AN ARCHITECTURAL PLAN FOR PREVENTATIVE CARE OF THE AGED:

Addressing the need for a holistic centre for the aged, merging rehabilitation and well-being, in South Africa

Anthony Robert Haynes

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Anthony Robert Haynes

A Dissertation submitted to the School of Architecture, Planning and Housing, University of KwaZulu-Natal, Durban, South Africa, in partial fulfilment of a Masters in Architecture.

January 2010

DECLARATION

I hereby declare that this dissertation is my own unaided work, except where otherwise acknowledged. It is being submitted to the University of KwaZulu-Natal, School of Architecture, Planning and Housing in fulfilment of the requirements for the Masters in Architecture. It has not been submitted before for any degree or examination at any other university.

Signed: _____

Anthony Robert Haynes

June 2010

DEDICATION

To my grandfather Tony Folker who from 1980 to 1984 was the acting chairperson to The South African Council for the Aged, and who's tireless efforts helped change the face of aged care for all in South Africa despite resistance from the apartheid government.

He was born in 1916 and died in 2008 at the age of 92. You lived well and were loved by all who knew you.

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ABSTRACT

The purpose of this research document is to understand the social issues that are generated from a globally ageing demographic, which relate to the aged identity and the current care environments available to them. Research will be conducted under the hypothesis that the design of a strategically sited care facility which, grouped with facilities that pertain to the care of the aged, could improve the quality of life for the elderly whilst promoting intergenerational connectivity. It is also hoped that ageist stereotypes could be abridged by lowering the dependency of the elderly on care providers by providing preventative and post operative rehabilitative care.

The scope of the work is limited to the urban context of South Africa's ageing population primarily based on the current trend of mass urbanisation, after the abolition of the Apartheid government, which is creating a new family dynamic within South Africa where the care of the elderly is shifting onto medical institutions and care facilities. The demand for aged care facilities and the lack of resources in the field of aged care potentially create a situation where medical facilities are unnecessarily overburdened.

An architectural response was generated through an investigation of current literature, case studies, precedent studies and personally conducted interviews with a number of aged care professionals. The research was conducted from a global standpoint and then focused towards issues that affect the aged individuals identity and care.

The goal of this research was ultimately to inform the design of a care facility within Pietermaritzburg that is responsive to the needs of the elderly whilst being innovative towards its approach of aged care within a community.

ACKNOWLEDGEMENTS

Firstly, I would like to thank my whole family for supporting me through my endeavour to one day become an architect. To my father whose efforts towards furthering my education have been nothing short of a tireless exercise in patience and tolerance. To my mother who is a repressed architectural critic at heart, who'll stay up late at night trying to either help or distract me just before a hand-in. And to my brother and sister who I love for believing I could achieve anything.

Secondly, to my friends who have understood why, during the course of our friendship, I've had to disappear for days, or weeks before emerging once again from my desk with black rings under my eyes and ink under my nails. Surprisingly, you'd still consent to going out with me in public. You've always kept me laughing even if that laughter was directed at myself and for that I thank you.

I would like to thank the following people for the part that they had in contributing towards the compilation of this research document:-

My supervisor, Mahinda Githitu and the rest of the staff from the Faculty of Architecture at the University of KwaZulu Natal for the effort you have put into my education over the years.

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Anthony Robert Haynes

INTRODUCTION

While the process of ageing and its related diseases have been well documented by people as far back in time as Hippocrates and Leonard da Vinci, there was little development in the way society cared for its elderly population until the outbreak of the Second World War. The British Ministry of Health commissioned an inquiry into the standard of care for the elderly and discovered a general 'air of apathy' towards their standard of living. (Bennett *et al.* 1992:59) As a result of this survey, Doctors Marjory Warren and Trevor Howell established a new continuum of care for the elderly and chronically sick by instilling that every patient had to have a full examination before undergoing any form of rehabilitation. Trevor Howell went on to research the normal processes or stages of ageing which marked the beginning of Gerontology, the scientific study of ageing (Bennett *et al.* 1992:59).

Today the international challenges of aged care are still linked to the Second World War due to the baby boom that occurred during the post war years, from 1946 to about 1964 (U.S. Census Bureau, 2009). Gerald Bennett comments on the changing demographics of the aged population within the last century as a result of two major forces; "reductions in fertility, and declines in infant mortality (not from better health care, but from socio-economic development). He goes on to state that many people now live well into their 80s and even 90s (Bennett *et al.* 1992:62). Increased life expectancy of the population in first world countries and ballooning state retirement pensions have helped cultivate a perception that the elderly have become heavily dependent on others, physically and economically and thus represent a 'burden' to society.

This stigma has been challenged in some first world countries by a shift in policy and practice towards a more proactive preventive system of care for the elderly. (Tanner. 2008:57) This means that focus has shifted from merely providing an acute service for those with severe needs, to providing a universal service to a wider community of elderly, based on the promotion of well-being. In comparison to first world countries, South Africa is still treating the stages of ageing rather than preventing the illness or disability. This is evident from the type of facilities currently available such as retirement villages, hospitals, step-down or rehabilitation centers and frail care centers, all of which offer treatment rather than prevention.

This research will explore the needs of the aged by incorporating universal advancement in the care of the aged, and addressing the issues of future aged care facilities and current available care environments. This document argues for the design of an aged care facility, which groups all the necessary facilities that pertain to the care of the aged into a single unit. The goal is improvement in the quality of life for the elderly through preventative treatment and post operative step down care, whilst simultaneously redefining the aged identity within a rapidly urbanising modern society.

CHAPTER 1:

RESEARCH BACKGROUND & RESEARCH METHODOLOGY

1.1 RESEARCH BACKGROUND: INTRODUCTION

This research document will seek to uncover the issues surrounding the ageing of South Africa's population with the eventual goal of utilising this knowledge to form a platform from which to design a care environment for the elderly within Pietermaritzburg, that caters for the needs of the elderly as well as the need for an amalgamation of society in terms of race, culture and age group.

1.2 HYPOTHESIS

It is hypothesised that an appropriate architectural resolution could act as a catalyst between the varying demographics and socio-economic levels which divide South Africa's population as a result of its political history, with the emphasis on elevating the status and well-being of the elderly within society. This can only be achieved by interpreting the needs of the elderly whilst contrasting those needs against the current care facilities for the elderly. The objective is thus to design a care environment, that fosters the recovery of the elderly as well as the community within which it is sited.

1.3 RESEARCH QUESTIONS

To prove this hypothesis, the process of ageing will be examined from a global standpoint, the modern aged identity and the current care environments that are available to the aged and the issues that surround each. Under each of the aforementioned headings it is helpful to outline certain questions that need to be answered if the hypothesis is to be confirmed.

1.3.1 GLOBAL IMPLICATIONS OF AGEING DEMOGRAPHIC

What are the effects of an increasing life span on society?
What are the current global trends in terms of an ageing demographic shift, and are the effects of modernisation and urbanisation destroying the nuclear family structure that traditionally supported their elderly?
What architectural solutions have been found in both first world and third world countries with regard to their aged populations, and is either solution more relevant than the other in terms of finding an architectural solution for South Africa?

1.3.2 THE MODERN AGED IDENTITY

What are the needs of the elderly and are they being met by the current care environments available to them?
How do the elderly interpret their role in society? Can space positively or negatively affect this social connectivity?
Does the dependency on care providers and care facilities occur naturally over a standard progression of time, or are there environments and care programs that unintentionally provoke dependent behaviour amongst the elderly?

1.3.3 CURRENT CARE ENVIRONMENT ISSUES

Where are there current and future structural inequalities or pitfalls within the care environment?

Should South Africa maintain an ethos of treatment rather than prevention with regards to the care of the aged and what are the repercussions of either solution?
What shifts in social policy or care programs need to occur before there is an improvement in service delivery?
Are there any criteria which could guide the future development of care environments that acknowledge the importance of the both physical and mental sustainability amongst the aged community?
Can a preventative care facility be used tp blur the boundaries between generations of a community?

1.4 RESEARCH SCOPE AND DELINEATION

Now that the research questions have been delineated, it is important to outline the limits of this research. The scope of this document is limited to trying to find a solution to the problem of urban aged care. There are a large number of issues that relate to rural care of the aged which are discussed, but these issues are only used to highlight social stereotypes towards the elderly. The urban model is chosen over the rural model because of the current wave of urbanisation occurring in all of South Africa's cities as a result of the removal of the Apartheid government and its policies of forced racial segregation since 1994. The research is also restricted to finding an architectural solution for a largely social problem and therefore makes no attempt at transforming

social policy but instead makes assumptions as to the appropriate design of a care environment for the elderly only.

1.5 RESEARCH METHODOLOGY: INTRODUCTION

All research conducted was done with the aim of creating a well informed design of a care environment for the aged. This research into current and future trends in aged care facilities will act as a design catalyst for a critical regionalist approach within South Africa. However, to gain an understanding of the design problems and potential solutions, the scope of research was widened to include international examples of buildings that were seen to fulfil the role as both care provider and social integrator. The research will be divided into two categories, primary and secondary research and both will contribute towards the framework within which the building will be designed.

1.5.1 PRIMARY RESEARCH

Primary research refers to any information that is gleaned first hand from a reputable source, either in the form of interviews or case studies. Interviews are an excellent means of gathering data which relates to the way in which people use or perceive their environment. Interviews also provide accurate insight into the positives and negatives of current care facilities which helps when establishing the best course of action for future developments. The people interviewed for this research document were staff of aged care facilities, the patrons themselves and the architects who designed the buildings selected for the case studies.

The case studies were chosen based on their architectural merit and their response to the existing problems with aged care within South Africa. It is important to note that certain criteria needed to be met for a building to qualify as a case study. The criteria that formed the framework of their selection were as follows:

- The buildings selected for critical analysis had to be found within South Africa so that the information learned from each would be relevant towards the design of a regionally responsive care facility within Pietermaritzburg.
- Where possible, the case studies were conducted on buildings within KwaZulu-Natal so that the climactic and socio-economic context of the chosen building would relate to the site chosen within Pietermaritzburg.
- Lastly the function of the selected case studies had to be similar to that of the proposed design. It was also seen as beneficial if the case studies responded in some way to the needs of the elderly and the care providers while trying to

foster some form of social connection between the building and its functionality within the context of a community.

1.5.2 SECONDARY RESEARCH

A major percentage of the research document is based on findings extrapolated from an extensive investigation into secondary research which consists of locally and internationally published works. Questions and issues raised that pertain to the hypothesis were solved or discussed further through the analysis and interpretation of information found in books, journals, photographs and internet sources which comprised of a literature review, theoretical framework and precedent studies. The precedent studies were conducted on buildings from around the world to critically analyse their architectural merit, and appropriateness as a care facility for the aged. These examples did not necessarily have to relate to the South African context, climate or building typology. Instead the relevance of these designs is based on specific points of interest that relate to the building's functionality or design such as innovative tectonic, sustainable or critically regionalist approaches. The buildings selected for critical analysis are:

1. *Onni Wellness Centre for the Aged: Pukkila, Finland*
   (L&M Sievanen Architects)

2. *Maggie Centre: London, United Kingdom*
   (Rogers Stirk Harbour & Partners)

3. *REHAB Basel Centre for Spinal Cord & Brain Injuries*
   Basel, Switzerland
   (Herzog & de Meuron)

4. *The Center for Discovery: Sullivan County, USA*
   (g5 Architects)

1.6 CONCLUSION

The literature review aims to inform the rest of the research document by providing insight into the issues surrounding modern day ageing. From this contextual milieu, conclusions will be made that guide the choices made in terms of architectural theories, precedents and case studies which relate to the eventual design of a care facility for

the aged within Pietermaritzburg. Both case and precedent studies will be used to highlight innovative design ideas in the field of aged care, as well as the failures experienced by existing care facilities. This will ensure that the design of a care facility is an informed approach to aged care, whilst catering for the varying stages of aging and the special needs that accompany each stage of the aging process.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION TO THE ISSUES SURROUNDING GLOBAL AGEING

> *"It is often said that the value and meaning of a civilisation can be documented in the record it leaves in the form of architecture, and that the true measure of the compassion and civility of a society lies in how well it treats its frail older people."*
> *(Regnie, 1994 cited in Perkins et al 2004:3)*

In 1950 the maximum percentage of elderly (over the age of 65) in any nation was 11%. In 2000 the highest percentage was 18% and it is expected that by 2050 this figure could grow to as much as 38% (Rowland, D. cited in Uhlenberg, 2009:37). Figures like these show that the impact of global population ageing could raise long term issues for the late 21st Century unless action is taken now to improve the socio-economic and social care services related to the elderly.

The scientific study of ageing and the problems associated with ageing people and populations is called the study of gerontology. Gerontologists use a number of analytical methods to illustrate the ageing population trends and resultant consequences on the global population related to age discrepancies within a country. One of these tools is called the population pyramid and is a horizontal bar graph that visually illustrates the distribution of various age groups within a population according to gender ratio. A large amount of information can be gleaned from the population pyramid with regards to dependency ratios, mortality rates, birth rates and gender specific differences between age groups. Predictions can be made as to the size of the elderly population according to any bulges in the pyramid often referred to as the "pig in the python" (Morgan, 1998:73) phenomenon as can be seen in the population pyramid that shows the ageing of the baby boom generation who were born after World War II. The population pyramid for each country across the globe shows one biological phenomenon of ageing - women live longer than men. In fact statistically women live between five to ten years longer than men. This is because men are genetically more susceptible to illnesses such as cardiovascular disease which can be brought on by stress or a high level of iron in their system. Iron plays a very important part in the reactions in our cells that produce damaging free radicals, which glom onto cell

membranes and DNA, and may translate into aging the cells. (Laura Blue, 2008) Therefore, this gender discrepancy amongst those aged over 65 needs to be considered when it comes to the design of an aged facility, in order to determine the appropriate schedule of accommodation for male and female users.

For many countries such as India, any increase in life expectancy is seen as a sign of civility and progress. However in industrialised countries, increased life expectancy can become a problem if there aren't enough young workers to replenish the workforce. In this case the result would be an inverted population pyramid which has both social and economic repercussions. This anomaly in the population pyramid has been attributed to a drop in fertility levels of women worldwide over the last 50 years, along with the current trend for women of childbearing age to postpone starting a family until later in life. There has also been a reduction in the number of children being born per reproductive woman. This is most likely due to the financial burden of raising children especially within developing countries where resources are low and mass urbanisation is taking place (Harper, 2006:205).

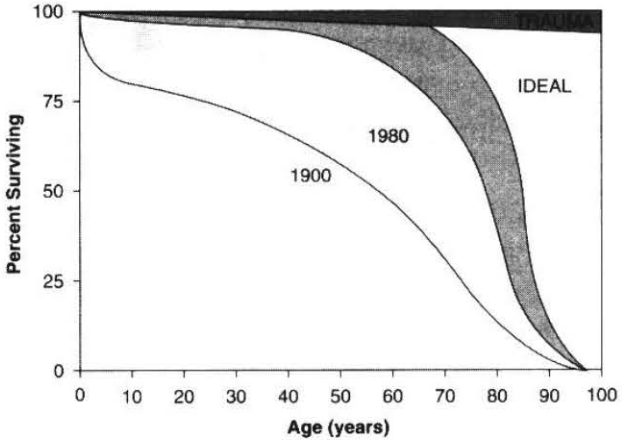
In 2002, Mohammad Nizamuddin, the director of the United Nations Population Fund for Asia and the Pacific stated that, "In Europe, countries became rich before they became old but in the developing world, countries are growing older before they are rich." This statement highlights one of the major differences between first world and third world aged care today. First world countries had ± 150 years to prepare for the maturing of the population, in terms of improved social policy, pension funds and care environments for the elderly. Countries such as Asia will make the same progression towards an elderly society within the next 25 years. Third world countries are still dealing with issues such as poverty, famine, poor sanitation, acute infectious diseases and high levels of infant mortality which take priority over long-term care and economic security for the elderly (Harper, 2006:205).

Surprisingly both first and third world countries have socio-economic issues that are directly related to their ageing populations but each varies from the other. First world countries tend to have a large ageing population which is not being replenished by younger generations due to their falling fertility rates, the implications of which place added strain on their pensions schemes. This is because most pension schemes in Europe are based on a "pay as you go" (Haas, 2008) system which relies on the money received from its current active workers to pay the pensions of the elderly. In first world countries the proportion of the population aged over 65 years is 13% whereas for less developed countries this percentage is much lower at 5% (Letzig,

1983). One might think that first world countries have the majority of the elderly living within their borders but this is not the case because third world countries have a larger population base. Therefore this 5% equates to about 60% of the world's total aged population (Letzig, 1983). Furthermore of this 60%, 40% are living within urban areas owing to the effects of mass urbanisation over the past few decades.

The effects of urbanisation and modernisation in South Africa have been compounded by the exit of the apartheid government in 1994. Prior to 1994, the movement of black people was restricted to 'homelands'. Within these homelands, the family was seen as the usual means of support for the elderly but once the movement restrictions were removed in 1994, mass urbanisation of workers took place, which meant that the family structures that once supported the elderly were no longer available. The status of the elderly has rapidly been eroded by social advancement in the form of urbanisation, industrialisation, technological advances and population growth because the elderly are no longer seen as society's source of knowledge and wisdom (Morgan, 1998:87).

Modernisation has skewed social perception to the point that the elderly are viewed as a homogenous group who are no longer able to contribute to their families or society and are therefore seen as a burden to all. It is true that, on average, elderly people require or consume more medical resources than working age adults, and on an annual basis are admitted to hospital up to five times more often than younger people (Haas, 2008). Lloyd Sherlock believed that if it were possible for governments to shift resources away from acute care to long term or preventative care, the elderly would be able to sustain a better quality of life and prevent the onset of disease and dependency brought on by premature institutionalization (Cited in Harper, S 2006:221). Research has proven that with better health care, the elderly would be able to remain productive and independent for much longer through better nutrition, sanitation, education, fitness and attenuation of disease causing habits such as smoking and drinking alcohol (Engardio, 2005).



III.2. 1 This illustration shows the compression of morbidity and mortality which means people are living longer lives, free of illness or disability until much later in their lives and for a much shorter periods before they die. This is due to improved standards of living and available medical treatments.

The process of ageing is the accumulation of faults throughout one's life but especially toward the end one's life course when the susceptibility of contracting age associated diseases or disability is greatest (Bond et al., 2007:30). Therefore any early changes to lifestyle for the better translate into a better quality of life during old age. One theory on healthy ageing which supports this argument is known as the "compression of morbidity and mortality" (Fries cited in Bond et al, 2007:33). It used the advancements in medicine during the 1980's as a basis for theoretically compressing or reducing the amount of time the elderly spent either in a state of illness or disabled during their remaining years (Bond et al., 2007:33). This theory is however floored because at the time it was assumed that there was a fixed maximum human life span and that disease could be postponed further within this fixed lifespan (Bond et al., 2007:33). This theory does highlight one fear about an extended life expectancy due to medical advances. The fear is that an increase in life expectancy will come hand-in-hand with an increase in the number of years spent with either illness or disability. It could also increase the number of years the elderly spend within a hospital, institution, frail care environment or at home with their children as dependents. (Dependants refer to people either under the age of 15 and are too young to work, or over the age of 65 who are retired and need some form of social care.)

The dependency ratio of a country has a huge impact on economic growth because a drop of 1% in the dependency rate equates to an increase of between 0.5 and 0.7% in the country's economic growth (Loewe, 2007). The issue of aged dependency is currently being compounded by factors such as forced early retirement, rising health-care costs, inadequate personal savings and the declining support given by families to their elderly (http://www.csis.org/program/global-ageing-initiative). Some of these burdens could be negated through efficient social policy which would allow the elderly to remain within the workforce for as long as possible. This would increase the number of potential taxpaying citizens whose contributions could be fed back into social insurance schemes, as well as healthcare and education systems (Loewe, 2007).

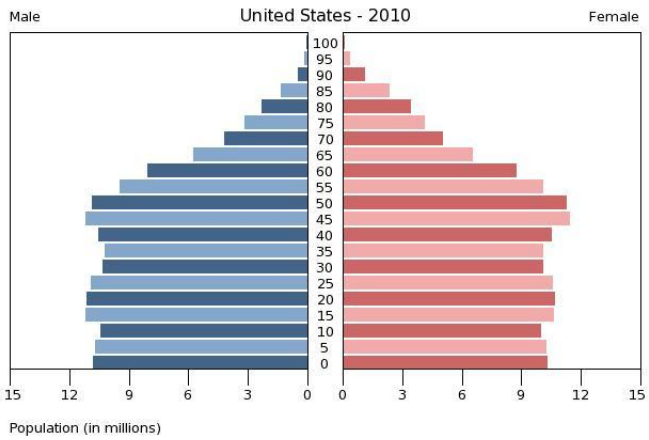
A countries economy or GDP can also be negatively affected by a drop in entrepreneurship or financial risk-taking, which occurs when a population ages and shifts its focus from investing to saving (http://www.csis.org/program/global-ageing-initiative). A rise in the number of elderly voters also means that they potentially control any future political policy and can therefore shift the public spending of a county. Therefore in European countries where the age pyramid is being inverted, added financial pressure is being placed on the working proportion of the population to

provide financial support for "pay as you go" pension schemes, with slowing economic growth which, if not addressed by effective public policy reforms, could turn into a pension time bomb (Haas, 2008).

A process of social, political and economic reform towards the care of the elderly needs to take place in order to prevent the exacerbation of current pension schemes and existing governmental healthcare facilities. However, it would be unrealistic to expect a sole solution to exist that could be implemented. One solution cannot be transplanted and implemented worldwide successfully; each country needs to establish its own independent solution for their ageing population according to their population size, demographic trends, public policy and financial backing. In order to find a solution for South Africa, an understanding of other countries approaches to the global problem of an ageing population needs to be examined and relevant or potentially transposable solutions need to be gleaned from it. The countries chosen for this analysis are the USA, UK, Japan and lastly South Africa itself. Historical and current care for the elderly in these countries will be discussed to establish any differences or shortfalls.

2.1.1 UNITED STATES OF AMERICA





III.2. 2 Current population pyramid for the U.S which shows a large percentage of the population aged 45 to 55. This bulge is the result of the 'baby boom' generation which came about post World War II.

As a global super power the U.S.A is one of the wealthiest countries in terms of natural resources, technical, medical and scientific research and per capita has one of the largest gross national product rates in the world (Palmore, 1980:434). In terms of its population, the U.S. has one of the largest heterogeneous aged populations in the world due to the large number of immigrants that settle there each year. It also spends more per capita on its elderly population than any other country (Palmore, 1980:434).

Despite the attention given to the elderly within the U.S., the status and quality of life of its elderly is not drastically better when compared with other countries. For instance, the life expectancy of all males born in the U.S. during 1970 was lower than that of 25 other countries while of those aged 65 and older, 15% were considered to be living under the official poverty levels in 1980 (Palmore, 1980:434). This poor performance could be as a result of the country's greatest feature, its large multi-cultural population. The race, religion, culture, socio-economic status and geographical location of the U.S. population may have contributed towards the difficulties experienced with the provision of an adequate program or care service for its elderly. This shows that, although everyone ages, there are complex underlying variables to the ageing process that need to be taken into consideration when trying to delineate a solution to an ageing population in a multicultural society. This also shows that the resources a country has at its disposal don't necessarily lead to adequate care for its elderly.

This isn't to say that America hasn't made advances in the field of gerontology and social care for the elderly, because they have; but abnormal circumstances in the form of a maturing baby boom generation has probably caused the ballooning ageing issues. Surprisingly the status of the baby boom generation elderly is changing for the

better in the U.S. because they have been recognised as a demographic that controls a large percentage of public policy as well as a large percentage of the country's wealth (Palmore, 1980:435).

Some of the major services available for the elderly in the U.S. are;

- Meal services: Meals are provided to those elderly who have difficulty with mobility and for whom there are no means of transport to a central dining location where meals are provided. Those that can travel to the dining locations also receive fringe benefits such as socialisation and exposure to other programs for the elderly (Palmore, 1980:441).
- Day care/geriatric day hospitals: These integrate a number of services such as a full range of medical, rehabilitative, nutritional, psychiatric and recreational services for those that need this service during the day. Their goal is to relieve some of the pressure of caring for the elderly which is experienced by the families or primary caregivers. This service helps to reduce the number of elderly that are institutionalised prematurely, through effective rehabilitation or occupational therapy (Palmore, 1980:441).
- Respite services: Respite services perform a similar service as a day care centre but their main focus is on relieving primary caregivers from their responsibilities of caring for their aged over weekends and holidays (Palmore, 1980:441). This service is offered through geriatric centres.
- Registrant services: The elderly living within a community use this service to register themselves with a geriatric centre which would allow them to access or utilise the various services that are available within the centre (Palmore, 1980:441).
- Social group activity programs: These programs take place within a number of locations and provide recreational and therapeutic activities for elderly people (Palmore, 1980:441).

These services are invaluable to those that use them, but often people can't afford to use the service that is relevant to their physical or mental disabilities. Some gerontologists in the U.S. believe that the number of elderly that are institutionalised prematurely is excessively high. It is also believed that a large proportion of the countries elderly are not institutionalised when they do need it and that better screening of patients needs to be conducted (Palmore, 1980:442). Palmore also argues that the majority of institutions are inadequately equipped or staffed to handle the needs of the elderly (1980:442). These centres also do little in terms of restorative care or

preventative care and instead treat the symptoms of accumulated frailty and disease associated with ageing.

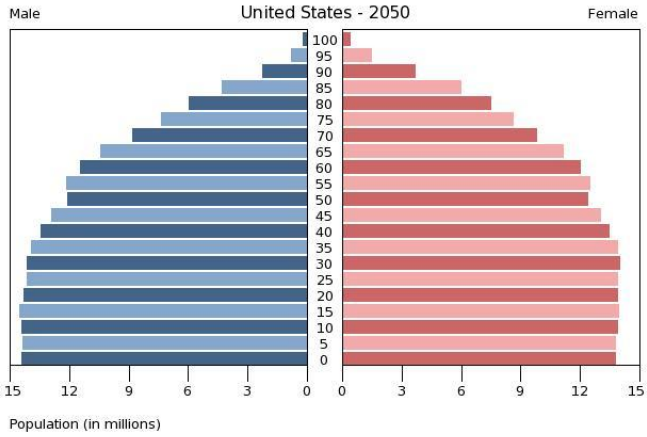
Currently the World Health Organisation (WHO) is adopting policies which support the establishment of smaller locally based healthcare services. This change in structuring of healthcare environments was brought on by the demand for convenience to the public who prefer to be treated in an environment which is close to their home rather than in a large institutionalised building such as a mega hospital. This current trend will encourage the development of new specialised healthcare facilities which are located within the community that they serve. This new model for smaller healthcare facilities within the community also mean that demand for highly expensive capital intensive hospitals will be reduced (although some hospitals will continue to be required for research and complex medical procedures). What remains is a network of smaller satellite community healthcare centres which deal primarily with sub-acute care whilst being supported by a large hospital which can handle more specialised cases which involve surgery or complicated procedures.

This new healthcare network has also been greatly influenced by the development of a green building certification system which is controlled and implemented by the Leadership in Energy and Environmental Design (LEED) organisation. The goal of this organisation is to certify that a building has been designed and built in according to green architectural principles which are intended to improve the performance of the building through passive design strategies. These include energy and water conservation and the reduction of CO^2 emissions through the appropriate selection of materials with regards to production and transportation costs not only to the client but on the environment as well.

LEED certified buildings often provide a healthier environment within which to live or work because fewer greenhouse gases and toxins are released by the building materials used. These initial considerations can translate into better health and comfort for the buildings occupants and is therefore especially pertinent to the design of a healthcare facility which is supposed to support the process of healing within its patients. The initial costs of constructing a LEED certified building maybe more expensive in comparison to regular construction methods but the effects of a healthy environment are long lasting both on the buildings occupants and to the environment and over time these initial costs can be mitigated by the lower-than-industry-standard operational costs. Some studies have shown that even a 2% increase in the initial

design and construction costs of a building in line with LEED building standards can yield up to 10 times this initial investment over the entire lifecycle of the building.

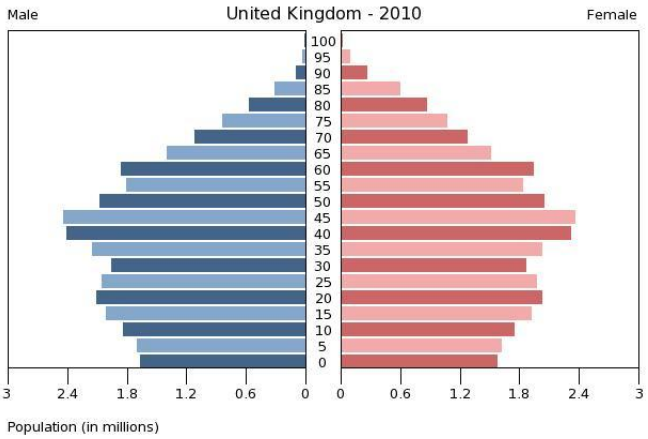
With the further ageing of the baby boom generation within the U.S., LEED certified buildings could lessen the risk of illness and disease which are attributed with materials that release toxic fumes as they degrade over time. All of a sudden, that 2% investment in the building's initial design becomes a huge financial liberator when the broader effects on the community are taken into account. If the growing aged population remain healthier for longer and thus less reliant on medical care and treatment, the financial pressure on pension funds and tax payers is lessened because fewer medical resources will be consumed by the elderly each year.



Ill.2. 3 This population pyramid is a projection of the future population size with regards to age and gender. There is a significant growth in all age groups including those aged 60 and over. Surprisingly the difference in elderly males and females is slightly less pronounced which could be determined by expected future improvements in medication for the treatment of cardiovascular disease.

2.1.2 UNITED KINGDOM





Ill.2. 4 The current UK population pyramid shows the risk that the countries age demographic could become inverted, where there is a larger aged population which is not being supplemented by the youth. This is the result of the countries dropping fertility rates over the last 50 years.

Like the U.S., the UK also has issues surrounding the maturing of the baby boom generation which materialised after the Second World War. However due to modern industrialisation of the European countries the youth are a mobile workforce. This is because movement between the European countries has become a lot easier with modern transportation and the evolution of the European Union. As a result, Britain has a fluid workforce that relies on a steady influx of educated young workers (Bytheway, 1979 cited in Palmore, 1980:418). So as long as the UK remains an attractive place for workers, the threat of an inverted age pyramid can be avoided by supplementing the workforce with immigrant labour. This workforce also helps to reduce the dependency ratio within the country which relieves some of the financial burden on the government in terms of providing pensions for their elderly.

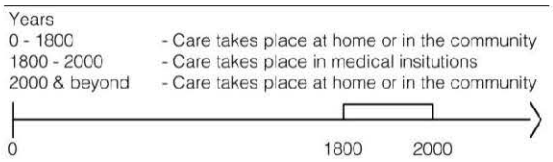
The British government became a welfare state whose chief responsibility is to provide social and economic security to its population through public policy such as - unemployment insurance, transport subsidy, old age pension schemes, housing, healthcare, domestic help and financial support of the indigent (Bytheway, 1979 cited in Palmore, 1980:420). These policies are designed to help those in need, but at the same time have contributed to the stereotyping of the countries elderly as a financial burden. This stereotyping leads to a deterioration in the identity of the elderly within the UK and fuels ageist beliefs.

The services available to the elderly in Britain are pretty much on a par with the services available in the U.S. and so only additional services have been discussed here.

- Transport: Within London, the elderly are subsidised to use the underground trains. Access to this service is difficult if they have a disability and so often the bus service or taxis are utilised instead. Outside of London, public transport relies on buses which are heavily subsidised by the local government (Bytheway, 1979 cited in Palmore, 1980:427). Expenditure cuts and general transport trends have resulted in rising fares and a less frequent service. This restricts the mobility and independence of the elderly greatly within rural areas (Bytheway, 1979 cited in Palmore, 1980:427).
- Housing: Some authorities in London have been experimenting with erecting purpose built housing for the elderly. These housing schemes may receive support from a mobile staffing unit, or if the housing scheme is linked to a day centre may make use of these facilities (Bytheway, 1979 cited in Palmore, 1980:427).
- Home from hospital: These are programs that relate to the discharge of elderly from hospital and their rehabilitation process. The care itself is offered at home if possible or within a number of care facilities within the community (Bytheway, 1979 cited in Palmore, 1980:427).

While Britain may have reduced the financial burdens of its ageing population on workers, little has been done to reintegrate the elderly within the community. This task is probably more difficult to achieve when a countries youth is a conglomeration of the youth of neighbouring European countries who have no social or historical connection with the British elderly.

Like the U.S., the UK has also transformed its approach to the provision of healthcare facilities. The emphasis has shifted away from the large scale complex hospital system towards a pattern of smaller, community-based facilities. This change was brought on by the study of holistic forms of medicine which advocates for the care of patients at home or in the community, which has not been the case for the last 200 years as seen by the timeline in Ill 2.5. In 2000 the NHS and the UK government adopted this policy of healthcare provision as well as a more patient focused approach to care. This shift in healthcare provision was also motivated by the payment of medical services through insurance policies which meant that it was convenient to the patient and cost effective for the healthcare provider to locate their facilities within, or close to residential areas (Purves, 2002:7).



