

**Exploring the role of healing spaces in the metaphysical and physical realm.
Towards a place for meditation in Durban.**

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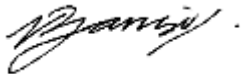
Dissertation submitted to the School of Built Environment and Development Studies,
University of KwaZulu-Natal, in partial-fulfilment of the requirements for the degree of
Master in Architecture

Durban

DECLARATION

A Dissertation submitted in partial fulfilment of the requirements for the degree of Master of Architecture.

I hereby declare that this dissertation is my own unaided work. It is being submitted to the School of Built Environment and Development Studies, University of KwaZulu-Natal, Durban, for the degree of Master in Architecture, and has not been submitted before for any degree or examination at any other University.

A handwritten signature in black ink, appearing to read 'N. N. N.', followed by a period.

Signed by me on this 06th day of November 2017.

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To my close friends, thank you for making these past few years both unforgettable and bearable. The bond we share and memories we made will last a lifetime.

And lastly thank you to all those who played a role in the making of this thesis. Your participation has been highly appreciated.

DEDICATION

I dedicate this thesis to my loving parents Bisham and Shamane Bansi. It is through their unfailing love, support and guidance which has brought me to where I am today. Thank you for allowing me this opportunity to pursue a lifelong dream and for being my constant pillar of strength in times where I felt defeated. I am forever grateful to you both.

ABSTRACT

Over the course of seventy years, the structure of global society has drastically changed following the trend of globalization. Factors such as stress and anxiety have become increasingly common, affecting nearly one in thirteen people on both a local and international scale (Psychological medicine, 2012:471). Financial responsibilities, family commitments and work obligations are but few attributing causes to the fluctuation of one's stress and anxiety levels.

Unfortunately, many of our living and working environments pay little to no regard to human comfort, sensual experience and wellbeing, thereby creating negative environments which aggravate stress and anxiety. Although studies have shown the importance of nature on the human mind and body, many of individuals still prefer to remain indoors based on social conventions.

The aim of this project is to therefore help improve the quality of life for individuals seeking to find balance by using architecture as a healing agent across the metaphysical and physical realm. In doing so, people have the opportunity to unlock the inner depths of their consciousness whilst establishing links with nature and place which are vital towards achieving holistic wellbeing.

Key words: Stress, anxiety, holistic wellbeing, sensory and biophilic design.

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"Health is a state of body. Wellness is a state of being."

-J. Stanford, (Samadhi Productions, 2014).



Figure 1 - Attaining holistic wellness.

Source: Author, 2017

CHAPTER ONE: BACKGROUND RESEARCH

1.1 BACKGROUND

The concept of healing environments within architectural history has been in effect long before modern medicine, science and technology were first introduced into society. For centuries ancient Egyptians, Greeks and Romans sensitively designed grand temples and monuments immersed amongst vegetation, natural bodies, adequate sunlight and gentle breezes in order to promote healing environments which restored balance and harmony.

Architecture and the built environment thus plays a vital role within one's physical and metaphysical existence; acting as a fundamental agent in influencing our state of wellbeing. According to Norberg-Schulz, architecture and place form an integral part of human existence from birth to death, providing one with meaning and a sense of belonging within the natural order of the universe (Norberg-Schulz, 1980:5). To deny one of a conducive environment or the ability to dwell encourages alienation and placelessness to manifest within one's individual makeup. This fundamental concept is unfortunately applicable within our urban environment today. Factors such as globalization, Sick Building Syndrome (SBS), urbanization and poor architectural design have ultimately threatened the wellbeing of human beings by aggravating one's stress and anxiety considerably. As a result, people have an inability to orientate and identify themselves within their environments which encourages levels of illbeing rather than wellbeing.

Conducive environments which stimulate and enhance holistic well-being should therefore take precedence in order to address perception of space rather than aesthetic. Concepts such as spirituality, phenomenology and genius loci have helped alleviate stress and anxiety levels significantly through principles of sensory design within the healing process. However, people often overlook spirituality as an alternative coping method to such issues, as they seemingly affiliate meditation centres and spiritual retreats with religion. Effectively, spirituality has proven to create a state of awareness of one's surroundings, physical and metaphysical self which aims to establish a sense of oneness and harmony within the physical and built environment.

1.2 DEFINITION OF THE PROBLEM

Architecture and the built environment have since recent years dominated the earth's natural landscape with harsh, prominent structures which have seemingly altered our innate understanding of dwelling. No longer do our buildings reflect the true essence of man's identity within the *genius loci* of place, but instead architecture today has become techno-rationally biased and economy obsessed, (Pallasmaa, 1988:26) which has led to the detachment of man from his geographical and cultural soil (Pallasmaa, 1988:127).

Rather than adhering to one's basic comfort level, sensual experience and health requirements; our living and working environments have exhibited such downfalls in that they have significantly contributed towards the illbeing of occupants by allowing stress and anxiety to manifest within people's lifestyles. Such issues can be attributed to Sick Building Syndrome, which pays little to no regard for natural lighting, cross ventilation or spatial design. Other factors which include, globalization and urbanization also contribute towards the impact of negative environments. As a result, people can no longer orientate and identify themselves within the bounds of their environment, caused by external influences and mass production.

The built environment should therefore contribute towards bettering one's state of wellbeing, through the design of healing spaces (Ellis, 2014:19). By incorporating sensory design elements into architectural design, an opportunity to re-establish a spiritual and physical link with nature becomes possible. Since spirituality strives to maintain balance between mind, body and soul, healing spaces can further enhance this connection through human perception and consciousness.

1.2.2 Aims

To explore how architecture encourages healing through sensory and biophilic design.

1.2.3 Objectives

1. To explore how healing spaces influence mental and physical well-being of occupants.
2. To explore how healing spaces can create and invoke spirituality.

3. To explore how different design elements can create stimulating and therapeutic environments.

1.3 SETTING OUT THE SCOPE

1.3.1 Delimitation of Research Problem

The following study aims to identify how qualities of sensory and biophilic design can help to create healing spaces which promote physical, mental and spiritual wellbeing. At present many individuals are faced with inundating stresses brought on by work, family and finances which cause serious lifestyle imbalances. Thus, for the purpose of this research, aspects pertaining to holistic wellbeing shall be explored. There will be no reference however, to mental health issues such as bipolarism, depression, dementia and schizophrenia, owing to the reason that such issues are of a more sensitive nature and could lead to ethical conundrums.

Light, texture, sound, aroma and colour shall be extensively researched as part of sensory design principles, to understand how such elements can create healing environments which restore balance and harmony.

To dwell within the sphere of the universe requires one to connect with the spirit of place; the earth and the cosmos on a metaphysical and physical level. This relationship has unfortunately been severed due to factors of globalization and modernity, resulting in alienation, lack of identity and placelessness. Thus, the relationship between architecture and one's metaphysical and physical wellbeing shall be further investigated in the chapters that follow

1.3.2 Key Questions

Main question: How can healing spaces affect the physical and metaphysical wellbeing of anxiety sufferers?

1. How can healing spaces invoke a sense of spirituality?
2. How can healing spaces help alleviate anxiety?
3. What design principles aid in creating sensory and therapeutic environments?

1.4 CONCEPTS AND THEORIES

Introduction

The following research outlines the role that architecture plays in creating healing spaces for the physical and metaphysical realms of human well-being.

Psychological, social and ontological views shall form the basis of the literature review and shall be incorporated in an integrative manner to draft a comprehensive dialogue between the respective studies.

Spirit/ Spirituality

Man's inability to orientate himself within the bounds of his environment ultimately stems from the phenomenon of globalization. This has severed our bond with the earth, cosmos and universe thereby creating an imbalance within one's existential makeup. As a result of this disconnect, man can no longer identify himself within his surroundings which has led to the manifestation of illbeing. Spirituality thus enables man to connect within his inner self and discover his true essence of being. By creating healing spaces which are spiritually charged, man may be able to reaffirm his existence within the entirety of the cosmic order (Ellis, 2014:24).

It is through this level of connectedness that man is thus humbled and conscious of his surroundings, which in turn provides meaning to life (Norberg-Schulz, 1980:1). This existential foothold establishes a spiritual bond between nature; forming an integral part of a threefold totality of man, the earth and the heavens.

Anxiety and Stress

The high demand of globalization has ultimately affected architecture and the built environment within today's context, as architects and designers are faced with the inundating conundrum of designing for aesthetic appeal and mass production. Unfortunately, many of our living and working environments pay little to no regard to the comfort levels of man, sensual experience and wellbeing; creating negative environments which harbour stress and anxiety. A recent study carried out by *psychological medicine* (2012), indicated that one in thirteen people of the world's population today experience anxiety and stress daily which can largely be attributed to high demand of living, multiple commitments, financial responsibilities, technology,

competition within the working environment and most importantly Sick Building Syndrome (Psychological medicine, 2012:471).

Phenomenology

The term phenomenology was first coined by Edmund Husserl in the early twentieth century, in his publication titled 'Cartesian Meditations'. His interpretation of phenomenology relates to the study of human experience and consciousness from a first-person view point (Husserl, 1931:33). This degree of consciousness and experience can be triggered by memories, surroundings, perceptions and natural elements which form the fundamental foundation upon which sensory design is based.

Martin Heidegger however, displayed an anti-Cartesian approach to the theory unlike Husserl. Heidegger rejected Husserl's psychological approach to phenomenology and instead directed his views towards ontology; viewing the mind as an effect rather than a factor of existence (Heidegger, 1968:x). Unlike most philosophers of his day, Heidegger acknowledges man's spiritual connection within the natural order of the universe which greatly influences man's conscious state of being.

Norberg-Schulz, in contrast to Heidegger and Husserl, presented an alternative understanding of phenomenology. Unlike other theorists, Schulz moved away from psychological, ontological and ethical approaches and focused on the environment (Norberg-Schulz, 1980:8). It was his belief that phenomenology and place were interrelated to one another which deeply influenced the physical and metaphysical entities of man through texture, colour, shape, materials and substance (Norberg-Schulz, 1980:5). It was through this understanding of phenomenology which gave rise to Norberg-Schulz's interpretation of genius loci.

Sensory response and architecture

Vineet Luckoo, believes that spirituality combined with sensory design has the capability to help heal mental and physical states by establishing healing environments (Luckoo, 2011:45). Therefore, psychological, experiential and physical properties must be addressed. These qualities pertain to sensory experience.

Sound, vision, texture and smell have the ability to greatly influence a person's mental and physical well-being, as well as spatial experience (Luckoo, 2011:45). According to Kevin Lynch, such fundamentals of design help pattern and orientate ourselves within our environments. These elements are crucial to our emotional, physical and psychological responses, as it establishes a link between man and the outside world (Lynch, 1960:3).

By incorporating sensory design principles within spiritual architecture, it is possible to generate spaces which encompass spirituality based upon the ambience, mood and environment created. This allows occupants to reach a state of inner balance and mindfulness by establishing a connection with the cosmos and the earth. This level of consciousness can further be explained through the concept of phenomenology.

Genius Loci

The term genius loci is a Roman concept which implies that "every independent being has its genius, its guardian spirit" (Norberg-Schulz, 1980:18). Spirit is thus embedded in the context of place and offers meaning to the inhabitants through character, identity and human experience (Nezih, M, 2011:1). This inadvertently enables man to orientate himself within an environment (Nezih, M, 2011:1). Unfortunately, due to intercontinental influences, our built environments no longer envelope the spirit of locality, but rather express the standardization of foreign materials, building methods and styles which disregard regional context (Eldemery, I, M, 2009:344). By incorporating sensory design principles and indigenous materials within a particular environment, architects and designers may then be able to create healing spaces which reaffirms man's identity within the character of place through self-awareness.

1.5 RESEARCH METHODS AND MATERIALS

1.5.1 Research Methods and Materials

Approach

The purpose of the following research lies in the exploration of architecture and its ability to optimize the healing process of anxiety through the aid of sensory and

biophilic design. A mixed method approach shall therefore be used within the scope of this study to strengthen the research material by offsetting weaknesses found within each method. Both primary and secondary data shall be utilized to acquire a vast amount of knowledge relevant to the topic.

Various facilities in and around Durban shall be explored by the author to further the understanding of meditative spaces and its role upon human wellbeing. However, the facility better known as The Buddhist Retreat Centre in Ixopo, shall be investigated as the primary case study in chapter five of the research document.

Observations, interviews and detailed questionnaires will be conducted in order to obtain a greater understanding of the intended research on a more personal level. Literature papers, online articles, published journals and books shall be used as data collection tools as well, to broaden the field of study.

Sampling

The research will make use of non-probability purposive sampling; using the snowball technique. This method of sampling shall require the author to use discretion in selecting particular sample groups and sizes best suited for the required research.

These sample groups shall include spiritual instructors and users of different facilities which will further aid in the understanding of such spaces. The information gathered from these sample groups may then lead to further investigation of other sources through word of mouth or knowledge.

Data collection: Primary research

The primary source of data that will be used for the purpose of this research will consist of on-site observations, questionnaires and open-ended interviews.

The following questionnaires shall be answered by approximately 30 users from various retreats and meditation centres within Durban. Due to their position and expertise, spiritual instructors shall also be interviewed based upon their knowledge

and insight of the effects of spirituality and sensual space upon the metaphysical and physical self. To ensure both reliability and validity, the retreats investigated shall be within operation for at least five years in order to gain a general consensus of how they stand to function. Selected users from different facilities shall also be asked to participate within the following study in order to understand their reason for attending such establishments and how these centres have impacted upon their wellbeing.

Another form of data collection shall focus upon on-site observations during possible attendance of retreats and meditation centres within Durban. These observations shall provide insight as to how such facilities affect the mind, body and soul through the architecture and activities offered.

Data collection: Secondary research

Academic journals, published dissertations and books shall also contribute to the following research material in the form of secondary data collection.

Analysis

The information gathered during the course of the research shall help lend insight as to why people find solace in attending spiritual retreats and meditation centres. By understanding these reasons, it may be possible to create an architectural response that will fit into today's contemporary society. Reasons as to why people are drawn to retreats, social well-being, spiritual healing, consciousness and the overall experience within these buildings are crucial components that must be researched in order to render the architectural response successful.

1.6 VALIDITY, RELIABILITY AND RIGOUR

As stated in the above research methodology, a mixed method approach shall be taken for the purpose of this study in order to obtain a broad wealth of knowledge and understanding relative to the dissertation topic.

All primary research shall be conducted by the author of this thesis to ensure sound reliability from all visited sources. Based upon the purpose sampling method, selected spiritual facilities that have been in operation from a minimum of five years shall be investigated during the course of this study to ensure legitimacy and

reliability of all data collected. A sample size of 30 participants shall be interviewed by the author to reinforce the validity of the research. However, due to the nature of the above sampling method, high levels of bias caused by error in judgement and the inability to generalize the research findings of the sample groups by the author, may present possible limitations.

Academic papers, dissertations and online journals shall form the basis of secondary data which shall be accessed using the relevant research tools and search engines made available by the university. All research material that shall be used for the purpose of this study must be published by valid institutes and authors to ensure reliability of information. Newspaper articles, magazine extracts and internet sources will not be utilised within the scope of this study due to inaccuracy and unreliability.

The author shall conduct her research in a professional and timeous manner in order to meet the requirements and time constraints of the academic year. However, most of the centres which shall be investigated lay at opposite ends of Durban's periphery which could pose as possible threats to time management and cost infringement. Upon acquiring all relevant data, the author shall thematically sort through the research collected and present her findings in a clear and concise manner which must be acceptable of an academic standard.

1.7 CONCLUSION

While sensory design should form an integral part within architecture, many architects opt to design for more aesthetic and practical reasons rather than experiential and sensory stimulation. It is therefore vital that sensory design be further explored within the scope of this study in order to create an architectural response which focuses on healing environments, spirituality and embodies the concepts of phenomenology and genius loci. In doing so, the impact of architecture on the metaphysical and physical realms of human wellbeing can thus be analysed.

2

*“Architecture is really about wellbeing.
I think that people want to feel good in a space ...
On the one hand it’s about shelter,
but it’s also pleasure.”*

– Zaha Hadid, (Abduzeedo, 2009)



Figure 2- *For the love of wellbeing*

Source: Author, 2017

CHAPTER TWO: DEFINING HUMAN WELLBEING AND ITS IMPACT ON ARCHITECTURAL ENVIRONMENTS

2.1 Introduction

Place and the built environment has said to form an integral part within our earthly existence, from the moment of birth to the finality of death. It was Le Corbusier who once wrote, that architecture has the fundamentals to move us emotionally and physically when the spaces created resonate within our very being; in tune with the universe which encompasses us (Le Corbusier, 1927:23).

As human beings, our emotions are tied to our physical environments as they strongly influence our metaphysical and physical states. These spaces provide identity and character to being; creating meaningful and stimulating experiences (Norberg-Schulz, 1980:1). However, this is not to say that all spaces positively impact upon holistic wellbeing. Positive environments can render healthy and well-balanced lifestyles, but negative environments can create adverse effects on the mind, body and soul; impeding on one's livelihood (Blom, 2013:14). Contributing factors such as Globalization, have been renowned to induce hostile environments which aggravate stress and anxiety within people's daily lives.

It is therefore the tasks of architects and designers to create conducive environments which adhere to man's basic needs to live comfortably and healthily.

2.2 Conceptualizing holistic well-being

In recent years, holistic wellbeing has become somewhat of a sought after global phenomenon which many have strived to attain in today's contemporary society. The concept however, remains highly subjective and open to interpretation as no universal definition can be deemed worthy to fully encapsulate the essence of wellbeing.

According to famous Greek philosopher Aristotle, human wellbeing can closely be related to man's ability to lead a humble, and honest life devoid of any impure or sinful thoughts and actions that may hinder on his path towards righteousness (Ahtianen, 2014:11). Aristotle's belief is therefore characterized as a traditional understanding, which centres around religion during an era where people were rarely afflicted by stress and anxiety within society.

This understanding of wellbeing has paved a way for future interpretations of the concept by fellow philosophers and socialists. Today however, human wellbeing has developed into a multidimensional term that no longer emphasizes man's morality, but rather focuses on external factors such as work, prior commitments, leisure and personal affairs which have become part of one's state of wellbeing; having been embedded into man's daily regime decades ago.

