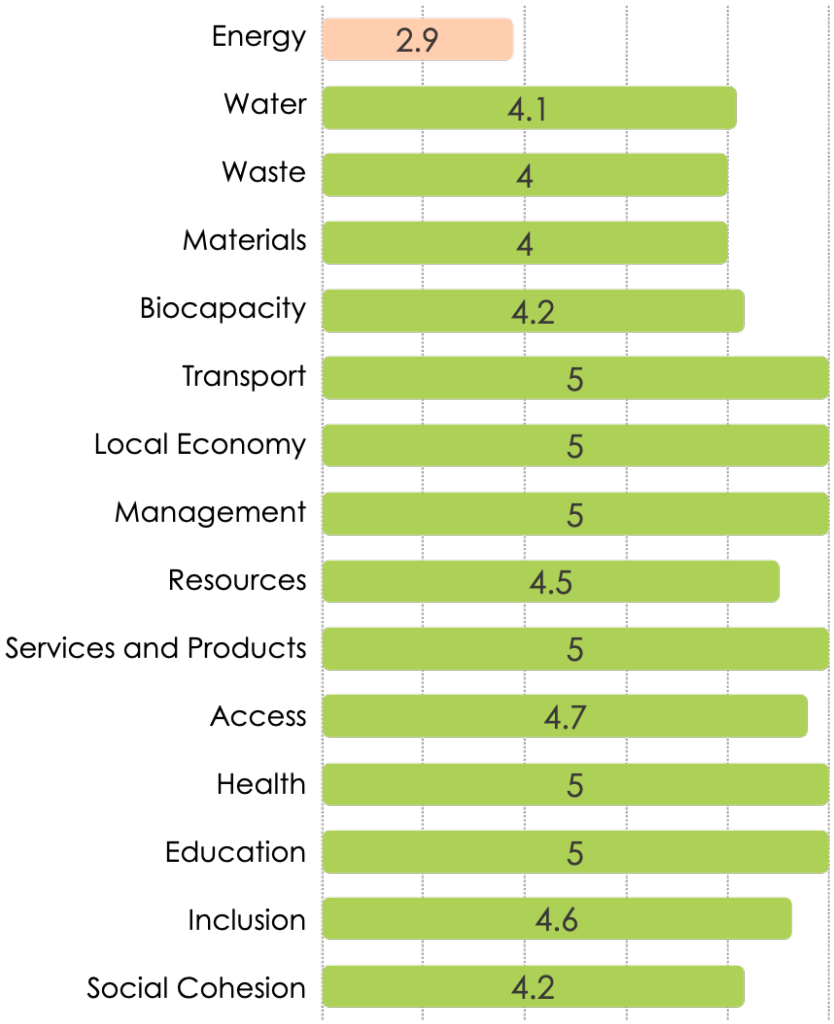


Figure 89. Sustainable Building Assessment Tool scores out of 5 - only the 'energy use' category falls below the 'high' classification and this is mostly due to the buildings electricity demand not being met entirely through renewable resources (Author, 2021).

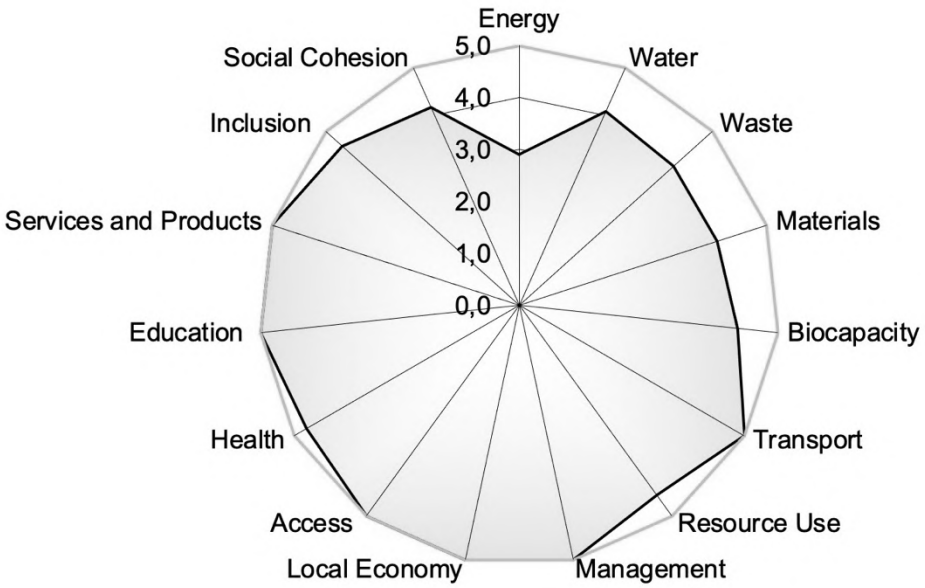


Figure 90. SBAT scores represented on a radial graph. This diagram illustrates the holistic approach to environmental, economic, and social sustainability (Author, 2021).

3.10. Conclusion

The human flourishing and well-being design approach using the '*collective*' design typology within the intervention includes providing opportunities for activities that will facilitate the development of skills and talents, which are long-lasting benefits that continue to accrue after users are removed from the environment (Stevens, Petermans & Vanrie, 2019). Emphasis is placed on empowering users, encouraging them to build and discover new skills and relationships. The intervention provides more temporary elements of flourishing, but the goal is that more enduring effects are achieved. The more intangible impact of flourishing is achieved by providing several interconnected scenarios for users to participate in (Stevens et al., 2019). A holistic approach is developed by creating an environment that addresses different aspects of health, well-being, and flourishing. By protecting users' health, ensuring their comfort, designing in harmony with nature, and facilitating healthy behaviour and social connections, users can flourish.

Part 4 Reflection

4.1. Introduction

The project aim was to address well-being, human flourishing, and access to knowledge and opportunities for interaction within post-pandemic workplace design. This approach was chosen due to the relevance of the effects of the COVID-19 pandemic on the workplace and the well-being of the Hatfield community. The consulted data suggested that the workplace was to take on the role of a "convening" space in which users can participate in various interrelated scenarios that connect people back to each other, work, and opportunities (McLaurin, 2020).

Part 4 entails a discussion of the significance of designing for well-being and flourishing and the relevance of applying these techniques in practice.

4.2. COVID-19

At the time of writing, research regarding post-pandemic workplaces is still underway as this is still a relatively recent topic. Furthermore, many publications relating to post-pandemic workplaces focus on COVID-19 protocols, but not necessarily how these can be integrated innovatively into a design intervention.

Due to advancements in technology and remote working, coupled with challenges faced by communities during the pandemic, the role of the workplace becomes a space wherein communities can reconnect. Furthermore, by creating programmes that are relevant to the affected communities, such is the case with the *Network Node* and the Hatfield community, the experience of the communities can be augmented into a richer user experience. The pandemic can be seen as an opportune moment to integrate the workplace with the surrounding community, leveraging resources and human capital to enhance shared experience in the built environment (Stromquist, 2020).

4.3. (W)ell-being & flourishing

As stated in Gensler's design forecast 2021 (2021:1), "[…]the key to a successful [design] is a focus on people and their needs and expectations. The value of design and architecture is the human experience it facilitates. The people-first design has never been more important".

Research regarding well-being and flourishing is becoming topical but is still in its infancy (Brey, 2015:378, Stevens, Petermans, and Vanrie, 2019:395). Flourishing research is often conducted from a psychological perspective, with little being written about how this can be achieved in an interior architectural intervention. As stated by Stevens *et al.* (2019:406), "[… designers] today often rely on their intuition while incorporating well-being-related aspects into their design, or they practice this theme without being formally aware of it". Furthermore, research incorporating the effects of the COVID-19 pandemic regarding flourishing and well-being is also lacking, with most pandemic wellness research focussing mainly on protecting physical health.

4.4. Contribution to the discourse

Although the project is aimed at achieving a more intangible outcome manifested in physical space- the research undertaking aimed to contribute to the ongoing research toward well-being, particularly in a post-pandemic workplace setting. The intention was to further contribute to establishing guidelines for interior architectural design techniques that facilitate a holistic approach to flourishing. The research can also be seen as a precedent as to how the theory can be applied to a physical space and the role of designers in creating spaces that positively contribute to people's lives and facilitate flourishing. The information contained within this project is intended to be viewed as exploratory or preliminary as further research and application thereof is necessary to advance and establish the topics. Additional research is required to create a systematic, comprehensive approach or holistic framework for application into effective physical design processes.

The built environment should ultimately empower users to thrive. Imagine an environment wherein all the spaces you enter are designed with your well-being in mind. I believe that architectural designers are responsible for creating spaces that positively contribute to the users thereof and make a more significant impact on the surrounding communities.