Ill.2. 5 Chronology for the place of care

An essay published in 2002 by Dall'Olio's entitled the 'Origin and development of healthcare facilities' highlighted the need for change that is slowly occurring across industrialized countries to incorporate the ethos of more patient centred care facilities. He believes this is achieved by considering the patients needs as well as the effects of external forces such as environment and architectural context that could affect a patient's wellbeing. His essay concludes with the following statement:
"The 'humanization' of the hospital thus seems to be the primary objective of the research conducted in recent years, humanization that has to do with quality and even with the vivacity of interiors, finishes, materials and colours, that calls for the addition of new functions and spaces, for both patients and personnel, and for the visitors – shops, cafes, indoor gardens, meeting points, libraries and, lastly, breaking down the historic isolation of this type of structure, considers it fundamentally important to insert the hospital in the life processes of the city." (Purves, 2002:9)

One initiative set up by the NHS LIFT is the transformation of some 3000 GP premises within the inner cities and poorer boroughs of Britain by improving facilities and accessibility. This is all possible thanks to a £1 billion fund which combines both public and private money. It is envisaged that these updated facilities will incorporate other services such as retail outlets, an opticians shop, a pharmacy, or other related services. The intention is to combine primary care and social services under one roof. (Purves, 2002:52)

This statement highlights the influence the environment potentially has on a patient and reinforces the hypothesis that healing takes place not only on a physical level but on an emotional and psychological level too, and that a sterile institutional environment dehumanises the healing process. Over the past few decades architects have investigated the opportunities to incorporate artwork into the hospital environment as a therapeutic tool which has no impact on the clinical effectiveness of the space, but do however act as a mediator between the conflicting modern hospitals healing environment and the social context within which the hospital is sited. As Linda Moss sums up in her study of *Arts and Healthcare:*

"The arts are a human intervention, expressive of human emotion and response to experience. Their presence in the hospital can raise the profile of the human aspects of healthcare." (Purves, 2002:9)

When designing a medical facility however the chosen artwork should become an integral part of the design process or else it runs the risk of becoming post production ornamentation over an institutional environment. Unfortunately hospitals and other care facilities in the UK and the rest of the world have not fully accepted the theories that art and design in hospital spaces has no effect on the efficiency on the space but a large impact on the healing process of the patient (Purves, 2002:10). The institutional perception of hospitals needs to be dismantled to a point where they can be used as a cultural resource within which physical and social healing occurs.

The National Health Service (NHS) has set up the Local Improvement Finance Trust or LIFT to try and streamline the healthcare system in Britain, in accordance with the current shift towards smaller healthcare centres. They've focused on improving the speed and quality of information about each patient by investing in an IT network called NHSnet. This network is designed to help GPs diagnose, inform, prescribe for and refer patients more easily. GPs and nursing staff will be able to access up to date medical histories of patients and order tests more easily without the risk of having conflicting prescriptions or procedures (Purves, 2002:31).

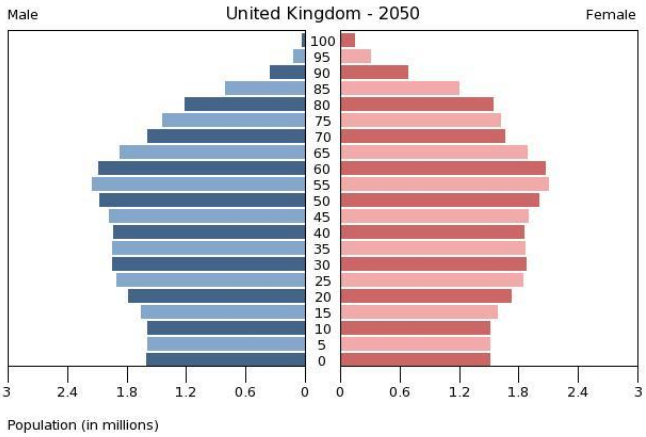
The LIFT program recognised that for the patient centred care philosophy to be developed properly, new tools and mechanisms are required. These include:

- *"getting upstream on prevention, early intervention and support for individuals for self-care and promoting well-being for the wider population;*
- *Planning how to shift care – not just shifting activity from one big building into another smaller one, but developing models of care that support people in communities and in their homes; reducing unnecessary admissions to hospitals and institutions; and getting in early to stop problems developing." (Purves, 2002:32)*

To attain these goals within a quality care environment it has been acknowledged that the funding of future care centres in Britain will need to draw on both governmental as well as private funding. Therefore research is still being conducted into ways in which different environments affect physical, mental, spiritual, social and emotional components of healing. This research is aimed at justifying the design philosophy of future care facilities that relate to therapeutic landscapes and spaces which private

companies will be happy to invest in. If successful, a large number of medical facilities will be funded by what is called a PPP or Public Private Partnership. These partnerships insure that the building is insured and maintained by the private investor, while costs of care are deferred onto the government. This means that care can be administered to the whole population regardless of a person's wealth, within a quality care environment which has some of the best equipment and staff available.

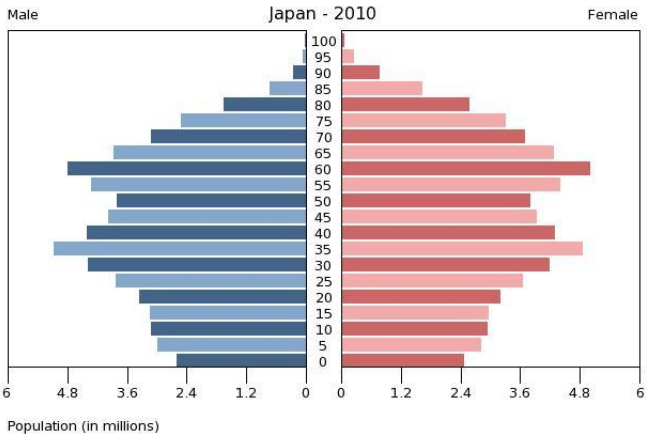
PPP initiatives have been successful in South Africa; unfortunately large public hospitals are draining financial resources which would be better appropriated towards smaller community based satellite facilities. South Africa is still dominated by large institutional mega hospitals because the focus is still on treatment rather than prevention. If this trend was reversed, the number of cases needing acute care would significantly drop. This change cannot happen overnight but it would start with the right design and development of future medical institutions that include the community, artwork, private investors and healing landscapes within their brief.



Ill.2. 6 The projected population pyramid shows that the total population size could shrink due to falling fertility rates. However the number of aged people living further into old age will increase by a noticeable margin. The birth rate is also steady at ±1.5 million which could be because the medical care available insures a low infant mortality rate and so families don't feel that they need to have more than the average number of children.

2.1.3 JAPAN





Ill.2. 7 Japan is at risk of having an inverted population pyramid because of government policy which restricted the number of babies being born into each family.

Between 1900 and 1970, Japan went through a period of unparalleled industrial growth which brought about mass urbanisation of the country's population. Historically the Japanese family structure has had the makeup of a traditional multigenerational family (Perkins et al, 2004:2), coupled with a deep respect for its aged. This industrialisation and urbanisation which took place caused a rapid social change and threatened to break the existing family support structure for the elderly. The rate at which this change came about meant that the social services needed for the well-being of the elderly were far less developed than those of the Western world (Maeda, cited in Palmore, 1980:253).

National policy of the Japanese government during the middle of the 20th century altered the age structure of the population by encouraging families to have larger numbers of children. This change in the Japanese demographic offset the gradual growth of the ageing population due to medical advancement and improved living standards. Soon after 1950, Japan faced the same global problem of a decreasing birth rate with an increase in life expectancy. These circumstances lead to Japan having the highest number of elderly in the world. As of 2004, Japan had more people over the age of 60 than under the age of 29 (Perkins et al, 2004:2).

The younger generations moved into the urban areas to find work, leaving their elderly in the rural areas where care facilities and resources were harder to access (Maeda, cited in Palmore, 1980:254). Despite this, four out of five Japanese elderly still live with their children, which is surprisingly large when compared with the statistic that one out five of USA's elderly live with their children (Maeda, cited in Palmore, 1980:257). It was believed that a housing shortage was the cause of the large proportion of elderly living

with their children. This theory was disproved by the Japanese Ministry of Health and Welfare when they established that even in areas where there was no shortage of housing, the elderly still chose to live with their children (and vice versa) (Maeda, cited in Palmore, 1980:258).

In Japan there are incentives that encourage the multigenerational family structure, such as reductions in tax for the aged person as well as their carer, but in general there also seems to be a greater respect and sense of duty towards the care of the elderly by their children (Maeda, cited in Palmore, 1980:258). This is shown by the low number of elderly that reside in some form of institution - approximately 1.4% (Maeda, cited in Palmore, 1980:264). Perhaps the financial burden of the aged in a society whose pension scheme hasn't fully matured and where the stipulated retirement age strips most aged Japanese people of any form of substantial income (excluding their meagre pension), means that families support their elderly financially. This raises the dependency ratio of each household, making having children financially impossible.

Poor pension payouts mean that 81% of the elderly population aged between 60 and 64 have a second job after retirement. The percentage that keep working over the age of 65 is the largest percentage in the world at 46.7% and of this number 40% want to keep working through to 70 (Maeda, cited in Palmore, 1980:257). Whether they wish to remain working so late into their life because of financial, social or cultural reasons is unknown, but it does highlight that the aged are willing and able to work and contribute towards society.

When asked which services the Japanese elderly would most like to see an improvement in, they answered as follows. Firstly, increases in their pension payout each month, secondly, a lowering of the age limit at which the elderly can receive free medical care (currently 70 years).

Lastly, in no specific order, job finding services, increased facilities for leisure activities, an increase in the number of home helpers, an increase in the number of homes designed to cater for the elderly and an increase in the number of beds available within the current geriatric hospitals (Maeda, cited in Palmore, 1980:263).





Ill.2. 8 One of the reasons why the Chinese elderly may live longer lives could be based on their daily routine of exercising each morning in public squares and parks. This keeps them physically active and improves their mental state by encouraging links between themselves, their peers and the broader community.

These answers show that the financial stability and medical care of the elderly after retirement are the two greatest variables that impact on whether or not they live comfortably into old age.

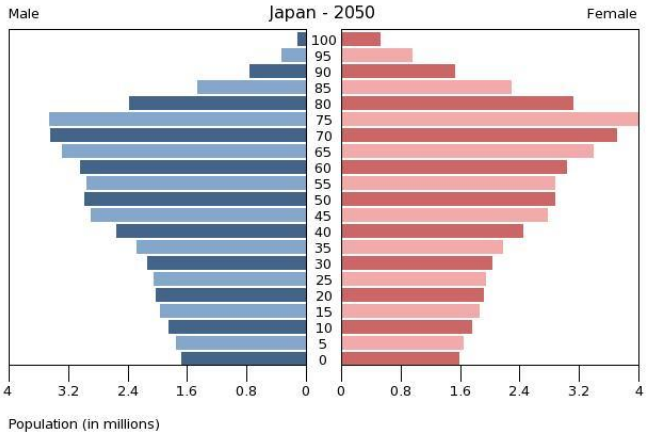
The Japanese primary healthcare system developed in a completely different direction to that of the U.S or UK. Japanese medicine was heavily influenced by Chinese medicine which was based on internal medicine. This is because Confucius was opposed to cutting the human body so surgery was never developed. During this same period in history Japanese medical knowledge was based on the ancient Shinto religion which principally worshiped nature, so the Japanese had medical gods who they believed would heal them. (Purves, 2002:19) Therefore the original Japanese medicine had strong spiritual ties which believed that healing occurred through the soul rather than just physically.

Over time Western culture began to creep into Japan which the Japanese Government feared would destroy their cultural identity. Their solution was to close their ports to the West and enter into a period of self-imposed isolation. This period of isolation came to an end with the spread of global communications. Today Western, Chinese and Japanese medicine has become increasingly inter-related. (Purves, 2002:20)

In recent years a number of initiatives and exchanges have been set up between UK and Japanese architects working in the health sector to gain a better understanding of each cultures different approach to primary healthcare. Although there hasn't been any tradition of building primary healthcare facilities in Japan, there are currently a number of smaller health facilities that have been built including community hospitals, private medical clinics and specialist healthcare projects such as sheltered premises for the elderly and small-scale private clinics for cancer patients. (Purves, 2002:20)

In the past, the Japanese healthcare system relied on natural remedies along with spiritual and physical wellbeing. Now that the country has opened up to Western culture they have started to adopt the latest trend of Western medicine to build smaller specialized care facilities. Due to their period of isolation Japan never adopted the large mega hospital as a building typology. In a sense they've managed to omit the period of architecture that defines most mega hospitals of the past, namely the international style of the 1930's onwards till just before the turn of the century and the end of post modernism. The construction of smaller community based healthcare facilities is in keeping with their ethos towards patient centred care, which will become even more important by the year 2050 where the aged population outnumber the youth

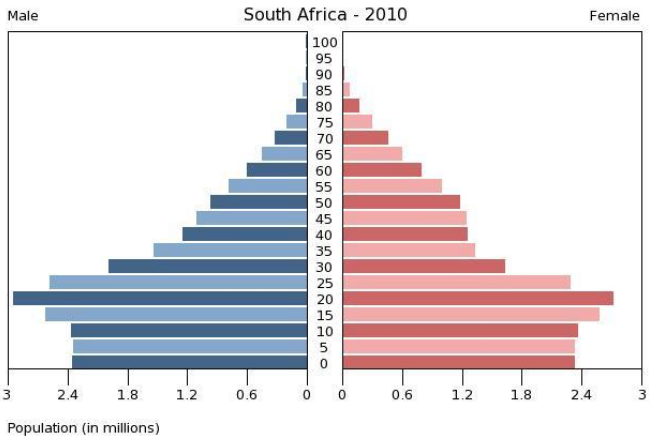
of the country. This is because smaller satellite healthcare buildings are more accessible to the elderly if placed within the community and linked to public transport nodes. In Japans case, they'll have a demand for aged care but this shouldn't prevent their healthcare facilities from being open to all age groups.



Ill.2. 9 Japans population pyramid is inverted and so should be seen as the result of a successful healthcare system which has amalgamated the best of both Eastern and Western medicine. The negative implications of this population pyramid are that the GDP of Japan could drop as fewer people make up the working class which subsidize the dependency of the elderly. The current solution is for the elderly to work well past the stipulated age for retirement.

2.1.4 SOUTH AFRICA





Ill.2. 10 The South African population pyramid is completely distended towards a larger youth. However the effects of poor nutrition, healthcare and the effects of the HIV/AIDS epidemic is causing a high mortality rate amongst the those over the age of 25.

"In Africa, it is said that when an old man dies, a library disappears. This reminds us of the vital role older persons play as intermediaries between the past, the present and the future; of the veritable lifeline they provide to society. Without the knowledge and wisdom of the old, the young would never know where they came from or where they belong. But in order for the old to have a shared language with the young, they must have the opportunity to continue learning throughout life."

(United Nations Secretary, Kofi Annan, cited in the World Assembly on Ageing II, 2002)



Ill.2. 11 The role of the elderly within South African families is currently being redefined by the effects of the HIV/AIDS epidemic. In some cases the elderly have become surrogate parents to their grandchildren or else their pension funds have become the only source of income for some families.

South Africa is a society made up of a number of cultures and races, namely, Black, White, Indian and Coloured. Each of these contributes toward a society of varying ethnic and cultural backgrounds. In most ethnically diverse countries, one social group tends to become dominant and dictate the nature and rate of modernisation within that country (Cilliers cited in Palmore, 1980:369). In South Africa's case the dominant force during the majority of the 20th century were the minority Whites through the political policies of Apartheid, which controlled the movements, integration and settlement of each race. For instance the

majority of White people lived within the cities which were modernizing in parallel with first world countries. Unfortunately this modernisation was carried out by means of exploitation of the Black population as a cheap labour force. They were forced to live in townships or homelands that were on the periphery of the cities. One result of this racial separation and economic dominance of the White population was that little to no building developments took place in rural area with the exception of social housing schemes within the homelands (Cilliers cited in Palmore, 1980:270).

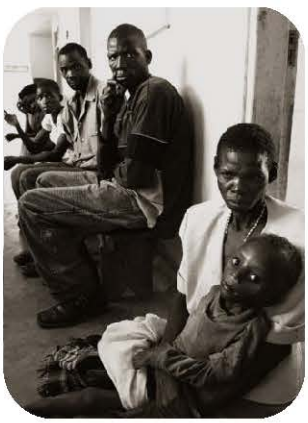
After the 1994 elections, South Africa underwent a number of social reforms along with large scale urbanisation of the previously disadvantaged and marginalised racial groups. The impact of modernisation and urbanisation on the family support structure has eroded the extended kinship system and tribal values that cemented the status of the elderly black people as vital members of family and society (Cilliers cited in Palmore, 1980:378).

Statistically the White population has the highest proportion of aged at 6.6% and a life expectancy that closely approximates that of Western countries (Cilliers cited in Palmore, 1980:372). In contrast, the black population is represented by a high birth rate combined with a high infant mortality rate. None the less the black aged population is numerically the highest. It is nearly three times higher than any other population group (Cilliers cited in Palmore, 1980:373). While there may be more Black than White elderly, there are however more White than Black elderly over the age of 80. This statistic points to the effects of a healthier lifestyle enjoyed by most Whites in their lifetime. In general, Whites had better nutrition, health facilities and medical treatment as a direct result of their financial standing, which was a by-product of the Apartheid system of government.

The demographic disparities discussed thus far have illustrated the large number of differences that existed between South Africa's racial groups over the past century. With the introduction of democracy and equal rights for all, the effects of Apartheid are slowly being undone. With the integration of Western culture and modernisation, comes



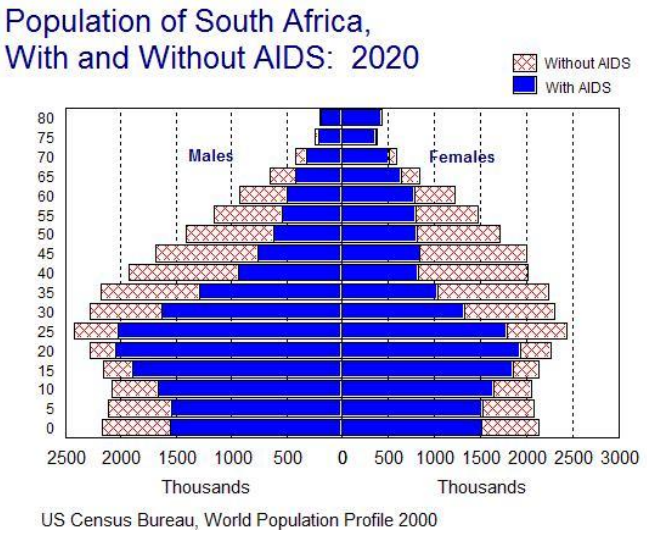
Ill.2. 12 An image of the new family structure which is emerging within South Africa.



Ill.2. 13 Medical facilities are being overrun by people suffering with AIDS or the resultant illnesses which are caused by the disease.

changes in the traditional family structure, living standards, education, nutrition and healthcare of those previously disadvantaged. It isn't unreasonable to predict that with equal opportunities and resources for all, the mortality rate of infants should be reduced and the life expectancy of the elderly black population should improve. This would create a situation similar to that of the "pig in the python" phenomenon seen in the age pyramid with the maturing of the baby boom generation from the U.S. and UK. Therefore initiatives need to be taken now to improve the quality and quantity of all care facilities and services that relate to the care of the aged.

One obstacle to the successful ageing of the Black population within this new environment of social reform is the lethal effect the HIV/AIDS epidemic is having on the middle generation. The significance of the elderly was being diminished with the transformation towards a modern society but is now being reinvented as they are increasingly becoming surrogate parents to their grandchildren (Rodriguez et al, 2002). Medical advances in the field of HIV/AIDS research have meant that a child can be born free of the disease despite their parents being infected. Therefore, the child's parents may die from the disease, leaving the child an orphan under the care of the grandparent. This situation has a negative impact on the socio-economic standing of the country and family because the dependency ratio increases sharply with the disappearance of the middle generation, and the grandparents become the de facto bread winner of the family. The needs of the elderly are therefore placed second behind the needs of the grandchildren who they now have to raise. Often the household will rely solely on the pension of the grandparent to feed, clothe and educate the child. In 2002, the state pension was approximately R540 per month which is low in itself, let alone once you include the financial burden of raising another generation (Rodriguez et al, 2002).



III.2. 14 The major underlying cause of the relatively small aged population of elderly people.

Being the breadwinner of a family again creates an environment which is stressful to the elderly and is very often a cause of depression and poor health for them during the later years of their life (Chinkanda, 1987:7). This is because they put the health and

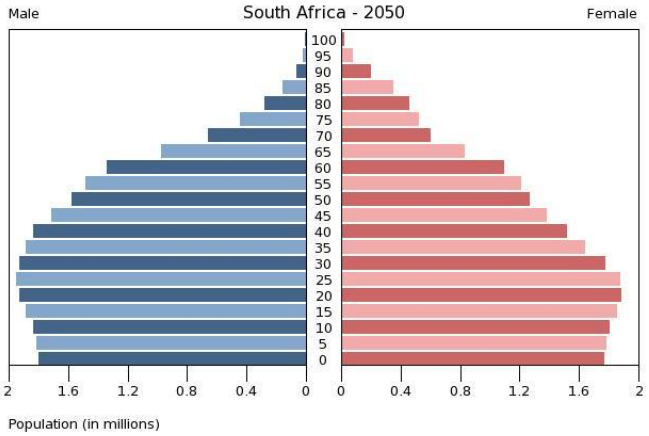
well-being of their grandchildren ahead of their own by neglecting to seek medical attention when it is needed (Rodriguez et al, 2002). There are non-profit and voluntary organisations such as TAFTA, PADCA, Algoa Bay Council for the Aged, CPOA, JAFTA, ELSCA, and HOSPICE that attempt to support and where possible alleviate some of the hardships experienced by the elderly by providing meals, clothing, accommodation as well as respite and other medical care. The "Age-in-Action" group, previously known as the South African Council of the Aged was established in 1956, and since then have been fighting for the equal rights and services for the elderly regardless of race or colour (Eckley, 2006:4).

The Age-in-Action initiative, since its inception in 1956 has managed to highlight issues with aged care in South Africa. Through long term financial support from organizations such as Shoprite Checkers, Liberty Life, BP Southern Africa, Nedcor, Standard Bank and the National Lotteries Board (just to name a few) Age-in Action has managed to achieve a number of goals (Eckley, 2006:26). They have managed to improve the care of the elderly by ensuring services are made available to all older persons, regardless of race. It is also addressing the massive discrepancy in services for the previously disadvantaged elderly with the help of government and corporate sponsors (Eckley, 2006:26). The first success was to standardise the pension amounts received each month by the elderly of differing races, as in the past there were huge discrepancies caused by discriminatory policies of the Apartheid regime. The council has also tried to develop care programs that allow for the elderly to become both recipients as well as providers for their own care. By doing so, they have encouraged the perception that older persons can play a meaningful role in modern society and that their independence and quality of life should be developed and encouraged further (Eckley, 2006:8).

In 1995 the late Mr. Steve Tshwete, Minister of Sport and Recreation, visited a number of aged facilities and clubs and was horrified that little or no effort was being made to encourage the physical activity of the elderly and that many were simply "waiting to die" (Eckley, 2006:24). As a result he established the Senior Sengala initiative as part of the South African National Games and Leisure Activities (Eckley, 2006:24). This campaign set out to promote exercise and recreational activity for the elderly. This program lasted for five years before coming to an end but in that time staff members were trained to organise fitness and exercise programs for older persons. Equipment was provided to clubs and organisations that participated in active ageing principles. This equipment was also given with the intention of making those clubs sustainable by encourageing

income generating activities such as cooking, catering, food gardens, sewing, woodwork etc (Eckley, 2006:24). Although the Senior Sengala initiative has come to an end, its principles should be implemented in any facility for older people because the effects of keeping active throughout one's life have far reaching positive consequences for the individual as well as society.

If South Africa is to have a successful ageing demographic within its recently transformed democracy there are still a number of issues to be addressed with regards to the perception of the elderly, the care of the elderly and their role in a rapidly developing urban fabric. The key obstacles to their improved quality of life are poverty and the effects of HIV/AIDS destabilisation of the family structure. There is a lack of state resources and programs designed for the elderly aimed at sustaining a good quality of life within a community. Finally, any initiative must try in some form or another to change the perceptions of the elderly as a "burden" to society and instead recognise the potential benefits of a well knitted society.



Ill.2. 15 This population pyramid suggests that by 2050 the effects of the HIV/AIDS epidemic will be under control which is shown as a significant population growth in the age groups over 25. The number of elderly has also greatly increased although the numbers are still lower than those of first world countries.

2.1.5 CONCLUSION

Regardless of any medical advancement which could potentially reduce the number of years the elderly spend living with a disability of some kind, the demand for healthcare and long term care resources for the elderly is anticipated to intensify as the demographic earthquake materialises. With better healthcare and living conditions and lifestyles the aged could remain productive members of society for a lot longer, which would ease the pressure on service providers as seen by the example of Japan. A fundamental shift in the mindset of care providers needs to occur in terms of how they care for the elderly. Instead of treating the accumulated faults that naturally occur with ageing, they should be focussing on care that prevents the onset of disability while promoting independence. The saying 'prevention is better than cure' seems pertinent to the care strategy that needs to be employed in terms of future aged care. This does not mean however that there is a perfect solution or model for aged care. Society is not static and so ageing and its care needs to be flexible to allow for this. Therefore future medical facilities need to be designed to cater for the communities within which they are placed and be flexible enough to handle the additional social services which are becoming a part of the healthcare environments in countries such as the U.S, UK and other European countries.

This chapter highlighted that every country, regardless of racial make-up or wealth, has varying issues related to their growing aged population and so a pattern of care cannot simply be adopted and implemented globally. What is significant is that the changes in the levels of hygiene, education, the improvement in people's standards of living and the effects of urbanisation all have a positive impact on life expectancy. This is particularly seen in the example of Japans ageing population. For South Africa, these global trends act as a warning to all medical facilities that the demand for their services is going to expand as the life expectancy of all South Africans is expected to grow under the constitution of the new government where all are entitled to food, shelter, education and healthcare. Solutions for the global ageing demographic can only be addressed within each country as the problems tend to be region specific, and so no one solution can be cultivated and adopted globally.

At the 43rd session of the Commission for Social Development in 2005, the European Union stated:

"The potential for older persons is a powerful basis for future development, enabling society to rely increasingly on the skills, experience and wisdom of older persons not only to take the lead in their own betterment but also to participate actively in that of society as a whole."

It is the job of the architect to create an environment that fosters recovery and preventative care along with the ideal of changing social stereotypes towards the elderly by encouraging intergenerational connectivity. Through the redefinition of the aged identity in society, most problems that surround the service and care of the elderly can be reduced or prevented and instead of being seen as a burden, the elderly could be seen as a potential source of future development. This is possible through the reinvention of our healthcare facilities as places of care rather than treatment.

2.2 DEFINING THE AGED IDENTITY



Ill.2. 16

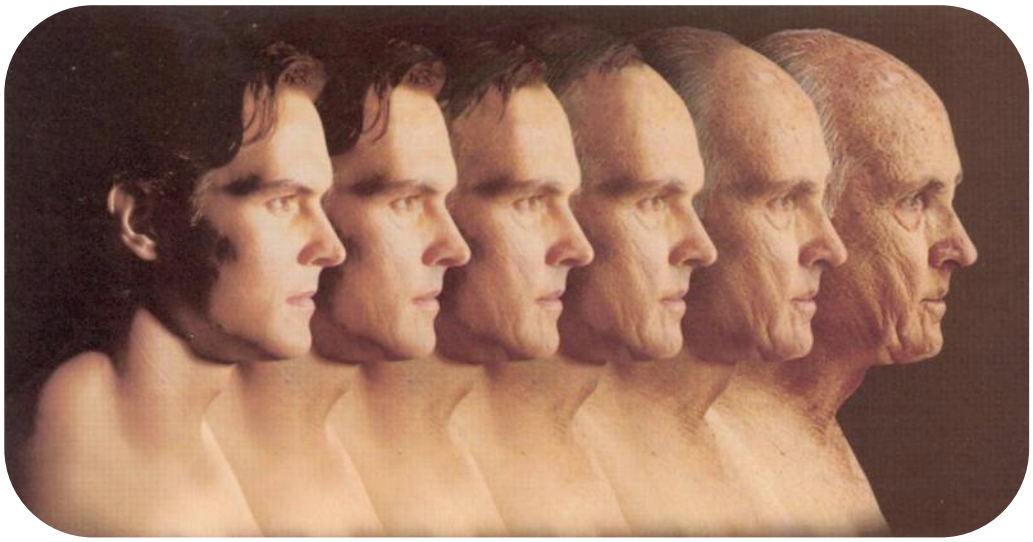
"The ageing body betrays the identity within as it does with the rest of society who gaze upon it."
(Foo,1999:4)



Ill.2. 17 The four stages of a man's life course depicted by what form of liquid he consumes.

Just as the ageing body becomes the physical representation of the accumulation of lifelong habits, lifestyle or acquired disabilities, the aged identity of an individual is the culmination of a number of lifelong experiences defined by; culture, family, religion, education, friendships and work experience up to the present. Therefore an older person's identity remains in a fluid state throughout their life and is constantly being redefined by environment and social context, creating the notion of an "ageless identity (Foo, 1999:5)." From this constructed identity the elderly priorities what services they need, demand or accept which is often in conflict with societies "socially constructed roles (Foo, 1999:1)" or views of the elderly which are based on ageist stereotypes. If this conflict of interests occurs, the older person is labelled as a problem case and this often leads to premature institutionalisation.

In 1986 Kohlis introduced the concept of a 'life course' which is divided into three distinctive periods within a person's life. The three periods were based on the activities one is supposed to engage in at each age stage of their ageing process. The first period occurs from childhood till the end of adolescence and is a time for being educated in preparation of entering the workforce. The second period is depicted by a period of sustained work which occurs throughout adulthood. The last period is characterised by leisure or the absence of work activity after one retires. This system of categorising the life course according to periods of education, work or leisure is highly structured and can have a segregating effect on society according to age and activity. Segregation occurs because the first and second periods are geared towards the young, to the exclusion of the aged (Kohlis, 1986: 271-303).



Ill.2. 18 A series of photographs showing the effects of ageing on an individual's physical appearance. Public perception of a person as being either young and vibrant or old and frail is often formed by their physical appearance.

Other gerontologists such as Setlerstein and Lovegreen have divided the life course differently to the one by Kohlis. They propose that the life course should be divided by family, education and work, the latter two periods are still structured but family is more flexible. The significance of this format is that the individual's lifecourse is simultaneously tied to these periods, and that the engagement or boundaries between them become blurred by influences such as culture or social perspectives. Both structures of the life course provide some insight into the amount of stress experienced by the elderly which is caused by inflexibility due to incompatibility between structures of family, work and education. (Setterstein et al, 1998:506-538)

Pressure from society to conform physically, mentally and socially in accordance with the concept of a structured life course can cause the elderly to disengage from society. Dowd argues his belief that all social interactions are a process of exchange. If the

older person feels that they no longer benefit from social or environmental interactions then they are likely to disengage from both, not necessarily from functional decline. He goes further to delineate the tools or "resources" the elderly draw on for these exchanges. They are; material (wealth), symbolic (physical appearance), relational (friendship). These are the same resources the young use to establish social connections or standings but the difference is that the elderly cannot always make use of their resources due to the environments within which they are placed. If the elderly are allowed more control over their resources, the result could potentially be an increase in their level of activity (Foo, 1999:2). For this reason, care environments need to be designed to enable the elderly to manipulate their resources to achieve the optimum level of connectivity and activity within society.

2.2.1 CONNECTIONS BETWEEN SPACE AND THE AGED IDENTITY



Ill.2. 19

"Identities are spatialised, in that where we are says a lot about who we are. There are pervasive links between social and spatial positions; we hold `geographically specific' stereotypes of people because there are equally powerful stereotypes of places."
(Laws, G cited in Foo,1999:5)

Glenda Laws statement highlights that stereotypes of place exist, and are attached to the identities of those that occupy that space. More importantly, the connections between space and identity can be fashioned by the forms of spatiality which can change social behaviours and age integration within that space. Equally, the identities of the occupants of a space dictate the perception of that space. The saying that "space is a social construct" which was coined in the 1970's was later amended in the 1980's through the inclusion of the phrase that "the social is also spatially constructed (Foo,1999:13)." Thereby reiterating the significant link or influence each has on the shaping of the other.

Spaces can imbue the aged body with positive meaning and when the body physically or mentally cannot navigate a space, the result can be the disempowerment of the body which no longer fulfils the 'role' that is required of that space or place (Foo, 1999:14). If the goal of the architect is to empower the aged identity within the space and in a broader sense the community, then there is a need to factor in an element of decline from the user so as not to marginalize them according to the natural effects of their ageing body. A negative side effect of this treatment of spaces according to its

targeted users could result in the space being age-graded and hence limit the development of the community in terms of potential social interactions (Foo, 1999:7).