Aspects pertaining to spirituality, self-regulation, leisure, work, recreation, friendship and love have been established as part of the holistic wellness model founded by Antoinette le Roux. These fundamentals assist one in their endeavour towards seeking to fulfil particular goals and aspirations within one's life by utilizing an individual set of beliefs, cognitive styles, behaviours and desires to assist in their quest regarding wellness (Le Roux, 2008:18).

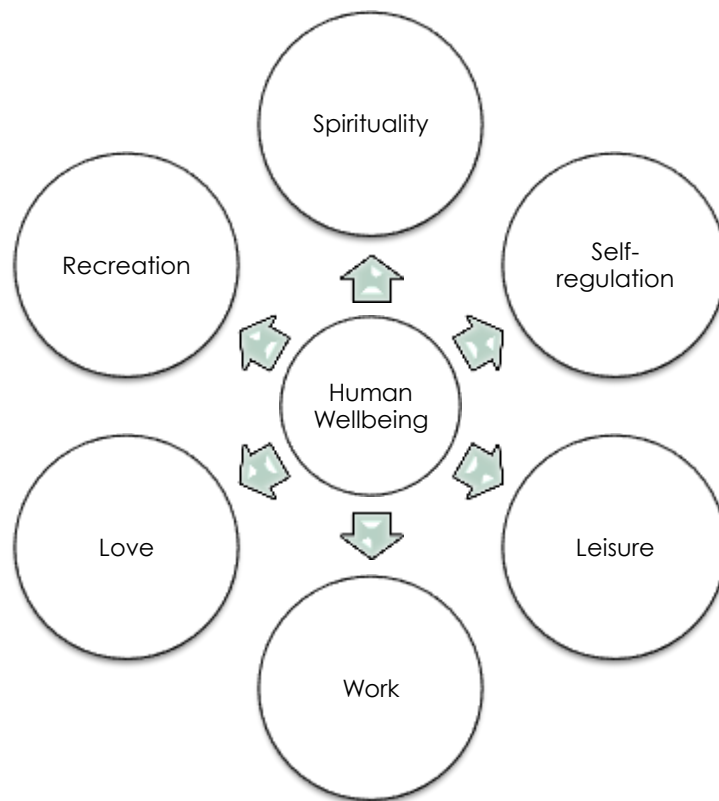


Figure 3- *Le Roux's model of wellbeing*

Source: Author, 2017

In addition to Le Roux's understanding, Ahtiainen expands on this model by categorizing these aspects into three totalities of wellbeing. These totalities pertain to health, material wellbeing and subjective wellbeing (Ahtiainen, 2014:10). However,

in order for one to reach a level of fulfilment, certain resources are required to address the psychological, physical and social challenges of life.

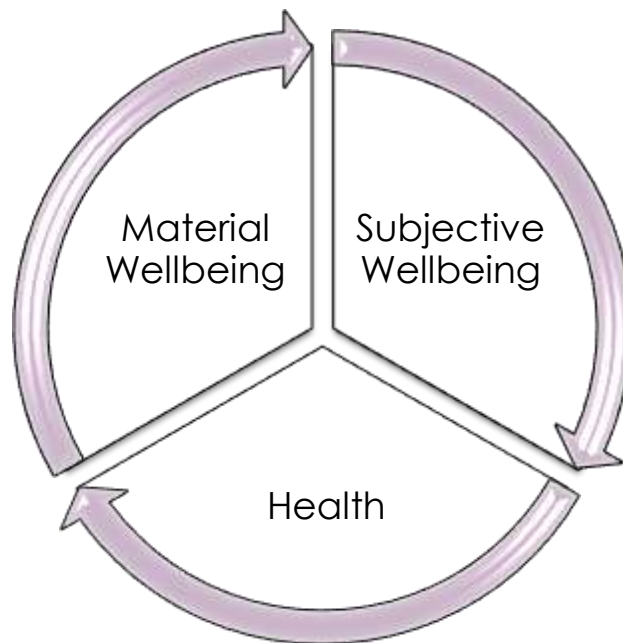


Figure 4- *Ahtiainen three totalities of wellbeing*

Source: Author, 2017

According to K, Moodley, holistic wellbeing can be defined as a resultant by product of being when ones physical, psychological, social, economic and ecological affairs positively enhance an individual's immediate lifestyle; resulting in state of contentment (Moodley, 2013:32).

As human beings, we exhibit a high level of sophistication in terms of our psychological, physical and metaphysical makeup. These fundamentals enable one to fully analyse and identify certain areas which require attention in the self-healing process towards holistic wellbeing (Moodley, 2013:32).

However, the age of modern technology has subsequently altered the standard of living amongst most citizens today. Individuals are constantly faced with financial, personal and social responsibilities brought on by modern living which has led to the inability of people to thematically sort through their day to day issues; causing high levels of stress and anxiety.

2.3 Factors which inhibit wellbeing (Stress, anxiety and globalization)

The concept of Globalization as a determinant of holistic wellbeing has generated major international hype surrounding the topic, as the need to produce healthier environments for occupants has become one of necessity. For years, Globalization has been affiliated with aspects pertaining to economic processes, trade liberation and capital mobility (Huynen and Martens, 2006:269). However, recent insight has led to an ulterior understanding of this phenomenon; relating to the restructuring of contemporary society.

Globalization can be defined as an intensification of cultural, economic, political and technological interactions that form an integral part within existing urban fabrics, which links various scales of life from different localities (Huynen and Martens, 2006:272).



Figure 5- *Globalization linking countries across the world*

Source: Source: Nefertari with Isis, (2017), *Problems with Globalization* [ONLINE]. Available at: <https://stream.org/wp-content/uploads/Globalization-900.jpg> [Accessed 4 June 2017].

While some of these international influences positively impact upon the performance of foreign countries, competition amongst these distant neighbours present a major downfall. Advancement in technology, rivalry amongst corporate companies, mass trading, ecological awareness and economic relations are components to which certain countries constantly strive to surpass that of their rivals. Architecture in particular is constantly affected by this rat race of globalization. Architects and designers worldwide constantly compete to exceed one another in their quest to create designs which push the boundaries. However, contemporary architecture is at risk of losing cultural and regional identity due to the level of standardization of

materials, methods and styles used within most buildings today (Zahiri, Dezhdar and Foroutan, 2016:17). These designs greatly hinder upon individual wellbeing as human comfort and sensual experience are seemingly ignored in the race towards urbanization.

Colin Davies states that man has lost touch with the true nature of being which ultimately stems from his inability to dwell within his current environment. His relationship between the earth, the physical plane and the cosmos have become more distant than ever before; caused by man's severed ties with the high tech urban setting.

The term high tech within architectural context does not pertain to aspects of modern technology, but simply the style of contemporary architecture (Davies, 1988:1). Materials, such as metal and glass, form part of the high-tech imagery which embodies the notion of truth to materials, whereby honesty and integrity are placed on a materials form and expression (Davies, 1988:2).

According to Davies, architecture should have the moral obligation to express the spirit of age of a given period, in keeping with the advances of technology and civilization (Davies, 1988:3). Architecture should therefore be functional and efficient rather than symbolic, to express the essence of the built form (Davies, 1988:3).



Figure 6- Dubai 1991

Source: Nefertari with Isis, (1990), *Dubai before and after* [ONLINE]. Available at: <http://allthatsinteresting.com/dubai-before-and-after> [Accessed 2 May 2017].



Figure 7- Dubai 2016

Source: Nefertari with Isis, (2009), *Therme Vals / Aussenbad* [ONLINE]. Available at: https://commons.wikimedia.org/wiki/File:Therme_Vals_outdoor_pool,_Vals,_Graub%C3%BCnden,_Switzerland_-_20090809.jpg [Accessed 25 June 2017].

Within the last decade, the world has witnessed Dubai's rapid architectural transformation following the descent of modernism. Contemporary architecture such

as high-rise buildings, office blocks and retail centres exemplify the spirit of age of contemporary architecture through modern technology and materiality amongst Dubai's urban setting. As a result, most of Dubai's architecture exhibits machinelike characteristics; relating more so to the technology of the age rather than embodying aspects of local context. Unfortunately, this lack of environmental response, disregard of human experience and poor choice in materials has led man to feel alienated amongst the ordered metal yard of Dubai's urban environment. In short, this artificial metropolitan is a clear example of how urban designers opt to design for aesthetic and international gain rather than sensual experience, which similarly can be said for the city of New York.

Architecture should therefore strive to be figurative rather than abstract, so as to convey a level of meaning through traditional and structural elements which are identifiable to individuals.

Lack of identity and alienation are therefore by products of globalization which have contributed towards ill being due to poor spatial design and disregard for local context. Stress and anxiety have thus become prominent issues facing modern man which Claude S Fischer further discusses.



Figure 8- *Alienation in the urban environment*

Source: Author, 2017

In his book publication titled, *The Urban Experience*, Fischer makes an assumption that urban dwellers have a higher tendency to suffer from psychological stress and anxiety as a result of the fast-paced lifestyles associated within cities.

Lack of public green spaces, alienation, powerlessness, normlessness and urbanization are but few factors which seemingly overwhelm newcomers to the city and can induce symptoms of stress or fear (Fischer, 1976:165). However, Fischer concludes in his findings that stress and anxiety cannot be solely related to urban living, as many suburban and rural dwellers have also displayed signs of stress and anxiety attributed to poor design of homes during the modernist era. (Fischer, 1976:169).

Stress occurs within all human beings regardless of their age, gender or creed. The question then posed is what contributes towards stress and anxiety? Stress is considered to be a state of psychological strain caused by adverse effects of overwhelming circumstances which hinder on one's mental and physical capacity (Moodley, 2014:34).

According to philosopher Day, stress is associated with various circumstances of daily living. These stressors inflict imbalance within our metaphysical and physical core which leads to emotional, physical and psychosomatic ailments. These include family commitments, relationships, financial obligations, careers and personal affairs which stem from the main external force of globalization.

2.4 Attaining balance through architectural environments

Man's relationship with the built environment has explicitly stood the testament of time from as early as primitive man to as far as the twenty-first century. Norberg Schultz outlines this connection by referring to his threefold model of man, dwelling and place. When man identifies himself within a space, the environmental quality, its sensual attributes and his immediate response manifests within his metaphysical and physical self, forming part of his earthly existence. Architecture in turn mediates man and his environment, enabling him to dwell (Pallasmaa, 2005:72).

In earlier times, man's triquetra relationship between dwelling and his environment was one that existed based upon mutual understanding and respect which has seemingly been lost in today's context. Traditional structures were constructed out of an abundance of locally sawn materials, indigenous to their respective regions and were designed according to cultural beliefs unique to each ethnic group. Most

dwelling followed the eight cardinal points of the cosmos's which dictated the positioning and function of each interior space, which varied across cultures. The interior spaces within the dwelling were usually gender specific; with the most important spaces reserved for the head of the families.

This attention to detail, contextual awareness and architectural symbolism has gradually faded into the age of minimalism, functionality and efficiency. Today, the concept of dwelling has become far more complex and multifaceted due to external forces of foreign countries influencing our every waking moment. No longer do we design contextually using locally accessible materials and construction methods, but rather we import alternative resources from various countries to which we share no connection with in terms of values, cultures, architectural style or belief systems.

Renowned architect, Bjarke Ingels, states that the urban setting has become an extension of man, evolving and progressing with him during each passing decade (Ingels, 2009:1). Unfortunately, the failure of modernism ultimately left an indelible mark upon many cities globally, causing disjointedness amongst physical, social and cultural spaces which inadvertently impacted upon one's overall state of wellbeing (Ingels, 2009:1). This architectural blow has created countless issues within the urban complex such as alienation, disconnectedness and placelessness which has manifested into people's lifestyles.



Figure 10- Brutalist influence

Source: Nefertari with Isis, (2014), *Skopje's 'other' architectural history: Janko Konstantinov's Central Skopje Post Office*. [ONLINE]. Available at: <https://www.failedarchitecture.com/how-skopjes-makeover-alienated-locals/> [Accessed 5 June 2017].



Figure 9-Skopje Urban Intervention

Source: Deian Vladov, (2014), *Rebuilding history* [ONLINE]. Available at: <https://www.failedarchitecture.com/how-skopjes-makeover-alienated-locals/> [Accessed 5 June 2017].

The urban intervention formally known as Skopje, is a classic example of a failed transformation which has alienated thousands of locals' due to the foreign style of

modern architecture which has bombarded the streets of Europe. Locals found that the influence of modernism and brutalism created architecture which were unidentifiable, intimidating and overwhelming. Intentionally planned to attract tourists and foreign investment, the redevelopment has ultimately disrupted the lives of its inhabitants by destroying intimate and social spaces with pomp and grandeur. Locals have since then, become increasingly detached from the city to the extent of which they consider themselves as tourists.

Ingels is of the opinion that architects and designers must therefore exercise control and responsibility to adapt new innovative and flexible spaces within urban conditions (Ingels, 2009:1). Ingels likens the need for new urban settings with Darwin's theory of adaptive selection (Ingels, 2009:2). In order for an urban environment to be successful, the built environment must conform to the advances of technology and society in order to reflect the ideals of modern man.

When a physical environment offers ecological efficiency, sustainability, identity, cultural diversity, inclusiveness and harmonious spaces devoid of pollution, biological degeneration, disregard for sensual experience and poor public spaces, it inadvertently acts as a catalyst in stimulating balance within an individual's inner self, towards a state of wellness (Moodley, 2013:35). A state of imbalance is achieved however, when these requirements have not been fulfilled. Architecture can thus be understood as a restorative agent of individualism, whereby sensual design and stimulation within the built environment can promote states of wellbeing within one's life (Moodley, 2013:35). Architecture also has the capacity to heal communities which builds connections and relationships between individuals from all walks of life; combating against alienation.

In the urban intervention known as Superkilian Park, BIG architects created a unified urban experience at the heart of the city centre that incorporated cultural diversity within the scope of their design. This scheme enabled people to connect with spaces which were previously disconnected from city dwellers due to lack of urban design features. They used a process of zoning the park precinct into various colours and functions which represented the different ethnic groups of that region. This cultural integration thus enabled people to interact with the activities of spaces, establishing communities and building collective identity.

Therefore, in order to address ones being, our surroundings must epitomize the essence of support and nurture to fully achieve a state of balance within architectural environments. Only then can the process of healing be attained.



Figure 11- *Superkilen Park Urban Intervention*

Source: Iwan Baan, (2013), *Three colours – Red Black Green: Landscape Park in Copenhagen* [ONLINE]. Available at: <https://www.detail-online.com/article/three-colours-red-black-green-landscape-park-in-copenhagen-16511/> [Accessed 2 May 2017].

2.5 Understanding the relationship between urban environments and human well-being

According to the research carried out by Norberg-Schulz, place and the built environment forms an integral part of man's existence. Materials, substances, shape, colour and texture are but few components which makeup up the character of place that resound within the natural tendency embedded in man (Norberg-Schulz, 1980:3). This understanding is strongly related to the concepts of *genius loci* and *phenomenology* which shall further be explored within the chapters that follow.

In today's technological driven age, people have become so consumed with the fast-paced complexity of modern living that many have opted to live in cities away from

nature. Nature and environmental psychology has been said to greatly impact on a person's wellbeing due to man's inherent affinity to his local surroundings. However, this separation from nature has created a sense of alienation from man's previous environment, causing levels of ill-being to manifest within people's lifestyles (Blom, 2013:20).

Kevin Lynch states that each individual regardless of their creed has a strong affiliation with parts of a city. These relations evoke unique meaning and memories for people, forming part of one's existential makeup. This stark association stems from the direct connection between phenomenology and the built environment which resonates within one's earthly core. Visual sensations, light, sound, shape, motion, touch, kinaesthesia and sense of gravity form key agents in organising and structuring space within the urban complex based upon the sensory cues of man (Lynch, 1960:3).

Our need to recognise and pattern our surroundings are crucial to our emotional response (Lynch, 1960:3). Design elements thus form part of our environmental image which provides one with emotional security by deepening the intensity of human experience. This relationship thus enables man to establish a link between himself and the outside world (Lynch, 1960:3).

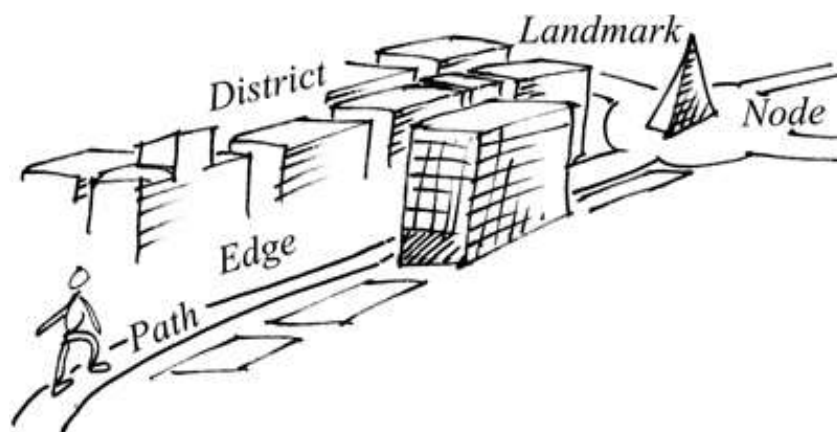


Figure 12- *Diagram of city image*

Source: Nefertari with Isis, (2012), *n.d* [ONLINE]. Available at: <http://designforwalking.com/are-paths-the-primary-component-of-landscapes/> [Accessed 20 February 2018].

However, in today's contemporary society, emotional satisfaction, framework of communication and conceptual organisation is missing amongst our urban environments. Design elements and symbols such as paths, nodes, edges,

landmarks and form qualities are therefore essential in establishing a connection between man and his immediate surroundings in order to help strengthen his state of balance and wellbeing.

Paths

Paths provide structure and organisation to the urban complex by ordering movement in a progressive manner. Texture, patterns, planting, smells, spatial characteristics and activities along pathways provide continuous experience by imbedding memories and sensations into an individual's mental and physical psyche. (Lynch, 1960:96).