Within the context of the Hatfield community, if more contextually integrated spaces (specifically '*collective*' workspaces) emerge that are focussed on user well-being and positive social interaction and behaviour- those positive traits are carried through to the larger community, thereby creating a stronger, more connected, and ultimately happier community. By creating an inclusive space wherein the Hatfield community can come together and interact with one another- knowledge is constantly being shared, and social networks are continually being expanded. These guidelines can be applied to other communities, creating happier, more connected, and empowered neighbourhoods and ultimately a larger society one step closer to flourishing. By establishing theoretically grounded guidelines for designing for well-being and flourishing, more designers can ensure that the spaces they design are genuinely beneficial to the users.

Is it not the goal of every architectural designer to positively contribute to people's lives and create spaces wherein users thrive? The conversation is still ongoing; however, the discourse is being contributed to each day by investigations such as that outlined in this document.

4.5. Personal reflection

My normative position has always entailed designing with a positive user experience at the core of each intervention. Through this project, my normative position has only been strengthened by reframing my views to include well-being and flourishing as a means to achieve a positive user experience.

Throughout this study, I and many people around me faced a multitude of challenges related to well-being. These included mental, physical, social, societal and workplace well-being challenges - many related to being confined in our homes and disconnected from our communities due to the pandemic. These experiences made it clear to me how vital designing for peoples' well-being truly is and how much of an impact our environments can have on our health. Designing for well-being and flourishing should be an essential part of practice and not just an optional benefit.

4.6. Conclusion

It is clear that research regarding flourishing and future COVID-19 workplaces is ongoing and relevant and still requires much attention. The *Network Node* was developed with every element of the intervention designed to encourage health, well-being, and flourishing of the users and the community in the midst of the pandemic. The intention of the project was to address flourishing across multiple levels, including a personal, workplace, and community level. Not only does the project seek to better the lives of the users while in the space, but also to contribute toward the more long-term flourishing of the local community. This was addressed by compiling relevant literature into comprehensive theoretical guidelines to inform the intervention, which can hopefully be implemented in practice.

Figure 91. Conclusion/ summary (Author, 2021).

Thank you.

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6. Appendix

6.1. Department of Architecture blanket ethical clearance

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

9 June 2021

Reference number: EBIT/79/2021

Ms A van Aswegen
Department: Architecture
University of Pretoria
Pretoria
0083

Dear Ms A van Aswegen

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Masters Professional Mini-Dissertation in Architecture, Landscape Architecture and Interior Architecture (Group / Blanket)" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval
This application is approved based on the summaries provided.
Applications from each student (including application forms and all necessary supporting documents such as questionnaire/interview questions, permission letters, informed consent form, etc) will need to be checked internally by the course coordinator/ supervisor. A checklist will need to be signed off after the checking.
All of the above will need to be archived in the department and at the end of the course a flash disc / CD clearly marked with the course code and the protocol number of this application will be required to be provided to EBIT REC administrator.
No data to be collected without first obtaining permission letters. The permission letter from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.
Where students want to collect demographic the necessary motivation is in place.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

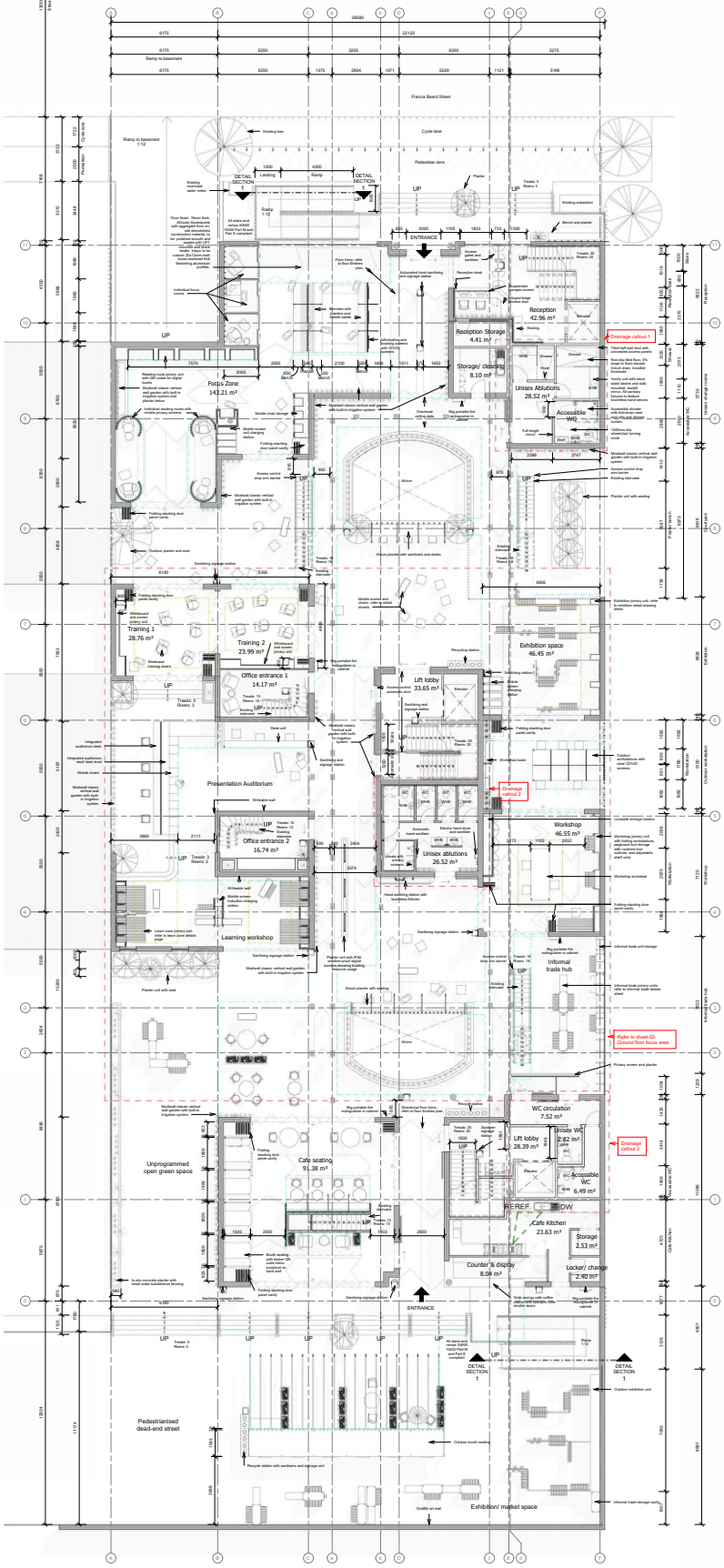
The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Kai-Yin

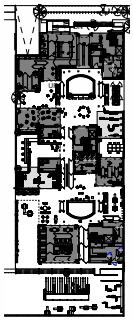
Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

6.2 Technical drawing pack



Ground Floor Plan

Scale 1:100



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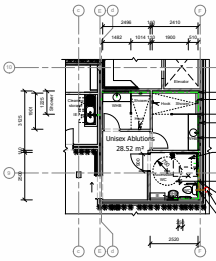
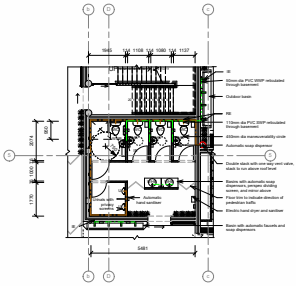
	Inside
	Covered
	Outside



Drainage callout 1

Scale 1:100



Drainage callout 2

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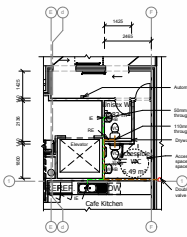

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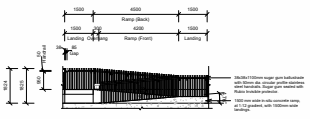