Ill.2. 20

> *"The material spaces and places in which we live, work and engage in leisure activities are age graded and in turn, age is associated with particular spaces and places."*
>
> *(Laws,G cited in Foo, 1999:7)*

Massey argues that the spatial boundaries created by age-grading are actually more permeable than previously believed and that the linking of complementary environments that relate to all age groups could promote new attitudes towards intergenerational social engagement (Foo, 1999:7). Not only do the identities of each generation gain from the renewed social interaction but the perception of the space is positively altered, redefining the place and its character.

2.2.2 THE PITFALLS OF DIAGNOSING 'SUCCESSFUL AGEING'



Ill.2. 21 Our culture is currently being defined by the desire to remain youthful in appearance.

Social perceptions towards the natural progression of ageing led scientist of the 19th century on a quest to establish the ideal of a 'normal old age' based on the physical image and capacity of a youthful body. These criteria became the basis for the understanding of 'successful ageing'. Scientist sought to postpone the onset of ageing by finding solutions for senility, sexual impotence, and the declining productivity of the ageing human body (Foo, 1999:10). This emphasis on the physical perception of the aged body highlighted the hostility the public have towards the natural process of physical decline. Advancement in medical technology and treatment has meant that the physical signs of ageing can be temporarily postponed till later in life than previously possible. Thomas Cole, the author of *"The Journey of Life"* warns that the notion of successful ageing is fundamentally flawed because if fails to accept or accommodate the inevitable onset of decline and death (Cole, 1992:239).

The benefits of compressing the age related diseases and declines until much later in life thanks to medicine is known as the 'compression of morbidity' and while this may be beneficial to the elderly, these increases in physical and mental capacity are negated by economic forces and technological advances in the job market. This means that people can stay productive for longer but are socially excluded as the usefulness of their skills become irrelevant within a modernizing society where age discrimination

still occurs. With the increase in the number of healthy years of life comes the pressure of having to financially support one's self from the time of their enforced retirement till their eventual death. This financial pressure could reverse the effects of medically compressed morbidity unless new meaning and purpose is found for the elderly within a modernising society.

2.2.3 IDENTIFYING SPACE AS A SOCIAL DICTATOR

Different environments demand different responses from its user. For instance, an activity that takes place in an informal setting such as a public space or leisure centre will differ in response to the same activity taking place within an institutional setting such as a hospital or formal care facility. This is because in an institutional setting the ability to perform or failure to perform an activity could become an elderly patient's fulcrum between being seen as co-operative or fulfilling socially anticipated stereotypes of being difficult or anti-social. Activities are then seen as a measure or test of the older person's social capacity and failure in these activities could cause the older person to disengage from their environment and social network (Foo, 1999:14).



Ill.2. 22 Social isolation of the elderly from the rest of society can cause depression and feelings of despair. Architecture for the elderly has in the past justified this break in social networking by saying that the elderly preferred to escape from the hustle and bustle of modern day life, to a quite, calm environment where they can reflect back on their lives. This kind of environment simply encouraged the elderly to disengage from society and become more dependent on others for care.

Activities and environments designed for the elderly should try to prevent the onset of disengagement from society or carers, brought on by the aged identity subsuming ageist stereotypes according to the older person's physical capacity. Instead the space needs to empower the elderly to perform within their own capabilities with a goal of self development free from social stigma. This is possible within a less formalised environment where the care providers provide care to the elderly without creating an atmosphere of expectation for the elderly to live up to. Free from goal based expectations, the elderly are able to participate without the fear of being diagnosed according to the 19th century model for successful ageing. Unfortunately the mindsets

of most communities are still based around this ideal of superficial ageing which is only skin deep. For this reason, environments designed for the elderly within communities need to indirectly cause social integration or else the aged identity will always be linked to the fate of their physical bodies.

For space and identities of each generation to weave together, the previous discussion on the age grading of space needs to be taken into account. For instance a young person has little or no reason to be at an aged day care facility or aged institution, likewise the elderly are just as unlikely to be involved in any number of activities associated with a communities youth culture. But there are environments such as churches, malls and public spaces where the potential for accidental intergenerational interaction do occur. This opens up possibilities to try and combine informal aged care facilities with public spaces in an attempt to encourage the accidental meeting of generations. This manipulation of age graded spaces does run the risk of creating a negative view by the youth of the intergenerational woven space. Other influences need to be established to ensure that the space is continually accessed by a varying age demographic. Reasons for such continued use could be created out of necessity or convenience.

2.2.4 THE PARADIGM OF 'SCRIPTED ROLES' BASED ON ENVIRONMENT AND CARE PRACTICES

> *"For the most part, the social environment accepts dependent behaviour as appropriate and congruent with normative expectations of the ageing."*
>
> *(Baltes and Horgas cited in Foo, 1999:19)*

Aged dependency on care facilities or care givers can be linked to two behaviour types known as the model of "learned dependencies and learned helplessness (Foo, 1999:19)." The former type stipulates that people will learn to act in a certain manner or adopt a pattern of behaviour if this behaviour evokes the desired response from care providers. Therefore in care environments where dependent or antisocial behaviour elicits the immediate response of care givers, the overcompensation in care practices has the detrimental effect of encourageing dependant behaviour as discussed by Baltes and Horgas. The latter type occurs when any independent behaviour or social initiatives taken up by the elderly go unnoticed or seldom generate support from care providers. In some instances, this independent behaviour is met with disapproval and

could even be misinterpreted by carers as the elderly individual being ‘difficult’ (Foo, 1999:19).

Baltes and Horgas noticed that the pattern of response to independent and dependent behaviour amongst the elderly could be reproduced or prompted in older persons from around the world despite cultural differences. They decided to call these two behavioural responses ‘dependency-support script’ and ‘independence-ignore script’.

‘Dependency-support script’ was noted to be the most common response chosen by the elderly when placed within institutions, care facilities or other medical facilities (Baltes and Horgas cited in Foo, 1999:20). This is probably because they’re within an environment designed to treat the symptoms of ageing instead of trying to promote independent preventative care. Thus their behaviour changes to suit one that perpetuates the stereotype of the ‘dependent elderly’ which shows that they have buckled under the weight of trying to live up to the 19th century view of the successfully ageing body. This could cause the onset of depression and disengagement as the elderly lose their sense of belonging and so they behave in a way that generates a response and makes them feel significant even if it is under the guise of being ‘difficult’.



Ill.2. 23 A street sign which highlights social stereotyping of the elderly as frail.

‘Independence-ignore script’ describes the lack of support or encouragement given to those elderly that do practice self-care (Baltes and Horgas cited in Foo, 1999:20). This situation is made worse when the medical support model or care givers are given or claim credit for the elderly patient’s independence. The elderly themselves see dependent behaviour being brought on by over-protective environments and care practises, whilst their independence was a result of their own efforts.

With an understanding of the cause of either dependent or independent behaviour by the elderly within care environments, clear guidelines could be gleaned as to the environment and care practices that best cater for the needs of the elderly without being over protective. Independent behaviour should be positively reinforced and encouraged and adequate resources should be split between caregiving for dependent as well as independent elderly. In designing care environments for the elderly there needs to be an understanding that the elderly, just like the rest of society are adept at

moulding their 'resources' to ensure their sustained optimum level of comfort. P and M Baltes calls these measures of successful adaptation of resources, 'Selective Optimisation with Compensation' or (SOC) for short (Foo, 1999:21). As people age, there are normal biological losses along with intellectual and social decline which the elderly encounter but through successful implementation of strategies by the individual, these losses can be bypassed through adaptive behaviour (Foo, 1999:22).

These changes in the pattern of behaviour in the elderly, under expected decline shows how the aged identity is resilient and resourceful when it comes to controlling the services they need, demand or respond to. Because of this the design of care environments and care services needs to be flexible to allow the elderly to control both in such a way that they help compensate for the eventual decline or decay, brought on by the natural process of ageing.

2.2.5 CONCLUSION

The biggest goal of modern day society should be to differentiate between or separate the ageing body from the ageing identity. By doing this the elderly could potentially be less marginalised by society and the urban fabric could become less segregated according to age graded spaces. Plus ignoring the growing aged demographic could be financially and socially devastating to societies across the globe. With an understanding of how people's identities are formed as they age, architects can make informed design decisions. Like how best to design for the elderly in such a way that their needs are met within an environment, that doesn't isolate them from a society that at the moment is uncertain how best to cater for and incorporate the complex ageing identity within the social fabric of a modern urbanising society. If the stereotypes that are linked to the aged identity are ever to be eradicated, the environment within which the elderly are placed should be flexible enough to cater for their varying stages of decline, whether mental or physical. This flexibility should also allow the elderly to manipulate their 'resources' (wealth, health and social networks), thereby encouraging them to remain active and prevent the onset of early dependency on institutional care facilities and service providers.

2.3 CONCEPTUALISING CARE ENVIRONMENTS FOR THE ELDERLY

The global demographic shift is creating a healthcare environment which is stressed, both by the lack of resources and the resultant perpetuating cycle of acute treatment which dictates their service delivery. Like the social views towards the elderly within a community, the current medical care of the elderly needs to undergo a radical shift in mindset. The goal of hospitals and other care environments shouldn't be primarily based on the treatment of the symptoms of ageing and illness but rather, should be based on the prevention and onset of these symptoms. This shift is best explained by a statement made by the CEO and president of Crozer-Keystone, Mr John McMeekin where he said:

"I remember the Pennsylvania Railroad. They went under because they thought they were in the railroad business, instead of realising they were in the transportation business. If we only see ourselves as an industry that treats the sick and injured, healthcare is going to be a very difficult and challenging business..."

(McMeekin, J cited in Gallup, 1999:34)

This chapter aims to show the transformation of the care environment from its past to present state and concludes with a proposal for the future direction of medical care. This course of action needs to occur in order to prevent the healthcare system from collapsing in on itself, simply because it believes its job is to 'treat' rather than 'care' for the community it serves.

2.3.1 THE HISTORY OF CARE ENVIRONMENTS

The earliest recorded examples of hospitals or places of healing existed are found in the ruins of ancient Greeks halls. These halls acted as inpatient wards and were lined with beds and equipped with bathing spaces, medication outlets and treatment areas (Cestnik, 2009:15). These halls were designed in a similar fashion as the temples of the time. They were closed on three sides with the fourth facade being open to the South orientated towards the sun. This early attempt at hospital design made an attempt at maintaining the connection between the building, patient and the landscape, unlike the hospitals of today which tend to isolate the patient from the natural environment.

During the Medieval and Renaissance periods, medical care of the community fell under religious control. Medical facilities were housed within the churches and monasteries of the time, which became the communal nodes within a community

(Cestnik, 2009:15). The grounds of the church were used for farming and the raising of livestock to help sustain the finances of the church. Monks as well as patients worked on the church owned farms and this labour was considered a form of therapy for the patients. This was similar to the activities employed by occupational therapists of today.

The shift in power from the church to the state resulted in a new approach to hospital design, towards a building typology that closely resembled that of the palaces of Europe. The acceptance of an institutional care environment and the architectural driving force of a more modern building typology ultimately led to the formation of the "megahospital" which is how hospitals are designed to this day (Verderber cited in Cestnik, 2009:15). The megahospital typology basically takes the modernist approach where minimalism and high technology take preference over the natural context of the hospital site.

The 'megahospital' typology and functionality has undergone some changes through the last century, in that specialised satellite services have branched out from the totalitarian care environment of the hospital such as day care, rehabilitation, step down care, frail care and palliative care. Most of these services act in isolation and like the model of a hospital promote little to no social interaction. Most of these care centres only came about as a result of the shortage of beds within the hospital environment where there is a focus on acute care and a rapid turnover of patients. Ironically, this pressure on the hospital environment still exists but in a country such as South Africa, specialised satellite buildings for care are not a viable option financial support is limited.

As far back as the 19th century it was realized that the approach and design of healthcare facilities needed to be reformed, as noted by Thomas Edison:

"The doctor of the future will give no medicine but will interest his patients in the care of the human frame, in diet, and in the cause of prevention of disease."

(Gallup, 1999:47)

Over a century has passed since this statement was made, and only now are architects and healthcare providers re-evaluating their role and service towards the health and well-being of their communities. Hospitals can no longer be perceived as architectural monuments that are a place to go when something in one's body or mind needs fixing. The 21st century concept of wellness has initiated a change in the mindset of people and patients towards medical institutions and their role towards their health.

2.3.2 HEALTHCARE SHORTFALLS IN TERMS OF ELDERLY CARE

> *"The elderly do consume more health services than any other age group. They visit more doctors, take more drugs, spend more days in hospitals and nursing homes, and in general need more care than other people."*
>
> *(Lauerman, 1990)*

Combine this statement with the growing number of elderly in the world who expect a good quality of life and you end up with a situation where there is a need for new care facilities. These facilities shouldn't merely treat the symptoms of ageing but instead should try understanding the biological processes that occur with ageing in order to delay their onset.

If we understand ageing as a process that is affected by environmental and genetic determinants, then the best way to describe ageing is as a balance between investments made towards ones fitness and general body maintenance: if these investments in body maintenance are not conducted then ageing occurs, sometimes at an accelerated rate (Bond et al, 2007:37). Body maintenance also includes the type of diet one has been raised on because poor nutrition *"exacerbates the accumulation of cellular and molecular damage through biochemical and physiological pathways that are already understood reasonably well (Bond et al, 2007:35)."* Therefore the saying, 'you are what you eat' is partially correct because for example a child raised on diet with excessive saturated fat and sugar and who doesn't exercise regularly is more likely to suffer from diseases such as diabetes and atherosclerosis, but is also likely to age faster as a result of the molecular damage done during the early stages of the life course (Bond et al, 2007:35).

The implied theory therefore is that with a good lifestyle, a healthy environment and the continuous increase in life expectancy with no biologically determined limit to the number of years a person could potentially live, the question of successful ageing hinges on disease related morbidity (Bond et al, 2007:36). This highlights the role of the architect as designer of environments that promote health and well-being. Environmental gerontologists as well as architects like Oscar Niemeyer have commented on how both fields have often been guilty of 'de-contextualising' people from their environment. *"Environmental gerontology has focused particularly on the physical/material and special components of the context of ageing, while*

acknowledging they are close links between physical, social, psychological and cultural environments (Bond et al, 1007:210)." With regard to architectural supporting arguments, Niemeyer conceptualised the 'broken window' theory, which implies that if a neighbourhood has building with broken windows or other elements of social neglect, one automatically assumes that the neighbourhood is an unsafe environment and in fact cultivates further neglect or abuse by the residents.

If the environment can breed feelings of despondency and disconnection within a community, where buildings are dilapidated, it is hard to imagine the effect the environment has on a person with some form of disability. People with disabilities find all environments hostile towards them if their needs haven't been accounted for in the design of the environment. *"In most cases it is the constraint imposed by the environment that has created the handicapping situation (Bond et al, 2007:66)."* With ageing being defined by society as the eventual onset of faults or disability as a result of age associated diseases, the result is that the aged population (a large percentage of the global demographic) feel isolated by their disabilities. Therefore the environment results in social withdrawal which is compounded by the devaluing of the elderly within their own families as a result of modernisation.

Disabilities amongst the elderly are treated rather than prevented by current hospital facilities with little time being allocated to rehabilitation after surgery. Also, the elderly patient's short stay in a hospital can cause further complications such as functional decline or poor nutrition that postpones or prevents their effective rehabilitation to an acceptable level of functionality. With a loss in functionality, the patient is more likely to be readmitted to hospital for further treatment as a result of complications caused by the initial surgery in an attempt to try and regain their physical independence.

In 2000, adults aged over 65 were admitted to hospital up to four times more often than those under the age of 65. Once admitted, older adults have longer lengths of stay, more diagnostic testing, and are more likely to experience a decline in their functionality (King, 2006). This is because of extended periods of bed rest which, while good for recovery, has negative consequences for the elderly who can lose up to 5% of their muscle strength for everyday they are bedridden (King, 2006). Other side effects of bed rest include a reduction in aerobic capacity, vasomotor stability and respiratory function thereby increasing their risk of complications once discharged such as deep vein thromboses (DVT), syncope, atelectasis, falls and constipation (King, 2006).

Studies have shown that functional decline may also be worsened by the lack of adequate nutrition and that as much as 40% of hospitalised elderly patients are undernourished either on admission or become so before they are discharged (Jancin, 2007). Their poor nutritional state was found to cause a higher in-hospital and 90 day mortality rate. They were least likely to be discharged home and were more likely to be discharged as dependant on informal carers (Jancin, 2007).

In terms of cognitive functionality, individuals differ noticeably in the amount of cognitive functionality they lose. This is because people 'cognitively age' at different rates and therefore knowing someone's chronological age means very little in terms of their cognitive skills or ability. Methods of coping with coming to terms with cognitive loss are better explored within social groups with people who are encountering the same symptoms. Jaber Gubrium examined how patients suffering from Alzheimer's were able to use language as a construction of reality, within the 'local culture' of their residential settings and day centres with the help of support groups (Bond et al, 2007:77).

If cognitive functionality declines, designers of care facilities should make attempts at creating clear distinct markers throughout the building so that they reduce the chance of a patient being confused or disoriented by the space. This design consideration would also address the loss of sensory perception brought on by either old age or a genetic disability. These include the loss of visual, tactile and aural levels of perception which can be catered for to some extent in the design of a care environment (Stephens, 1978:96).

Somewhere in the shift from spiritual based care to state controlled care, architects have managed to transform a caring, nurturing environment into a solidly institutional environment. This may have happened because people who are ill began to associate an institutional environment as a trustworthy. After all, decisions about life and death are made within this environment, who could trust a diagnosis given within a homely environment? Architecture has therefore defined the social perception and role of hospitals as a place where people are born, die or treated for serious illnesses (Gallup, 1999:56). The case can be made then that hospitals are places that symbolise important events in one's life and besides birth most memories made within hospitals are unsettling and have far reaching consequences on the rest of one's life. This defines hospitals as machines for treatment. How can the care environment of a hospital be 'de-institutionalised' to one that is more positive, nurturing and life affirming?

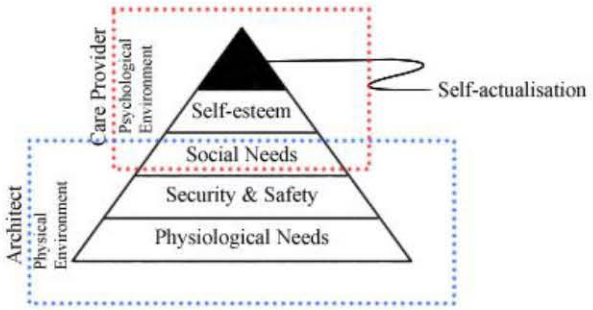
Patients were asked what attributes they would most like to be associated with their healthcare environment, they responded with the following: The healthcare environment must –

1. *Provide a connection to others.*
2. *Be conducive to a sense of well-being.*
3. *Be convenient and accessible.*
4. *Demonstrate caring for the patient's family.*
5. *Be considerate to the patient's impairments.*
6. *Be clear in its expectations.*
7. *Be close to nature.*

   (Gallup,1999:20)

All of these attributes relate in some way to either the social or physical well-being of the elderly. Therefore the framework from which the design of a care facility is planned and executed must work on both of these levels.

1. The physical environment must facilitate the ease of movement, user friendliness while providing an array of environments that cater therapeutically for the needs of the elderly. They must not however, be over protective or paternalistic in nature as this would create an environment that doesn't tax the patient and instead encourages dependent behaviour. While creating a barrier-free environment one must be careful not to give the appearance of an environment that is indestructible due to material selection. As previously discussed, space is linked to the identity of the user so care facilities should never reinforce the fear of disease by building sterile, alienating environments.
2. Social environments or social integration through family networks or group interaction are necessary as people are social beings who need some form or community connection. Patients have also been found to recover from illness much quicker if they are supported by social networks, especially amongst patients who are suffering from the same ailments.



Ill.2. 24 An illustration showing the elderly hierarchy of needs, that are affected by the architect and the care provider and the point where both intersect.

"Maslow's hierarchy of needs describes the pyramid of basic human needs, indicating these as motivational sources of well-being. Thus in designing and planning supportive environments, one has to be aware of the interrelatedness and complexity of needs and how best to facilitate them."

(Foo, 1999:38)

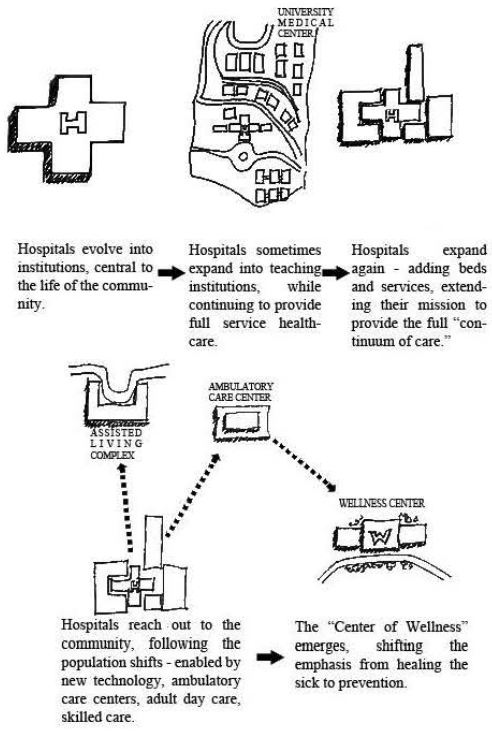
In conclusion, there is no set program for ageing, and since ageing process is compounded by the accumulation of faults over one's lifetime. The best solution would be to slow the accumulation of these faults by designing enabling environments that encourage mental, physical and social activity to not only extend the lifespan of the elderly but also the quality of health within which those final years of life are lived. These alternative care environments need to de-institutionalise care in its physical outlook and functionality as well as its social connectivity while shifting its focus from treatment towards prevention.

2.3.3 THE FUTURE OF CARE ENVIRONMENTS

"At the beginning of the 21st century, greater emphasis is being placed on prevention and rehabilitation. Recent European debates continue to focus on the types of institutional and organisational reforms that can guarantee the following criteria: access for all, healthcare and social care quality, and financial viability of systems."

(European Commission and the Council, 2003)

Medical practitioners are realising that the care of the elderly, whether it is social or physical, involves more than just medical analysis and treatment. However the environments within which they practice are designed for institutional control and separation from the public and urban environment, and doesn't allow for the expansion of 'treatment' towards 'holistic care'. Demand for this shift in the climate of healthcare has caused certain medical

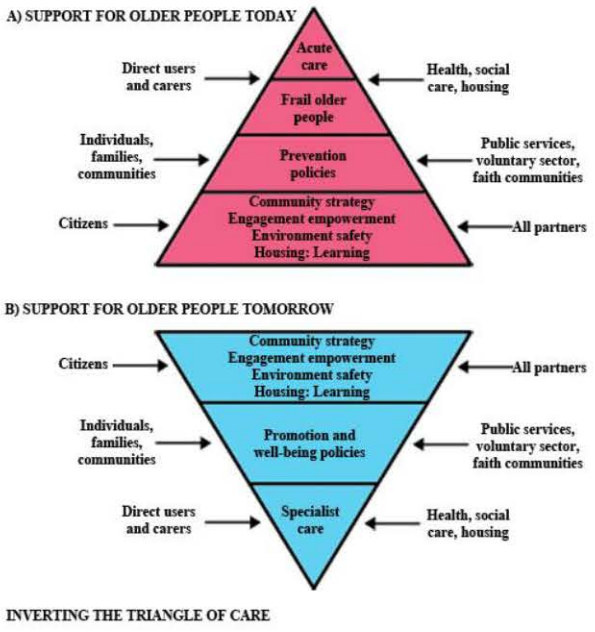


Ill.2. 25 This Diagram shows the shift of healthcare provision from the treatment of patients in a hospital to the preventative care at a wellness centre.

services to be separated from the hospital and relocated as satellite buildings which still have ties to the hospital in case a specialised referral is needed (Gallup, 1999:viii). These satellite buildings increase the catchment of care facilities within a community and are generally cheaper to run than if they were contained within a 'megahospital". For the community this makes healthcare more convenient by reducing the distances they need to travel to seek care.

Author John Robbins, in his book *Reclaiming Our Health: Exploding the Medical Myth and Embracing the Source of True Healing,* emphasises that the current culture of self-care, prevention, natural healing approaches and holistic medicine within the *"medical business climate"* is altering the direction our current and future healthcare system operates (Gallup, 1999:53). This future will be dominated by the efforts to intervene in the disease process before it begins and will change the notion of "primary care" to one of "pre-primary care" which is in effect, preventative medicine (Gallup,1999:55).

What if the hospital of the future wasn't just a place you went to when you're sick? Instead you would go to this hospital to prevent yourself from becoming sick in the first place. If John Robbins predictions are to come true, community based healthcare needs to provide a centre for this process to occur and architects need to design a healthcare environment with this new goal in mind. Such a building typology is currently evolving. It's called a 'wellness centre' and is a hybrid building which blends healthcare environments, community centres, fitness facilities and education into one. This building typology could potentially turn the triangle of care upside down by creating an environment where a shift in healthcare can occur. The result would be a movement away from providing acute care to a smaller number of people with severe needs, and instead provide a universal service to a wider community which would promote well-being (Tanner et al, 2008:57). For the first time in history, doctors and hospitals would be able to make the bulk of their profits by preventing the need for acute care.



Ill.2. 26 Shifting the treatment of a small number of patients within the hospital environment, towards the prevention of treatment of many within the community system of care.

The major barrier towards the implementation of the wellness centre model in South Africa is financial combined with the usual concentration of resources being utilised in fighting the effects of HIV/AIDS and child mortality. Therefore the logistics the healthcare system has to face in terms of delivering services to a variety of nonacute care facilities becomes too great, especially when it is cheaper to provide multiple medical services in one place. However the long term effects of only treating those with severe cases will increase the burden of care and treatment on the hospital model of care. In the elderly the benefits of preventative care will result in fewer cases of acute admission which will free up hospital beds for those who need acute care, as well as reduce the risk of increased debility due to complications caused by extended periods of bed rest within the hospital after surgery. Therefore if any building type should dominate the healthcare industry, it should be the wellness centre.

Gallup argues that very concept of a wellness centre automatically invokes positive psychological effects within its users, just through its name. *"Going to a wellness centre instead of a "sickness centre" has more than a superficial impact on a person's being (1999:112)."* He goes further and suggests that the promotion of positive emotions caused by the social and physical environment of a wellness centre, causes changes on a cellular level in those who are ill. This type of environment shifts the focus away from the person's illness and instead focuses it on the positive elements of life. If healthy people always choose life and those who are sick can be distracted from their illness based purely on the space or environment they are in then this changes the role of the architects to design for the care of people again, not for the treatment of illness.

The wellness centre focuses on the preventative, rehabilitative, spiritual and educational realms of the community all while clustering and coordinating complementary treatment services, and may in time, replace the traditional hospital (Gallup, 1999, 64). For now, most wellness centres that exist today are attached to hospitals or hospital systems. This is because they have a symbiotic relationship of referrals between them, known as the "halo" effect, which helps cater for both acute and 'pre-primary' needs of the community they serve. This halo effect also controls which services are extracted from the hospital and placed within the wellness centre, based on cost or whether the service is specialised i.e. surgery. The facilities most likely to be found within a wellness centre relate to rehabilitation, physiotherapy, occupational therapy, family medicine and nutritionists.

The incorporation of the adult day care model into a wellness centre would create a link within a 'de-institutionalised' environment between the older person and their treatment whether it be rehabilitative or preventative. Further links could be cultivated between the aged and the community within which they live as well as alleviate family care providers of the burden of continuous care. Family members could drop their parents off at the adult day care facility within the wellness centre on their way to work, with the peace of mind that their medical needs could be attended to if the need arose during their working day. This gives the informal carer much needed respite from constantly having to care for their elderly.

Because a wellness centre could be sited easily within the urban fabric, it is not limited in terms of the contextual connections it can make to other buildings, services or environments. The possibility of linking patients/patrons to natural environments of therapy such as a cafeteria, or even a mall, would create a real world environment for collaborative healing. This connection between care environment and community spaces means that the wellness centre would allow for multipurpose journeys to the facility which could include aspects of one's health, fitness, respite or even grocery shopping, all of which encourages community involvement through the wellness centre (Amos, Unknown date).

Lastly, if the healthcare system can be reformed then so too should the public policy that those over the age of 65 should be forced into retirement. This automatically segregates the elderly from society based on their age and their depreciated role as someone who does not contribute to the workforce. Instead efforts should be made to encourage lifelong learning so that the elderly are not alienated by technological advancement. Lifelong learning has two major benefits. Firstly it keeps the elderly mentally active, which improves their cognitive ability as they age. Secondly it would redefine their role within a modernising society. Lessons learned throughout life, through education and work experience cannot be allowed to become redundant with the improvement of technology. As familiarity with the internet increases the potential for continued contributions by the elderly to society can be made. Surprisingly it is within the medical field that this theory is best put into action. Medical practitioners are now able to diagnose patients and suggest treatments via the internet which means global medical care is slowly becoming a virtual reality, and where else could you find a more suitable virtual workforce than at a wellness centre for the elderly?

2.3.5 CONCLUSION

Treatment facilities have always seemed to be a hostile environment towards those that need care, especially the elderly. As society moves through the 21st century, a shift in how we care for the elderly needs to occur. This shift has far reaching consequences in terms of the effects it has on the ageing global demographic as well as the rest of society. Healthcare systems cannot sustain the numbers of people being admitted under acute care facilities, especially in developing countries and so a built solution in the form of a wellness centre offers an opportunity to create a robust healthcare system, that doesn't perpetuate the current self-destructive cycle of treatment over preventative care.

Acute care facilities will always be needed, but the wellness centre building typology weakens the link between a communities physical and social reliance on the hospital as their only option of healthcare. It could also act as a centre for social change where links between generations can be nurtured by removing the age segregation of spaces within which the elderly are predicted to inhabit, thus supporting this documents hypothesis.

CHAPTER 3: THEORETICAL REVIEW

3.1 THEORETICAL REVIEW INTRODUCTION

The architectural theories chosen for this document, relate to the connections that need to exist between the user and the healthcare environment with the objective of informing an architectural response to the needs of both. The scale of their meaning differs according to their micro or macro scale; from the individual's sensory perception of space, to the design of a healing environment which stimulates all the senses, and lastly to the siting of a healthcare environment within the urban fabric, according to its environmental and community context.

This theoretical framework is used in the analysis of the quality of spaces found within the case studies. These theories are however limited in terms of their ability to experience a space from the viewpoint of an older person, who may have multiple sensory failure. They do however express the importance of ensuring that the design of a care facility for the elderly does not simply rely on the visual sense but engages as many tactile senses as possible.

3.1.1 TOWARDS A HOLISTIC SENSORY PERCEPTION OF ARCHITECTURE

The eyes of the skin: Architecture and the senses by Juhani Pallasmaa.



> *"All the senses, including vision, are extensions of the tactile sense; the senses are specialisations of skin tissue, and all sensory experiences are modes of touching and thus related tactility."*
>
> *(2005:10)*

Architects have been guilty at times of becoming too reliant on the visual perception of space while frequently rejecting the discovery of space through a fully sensuous exploration by all the sensory organs. This can create an environment that feels threatening and confusing for older people whose vision declines with age. The non-visual characteristics of architecture need to reinforce the visually perceived space. If the kinetic, tactile, auditory, thermal, even olfactory experience of a space supports the visual perception of that space then the architectural meaning of the space is more effectively assimilated by all, not only the visually impaired (Stephens, 1978:6) . Contemporary culture has been the cause of this sensory shift towards measuring everything by its ability to show and be shown through a visual journey which is devoid of tectonic logic or materiality combined with an architectural understanding (Pallasmaa, 2005:24).

> *"Architecture enables us to perceive and understand dialects of permanence and change, to settle ourselves in the world, and to place ourselves in a continuum of culture and time."*
>
> *(*Pallasmaa, *2005:71)*

This means architecture not only creates sculpted environments for people to inhabit but also projects the meaning of our existence within that environment. This links to the

idea of binding identities to space which affects ones sense of self and being within a community. Therefore architecture can either root our role or existence within society, or disengage us, depending on how the individual perceives the space and how the community perceives the individuals identity within that space, making architecture a powerful tool for social connectivity.



Ill.3. 1 Design for all the senses. Dont rely only on the visual perception of space.

"Sight is the sense of the solitary observer, whereas hearing creates a sense of connection and solidarity; our look wanders lonesomely in the dark depths of a cathedral, but the sound of the organ makes us immediately experience our affinity with space. We stare alone at the suspense of a circus, but the burst of applause after the relaxation of suspense unites us with the crowd. The sound of church bells echoing through the streets of a town makes us aware of our citizenship. The echo of steps on a paved street has an emotional charge because the sound reverberating from surrounding walls puts us in direct interaction with space; the sound measures space and makes its space comprehensible. We stroke the boundaries of the space with our ears."