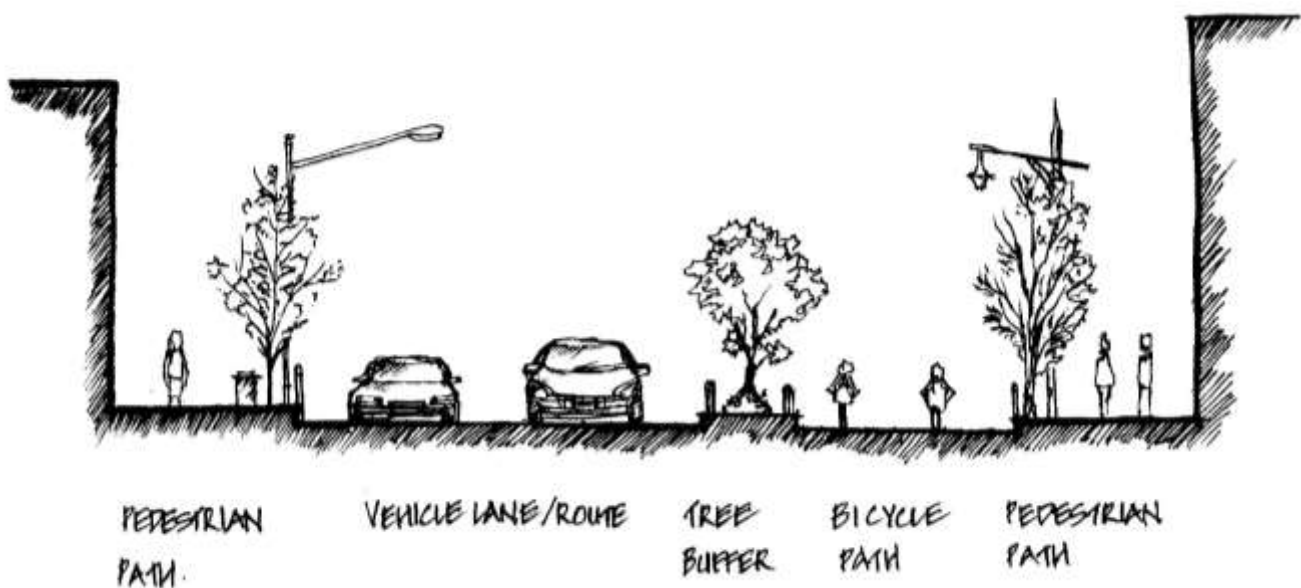


Figure 13- *Street section of pathways*

Source: Author, 2017

Although Le Corbusier's Voisin's urban intervention sparked major controversy in the late 1920's, the fundamentals of his design features which were integrated into his urban scheme have been extensively studied and implemented by urban practitioners and architects of today.

Le Corbusier highlighted the impact that the urban environment has on human wellbeing to which he proposed the design of a utopian world centred around the needs of city dwellers. Linear pathways positioned on a grid like formation, organises vehicular and pedestrian movement within the city in a controlled manner, avoiding congestion through repetition. These pathways are well landscaped with vegetation

and public green spaces framing the outer extremities of the pedestrian routes between buildings. These pathways allow light to filter in between building designs, reducing building shadows and claustrophobic spaces.



Figure 14- *Le Corb's Voisin Urban Intervention*

Source: Nefertari with Isis, (2013), *n.d* [ONLINE]. Available at: <http://imgur.com/8OBnh7d> [Accessed 2 May 2017].

Nodes

Nodes are generally established along the length of pathways which help create focal areas in which light and sound may filter through, causing people to rest at such spatial intersections (Lynch, 1960:102). Nodes are sometimes accompanied by a landmark which helps people recognise their surroundings.



Figure 15- *The Normal Municipal Plaza Fountain*

Source: Author, 2017

The Normal Municipal Plaza Fountain in uptown Illinois acts as a successful activity and transportation node in the heart of a busy intersection. The node is framed by a

series of lush streetscape vegetation and textured paving which creates a soft transition between vehicular and pedestrian spaces. Large expanses of greenery surrounded by a filtered storm water system, acts as a focal point amongst Illinois's concrete jungle which attracts people from all walks of life during various parts of the day.

Landmarks

Landmarks act as markers throughout the city by facilitating movement from place to place. These elements help enhance the identity of a city, district or node which helps navigate individuals within the urban complex.

The Eiffel Tower stands as an impressive architectural icon as a symbolic reminder of French unity during times of celebration and bereavement. The steel structure has become recognised world-wide as an element identified with Paris to which thousands are attracted to annually to experience its structural and representational glory.



Figure 16- *Eiffel Tower Landmark*

Source: Author, 2017

Edges

Like paths, edges require a continuation along the city, creating an unforgettable environmental image which strengthens the identity of the urban fabric. Successful

edges can sometimes create popular landmarks which are recognised worldwide (Lynch, 1960:92).



Figure 17- *City Edge*

Source: Author, 2017

The Durban promenade acts as a transition between the city scape and the beach front by creating a physical and visual boundary between both phases in the form of levels, change in paving, vegetation and bollards. The backdrop of the promenade edge creates a strong skyline of Durban which is a powerful architectural feature.



Figure 18- *Durban Promenade Edge*

Source: Nefertari with Isis, (2015), *Durban South Beach promenade* [ONLINE]. Available at: <https://richedwardsimagery.wordpress.com/2015/04/14/durban-south-africa/> [Accessed 2 May 2017].

Form qualities

Singularity, form of simplicity, continuity, dominance, clarity of joint, directional differentiation, visual cope, motion awareness, time series and name and meaning

work in conjunction with one another to render identity and structure within a city (Lynch, 1960:105).

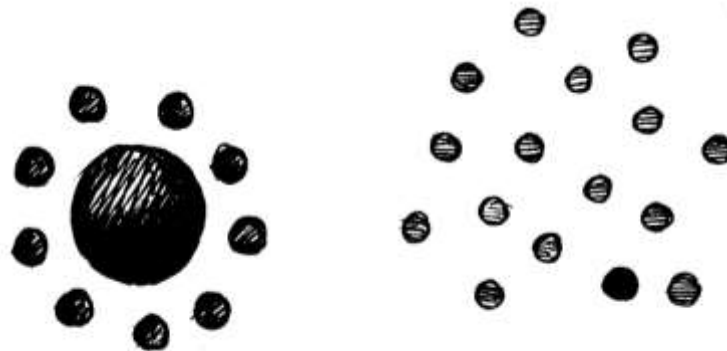


Figure 19- *Form Quality Diagram*

Source: Author, 2017

Such symbols thus contribute to sensual response within a city which each individual experiences in their own unique way.

2.6 Conclusion

When people are exposed to negative environments or spaces, issues such as anxiety, stress and health problems slowly start to manifest within people's lifestyles; causing occupants to experience high levels of illbeing. If one's comfort levels are not met, most often than not a mental breakdown may then follow. Architecture and the built environment therefore plays a vital role in the enhancement of physical and mental wellbeing. People often overlook the value of spaces as an influencer over emotional, physical and psychological responses. When designing, it is of paramount importance that architects and planners pay close attention to sensory stimulation in order to evoke positive occupancy response for all users within a building; ensuring optimum wellbeing.

“Architecture is the very mirror of life. You only have to cast your eyes buildings to feel the presence of the past, the spirit of place, they are the reflection of society.” – I. M. Pei, (Smithsonian, 2017)



Figure 20- *Spiritually and its healing properties*

Source: Author, 2017

CHAPTER THREE: SPIRITUALITY AND HEALING

3.1 Introduction

A thorough investigation between spirituality and healing environments shall be carried out within the successive chapter, to reveal the role that architecture plays in restoring balance and harmony within an individual's configuration.

All environments which exist, seemingly embody the concept of genius loci which is fundamental to one's emotional, physical and psychological responses. However, our physical surroundings often go unnoticed in today's context due to the disorientation and alienation of man, which shall be further interrogated accordingly. Architecture therefore has the responsibility to interpret space, our physical environments and scales of objects for the benefit of man, so as to re-establish a metaphysical link between the universe.

The architectural works of Tadao Ando and Carlo Scarpa shall be critically analysed within the following section, in order to draught a comprehensive overview of the relationship that healing environments and spirituality have upon holistic wellbeing.

3.2 Spirituality (Mind, body and soul trinity)

Like almost everything within the compounds of the universe, our physical entities are said to consist of the same matter and materials which are responsible for the creation of our planetary bodies, stars, galaxies and earthly encounters within the grand design. Since human beings are regarded as creations of a totality, a strong connection thus exists between our metaphysical self and the cosmic power of the universe which fills our earthly existence with purpose and meaning.

"I dwell, you dwell. The way in which you and I am, the manner in which we humans are on the earth, is Buan, dwelling. To be a human being means to be on this earth as a mortal, it means to dwell." - (Heidegger, 1971:2).

Martin Heidegger elaborates upon man's physical and emotional relationship with the universe as man's longing to dwell in harmony within his immediate surroundings and earthly creations. Dwelling is as fundamental to human beings as breathing is for one to survive. Without dwelling we exist as nomads, aimlessly wandering upon

this earth in which we call home yet share no connection with. To dwell, therefore requires one to experience and familiarise oneself within the physical environment, thereby establishing a unique connection within a particular place which responds to an individual's psyche and bodily responses.

Heidegger believes that in order for man to live at peace, he must first and foremost dwell within the simple oneness of the fourfold which he defines as the earth, the sky, the divinities and the mortals (Heidegger, 1971:3). These fundamentals work in unison with one another which aids man in his quest towards dwelling.

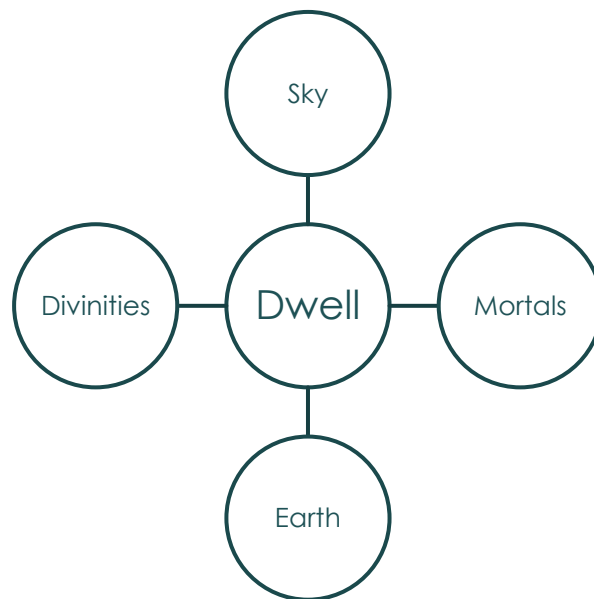


Figure 21- Martin Heidegger's Fourfold Model of Dwelling

Source: Author, 2017

"We do not dwell because we have built, but we build and have built because we dwell: that is, because we are dwellers." – (Heidegger, 1970:3).

All places, be it natural or manmade, typically consist of a floor, a ceiling, walls or boundaries and other materials which form part of one's optical array (Van Nes, 2012:7). This understanding can be applied to Heidegger's fourfold model of man. Heidegger disregards the need for tectonic building as a means to dwell, but instead focuses on man's innate ability to exist within the natural fourfold which forms part of his dwelling. The sky is perceived as a roof, the earth as the floor, the sun as the divine and man as the mortal dwellers.

Unlike most philosophers of his day, Heidegger makes references to the divinities which look upon the mortals of this world. It is through this that Heidegger

acknowledges man's spiritual connection within the natural order of the universe which influences man's state of being.

In the story entitled "A Long Way Home", by famous philosopher, Tarja Vesaas, Vesaas further elaborates upon man's spiritual connection within the universe. One day a Norwegian traveller, known as Knut, wanders into a forest only to make an astounding revelation about his identity in retrospect to his surroundings. He observes the changing of the forest as dusk approaches, experiences the textures of the natural landscape, witnesses mother nature's awe-inspiring beauty and finally is enclosed by the forest as dawn approaches. It is through this sensual experience that Knut thus establishes and confirms his metaphysical and physical connection with his environment which offers life meaning and purpose.



Figure 22- *Ancient man immersed in nature*

Source: Author, 2017

By dwelling within the horizontal and vertical extremities of the universe, man forms a relationship between the cosmos and the earth (Norberg-Schulz, 1980:3). It is through this level of connectedness that man is thus humbled and conscious of his existence relative to his surroundings which in turn provides meaning to life

(Norberg-Schulz, 1980:1). This existential foothold establishes a spiritual bond between man and nature; forming an integral part of a threefold totality of man, the earth and the heavens.

Similar to Heidegger and Vespaas, Christine Ellis makes reference to man's spirituality connection to the earth but unlike Norberg-Schulz, Ellis proposes an alternate understanding to his infamous threefold model between man, place and dwelling. She disregards man's physical vessel and instead acknowledges the metaphysical attributes of man, namely his soul as part of her trinity model of the built environment, divine power and the human soul.

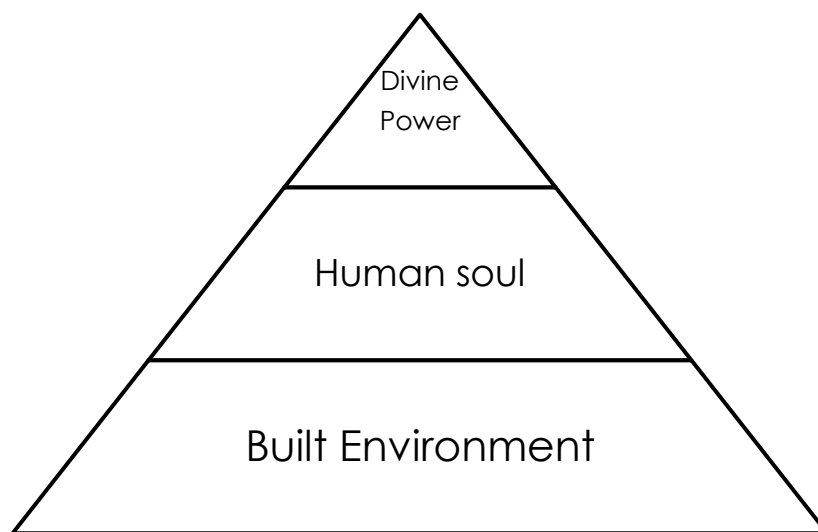


Figure 23- *Ellis's Trinity Model*

Source: Author, 2017

People often look towards spirituality or a divine force in the hopes that they find purpose and meaning in life. According to Aristotle, our souls are the essence of our existence which provide one with character and identity. It is only natural that people thus turn towards spirituality as a means to order and make sense of the chaos surrounding their lives (Ellis, 2014:10). By establishing a link between our metaphysical self and the physical world, we are then able to create architecture which converses between our soul and the universal energy; carrying occupants to a higher state of consciousness. When architecture connects with the earth, it inadvertently transfers the energy of the universe onto occupants, mimicking the simple oneness as mentioned by Heidegger (Ellis, 2014:10). This inadvertently

allows individuals to attain inner peace within the mind, body and soul (Ellis, 2014:10).

Spiritual wholeness, the simple oneness of the fourfold and the trinity of the divine, all exhibit similar characteristics which undoubtedly contribute to holistic wellbeing within man. How then can this spiritual connection be obtained in the age of modernity?

3.3 Spirituality and its role in the healing process

For thousands of years, human beings have extensively relied upon religion and spirituality as an intangible force which subsequently governed one's psychological and physical wellbeing based upon their actions, speech and thoughts. However, in today's day and age, man has seemingly severed ties with the divine and has forged a new relationship with medication and technology which has aided him within the context of the modern world.

Since many individuals today suffer from some array of psychological or physical ailment, people have begun to rely on self-medication and psychiatric treatment to help treat these persisting issues instead of relying on simplistic approaches.

As discussed in the previous section, man exhibits an innate relationship between the earth and the cosmos so much so that it provides him with identity and meaning within the extremities of life.

All entities that exist within the cosmic order are composed of natural energy of which the universe is made of. According to the medical wheel, diagram, a constant cycling of energy is experienced from birth to death caused by the interconnectivity of all things within the universe of a greater spirit (Ellis, 2014:22). Our emotions, the changing of the seasons and our physical bodies are tied to this divine force which maintain a constant balance. However, most polarities on earth are placed deliberately by this greater power to signify an imbalance. It therefore falls on the task of man to reverse these affects by altering his natural energy relative to the universe, so as to maintain a consistent equilibrium (Ellis, 2014:23).

This is achieved when one's physical and psychological entities work in unison with one another to achieve a state of balance. However, one's mind, body and soul are simply not enough to achieve a state of zen. Our physical environment must produce

conducive and therapeutic spaces which stimulates the body, restores the mind and heals the soul; connecting man and the natural energy of his surroundings.

Just as our built environments play a crucial role in achieving holistic wellbeing, so should our natural environment be deserving of the same level of importance.

In the age of modernity, man's heavy reliance upon technology has ultimately created a rift between his long-standing relationship with nature. Individuals of today prefer the comfort and luxury of indoor spaces, surrounded by brick and mortar in which valuable time is wasted abusing electrical outlets which fuel the stereotypical "couch potato" mentality of modern man.

Studies have shown that nature has numerous psychological and physiology benefits on man which stems from his innate connection with his earthly surroundings. Natural lighting, vegetation, gentle breezes and nature's abundant sounds work in harmony to alter one's emotions and mood which greatly reduces stress levels thereby effecting man's overall state of wellbeing. Besides addressing the physical and mental restorations of man, nature also acts as an oasis from the chaos of urban and suburban living; whereby individuals can escape the pressures of work, relationships and family commitments within the bounds of natural healing environments.

In the urban setting of Singapore, man-made tree structures have been erected along the length of the metropolis following the mass deforestation experienced in the country. These structures have seemingly altered the state of Singapore's urban environment by adding greenery amongst the city's concrete jungle. Vines and various plants are draped upon these massive structures to emulate the shrubbery of trees to which birds and other wild life take shelter in thereby conserving the ecosystem. Besides creating artificial habitats for species, these structures help regulate the humidity and air levels within the urban context which has significantly reduced CO₂ emissions i.e. Singapore's carbon footprint following its implementation.

Garden at the bay therefore stands as an explicit example of how nature has the ability to positively enhance man's environment thereby strengthening holistic wellbeing.