Detail Section 1- Ramps

Scale 1:100

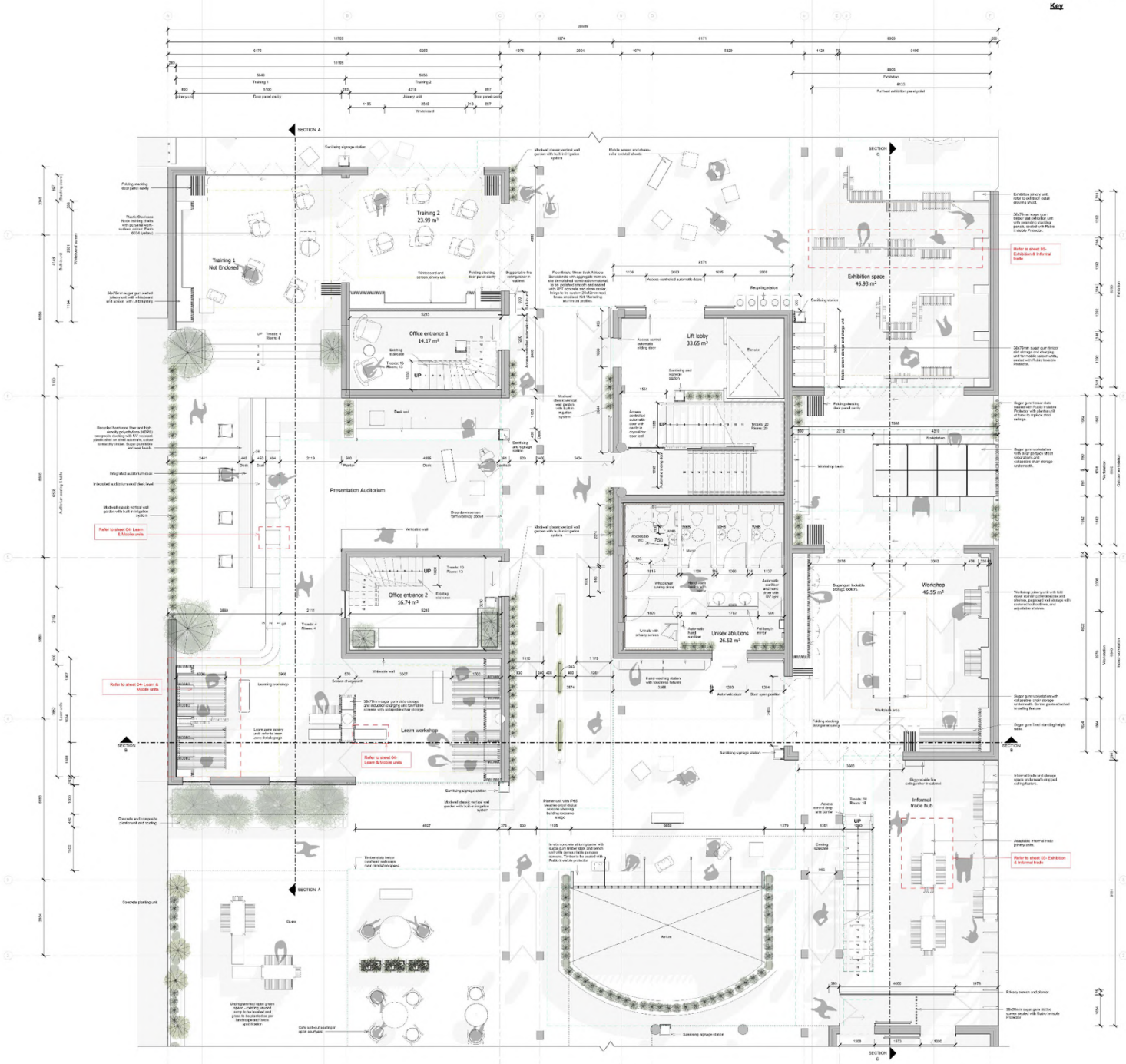
KEY:

	Callout
	Overhead slats
	Overhead structure
	Soil water pipe
	Waste water pipe
	Blue acoustic ceiling
	Yellow acoustic ceiling
	Orange acoustic ceiling

PROJECT	Net[work] Node
	1157 Francis Baard St, Hatfield, PTA
DRAWING	Ground Floor
Scale	As indicated
Drawn	Author
Print Date	09/2021
Project No	1
Drawing No	01
	A0

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Key



N

Ground Floor Focus Plan

Scale 1:100

Key

	Callout
	Overhead slats
	Overhead structure
	Blue acoustic ceiling
	Yellow acoustic ceiling

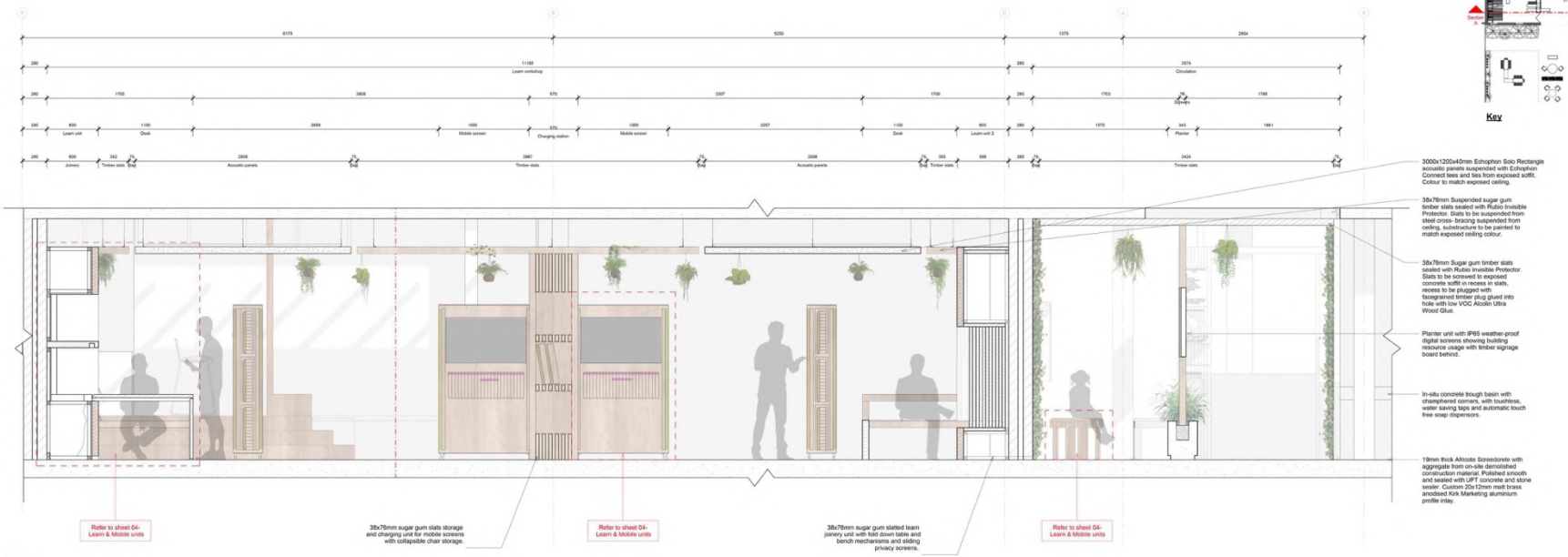
PROJECT
Net[work] Node
1157 Francis Baard St, Hatfield, PTA