(Pallasmaa, 2005:51)

Pallasmaa's description of the experience of space within a community which is defined by visual and auditory clues shows that a space can hold multiple meanings to the individual. This meaning would be lost if only one sensory organ was used to weigh and measure the space in relation to their human scale and location. Spaces can be used to diminish the individual, such as in the case of vast public spaces in China, or could make a person's spirit soar in places like Cathedrals which use architecture to imply the importance and magnitude of God (Gallup, 1999:111). Visual hierarchy of architectural rhythm and form may be complemented by light and dark, to give the sense of procession within a



Ill.3. 3 Positive emotional responses can be invoked through the manipulation of architectural tools such as scale and rhythm.



Ill.3. 4 An example of scale being used to diminish the value of the individual while elevating the perceived position of power held by the Chinese government.

space but someone who is blind wouldn't be able to appreciate the architect's attempt at spatial constriction and release unless they used their remaining senses. The echo of a room or temperature difference caused by a change in material and restriction of space could all be used as alternative cues to the emotional response the architect wished to invoke within the individual.

"There is an inherent suggestion of action in images of architecture, the movement of active encounters, or a 'promise of function' and purpose. The objects which surround my body reflect its possible action upon them. It is the possibility of action that separates architecture from other forms of art."

*(*Pallasmaa, *2005:63)*

For the elderly, these '*encounters*' with architecture create a tension between the environment and the individual, who is expected to '*function*' within this space in accordance with social norms and expectations. This could cause the elderly to disengage from the environment with the onset of sensory decline based on fears of being perceived as incapable and therefore reliant on others. To counter this effect, architects can use materials that connect the user to both space and time. This is possible by utilising textured materials that express their age and history caused by weathering secondary to environmental and human interaction. This gives new meaning to the aged through the use of architecture as a metaphor for the ageing process. Materials such as stone, brick and wood have inherent warmth to them. Modern man-made materials of today like glass, enamelled metal and synthetic plastics are visually and tactilely sterile and have no connection to the history of that material. Buildings that use these modern materials usually aim for the ageless perception of the architecture and reject any links to time, place or ageing.



Ill.3. 5 A door handle is your buildings handshake

"It is pleasurable to press a door handle shining from the thousands of hands that have entered the door before us; the clean shimmer of ageless wear has turned into an

image of welcome and hospitality. The door handle is the handshake of the building."

*(*Pallasmaa, *2005:56)*

Modern architectural forms use materials such as glass and concrete to give the impression of transparency and weightlessness. This was done without considering the human need for tactile exploration and instead relied on the visual awe of floating masses. Currently new architectural imagery is emerging which uses reflection, gradations of transparency, overlay and juxtaposition to create a sense of spatial thickness, as well as subtle and changing sensations of movement and light (Pallasmaa, 2005:32). This redefining of modern materials is helping to change this notion of architectural isolation from the individuals senses by creating a positive layering of space, place, meaning and time. The most important connection being made is through time which connects the natural environment to the building and to the natural progression of ageing. Pallasmaa goes further to say that it is the role of the architect to domesticate limitless space which enables us to inhabit it, but it should also domesticate endless time and enable us to inhabit the continuum of time (2005:32).



Ill.3. 6 Layering of space, place, meaning and time through architecture.

Juhani Pallasmaa's poetic description of space and the materialisation of that space within the psyche of the individual through sensory assault, acts to reaffirm the important influence that an architect has on the individual and the community. Sensitivity towards the declining sensory defined spaces which the elderly inhabit will ensure that architecture moves away from the visually dominated definition of its spaces and instead will awaken all the senses (or at least allow for connections between space and the sensory disabled to occur by more than a visual connection).

3.1.2 ARCHITECTURAL DESIGN FOR HEALING

Places of the soul: Architecture & environmental design as a healing art by Christopher Day.

> *"Healing means the transformation at the inmost level – something individuals can only do for themselves. How then can this be accomplished? What has it got to do with architecture?*
>
> *...It is hard even to recognise the need for such inner transformations, and harder still to start them. Something from outside, like counselling, homeopathic medicine or some other agent, is needed to initiate and support the process. Environment is one such agent: it can provide nourishment, support and balance for the human spirit as much as it can starve, oppress and pervert it."*
>
> *(Day,2002:23-26)*

Studies have shown that an improvement in the hospital environment can potentially reduce the time taken for treatment by 21% and class A analgesic use by 59%. Roger Ulrich, conducted a study into patient recovery time versus their recovery environment in 1984, from which he stated that every leaf visible from the patients hospital window is 'worth its weight in gold' (Day, 2002:16). The effect nature has on human conscious and subconscious is profound, especially when an individual has a heightened emotional state or is placed within an unfamiliar environment. Our mind, like the process of healing, uses the environment as an 'agent' to provide balance. Our environment can create connections to place by rooting our daily rhythm to the rhythm of nature expressed within the building, and provides "soul support" – the best step to recovery (Day, 2002:32). If the needs of the soul are not met they tend to seek out alternative forms of connection through dependency - dependency on drugs, alcohol, television or consumerism.



Ill.3. 7 The eyes help feed the soul

Architecture can either support or damage physical as well as psychological health through simple environmental manipulations. This manipulation can occur when the environment is not appropriately tempered to the needs of the individual by changing levels of light and thermal variance within a space. Different kinds of heating and lighting either feel healthy or unhealthy, inviting or unpleasant. This is easily imagined within a hospital environment where bright light and sterile robust materials make the experience of breathing in the surrounding environment an uninviting prospect. Mentally contrast the image of a hospital with the feelings one gets from looking at a log fire, which illuminates with a similar spectrum of light to that of the sun and radiates heat that warms the body, as well as the soul (Day, 2002:20).

Our connection to light has more of an impact on our well-being than previously imagined. Medical researchers discovered that on a biological level the effects of light can affect growth and other hormones that are controlled by our pituitary, pineal and hypothalamus glands which are all stimulated by natural rhythmic light, especially daylight (Day, 2002::21). Architects should try creating healing environments that have several windows on multiple walls of a room, to create interplay of light and shadow which connects the individual within the space to the natural environment and its progression of time (Day, 2002:21). Mono-directional light from a single window only allows for a partial momentary connection to this progression of time, and is therefore limited in terms of its healing ability through natural connectivity.

"Mostly, we experience things through our outer senses: sight, smell, taste, sound, warmth, touch. Architecture, in the sense of environmental design, is the art of nourishing these."

(Day, 2002:72)

We all have an inner sense of consciously feeling healthy, and when we feel ill or our bodies feel out of balance, we sense this through our soul. This link connects architecture to our physical health and our soul and is often referred to as 'sick building syndrome', when a space makes one feel sick. Sick building syndrome can manifest itself in subtle ways which we fail to link to our environment, like bad sleep, tension or exhaustion (Day, 2002:74-75).

Sick building syndrome can be prevented through the correct orientation of a building and choice of materials. Material selection speaks to the vernacular style of a place

and therefore links the building to a places history. Christopher day forewarns that this connection to historical places if not acknowledged can make a building an imposed alien within the urban fabric but if the historical precedent dominates, it can be claustrophobic to live in and falsely cosmetic (Day, 2002:16). *"Past and future need each other: The past informs, the future inspires. At the meeting point is that informed, inspired present (Day, 2002:16)."* This architectural connection to past and present can act as a metaphor for the role of our elderly within the community and can inspire a new connection between both. Architecture can become a symbol of this connection.

These connections are given further importance through urban design considerations which identifies meeting places as the places richest in life (not only cafés and city squares) (Day, 2002:34-35).

"In nature, life is at its most vigorous where elements meet. When we seek rejuvenation in natural surroundings we're drawn to those places where the spirit of place is strongest – when there are meetings between elements – places which emphasize the meeting of, for instance, earth and sky or water and rock."

(Day, 2002:34-35)

These meeting points are themselves therapeutic and create an opportunity for social as well as environmental connection. Architecture needs to be used as a social tool to create an environment where meetings between 'elements' or ages of society combine to create the spirit of community – the "spirit of the place (Day, 2002:160)."

"'Form' is the property of objects. Objects are, in a way, beings. 'Space' is the space in which things can happen, in which living things can be. Buildings are objects from the outside, space within."

(Day, 2002:105)

The shape of form can dictate the experience of space and can encourage social connection. For instance a circular table can promote group discussion, whereas a rectangular table with over six seats usually divides the individuals into separate groups, producing separate conversations (Day, 2002:108). A circle is centre focused and good for communal discussion but it's also inflexible. The predictability of the square with its abrupt regular change in direction can help to reorientate oneself when one has lost ones bearings (Day, 2002:108). The square, like the circle, can have negative connotations where for instance square rooms become boring and

unstimulating through rigid symmetry. Flat ceilings turn square rooms into boxes whereas shaped ceilings bring them to life (Day, 2002:108). For elderly care both spaces should be used in relation to the spaces desired activity. Movement through a building should be controlled be the line of any one side of the square, whereas spaces for social interaction should be rounded to encourage sociable behaviour by refocusing the individual on the group. What becomes important is the transition between public, private and communal environments. Entrances should be expressed through a preparatory progression of spaces toward the destination of interest within the building. This concept is used effectively in Islamic architecture where the interior of the mosque is reached through a series of spaces designed to separate the sacred space from the noise and commotion of the city, while also allowing for the preparation of the soul.

Old buildings are not simply relics of a past architectural style. They, like the elderly themselves, are a collection faults caused by weathering and human use which links the history of a place to the current time. When new buildings are built alongside the old, the contrast of materials, textures and architectural details give the older building charm and appeal. When new buildings replace an old building or new design is added to an old building in a disrespectful or brutal manner, both the new and old are compromised. Their drastic juxtaposition weakens any potential connectivity by both as each become un-enriched by time with the loss of their vernacular rooting.

"Ageing is a process by which forms and materials are modified by the forces they're exposed to. Impact and frost damage harden edges; ground movement and compression under load soften geometric purity; photochemical reactions bleach colours; water saturation encourages mould, moss, even tree growth. We can pretend ageing will never happen – or accommodate it, letting the passage of time mellow, rather than tarnish, our surroundings."

(Day, 2002:173)

The reform of healing environments and the integration of a community should not be seen as a process of forced sterilisation which cleanses both of any connections to time, history or nature. The past should inform the present and the present moulds the future of both. Historical connections within the urban fabric are important because lessons, good or bad need to be addressed in order for a community to heal itself.

CHAPTER 4: PRECEDENT STUDIES

4.1 INTRODUCTION

The precedent studies chosen are from an array of international examples which help to clarify issues encountered with the design of medically related facilities like rehabilitation centres, wellness centres for the elderly and designing for people with both mental and physical disabilities. Most of the selected precedents have realised that healing does not occur in isolation and so have made some attempt to try reconnecting the patient to society. The role of formal and informal care providers are also acknowledged through the incorporation of some of their needs, like the ability to combine activities such as respite care and proximity to retail stores for convenience.

Each precedent study is discussed in terms of site and the architectural acknowledgement of that site, the guiding principles behind each design, the materials selected and their reasoning in relation to costs to the user, the owner and the environment; the facilities included and lastly conclusions or points of interest will be discussed at the end of each, with the goal of informing the design of an effective wellness centre for the elderly within South Africa, specifically Pietermaritzburg.

4.1.1 ONNI WELLNESS CENTRE FOR THE AGED: PUKKILA, FINLAND

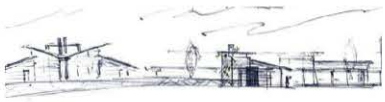


Client: Municipality of Pukkila

Architect: L&M Sievanen Architects

Floor Area: 2,760sqm

Completion Date: 2007



III.4. 1 Concept sketch of building



III.4. 2 Main entrance



III.4. 3 Communal dining room

INTRODUCTION:

The Onni Wellness Centre is the outcome of a design competition which was held in 2004 to design a care and housing facility for the aged. The project was dedicated to the memory of the former housing minister of Pukkila, Mr Onni Nurmi. The building was designed to care for the elderly while redefining the city centre of Pukkila.

SITE & BRIEF:

The wellness centre was built in the centre of the city of Pukkila, adjacent to the market square. The design brief generated by the Pukkilan municipality for the completion stated that the building must be designed to provide for complete care, well-being and the housing needs of the elderly population of around 1000 members. It also had to act as a tool for the reforming of the city centre as well as changing the outlook of the public towards its elderly. The building was sited along the edge of the city market to encourage social

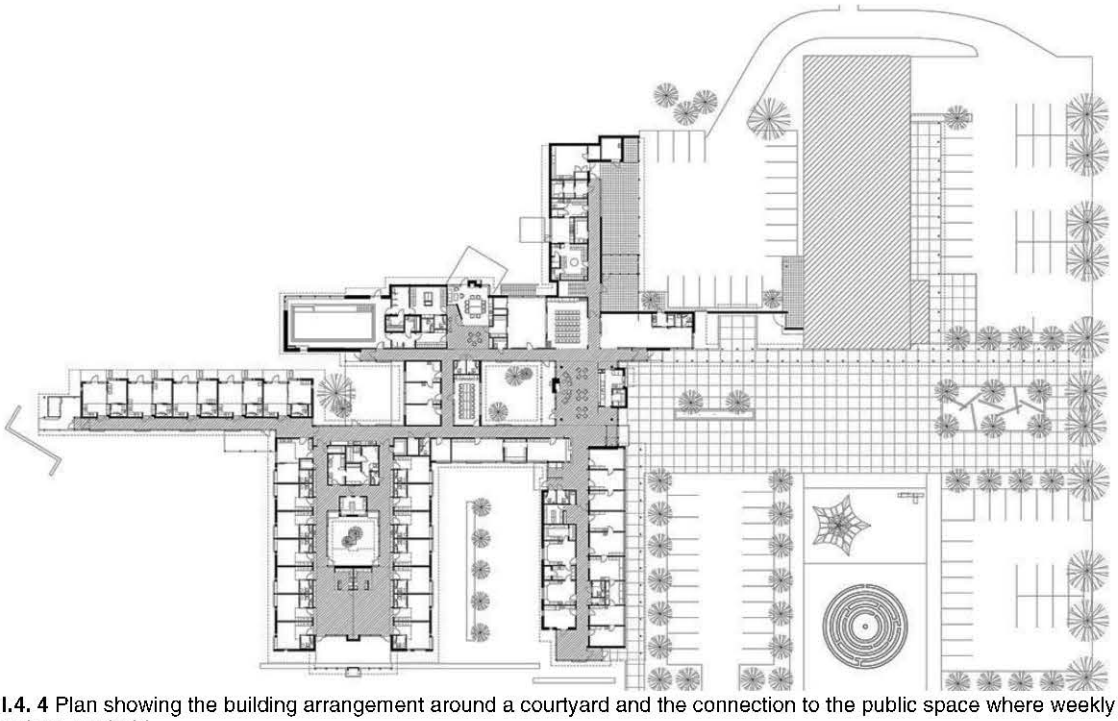


III.4. 4 Landscaped Gardens



III.4. 5 Indoor heated hydrotherapy pool

interaction between the different generations as well as making use of the open plaza



III.4. 4 Plan showing the building arrangement around a courtyard and the connection to the public space where weekly markets are held.

as a place where occupational therapy and rehabilitation could be conducted.

FACILITIES:

The centre includes sheltered housing for physically handicapped elderly people, a group home for people with memory disorders, a health and fitness centre, sauna, cafeteria, utility facilities and a number of common areas which are used to link more private sections of the building. A number of satellite medical facilities are also included in the building and which are made available to the Pukkilan community, as well as catering for the needs of the elderly.

FORM DERIVATION:

The double volume entrance houses the social heart of the centre in the form of a cafeteria which comes directly off the market plaza. The entrance and cafe were seen as the gateway to the community for the elderly and a space that invited the general public in for a meal or coffee with the chance of connecting the community once more.



III.4. 5 3D rendering showing the walkways that overlook the courtyard

The rest of the building stretches out along linear corridors which connect individual areas, based on functionality. These corridors were designed to be as non-institutional as possible by being cosy and spacious, offering alternating views of the courtyards and Japanese garden which acts as a public sanctuary. These corridors also added an element of flexibility within the design by allowing for future expansion along the linear corridors.

The building was restricted by the brief to a single storey and is devoid of any stairs. This is as a result of the principles of accessibility, and the promotion of independent living for all the patrons regardless of their age or disabilities, which drove the design. The restriction on height in the rest of the building was used to emphasise the roof of the entrance, which floats above a double volume and acts as a visual cue towards the entrance of the wellness centre.



III.4. 6 The section shows that all the roof heights are single story unless there is a double volume void which only occurs over the dining room, entrance, pool and fitness studio.

MATERIAL SELECTION:

Materials were carefully selected according to the environmental design needs of the elderly. Wood was used extensively throughout the structure because it offered good acoustic dampening from the surrounding city and its noise pollution. The wood also has warmth to its texture and colour and so replaced more modern materials. These may have been easier to maintain but would change the spirit of the place towards a more institutional, sterile environment.



III.4. 7 A large amount of timber is used throughout the building.

The use of glass and landscaping were combined to ensure a perpetual connection to the landscaped courtyards which help to create a connection to nature despite the building being sited within a city centre. Extensive glazing also reduced the centres reliance on artificial light during the day.

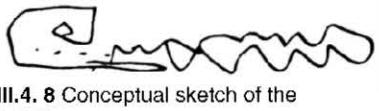
Some surfaces were painted with strong colours, which to some may appear glaring in places. However, strong colours and contrast variations help those elderly who have poor eyesight to distinguish surfaces and their edges and thus help them navigate the centre in comfort. Whilst contrast and colour were used as navigation tools, serious design foresight was used to try and prevent imaginary boundaries to those with memory disorders. Such psychological obstacles to the interpretation of a space could be caused by stripes which are perceived as a barrier or a threshold which cannot be crossed.

CONCLUSION AND RELEVANCE TO PROJECT:

The Onni Wellness Centre may appear to be a simple building which has little visual interplay but the use of tactile materials and vibrant colour make up for is simple massing and instead reinforces the initial brief of designing a building that caters to the needs of the elderly, who may have sensory impairments. The siting of the building plays a major role in its effectiveness for providing a space which connects a community. Lastly the building achieves its goal of providing a customised healing environment for the elderly, close to the first world medical resources and ancillary support services.

4.1.2 MAGGIE CENTRE: LONDON, UNITED KINGDOM





III.4. 8 Conceptual sketch of the building



III.4. 9 South Elevation

Client: Maggie's Centre

Architect: Rogers, Stirk, Harbour & Partners

Floor Area: 370sqm

Date Completed: 2008

INTRODUCTION:

The concept of the Maggie Cancer Caring Centres was envisioned by the late wife of the famous architectural writer Charles Jencks, Mrs Maggie Keswick Jencks, who herself suffered from breast cancer for many years before succumbing to her disease in July 1995.

Throughout her treatment Maggie saw the need for a cancer support facility that had a non-clinical environment and which could be a source of practical information about cancer. The centres main goal was however to provide a space for psychological and emotional support or connection between people suffering from cancer, where positive life affirming emotions were encouraged.



III.4. 12 Entrance walkway which creates a privacy gradient.



III.4. 13 The building has outdoor decks on the first floor for staff.



III.4. 10 Internal view of the double volume space which forms part of the kitchen.



III.4. 11 Artistic render of the building from the opposite street corner which shows how the building is screened off from the noisy street edge by rows of trees as well as the wrap around external wall.

There have been a number of Maggie Cancer Centres built around the United Kingdom and Wales, through the collaborative efforts of Maggie's husband, her old oncology nurse Mrs Laura Lee and a number of well known architects such as Frank Gehry, Zaha Hadid, Richard Rogers and his Rogers, Stirk, Harbour & Partners firm. These centres are always placed on the grounds of hospitals that have cancer treatment facilities and acts as a satellite or halo service to that hospital in the form of social and psychological care.

SITE & BRIEF:

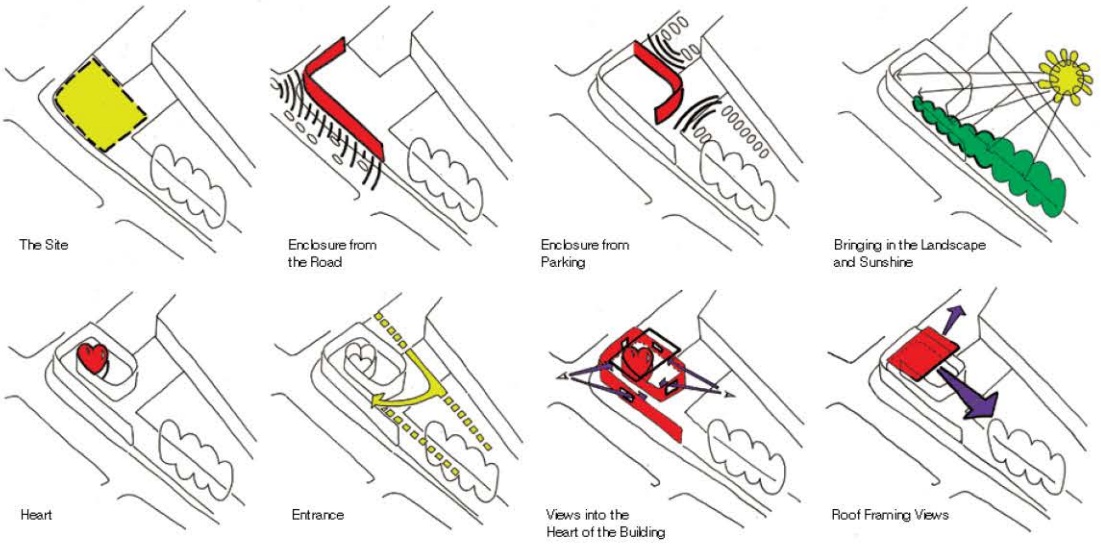
The site of the London based Maggie Centre is on the grounds of the Charing Cross Hospital and is between the junction of Fulham Palace Road and St Dunstan's Road. This proximity to the traffic intersection meant that the site has a relatively harsh urban environment which needed to be addressed by the design team to create a solution that acknowledged the urban fabric and yet still allowed for privacy within. The building is sited on the Hospital grounds to make visits to the Maggie Canter convenient for the hospitals cancer patients and their families or carers. The brief was to design a structure that would provide a relaxing environment that cancer patients could visit to discuss their lives beyond their diagnosis of cancer.

"The building should be a truly remarkable place with its own unique identity that transforms the question 'will I live?' into the 'will to live'."

FACILITIES:

The building consist of a number of small spaces which are conducive to intimate group discussions amongst visiting patients, their carers or family members. Larger rooms are available to relax in and each has a fireplace to create a homely environment. The central double volume kitchen is really the heart of this building though and is supplemented by a small library. Staff offices are on the second floor, although staff members are only there to provide accurate medical information and support in the case of an emergency.

FORM DERIVATION:



III.4. 12 The architects analytical sketches of the buildings concept which shows the progressive design of the buildings form.

The form of the building was strongly dictated by the buildings urban context with vistas to the outside being strategically manipulated by punctured walls that wrap around the building to create a sequence of spaces which guide the visitor into the entrance. The wall was then punctured to allow for occasional glimpses into the outside world of busy streets. The journey into the building culminates at the 'heart of the building', the double volume kitchen which is juxtaposed by the surrounding vistas of courtyard gardens, sitting rooms and smaller personal caring spaces. The floating roof was another architectural manipulation, which insures the view of the hospital is forcibly disregarded thereby separating the two from each other. This isolated the patient within

the healing environment of the Maggie Centre instead of constantly getting visual reminders of their cancer treatment, which takes place in the hospital.



III.4. 17 Views into the surrounding landscape was important to link the building to nature and time.



III.4. 18 This plan shows the incorporation of courtyards throughout the building to encourage a visual connection to natural environment.

The impression of an overly protective environment is avoided, by placing staff offices on the second floor where their presence is less noticeable but where the staff members are still able to watch over the patients below. This separation between staff and patients also helps to give the patient the illusion of ownership of the space which encourages them to shape their environment as much as the centre is shaping their healing process.

Dan Pearson Studios were the landscape architects used for this project. Their brief was to create gardens within this urban environment that spoke to the process of time, whilst creating visually appealing green spaces which would be relaxing and reconnect the visitor back to nature and thus provide a healing space. Their solution was to create three external garden areas, on the northern, eastern and southern facades of the building. Each would have specific foliage which would blossom in tune with the changing seasons. A procession of trees wrap around the peripheral walls and act as noise dampers whilst becoming part of an attractive view from both inside and outside the building.



III.4. 19 Juxtaposition of materials.



III.4. 20 A variety of materials and brightly coloured surfaces draws attention to architectural features.

MATERIAL SELECTION:

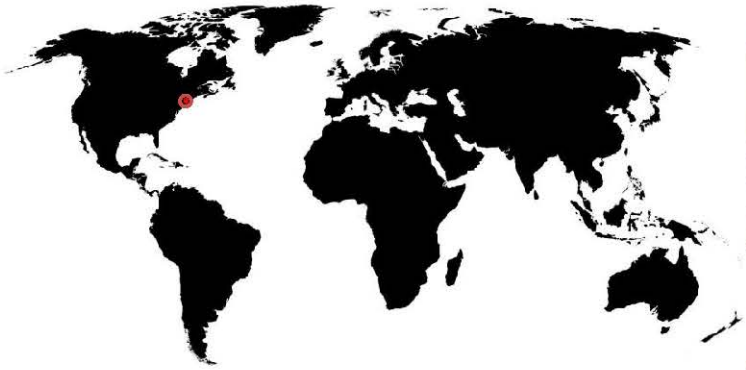
Materials were chosen according to their durability, mass, transparency or structural strength. The floors are made of

polished concrete screed and fitted with under-floor heating. In most of the smaller personal spaces, the floor is carpeted to prevent reverberation into the rest of the building. The walls are made of block work which only supports the second floor staff offices as the roof is structurally supported by internal columns to create the illusion that the roof is floating above the building. This creates a light and airy internal space. Glass is used extensively to allow visual journeys into the surrounding gardens but equally allowing light and nature to come into the building.

CONCLUSION & RELEVANCE TO PROJECT:

Both the internal and external environments needed to work together to create a harmonious environment for healing which takes the individuals scale into account within a hectic urban environment. This is important because the space is meant to be a nurturing environment and if the scale was too large, it could have risked isolating the patient from the space. The Maggie Centre could relate to a Wellness Centre for the aged because as people age, they seek out spaces which allow them to reflect on their lives and process the possibility of death. Finally, the Centre allows for social healing to occur without the input of medical staff, who are strategically hidden away until needed. People should be allowed to control their own healing without the pressure of performing 'scripted' or 'expected' roles within a space of healing.

4.1.3 PATRICK H DOLLARD HEALTH CENTRE: SULLIVAN COUNTY, USA





III.4. 21 Natural context.

Client: The Centre for Discovery, Corporation, Non-profit.

Architects: Guenther 5 Architects

Floor Area: 2630sqm

Date Completed: 2003



III.4. 22 Strong use of form the announce and entrance

INTRODUCTION:

For the last 50 years the non-profit organisation known as the Centre for Discovery has been creating safe, caring environments for people of all ages with neurological and developmental impairments as well those with physical disabilities, that need primary and speciality medical treatment. Their goal is to support the intellectual, social and recreational development of this community. The Patrick H Dollard Health Centre is actually one of many buildings to be found on a medical campus in Sullivan County, USA. Before the design of the building started, architects proposed that the client should think about utilising green building strategies to make a positive impact on the environment, save on annual utility expenses and reduce the onset of chemically induced allergies or other illnesses. Because the function of the building is to promote healthy living it made sense to incorporate green building design strategies, and in 2004 the Patrick H. Dollard Centre

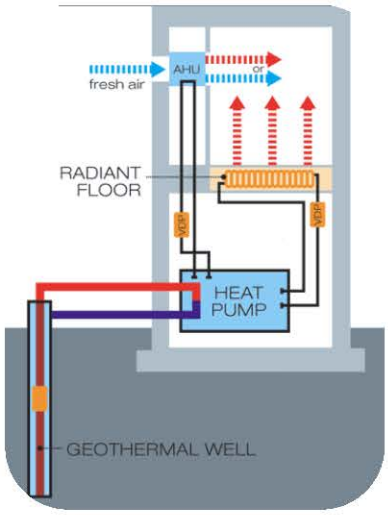


III.4. 23 The use of rhythm guides users into the building.



III.4. 24 Entrance lobby

was awarded its silver LEED certification. It became one of the first medically oriented buildings to receive this award for sustainable and green design.



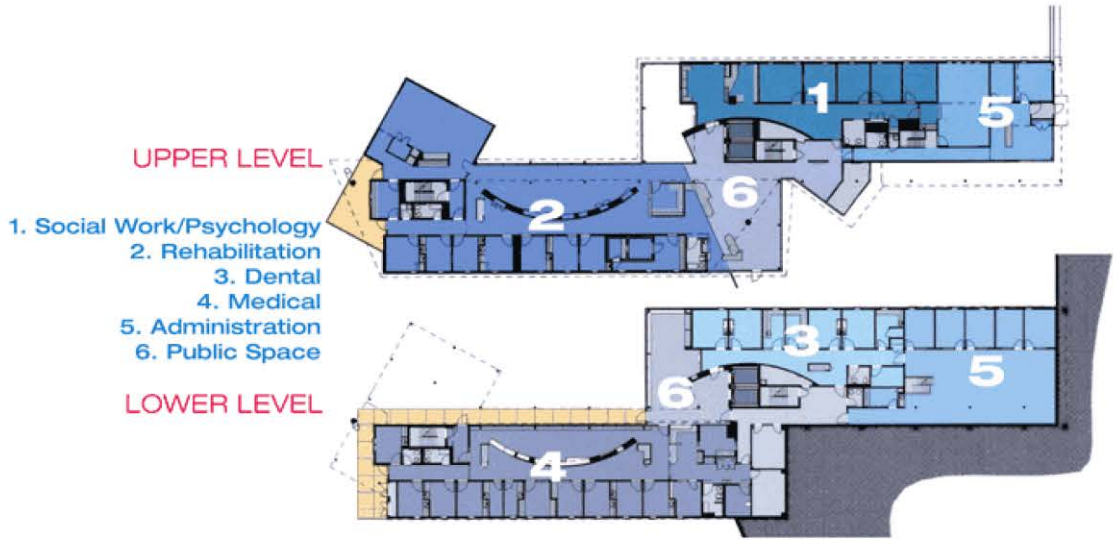
III.4. 25 A diagram showing how heat from the earth can be used to warm the building.

SITE AND BRIEF:

In selecting a site on which to build the centre, it was decided that the centre would avoid prime agricultural land which could be used instead for farming. The client and architect decided to reclaim an abandoned industrial agricultural site which they infilled. Like the Maggie Centre in London, the PHD Health Centre is located in close proximity to other medical facilities which creates a system of easy referral.

On embarking on a mission to create the first LEED approved medical building, the G5 architects were asked to research green building strategies. The building now incorporates a geothermal well and a heat pump to use the naturally occurring heat from within the earth's crust to warm the interior of the building during winter. In summer the process is reversed and other methods of cooling the building are employed, such as structural shading devices, reflective roof sheeting and a well insulated building envelope. These all contribute to the reduced work load of air-conditioning. The narrow width of the buildings footprint also means that natural cross ventilation can pass through open fenestration to lower the internal ambient temperature.

Rainwater is harvested from the roof of the Centre and is used for flushing toilets and in the horticulture therapy gardens which patients use as a form of occupational therapy and relaxation. Any excess rainwater spills over into a channel which replenishes the local ponds and aquifer.



III.4. 26 General layout plan

FACILITIES:

The PHD Health Centre caters for both mental and physical therapies, but uses its natural surroundings as a rehabilitation tool. Patients are encouraged to be involved in agricultural activities as a form of occupational therapy. Rehabilitation rooms vary in materials and size depending on the type of therapy program that takes place within. The Centre is also open to the local community and acts as a venue for the local farmers market. The connections made between environment and community generate feelings of enthusiasm, optimism and health within the Centres patients.



III.4. 27 Raised planter boxes for Horticulture therapy



III.4. 28 Therapy studio



III.4. 29 Rehabilitation studio

MATERIAL SELECTION:

A lifecycle assessment was conducted for finish materials and furnishings, and the selection of materials was made after considering the long term health effects of each, in addition to cost and durability. Any material that didn't meet the health criteria of the LEED assessment was excluded. The criteria are;

1. Shall not produce volatile organic compound (VOC) levels above California's Code of Regulations
2. Should lower toxicity to humans, mammals, or aquatic life in multiple phases of their life cycles.
3. Shall not contain - Known or suspected carcinogens, mutagens, or teratogens; ozone-depleting compounds, greenhouse gases, or substances that contribute to photochemical smog and poor indoor air quality; endocrine disrupters; heavy metals such as arsenic, lead, cadmium, cobalt, chromium, mercury, nickel, and selenium; persistent or bio-accumulative substances; or suspected asthma triggers.
4. In addition to meeting the above health criteria, materials and products were selected based on their overall environmental "footprint". Accordingly most are regionally manufactured, are high in recycled content, are rapidly renewable, are bio-based, or can be easily recycled.