Figure 24- *Man made tree structures in Singapore*

Source: Author, 2017

3.4 Biophilic design and healing environments

The term biophilia was first popularized by Edward, O, Wilson, in 1984 in which he referred to the concept as man's "innate tendency to focus on life and lifelike processes" (Wilson, 1984: 1), and the "innate emotional affiliation of human beings to other living organisms" (Wilson, 1993: 3). Although originally associated with biology, the concept of biophilia has since then been incorporated across many disciplines including architecture which many architects suggest that an instinctive bond exists between man and his surroundings and should therefore be considered when designing.

Biophilic design has become increasingly popular within the architectural world as the need to create spaces which enhance one's state of wellbeing has become one of necessity. In the past, architects and designers knowingly ignored elements of biophilic design within the built environment and instead valued their years of experience, intuition and design traditions (Salingaros, 2015:14). The introduction of biophilia within the late twentieth century, paved the way for architects to create innovative, unique and non-adaptive forms which rejected intuition and orthodox traditions (Salingaros, 2015:14). Human wellbeing was now the new issue of concern and spaces thus incorporated green building elements into the design to further enrich one's state of health.



Figure 25- *Biophilic design in the office environment*

Source: Nefertari with Isis, (2015), *airmas asri architects adds greenery to their new expanded offices in jakarta*[ONLINE]. Available at: <https://www.designboom.com/architecture/airmas-asri-architects-expanded-office-jakarta-11-27-2015/> [Accessed 4 June 2017].



Figure 26- *Green balconies on apartment building*

Source: Nefertari with Isis, (2014), *n.d* [ONLINE]. Available at: <http://typennington.com/wp-content/uploads/2014/07/progressivetimes.jpg> [Accessed 4 June 2017].

Similar to sensory design principles, biophilic architecture combines the use of light, natural elements, colour, greenery and detailing to help improve one's physiological response (Salingaros, 2015: 10) and stimulate mental capacity. Other factors include, curves, fractals, gravity and life which also form part of the concept.

“Biophilic design is not about greening our buildings or simply increasing their aesthetic appeal through inserting trees and shrubs. Much more, it is

about humanity's place in nature, and the natural world's place in human society..." – (Kellert et al, 2008: vii).

Within the cosmic order of things, a constant cycling of energies must occur for there to be balance across all-natural entities of the universe. Even in nature, there exists a level of mutual respect and understanding between all organisms for survival. Man and nature are dependent on one another to thrive as they offer each other beneficial properties. By incorporating nature within building designs, it has the power to relieve damage to city ecology, promote ecosystems within urban environments and spread awareness about nature conservation.

Human beings on the other hand are reliant on nature for food, shelter, sustenance and even health benefits. Studies have shown that exposure to green elements such as gardens, vegetation and parks help one deal with emotional issues such as stress, anxiety and other psychological issues (Dr Almusaa, Dr Almssad, Dr Abudushaik and Dr Khalil, 2006:3). In an investigative project carried out by psychosomatic researchers, it was found that access to natural views enabled higher concentration levels, diverted negative thoughts and improved one's health considerably (Dr Almusaa, Dr Almssad, Dr Abudushaik and Dr Khalil, 2006:3).

Modern medicine and technology can only go so far as to address man's immediate state of being. When human health and wellbeing are of concern, the subtle properties of nature holds immense power in improving ones physical and mental state. Biophilic design not only adds aesthetic and sustainability to the overall building, but acts as an agent in improving one's consciousness, mood, health and attitude tremendously.

3.5 Concretizing Spirit of Place through the built environment.

Spirit of place/ Genius Loci was first coined in biblical times as an ancient Roman concept which acknowledges the Genius/ guardian spirit of each independent being (Norberg-Schulz, 1980:18). This spirit instils life within people and places, providing such entities with both character and essence. Ancient man was thus conscious of the existential importance of space which encompassed his life and therefore showed high regard for the character of his environment (Norberg-Schulz, 1980:65).

Since human beings cultivated off of the land from as early as ancient civilization, man thus recognised the need to establish an existential foothold within his locality through both physical and psychological senses to ensure continuous survival (Norberg-Schulz, 1980:18). In order to achieve this relationship, man must first and foremost orientate himself within a place and identify the character of the environment as meaningful. Only then can he thus dwell (Norberg-Schulz, 1980:1).

To dwell within the boundaries of the earth and the heavens, architecture and the built environment must concretize the genius Loci of a particular place by gathering the properties of the environment and understanding the vocation of the space. By enveloping these fundamentals and bringing them close to man, architecture thus acts as a medium between man and his environment (Norberg-Schulz, 1980:1); generating a meaningful sense of space. In addition to creating functional, structural and aesthetically sound architecture, architecture should also consider one's experience, perceptions, consciousness and spiritual level.

Moving architecture such as Tadao Ando and Carlo Scarpa's designs have undeniably embodied the concept of genius loci through which occupants have experienced the realm of spirit.

Ando's design philosophy has been thoroughly implemented within his architectural works which encourages "people to experience a journey involving gestation, self-awareness and thinking" (Hsu, H, Chang, Y and Lin, H, 2015:458) within the metaphysical and physical realm of spatial structures. Church of Light, Church of Wind, Church of the Water and Church of the Sea are but few architectural examples of which evoke spirit of place.

Ando utilized natural elements within the architectural language of each design in order to adhere to man's innate connection to the earth. The play of light and shadows within architectural space, the tranquillity of water, the gentleness of breezes and the sound of crashing waves help to generate a sense of ambience within the built environment which inspires people's emotions by exciting the senses. By concretizing the intangible force of spirit into a poetic space, individuals can thus appreciate the character of the environment. Therefore, by creating sensual

experiences through the aid of nature, people are thus mindful of the realm of consciousness and enlightened by the divine.



Figure 27- *Tadao Ando Church of Light*

Source: Nefertari with Isis, (2015), *n.d* [ONLINE]. Available at: <https://i.ytimg.com/vi/7ZtfYOD5l8M/maxresdefault.jpg> [Accessed 2 May 2017].

Similar to Ando, Scarpa's architecture encompasses beauty, emotion and spiritual qualities. In his project titled The Brion Cemetery, Scarpa's intentional use of materials, texture, lighting and shadows poetically define the symbolic function of form, elements and spaces which primarily affects one's perception. Scarpa's deliberate use of detailing and aesthetics create powerful emotive responses through artistic expression.

In the following images below, Scarpa's bold use of textured materials and ingenious play of light and shadows can clearly be analysed to reveal the eloquent composition of the pavilion. As seen in figure 29, the Brion pavilion is encircled by a pool of water as if naturally reared which reflects the imagery of its surroundings; creating a calm and tranquil setting. The use of concrete as a primary building material powerfully expresses the raw simplicity of the design as if one with its surroundings. Blankets of moss which cover the external walls, the hidden daisies amongst the fields, the large expanse of open sky and the quietness of the land all create a sense of place and wholeness to which this structure rests upon; enveloping the natural beauty of the land in a simple yet awe inspiring way. The use of light and shadows within this design further enhances the ambience of the locality by highlighting different internal

and external elements of the design which create atmospheric discrepancies throughout the day. This active movement stimulates one's bodily senses which evoke emotive and perceptive responses of the occupant.

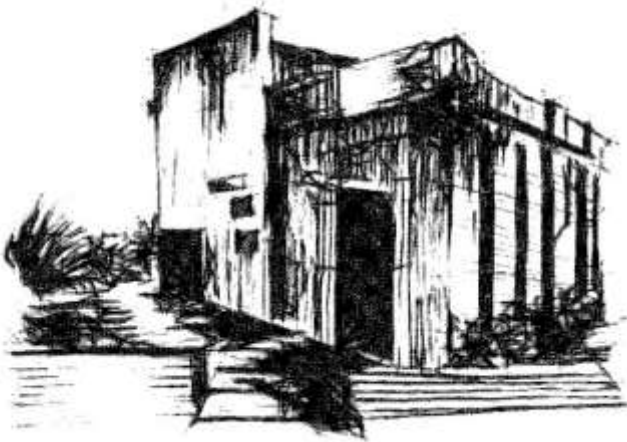


Figure 28- *Brion Cemetery*

Source: Author, 2017

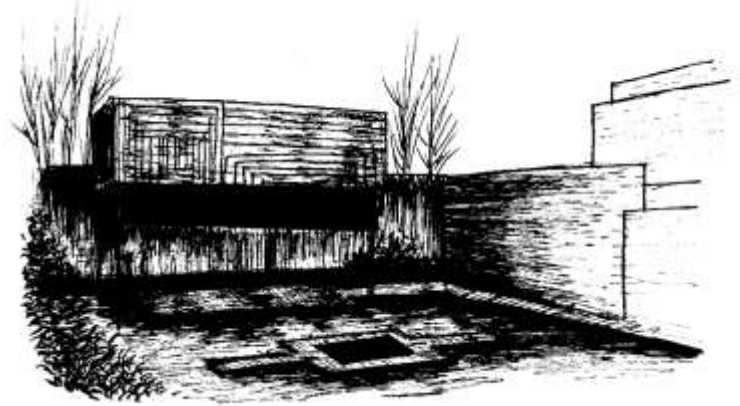


Figure 29- *Contemplation space amongst water*

Source: Author, 2017

Spirit of place and self-awareness thus play a vital role in the creation of atmosphere and ambience which is fundamental for sensual patterning and memorable experiences.

3.6 Conclusion

To achieve a state of absolute oneness and self-awareness within the entirety of the universe, our built environment must encapsulate the character and essence of place. In doing so, occupants are able to interpret nature's bountiful elements, their immediate surroundings, scale of objects, forms and figures, thus fusing their self within their experience of space.

"You cannot simply put something new into place. You have to absorb what you see around you, what exists on the land, and then use that knowledge along with contemporary thinking to interpret what you see."

– Tadao Ando, (I Z Quotes, 2017)

4



Figure 30-Touching the senses

Source: Author, 2017

CHAPTER 4: PHENOMENOLOGY AND ITS ROLE IN CREATING HEALING ENVIRONMENTS

4.1 Introduction

For architecture to positively enhance one's state of wellbeing, certain qualities of design must be carefully considered, so as to create healing environments which evoke emotive response. A phenomenological approach towards place making must therefore be considered when addressing the bodily senses of man. Such sensory principles must be in sync with its immediate surroundings, so that the mind, body and soul can be rejuvenated through active engagement and consciousness.

4.2 Sick Building Syndrome

As previously discussed in chapter one, Sick Building Syndrome has become a prominent factor within today's context, affecting individuals of most working and living environments. Sick Building Syndrome or SBS can be defined as distress experienced by occupants of built environments, namely within office contexts, in which sensory deprivation attributes to a state of illbeing. which manifests in the form of stress, irritability, headaches, fatigue, hyperkinesia and other bodily ailments which are often mistaken from ordinary influenza.



Figure 31- *Individual suffering from sick building syndrome symptoms*

Source: Nefertari with Isis, (2017), *Is your building sick? How HR can reduce absenteeism* [ONLINE]. Available at: <https://www.insidehr.com.au/building-sick-reduce-absenteeism-boost-productivity/> [Accessed 4 June 2017].

The rapid transformation of our social landscape has ultimately reared the birth of new technology, innovation and design. Many buildings today are constructed out of

refined, synthetic materials which has immensely reduced cost and construction. Most of our natural resources are slowly degenerating from the earth's surface due to deforestation and urbanization for which man is responsible. Many architects strive to reduce their carbon footprint by designing energy efficient buildings which greatly reduce cost and consumption. Refined materials such as steel, glass and artificial wood, are predominantly used for the purpose of construction due to their material performance and price. However, these materials are considered to be disease carrying as they contribute to illnesses. According to Christopher Day, synthetic materials emit doses of chemical vapours which are toxic to human beings over prolonged periods of time (Day, 1990:60). These materials can thus create harmful spaces which are detrimental to an occupant's overall health (Day, 1990:60).

Undesirable environments breed negativity which directly influences one's psychological state of mind. Stress and anxiety occur within all human beings and to say that Sick Building Syndrome is the main cause would be dishonest. SBS simply aggravates one's irritability and mental state, through lack of natural lighting, limited windows, artificial lighting, poor circulation of air and disconnect between man and material. These factors largely contribute to poor ambience and atmosphere of spaces.



Figure 32- *Poorly ventilated and lit environment*

Source: Nefertari with Isis, (2015), *Facility-Managers-Now-Key-To-Strategic-Decision-Making* [ONLINE]. Available at: <http://www.goodway.com/hvac-blog/2015/12/facility-managers-now-key-to-strategic-decision-making-can-they-also-cut-costs/> [Accessed 5 June 2017].



Figure 33- *Poor artificially lit environment*

Source: Nefertari with Isis, (2014), *These are the Saddest Office Cubicles we could find* [ONLINE]. Available at: <https://www.wired.com/2014/10/saddest-cubicles/> [Accessed 4 June 2017].

These effects thus enable occupants to experience a higher percentage of stress within their daily environments; ultimately creating a shift of man's natural energy.

These symptoms however, vary across each individual which according to Breetzke are determined upon one's job satisfaction, productivity and motivation (Breetzke, 2010:70).

Sick building syndrome can be avoided through basic architectural elements which include spatial design, appropriate use of materials, reduction of chemical inputs and controlled ventilation. Most buildings today, have disregarded traditional building materials such as brick, timber and concrete, so as to keep up with the demand of technology and innovation. In order to ease one's state of discomfort, compatible materials which have been borrowed from nature should therefore be used. These materials contain nurturing qualities which speak to the heart of man. Warm tones, textured surfaces and earthy aromas, have a positive effect on one's physical and psychological state, which restores man's connection with nature.

Sick Building Syndrome has thus led architects to recognise the need to carefully consider the design of buildings today, so as to ensure the health and wellbeing of occupants. Natural materials, adequate daylighting, spatial design and controlled ventilation are thus crucial to the design of buildings, in order to create conducive environments which promote positive living, improve performance at work and encourages mental and physical growth. Sensory stimulation thus plays a vital role in improving one's holistic wellbeing.

4.3 The impact of sensory design on human wellbeing

It is quite common in society for our built environments and immediate surroundings to go unnoticed. According to Day, our environments are breathed in rather than acknowledged and enjoyed by individuals which stems from little to no interaction with architecture (Day, 2004:4).

Architecture should stimulate one's physical, emotional, psychological and social states by establishing a connection across all dimensions. Architecture has the fundamental responsibility to excite the multisensory modes of man to which the spirit of place embodies (Carless, 2011:48). All bodily senses are important when

combined to help generate true emotions and experiences within architecture and the built environment.

“Architecture is given life and spirit by all qualities that touch the human senses and the human soul. If the functional nourishes our physical needs, the poetic nourishes the soul” (Franck, 2007:34).

It is therefore vital that our sense of touch, sight, sound and smell be acknowledged by architects so as to achieve maximum experience and sensual response. Each sense requires certain criteria in order to stimulate a higher state of consciousness which shall be addressed in the following subheadings.

4.3.1 Light

The benefits of light on one’s mental and physical states have ultimately produced desirable results which have improved one’s holistic wellbeing. Health care facilities, meditation centres and senior citizen homes, have incorporated the use of white light into their designs which enable individuals to perform at optimum efficiency.

For thousands of years, ancient Egyptians and Greeks regarded the sun as god which powered and sustained all life on earth. It was through this fundamental belief that ancient man thus utilized the concept of light therapy, and constructed sunbathing structures to help improve one’s health and remove bodily impurities. Although sunbathing has since lost its initial meaning, the properties of light have retained its value till this very day.

Light has the ability to restore balance within one’s existential makeup by targeting areas such as the body’s circadian system. When light enters the retina, it transmits energy to the hypothalamus gland, which regulates the body’s biological clock to distinguish times of day and control one’s energy and alertness required for certain tasks. This phenomenon also controls an individual’s sleep pattern to ensure that maximum rest is obtained (Joseph, 2006:4).

Another advantage of light on one’s wellbeing, involves the reduction of anxiety, agitation and stress. A study carried out in Turkey, revealed that nurses who were exposed to at least 3 hours of daylight per day, experienced less stress in their

working environments and adopted a positive outlook on working for the remainder the day (Joseph, 2006:8).

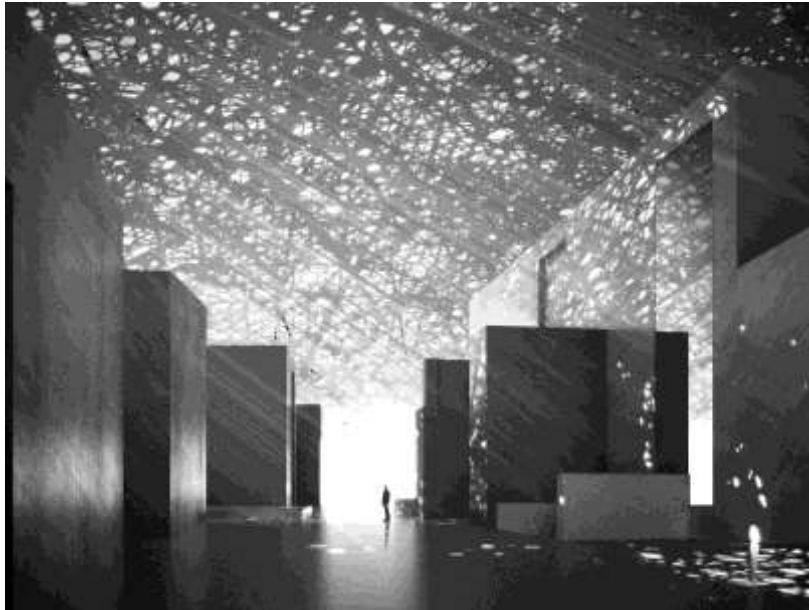


Figure 34- *Play of light and shadows in Abu Dhabi Louvre Concept*

Source: Nefertari with Isis, (2007), *Light Matters: Mashrabiyyas - Translating Tradition into Dynamic Facades*[ONLINE]. Available at: <https://www.archdaily.com/510226/light-matters-mashrabiyyas-translating-tradition-into-dynamic-facades/5383c50fc07a80317a00004a-light-matters-mashrabiyyas-translating-tradition-into-dynamic-facades-image> [Accessed 4 May 2017].