DRAWING
Ground Floor Focus

Scale	Drawn	Print Date
As indicated	Author	09/2021

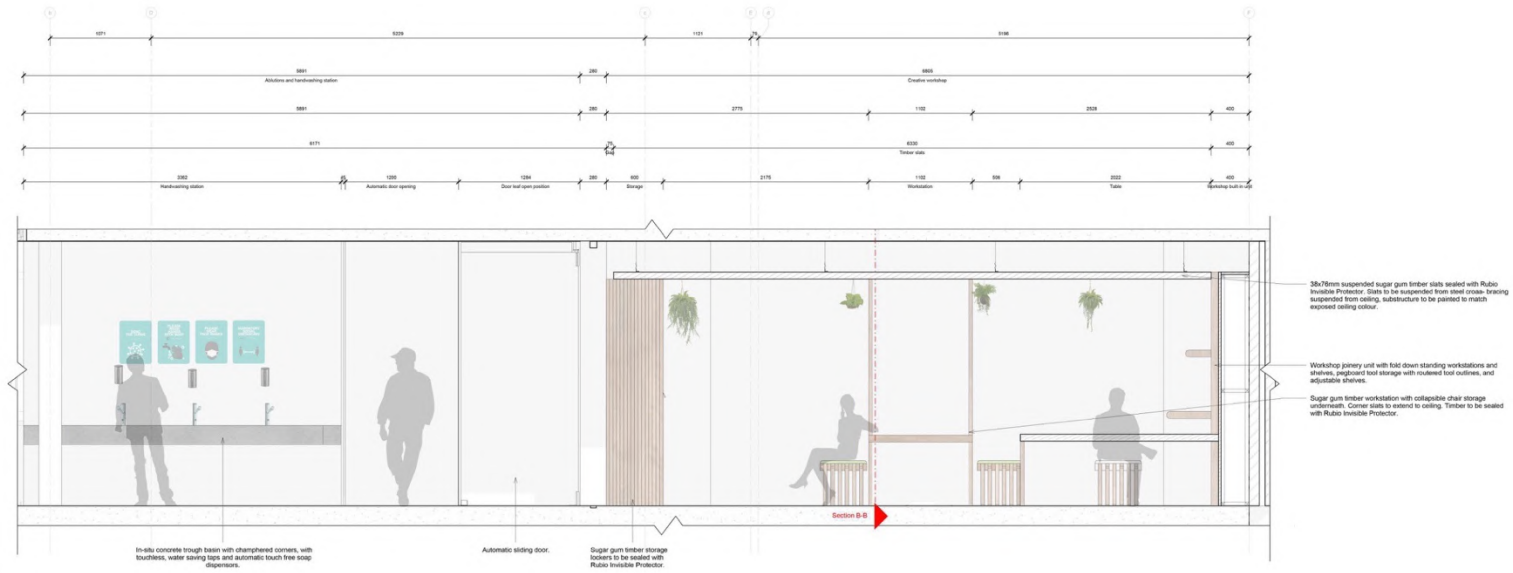
Project No	Drawing No
A0 1	02

Key



Section A - part 1

Scale 1:20



Section A - part 2

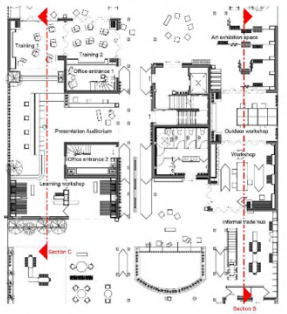
Scale 1:20

PROJECT
Net[work] Node
1157 Francis Baard St, Hatfield, PTA

DRAWING
Section A

Scale	Drawn	Print Date
As indicated	Author	09/2021

Project No	Drawing No
A0 1	08



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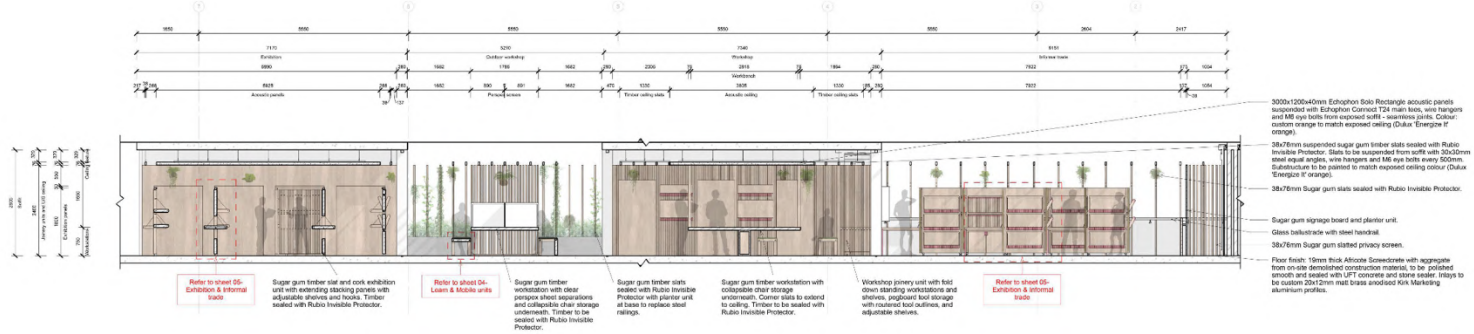
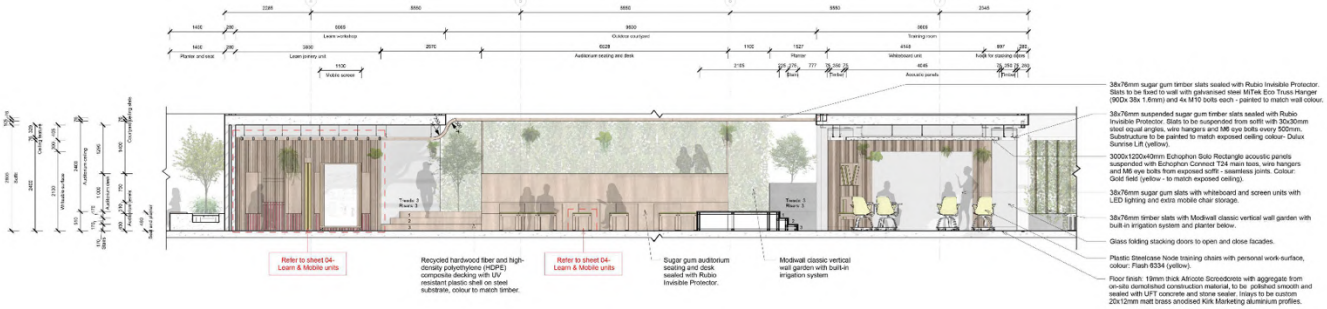


Section B

Scale 1:50



Section C

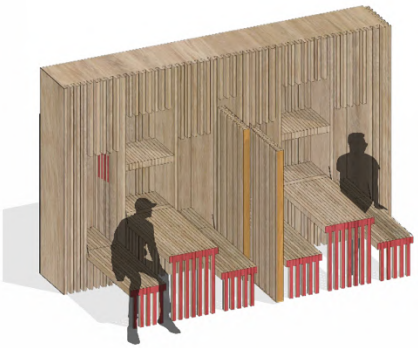
Scale 1:50

PROJECT
Net[work] Node
1157 Francis Baard St, Hatfield, PTA

DRAWING
Sections B & C

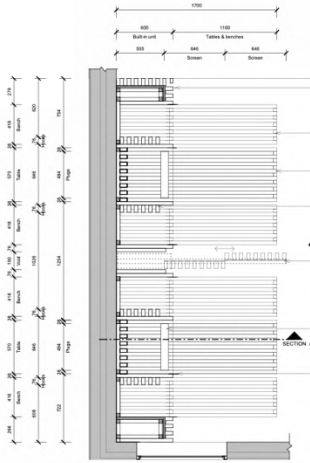
Scale	Drawn	Print Date
As indicated	Author	09/2021

Project No	Drawing No
A0 1	09



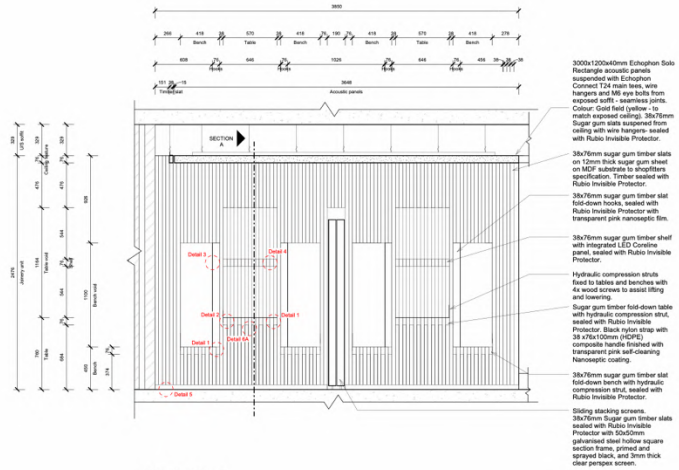
Learn unit 3D View

Scale 1:20



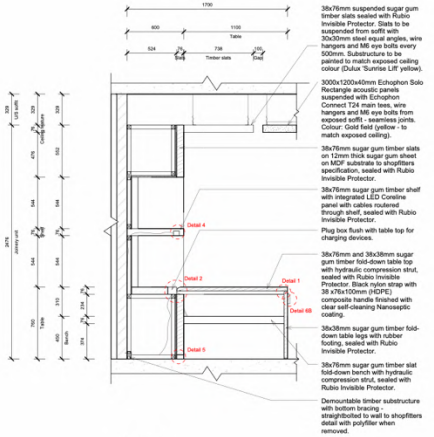
Learn unit plan view

Scale 1:20



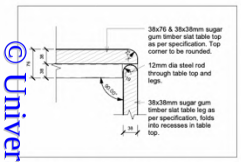
Elevation 1- front

Scale 1:20



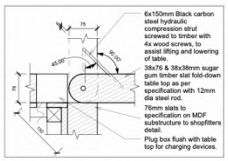
Section A

Scale 1:20



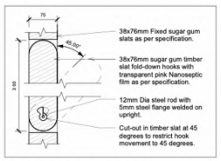
Detail 1- Desk and leg folding mechanism

Scale 1:5



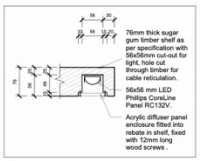
Detail 2- Desk folding mechanism with strut