CONCLUSION & RELEVANCE TO PROJECT:

The Patrick H. Dollard Health Centre is surprisingly well equipped and supported by the community and has achieved a lot in terms of medical design and the environment. What is more amazing is that the building has achieved a silver LEED certificate and yet it is a non-profit organisation. It is cheaper to build with materials from all over the globe instead of sourcing the materials locally. The only problem is that future generations pay for that decision with the earlier onset of global warming, secondary to global business practices. If one is designing a Wellness Centre for the aged it is incumbent upon the architect to ensure that green design considerations are employed to minimise the long term societal cost of such a structure. The second point of interest is that the centre is successfully using alternative forms of treatment such as horticulture to stimulate the mind, body and soul of their patients.

CHAPTER 5: CASE STUDIES

5.1 INTRODUCTION

Three national case studies were conducted for this chapter: The Western Cape Rehabilitation Centre (WCRC), the Rustenburg Medi-Care Centre and the Nazareth House in Durban. The reason for choosing these three examples is that each has a connection either to rehabilitation, frail care or housing for the elderly. This meant that valuable first hand information could be gathered from the employees and users of each facility, which will ultimately inform the design of a new care facility for the aged in Pietermaritzburg.

Both the WCRC and Rustenburg Medi-Care centres focus on physical rehabilitation, however the WCRC is open to anybody of any age who has suffered a stroke, spinal cord injury, or amputation. The Rustenburg Medi-Care Centre is slightly different in that the initial brief for the building was to cater for the physical rehabilitation, frail care, sub-acute care of the elderly along with a percentage of the building being dedicated to accommodation for the elderly. Demand for general public medical services has forced the building to change its focus slightly to include the sub-acute care and physical rehabilitation of the general public. Currently extensions are being constructed to the centre to include a day theatre and a number of wards which would make the building a combination of a number of medical facilities. Nazareth House offers no rehabilitation or preventative care but it does offer frail care for those who are physically unable to care for themselves anymore.

The areas of focus concerning the case studies were determined by the research done in the previous chapter's precedent studies which helped to determine the criteria for analysis. These criterions are: the choice of site in relation to its context, the spatial arrangement of the internal spaces, the client and funding of the facility, access to the site and links to public transport, the flexibility of such facilities, materials and structural system and finally the engagement between the patients and the public. This information will aid in the refining the brief and schedule of accommodation for the proposed design of a care facility for the aged.

5.1.1 WESTERN CAPE REHABILITATION CENTRE

Architects: Nazeer Seria Architects and South Architects

Location: Lentegeur Hospital Grounds, Mitchell's Plain, Cape Town, Western Cape, South Africa

Client: Department of Health

Completion Date: October 2004



LATITUDE: 34' 02" S
LONGITUDE: 18' 61" E



III.5. 1 The entrance to the Western Cape Rehabilitation Centre.

BACKGROUND:

The WCRC is the result of the amalgamation of Conradie Hospitals' spinal cord injury unit and the Karl Bremer comprehensive rehabilitation units. The Department of Health made the decision to consolidate the specialist rehabilitation services of the Western Cape into one specialist centre now known as the WCRC which is located within new and refurbished premises on the Lentegeur hospital site. The Department of Health felt that a pooling of resources, facilities and medical expertise within a new rehabilitation facility would be in sync with the global trend towards specialized satellite care centres.

A demand for acute beds within tertiary, secondary and district hospitals had also created a situation where patients were being prematurely discharged after surgery (On average 3 days after surgery). This shifted the burden of outpatient care onto rehabilitation services. Unfortunately the number of medical staff available to these facilities is limited and so while demand is high, rehabilitation centres such as WCRC simply do not have the staff needed to operate at full capacity.

SITE CHOICE:

The site on Lentegeur hospital grounds was chosen for a number of reasons. Firstly Mitchell's Plain was earmarked by Tabu Mbeki during his Presidency, as an area of priority in terms of urban renewal within the Western Cape. The presence of the WCRC between two prominent informal townships such as Mitchell's Plain and Khayelitsha was intentionally planned to create urban renewal in the form of "spin-off" improvements to public facilities and infrastructure. These spin-offs included the upgrading of pavements within the area to improve wheelchair access to the local shopping centre; the introduction of traffic calming measures to help protect the population of the area from high speed traffic accidents as well as the upgrading of both the Lentegeur and Mandalay train stations to allow for wheelchair access.



III.5. 2 Aerial view of the entire complex which shows the distances between buildings as well as the covered walways that connect them.

Surveys were conducted before the site selection process to determine where most of the disabled patient population originated from. It was discovered that the largest percentage of patients came from both Mitchell's Plain and Khayelitsha due to the high incidence of violent crimes that occur within these areas. It was established that most patients' injuries had been caused by stabbings, drunk driving, driving accidents, domestic violence and shootings between gangs within the community. It therefore made sense to site the centre within a close proximity of these two townships. (This survey also established that the average ages of the patients being admitted are between 18 and 25, although the WCRC deals with patients of all ages.)

This decision created a set of problems all on its own, namely the safety and security of the patients, staff and facilities. The decision was made to refurbish 6 existing vacant

wards on the Lentegeur Hospital grounds and build a new Wellness Centre alongside the wards and treatment spaces. The Wellness Centre was motivated by a Masters Students thesis that was conducted on Conradie Hospital and investigated the facilities available to those patients who were discharged with a physical disability. The location alongside Lentegeur Hospital meant that the patients, staff and facilities would be protected behind a 10ft precast concrete fence and razor wire where access is controlled through a single gate which is manned by security staff. Being located in close proximity to a hospital also means that patients can be speedily transferred to the hospital in the event of a medical emergency which the centre may not be able to handle.

Access to the centre is extremely difficult for anyone with a disability who uses public transport as taxis are not permitted to drive through the main gate as a security precaution. Additional transport provisions needed to be made and so a golf cart is used to fetch those able to use public transport, from the gate and deliver them to the WCRC. Public transport in South Africa is not suitable for people in wheelchairs and so specialized taxi service called "Dial a Ride" was set up by the WCRC to fetch patients from their homes and drive them to the centre. Also the Lentegeur and Mandalay train stations were upgraded to aid in embarking or disembarking the public train system. Unfortunately the rest of the train stations in Cape Town have not been upgraded to cater for the disabled. People with physical disabilities may not be able to drive a vehicle, so public transport, privately hired specialized taxis or family members are the only options available to them but unfortunately public transport is currently inadequate for the needs of the disabled.



III.5. 3 Dial a Ride service which is used to transport quadriplegics to and from the facility.

CLIENT & FUNDING:

The client for the WCRC is the Department of Health but the assets of the centre such as the building, vehicles, equipment and maintenance staff are all owned and managed by a private party. This relationship between governmental agencies and private corporations is known as a Public Private Partnership (PPP). All medical staff, patient treatment and monthly payments to the private party are paid by the Department of Health. Albert Luthuli Hospital was the first hospital to make use of a PPP in South Africa and the WCRC is the second to have done so.

The benefits of this of a PPP partnership is that the building is maintained and equipped by the private party in accordance with private healthcare standards but is accessible to all because the treatment of patients is paid for by the government. This means the centre provides the best possible care to the public (In the Western Cape, anyone who's on a social grant qualifies for free medical care.) instead of just the wealthy or those who are covered by medical aid, although patients who can afford the treatment are encouraged to pay for it. The unit fee per patient per day is between R130 and R200 which includes meals and treatment costs. The centres budget is not limited by profits as it draws on a wider pool of funds, government taxes to finance its operational costs. Nonetheless the centre still holds fund raisers and accepts donations to help contribute to the care of their patients.

There are minor issues caused by the separation of medical staff from maintenance staff due to each having a different employer, and all maintenance requests need to be approved by the private party before the maintenance staff can set about repairing any problems. This can cause delays but overall the benefits of this kind of a partnership far outweigh the negatives.

MEDICAL & SOCIAL FACILITIES:

MEDICAL:

The primary focus of the services offered by the WCRC is to reintegrate persons with physical disabilities back into their communities and ensure that they are able to handle day to day living within their own homes. The medical team that work at the centre is made up of a doctor, nurses, physiotherapists, occupational therapists, speech therapists, social workers and a dietician. These medical practitioners perform their treatment within either one of the three large therapy studios which each has a gymnasium, counselling area and a single occupational therapy space.

TREATMENT STUDIOS:

The therapy studios are equipped with parallel bars, large flat beds with suspension frames above, weights, therabands and gym balls. The spaces are large enough for multiple patients to be treated simultaneously in an area where they can move about freely without being restricted by the size of the room or amount of equipment. Large storage rooms are included within the treatment studios to store supportive splints or prosthesis when not in use by the patients.



III.5. 4 Large treatment space



III.5. 5 Parallel Bars



III.5. 6 Suspension System



III.5. 7 Adjustable treatment tables

OCCUPATIONAL THERAPY SPACE:

These therapy areas consist of a kitchen, bathroom and bedroom. All these facilities are standard settings within which the disabled need to be able to navigate and function in. The disabled person needs to relearn how to manipulated door handles and appliances with whatever movement or dexterity they have in their hands. The disabled also learn to use modified seating boards to help them transfer themselves in and out of the bath or shower.



III.5. 8 Fully equipped kitchen is used to prepare a patient for their home environment.

WARDS:

The wards are divided into a combination of sizes of either 1 or 4 beds. There are 6 wards available for use but currently only 3 are being used fulltime because of the lack of trained medical staff to supervise the remaining wards. The wards were pre-existing structures and so little could be done to change the ward layout which is unsuitable because the nurses' station doesn't have a direct view of the wards. The centre has a maximum number of 240 beds but currently only 156 of these beds are being used.



III.5. 9 A four bedroom ward.

HEALTH AND WELLNESS CENTRE:

This addition to the WCRC was officially opened on the 28th June 2006. It houses an indoor heated hydrotherapy pool and a small collection of gym equipment. The pool needs to be heated to body temperature because people who are paralysed often

cannot regulate their body temperature as effectively as an able bodied person. This means they run the risk of suffering from hypothermia if the hydrotherapy treatment were to be conducted in a regular pool. Paraplegics can access the pool thanks to a mechanical seat which is winched up and over the pools threshold. Hydrotherapy is effective because it allows the patient to do resistance training while in a semi weightless state. The changing facilities are easily accessible to those using the pool or gym and are designed in the form of curtained off cubicles which have enough space to allow for someone to assist the patient to change.



III.5. 10 Panoramic picture showing the gym equipment, theraband stations on the wall and the hydrotherapy pool.

WHEELCHAIR DEXTERITY/GAIT OBSTACLE COURSE:

A number of outdoor spaces have been transformed into challenging obstacle courses for wheelchair users. The landscaped environment mimics the obstacles the patient is likely to encounter within their community, such as gravel, gutters and changes in level or gradient.



III.5. 11 Different materials are used to simulate textures, wheelchair users will have encounter in public.

WASTE MANAGEMENT:

General waste is collected by the municipality whereas medical waste is collected twice daily by a specialized subcontractor called waste tech. All medical and municipal waste is stored separate of each other in locked storage rooms which are free standing structures that are alongside the service entry parking lot.



III.5. 12 All municipal and medical waste is securely stored in these buildings until they are collected.

SOCIAL FACILITIES:

FENG SHUI MEDITATION GARDEN:

Theses gardens are supposed to be a calm environment where patients and family members can relax. Unfortunately they appeal to be harsh environments because they're brick paved with only a small number of shrubs. In summer there isn't enough shade to protect the patients from the sun and so are rarely used. The gardens had the potential to become therapeutic themselves by incorporating horticulture therapy. There are raised planter boxes which mean people in wheelchairs could work on the gardens but this has not been taken further by the centre.



III.5. 13 The Zen Garden too impractical to be used by patients in wheelchairs because it is entirely covered in gravel.

BASKETBALL COURT:

Involvement in a team sport provides an opportunity for patient's reintegrate into their communities. It allows them to participate in a sport they may have previously played prior to the onset of their disability, or encourages involvement in new sport or leisure activity. The benefits of playing in a team sport like basketball are that it improves physical and psychological functioning through fun means.



III.5. 14 Basketball it a great activity for those with physical disabilities because it keeps them fit and encourages teamwork and social interaction.

LIBRARY AND INTERNET CAFE:

The library provides staff, patients and family members with access to various resource materials which related to physical disability. The library is also used as a spiritual counselling conference room as there is no chapel or mosque anywhere on the site.

THE LODGE FOR FAMILY AND CAREGIVERS:

In 2007 it was agreed that accommodation was necessary for the family members or caregivers of patients who needed to stay within close proximity of the centre so that they themselves can learn how to care for their disabled family member. These rooms are also used by patients who have been discharged and are waiting for transport home. Or ex-clients who wish to attend further training programs.

KIOSK:

The kiosk is open 5 days a week and offers full meals or snack to patients, staff and visitors. It is linked to the entrance lobby and so is used a lot by family members who are waiting for a patient to finish treatment and be discharged.

SPATIAL ORGANISATION AND FORM DERIVATION:

The WCRC is mostly a refurbishment of existing single storey satellite wards from Lentegeur Hospital which is perfect in that there are minimal level changes. The negative of this is that the building has become a vast network of smaller buildings that have been linked by external covered walkways. Patients therefore have to travel large distances along semi exposed walkways just to reach their therapy sessions in neighbouring buildings. These walkways also pose a problem to those with visual impairments because they are not all straight walkways; some have kinks in their route which increases the risk of someone walking into supporting columns. It also increases the number of staff needed to operate the centre effectively.



III.5. 15 The covered walkways are not always completely straight which increases the risk of a visual impaired patient walking into a column.

The schedule of accommodation and overall size of the facility was determined by the needs of the local population. The number of beds available was established by the size of the local population (485 950 people) which the centre was designed to cater for. This translated into one bed per 3115 of the user population within the



III.5. 16 This paved courtyard serves both the kiosk, entrance lobby and the staff offices. People gather her during lunch or while on a smoke break.

Western Cape. The additional wards were included to cater for the growing demand by surrounding provinces for specialised rehabilitation treatment, although they are not currently occupied.

The main building is designed around two courtyards, both of which are brick paved. The first smaller courtyard is linked to the Kiosk and is also used as an outdoor smoking area for the staff. The larger of the two courtyards is the Feng Shui meditation garden. The spaces between the main building and the wards are used as landscaped obstacle courses for wheelchair training.

Because the building is so vast and disconnected, an attempt was made to distinguish each section of the building according to its function. This was done by painting each section a different colour. Unfortunately they weren't all that bold with their colour selection and so this wayfinding tool is hardly noticeable.

IMPACT ON THE COMMUNITY:

Because of its location within a fenced off site, the WCRC has no direct connection to the public. The centre does hold annual fund raiser wheelchair races around the Lentegeur grounds and other fund raiser activities such as Jazz in the Park where small performances are put on at the Maynardville Open Air Theatre. Other community initiatives include the Peer Support Training program which trains a selected number of past patients with disabilities to be able to educate, train and support other persons with physical disabilities in their communities.



III.5. 17 This image shows the site and its context as well as the physical barrier of a security fence that separates the two.

Despite its relative isolation from the surrounding context, the centre does a lot to improve the lives of those living in the community with disabilities and for that it is widely appreciated by the local populations of Mitchell's Plain and Khayelitsha. In fact the WCRC client base apparently covers the Eastern and Western Cape as well as the Freestate and Gauteng. Patients travel from all over the country just to receive treatment at this centre so while its impact on the micro context may be restricted, the centre still manages to influence the lives of a massive number of South African through medical excellence.

FLEXIBILITY:

The spread out nature of the building allows for future growth but currently the whole facility is not being utilized because of the distributed layout of the existing facilities. The internal organization of the wards with relation to the nurse's stations also means that more nursing staff are required to be in attendance than if the wards were designed in a Nightingale configuration. Future expansion should be carried out along the vast covered walkways between existing buildings or should be built as a second story on the main building.



III.5. 18 The position of the nurses' station doesn't allow for direct visual monitoring of the patients which means more staff are needed to supervise the nurses' station and the patients.

While changes in level are not ideal when designing for the elderly or disabled, this building proves that restricting everything to a single level can cause just as many logistical issues. One option for the remaining wards would be to turn them into accommodation for the elderly who would benefit from being in close proximity to medical facilities. They could also make use of the Health and Wellness Centre to keep physically active. The size of treatment studios and wards means that these spaces could be utilized for other functions, and could be easy subdivided into smaller rooms if the need ever arose.

CONCLUSIONS AND RELEVANCE TO TOPIC:

The WCRC is not the ideal design for a rehabilitation centre for the physically disabled because of its disjoined facilities which are loosely connected by walkways. The architects however had little control over the spatial organisation as their brief was limited to the refurbish existing hospital wards for the purpose of creating a rehabilitation centre. Where the architects have succeeded is in the refurbishment of the existing structures in a way which ensures that the special needs of the disabled patient are met. There are no level changes or steps which could impede someone in a wheelchair and all external doors are automated to allow for easy movement between buildings. Toilets have been built into passage ways with a curved screen wall which, while allowing easy wheelchair access also offers a degree of privacy between the entrance of the toilet and the passage. These design features were insisted upon by

the engineering consultants and architectural firm who were appointed to the job because each is run by a disabled person. Their appointment insured that universal accessibility standards were adhered to. One aspect of the centres design which is lacking is the amount of wayfinding tools such as brightly coloured feature walls, textured materials which announce the function of spaces to those with visual impairments. In a centre of this size, navigation becomes difficult and confusing if no clear signage or visible markers are used to announce the spaces.



III.5. 19 The entrance to the toilets are partially hidden by this feature wall which is decorated with plants or artwork.



III.5. 20 All bathrooms have been appointed with grab bars to allow a patient to access the toilet by themselves. However the toilets are large enough to cater for a patient and carer, in case the patient falls onto the floor.



III.5. 21 The reception counter has been designed with two levels which means someone in a wheelchair visiting the site will be able to see the receptionist.

The centre has a number of positive features which could be incorporated into the design of a care facility for the aged. One important feature is the financial structure of the current PPP which ensures that the best medical care is given within a well maintained facility to all persons in need of treatment regardless of background or financial standing. With regards to the elderly this would mean that the proposed aged care facility would be able to offer treatment and preventative care to elderly patrons from all sectors of society which is part of the design ethos of creating a centre which doesn't discriminate but instead encourages social interaction between people of all ages, backgrounds and race. By offering free care it is likely that people would be encouraged to attend the centre where preventative healthcare could become possible. It would also improve the standards of health amongst the elderly whilst not increasing their financial expenses either on their own pensions or on their families' income.

The WCRC has successfully integrated a number of specialized medical disciplines under one roof which makes the process of treatment for people with a disability a lot more convenient. The siting of the centre on a hospital grounds also adds an element of security not only to the people and structure from the surrounding context but also in terms of having a close connection to the medical facilities available within the hospital in the event of an emergency. Unfortunately the downside to this is that the building

starts to be seen as an isolated medical institution especially when considering that public transport onto the site is limited. A greater connection to the community would encourage patients to be more actively involved within the community and would help speed recovery. It would also educate the general public about the abilities of those persons with disabilities, especially seeing how people often confuse physical disability with mental disability.

5.1.2 RUSTENBURG MEDI-CARE CENTRE

Architect: Gillian Holl

Location: 271 Beyers Naude Drive, Rustenburg, North West Province, South Africa.

Client: Belinda McGillewie & Robert Beaumont

Completion Date: September 2009



LATITUDE: 25' 68" S

LONGITUDE: 27' 22" E



III.5. 22 A panoramic picture of the main entrance of the building which is flanked by three storeys of medical wards, assisted living units, frail care units, psychiatric ward, sub acute care and the rehabilitation centre.

BACKGROUND:

The Medi-Care Centre was originally conceived as an old age home come retirement village with a portion of the building being dedicated to wards frail care. The brief to the architect kept changing during the design process which has resulted in buildings functionality being changed to include; a sub-acute hospital, psychiatric hospital, acute rehab hospital. Construction is continuing behind the existing facilities to include an adult day care facility as well as a day theatre. The reasons for the change of brief by the client were as a direct result of the fact that there was a lack of interest by the public towards the construction of a retirement village and old age housing. The second motivating factor was brought on by the current medical facilities within Rustenburg which do not include any day theatres. This means that patients need to be admitted to hospital and stay overnight even if the surgical procedure they are having is considered minor surgery. These circumstances are extremely inconvenient to the patient in terms of time and cost.

Medical practitioners in the area recognised the need for day theatres and so asked for them to be included within the development along with an x-ray department.

Unfortunately, these facilities had not been included in the original design of the first stage of construction and so have been subsequently added to the design of the second stage. This uncertainty towards the buildings chosen function has resulted in a centre that is poorly designed with regards to access and circulation for those with disabilities as well as the elderly.

SITE CHOICE:

The site was chosen by the joint owners and developers of the project, Belinda McGillewie and Robert Beaumont because the site had already been in their possession for a year prior to the development of the project. Therefore it was selected more out of convenience than for its orientation or locality. The site is conveniently located close to the Life Peglerae Hospital and the M4 which is the major traffic route in and out of Rustenburg.

Originally the site had a number of houses on it which were then bought and converted into a crèche. The crèche soon closed down due to financial difficulty and was then bought and converted into a junior school. The school had to be closed down in 2006 due to substandard facilities. Belinda McGillewie and Robert Beaumont then purchased the site with the goal of developing a small retirement village which later changed to what it is today. The site has recently been made bigger by the purchase of a neighbouring site which is located behind the existing Medi-Care centre. Currently, construction of Stage 2 (Day theatres, x-ray department and additional wards) is taking place on this newly acquired land and should be completed by the end of 2011.

Access to the site can be difficult along the busy Beyers Naude Drive during peak traffic times. This problem has been alleviated with the purchase of the neighbouring site which has direct access onto a quite back alley that links to the M4. Public transport is a problem for staff and patients alike because there is no designated taxi stop at or close to the centre. Beyers Naude Drive also does not form part of the public transport route travelled by taxis or buses. This forced the Medi-Care Centre to purchase a specialized vehicle which is used to collect patients who are receiving treatment at their facility.

CLIENT AND FUNDING:

The Medi-Care Centre is a privately owned facility which is separate from the acute rehabilitation centre which located on the ground floor. Income is generated by the centre by offering a number of sub acute care options to people who have recently

been discharged from hospital. Income is also generated from the subletting of part of the building to the rehabilitation centre. The rehabilitation centre is owned and run by Jurgen Voges, a physiotherapist who is also the current acting Chief Physio of all Platinum Health's physiotherapy services.

MEDICAL & SOCIAL FACILITIES:

MEDICAL:

The Medi-Care centre is divided between three levels; each level is divided into two wings by a central core which houses the lift and staircase. Each of the 9 wings has a different function which includes either one of the following; a psychiatric ward, assisted living units, frail care, orthopaedics wing, sub-acute care ward, general wards and the rehabilitation centre.

SUB ACUTE CARE:

The aim of the sub acute wards is to merge the sophisticated technology of a hospital with the efficiency of quality nursing staff to reduce the cost of hospital services while maintaining quality care. Patients who use this facility have recently been discharged from hospital and no longer require critical care but are not yet able to return home. Patients are monitored by 24 hour nursing staff and by an onsite general practitioner. This wing has been designed to house the wards on one side of the passage and staff offices on the other so that there is always a medical practitioner close at hand in the event of a medical emergency.



III.5. 23 The sub acute wing is divided into two sides. The left side is all the wards and on the right are all the staff offices.

REHABILITATION CENTRE:

The rehab centre is an independent, sub acute centre which is linked to the Medi-Care step down facility. The centre is divided into a one large treatment studio with 4 smaller treatment rooms that run along the one side of the general treatment zone. These smaller treatment rooms are used by all the therapists for occupational therapy, speech and hearing therapy, orthotic and prosthetic services along with physiotherapy. In comparison the treatment studio is a lot smaller than the studios of the WCRC but then again they are run as a public facility and deal with a larger number of patients. The studio is only designed to handle the simultaneous treatment of 2, maybe 3 patients at

a time. On average the physiotherapist and occupational therapist treat about 7 patients a day while the speech therapist works with about 4 patients a day. Therefore the studio only has to handle 18 people a day. The large studio can be divided into two smaller areas with the use of curtains and each house a selection of gym equipment, specific to the physical needs of a patient who's suffered a spinal cord injury or lost a limb.



III.5. 24 Main divisible treatment studio.



III.5. 25 A smaller treatment room with suspension system.



III.5. 26 The heated hydrotherapy pool is kept at 38º Celcius because quadriplegics are unable to regulate their body temperatures.



III.5. 27 An occupational therapy station.

A small heated hydrotherapy pool at the furthest end of the rehabilitation centre is enclosed by glass windows. The design of the space seems inadequate because there is minimal space in which to manoeuvre around the pool, especially in a wheel chair. Like the WCRC, the Medi-Care Rehabilitation centre has a seat which can be lowered into the pool if the patient is physically unable to climb into the pool themselves. This winch operated seat needed to be a portable adaptation of the one found at the WCRC because there isn't enough space around the pool to install the permanent version.

WARDS:

All the general wards are comprised of 6 beds with an en-suite bathroom. The bathrooms have been designed according to the needed specifications for someone with a physical disability which includes; grab rails along the walls, large toilet cubicles to allow for the turning circle of a wheelchair and lever operated taps. The sub acute wards each have 4 beds and have additional medical facilities such as a wall



III.5. 28 One of the 6 bedroom wards.

mounted oxygen supply and monitoring equipment.

The psychiatric wards are divided into 3 smaller rooms which have 2 beds in each. A nurse's station is set up in the first room from where the nurse can monitor the behaviour of the patients to insure that they don't inflict harm on themselves or their peers. The psychiatric ward is locked off from the rest of the building by a security gate.

One issue with the wards is that most of them need a nurse's station from which the nurse can monitor the condition of the patients. Unfortunately these nurse's stations were never designed into the building and because of the layout of the building, adding the stations now is almost impossible and highly impractical. The solution to this has been to convert each wards balcony into a nurse's station, which has a cupboard for storage and a sluice room which was added as an afterthought.



III.5. 29 Poor design led to the wards balcony being converted into a nurses station and sluice room.

WASTE MANAGEMENT:

Regular waste is collected by the municipality while the medical waste generated on site is collected one a day by a subcontractor who disposes of it in accordance with the health and safety regulations. All medical waste from the wards is placed in green plastic sealable containers before being taken away by staff to be emptied into the holding bins outside. The centres holding facilities for its waste is not securely locked away which it should be and so poses a health risk to the general public.



III.5.30 Medical and municipal waste are being stored together and in an unsecure holding area which could be a public health risk.

The centre uses a subcontractor for all its laundry services except for the Rehabilitation Centre which does its own laundry. The Rehabilitation Centre has no designated laundry room so a washing machine and tumble dryer have simply been placed in one of the treatment rooms which has plumbing facilities.

SOCIAL FACILITIES:

Currently the only facilities that encourage social interaction are the Kiosk which is on the first floor, and the paved courtyard at the back of the centre which is used as a place for patients and staff to smoke.

KIOSK:

The kiosk makes and sells meals to people visiting the centre but they also provide for all the patient meals on a daily basis. The kiosk is managed by Rita's Catering service and the costs of meals is included in the levies of those elderly patients who are living in the Assisted Care or Frail Care accommodation or else it's simply included in a patients fees.



III.5. 31 An image of the inside of the kiosk which serves meals to visitors as well as all daily meals consumed by the patients.

SPATIAL ORGANISATION AND FORM DERIVATION:

The building has been designed in a broad V shape. At the junction of the V is where the vertical circulation between all three levels occurs through a lift and spiral stairwell. On the ground floor this central point draws the focus onto the building's entrance lobby and reception area. On the first floor above the lobby is the kiosk and above that is the nurse's lounge. All the wards and treatment areas branch out from this central public core. The resultant form means that there are dead ends at the end of each passage. Currently the building doesn't have any fire escape staircases except for the centrally located stair; therefore a fire near the centre of the building would be devastating. A fire near the core is highly possible seeing that the kitchen is located near the core. There are no ramps between levels which means that people who are unable to walk or whose movements are restricted by being in a wheelchair, would not be able to evacuate the building in the event of a fire because the lift would be shut down. One solution for this is for the Centre to invest in a specialised wheelchair that can be used to transfer patients down a flight of stairs.

IMPACT ON COMMUNITY:

There is a large demand for sub acute step down care within Rustenburg because Rustenburg's healthcare system is reliant on large hospitals for the treatment and care of the local population. Unfortunately there is a shortage of beds in these hospitals which means patients are discharged prematurely which is why the Medi-Care centre is so invaluable to the community. Unfortuantely the building was poorly designed and built because of an uncertainty as to what medical facilities it would include.

The building does not engage with the local community at all because there are no facilities that are open to the public on the ground floor of the building. The buildings downfall is that the most private medical treatments are all conducted on the ground floor which immediately limits the movement of the public through the building. Even the courtyards which are provided are hard areas that are fully paved and receive little sunlight because of the construction of stage 2 which backs itself up against the courtyards.



III.5. 32 This image shows the small courtyard that is now constantly in shadow with the commencement of stage 2's construction.

The fact that this facility is privately owned and run means that they rely on profits to support the daily operations of the building and treatments facilities. Unfortunately this means that a large percentage of the population cannot afford the type of care that is on offer at the Medi-care Centre. Medical treatment should not be restricted to anyone portion of the public especially within a city that only has one designated sub acute step down facility.

FLEXIBILITY:

There is a large amount of flexibility within the form of the building because the additions can be made to the ends of each wing and in fact stage 2 of construction does link to both the core and one of the wings. The size of the land available at the back of the building is more than big enough to double if not triple the size of the existing structure and the additional access road to the site means that movement of vehicles could be well managed through the site.

CONCLUSIONS AND RELEVANCE TO TOPIC:

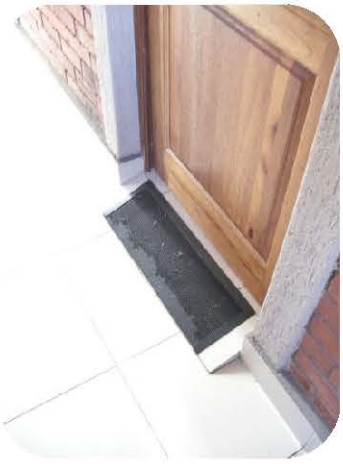
The Medi-Care Centre was originally selected for this case study to examine the possibilities of designing a care facility for the aged which is not limited to a single

story; the Medi-Care Centre has achieved this but not successfully. This example has shown that when designing for the elderly, ramps become an important fulcrum as to whether or not a building is successful in terms of vertical movement. Lifts and stairs are necessary but both present themselves as obstacles to a person who's restricted to a wheelchair. Movement between each level of a building along a ramp represents a serious challenge to any aged person, which requires a large amount of energy. Therefore it is believed that the number of storeys of a building designed for the aged should be limited to two.

The Medi-Care centre also helps to highlight the importance of areas both inside and along the active edge of the building that encourage social interaction between, patients, staff and the general public. This facility lacks a metaphorical heart by not having meeting spaces or any other form of connection to the public. People don't heal in isolation, they draw on social interaction to motivate and inspire themselves into action and for this a building needs to be extroverted instead of introverted.

For a building that was originally designed for only the elderly, there appear to be some fundamental flaws in execution of the building's design. Some of these problems are listed below:

1) There are unnecessary level changes of 5cm between internal passages and the buildings core, as well as between door thresholds of wards, assisted living units and passages. These level changes were dealt with by simply by creating a 45º ramp from screed and tiles. The steep angle of these small ramps makes it unnecessarily difficult for an individual in a wheelchair to move about the Centre. This is a case where the architect has created a disabling rather than an enabling environment.



III.5. 33 Improper level changes.

2) The entrance lobby is only reached after crossing a cobbled parking area which is difficult for a wheelchair user to navigate across. Elderly patients who are prone to falling find this paving particularly treacherous. Once inside the lobby, wheelchair users are confronted by a reception counter which is too high to see

over and so an additional reception desk was built into the wall, adjacent to the main reception counter.

These initial architectural faults give the patient the impression that the centre was not designed to cater for those with disabilities when in actual fact the centre was supposed to be designed for just that.



III.5. 34 The additional reception counter which is low enough to allow wheelchair users to see and speak to the receptionist.

3) The size and type of doors in the Centre are often standard size doors which have no protection such as aluminium kick plates or nosing for the corners of the walls. Door handles are standard even on the door to a paraplegic toilet. As a result of poor materials selection or poor judgement, a large percentage of the doors within the building are being rapidly damaged as people in wheelchairs try to enter the toilets.

4) The centralized lift is currently too narrow for a hospital bed, hence if a bed ridden patient needs to be transferred between floors, the patient is physically lifted onto a narrow gurney, placed inside the lift and sent up a floor. Once disembarking the lift, the patient is once again transferred onto a waiting hospital bed.



III.5. 35 The gurney that's used to transfer patients between levels.