Mood and perception of individuals are affected by different types of lighting conditions. These changes uniquely alter one's behaviour and performance within various environments. Research has shown that people prefer daylighting to artificial lighting for work and living environments, as it improves psychological comfort, office appearance, pleasantness, general health, work performance and job satisfaction (Joseph, 2006:7).

Exposure to light has also found to support vitamin D metabolism in humans which can only be achieved from direct sunlight (Joseph, 2006:8).

4.3.2 Texture and materials

When compared to the other bodily senses of human beings, our sense of touch is least recognised, as our heavy reliance on vision overpowers our need for physical contact. However, when examining one's movement through buildings, our sense of touch thus becomes fundamental.

All architecture and structures have surfaces which we come into contact with on a daily basis. Surface texture is imperative not only to the aesthetic of a building, but to the experience it offers both visually and physically. Texture can be categorised into two components, visual and physical.

- On a visual scale, the human eye interprets the combination of light and shadows thus registering the texture, whilst the physical aspect experiences the roughness and smoothness of the actual surface first hand.
- Texture thus enlivens and enhances the quality of space by creating three-dimensional space, which provides depth, character and stimulating experiences.



Figure 35- *Texture as a physical and visual stimulant in a meditation centre.*

Source: Author, 2017

4.3.3 Sound

Sound therapy can be defined as the intentional use of sound to reach a state of consciousness which promotes wellbeing (Sound Therapy, 2016). Sound healing is founded on the basis that all natural organisms vibrate at specific frequencies and can be altered by external elements which radiate at similar wavelengths.

- Our souls have a natural frequency which when touched, allows one to achieve balance and consciousness. However, most of our daily encounters are fuelled by noise pollutants which disrupt our concentration levels and natural frequencies. Thus, vibrations, acoustics and tone can be used to combat high levels of noise and restore a state of balance.

- Different sound mediums exist which support the natural healing energies of man. These sources include, white noise, music, instruments, computer based frequencies, natural sounding bodies (wind, fire, water), drumming, crystal bowls and voices.



Figure 36- *Sound steam room*

Source: Nefertari with Isis, (2007), *The Aroma Room* [ONLINE]. Available at: https://www.tripadvisor.com/LocationPhotoDirectLink-g312781-d982478-i28968298-Trout_Wine_Tours-Mendoza_Province_of_Mendoza_Cuyo.html [Accessed 3 May 2017].

These apparatuses work in accordance with resonance, entrainment and intention (Sound Therapy, 2016). Unlike most music, sound therapy makes one aware of the present by attuning one's mind to concentrate on the vibrations emitted, rather than fixating on one's immediate surroundings. This level of concentration allows an individual to focus on aligning one's energies and attain inner balance. By achieving a state of absolute zen, an individual thus experiences tranquillity, happiness, inner peace and above all wellbeing.

4.3.4 Aroma

Our sense of smell, similar to sight and touch, form part of the more dominant senses of the human anatomy, which has been well developed since the period of gestation.

Aromatherapy is a powerful tool for reducing stress, anxiety and other psychological imbalances experienced by individuals. This technique harnesses the olfactory properties of fauna and flora to help alleviate instabilities, thereby improving one's

state of wellbeing. Essential oils, fragrances and scents which are devoid of impurities and synthetic chemicals, aid in relieving stress, stabilizes one's mood, improves sleep patterns, reduces stress, subdues nausea and improves energy and memory levels by calming the mind (Mercola, 2014:2). Various scents are thus used to target certain problems areas experienced day to day, which create a soothing effect on the mind, body and soul.



Figure 37- *Dimly lit aroma room*

Source: Nefertari with Isis, (2007), *The Aroma Room* [ONLINE]. Available at: https://www.tripadvisor.com/LocationPhotoDirectLink-g312781-d982478-i28968298-Trout_Wine_Tours-Mendoza_Province_of_Mendoza_Cuyo.html [Accessed 3 May 2017].

4.4 Conclusion

For one to experience the true essence of architecture, our sense of touch, sound, sight and smell must be stimulated to fully render an occupant aware of his or her surroundings. Spaces should not be occupied but experienced. Good architecture does not prioritize aesthetics, form or function over human experience and comfort, but rather addresses all the necessary requirements of man and the environment. endeavour. By introducing sensory design principles within architecture, occupants become more receptive to their immediate surroundings, which significantly alter and improve holistic wellbeing.

“Architecture should speak of its time and place, but yearn for timelessness.”

– Frank Gehry, (eCelebrityFacts, 2017).

5

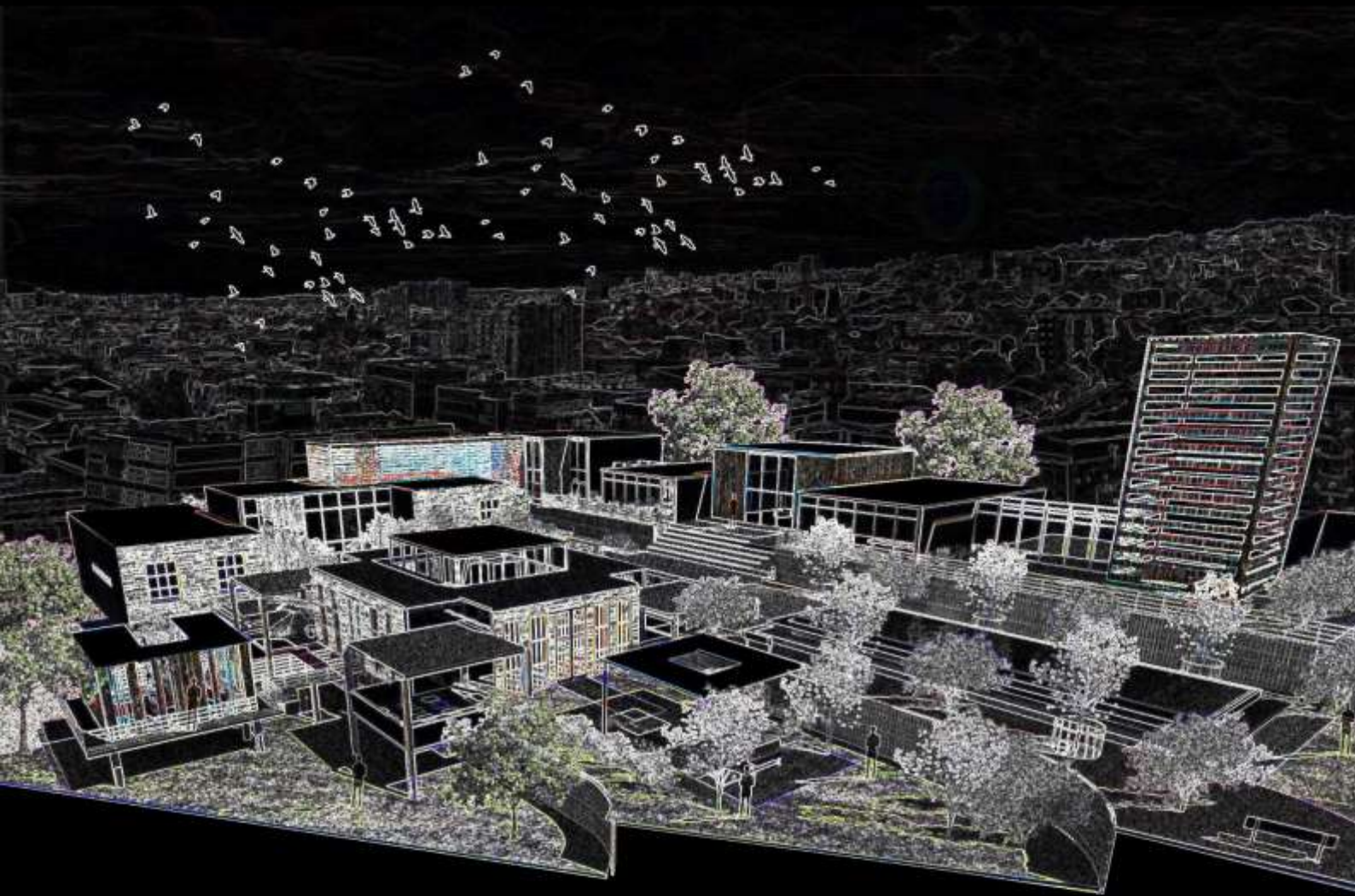


Figure 38- *Spiritual retreat example*

Source: Author, 2017

CHAPTER 5: CASE STUDY

5.1 Introduction

The following chapter serves as a comprehensive review of healing, spirituality and wellbeing within architecture. The Buddhist Retreat Centre shall lend insight to certain parameters and requirements which are needed in order to design for individuals of the proposed intervention.

The architectural theories of genius loci and phenomenology shall be used as criteria to access the following study accordingly. The case study shall be broken up into categories such as concept and locality, justification of study, genius loci, phenomenology and integration of nature in order to critically understand the architectural and physical environment with respect to human wellbeing.

5.2 The Buddhist Retreat Centre

5.2.1 Concept and Locality

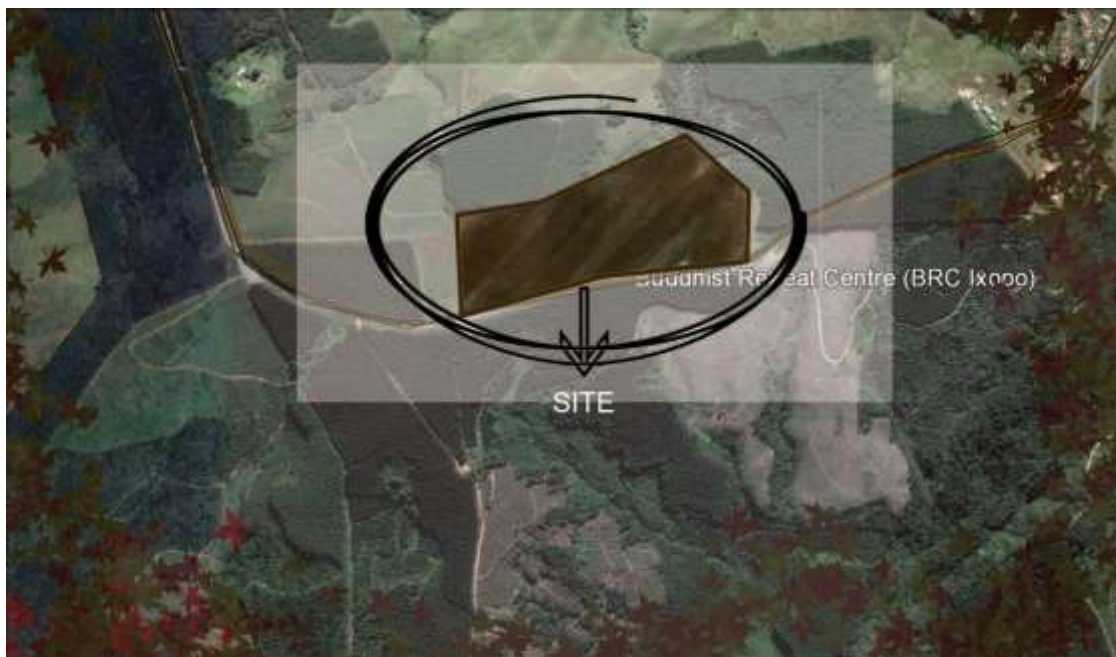


Figure 39- Location of Buddhist Retreat Centre

Source: (www.googlemaps.com), edited by author, 2017

Hidden amongst Kwa-Zulu Natal's bountiful hills and lush indigenous forestry, The Buddhist Retreat Centre like so many others, is located in a secluded region of Ixopo which offers an escape from the chaos of urban and suburban living. The Centre

offers captivating views of the country side devoid of civilization which helps one to reflect on their lives without the pressures of society weighing them down.

The Centre's humble belief lies within creating gentle and nurturing spaces which helps rid the mind from one's own crowdedness and journey along the path towards oneness and peace.

Although Buddhist in nature, the centre encourages people from all forms of faith, ethnicities, denominations and cultures to attend, so as to maintain an inclusive spirit.

5.2.2 Justification of the Case Study

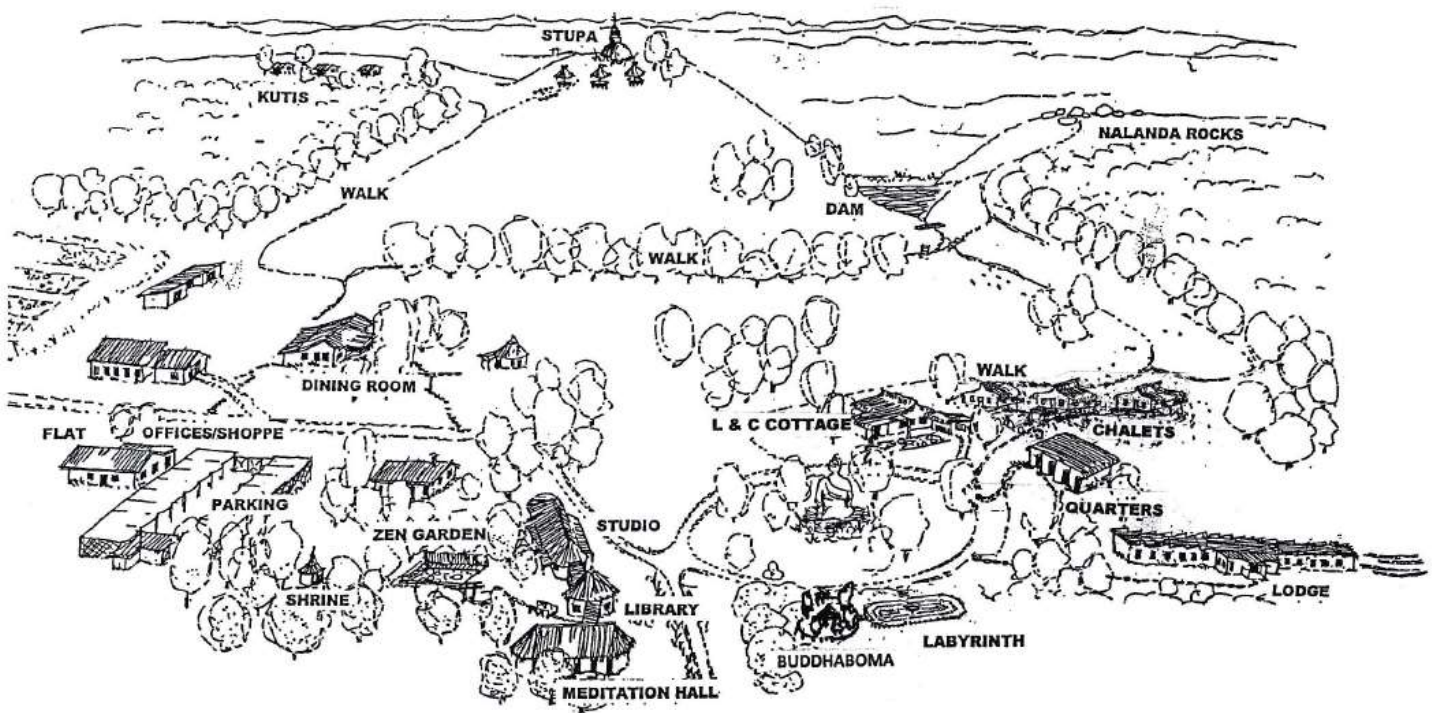


Figure 40- Design layout of Buddhist Retreat Centre

Source: Nefertari with Isis, (2015), *Virtual tour* [ONLINE]. Available at: <https://www.brcixopo.co.za/about-the-centre.html> [Accessed 31 May 2017].

Unlike certain Spiritual Retreats, the design of the Centre as well as the activities offered express a strong urgency for one to journey. The Retreat is divided into a series of modules which are strategically positioned within the natural landscape to

allow people to experience growth, self-realization and healing as they move from one activity to the next. This method of design thus allows people to engage with not only the architecture, but the environment as well which stimulates the senses and deepens one's level of consciousness.

5.2.3 *Genius Loci*

Tranquillity, peace and serenity are but few eminent qualities which one experiences upon arrival within the landscape setting of the Buddhist Retreat Centre. The location is bounded by an array of natural entities and elements which aid in calming the mind, body and soul towards achieving balance. These include, the Umkomaas River, dense forestry and Ixopo's rolling hills.



Figure 41- *View of Ixopo's hills and valley*

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].



Figure 42- *Scenic view of the Umkomaas River*

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].

Spirit of place is strongly evoked within this enchanting, dreamlike environment as it seemingly transfers its peace-like aura onto those who visit the centre, which induces the process of physical and metaphysical relaxation. From the moment of arrival to the moment of departure, ones every waking moment is filled with purpose and meaning due to the tranquil nature and blissful character of which the place embodies.

5.2.4 Phenomenology

The overall design of the retreat exhibits a strong phenomenological influence by way of materiality, colour, texture, visual and olfactory stimulation which plays an important role in the healing process and transformative outcome of a space.



Figure 43- *Meditation Hall*

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].



Figure 44- *Outdoor Contemplative Space*

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].

Since the design is broken up into a series of timber cottages scattered across the landscape, the design appears to merge with the natural surroundings as if one with the earth. Each pod adheres differently to one's senses based on the occupant's level of awareness. The play of light and shadows, the textured finish of raw materials, the smell of burning incense, the sound of trickling water and the subdued tones of the building all culminate into one, to create positively charged spaces. These elements help awaken one's consciousness and spiritual state through sensory perception and environmental ambience.

5.2.5 Integration of nature

The spiritual centre is completely immersed within landscaped gardens which emphasize the importance of man's reconnection with nature. Large green spaces, flower beds, rock gardens, zen gardens and a labyrinth are but few natural elements

which help one connect with the cosmic and earthly energies of the universe, thus calming the mind, body and soul.



Figure 44- Zen Garden

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].



Figure 45- Labyrinth

Source: Nefertari with Isis, (2015), *Scenes from the BRC* [ONLINE]. Available at: <https://www.brcixopo.co.za/joomgallery.html> [Accessed 31 May 2017].

The importance of nature on one's psychological and physical wellbeing has proven to be quite significant and as such, attendants are encouraged to partake in daily walks and strolls in nature so as to initiate the healing process.