Scale 1:5



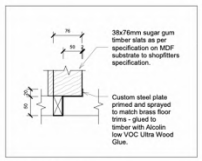
Detail 3- Hook folding mechanism

Scale 1:5



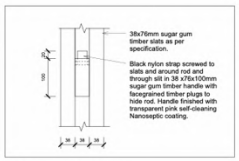
Detail 4- Shelf LED

Scale 1:5



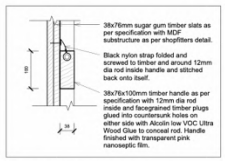
Detail 5- Kickplate

Scale 1:5



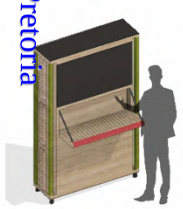
Detail 6A- Handle front view

Scale 1:5



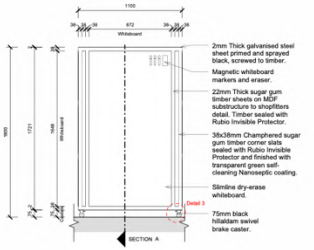
Detail 6B- Handle section view

Scale 1:5



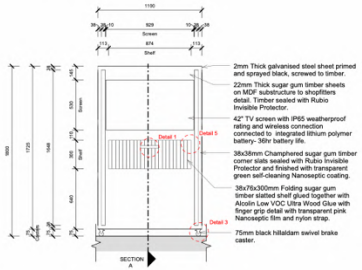
Mobile screen unit 3D View

Scale 1:20



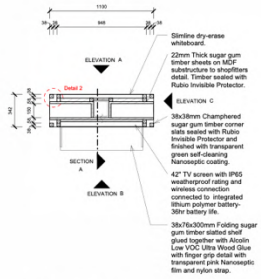
Elevation A- Whiteboard

Scale 1:20



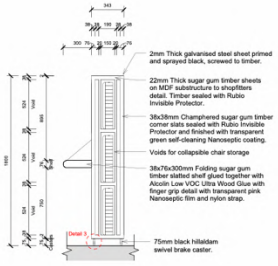
Elevation B- TV screen

Scale 1:20



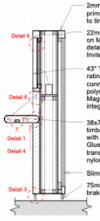
Mobile screen unit plan view

Scale 1:20



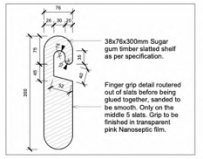
Elevation C- Side view

Scale 1:20



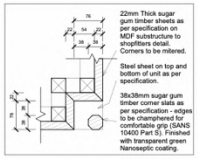
Section A

Scale 1:20



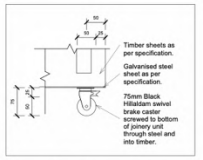
Detail 1- Finger grip

Scale 1:5



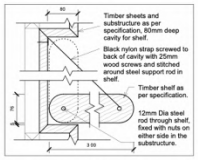
Detail 2- Champhered end grip

Scale 1:5



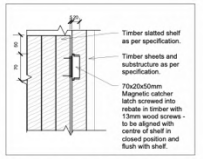
Detail 3- Casters

Scale 1:5



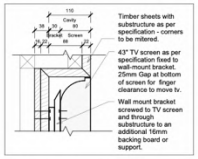
Detail 4- Shelf folding mechanism

Scale 1:5



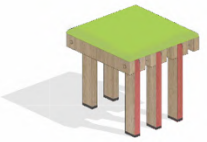
Detail 5- Magnetic catcher latch section

Scale 1:5



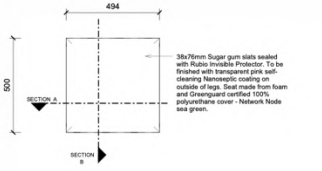
Detail 6- Screen support

Scale 1:5



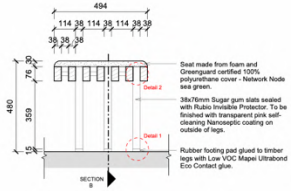
Collapsible chair 3D view

Scale 1:10



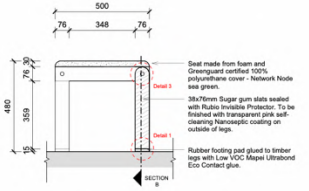
Collapsible chair plan view

Scale 1:10



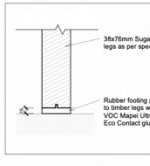
Section A

Scale 1:10



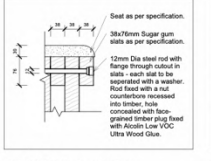
Section B

Scale 1:10



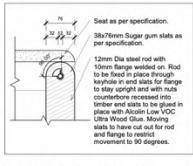
Detail 1- Rubber footing

Scale 1:5



Detail 2- Folding mechanism

Scale 1:5



Detail 3- Rod folding connection

Scale 1:5

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PROJECT

Net[work] Node

1157 Francis Baard St, Hatfield, PTA

DRAWING

Learn & Mobile Units

Scale	Drawn	Print Date
As indicated	Author	09/2021

Project No	Drawing No
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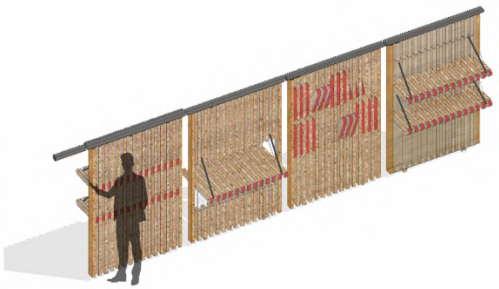
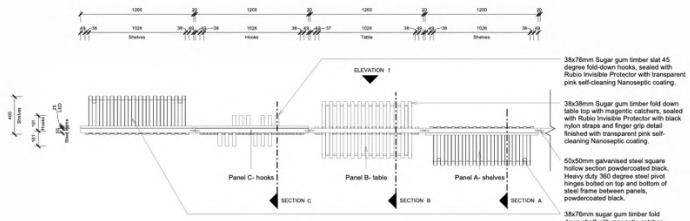