5) A common shortfall in all the case studies thus far is the lack of wayfinding tools for the visually impaired. All that is required is a bright colour scheme to distinguish spaces for those with partial sight, or a change in material along the walls or floor for those with total blindness. Audible cues could also be used such as the sound of water or wind chimes.

In conclusion this case study was more revealing as to what not to do when designing for the elderly. It also showed that a loosely defined brief can lead to long term issues within the completed building such as poor circulation, material choices and poorly linked spaces.

5.1.3 NAZARETH HOUSE

ARCHITECT: Seitter Boyd Architects

LOCATION: 82 South Ridge Road, Berea, Durban, South Africa

CLIENT: Sisters of Nazareth

COMPLETION DATE: December 2004



Latitude: 26' 14" S
Longitude: 28' 11" E



III.5. 36 East elevation showing visitor parking and the main entrance

BACKGROUND:

Nazereth House used to be a children's home as well as an infirmary for the elderly. Over the years, the children's home was done away with because the governments welfare foster care program took over. Currently Nazareth House is used as a convent and as a frail care centre for the aged.

With the number of religious sisters dropping over the years, the original convent building became too big in relation to the number of occupants and so a decision was made to construct a new building on a vacant plot of land that neighboured the old building. The old convent building has been taken over by the Entabeni Life Group and is in the process of being renovated to house the nursing collage.

SITE CHOICE:

The site was chosen for the construction of the new convent and frail care centre because it was an empty plot which was already owned by the Sisters of Nazareth. The site is located within close proximity to both the Entabeni hospital and St Augustines Hospital. The frail care centre has become a satellite medical facility that caters for those elderly patients who have recently undergone an operation and need nursing care. Therefore both the old and new sites are ideally located because patients don't

have to travel a long distance during their transfer from the hospital to the frail care centre.

CLIENT & FUNDING:

Nazareth House relies heavily on donations from the public to support its operation of the convent and frail care centre. It's a non-profit organisation and so all funds raised are channelled back into the centre and its patient's treatment. There are a number of aged patrons who live in the assisted living units who pay a monthly levy. The government also subsidises the costs of patient care if they are considered an economic pensioner who can't afford his/her care. Currently there are 16 patients whose care is subsidised by the government staying at Nazareth House.

MEDICAL & SOCIAL FACILITIES:

MEDICAL:

Nazareth house operates with a minimal amount of medical supplies and equipment. There are no designated treatment rooms; instead nurses attend to the patients in each of their rooms.

PATIENT ROOMS:

The building is designed around and double volume lounge area with rooms on two levels that are located along the external walls of the building. Each room has its own en-suite bathroom which is fitted with grab rails and a paraplegic shower and toilet. All the rooms cater only for single patients. There are very few elderly couples and so the demand for a double room is minimal.

WASTE MANAGEMENT:

The building has a large sluice room which is used to sanitise all soiled bed pans and other sanitary equipment. This room is completely tiled to make cleaning very easy. There is a drain in the floor so that any spills can be quickly washed away. This room is also used to store a large amount of cleaning detergent which is decanted here by maintenance staff.



III.5. 36 The sluice room

All municipal waste and medical waste are stored in a small building alongside the service entrance. The

medical waste is locked behind a gate to insure there is no risk of contamination or chance of spreading disease.

SOCIAL FACILITIES:

LOUNGE AREAS:

A double volume lounge is positioned in the centre of the frail care building and has clerestory lighting. The only problem with the design of this lounge is that a necessary ramp has been built which wraps all the way around the lounge. This means that access to the lounge can only be obtained from the one corner of the room. The ramp also blocks some of the light filtering down from the clerestory lighting.



III.5. 37 Double volume lounge area which is disrupted by the ramp

DINING ROOM:

The dining room is located in an older part of the building. Unfortunately it is some distance from the frail care centre which means most patients need to be fed in their rooms. One design flaw is that the lift that serves both levels of the frail care centre is locate on the far northern side of the building which means patients have to walk an excessive distance from the entrance lobby and past the lounge to get to the lift. This means that staff have to wheel a trolley of food from one side of the building to the other before being able to move the food cart between floors.



III.5. 38 The dining room is under utilised because of its location on the far end of the building

ACTIVITY ROOMS:

The frail care building also includes a hobby room for making Christmas cards and other trinkets, a hairdressing salon and a small counselling room with library. Unfortunately because of the poor physical condition of



III.5. 39 The hair salon

the patients staying in the centre, few actually venture out of their rooms to take part in these activities.

SPATIAL ORGANISATION AND FORM DERIVATION:

The building can be divided into seven connected parts according to their function. These are:

- Entrance and frail care centre
- Chapel
- Communal lounge and acitivity area
- Assisted living units and dining room (older portion of the building)
- A convent
- Visitors accommodation
- Maintenance, storage and waste areas.

The building is double storey in most areas which could have been an issue if it were not for the ramp which means that the first floor patients can still be evacuated in the event of a fire, unlike the Rustenburg Medi-Care centre.



III.5. 40 A view of the Southern elevation showing the frail care centre on the left, the convent on the far right, with the chapel between the two.

IMPACT ON THE COMMUNITY:

The frail care centre plays a vital role in alleviating some of the stress of being discharged from hospital prematurely. Its only downfall is that there is no designated rehabilitation area or treatment studio and so the patients are not rehabilitated properly. This is a minor issue in the case of this building though because their main focus is on caring for the elderly who are past the point of being rehabilitated. They provide more of a HOSPICE type care as a result.

FLEXIBILITY:

Nazareth house is somewhat limited in terms of what can be done to the existing building to improve its facilities. Their only option if they ever wished to expand would be to construct a new building in front or behind the current building and then link the

two together. There are a number of spaces that are under utilised in the older section of the building which could be changed to suit any future needs.

CONCLUSIONS AND RELEVANCE TO TOPIC:

Nazareth house was examined as a case study to establish if a care facility for the aged could function effectively over more than one storey. Nazareth house works perfectly well but some architectural elements such as the obstructive ramp could have been worked into the design in a more elegant solution. Nonetheless the internal spaces are nicely lit by clerestory lighting and the ventilation cowls help to reduce the build up of heat within the lounge areas.

In terms of social integration, the building isolates itself by being surrounded by a fence and security gate. Unfortunately these are necessary measures to insure the safety of the patients. Other than the neighbouring hospital there are no social nodes with which the patients would be able to interact with. There is however a good public transport network in operated by the Mynah buses and taxis in the area that stops outside the centre. This service helps to encourage independence amongst those staying in the assisted living units.



III.5. 41 The main entrance and guard post.

CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

6.1 INTRODUCTION

The research conducted in this document has explored the issues that surround current forms of health care with the emphasis being on the care of the elderly. This research was conducted to suggest an appropriate response to the design of a wellness centre for the elderly within a suburban area of Pietermaritzburg. This chapter is a summation of the main aspects that should inform the brief and ultimately the design of a care facility for the elderly. The main aspects are as follows:

- Social integration of the elderly into the community
- Redefining healthcare facilities
- Healing environments

6.1.2 SOCIAL INTERGRATION OF THE ELDERLY INTO THE COMMUNITY

In today's society the position of the elderly within the family has and currently is being redefined. Once revered members of the community, the elderly soon became marginalised with the onset of the industrial revolution. In first world countries, the elderly are seen as a financial burden but in 3rd world countries, the elderly status is being elevated due to the effects that HIV/AIDS epidemic has had on the middle generation. Financial difficulty has meant that in some circumstances the social grant given to the elderly by the government is often the only income generated within a multigenerational family, making the grandparent the breadwinner of the family. In South Africa the situation is a combination of both first and third world countries. In the poorer sector of society the elderly are increasingly becoming a vital asset to the family once more, where as in the middle to upper classes of society, the responsibility of caring for the elderly is often deferred onto a care taker within an institution or retirement village. Both situations have negative effects on the elderly in terms of their mental, physical and social wellbeing. In the former circumstance, the elderly are at risk of neglecting their own health by instead focussing on caring for their children or grandchildren. The later circumstance severs most social connection between the elderly and their extended families as well as from the rest of society. This is because most retirement villages are gated communities or are simply built on the outskirts of the towns.

There are few facilities that relate to the elderly that encourage social interaction between generations. Today's social nodes are defined by shopping malls and sporting events. Therefore it is the intent of the author to design a care facility for the elderly that has strong links to a small shopping centre (Cascades) in Pietermaritzburg which would allow for impromptu social interaction between the elderly and the rest of society. The shopping centre itself is battling to survive as the larger Midlands Mall that's just down the road has managed to draw most of the centres customers away. It is envisaged that the introduction of a Wellness Centre for the aged which has adult day-care facilities, public access to general practitioners and other general amenities would encourage people to visit the centre more frequently.

Children could drop their parents off at the adult day-care centre in the morning on their way to work and then be able to do their grocery shopping at Cascades before collecting their parents. This creates a symbiotic link between the Wellness centre for the aged and the Cascades shopping centre. Not only are social links cultivated but financial links too. The benefits of such an environment is that the elderly are physically, mentally and socially stimulated which would improve their health and lower their risk of sickness or injury and ultimately on becoming dependent on others for care.

6.1.4 REDEFINING HEALTHCARE FACILITIES

As the position of the elderly within society has changed over the centuries, so too has the location and type of healthcare environments. Originally the sick were cared for at home or in the community but over the last 200 years, the role of healthcare provision has fallen under large medical institutions such as public or privately run hospital. While hospitals and medical staff are effective at providing acute care to the sick or injured, the environment itself is not one which stimulates individual healing. The emphasis is also only on the treatment of the illness rather than the prevention of the illness in the first place.

Medical and governmental agencies are slowly realising that the model of care provided within large hospitals that require a huge amount of capital to run is not the most efficient way to improve public health. Countries such as the U.S and UK have started to revaluate their healthcare facilities and have found that smaller satellite facilities placed within the community are far more effective at improving public health. These satellite care facilities are also cheaper to operate, staff and maintain. They also

shift the mindset of the public and the medical field towards a future of prevention rather than treatment. The hospital is still a vital part of the healthcare system but its role as the sole provider of care to the public needs to change. This need to change the current healthcare provision in South Africa is what led to the research conducted within this document which will inform the design of a Wellness Centre for the Aged.

6.1.3 HEALING ENVIRONMENTS

The type of environment we're in has a noticeable effect on our mental and physical wellbeing. Therefore sterile, institutional care environments such as hospitals can actually slow the process of healing rather than encourage it. The materials and design of hospitals has been too focused on the requirements of the doctors rather than the patient. Sterile environment have no life to them and so lack the ability to inspire a patient to get better. Research has been done that conclusively acknowledges that a patient placed in an environment which responds to their needs and has visual or physical connections to both nature and the public, will heal in a significantly shorter period of time.

Hospitals lack the ability to feed all the senses of a patient and so the best solution is to redesign the care environment that is centred around the patient but at the same time encourages preventative care rather than treatment and stimulates rather than isolates the patient. A Wellness Centre is therefore an obvious choice because as it can house both sub acute care and preventative care facilities under one roof. The siting of the building is important because it needs to visually connect to nature but not isolate itself from the urban community. The site selected next to Cascades has views directly onto a wetland, river system and forest but yet still maintains a level of connectivity between the building and the public.

The case studies conducted in this document were chosen based on the strength of their design either as a medical facility or as a centre especially designed for the elderly. This was done so that when the two are combined into the proposed Wellness Centre for the aged, they function correctly and create an environment which is enabling rather than disabling for a person who may have a physical disability. The building spaces need to be easy to navigate through and each portion of the building needs to be defined according to its function in a manner that is easily interpreted by someone with a visual disability or cognitive issues.

6.1.4 CLOSING REMARKS

Throughout this document various aspects of aged care have been explored and an understanding of past present and future models of care has been discussed. The precedent and case studies were examined to glean firsthand knowledge about differing care environments so that the design of the Wellness Centre for the aged is an informed response to the social issue of caring for the elderly within our community. By considering all the social and design implications of an aged care facility, a suitable architectural response will be determined for a facility that will ultimately create a platform for intergenerational connection through preventative healthcare.

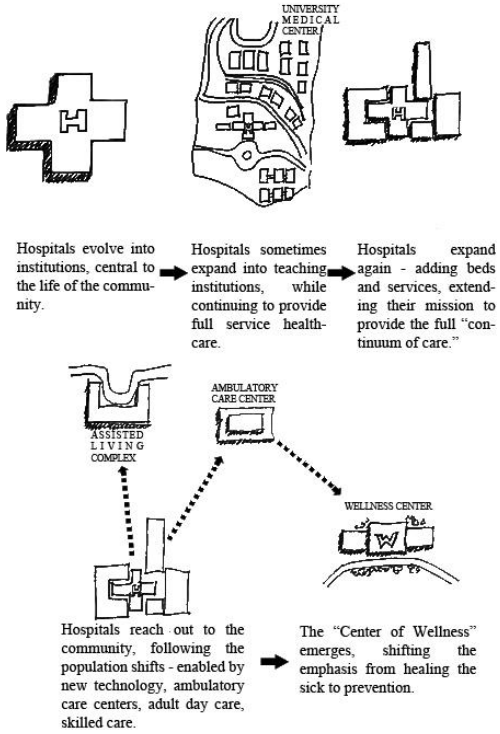
INTRODUCTION:

Healthy people always choose life, and the future of healthcare lies in the creation of architectural environments that enhance, encourage, and promote both healing and preventative care.

The proposed new design of a Wellness Centre for the Aged, located on a semi-urban site alongside Pietermaritzburg's Cascades Mall, sets out to create a building that acts as a catalyst for social interaction between the public and the aged community that exists within the surrounding areas of Hilton, Howick and Pietermaritzburg.

Its primary goal however is to bridge the gap between acute care facilities such as hospitals and the patient's home or care environment. The high demand for hospital beds in Pietermaritzburg and generally across South Africa has resulted in a treatment cycle which discharges elderly patients prematurely. By freeing up hospital beds today, they've actually started a chain reaction which forces the elderly into early dependency on others while increasing their likelihood of being re-admitted sooner rather than later. The reason for this is that the elderly will be more prone to falls and other household accidents as they try navigate their home or care environment with a disability.

The Wellness Centre for the Aged aims to place a large emphasis on preventative care, rather than simply treating the natural erosion of an elderly person's mental and physical state reactively as most medical institutions currently do. By keeping the elderly physically and mentally fit for longer, they could have a better quality of life and remain independent of carers for longer. This goal can be achieved through better; nutrition, sanitation, education, fitness and the attenuation of disease causing habits such as drinking and smoking.



By designing smaller, satellite healthcare facilities for the elderly within a convenient location and with a non-institutional design approach to materials and scale, the resultant architectural design is one which is humanistic in its response. Edward Taub, M.D. (the Director of Wellness Services at the Western Medical Centre Hospital in Southern California) believes, that by creating a therapeutic environment which encourages everyday use by the elderly whether they're ill or not will change the future of healthcare by transforming the concept of "primary care" toward a new one of "pre-primary care," which is in effect preventative medicine. The result of this shift could mean that for the first time in history, doctors and hospitals would make the bulk of their profit by keeping people away from the doctor's office in the first place, opening up wards in hospitals to only those patients which need specialized surgical treatment. (Gallup 1999, 55)

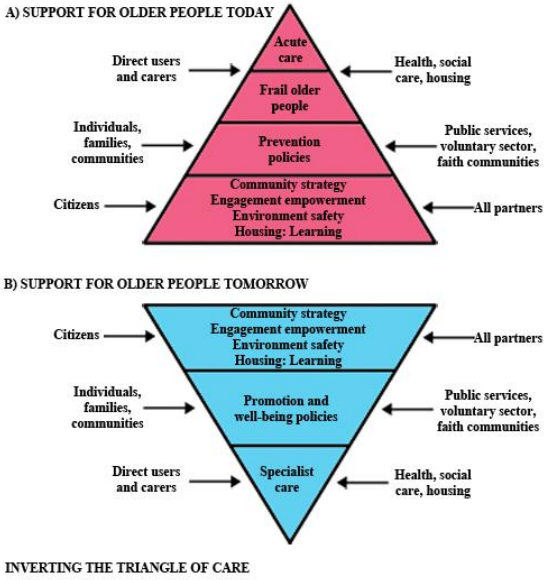
The design of a Wellness Centre for the aged within South Africa is needed to help alleviate the demand on primary care facilities such as hospitals and clinics that are still dealing with third world issues of infant mortality, the effects of diseases associated with HIV/AIDS infected people. The elderly population in South Africa is growing as more of the population is exposed to better standards of living, education, nutrition and healthcare since the democratic elections of 1994. As this demographic shift occurs, it is shadowed by age associated illness and disabilities which could be abated through preventative care within a therapeutic environment. This report will highlight how such a design concept towards healthcare can be achieved within the context of South Africa's elderly.

BRIEF:

The Wellness Centre for the aged aims to provide sub-acute/step-down care within a therapeutic healing environment for the elderly. The facility will rely on post-operative referrals from Pietermaritzburg's three public hospitals; Edendale, Grey's and Northdale Hospital, as well as St Anne's Hospital which is a private hospital in the CBD. (The implications of offering care to public and private hospital patients will be discussed later on in this report). The Wellness Centre should be located as close to its target user group as possible to make it convenient for them, whilst insuring that the link between referring hospitals is not compromised as a result of its location.

The building elements to be included in the facility are; an aged wellness/day care centre, a medical office building and a post operative rehabilitation centre/step-down care facility which includes patient accommodation. It is believed that a synergistic relationship between these three elements on one site will create a financially viable approach to the preventative and post operative care of the elderly. The success of the Wellness Centre will be determined by the aged demographic context and the strength of the referral links between the previously mentioned hospitals.

Transport to and from the Wellness Centre should be easily available for all, irrespective of their physical abilities. A large percentage of the elderly visiting the centre on a daily or weekly basis may no longer be able to drive therefore public transport needs to be assessed to determine how best it can be integrated into the daily lifecycle of the centre.



INVERTING THE TRIANGLE OF CARE

Changing an elderly person's physical environment can be a traumatic experience, especially when they're already under physical and emotional stress after a surgical procedure. Therefore the design of this Wellness Centre needs to incorporate design strategies that are non-institutional in appearance and that promote the process of healing within a safe, nurturing environment. This 'humanization' of the care environment needs to re-evaluate the needs of a healthcare facility in terms of the quality and selection of finishes, materials and colours. These selections can also be used in wayfinding to and through the building. Wayfinding tools should engage with patients on a multisensory level so that a patient with a sensory impairment may still navigate the building through the use of one or more of their remaining senses.

The building and its surrounding context should be developed to include relevant ergonomically design for the elderly and the disabled, thereby making it an "enabling environment" within which to heal.

The building will be integrated into the public fabric to encourage the concept of communal healing rather than healing in isolation within an insular self contained facility like a hospital. To achieve this, the facility shall include functions and spaces for patients, staff and visitors. These spaces will include; a cafe, indoor gardens, meeting points, a small library and art gallery, each of which acts as a subconscious therapeutic activity that aids in the healing process. The close proximity to well lit areas of pedestrian activity and the inclusion of public spaces will help to minimize the risk of crime and provide a sense of comfort to its users. With this in mind, care needs to be taken when designing to include the public within such a facility because a layered gradation between public and private spaces still needs to be maintained for patient privacy.

CLIENT:

Introduction:

The aim of this wellness centre is to provide care to as large a percentage of the elderly population within Pietermaritzburg and its surrounding areas as possible, regardless of their income bracket. By creating a Public Private Partnership (PPP) between developers and a potential client such as PADCA, the cost of construction and maintenance of the building can be separated from the everyday operating costs of running a Wellness Centre for the aged with respect to staffing and medical expenses. Therefore a number of clients would be involved to ensure that the centre is financially viable irrespective of the patients' income bracket.

Primary Client:

The main client will be the investors who will pay for the construction and maintenance of the facility. In this case the main client will be a private developer by the name of Rob Alexander from Ducatus Property Developers. His development company recently purchased Cascades Mall and is in the process of redeveloping it at a cost of R25 million. An application to extend the mall to the other side of the river by about 4000m² has also been lodged with the town planning authorities. Plans include the construction of a new Virgin Active gym adjacent to the mall, a number of office blocks and a mega outdoor shop/market.

The wellness facility would become part of the Ducatus property portfolio which they would lease to a number of tenants involved in the wellness centre scheme. These tenants would become the secondary clients involved in the wellness centre.

Secondary Clients:

One of the secondary clients for the wellness and sub-acute facility would be an organisation such as PADCA. PADCA has a strong history of providing care and accommodation for the elderly in Pietermaritzburg and currently manage five homes within the CBD.



The wellness facility will have a medical wing which is open to the public. This wing will house a number of medical professionals including; physicians, general practitioners, optometrist, dentist, pharmacist and nursing staff whose space requirements need to be taken into consideration during the design phase.

Conclusion:

While the previously mentioned clients are directly related to the design and running requirements of the wellness centre, other entities play a major role in making the building sustainable in terms of its financial and functional lifecycle. These entities are the elderly patients/visitors and the network of hospitals within Pietermaritzburg.

If the local hospitals transferred their stable post-operative elderly patients to the wellness centre, a mutually beneficial referral link would be established. The hospitals would benefit by freeing up hospital beds for new patients needing surgical procedures, which is where hospitals make the bulk of their money anyway. The step down facility would need a constant stream of patients needing rehabilitation to help pay for the running of the wellness centre.

The patient also benefits from the transfer by being in a healing environment where they can receive step down care at a lower cost than if they were to stay in a hospital ward. By lowering the cost of step down care one increases the buildings user base as it is able to care for those who fall under a lower income bracket.

The needs of the elderly for an enabling, healing environment should be the focus during the design phase but the building must be flexible enough to accommodate growth or future changes to be determined by the building owner, Ducatus Property Developers.

FUNDING:

Funding a wellness centre for the aged that caters for all income brackets means the building will most probably have to operate as a not profit organization. The services provided by the wellness centre and step-down facilities will be charged according to a patient or elderly visitor's income. The poorer elderly who only receive a state pension of R1140 a month would need to receive some form of subsidy from the government for their care, whilst medical aid schemes would pay for the care of the more affluent patients or visitors.

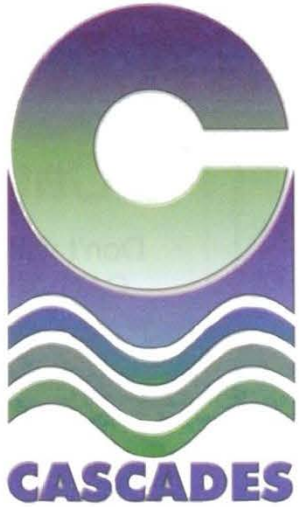
Medical aids currently subsidize their clients gym memberships as well as certain grocery products because they've realized that by encouraging a healthy lifestyle, the number of medical aid claims made each year by their clients will lessen. A similar scheme could be set up between medical aid providers and the wellness centre to encourage regular use of the facility by the elderly, thereby improving their physical well-being and lowering the risk of falls or other age associated disabilities. The longer the elderly clients live free of disease and disability, the longer they can remain independent. From the point of view of the medical aid provider, this translates into fewer doctors' consultations, fewer prescriptions and ultimately fewer claims against their medical aid.

By subletting space out to doctors and other smaller public facilities such as a coffee shop and art gallery, the wellness centre could generate a supplementary income which would partially reduce the costs of their rental. Obviously this supplementary income would not cover all the buildings expenses and so funding will most likely need to come from charitable organizations such as the National Lottery or from public and private donations.



Shoprite Checkers has been the main anchor tenant for over 30 years at the Cascades mall and during that time, they have made financial donations to the Age-in-Action initiative. It is hoped that they would contribute to the running costs of the wellness centre for the aged that is located adjacent to them. A wellness centre for the aged would stimulate the economic environment of Cascades by drawing daily visits from the elderly as well as their children upon whom they may be financially dependent.

According to Joanne Steven O'Connor, a social worker at PADCA, the number of elderly who are dependent on their children for care is nearly five times as high as the number of elderly living within a retirement home or aged care facility. This places a large amount of stress on the children and families who are struggling to provide for themselves as well as their ageing parents. The wellness centre for the elderly would act as a type of adult "day-care" facility where family caregivers could leave their parents for the day whilst they are at work. Because the wellness centre is located adjacent to a mall, it makes it convenient for family carers to do their grocery shopping or visit the newly proposed gym on their way back from work before collecting their parents and heading home. This daily lifecycle would provide an economic injection to the Cascades mall which is struggling financially as a result of the newer Midlands Mall. It would also temporarily relieve family carers of the "burden" of caring for their parents. This could potentially strengthen the traditional family ties and prevent elderly abuse by carers, all whilst assimilating the elderly back into the urban fabric.



THEORIES THAT SCULPTED THE DESIGN.

EVIDENCE BASED ENVIRONMENTAL DESIGN FOR IMPROVED MEDICAL OUTCOMES:

Roger S. Ulrich

INTRODUCTION:

Traditionally, the design emphasis of healthcare facilities has been focused on the buildings functional efficiency, costs of maintenance and care, along with the ability of staff to administer medical treatments within a controlled environment. This approach to healthcare design has meant that the patients psychological, social and even the physical needs are often overlooked, resulting in an institutional environment that can hamper the patients process of healing. The effects of this design approach affect not only the patients who are already in a heightened emotional state after surgery, but also the staff and visitors who frequent the facility to care for the patient.

Hospital administrators have started to realise there is a need to create care environments that are supportive or nurturing to the patient as well as functional. The patient must be allowed to recover with as little manufactured stress as a consequence of the care environment, whilst still remaining as efficient as possible for staff to administer care.



The demand for the re-evaluation of the healthcare design process stems from the mounting scientific evidence that environmental characteristics can have a positive or negative influence on the patients healing process. Research has shown that well designed care environments can, reduce anxiety, lower blood pressure and lessen pain. While poorly designed facilities can have effects such as higher occurrences of delirium, elevated depression, greater need for pain drugs and even longer hospital stays.

ENVIRONMENTAL PROPERTIES FOUND TO AFFECT RECOVERY:

NOISE:

There is considerable evidence that noise detrimentally affects care outcomes across a large percentage of patient groups. It's been proven that patients recovering in an unfamiliar environment, and that are exposed to distinguishable levels of noise are more likely to have an elevated heart rate as well as a greater number of sleepless nights.

DESIGN IMPLICATION:

- The ability of patients to control their ambient noise, especially within their rooms should be a major design consideration. This can be achieved through the selection of appropriate noise attenuating materials for surfaces or even through the use of patient artworks such as wall tapestries.
- One other consideration is to create soothing familiar white noise such as the sound of running water from a fountain or river.

MUSIC:

Several studies have shown that the effects of pleasant, controllable music can often lower anxiety or stress levels and can even help some patients cope with pain. Music therapy can be used to create a physiological response in a patient as well as a social response by getting them to actively participate within a group activity such as playing musical instruments or listening to and identifying songs.

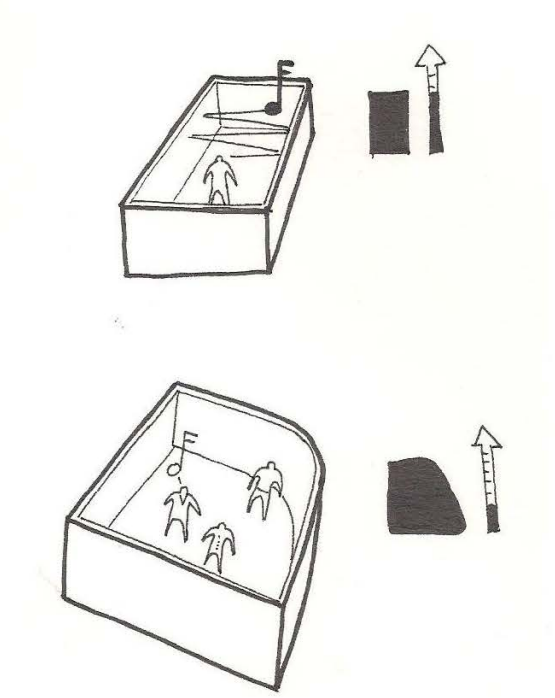


Fig. 1 – By having at least one wall which is curved within a room will reduce the amount of reverberation or echo by half. Another strategy is so select sound dampening materials which absorb sound rather than reflect it back into the space.

DESIGN IMPLICATION:

- Include a music room where musical instruments can be played as a group or individually but shape the room to prevent reverberation. (fig. 1)
- Patient rooms should also be equipped with headphones so that patients can listen to television or music without disturbing other patients or staff.
- Try to include audio carrels where individuals or groups can listen to a large selection of music.

ACCESS TO VIEWS AND DAYLIGHT:

Medical scientists have proven that exposure to natural daylight stimulates glands in the brain that influence our mood and health. The movement of the sun across the sky connects all living organism to a circadian rhythm which affects ones sleeping patterns as well as our metabolism. Studies have also shown that patients suffering from depression or who have suffered from a myocardial infarction (heart attack), have shorter hospital stays and recover quicker if exposed to sunlight.
Another consideration to take into account is that as we age our vision deteriorates for a number of age associated reasons. It has been found that an elderly person's eye generally needs three times as much light as say a 21 year old to be able to interpret their surroundings sufficiently. Also, due to the limited ability of the elderly eyes to focus rapidly, any transition from a dark to bright environment can cause temporary blindness and disorientation as their eyes attempt to adjust to the lighting conditions. They are also more sensitive to glare, especially from shiny floor surfaces.



DESIGN IMPLICATION:

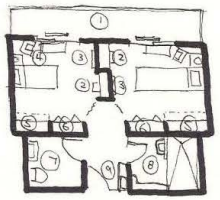
- Insure all patient rooms have a view of a nature and that they are amply lit by daylight.
- Use passive design strategies to ensure that the building is naturally lit by the sun.

- Use horizontal louvered screens on the North façade and vertical louvers on the East and West facades to control the amount of direct sunlight entering the building that could cause glare.
- The use of light shelves should also be investigated to determine whether they are required to reflect sunlight of the ceiling and deeper into the building. The width of the buildings floor plate with also determine their inclusion or not.

SINGLE ROOMS VERUS MULTI-BED UNITS:

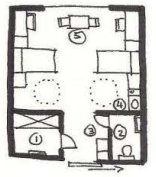
There are positive and negative aspects to both single and double patient rooms. Many healthcare professionals state that double rooms are more cost effective in terms of construction but also with regards to the efficiency of nursing staff to care for multiple patients within a single room which is why the ward style is more favourable in terms of functionality. They also believe that double rooms are also better from the standpoint that they foster a supportive pier based environment as each patient provides the other with social or emotional support.

On the other hand supporters of the single patient room design argue that it's easier to control the amount of cross infection between patients in single rooms than in a double room. They also indicate that some patients in double rooms regularly complain about their roommates having an incompatible personality, issues with invasion of privacy or disturbed sleep. Single room advocates go on to posit that the time and energy relocating patients to suitable rooms is more costly in the long term than simply constructing single rooms. In the end I believed it comes down to patient preference and the belief that the less unfamiliarity there is within a patient's room in comparison to their home environment the better. Plus as my Wellness Centre aims to provide care to the rich and poorer



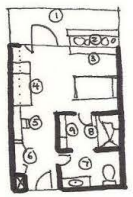
2 Beds with shared ablutions

1 - Shared deck
2 - Desk cubicle
3 - wall mounted TV
4 - Day space
5 - Guests Murphy bed
6 - Closet
7 - Toilet
8 - Shower
9 - Nurses station with basin at entrance



2 Bed patient room

1 - Shower
2 - Toilet
3 - Rest area
4 - Nurses station
5 - Day space



1 Bed unit with Murphy bed

1 - Deck
2 - Planter box
3 - Built in bench seating
4 - Guests Murphy bed
5 - Desk & work space
6 - Closet
7 - Toilet
8 - Shower
9 - Shelving and bench

elderly, across all the races, fewer complains of personality clashes will be reported if each patient has a space dedicated to them. This may seem counterproductive in terms or reintegrating the elderly back into the community but people need to have the choice to be sociable or not, that's the key element to evidence based design, the ability for a patient to choose.

DESIGN IMPLICATION:

- All patient rooms should be single to prevent patient discomfort and the risk of cross infection. Plus singe-bed rooms are easier to decontaminate after a patient has been discharged than if it were a double-bed room.
- Patients who are in a critical stage of recovery will need close observation and so their rooms should have a small viewing window looking into their room so that a nurse can observe them without entering their room and disrupting them.
- Critical patient rooms should also be located as close to the treatment studios (Occupational therapy, Physiotherapy and counselling rooms) as possible to reduce the distance travelled to and from therapy sessions.
- Wash basins should be located within the patient's rooms so that it's also within easy access of nursing staff. Regularly washing ones hands will prevent cross contamination between patients via staff. Taps should either be lever operated or be automated through the use of infrared sensors. The later being preferable because it reduces the spread of infection from touching the tap before and after washing ones hands.
- By designing identical patient rooms, the risk of human error whilst administering treatment is far lower.

FLOORING MATERIAL:

Contrary to popular belief, hard floor materials such as vinyl and linoleum may not always outperform carpet with regards to certain health related environmental conditions such as the amount of bacteria in the air.