5.2.6 The influence of globalization on architectural design

The effects of globalization, as previously outlined in chapter two, have undoubtedly altered one's innate understanding and perception of regional context and identity due to the multifaceted influences of international affairs. Many architectural designers have become so accustomed to these international ideologies that they fail to acknowledge nor celebrate their immediate context but rather insist upon incorporating arbitrary forms and materials which offer little to no familiarity.

Although the Buddhist Retreat Centre is affiliated with eastern ideologies, the design nevertheless acknowledges the context and identity by incorporating indigenous, natural materials within the design which are relatable to individuals of this region. These include, stone, timber and other naturally occurring materials. This subtle integration allows man to connect with his environment and establish a close relationship with his surroundings which is unfortunately absent in most urban and

suburban contexts today. The Buddhist Retreat Centre thus stresses the importance of architecture and place making on one's physical, psychological and emotional response.

In addition to the architectural language and design, the facilities offered provide basic stress relief skills which can be practiced in daily circumstances of modern living.

5.4 Conclusion

The above study showcases good architectural design and contextual understanding of healing and spiritual practice which relates quite strongly to genius loci and phenomenology. For one to be completely detached from the materialistic aspect of life, one must be immersed within a positive environment which adheres to the mental and physical states of man. Only then can the healing process occur. Other facilities such as nature walks, exposure to natural elements, meditation, quietness and yoga are also fundamental features which should be addressed in order to recharge one's self.

“It is not so much for its beauty that the forest makes a claim upon men's hearts, as for that subtle something, that quality of air that emanation from old trees, that so wonderfully changes and renews a weary spirit.”

- Robert Louis Stevenson, (Brainy Quote, 2017).



Figure 47- *Spiritual retreats in nature*

Source: Author, 2017

CHAPTER 6: PRECEDENT STUDY

6.1 Introduction

The Therme Vals shall be critically assessed according to the same set of criteria as mentioned in chapter 5, in order to understand the relationship between architecture, healing and wellbeing from an international viewpoint.

6.2 Therme Val

6.2.1 Concept and Locality



Figure 48- Location of the Therme Vals

Source: (www.googlemaps.com), edited by author, 2017

Embedded within the snowy elps of Switzerland, the hotel and spa resort designed by Peter Zumthor, is one of ingenuity and sensuality. People from across the world travel to the resort to experience the healing and detoxing properties of the spa which is designed around an iconic hot spring.

The idea was to create a cave like building which allowed people the opportunity to meander throughout the design like explorers would and rediscover themselves on all forms and levels.

6.2.2 Justification of Precedent Study

The location of the resort, like the desired site selection, share many similarities which provides an excellent source of inspiration for the intended design. Natural

elements such as light, sound and water have been cleverly used to invoke a sense of healing and rejuvenation of the mind, body and soul; in keeping with the main scope of the thesis.

6.2.3 *Genius loci*

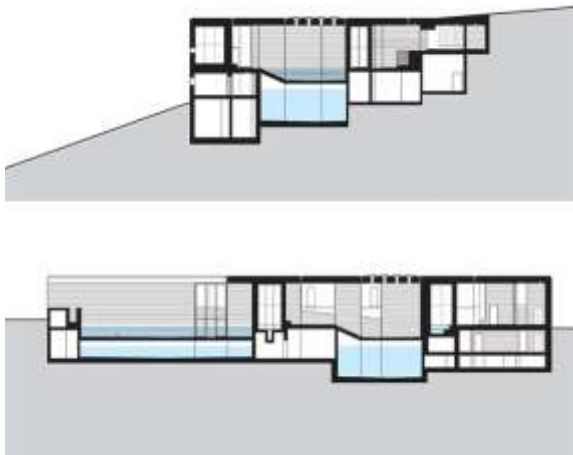


Figure 50- Section of *Therme Vals*

Source: Nefertari with Isis, (2015), *Sections* [ONLINE]. Available at: <https://www.architectural-review.com/buildings/thermal-baths-in-vals-switzerland-by-peter-zumthor/8616979.article> [Accessed 25 June 2017].



Figure 51- Landscape setting of the *Therme Vals*

Source: Nefertari with Isis, (2015), *n.d* [ONLINE]. Available at: <http://www.architecturerevived.com/therme-vals-spa-graubunden-switzerland/> [Accessed 25 June 2017].

Having been designed such that the architecture appears to emerge from the mountainscape, the resort beautifully encapsulates the essence of the natural landscape through materiality and clever use of cut and fill. The environment offers a reclusive and magical atmosphere which is mirrored in the interior of the design, through sensory stimulation and spatial design. This allows occupants to reach a level of relaxation and balance.

6.2.4 *Phenomenology*

Zumthor's remarkable implementation of phenomenology is eloquently expressed within the interior of the *Therme Vals* scheme via sensory design principles. As users approach various activity nodes within the resort, they are confronted with stimulating spaces which deprive and heighten the bodily senses; deepening one's conscious level.

The combination of light, sound, texture and water create a healing atmosphere which stimulates rejuvenation and balance which deepens one's level of consciousness immensely.

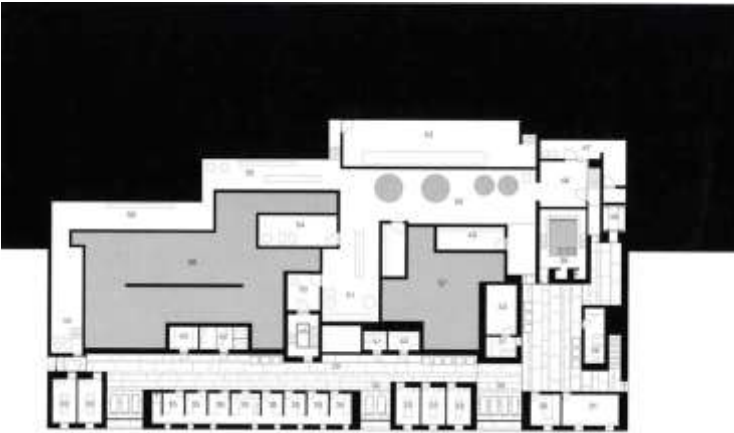


Figure 52- *Plan of the Therme Vals*

Source: Nefertari with Isis, (2009), *Therme Vals plan 02* [ONLINE]. Available at: <https://www.archdaily.com/85656/multiplicity-and-memory-talking-about-architecture-with-peter-zumthor/therme-vals-plan-02> [Accessed 25 June 2017].



Figure 53- *Cave like interior*

Source: Nefertari with Isis, (2009), *The Therme Vals / Peter Zumthor* [ONLINE]. Available at: <https://www.archdaily.com/13358/the-therme-vals/500f246028ba0d0cc7001d40-the-therme-vals-image> [Accessed 25 June 2017].

6.2.5 Integration of nature



Figure 53- *Retreat embedded into the hillside*

Source: Nefertari with Isis, (2009), *Therme Vals / Aussenbad* [ONLINE]. Available at: https://commons.wikimedia.org/wiki/File:Therme_Vals_outdoor_pool,_Vals,_Graub%C3%BCnden,_Switzerland_-_20090809.jpg [Accessed 25 June 2017].

Nature plays an important role in the overall design of the resort, acting as a catalyst for healing and rejuvenation. Large expanses of glass and viewing decks have been integrated into the design to allow occupants to connect with nature on a visual level.

Continuous roof lawns which terrace downhill allow occupants to experience the outside world yet still feel connected with the architecture. Zumthor took inspiration from the surrounding context to reflect the essence of the environment as the primary source of material is the natural stone quarried from the mountain in which the design is embedded.



Figure 54- *Views of the mountain setting*

Source: Nefertari with Isis, (2009), *Therme Vals / Aussenbad* [ONLINE]. Available at: https://commons.wikimedia.org/wiki/File:Therme_Vals_outdoor_pool,_Vals,_Graub%C3%BCnden,_Switzerland_-_20090809.jpg [Accessed 25 June 2017].

6.2.6 The influence of globalization on architectural design

In contrast to the Buddhist Retreat Centre in iXopo, the Therme Vals takes a unique approach to the effects of globalization on architecture and place. Rather than perceiving the effects of intercontinental interference as an encroachment on local customs and traditions, the design embraces the diverse influences of the global forum by celebrating the unison of both local and international ideologies.

This amalgamation of cultural identity is evident within the interior of the Therme Vals where the use of foreign practices can be seen in order to stimulate mental and physical responses via the ancient act of bathing; a common practice carried out during earlier times throughout parts of Europe and Asia.

The materials of the design however, mirror the regional context by incorporating locally quarried Valser Quarzite slabs from neighbouring mountains which reflect the highland landscape of Switzerland.

The design therefore views external influences as an advantage rather than a shortcoming.

6.3 Conclusion

The following precedent study offers an excellent use of sensory design principles which aids in creating transformative spaces that stimulate healing. In the above analysis, the architectural theory of phenomenology is strongly evoked throughout the design which showcases the architects high regard and understanding of human experience. The design is successful in capturing the essence of the environment in terms of site location, internal planning and materiality.

“As an architect, you design for the present, with an awareness of the past, for a future which is essentially unknown.” - Norman Foster (Brainy Quote, n.d)

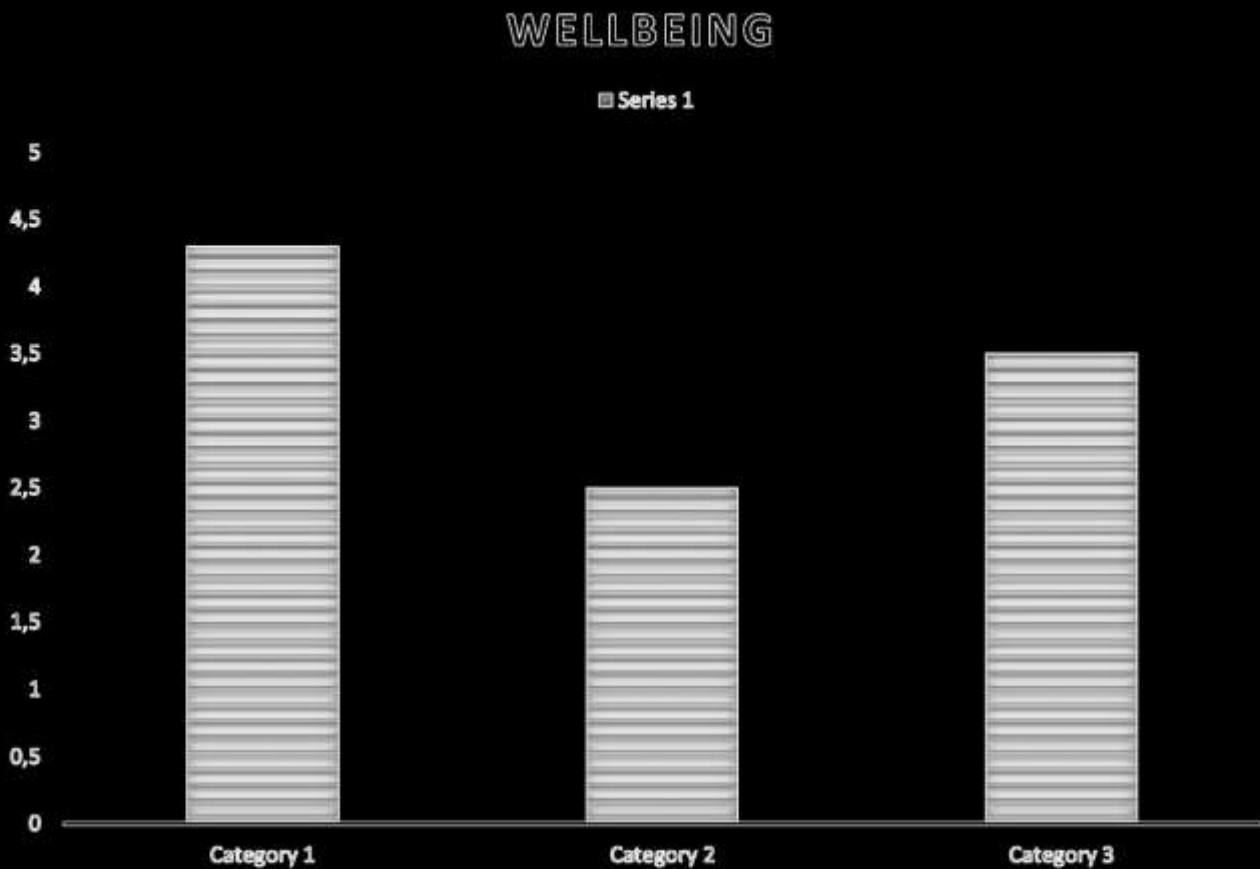


Figure 55- Data collection

Source: Author, 2017

CHAPTER 7: ANALYSIS AND DISCUSSIONS

7.1 Introduction

The following chapter focuses on a comprehensive analysis of data obtained during the course of this research in the form of interviews and questionnaires. The respective findings gathered from various institutes and personals have been efficiently represented in a series of charts and graphs to diagrammatically express the results accordingly.

A total of twenty emails were sent to numerous meditation and retreat centres of local and international context, which were to be answered by instructors and users of these facilities. The centres used for the purpose of this research were selected based upon the author's discretion and architectural theories previously mentioned in the document. Of those twenty emails, ten facilities graciously acknowledged and provided useful feedback. Candidates were asked to fill in an anonymous questionnaire which were distributed by staff, and thereafter scanned and sent back to the author for analysis.

Onsite observations and interviews were also conducted at three facilities within Durban, which were visited by the author to gain a broader understanding as to how such facilities operate.

The aim of the following data collection was to assess whether or not the location, sensory design principles and exposure to nature influenced the process of healing and improving one's state of wellbeing.

7.2 General statistics

According to the raw data collected from six different facilities, 60% of participants who were questioned were female, whereas 40% of participants were characterized as male.

As shown in figure 57, people from various age categories have attended either wellness centres or spiritual retreats in order to improve and maintain their state of wellbeing. In conjunction with these findings, all participants were asked if their current occupation contributed to high levels of stress within their daily lives, of which

80% of individuals responded as yes. This indicates that no matter what age group a person may belong to, all human beings are susceptible to stress.

Question Two: What is your current age bracket

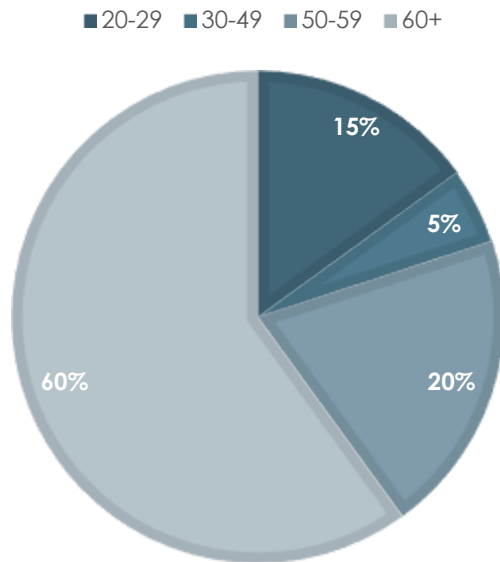


Figure 57- Pie chart indicating age bracket of users.

Source: Author, 2017

Question Seven: Does your current occupation contribute to high levels of stress within your daily lifestyle?

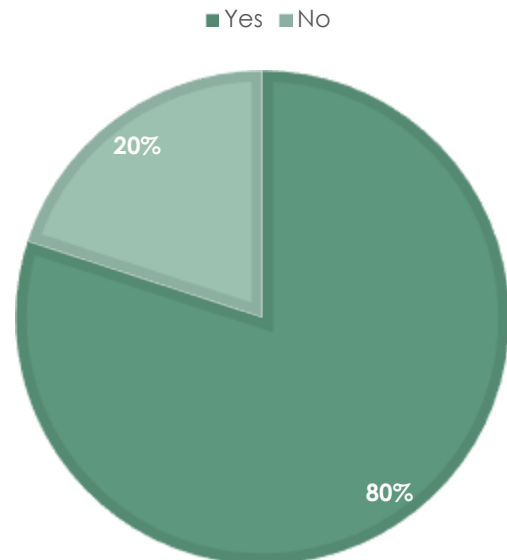


Figure 58- Pie chart indicating whether participants experience high levels of stress at work.

Source: Author, 2017

7.3 Therapeutic and healing environments

Participants were asked if the internal and external spaces of their retreat have been designed such that they create healing and therapeutic environments, of which 90% of respondents answered yes to, while the other 10% answered no. However, many individuals indicated that their classes operated from school halls and venues as their organisations were under renovation.

One of the lead architects, responsible for the design of the Buddhist Retreat Centre in Ixopo, stated that many users have commented on the location of the centre and have said that, "the BRC is a very healing and sacred place- which they sense as they drive through the entrance gate". A retired senior instructor, who worked at numerous spiritual centres, argued that instead of relying on the atmosphere of the environment to heal, " Its healthy living that contributes and enhances a person's

total wellbeing, peace and serenity”. Occupants “don’t know any better what the physical environment will do. They take the best from the yoga, meditation, breathing (pranaya-ma) and knowledge of the Master”.

Question thirteen: Have the internal and external spaces of this retreat been designed such that they create therapeutic and healing environments?

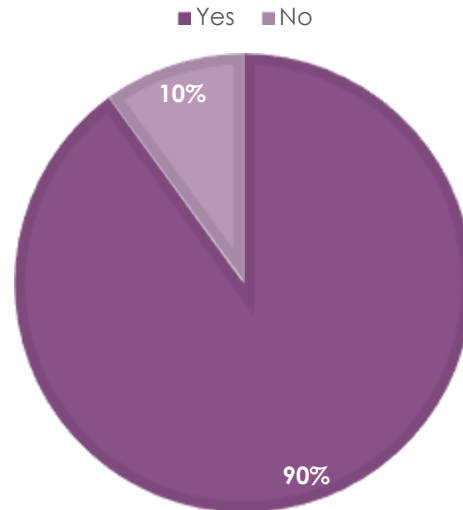


Figure 59- Pie chart indicating healing environments of retreat centres.

Source: Author, 2017

7.4 Sensory design

As sensory design plays a pivotal role in spiritual centres, users were asked if their facility utilised principles of sensory design in the internal spaces, of which 80% responded yes to, whilst 20% answered no.