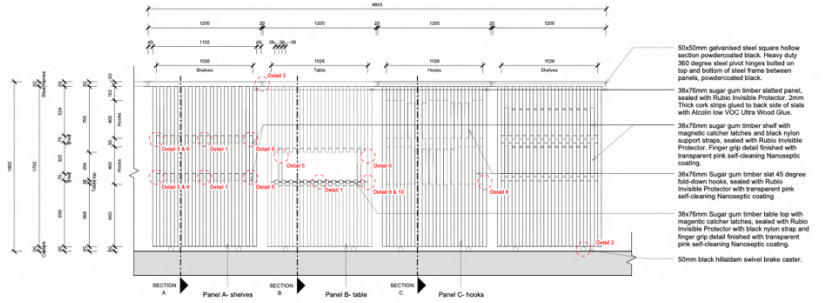
Exhibition panels 3D view

Scale 1:20



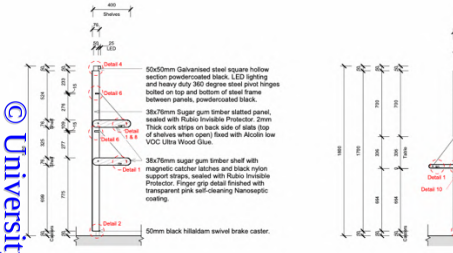
Exhibition panels plan view

Scale 1:20



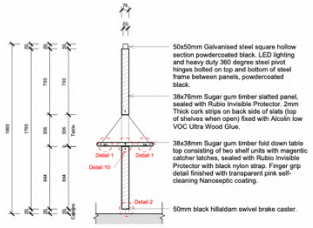
Elevation 1- front view

Scale 1:20



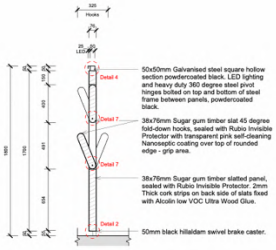
Section A- Shelf panel

Scale 1:20



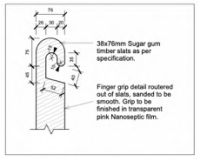
Section B- Table panel

Scale 1:20



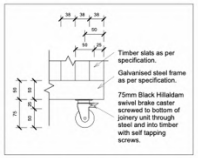
Section C- Hooks panel

Scale 1:20



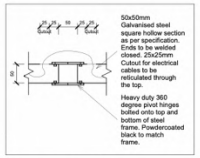
Detail 1- Finger grip detail

Scale 1:5



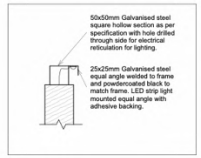
Detail 2- Casters

Scale 1:5



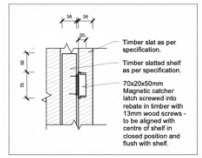
Detail 3- Pivot hinges

Scale 1:5



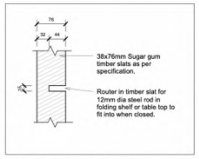
Detail 4- LED

Scale 1:5



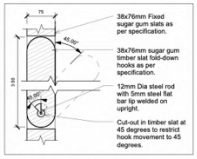
Detail 5- Magnetic catcher latch secti

Scale 1:5



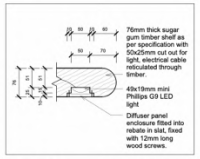
Detail 6- Router sectional view

Scale 1:5



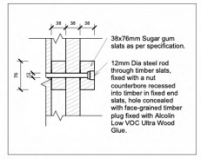
Detail 7- Hook detail

Scale 1:5



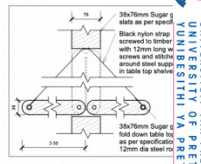
Detail 8- LED shelf light

Scale 1:5



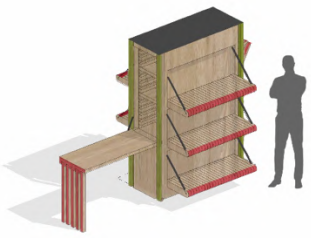
Detail 9- Rod detail

Scale 1:5



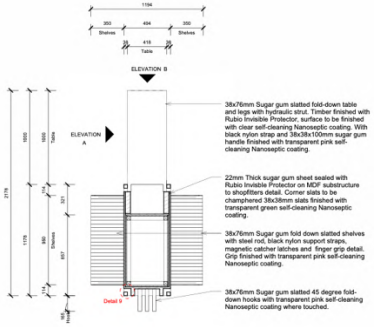
Detail 10- table fold mechanism

Scale 1:5



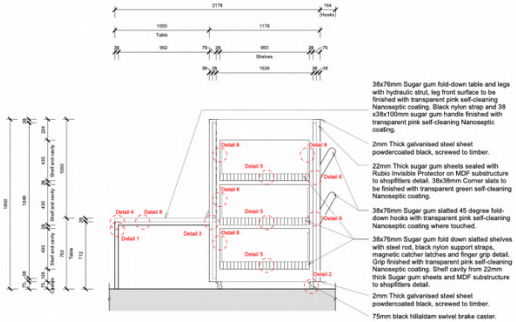
Informal trade unit 3D View

Scale 1:20



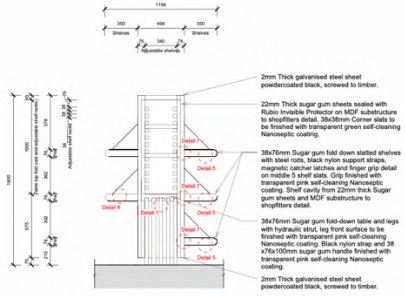
Informal trade plan view

Scale 1:20



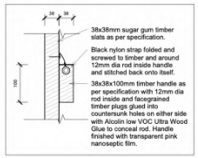
Elevation A

Scale 1:20



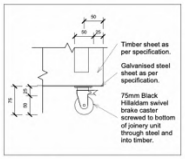
Elevation B

Scale 1:20



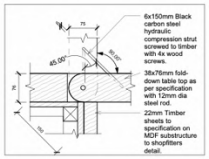
Detail 1- Handle

Scale 1:5



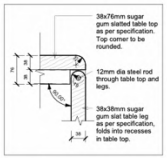
Detail 2- Casters

Scale 1:5



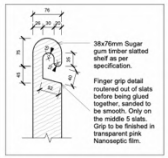
Detail 3- Table fold mechanism

Scale 1:5



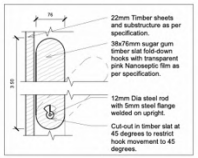
Detail 4- Table leg mechanism

Scale 1:5



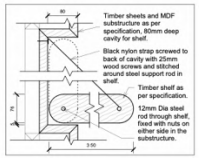
Detail 5- Finger grip detail

Scale 1:5



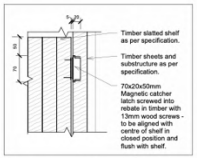
Detail 6- Hook

Scale 1:5



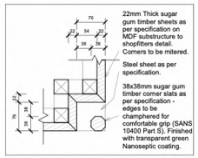
Detail 7- Shelf fold

Scale 1:5



Detail 8- Magnetic catcher latch

Scale 1:5



Detail 9- Champhered end slat

Scale 1:5

PROJECT

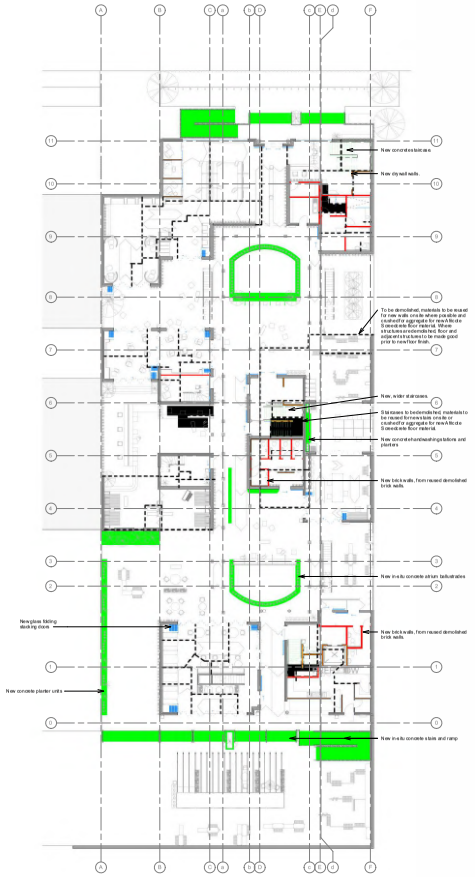
Net[work] Node

1157 Francis Baard St, Hatfield, PTA

DRAWING

Exhibition & Informal Trade Units

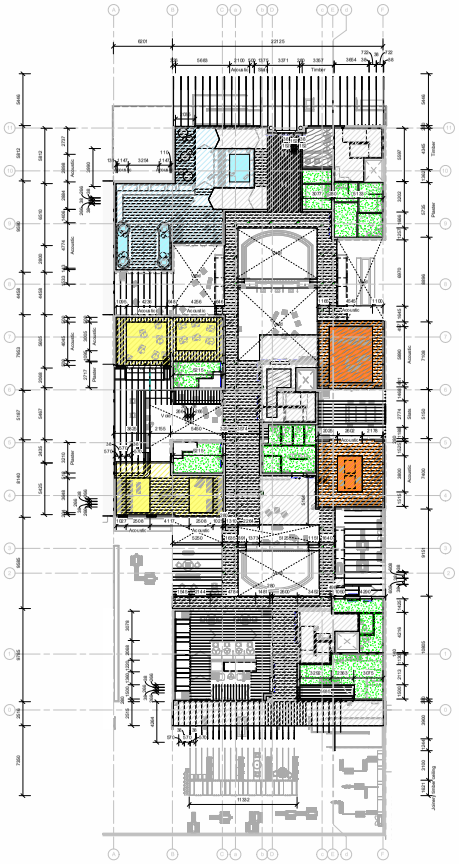
Scale	Drawn	Print Date
As indicated	Author	09/2021
Project No		Drawing No
A0	1	06



N

Ground floor diagrammatic demolition plan

Scale 1:200



N

Ground floor diagrammatic ceiling finishes plan

Scale 1:200

Demolition Key:

----------	Demolished walls
	New drywall
	New concrete
	New brick
	New glass

Ceiling Key:

	Sugar gum slats	35x70mm Sugar gum slats sealed with Rubio Invisible protector, suspended from exposed soffit with wire hangers and M6 eye bolts.
	Black plastered ceiling	Flush plasterboard plaster ceilings painted black with low VOC paint.
	Black exposed soffit & services	Exposed concrete soffit and all exposed services to be sprayed black with low VOC paint.
	Blue exposed soffit & services	Exposed concrete soffit and all exposed services to be sprayed with low VOC Dulux "Wild Blue Yonder" blue paint.
	Yellow exposed soffit & services	Exposed concrete soffit and all exposed services to be sprayed with low VOC Dulux "Sunrise Lit" yellow paint.
	Orange exposed soffit & services	Exposed concrete soffit and all exposed services to be sprayed with low VOC Dulux "Energize It" orange paint.
	Blue acoustic panels	Echophon Solo Rectangle acoustic panels suspended with Echophon Connect T24 main tees, wire hangers and M6 eye bolts from exposed soffit - seamless joints. Colour: custom blue to match exposed ceiling.
	Yellow acoustic panels	Echophon Solo Rectangle acoustic panels suspended with Echophon Connect T24 main tees, wire hangers and M6 eye bolts from exposed soffit - seamless joints. Colour: Goldfield to match exposed ceiling.
	Orange acoustic panels	Echophon Solo Rectangle acoustic panels suspended with Echophon Connect T24 main tees, wire hangers and M6 eye bolts from exposed soffit - seamless joints. Colour: custom orange to match exposed ceiling.
	Timber	Sugar gum sheets sealed with Rubio Invisible Protector, suspended with wire hangers and M6 eye bolts from exposed soffit - seamless joints.