Carpets actually outperform hard surfaces when viewed from the patient centred standpoint. Elderly patients walk more confidently on carpet because they feel they are less likely to slip and so have greater step length and speed. A recent study also showed that visitors to a rehabilitation facility are more likely to spend time with a patient in a carpeted room rather than a room with a vinyl floor. This is important because it shows that carpeted rooms in a healthcare environment could improve the process of healing by encouraging social support. Carpeted rooms are also better in terms of acoustics; they therefore reduce the amount of ambient noise generated by people's movement through the building which could otherwise disturb the patients.

Dr Debro Harris of Rad Consultants who has done research for a number of carpet tile manufacturers, states through her research that particulates get trapped in a carpet, while they tend to get kicked up when someone walks over a hard surface. She also tested air quality in patient's rooms and found that the air was cleaner when carpets had been installed. Healthy bacteria in carpets also help prevent the proliferation of other bacteria; however vinyl flooring is still more popular with nurses and maintenance staff. The reason being that staff find it easier to clean spills off vinyl flooring, while carpet manufacturers argue that carpet tiles can be easily removed and cleaned or replaced if need be.





DESIGN IMPLICATION:

- Flooring material is a major consideration in terms of making sure that the care environment is not interpreted as an institutional environment.
- A combination of both hard and soft materials should be used to try and make cleaning as easy as possible for staff; however a number of rooms should have carpet tiles to enhance the patient's interpretation of the care environment. These include the patient's rooms and all lounge areas.
- After researching types of flooring materials it was decided that bamboo laminate flooring should be used in high traffic areas such as passages and areas where spills are more likely to occur. Bamboo laminate flooring was chosen because it can have a non glossy protective coating which will prevent glare and wont stain. Another benefit of bamboo is that it has naturally occurring anti-bacterial properties. Bamboo is a fast growing plant whose fibres make it as hard as any hardwood available, making it an economical as well as an ecological conscious renewable material.
- The two other main flooring materials should be cork and carpet tiles. Both reduce noise reverberation but require more maintenance in terms of cleaning than the bamboo flooring. These materials should be used in lobby spaces and can include decorative colour schemes to aid in wayfinding.



GENERAL GUIDELINES FOR SUPPORTIVE DESIGN:

Ulrich, R posits that there are three major design guidelines that need to be incorporated into any healthcare environment in order to help patients cope with stress and therefore promote improved outcomes with regard to a patient's health. The building should foster:

- *A sense of control and privacy*
- *Social support*
- *Access to nature and other positive distractions*

FOSTERING A SENSE OF CONTROL AND PRIVACY:

Traditionally the hospital environment erodes a patient's real or perceived control over themselves and their environment, through unavoidable and sometimes painful medical procedures, a lack of information, long waiting periods, and the loss of control over eating and sleeping times. A poorly designed care environment can also be just as responsible for a patient's loss of control by denying them privacy, exposing them to excessive noise, or have patient rooms without adequate views of nature. Design considerations must take into account that a patient may be bedridden for large periods of the day and so lighting should be controllable so that they're not blinded by artificial lighting. Also clear wayfinding tools should be used throughout the building so that even patients with mental deficiencies can remain oriented. As soon as an environment becomes too challenging to interpret, elderly patients will withdrawn from communal spaces and activities so as not to be judged by others. If this behaviour is left to persist, elderly patients will become prematurely dependant on others for their own care.



DESIGN IMPLICATION:

- Provide changing cubicles for privacy in treatment rooms.
- Control the public's view into the treatment studios but allow patients to view public activities which could inspire or encourage them in their rehabilitation process. (Views of a gym, pool or pedestrian walkway are good examples)
- Try have concealed lighting built into the ceilings of patient rooms to prevent visual discomfort for patients who are bedridden. Also provide a two way dimmable switch at the entrance to the patients rooms and next to the patients beds so staff and patients can adjust the lighting accordingly depending on whether or not treatment is being administered.
- As mentioned earlier, noise levels from TV's and radio's can be controlled with the installation of headphones in every patient's room.
- Wayfinding is more than signage. Clear, simple building layout will help with orientation for those elderly with mental deficiencies. Other strategies that enhance architectural wayfinding are to the use of tactile materials, colours that are more easily seen by those with visual impairments, destination markers such as artwork or courtyards or even landscape differences on each elevation of the building. Anything that stimulates a sensory response through one of our five senses can be used for wayfinding. Smells invoke memories and even the smell of food can encourage a metabolic response. Sounds such as cascading water can be used to mark entrances or other important facilities such as toilets. A visually impaired person will rely on their other senses and once they've learned that the sound of running water is associated with the proximity to ablutions, they are far more relaxed and able to explore their environment and social setting without the fear of not knowing where a toilet is in case of an emergency.

FOSTERING ACCESS TO SOCIAL SUPPORT:

Scientific research has shown that people with a higher amount of social support heal quicker, experience less pain or stress when compared to patients who are forced to heal in isolation without a network of social support.

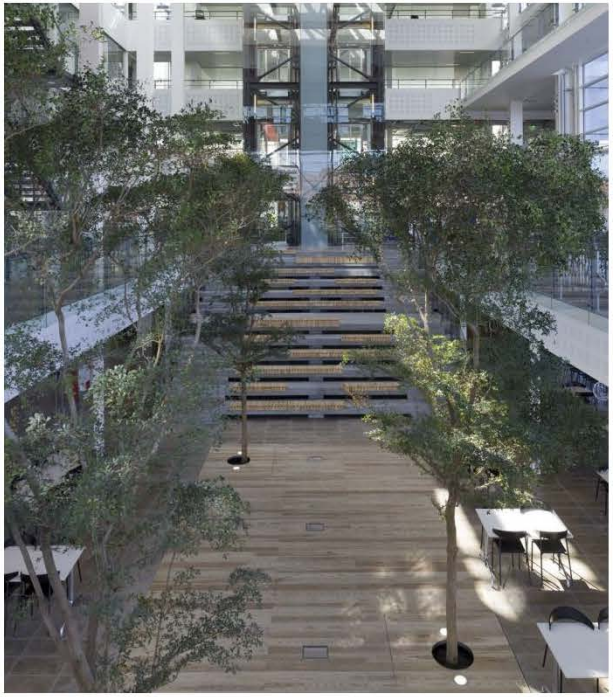
DESIGN IMPLICATION:

- Provide comfortable waiting areas for family and friends that have access to a café, restrooms and information desk.
- Provide spaces where patients and visitors can be sociable that are outside of the patients room, such as gardens, small visitor lounges, courtyards and even the café.
- Try and encourage family members to get involved with the elderly patients rehabilitation process so that they can continue to administer care once the elderly parent is discharged. This also insures that family members are educated in terms of their parent's physical abilities and their potential level of recovery.
- Include overnight accommodation for family members in each of the patient's rooms. This is useful for elderly married couples or for family members who have come from some distance to visit their parent or friend. Murphy beds are ideal for this purpose because they can be folded away into a wall and can be used as a shelf for flower arrangements and family photographs when not being used as a bed.



FOSTERING ACCESS TO NATURE AND OTHER POSITIVE DISTRACTIONS:

Types of positive distractions include music, art, comedy, companion animals and nature in indoor and outdoor settings. As I discussed earlier views of natural surroundings can have a positive physiological in patients which include less stress, pain and even result in shorter stays in care/rehabilitative environments for some patients. The most effective views are those that include greenery, flowers, and trees but especially water.



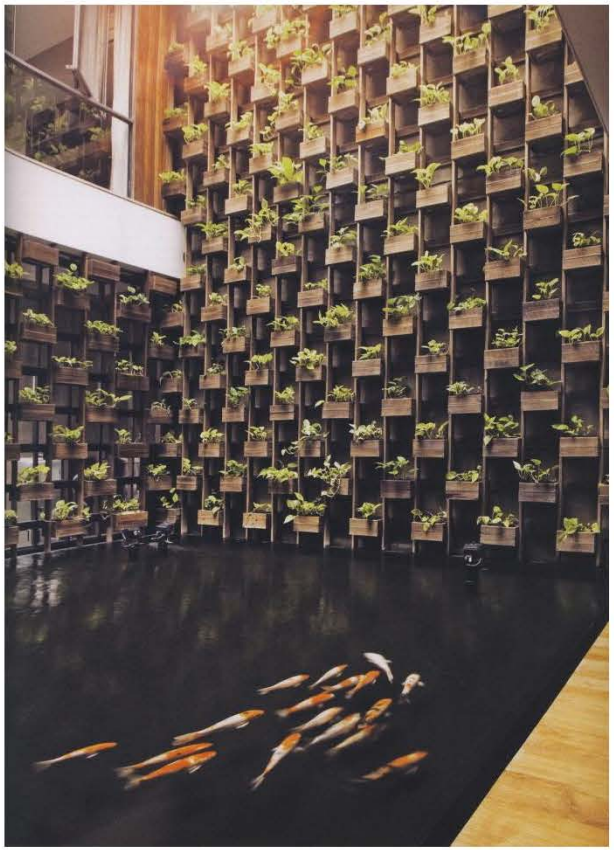
With regards to artworks that best evoke a positive response in a patients healing process, it was found that paintings of serene landscapes were far more popular with patients than abstract art which could be "challenging" or ambiguous to patients. For patients with slight mental deficiencies, the challenge of interpreting abstract art in itself can cause confusion and a fear of their own mental ability to distinguish the meaning or implied meaning of such artwork.

DESIGN IMPLICATION:

- Insure all patient rooms have a view of a natural setting rather than of a parking lot, although some researchers believe that a view of people going about their everyday lives is also just as effective at creating a positive distraction to the elderly.
- Running water has powerful soothing effects on people who are emotionally stress. I've tried to include aquariums or ponds within the building to help calm patients but they've also been included to act as wayfinding markers within my design.
- Each elevation has some exposure to water, whether it is the wetland, river or water feature. This was done to create different views and sensory responses from the same calming element, water. A crescendo of cascading water was used to signify the entrance to the Wellness Centre for partially sighted patients using the facility. The differing states of water

from still wetland to flowing river creates subtle variations in ecosystems which clearly orientate patients within the building when looking out a window or viewing either from a deck.

- I've tried to include spaces along passages but especially towards the end of passages where artworks can be displayed to act as visual markers of destinations.
- Works of art should also be hung in patient rooms and communal lounges to help calm patients.



TOWARDS A HOLISTIC SENSORY PERCEPTION OF ARCHITECTURE:

The eyes of the skin

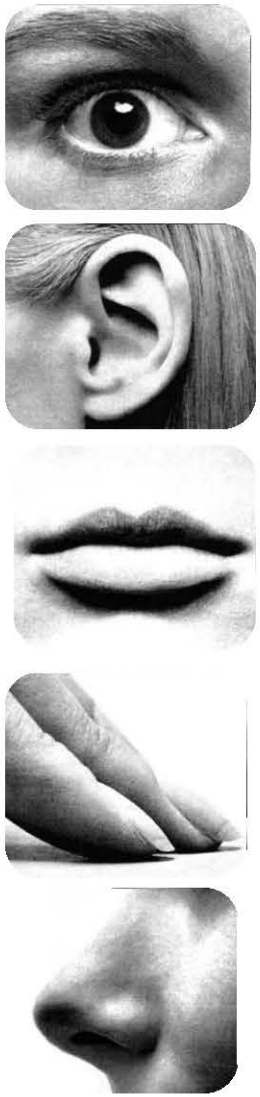
Juhani Pallasmaa

INTRODUCTION:

Pallasmaa argues that architects have been guilty of designing buildings that rely too heavily on the visual perception of their spaces rather than fully engaging all our senses. To an elderly person whose vision may be failing the result is an environment that becomes less and less easy to interpret which could result in them isolating themselves within areas which they know well. Therefore the design of the Wellness Centre should use architectural techniques to activate multiple senses which could help reinforce the visual perception of space.

When designing spaces for the elderly one has to be aware of the resultant place as both place and the elderly are bound to their perceived identities. Each shapes the other and can result in age associated stigma being attached to the other. Once this happens, the community accepts a building as a building for the aged and will not actively engage with the building or its inhabitance to prevent their own identities from being associated with old age. The aim of the Wellness Centre is to create an urban life cycle where people from all walks of life can engage with each other without the threat of being labeled as “old” as nearly everyone tries to deny the natural progression of ageing in modern society.

Finally, Pallasmaa states that encounters with architecture can have “an inherent suggestion of action, a promise of function and purpose.” For the elderly, these ‘*encounters*’ with architecture create a tension between the environment and the individual, who is expected to ‘*function*’ within this space in



accordance with social norms and expectations. This could cause the elderly to disengage from the environment with the onset of sensory decline based on fears of being perceived as incapable and therefore reliant on others.

DESIGN IMPLICATION:

- Pallasmaa's theories gave birth to one of my concepts of using architecture and materials as a metaphor for ageing in modern society. I therefore chose materials such as stone, timber to be used as accents throughout the Wellness Centre because they have an inherent age associated to them, which would help place the Wellness Centre in time and place as these materials also have a vernacular connection to the surrounding natural environment.
- Pre Patina copper was also chosen as it would link the building visually to the plantation on the northern hillside and the wetland and park environment to the south and south west. It was also chosen because it's a material that shows the progression of ageing as it turns green. Normally the process of copper turning green can take between 8 to 50 years to achieve naturally, however copper can be treated with a patina to turn it green in a matter of days.
- A large number of historical buildings in Pietermaritzburg such as the town hall were built with a deep red brick. This deep red brick was produced in Pietermaritzburg and has become part of the historical vernacular of the cities buildings. My building utilizes recycled red bricks from the renovation work currently being done on the Cascades Mall. This material too, whilst being a man made material has a connection to the cities past.
- By using materials that have inherent/implied age and materials such as baloo timber that turns grey as it ages, I believed that the building will age beautifully with its occupants and shift perceptions of the public towards the process of ageing to a more positive one. This process will also root the building to its genus loci or spirit of place.



With regards to designing for the senses:

Sight:

Elderly require 3x as much light as a young adult to see effectively. Contrast and colour are good tools for distinguishing surfaces, entrances or changes in level. Daylighting is preferable because of the physiological response it can generate in the human brain. Daylight can also be used to project colour patterns onto surfaces from coloured panes of glass. Care must be taken in choosing the appropriate colour though as colours such as red can provoke a physical response such as a raised heart rate. In a discussion with Moffat Optical it was discovered that red and green are used in eye test to determine how good ones eyesight is.

Because green is only seen by those with normal eyesight and red can be seen by those with poor eyesight, red was preferable for wayfinding markers. But because of the physical response that red evokes in people, especially those in a heightened emotion state, I decided to use yellow for the majority of wayfinding markers, with red being used sparingly to denote areas of danger for elderly people i.e. Stairs or changes in level.

Sound:

Room size and ceiling height can create an audible depiction of the size of space through reverberation or echo's. Changes in floor material will generate differing noise levels as a patient travels over it and can be used to announce what type of room the patient is in. The soothing sound of running water has a calming effect on people but could also be used to signify entrances or toilets.





Smell:

Courtyards will have flowers and herbs that emit strong fragrances which can evoke a memory in a patient and be used as a sensory wayfinding marker in the Wellness Centre. The smell of food wafting through the Centre also helps to stimulate an elderly persons appetite which is important because elderly people find food more and more dull as their olfactory senses fade with age. This has a direct influence on their diet and general well-being.



Taste:

Taste is a difficult sense to address architecturally but by providing patients with vegetable gardens, they can produce some of their own food which would be cooked in the kitchen.

Touch:

People can analyze and navigate their way through a building by feeling with their hands as well as their feet. Therefore rumble strips located in key positions along pathways can mark out points of interest to someone who is visually impaired. Braille name plates have also been located along handrails so visually impaired people could read what room they're approaching without removing their hand from the handrail which may be supporting them and preventing a fall.



A PATTERN LANGUAGE:

Patterns that are relevant to designing care environments for the elderly

Christopher Alexander

INTRODUCTION:

24 SACRED SITES:

The best way to intensify a site is through a progression of areas which people pass through as they approach the site. WE must therefore build around a sacred site a series of spaces which gradually intensify and converge on the site.

26 LIFE CYCLE:

Each community must include a balance of people at every stage of the life cycle, from infants to the very old; and include the full slate of settings needed for all these stages of life.

30 ACTIVITY NODES:

To create a concentration of people in a community, facilities must be grouped densely round very small public squares which can function as nodes – with all pedestrian movement in the community organised to pass through these nodes.

Such nodes require four properties:

1) Each node must draw together the main paths in the surrounding community.

2) To keep the activity concentrated, it is essential to make squares rather small. I.e.: 14x18m

3) Facilities grouped around any one node must be chosen for their symbiotic relationship towards each other. I.e. When kindergartens and small parks are grouped together, young families with children may use either, so their total attraction is increased. My proposal includes a kindergarten, park, wellness centre for the elderly, medical facility, commercial anchor and public transport.

4) Activity nodes need to be spread evenly across the community so that it is conveniently located close to its users.

Link these nodes with other nodes through a network of strolling promenades.

40 OLD PEOPLE EVERYWHERE:

Old people need old people, but they also need the young, and young need contact with the old.

In contrast with the modern family structure today, consider how the aged were respected and needed in traditional cultures. Traditionally the very young and the very old were left at home together to care for each other while the able-bodied have gone to work to earn a living for the family. In this structure, the elderly were able to impart their wisdom and experience whilst protecting and instructing their grandchildren, while in return the children have acted as the eyes, ears, hands and feet of their more frail elderly companions. The task of caring for the young thus provided the aged with a useful occupation and something of interest to occupy their minds as they progressively get older.

Old people cannot be integrated socially as in traditional cultures unless they are first intergrated physically – unless they share the same streets, shops, services, and common land with everyone else. But, at the same time they need contact with other old people, and some old people who are infirm need special services.



The more able-bodied and independent they become, the less they need to be among other old people and the farther they can be from special medical services.

We therefore need a way of taking care of the elderly whilst providing for their needs.

1) Must have a strong link to the community and be close to where they reside.

2) It must allow old people to congregate in groups which are small enough not to isolate them from the youth in the neighbourhood.

3) It must encourage independent elderly use within the community.

4) It must provide nursing care for those that need it.

47 HEALTH CENTRE:

More than 90% of the people walking about in an ordinary neighbourhood are unhealthy, judging by simple biological criteria. This ill health cannot be cured by hospitals or medicine.

Hospitals put the emphasis on sickness. They are enormously expensive; they are inconvenient because they are too centralized; and they tend to create sickness, rather than cure it, because doctors get paid when people are sick.

A system of healthcare which is actually capable of keeping people healthy, in both mind and body, must put its emphasis on health, not sickness. It must therefore be physically decentralised so that it is as close to possible to people's everyday activities. And it must be able to encourage people in daily practices that lead to health. The solution is a small, widely distributed no of health centres, which

encourage physical activities – swimming, dancing, sports, and fresh air – and provide medical treatment only as an incidental side of these activities. (Health maintenance)

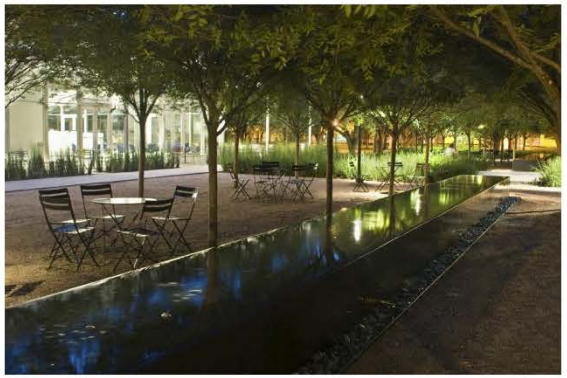
105 NORTH FACING OUTDOORS:

People use open space if it is sunny, and do not use it if it isn't, in all but desert climates.

Make outdoors spaces positive and break the building into narrow wings. Keep the most important rooms to the North of these wings and keep storage, parking, etc to the South face

106 POSITIVE OUTDOOR SPACES:

Outdoor spaces which are merely "left over" between buildings will, in general, not be used.



Positive spaces are partially enclosed. People feel comfortable in spaces which are "positive" and use these spaces; people feel relatively uncomfortable in spaces which are "negative" and such spaces tend to remain unused.

When a person looks for a place to sit down outdoors, he rarely chooses to sit exposed in the middle of an open space – he usually looks for a tree to put his back against; a hollow in the ground, a natural cleft which will partly enclose and shelter him.

Make sure that every space is always open to some larger space, so that it is not too enclosed – create a hierarchy of space.

Makes the outdoors as much a focus of attention as the buildings edge.

114 HIERARCHY OF OPEN SPACE:

People do not sit facing brick walls – they place themselves toward the view or toward whatever there is in the distance that comes nearest to view.

Therefore any place where people can feel comfortable has

1) A back

2) A view into a larger space.

In private gardens, make corners of the space as a "back" with a seat looking out on the garden.

Shape courtyards or public outdoor rooms according to two principles. Firstly, make at least one smaller space, which looks into it and forms a natural back for it. Second, place it, and its openings, so that it looks into at least one larger space.

115 COURTYARDS WHICH LIVE:

The courtyards in modern buildings are very often dead. They are intended to be private open spaces for people to use – but they end up unused, full of gravel and abstract sculptures.

There are three distinct ways in which internal courtyards fail.

1) The threshold between indoors and outdoors is too well defined. People need an ambiguous in-between space – a porch, or a veranda, which they naturally pass onto often, as part of their ordinary life.

2) There are not enough doors into the courtyard. If there is just one door, then the courtyard never lies between two activities, so people never pass through it, and enliven it.

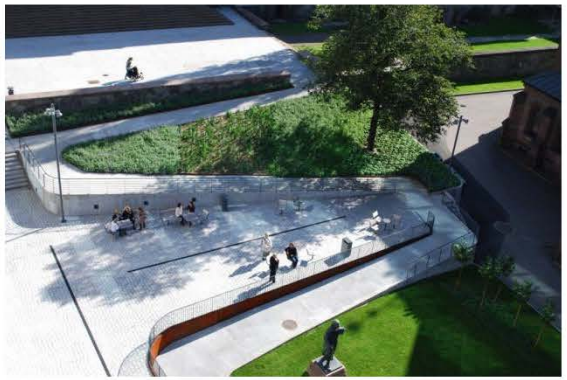
To overcome this, the courtyard should have doors on opposite sides, so that it becomes a meeting point for different activities, provides access to them and provides the cross-circulation between them.

3) They are too enclosed. Courtyards which are pleasant to be in always seem to have "loopholes" which allow you to see beyond them into some larger, further space. The courtyard should never be perfectly enclosed by the rooms which surround it, but should give at least a glimpse of some other space beyond.

Have places that are covered in the courtyards, places in the sun, places with filtered light and places to lie on the ground.

120 PATHS & GOALS:

To lay out paths, first place goals at natural points of interest. Then connect the goals to one another to form the paths. The paths may be straight, or gently curving between goals; their paving should swell around a goal. The goals should never be more than a few hundred feet apart.



Break the straight line path by creating distractions in the form of intermediate goals that can visually guide someone along an active path rather than a monotonous and tediously long straight path.

127 INTIMACY GRADIENT:

When spaces are homogenous, where every room has a similar or defined degree of intimacy, it rubs out all possible subtlety for social interaction in the building. Create a sequence of events that range

from public to private along defined routes through the building. I.e. Entrance lobby, reception, café, continued learning rooms, lounges.

Entrance – Public – Semi-public – Private

168 CONNECTIONS TO THE EARTH:

A building feels isolated from the nature around it, unless its floors are interleaved directly with the earth that is around it. Connect the building to the earth around it by building a series of paths and terraces and steps around the edge. Place them deliberately to make the boundary ambiguous so that its impossible to say where the building stops and the earth begins.

179 ALCOVES:



No homogenous room of homogenous height, can serve a group of people well. To give a group a chance to be together, as a group, a room must also give them the chance to be alone, in ones and twos in the same place.

The main lounge should be surrounded by small alcoves. The alcoves should be large enough for one or two people at a time and should have a lower ceiling to that of the main lounge. People want to be together, but at the same time they want the opportunity for some small amount of privacy, without giving up community.

223 DEEP REVEALS:

Windows with a sharp edge where the frame meets the wall create harsh, blinding glare, and mark the rooms they serve uncomfortable. To prevent glare from windows, make the window frame a deep, splayed edge; about a foot wide and splayed at 50 – 60 degrees to the plane of the window, so that

the gentle gradient of daylight gives a smooth transition between light of the window and the dark of the inner wall.

224 FRONT DOOR BENCH:

Build a special bench outside the front door where people from inside can sit comfortably for hours on end and watch the world go by. Place the bench to define a half-private domain in front of the house. A low wall, planting, a tree, can help to create the same domain.



243 SITTING WALL:

In many places a wall and fences between outdoor spaces are too high; but no boundary at all does injustice to the subtlety of the divisions between the spaces. The problem can only be solved by a kind of barrier which functions as a barrier which separates, and as a seam which joins, at the same time. Therefore:

Surround any natural outdoor area, and make minor boundaries between outdoor areas with low walls, about 500mm high, and wide enough to sit on, atleast 300mm wide.

244 CANVAS ROOFS:

The canvas has a softness, a suppleness, which is in harmony with wind and light and sun.



Build canvas roofs and walls and awnings wherever there are spaces which nee softer light or partial shade in summer, or partial protection from mist and dew in autumn and winter. Build them to fold away, with ropes or wires to pull them, so that they can be easily opened. Use the canvas awnings, especially, to filter light over those windows which face West and North and glare because they face the sky. Coloured canvas will add special life to a space by adding warmth through colour.

245 RAISED FLOWERS:

Issues relating to flower beds:

1) They need plenty of sun so locate them to the North.

2) Place them where people can smell them and touch them.

3)Position them inside or outside along paths so that people can see them as they naturally come and go through the space.

Soften the edges of buildings, paths, and outdoor areas with flowers. Raise the flower beds so that people can touch the flowers, bend to smell them, and sit by them. And build the flower beds with solid edges, so that people can sit on them, among the flowers too.



246 CLIMBING PLANTS:

A building finally becomes a part of its surroundings when the plants grow over parts of it as freely as they grow along the ground.

1) Climbing plants create a smooth transition between the built and the natural. They help to blur the edges.

2) When plants grow around the openings of a building the quality of light inside the building changes for the better. They create a special kind of filtered light inside. This light is soft, reduces glare and stark contrasting shadows.



3) Climbing plants also give the outside walls a subtle texture. This can be achieved through material selections but materials are not living and do not change as radically from day to day according to the weather and seasons.

Therefore:

On sunny walls, train climbing plants to grow up and round the openings in the wall – the windows, doors, porches, arcades, and trellises.

250 WARM COLOURS:

The greens and greys of hospitals and office corridors are depressing and cold. Natural wood, sunlight, bright colours are warm. In some way, the warmth of colours in a room makes a great deal of difference between comfort and discomfort.

The choice of colour needs to work in conjunction with the light that falls on the surface. Together they will shape the perception of a space as either warm and cosy or cold and alien.

DESIGN GUIDELINES

SITE INFORMATION:

Latitude: -29^0 57' South

Longitude: 30^0 35' East

East and south east winds are cool winds up valley. Evening winds are from the west. North west winds are berg winds and increases the temperature by up to 5^0 more.

1100mm rainfall per annum.

BARRIERS TO SITE:

Cascades mall loading zone on east of site with ramp down.

River to North East corner of site.

Wetland to the North West of site.

OPPORTUNITIES OF SITE:

Can build on brownfield site with natural surroundings. (existing parking lot)

Connection to mall and public transport. (community link)

Proximity to grey's hospital.

Can create a green healing environment. (views)



DESIGN GUIDELINES:

TOWN COUNCIL INFORMATION:

- Keep a building 4.5m from building line.
- Max coverage = ½ of site.
- One car parking space for every 3 habitable rooms.
- Building classification E3 – Hospital/other institution.

ELDERLY EYESIGHT EXPLAINED:

As people age, their lens becomes inflexible and the eye muscles lose their ability to shorten the focal length with the result being that in old age, the focus becomes fixed on infinity. Visual performance is altered in a number of ways which are significant when it comes to designing spaces for the elderly.
Less light reaches the retina, so more light is needed for visual tasks. Therefore an older person may need as much as three times the amount of light as a 20 year old, but without the glare which can be caused by reflective surfaces.
Care must be taken to prevent harsh changes in light as an older persons eye cannot adjust for the change in light rapidly which can lead to temporary blindness when transferring from a dark room to a well lit one.
Apart from the natural ageing process, there are diseases which affect older peoples vision, such as glaucoma and cataract. Both of these are treatable conditions in the short term but ultimately will lead to vision loss. As we age our lens thickens and yellows so that colour vision is affected. Blues and



greens are not easily distinguished where as reds and yellows are. The use of red however must be considered carefully as it has been found to instigate a physical response of excitement.

ELDERLY HEARING EXPLAINED:

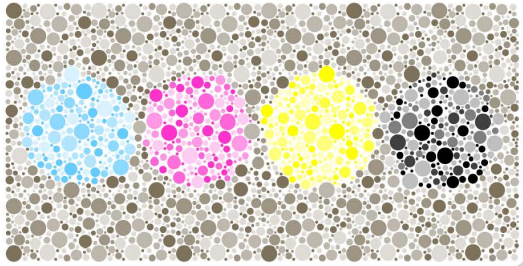
As we age, our auditory nerve loses efficiency, which is medically known as presbycusis. Another cause of deafness in older people is cortical deafness which is caused by a defect in the brains receptors. The condition causes loss of ability to hear high frequency sounds but the ability to hear low frequency sounds is not affected. Because most of the elderly visiting the centre will have some hearing loss it is important that the acoustic environment is as good as possible with an emphasis on magnifying high frequency sounds, minimizing background noise.

GENERAL:

- Changes in level are to be avoided; if this cannot be avoided ramps should be used.
- Create enclosure for wellness centre for security reasons but have visual connection to the public.

COLOUR:

- Use light contrasting colour – never blue or green. Red and yellow are more easily seen by the elderly but red has been found to have an agitative influence on patients.
- Use colour to differentiate parts of the building to help with orientation.
- Identical bedroom corridors can be made to look very different from each other by using contrasting colours on door surrounds.



- Staff doors can also be disguised by painting them the same colour as the wall.
- People with dementia perceive bold stripes as barriers or stairs and dots as holes. Even wallpaper with flowers can cause confusion. They will sometimes try pick the flowers off the wall.

SPACE PLANNING:

- Keep distances from bedroom to areas visited daily less than 40m.
- Destination should be visible down corridors. Don't place fire doors at the end of corridors. Create incidents along the corridor such as a windows or a resting place on the way.
- Lifts will be heavily used to place them in the middle to reduce distance travelled to them.
- The route to outdoor sitting areas should be direct and it must be easy for the person to get back inside again.
- A patient confined to a bed must have a good view through their ward/bedroom window.
- Lounges and bedrooms should have views of everyday activities.

LOUNGES:

Small lounges give an opportunity for quieter areas away from the crowd and the television. They are also good for entertaining visitors and family members and should be close to the entrance lobby. Usually have large windows that look onto a terrace and include window seating.

DAYROOM/MULTIPURPOSE ROOM:

- Has storage for furniture and moveable screen walls.
- Can include a TV
- Must have connection to main passage.

ACTIVITY ROOMS:

- Include the music therapy room.
- Hobby room & smaller cubicles.

DINING ROOMS:

- Dining is important for social interaction.
- Provide options to eat privately or as a group.
- Include outdoor dining.
- Supplies to the dining room must be received without intruding on the ambiance of adjacent communal living areas.

DISABLED DESIGN GUIDELINES:

Wheelchair storage should be located to where it will be required.

RAMPS:

PEDESTRIAN RAMPS:

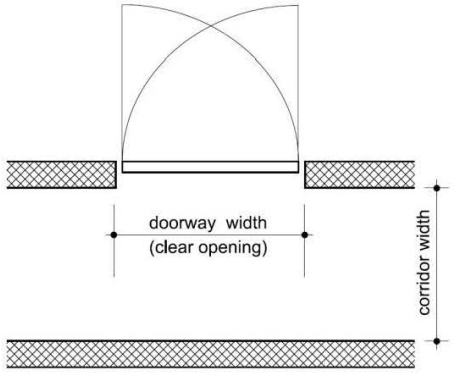
- 1100mm width minimum.
- 1:12 gradient with landing at 1,5m height

VEHICULAR RAMP:

- 1:25 gradient for first and last 5m of ramp.
- 1:8 Gradient for the main pitch of ramp.

DOORS:

- 1000mm minimum clear door opening for entrance doors or 850-900mm for other doors.
- 300mm gap between door handle and adjacent wall. On pull leaf side.
- All doors need 200mm high kick plate.
- Zone of visibility through glass doors for someone in a wheelchair is from 500-1500mm height.
- Door handles should be between at 900-1100mm height.
- Use planter boxes or rail and cane kerb around the entrance to doorways where the door opens outwards.



corridor width	clear doorway required
760	935
800	920
900	885
1000	855
1200	785

2.31 *Width of doorways opening off narrow corridors*

- Use gravity controlled sliding doors where rail is slightly tilted to cause door to slide closed slowly.
- Use magnetic door holders to hold open doors on main circulation routes.