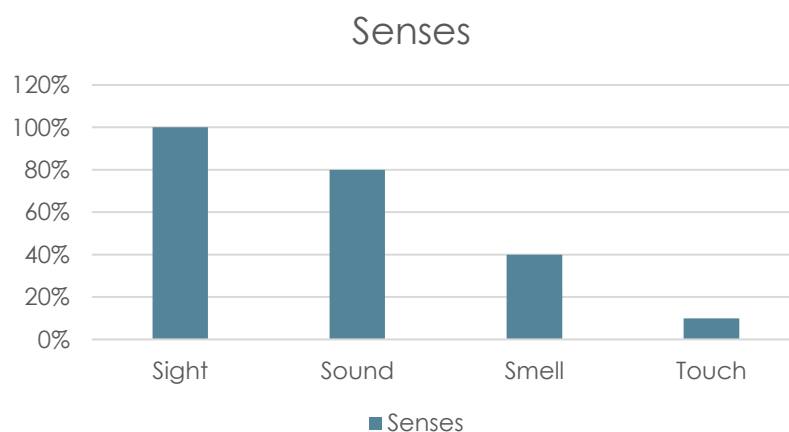


Figure 60- Graph showing types of senses addressed in various retreats

Source: Author

Those who answered yes, were requested to indicate which senses were addressed within the design. Sight received 100% response from applicants, whilst sound

received 80%, smell had 40% and touch contained the least amount of responses with 10% as shown in figure 60.

Participants were further asked if sensory design plays a vital role towards attaining inner balance which 90% of users were in favour of while 10% were against. According to another practicing architect who has chosen to remain anonymous for the purpose of this study, "many psychological studies have shown that the shapes and colours which surround a person profoundly affect one's mood and wellbeing".

Question sixteen: Are you of the opinion that sensory design (elements which heighten bodily senses) plays a vital role towards attaining inner balance?

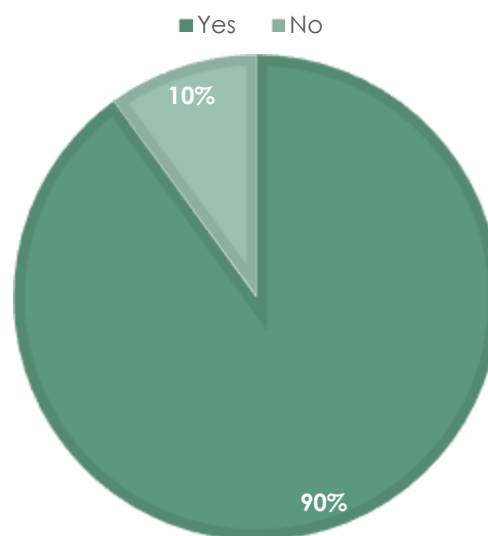


Figure 61- Pie chart indicating user's opinion of the importance of sensory design.

Source: Author, 2017

7.5 Integrating nature into the design

The next question rendered surprising results from many respondents across different centres. Participants were asked whether or not their facility integrated nature within the design. 20 percent of users replied to yes, whilst the other half indicated that they had not. Many had stated that although their facility did not offer

outdoor activities, there is no apparent blurring of nature and architecture that can be seen.

Question eighteen: Have elements of nature been incorporated into the design of this centre?

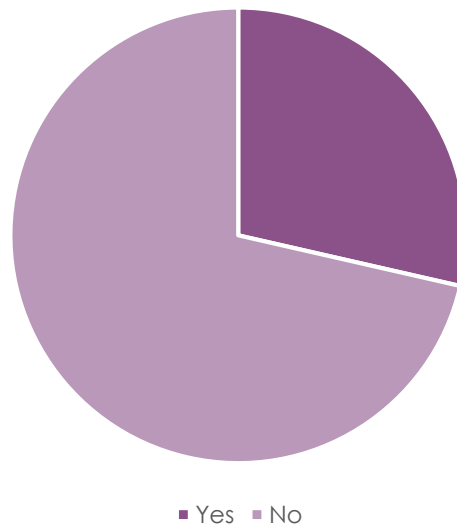


Figure 62- Pie chart indicating whether retreat centres incorporated elements of nature into the design.

Source: Author, 2017

7.6 Conclusion

To conclude, many of the responses derived from the data were somewhat expected. Sensory design is vital when designing for spiritual centre's to help improve a person's wellbeing. Sight, smell and sound have been used extensively throughout many facilities attended by participants, however sense of touch has greatly been overlooked as an important element of sensual experience. Touch enriches one's experiences of space through physical contact by allowing one to connect with the design and environment.

One particular finding however, produced mixed responses from participants in terms of integrating nature within architecture. Many centres have disregarded the need to include nature within their architecture which has well-known benefits in improving a person's psychological and physical health. By incorporating biophilic elements within the proposed building design, there is an opportunity to further enhance one's state of wellbeing.

“If I can create some space that people haven't experienced before and if it stays with them or gives them a dream for the future, that's the kind of structure I seek to create.” - Tadao Ando (Brainy Quote, n.d)



Figure 63- *Final thoughts*

Source: Author, 2017

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Throughout the following study, various concepts were thoroughly analysed and researched in order to establish a link across human wellbeing and architecture.

The main question posed at the beginning of the dissertation inquired how healing spaces affect the physical and metaphysical wellbeing of anxiety sufferers. In order to create spaces which restore and revitalise ones psychological and physical health, certain criteria must be met to render an environment conducive. Aspects such as biophilia and sensory design, have a remarkable effect on a person's being.

Exposure to natural elements such as daylighting, fresh air, raw materials and soft muted tones have a profound effect on one's behaviour and psyche. By combining these elements within architecture, man's psychological and physical wellbeing can thus be improved through direct contact with nature.

However, health benefits are but one aspect which nature provides. The secondary questions therefore explored, how spirituality could be invoked through sensory design and what elements could be used to create therapeutic environments.

By immersing man within nature, his mind, body and soul are able to become accustomed to its surroundings, thereby awakening and deepening his consciousness. More often than not, our level of consciousness is disturbed by interferences caused by the mind and body, similar to that of static on a radio. In order to maintain a sense of balance, one needs to tune into the wavelengths of a higher spiritual frequency. This is achieved by connecting with the earth, cosmos and nature, so as to become one with the universe. By integrating nature and sensory design principles within architecture, one is able to reach a spiritual state and thus alleviate the crudity of the mind.

Sensory design principles are vital in creating spiritual and therapeutic environments. By stimulating the bodily senses of man and incorporating elements of light, shadows, texture, materials, colours, smells and sounds within a design, one is able to holistically experience a space as their level of awareness is heightened.

Sensual, spatial, functional and biophilic elements shall therefore be used within the design stage of this study in conjunction with genius loci and phenomenology which shall establish the basis of which the design concept and brief shall be based.

8.2 Recommendations

From the data generated in the analysis component, to the in-depth research explored in the literature review, the following section shall focus on a set of criteria necessary for the proposed design of a place for meditation in Durban. It is important to note that the proposed design shall in no way or form be biased towards any denomination, race or religion, but shall strictly stand as a facility which is inclusive to all. The aim of this research was to highlight how architecture encourages healing through sensory and biophilic design. The research thus leads to reasons as to how architecture can affect one's physical and metaphysical wellbeing. The recommendations shall therefore help steer the design towards a more precise outcome.

- **Site selection:** The proposed site should act as an escape from the harsh reality of modern living by being placed in a secluded region, away from the everyday environment which exudes anxiety, stress and chaos. Not only should it be reclusive, but the location must embody aspects of genius loci in terms of serene landscape, bountiful views and the stillness of the countryside.
- **Inviting and welcoming spaces:** The design must be welcoming, inviting and should be sensitive to human scale, so as to not intimidate users through mass and volume.
- **Pockets of space:** In order to offer users a greater experience and connection with nature, the design should be broken up into a series of individual pods, strategically positioned throughout the site. This fragmentation of the design shall not only connect individuals with nature as they manoeuvre from activity to activity, but it shall also strengthen the users' overall experience as they undergo personal journeys along the way.

- Biophilic design: Spaces must be sensitive of its surroundings and should incorporate nature within the design. Elements such as nature trails, labyrinths, courtyards, zen gardens and water bodies should therefore be integrated.
- Reflection and contemplation: The facility should encourage individual growth and self-betterment of a user's state of wellbeing. Reflective and contemplative spaces should therefore be designed such, that they welcome and stimulate one towards the path of healing.
- Lodging facilities: Spaces should offer intimate accommodation which consists of private dormitories and ensuites which are separated by gender. Dining and vegetable gardens should also be considered.

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Appendices

APPENDIX A: INTERVIEW SCHEDULE



Masters in Architecture Research Project

Researcher: Virthi Bansi (BArch)

Email: v3bansi@yahoo.com

Cel: 082 727 9172

Supervisor: Viloshin Govender (March)

Email: govenderv3@ukzn.ac.za

Cell: 079 508 2921

Faculty: School of Built environment and development studies

Thesis topic: Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban

Research Ethics Offices: HSSREC

Telephone: +2731 260 3587

Email: HssrecHumanities@ukzn.ac.za

Interview for spiritual instructors and users of various facilities.

Participation in this research is completely voluntary and anonymous. Should any research participant wish to withdraw from the field of study at any given time, permission shall be granted and all data thereafter destroyed. The following interview shall take approximately 20-30 minutes to answer. Should any research participant not wish to have his/her feedback audio-recorded permission shall be granted

1. What is your name?

2. How old are you?

3. What is your gender?

4. What is your current occupation/ position?

5. Does your occupation contribute to high levels of anxiety or stress within your personal life?

6. What is your understanding of spirituality?

7. Are you of the opinion that religion and spirituality are one in the same? If not, why?

8. Can spirituality help cope/ alleviate anxiety? If so how?

9. Do you/ people attend these types of facilities to help manage your stress/ anxiety?

10. How regularly do you/ people visit this centre?

11. Who utilises this facility? (Age groups, cultural groups, gender etc.)

12. Why do people utilise these facilities?

13. Would you regard this as a more religious or spiritual based facility?

14. What spiritual activities are offered here?

15. Do you think these spaces are well designed?

16. What is your understanding of sensory design?

17. Have principles of sensory design been utilized within the interior spaces?

18. In your opinion, does sensory design play a role in healing anxiety? How?

19. Are the interior spaces designed to emanate a tranquil and serene environment? How do you believe this is achieved?

20. Do people leave feeling relaxed and spiritually charged?

APPENDIX B: QUESTIONNAIRE



Masters in Architecture Research Project

Researcher: Virthi Bansi (BArch)

Email: v3bansi@yahoo.com

Cel: 082 727 9172

Supervisor: Viloshin Govender (March)

Email: govenderv3@ukzn.ac.za

Cell: 079 508 2921

Faculty: School of Built environment and development studies

Thesis topic: Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban

Research Ethics Offices: HSSREC

Telephone: +2731 260 3587

Email: HssrecHumanities@ukzn.ac.za

Participation in this research is completely voluntary and anonymous. Should any research participant wish to withdraw from the field of study at any given time, permission shall be granted and all data thereafter destroyed. The following questionnaire shall take approximately 10-15 minutes to answer all 20 questions.

Please tick where applicable.

1. What is your current age bracket?

- 20-29 30-49 50-59 60+

2. Gender?

- Female Male

3. Race?

- African Coloured Indian White

4. How often do you attend spiritual retreats?

- Weekly Monthly Annually

5. For what reason are you drawn to these facilities?

- Leisure/ relaxation Stress related Spiritual enlightenment

6. Are you of the opinion that religion and spirituality are one in the same?

- Yes No

7. Does your current occupation contribute to high levels of stress within your daily lifestyle?

- Yes No

8. Have you attended other spiritual retreats in Durban?

- Yes No

If so please provide the following names

9. How do you commute this this facility?

- Car Public transportation By foot

10. Are there parking facilities on site?

- Yes No

11. Does this facility create opportunity for interaction among attendants?

- Yes No

12. In your opinion, does spirituality help maintain and restore physical and mental wellbeing?

- Yes No

13. Have the internal and external spaces of this retreat been designed such that they create therapeutic and healing environments?

- Yes No

14. If yes, how would you rate the quality of these spaces?

- Excellent Good Satisfactory Poor Inadequate

15. Are you of the opinion that sensory design (elements which heighten bodily senses) plays a vital role towards attaining inner balance?

- Yes No

16. Do the internal spaces of this facility utilise sensory design principles?

- Yes No

17. If yes, what senses have been addressed?

- Sight Smell Sound Touch

18. Have elements of nature been incorporated into the design of this centre?

- Yes No

19. If yes, how would you rate this implementation?

- Excellent Good Satisfactory Poor Inadequate

20. Do you leave feeling relaxed and spiritually charged?

- Yes No

APPENDIX C: INFORMED CONSENT LETTER



Masters in Architecture Research Project

Researcher: Virthi Bansi (BArch)

Email: v3bansi@yahoo.com

Cel: 082 727 9172

Supervisor: Viloshin Govender (March)

Email: govenderv3@ukzn.ac.za

Cell: 079 508 2921

Faculty: School of Built environment and development studies

Thesis topic: Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban

Research Ethics Offices: HSSREC

Telephone: +2731 260 3587

Email: HssrecHumanities@ukzn.ac.za

Dear Sir/Madam

I, Virthi Bansi, am currently undertaking a research project entitled “Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban.”, at the University of kwaZulu Natal for a proposed qualification in Masters in Architecture (MArch).

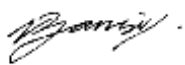
The aim of this study is to understand how spiritual architecture optimizes the healing process of anxiety through sensory design and mindfulness so that a state of inner balance can be achieved.

Subject to approval by the UKZN Ethics department, this study shall utilise questionnaires and interviews as instruments of data collection to assess information regarding this research.

This letter stands to request participation in the above-mentioned questionnaires and interviews which shall be audio-recorded and documented for research purposes. All data collected shall be kept strictly confidential and stored within my supervisor's office upon the premises of Howard Campus for a length of five years. Participation in this research is completely voluntary and anonymous. Should any research participant wish to withdraw from the field of study at any given time, permission shall be granted and all data shall be effectively destroyed.

Your service will be highly appreciated. Please contact me at v3bansi@yahoo.com to confirm that you are willing to allow access to the residents and instructors of this your facility providing they agree to part take in the intended study.

Yours sincerely



Virthi Bansi

Gate Keepers Signature

Date

APPENDIX D: CONSENT FORM



Masters in Architecture Research Project

Researcher: Virthi Bansi (BArch)

Email: v3bansi@yahoo.com

Cel: 082 727 9172

Supervisor: Viloshin Govender (March)

Email: govenderv3@ukzn.ac.za

Cell: 079 508 2921

Faculty: School of Built environment and development studies

Thesis topic: Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban

Research Ethics Offices: HSSREC

Telephone: +2731 260 3587

Email: HssrecHumanities@ukzn.ac.za

CONSENT

I, _____ (full name of participant) hereby acknowledge and understand the contents of this thesis document and the nature of the intended research carried out. I hereby consent to participating in the research project

undertaken and have my feedback audio-recorded and documented for research purposes. I understand that I am at liberty to withdraw from the above project during any time that I so desire. Should I withdraw, I understand that all data collected of my part taking shall be destroyed.

Signature of participant

Date

APPENDIX E: GATEKEEPER E-MAIL/LETTER



Masters in Architecture Research Project

Researcher: Virthi Bansi (BArch)

Email: v3bansi@yahoo.com

Cel: 082 727 9172

Supervisor: Viloshin Govender (March)

Email: govenderv3@ukzn.ac.za

Cell: 079 508 2921

Faculty: School of Built environment and development studies

Thesis topic: Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban

Research Ethics Offices: HSSREC

Telephone: +2731 260 3587

Email: HssrecHumanities@ukzn.ac.za

Dear Sir/Madam

I, Virthi Bansi, am currently undertaking a research project entitled “Exploring the role of healing spaces in the metaphysical and physical realm. Towards a Spiritual Retreat Centre for Durban.”, at the University of kwaZulu Natal for a proposed qualification in Masters in Architecture (MArch).

The aim of this study is to understand how spiritual architecture optimizes the healing process of anxiety through sensory design and mindfulness so that a state of inner balance can be achieved.

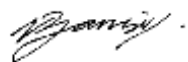
Subject to approval by the UKZN Ethics department, this study shall utilise questionnaires and interviews as instruments of data collection to assess information regarding this research.

This letter stands to request permission to be allowed access to your facility in order to perform the above-mentioned questionnaires and interviews. The following research shall be conducted in a timeous manner in accordance with scheduled meetings appointed by the gatekeeper. Arranged dates and times will be highly appreciated in which administration of these questionnaires and interviews can be conducted by the researcher of various residents and instructors of this facility.

All data collected shall be kept strictly confidential and stored within the supervisor's office upon the premises of Howard Campus for a length of five years. Participation in this research is completely voluntary and anonymous. Should any research participant wish to withdraw from the field of study at any given time, permission shall be granted and all data thereafter destroyed.

Your service will be of great value. Please contact me at v3bansi@yahoo.com to confirm that you are willing to allow access to the residents and instructors of this your facility providing they agree to part take in the intended study.

Yours sincerely



Virthi Bansi

Gate Keepers Signature

Date

PART TWO: THE DESIGN



SUSTAINABILITY AND TECHNOLOGICAL APPROACH

- Wind turbine
- Grey water recycling
- Solar Panels and green roof

We will also include the following design as per a sustainable green building which are essential elements to power the own facility. The design will also include practical architecture which can be achieved by floating concrete piles and hollowed concrete slabs to handle the water level.

SKETCH OF PUBLIC SPACE AND WALKWAY



PROBLEM STATEMENT

Over the course of 40 years, the built-up area of cities has steadily increased following the fast-growing demand for office space and modern living becoming increasingly common with people's daily lives at the expense to lose green belt. Many cities have become unlivable.

People no longer enjoy the subtle beauty of the water, or R&D areas, they are used to be rather than connecting with nature to help heal or relax. The aim of this project is to help improve this, and create an inhabitable setting for future generations by using modern, green building design to create a new physical and playful realm.