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

PROJECT

Net[work] Node

1157 Francis Baard St, Hatfield, PTA

DRAWING

Demolition & ceilings

Scale	Drawn	Print Date
As indicated	Author	09/2021

Project No	Drawing No
A0 1	07

6.3. Lighting calculations

Room name	Area (m^2)	Required lumens (lm)	Light type	Light luminous flux (lm)	No. Of lights required
Reception	43	500	Trueline	3400	7
Reception 1	14	500	Trueline	3400	3
Reception 2	23	100	Trueline	3400	1
Individual focus rooms	4	750	Master LED spot	1850	2
Individual reading nooks	2	500	Master LED spot	1850	1
Read circulation	76	100	Trueline 10w	1500	6
Exhibition panels	27	1000	Master LED spot	1850	15
Workshop table	10	750	Master LED spot	1850	5
Workshop tool bench	37	750	Trueline	3400	9
Learn workshop workspaces	10	750	Master LED spot	1850	5
Training room 1	29	500	Master LED spot	1850	8
Training room 2	24	500	Master LED spot	1850	7
Outdoor learning	42	500	Smartbright	3600	6
Cafe	91	300	Trueline	3400	9
Circulation space	-	100	Trueline	1500	1 per every 15m^2

Application:	Name	Lumens (lm):	Image:
Indoor	Phillips LED Trueline	3400	
Indoor	Phillips Master LED spot	1850	
Outdoor	Phillips Smartbright waterproof LED batten	3600	
Circulation	Phillips LED Trueline	1500	

Area:	Required Luminous Flux (lm):
Office	500
Corridor	100
Ablutions	100

6.4. Planting Investigation

Green walls: Edible, In- & outdoor

	Name	Water usage	Light conditions	Notes
	Silver Leaf Spurflower			
	Wild Cineraria			
	Mint, Thai basil, Sorrel, Lemon balm			
	Lettuces, Rocket, Silverbeet, Radishers, Dwarf Cabbage, Chives, Basil, Parsley			

Creepers / vines: Indigenous

	Name	Water usage	Light conditions	Notes
	Keetia Guenzii/ Muthambeni climber			

Other planting: Indigenous

	Name	Water usage	Light conditions	Notes
	Classic Cherise			
	September Bells			
	Delagoa Bay Barleria			
	Wild Cineraria			

Information from The Plant Library, n.d.

6.5. SBAT scorecards

		Target	Achieved
BI	**Building Information**	**5,0**	**4,5**
BI 1	**Building Targets**	**Target**	**Achieved**
EN	Energy	5,0	2,9
WA	Water	5,0	4,1
WE	Waste	5,0	4,0
MA	Materials	5,0	4,0
BI	Biocapacity	5,0	4,2
TR	Transport	5,0	5,0
LE	Local Economy	5,0	5,0
MN	Management	5,0	5,0
RE	Resources	5,0	4,5
SP	Services and Products	5,0	5,0
AC	Access	5,0	4,7
HE	Health	5,0	5,0
ED	Education	5,0	5,0
IN	Inclusion	5,0	4,6
SC	Social Cohesion	5,0	4,2
BI 2	**Priority Key (Not Performance Key)**		
VH	Very High	5,0	
HI	High	4,0	
ME	Medium	3,0	
LO	Low	2,0	
VL	Very Low	1,0	
NA	None / Not Applicable	0,0	

		Achieved
EN	**Energy**	**2,9**

Objective
The building is energy efficient and uses renewable energy.

Indicators		Potential	**Achieved**
EN1	**Orientation**		
	Buildings are orientated within 15 degrees of North.	1	1
EN2	**Building Depth**		
	Building depth does not exceed 10m.	1	0
EN3	**Roof Construction**		
	Roof construction achieves a minimum total R-value of 2.7 K•m²/W and the roof color has solar absorbance of 0.55, or less.	1	1
EN4	**Wall Construction**		
	Wall construction achieves a minimum R-value of 1.9 K•m²/W.	1	1
EN5	**Floor Construction**		
	Floor construction is explosed high thermal mass material such as tiles or concrete.	1	1
EN6	**Window to Wall Ratio**		
	Glazing is less than 40% of the North and South elevations and less than 20% of the East and West elevations.	1	1
EN7	**Ventilation openings**		
	A minimum of 10% ventilation opening area per room floor area is provided for each useable room.	1	1
EN8	**Daylight**		
	Over 90% the useable room area within the building is within 2h, where h is ht of head of window and internal light reflectance values are met.	2	
	80 to 89 % the useable room area within the building is within 2h, where h is ht of head of window and internal light reflectance values are met.	1	1
EN9	**Internal Lighting**		
	Internal lighting power density within the building does not exceed 5W/m2.	1	1
EN10	**External Lighting**		
	External lighting power density within the building does not exceed 0.75W/m2, or is totally powered by renewable energy.	1	1
EN11	**Installed Equipment Power Density (not including lighting)**		
	0-4W/m2 installed equipment power density.	5	
	5-14W/m2 installed equipment power density.	4	
	15-19/m2 installed equipment power density.	3	
	20-24W/m2 installed equipment power density.	2	
	25-29W/m2 installed equipment power density.	1	3
EN12	**Food Cooking**		
	A solar cooker, biogas stove or cooker powered by renewable energy, or combination of these has been provided.	1	0
EN13	**Water Heating**		
	All hot water heating requirements met through renewable energy sources with no electrical back up.	4	
	All hot water heating requirements met through renewable energy sources with electrical back up.	2	2
EN14	**Renewable Energy Generation**		
	Points are double for non-grid tied system (grid tied are the lower figure)		
	20+ Wp of renewable energy generation per m2	5 or 10	
	15-19Wp of renewable energy generation per m2	4 or 8	
	9-14Wp of renewable energy area generated per m2	3 or 6	
	5-9Wp of renewable energy area generated per m2	2 or 4	4

WA Water	Achieved 4,1

Objective
The building minimises the consumption of mains potable water.

Indicators		Potential	Actual
WA1	**Toilets**		
	Non-waterborne sanitation system is used or only grey/rain harvested water used	2	
	All toilets are dual flush with maximum flush rates of under 3L (half flush) and 4.5L (full flush)	1	2
WA2	**Wash Hand Basins**		
	All taps have a maximum flow rate of less than 6L/minute	1	1
WA3	**Showers**		
	All showers have a maximum flow rate of less than 10L/minute.	1	1
WA4	**Hot Water**		
	The distance between the source of hot water and useage does not exceed 6 running metres.	1	1
WA5	**Landscape**		
	Landscaping does not require irrigation or all requirements met from grey/rain water harvested water. No swimming pools or all requirements met from rainwater harvesting.	1	1
WA6	**Rain Water Harvesting**		
	40+ L of rainwater harvesting capacity per m2 of GIA	5	
	30-39 L of rainwater harvesting capacity per m2 of GIA	4	
	20-29L of rainwater harvesting capacity per m2 of GIA	3	
	10-19L of rainwater harvesting capacity per m2 of GIA	2	
	5-9L of rainwater harvesting capacity per m2 of GIA	1	3

WE Waste	Achieved 4,0

Objective
The building minimizes emissions and waste directed to landfill.

Indicators		Potential	Actual
WE1	**Recycling Area**		
	Covered recycling area of at least 0.5 x 0.5 x 1.0m provided in, or near, the kitchen.	1	1
WE2	**Recycling Collection**		
	Recycling depot within 2000m of site on regularly used route or at location such as a school / shopping centre / post office / sports facility.	1	1
WE3	**Organic Waste**		
	Organic waste is recycled on-site or at the local recycling depot (WE 2) and a 0.5 x 0.5 x 0.5m space for composting per household is provided.	1	1
WE4	**Sewage**		
	Sewage is treated on site, or in within the neighbourhood, to provide useful by-products such as irrigation water and fertilizer.	1	0
WE5	**Construction Waste**		
	Contract documentation and refurbishement policies require at least 50 % of construction waste to be recycled or reused on site.	1	1

MA Materials	Achieved 4,0

Objective
Construction impacts of building materials are minimized.

Indicators		Potential	Actual
MA1	**Building Reuse**		
	Over 60+% of an existing building structure is reused	4	
	Between 40-59% of an existing building structure is reused	2	4
MA2	**Timber Doors and Windows**		
	Over 80% of the windows and doors (by number) used in the building are made of timber. Timber must be certified from sustainable sources.	1	0
MA3	**Timber Structure**		
	Over 80% (by weight) of the roof or floor structure is made of timber. Timber must be certified from sustainable sources.	1	0
MA4	**Refrigerants**		
	No refrigerants which contribute to global warming are used in products such as HVAC or refrigeration equipment or insulation.	1	1
MA5	**Volatile Organic Compounds**		
	No paints, varnishes, glues or carpets that include Volatile Organic Compounds are used.	1	1
MA6	**Formeldehyde**		
	Materials, such a timber based boards, that contain, or use formeldehyde in their production, are not used.	1	1
MA7	**Locally Sourced Materials**		
	over 60 % of the materials and products by value used in the building come from within the country.	1	1

BI Biocapacity	Achieved 4,2

Objective
The building supports biocapacity.

Indicators		Potential	Actual
BI1	**Brownfield Site**		
	Site has already been built on and a green-field site is avoided	4	4
BI2	**Municipal Boundary**		
	Site is within a defined municipal boundary	2	2
BI3	**Vegetation**		
	Vegetation area equivalent to over 60 % of site area	6	
	Vegetation area equivalent to 50 - 59% of site area	5	
	Vegetation area equivalent to 40 - 49% of site area	4	
	Vegetation area equivalent to 30 - 39% of site area	3	
	Vegetation area equivalent to 20 - 29% of site area	2	
	Vegetation area equivalent to 10 - 19% of site area	1	4
BI4	**Ecosystems**		
	Vegetation area has over 10 complementar species of plants	1	1

TR Transport	Achieved 5,0

Objective
The building supports energy efficient transportation.