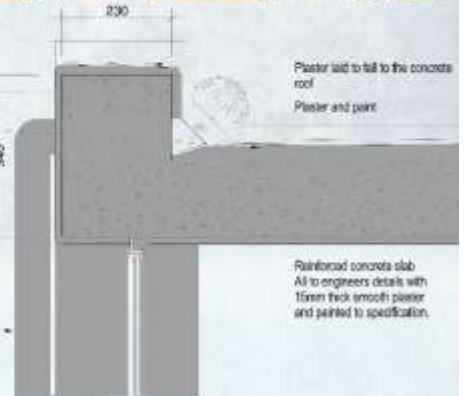
SKETCH OF AROMA ROOM



220 x 12mm Fibre cement facade boards.

ABE 'index Fide' or equal and approved for chion waterproofing on precast sand/cement screed laid to fall to 75mm 'FULLBORE' outlets on R.C. roof slab to Engineers detail. Waterproofing dressed up sides and over top of R.C. beam surround. All installed to manufacturers recommendations and specifications.

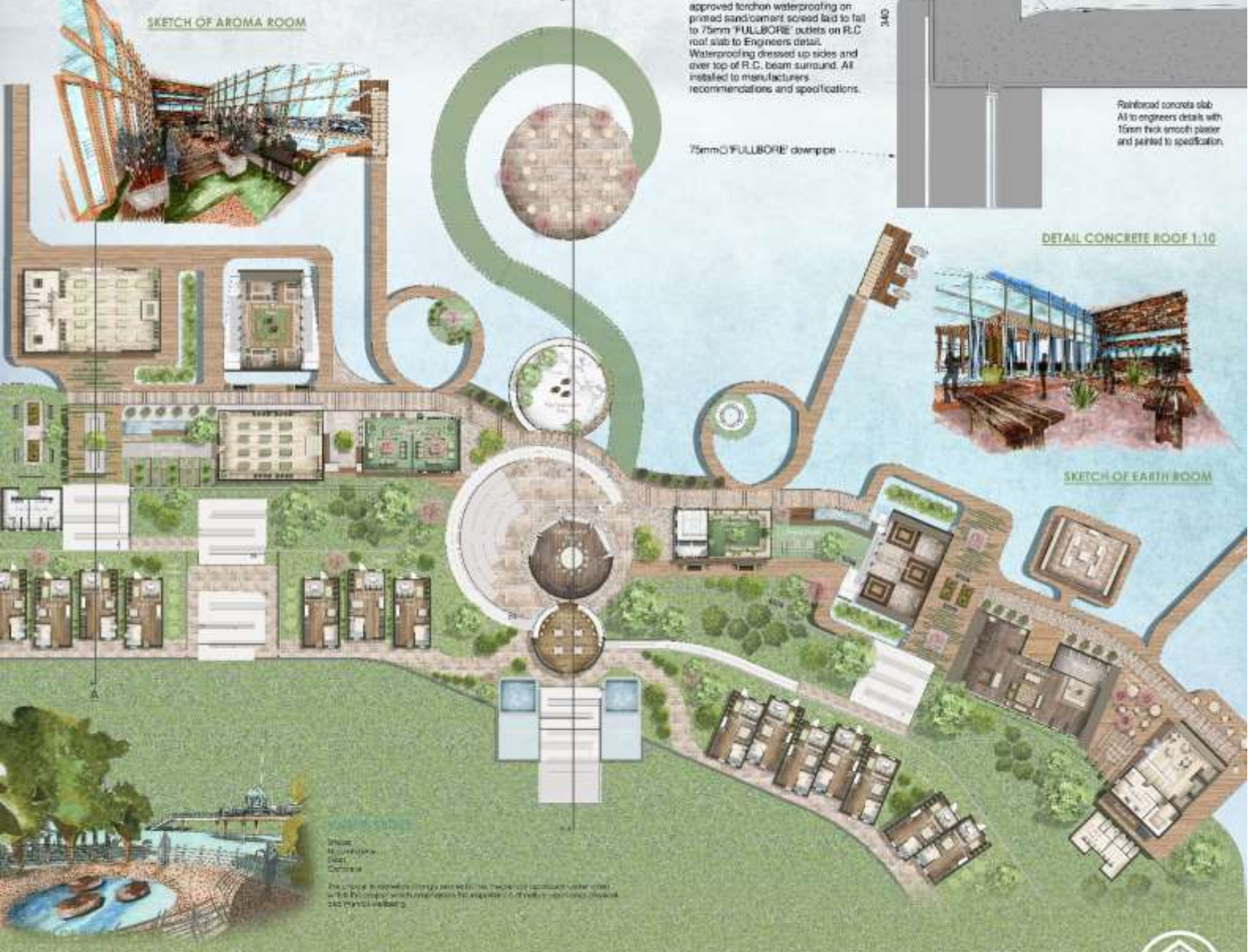
75mm Ø 'FULLBORE' downpipe



DETAIL CONCRETE ROOF 1:10



SKETCH OF EARTH ROOM



The choice of materials (strong concrete) has been used to support water level, with R.C. slabs which are designed for support of water level and also to provide a strong and durable structure.

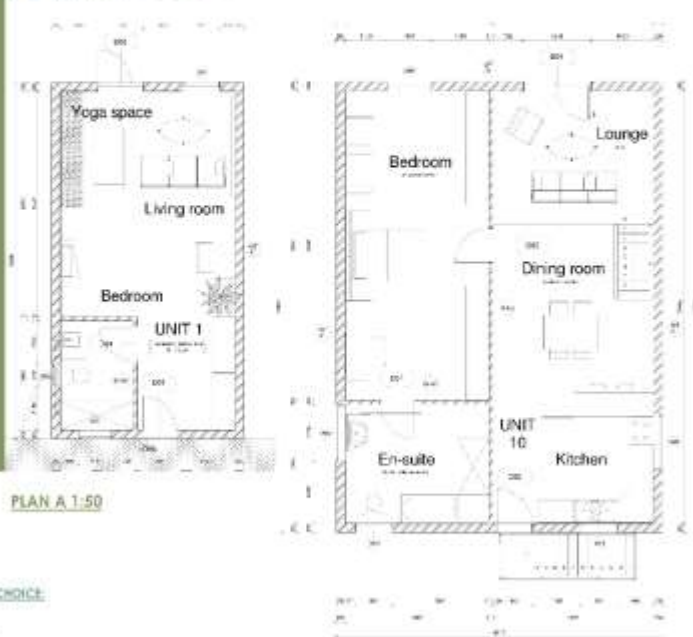


LOWER GROUND FLOOR PLAN 1:200



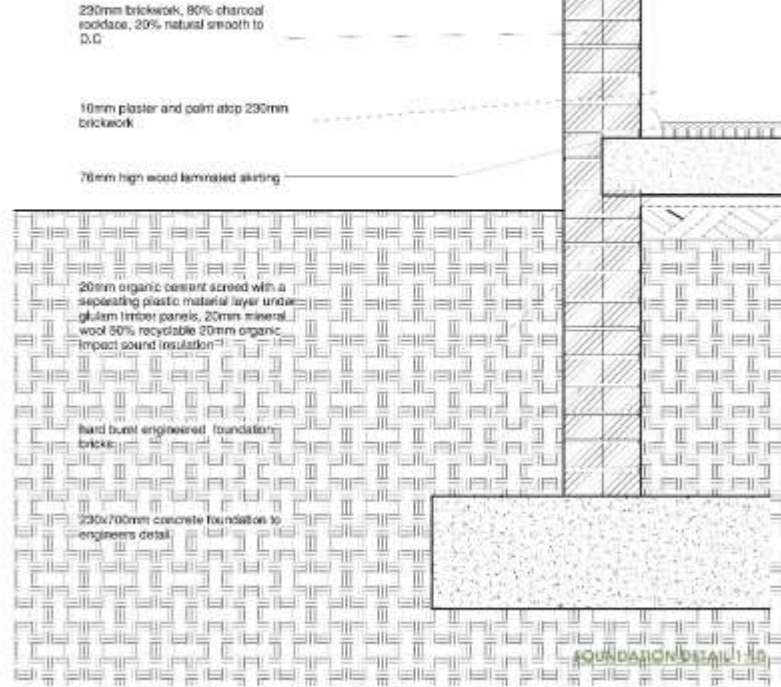


WEST ELEVATION 1:200



PLAN A 1:50

PLAN B 1:50



FOUNDATION DETAIL 1:10

230mm brickwork, 80% charcoal rockface, 20% natural smooth to D.C
10mm plaster and paint atop 230mm brickwork
76mm high wood laminated skirting

20mm organic cement screed with a separating plastic material layer under glulam timber panels, 20mm mineral wool 50% recyclable 20mm organic impact sound insulation

hard burnt engineered foundation bricks

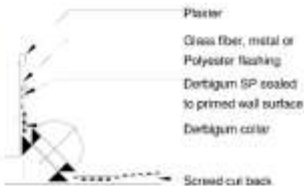
230x700mm concrete foundation to engineers detail

MATERIAL CHOICE

Timber
Rock faced stone
Glass
Concrete
The choice in materials is only related to the 'material approach' under taken rather than the 'material choice' as the choice of materials used does not affect the overall building.



SECTION B-B 1:200

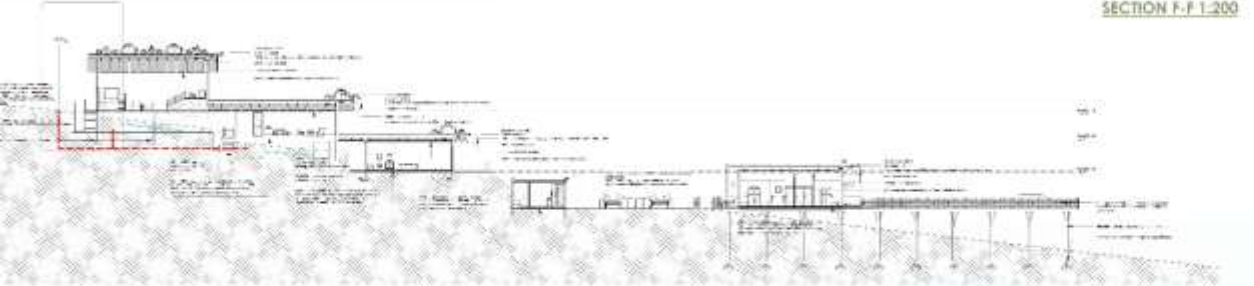


FULLBORE DETAIL 1:10

Plaster
Glass fiber, metal or Polyester flashing
Dettajum SP coated to primed wall surface
Dettajum color
Screed cut back
Considering the often short and intermittent use of sites, the expansion joint condition here has been resolved by a joint 20mm of the brick wall of the wall system, which will reduce thermal expansion. As for the window flashing, the brick will be flashing with a depth, synthetic resin with mineral wool material ground structure as the window frame surface with the choice. Other type of flash joint on the back of panel, if it affected in preventing the, absorbing it and, and building heat and moisture.

As preliminary installation, the worm on in floor heating system has been installed, by placing the worm on the side of the floor, in case of floor space will occur on the surface of the wall, which will serve as a heat barrier and be fixed with plates. Worm on that flows from outside of the room will efficiently heat the floor. Especially, the worm on will also be released through of the wall by the release preventing heat loss.

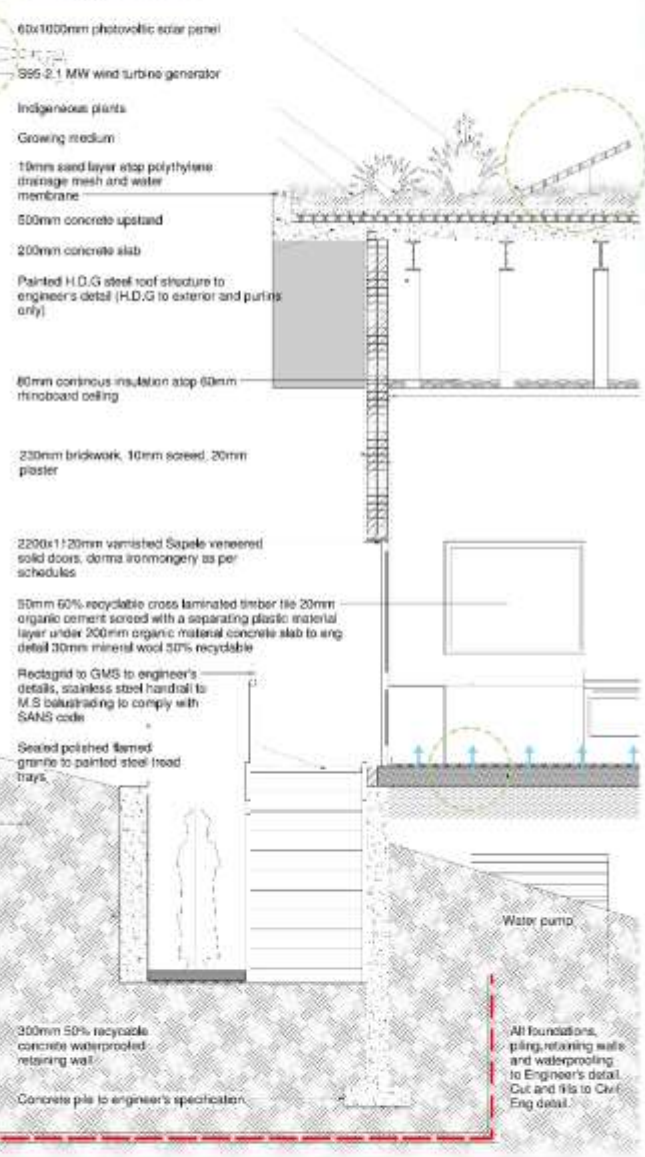
At times of absence, if the temperature drops to freezing point, an automatic system installed beneath the floor will use its software procedure. Since the system has built the preventing system, and on a result, the automatic system is not by automatically reduce an analog. The system was further controlled by adding a digitalization and earth wire line, which can be automatically operated throughout the year, the efficiency of the system is fully verifiable.



SECTION F-F 1:200

0 CARBON/OFF THE GRID STRATEGIES

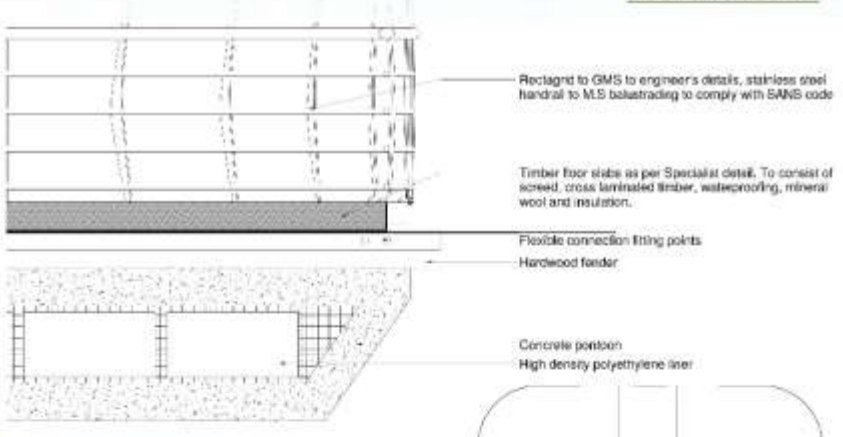
STRIP SECTION D-D 1:20



60x1000mm photovoltaic solar panel
966 2.1 MW wind turbine generator
Indigenous plants
Growing medium
10mm sand layer atop polyethylene drainage mesh and water membrane
500mm concrete upstand
200mm concrete slab
Painted H.D.G steel roof structure to engineer's detail (H.D.G to exterior and purlins only)
60mm continuous insulation atop 60mm rino-board ceiling
230mm brickwork, 10mm screed, 20mm plaster
2200x1120mm varnished Sapelle veneered solid doors, drama ironmongery as per schedules
50mm 60% recyclable cross laminated timber tie 20mm organic cement screed with a separating plastic material layer under 200mm organic mineral concrete slab to eng detail 30mm mineral wool 50% recyclable
Rectagrid to GMS to engineer's details, stainless steel handrail to M.S balustrading to comply with SANS code
Sealed polished flamed granite to painted steel head trays
Water pump
300mm 50% recyclable concrete waterproofed retaining wall
Concrete pile to engineer's specification
All foundations, piling, retaining walls and waterproofing to Engineer's detail. Cut and fills to Civil Eng detail.



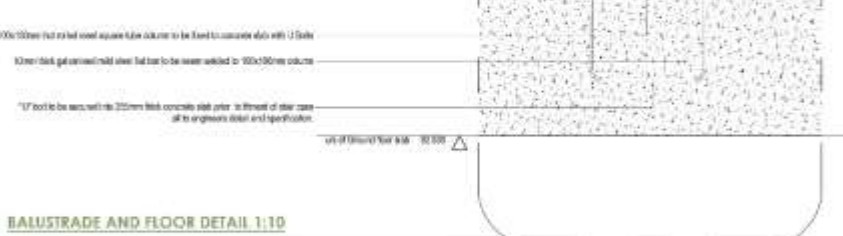
SKETCH OF PUBLIC SPACE



CONCRETE PONTON DETAIL 1:10

Rectagrid to GMS to engineer's details, stainless steel handrail to M.S balustrading to comply with SANS code
Timber floor slabs as per Specialist detail. To consist of screed, cross laminated timber, waterproofing, mineral wool and insulation.
Flexible connection fitting points
Hardwood fender
Concrete ponton
High density polyethylene liner

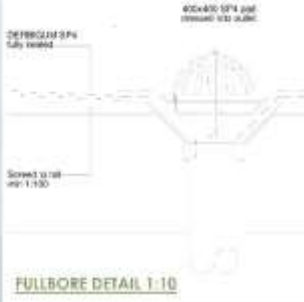
BALUSTRADE AND FLOOR DETAIL 1:10



100x100mm hot rolled steel square tube column to be fixed to concrete slab with U bolts
10mm thick galvanized mild steel flat bar to be secured with 100x100mm column
U bolt to be secured with 20mm thick concrete slab prior to finish of the concrete to engineer's detail and specification
to Ground floor slab 01.000
to 1st floor floor slab 01.000



EAST ELEVATION 1:200



FULLBORE DETAIL 1:10

200x200x100 S275 fully welded
60x40 S275 fully welded
Screed to 100mm 1:100