Indicators		Potential	Actual
TR1	**Pedestrian Routes**		
	Dedicated,safe and easily used pedestrian paths are provided from public highways to main entrance of the building	1	1
TR2	**Cycling**		
	At least one covered bicycle parking spaces with locking point is provided per unit	1	1
TR3	**Public Transport**		
	Building is within 400m walking distance of public transport node	3	
	Building is within 800m walking distance of public transport node	2	
	Building is within 1200m walking distance of public transport node	1	3

RE Resource Use	Achieved 4,5

Objective
The building makes efficient use of resources.

Indicators		Potential	Actual
RE1	**Site Density**		
	Site density is equivalent to 150 + persons per hectare	3	
	Site density is equivalent to 125 -149 persons per hectare	2	
	Site density is equivalent to 100 -124 persons per hectare	1	3
RE2	**Area per occupant**		
	Gross internal area per occupant is 10 - 19 m2	3	
	Gross internal area per occupant is 20 - 29 m2	2	
	Gross internal area per occupant is 30 - 39 m2	1	3
RE3	**Renewable Energy Generation**		
	Renewable energy generation equivalent to over 5% of site area	2	
	Renewable energy generation equivalent to between 2 to 4% of site area	1	2
RE4	**Food Production**		
	Food production area equivalent to over 10% of site area	2	
	Food production area equivalent to between 5 and 9 % of site area	1	1

MN Management	Achieved 5,0

Objective
The building is managed to support sustainability.

Indicators		Potential	Actual
MN1	**Building User Manual**		
	Building manual developed and applied.	2	2
MN2	**Energy Metering**		
	Energy meter provided for each unit and can be readily accessed and read.	1	1
MN3	**Water Metering**		
	Water meter provided for each unit and can be readily accessed and read.	1	1
MN4	**Recording**		
	Monthly management reporting system	1	1
MN5	**Residents' Association**		
	Residents association with a mandate to manage or to influence the management of the local area is in place.	1	1

LE Local Economy	Achieved 5,0

Objective
The building supports the local economy.

Indicators		Potential	Actual
LE1	**Locally Sourced Materials and Products**		
	80+% of the materials and products by value are from the country.	4	
	60-79% of the materials and products by value are from the country	3	
	40-59% of the materials and products by value are from the country	2	
	20-39% of the materials and products by value are from the country	1	4
LE2	**Small Enterprise Support**		
	One small enterprise is supported every 5-9 units.	5	
	One small enterprise is supported every 10-14 units.	4	
	One small enterprise is supported every 15-19 units.	3	
	One small enterprise is supported every 20-24 units.	2	
	One small enterprise is supported every 25-30 units.	1	5
LE3	**Construction Workers**		
	construction and maintenance workers employed on site to live within 50km of site	2	2

	Achieved
AC Access	**5,0**

Objective
The building supports access to facilities.

Indicators		Potential	Actual
AC1	**Internet Access** Low cost or free internet access is provided.	1	1
AC2	**Banking** ATM or Bank can be accessed within 2000m.	1	1
AC3	**Groceries** General food groceries can be purchased within 2000m.	1	1
AC4	**Post Office** Post office services are available within 2000m.	1	1
AC5	**Creche** Creche facilities are available within 2000m.	1	1
AC6	**Primary Schools** Primary schools are available within 2000m.	1	1

	Achieved
SP Services and Products	**5,0**

Objective
The building supports use sustainable products and services.

Indicators		Potential	Actual
SP1	**Fruit and Vegetables** Fresh fruit and vegetables produced within the country are available within 2000m walking distance of the building.	2	2
SP2	**Bakery Products** Fresh locally baked bakery products are within 2000m walking distance from the building	1	1
SP3	**Bean and Pulses** Beans and pulse products are within 2000m walking distance from the building	1	1
SP4	**Milk and Eggs** Milk and eggs produced within the country are available within 2000m walking distance of the building.	1	1
SP5	**Clothing** Locally made hard wearing clothing available within 4000m walking distance of the building.	1	1
SP6	**Furniture** Locally made hard wearing furniture available within 4000m walking distance of the building.	1	1
SP7	**Equipment Hire** Gardening and maintenance equipment available for hire within 2000m walking distance of the building.	1	1
SP8	**Notice Board** Physical notice board at central location which advertises local products and services and is within 2000m walking distance of the building.	1	1

		Achieved
HE	**Health**	**4,7**

Objective
Built environment supports a healthy and productive environment

Indicators		Potential	**Actual**
HE1	**Excercise** Excercise facilities are available within 2000m.	1	1
HE2	**Health facility** Health facilities are available within 2000m.	1	1
HE3	**Fruit and Vegetables** Fresh fruit and vegetables produced within the country are available within 2000m walking distance of the building.	2	2
HE4	**Bean and Pulses** Beans and pulse products are within 2000m walking distance from the building	1	1
HE5	**Milk and Eggs** Milk and eggs produced within the country are available within 2000m walking distance of the building.	1	1
HE5	**Water** Clean drinking water is available within or near the building.	3	3
HE6	**External Views** All useable rooms have glazing on external walls which provide a view (no obstructions within 5m of the window).	1	1
HE7	**Daylight** Over 90% the useable room area within the building is within 2h, where h is ht of head of window and internal light reflectance values are met. 80 to 89 % the useable room area within the building is within 2h, where h is ht of head of window and internal light reflectance values are met.	2 1	1
HE8	**Ventilation openings** A minimum of 10% opening area per internal useable floor area is provided in each room respectively.	1	1
HE9	**Roof Construction** Roof construction must achieve a minimum total R-value 4.1 K•m²/W	1	1
HE10	**Wall Construction** K•m²/W	1	1
HE11	**Volatile Organic Compounds** No paints, varnishes, glues or carpets that include Volatile Organic Compounds are used.	1	1
HE12	**Formeldehyde** Materials, such a timber based boards, that contain, or use formeldehyde in their production, are not used.	1	1
HE13	**Construction Worker Health** Construction contract / refurbishment policy requiring all construction workers to have received comprensive health and safety training including a component on HIV/AIDs	1	1

		Achieved
ED	**Education**	**5,0**

Objective
The building supports education.

Indicators		Potential	Actual
ED1	**Primary Schools** There is a primary school within 2000m walking distance from the building.	2	2
ED2	**Secondary Schools** There is a secondary school within 2000m walking distance from the building.	1	1
ED3	**Ongoing education** There is a facility for ongoing learning within 2000m walking distance from the building.	1	1
ED4	**Internet** Low cost or free internet access is provided.	1	1
ED5	**Noticeboards** Physical notice board at central location with notices about education course and opportunities and is within 2000m walking distance of the building.	1	1
ED6	**Space for Learning** An equipped space of at least 2m2 space within the buliding is available to support learning.	2	2
ED7	**Building User Manual** Comprehensive building user manual has been developed	2	2
ED8	**Construction Worker Education** Contract documentation requires contractors to ensure that all construction workers receive accredited training for a minimum of 5% of working hours	1	1

		Achieved
IN	**Inclusion**	**4,6**

Objective
The building is inclusive of diversity in population.

Indicators		Potential	Actual
IN1	**Public Transport** Accessible walking route of less than 400m to public transport node.	1	1
IN2	**Groceries** Accesible walking route of less than 400m to food grocery retail.	1	1
IN3	**External Routes** Accessible walking route within site, from public highway to entrance of the building.	1	1
IN4	**Entrances and Exits** Entrances and exits into the buildings are accessible	1	1
IN5	**Lobby** A space of at least 1500 x 1500mm is available immediately inside front door from which main rooms can be accessed.	1	1
IN6	**Window, door and lighting controls** All controls, such as light switches and door and window handles are within accessible locations and are 1000 - 1200mm from the finished floor level.	1	1
IN7	**Doors** All doors between rooms have accessible controls and a minimum clear opening width of 750mm.	1	1
IN8	**Bathroom** The bathroom is a minimum of 1500 x 1500mm and is accessible.	1	1
IN9	**Inclusive Employment** Construction worker includes at least 10% women, 20% youth and 1% people with disabilities.	1	1
IN10	**Kitchen** The kitchen is a minimum of 1500 x 1500mm and is accessible.	1	1
IN11	**Affordability** Housing is affordable. Affordable housing is located within 2km of site.	2 1	1

		Achieved
SC	**Social Cohesion**	**4,2**

Objective
The building supports social cohesion.

Indicators		Potential	**Actual**
SC1	**Occupants** Space where all occupants of the building can be seated for communal meals.	2	2
SC2	**Community Space** Covered space that is available for community events within 2000m of the building and can accommodate 5% of the population who live within 2000m.	2	2
SC3	**External Facilities** Open space that is available for community events within 2000m of the building and can accommodate 5% of the population who live within 2000m.	1	1
SC4	**Residents Association** There is an active residents' association.	1	0