WINDOWS:

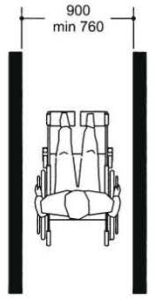
- If window is above ground then sill height must be 800mm from FFL. Alternatively a guard rail at 800mm can be used if sill is lower.
- No horizontal transoms below 1440mm height (standing height) for regular windows. All operable window handles must be between 800-1000mm height.

CORRIDORS:

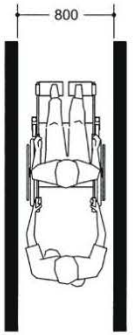
- 1800mm minimum corridor width for significant usage – prefer 2m.
- 900mm minimum clear width from passage away from door swing.
- 1000mm minimum width from between wall and obstruction such as duct etc.
- 1800mm diameter clearance on corners.

HANDRAILS:

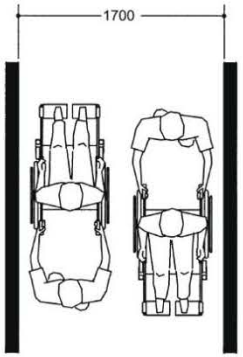
- 50mm gap between wall and handrail. Smallest gap is preferable because it prevents a person's arm being caught between the wall and rail if they fall.
- Support brackets must be slim and fixed to bottom of handrail, not side so that the hand can slide along the rail without encountering obstructions.
- 40-50mm diameter rail and 15mm minimum depth.



2.23 *Forward movement for self-propelled wheelchair*



2.24 *Forward movement for wheelchair with attendant*



2.25 *Passing place for two wheelchairs with attendants*

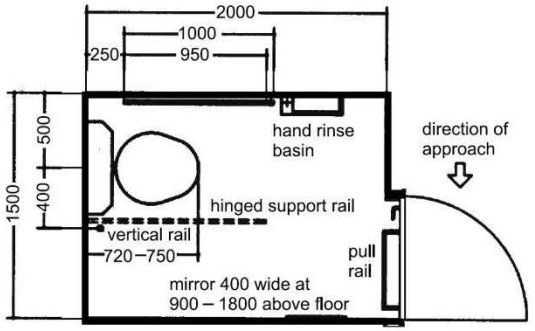
- Don't use channel handrails as litter and dirt accumulate in them and the ends need to be left open for cleaning.

DESIGN FOR THE BLIND:

- If an obstacle protrudes into pathway by more than 100mm then a guard rail should be placed around it at 900-1100mm height, or a cane detectable curb like a small upstand or change in texture like a rumble flooring material should be installed.
- Barrier rail should be used around stair landings etc. Planter boxes or cane detecatable curb can be used as well.

TOILETS:

- Toilets must be located close to lounge and dining rooms.
- Toilets should be easily accessible from outside sitting areas as well.
- Disabled cubicles should be about 2,2m x 2,4m in size.



They must include:
A shelf, bin, wash basin with swing arm taps at 740mm height, electric hand dryer, soap dispenser, paper towel dispenser, 600mm horizontal hand rail alongside toilet wall at 680mm height and 250mm away from corner wall, 900mm long vertical rails above toilet and basin, drop rail at 820mm away from wall, coat hook, mirror, alarm button at 1000mm height and 300mm height, toilet must be 480mm height and located 500mm from CL to wall with 160mm gap between toilet and basin. 1.5m radius turning circle. Door must open outwards and be able to be unhinged from the outside in case of emergency.

Toilets should be designed to screen users from general view, even if staff do leave the doors open.
Provide cleaners storage room with water supply, bucket sink and a space for mops.

LANDSCAPE DESIGN FOR DISABLED:

- Any post must have a 150mm band of contrasting colour on it between 1400-1600mm height.
- Blister surface paving are used at pedestrian crossings where the curb is dropped to be flush with road surface.
- Corduroy surfaces are rows of rounded bars laid at right angles to the direction of travel and set in concrete. Used for general wayfinding.
- Create wandering paths with incidents along the way, such as water features, seating with views.
- Include raised planter boxes for horticulture therapy.

ENTRANCE HALL & LOBBY:

- The routes to all parts of the building should start from the entrance lobby so people can see immediately and clearly how they can get to where they want to be.
- All routes should be clearly signposted.
- Information desk must be near entrance.
- Include a waiting/rest area opposite reception area and include toilets. (include views)
- Vertical circulation must also be done and controlled in the entrance lobby.

REFUSE COLLECTION:

- Clinical waste needs to be collected daily, whilst municipal waste is collected twice a week.
- Clinical waste will be taken to Grey's hospital for incineration.
- The maximum carry distance of refuse collection is 25m.

PARKING & TRAFFIC:

- Have a drop off zone for a car/ambulance.
- Locate disabled parking as close to entrance as possible.
- Minimum car parking bay size is 2.4m x 5m with an additional 1.2m loading zone between disabled bays for embarking and disembarking.
- A covered walkway between the drop-off zone and entrance of the building is needed.
- The covered walkway acts as a symbol of outreach to the community and extends the building envelope into the landscape.

SECURITY:

- Need to include a safe storage place or locker wall for patients to use to store their groceries or other personal items.
- Position administration staff by the entrance to guests can be greeted and potential intruders can be screened.

TYPES OF THERAPY:

ART THERAPY:

Art therapy is useful as an alternative to verbal forms of communication. Gives the patient a sense of control and the ability to choose for themselves at a time when few other aspects of their life are presenting the choice.

By including private artwork as well as patients artwork along the corridors and bedrooms and other spaces, it encourages the elderly to partake to leave something of themselves behind to be remembered. It can also aid in wayfinding.

Textile or tapestry artwork pieces can be hung on walls to act as sound dampening devices around busy areas such as nursing stations etc.

These artworks become acts of remembrance, and memorials.

Locate an art therapy room close to the patients rooms.

MUSIC THERAPY:

Music can trigger memories or an emotional response, which can provide a distraction from a patients fear, pain, anger or boredom, and relaxation for physical symptoms.

Acts as a means of relaxation and escapism.

HORTICULTURE THERAPY:

Horticulture therapy can be beneficial in terms of cognitive, social, psychological, and physical development.

Cognitive Benefits:

- Lifelong learning
- Learn new skills or maintain old skills.
- Improve decision making and problem solving.
- Work independently.
- Increase awareness of surroundings.

Social Benefits:

- Working within a group.
- Helping people to feel good about themselves by giving them a purpose.
- Work towards a common goal.

Psychological Benefits:

- Improvement of self-esteem and self-confidence.
- Gives them a sense of responsibility.
- A greater feeling of self-worth.
- Feeling of being productive
- Motivational

Physical Benefits:

- Exposure to the outdoors and fresh air.
- Encourage body movement.
- Stimulates motor skills.
- Stimulates olfactory senses (colour, light, texture, warmth, smell and taste).

CONCLUSION

The design of the wellness centre for the aged has proven quite complex in terms of the varying issues that govern it effectiveness as a place of healing and wellbeing. The balance between medical efficiency and an architectural resolution which aids in healing of those with mental and physical disabilities has been daunting. In the end, any design decisions made lent more towards enforcing the idea that the patients comfort rather than the medical efficiency of its operation would prove more effective at aiding in the healing process of the “patient”.

South Africa may not able to take this approach to healthcare right now because of predefined healthcare design and medical standards set out by our governing bodies. Unfortunately this means our elderly suffer and become more dependent on others prematurely, in fact causing greater damage to our healthcare system because of the financial and social “burdens” they’ve been forced to become. Decades of medical practice isn’t going to change overnight but architects have a responsibility assess social issues and build buildings that can act as catalysts for social change. I’ve tried to design a building which would make a difference and be more than just a building that asks for the praise of those who might criticise it. Its goal is to empower the people who use it and connect those who have been forgotten or neglected by society, not to act as an architectural landmark of my architectural ego.

END

BIBLIOGRAPHY

BOOKS:

- Anspaugh, D (2008); *Wellness: Concepts and Applications*; McGraw-Hill Humanities/Social Sciences/Languages; USA
- Author, Unknown (2005) *Global Ageing and the International Development Agenda*; NGO Committee on Ageing; New York
- Bennett, G & Ebrahim, S (1992); *The Essentials of Health Care of the Elderly*; Edward Arnold; Great Britain
- Birren, J (2006); *Handbook of the Psychology of Aging;* Academic Press; Burlington USA
- Bond, J et al. (2007); *Aging in Society: European Perspectives on Gerontology*. 3rd. Stage Publications
- Ebersole, P & Hess, P (2005); *Gerontological Nursing & Healthy Aging*; Elsevier Health Sciences; Chicago USA
- Cestnik, J (2009); *Fostering Recovery: A user's guide to downtown Vancouver USA rehabilitation wellne;*. Vancouver: University of Oregon,.
- Cole, Thomas R. (1992); *The Journey of Life: A Cultural History of Aging in America.* Cambridge; Cambridge University Press, United Kingdom.
- Day, C (1990); *Places of the Soul: Architecutre & environmental Design a a Healing Art*; The Aquarian Press; Oxford UK
- Foo, A. (1999); *A Society in Transition: The Social and Spatial Production of the Aged Identity in the Changing Ladscapes of Care Environments;* Thesis, Singapore: National University of Singapore.
- Gallup, G (1999); *Wellness Centers: A Guide for the Design Professional;* John Wiley and Sons; USA
- Goldsmith, S (2007); *Designing for the Disabled*; McGraw-Hill, Royal Institute of British Architects; London
- Kennie, D (1993); *Preventive Care for Elderly People*; Cambridge University Press; Cambridge United Kingdom

- Kohli, M (1986); *The World We Forgot: A Historical Review of the Life Course*; Sage, USE

- Miller, C (2008); *Nursing for Wellness in Older Adults: Theory and Practice*; Lippincott Williams & Wilkins; Michigan USA

- Morgan, L & Kunkel, S (1998); *Aging: The Social Context;* California: Pine Forge Press.

- Nierstrasz, F (1961); *Building for the Aged*; Elsevier Pub. Co.; Michigan USA

- Pallasmaa, J (2005); *The eyes of the skin: Architecture and the senses*; John Wiley & Sons Ltd; Great Britain

- Palmore, E. (1980); *International Handbook on Ageing: Contemporary Developments and Research;* London and Basingstoke: The MacMillan Press LTD.

- Perkins, B., D. Hoglund., D, King and E, Cohen (2004); *Building Type Basics for Senior Living*; John Wiley & Sons, Inc.; Hoboken, New Jersey

- Powell, M (2003); *Physical Environments and Aging: Critical Contributions of M. Powell Lawton to Theory and Practice*; Haworth Press; Philadelphia USA

- Purves, G (2002); *Primary Care Centres: A Guide to Healthcare Design; Architectural Press, Great Britain*

- Regnie, 1994 cited in Perkins, J.David Hoglund, Douglas King, Eric Cohen (2004); *Building Type Basics for Senior Living;* Hoboken New Jersey: John Wiley & Sons.

- Swain, J & French,S & Barnes, C & Thomas,C (2004); *Disabling Barriers – Enabling Environments*; SAGE Publications; London Great Britain

- Tanner, D & Harris, J (2008); *Working with Older People*; Routledge; New York USA

- Trancik, R (1986); *Finding Lost Space: Theories of Urban Design;* Van Nostrand Reinhold Publishers; New York

- Uhlenberg, P (2009); *International Handbook of Population Ageing;* Vol. 1. New York: Springer.

JOURNALS:

- Blue, L (2008); *Why o women live longer than men;* Time Magazine. (6th August): pg 32

- Chapanis, A (1974); *Human Engineering Environments for the Aged;* Applied Ergonomics: Man-Machine-Environment-Systems Technology. Vol 5 No. 1 (June):

pg 72 – 80

- Martin, J (1990); *Planning for the Very Old*; Planner. (22nd June): pg 16 – 18
- Rodriguez, H et al. (2002); *Depression and Social Support in the Elderly Population: A Study of Rural South African Elders*; *The ABNF Journal.*
- Unknown (1985); *Update: Community Care 5 the Elderly: Ageing and Environment*; The Architects Journal. (29th May): pg 63 – 64
- Williams, A (1989); *Building Dossier*; – *Northern General, Sheffield.* Building Vol.254 (April): pg 51 – 56
- Moughtin, J & McMahon,K (2009); *Healthy Building Syndrome*; RIBA Journal. (February): pg 7 - 50

INTERNET:

- Author Unknown. 2006. South Africa – Family Life in Black Communities (http://family.jrank.org/pages/1613/South-Africa-Family-Life-in-Black-Communities.html) Accessed 03/03/2009
- Haas, L. *Pax Americana Geriatrica.* 07 14, 2008. http://www.miller-mccune.com/culture_society/pax-americana-geriatrica-487 (accessed 07 01, 2009).
- Harper, S. *Find Articles.* 11 2006. http://finarticles.com/p/articles/mi_mOPCG/is_2_23/ai_n21053962 (accessed 07 01, 2009).
- Letzig, B. *World View on Ageing.* 01 01, 1983. http://www.globalaging.org/waa2/history/response.html (accessed 07 01, 2009).
- Unknown, Author. 2002. http://www.csis.org/program/global-aging-initiative (accessed 07 01, 2009)
- Unknown, Author. 2001. http://www.digitalnpq.org/archive/2001_spring/global.html (accessed 07 01, 2009).
- Welle, D. *"Growing Towards a Demographic Disaster I World Assembly on Ageing II."* 04 10, 2002. http://www.globalaging.org/waa2/articles/demogdisaster.htm (accessed 07 05, 09).

REPORTS

- Chinkanda, E. (1987); *Attitudes of the Black Public in Urban Areas with Regard to the Aged and Care of the Aged; Report S-168.* Pretoria: Human Sciences Research Council,.
- Eckley, S. (2006); *History of Age-in-Action [previously known as The South African Council of the Aged 1956-2006*.
- Engardio, P & Matlock, C. *Global Ageing*. The McGraw-Hill Companies Inc., 01 31, 2005.
- Loewe, M. (2007); *A Demographic Dividend for the Developing Countries?;* German Development Institute,.
- Stephens, S. (1978). *Accessible and Perceivable*. *Progressive Architecture: Editorial* .
- Unknown, Author. (2002); *U.N Offers action plan for a World Aging Rapidly I World Assembly on Ageing II;* New York: New York Times.

INTERVIEWS:

- Cloete, Dr. Mansur. (Supervisory Chief Physiotherapist of the Western Cape Rehabilitation Centre) interviewed by Anthony Haynes, 15th July 2010, Cape Town.
- McGilliwie, B. (Owner and developer of the Medi-Care Centre in Rustenburg) interviewed by Anthony Haynes, 15th July 2010, Rustenburg
- Voges, Dr Jurgen. (Chief Physiotherapist for all of Platinum Healths Physiotherapy services) Interviewed by Anthony Haynes, 19th July 2010, Rustenburg.

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III.2.1 Bond, J 2007:33

III.2.2 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-UnitedStates Accessed February 2010

III.2.3 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-UnitedStates Accessed February 2010

III.2.4 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-UnitedKingdom Accessed February 2010

III.2.5 Purves, G 2002:7

III.2.6 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-UnitedKingdom Accessed February 2010

III.2.7 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-Japan.png Accessed February 2010

III.2.8 http://www.flickr.com/photos/eyecatcher/500695917/in/set-72157600178623168/ Accessed January 2010

III.2.9 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-Japan.png Accessed February 2010

III.2.10 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-SouthAfrica.png Accessed February 2010

III.2.11 http://www.google.co.za/imgres?imgurl=http://img2.photographersdirect.com/img/12366/wm/pd347720.jpg Accessed August 2009

III.2.12 http://www.flickr.com/photos/un_photo/3311470487/sizes/o/ Accessed August 2009

III.2.13 http://nbknew.deviantart.com/art/About-faces-and-myths-65597767 Accessed August 2009

III.2.14 http://www.google.co.za/imgres?imgurl=https://istgeography.wikispaces.com/file/view/pop.JPG/31244623 Accessed February 2010

III.2.15 http://geography.uoregon.edu/bartlein/courses/geog361/labs/pop-SouthAfrica.png Accessed February 2010

III.2.16 http://fc02.deviantart.net/fs14/f/2007/060/e/2/OLD_by_luclak.jpg Accessed December 2009

III.2.17 http://yourenglishlessons.files.wordpress.com/2010/03/the-4-stages-of-life-baby-bottle-coke-bottle-as-a-1.jpg Accessed December 2009

III.2.18 http://ninitalk.files.wordpress.com/2009/07/aging_aeging-process.jpg Accessed December 2009

III.2.19 http://fc02.deviantart.net/r/2004/134/l/8/A_Couple___by_gonz0r.jpg Accessed December 2009

III.2.20 http://farm4.static.flickr.com/3068/2886227785_6be6898e9f_s.jpg Accessed March 2010

III.2.21 http://whollysblog.com/wp-content/uploads/2010/03/evian-live-young-5.jpg Accessed March 2010

III.2.22 http://www.flickr.com/photos/ajpscs/222116293/ Accessed May 2010

III.2.23 http://www.freefoto.com/images/41/01/41_01_51---Elderly-People_web.jpg Accessed January 2010

III.2.24 http://randydeutsch.files.worrdpress.com/2010/08/change-architect-maslows-needs-pyramid.jpg Accessed April 2010

III.2.25 Gallup, J 1999:2

III.2.26 Tanner, D 2008:57

Chapter III: Illustration references

III.3.1 http://www.beyondbiology.org/beyondbiology.org/images/stories/food/The-Five-Senses.jpg Accessed May 2010

III.3.2 http://www.yaslibakicisi.net/galeri/Yasli%20Resimleri/Age_1_by_SebastianStrange.jpg Accessed May 2010

III.3.3 http://www.flickr.com/photos/barteuppens/4598415321/ Accessed May 2010

III.3.4 http://famouswonders.com/wp-content/uploads/2009/03/tiananmen-square.jpg Accessed May 2010

III.3.5 http://commondatastorage.googleapis.com/static.panoramio.com/photos/original/5963413.jpg Accessed May 2010

III.3.6 Unknown Source

III.3.7 http://2.bp.blogspot.com/_bazwykKf2FDM/SS8lqK10zaI/AAAAAAAABCI/PZUi8ZHUJ2c/s1600/elderly-man-staring-out-window.gif Accessed May 2010

Chapter IV: Illustration references

III.4.1 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.2 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.3 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.4 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.5 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.6 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.7 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.8 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.9 http://www.ark-sievanen.fi/projektitonni.html Accessed April 2009
III.4.10 http://www.richardrogers.co.uk Accessed April 2009
III.4.11 http://www.richardrogers.co.uk Accessed April 2009
III.4.12 http://www.richardrogers.co.uk Accessed April 2009
III.4.13 http://www.richardrogers.co.uk Accessed April 2009
III.4.14 http://www.richardrogers.co.uk Accessed April 2009
III.4.15 http://www.richardrogers.co.uk Accessed April 2009
III.4.16 http://www.richardrogers.co.uk Accessed April 2009
III.4.17 http://www.richardrogers.co.uk Accessed April 2009
III.4.18 http://www.richardrogers.co.uk Accessed April 2009
III.4.19 http://www.richardrogers.co.uk Accessed April 2009
III.4.20 http://www.richardrogers.co.uk Accessed April 2009
III.4.21 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.22 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.23 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.24 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.25 http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=233 Accessed April 2009
III.4.26 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.27 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.28 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009
III.4.29 http://www.metropolismag.com/html/content_1003/dis/index_c.html Accessed April 2009

Chapter V: Illustration references

III.5.1 Author July 2010
III.5.2 http://www.wcrc.co.za/docs/96/picture.jpg Accessed August 2010
III.5.3 http://www.wcrc.co.za/doc/61/REFFERAL%20TO%20REHABILITATION%20FACILITY.pdf Accessed August 2010
III.5.4 http://www.wcrc.co.za/docs/66/picture.jpg Accessed August 2010
III.5.5 Author July 2010
III.5.6 Author July 2010
III.5.7 Author July 2010
III.5.8 Author July 2010
III.5.9 Author July 2010

III.5.10 Author July 2010
III.5.11 Author July 2010
III.5.12 Author July 2010
III.5.13 Author July 2010
III.5.14 http://www.wcrc.co.za/doc/61/REFFERAL%20TO%20REHABILITATION%20FACILITY.pdf Accessed August 2010
III.5.15 Author July 2010
III.5.16 Author July 2010
III.5.17 Author July 2010
III.5.18 http://www.wcrc.co.za/docs/68/picture.jpg Accessed August 2010
III.5.19 Author July 2010
III.5.20 Author July 2010
III.5.21 http://www.wcrc.co.za/docs/69/picture.jpg Accessed August 2010
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APPENDICES

11.1 INTERVIEWS

11.1.1 Western Cape Rehabilitation Centre

Interview was conducted with Mansur Cloete who is the Supervisory Chief Physiotherapist. July 15th 2010.

Email/Speak to Jaak Lloyd who's done his master in adaptive physical activity. Speak to him about access and types of equipment he suggests.

ADDRESS: 103 Highlands Drive
Mitchell's Plain 7789

- 3 month minimum rehabilitation stay.
- Where the patient attends physiotherapy, occupational therapy and speech therapy on a daily basis.
- Patients are encouraged to go home every weekend so they can apply what they've learned at the centre at home.
- Occupational therapist do home visits to assess their home environment, ie. Toilets, counter heights etc.
- OT makes splints but prosthesis limbs are outsourced from a specialist designer.
- 1)Nazeer Seria Architects. 2) South Architects
- Client is the Department of Health
- On site kitchen but staff are outsourced
- Waste management is done through a subcontractor (private company called waste tech/waste man. They collect the waste twice a day.

Sub Acute – need to be on a drip and doctors supervision, oxygen, medical waste (plan to cater for these kinds of patients)

Step Down facility combined with a wellness centre.

- Specialist rehabilitation centre cva's and spinal cord injuries, progressive diseases muscular dystrophy cerebral palsy, William bell syndrome.
- Screening of patients for admission
- Clinical psychology

- Dietician
- Social workers for intervention
- Special projects – Health and Wellness Centre (based on a masters students thesis that was done at Conradi hospital Kenyan student who looked at how young guys battled after discharge between the ages of 18-25 (stabbings, drunk driving or driving accidents, domestic violence, gangsterism, Diving accidents, sports injuries especially rugby but this has been reduced with the introduction of the Chris burger fund which has focused on educating coaches about correct body positions in the scrum, ruck and maul and tackling – no. have dropped from 3 or 4 per year as opposed to 20 a year although some may be dying) They introduced "Spine Line" which is a rapid response unit that reduces the time between admitting a spinal cord injury patient to hospital where progressive paralysis can be reduced by rapidly immobilising the injured spine and reducing the amount of inflammation that could cause further damage. (Within 1hr max of 4 hr)
- The Health and Wellness centre was inspired by the research done by a Kenyan student who found that patients with spinal cord injuries felt that they didn't have any access to facilities within the community where they could go and workout. Gym managers weren't giving them gym memberships because they were ignorant and thought the patient was mentally handicapped as well or else they were worried that the patient might injure themselves further and then sue the gym as a result. They also felt they wouldn't know how to use the gym equipment or else the gyms were simply inaccessible.
- Health and Wellness centre was originally designed for the hydrotherapy pool and then the design was expanded to include a gym. They've employed a swimming coach who comes in 3 times a week to give swimming lessons. (not hydrotherapy, its swimming lessons which is free of charge to those with disabilities and R10 for family members)
- The gym is open for 4 days of the week to anyone with any sort of physical disability whether a patient or not of the centre and is also free of charge. Is funded by fund raisers.
- Standard gym equipment which has just been adapted slightly for those with disabilities and for those who don't have grip, i.e. Velcro straps as opposed to a solid handle.
- Free weights, machine weights, boxing station for balance and wall mounted therobands (for people in wheelchairs to do strengthening exercises)

- Would like to have treadmills and bicycles and more of the weight training equipment. Virgin active offered them equipment but after 6months they only received 4 balance balls. Look into using old equipment from old virgin active in PMB. With the move they might upgrade their equipment.
- Building was sited according to the number of patients being at Conradie Hospital, large patient base of Khayelitsha and Mitchell's plain.
- Problem of access to patients because the WC is located within the grounds of another hospital and security is an issue in the area hence the fenced off grounds and security checks at the gate. Taxi's aren't allowed on the premises and so patients are usually dropped at the gate and need to make their own way to the WC itself.
- Public transport isn't ideal for the handicapped because they aren't suited to the needs of someone in a wheelchair.
- Solution is to use "Dial a Ride" which is a service that collects the handicapped from wherever they're staying and delivers them to the WC. Wheelchair accessible ramps in vehicles.
- Centre is a PPP Private Public Partnership where the risk of assets such as vehicles, buildings and equipment etc has been handed over to a private party and the centre pays them a unit fee per month for them to carry that risk and they do all the maintenance on the building etc which includes 12 services from hard to soft services, excluding the medical services and rehab services. So all equipment, therapeutic medical equipment. Albert Luthuli hospital was the first to use this kind of partnership and the WCRC was the second institution in SA to have this kind of partnership and it works – all the buildings are well maintained.
- Completed in October 2004
- Patient cost with PPP is R130-R200 per patient. (Unit fee?)
- PPP means quick response to problems with building maintenance due to penalty clauses (financial penalty) built into the contract whereby if things aren't sorted out timorously. Allows the staff to focus on their jobs rather than staffing or administrative issues.
- Majority of clients are non pay for their treatment.
- Vanguard community hospital/Day hospital (looks 20 years old because they're a public building and so maintenance is not carried out as stringently as it is in a PPP)
- In the Western Cape, anyone who's on a social grant gets free medical care. (Tax money). Also have paying clients as well as patients that are covered by medical aid (medical aid prefers them to publicly owned institutions because they give a

comprehensive service without relying on a profit margin because they have a budget which they can spend. They don't kick their clients out if their medical aid runs out and they can't afford further treatment. The spinoff is that even those patients on medical aid, when their medical aid runs out they transfer themselves to the WCRC because their services are free. As a public sector facility you're in a fortunate position because you have a bigger base to spend from (larger source of capital) you also don't need to make your own budget. The private sector needs to make a profit in order to be sustainable.

- Private sector runs the building and assets whereas the government provides for the actual treatment and staffing of the centre.
- Payment to the PPP each month is ±1,5 million therefore about 15 million per annum.
- The PPP uses cost cutting techniques such as when a piece of equipment breaks down they are liable to replace that equipment with an item of the same specs but not necessarily the exact same piece of equipment so can therefore buy a knock off item. Alternatively they might invest in a more expensive piece of equipment which doesn't break down as often.
- 2 staff workforces, i.e. Rehabilitation staff and general operational staff i.e., cleaners, laundry staff, maintenance staff etc who are paid for and monitored by the PPP.
- Privacy is a major issue because you need to integrate them but insure a privacy gradient for the patient.
- Try and incorporate the Discovery Health kick back system for those elderly that attend the wellness centre daily for physical exercise.
- 7-8 patients a day per specialist. Therefore 6-30 outpatients per day who come in on certain days to see a doctor or physiotherapist who isn't a permanent staff member and who doesn't deal with admitted patients.
- Try to make in environment as informal as possible so patients are permitted to access staff areas.
- Patients aren't encouraged to make their own tea or cook their own food within the wards or without supervision because they may injure themselves further due to not having full motor control, they could spill boiling water on themselves.
- There are areas that are set up to simulate daily living activities such at the bathroom and kitchen setup. Occupational therapy spaces.
- Had an existing ward that was converted into a staff office area and all the wards were existing wards and so they didn't have a say in their design. As a result they need more staff than they currently have because it not what they call Florence

Nightingale wards which are larger and back to back. Instead they have individual or four beds wards. It makes monitoring the patients more difficult but is done because of privacy issues (barracks style?).

- Kiosk and tea rooms are the general meeting points for staff and the dining and TV areas are the meeting points for patients.
- On the weekends, the staff organise activities for the patients to help prevent boredom for those patients that can't go home, like dominoes, blow darts, DVD's etc.
- They try to encourage patients not to go home on weekends if they don't need to because their budget is determined by bed occupancy rates and numbers of patients they have using the centre. So from Monday to Friday they have 95-100% occupancy and on the weekend it drops down to 55% which effects the average occupancy rate to about 65-70% and the centre needs to stay at 85% occupancy.
- They would like to expand to include another 2/3 wards because of the number of referrals. (They have 156 beds) But they'd need more staff. The need for intensive rehab is there.
- They have 6 wards but only 3 are being used by inpatients because they don't have the staff to operate them effectively and also they're too spread out.
- They have a small library which is accessible to clients and acts as a conference are.
- All patients get the same treatment and food etc whether they're paying, supported by medical aid or a non payer. Paying patients sometimes complain about not getting preferential treatment and so the solution is that if they complain, they will be place within a single bed ward. But therapy is done together.
- Ventilation and lighting – there's only air-conditioning at reception, in the gyms. The health and wellness centre combines air-conditioning with an extraction system because they have a heated pool. The extraction system works over the pool area to extract the hot humid air while the gym area is air-conditioned. They wanted to divide the two areas by a glass wall but this was never worked into the design and so is a very inefficient system. Also wanted towers to aid with extraction through the Venturi technique.
- Materials – All doors have aluminium kick plates, wooden handrails because they look warmer and more inviting and are used throughout the centre. Carpets are used in specific areas like lounges etc and linoleum flooring is used in areas where the chance of spillage is high either from catheters, drips or general cleaning staff detergents.

- Furniture – All furniture is free standing except for fold down chairs from the wall which are in the reception/waiting area. But majority of patients are wheelchair bound.
- Link to Context – therapeutic courtyards which are also used as obstacle training courses. Macro context, the building is isolated because it's within an existing hospital complex which is fenced off. Need more covered outdoor areas to get away from the ward environment. Too little community connection, no visual link. Supposed to use sub contractors from the community.
- Client base is through referrals from other doctors and hospitals.
- Level changes - all on one story for wheelchair accessibility.
- Lacking in way-finding signs for those who are visually impaired. Issues where lighting changes are too harsh and irregular covered walkway columns can cause an issue for those with visual impairments.
- Each area is colour coded to help distinguish them from each other which is helpful for those with visual or cognitive impairments.
- Tend to not focus on the rehabilitation of those patients with cognitive disabilities. Instead they'd refer them to a more specialised centre.
- Counselling is done by the social workers at the centre. They do need a clinical psychologist.
- 2 yrs old to 84yr old patients – but main demographic is from 18-25. There is part time teacher who school kids with disabilities while they're staying in the centre.
- They have more male patients because due to the age group and the environment within which they grow up. Ie, gangsterism. Female that attend the centre are usually there because of car accidents etc and amputations that are a result of Diabetes.
- Medical Professionals at centre:

  Nurses

  Physiotherapists

  Occupational Therapist

  Speech Therapist/Audiologist

  Social Worker/Clinical Psychologist

  Medical Doctor

The WCRC provides specialized high intensity rehabilitation and community reintegration programmes for persons with physical disabilities. The focus is outcome based and the promotion of functional independence. The facility maximum capacity of 240 beds, and a daily OPC clinic.

Patient profile: Stroke/head injury

Spinal cord afflictions

Amputations (post amputation rehabilitation)

11.1.2 RUSTENBURG MEDI-CARE CENTRE

Interview conducted on the 19th July with Jurgen Voges (head of physio department at Anglo Platinums Bleskop Hospital and later as Chief physio of all platinum health's physiotherapy services. Since March 2007 he has been running his own practice, focusing on orthopaedic and neurological rehabilitation)

Architect: Jillian Forbes

Developers/Project Managers Landscape Architects

Belinda McGillewie and Robert Beaumont

FACILITIES AND SERVICES:

- Sub-Acute care facilities
- 24hr private nursing
- Assisted living care and frail care
- Small library
- Hairdressers, beauticians and podiatrists
- Dispensary with qualified pharmacist

Rehab centre is equipped with rooms for occupational therapy, speech and hearing therapy, orthotic and prosthetic services. Equiped also with a rehab gym and a hydrotherapy pool as well as general physiotherapy facilities.
Medi-care, step down and frail care centre – for patients recovering from surgery, patients in traction (Orthopedic), rehab after surgery (Neurological and Medical) etc.

Rehab centre is an independent sub-acute centre, linked to the medi-care step down facilitiy.

- Originally planned to have a retirement village sector but was subsequently changed for day theatres and medical wards because of the large demand for day theatres in Rustenburg.
- Mainly designed to be an old age home come retirement village with frail care has now become a sub-acute hospital, psychiatric hospital acute rehab hospital and now day care centre.
- Ground floor is reasonably designed for people with physical disabilities.
- Assisted living originally

- Bathrooms are too small for wheelchair use. Not enough space to have assistance in the bathroom.
- Work with rehabilitating between 2 and 3 people at a time.
  Physio - Maximum of 10 patients per day. Average of 7.
  OT – Same numbers, Cognitive therapy
  Gym area is divided into 2 treatment areas which can be curtained off completely and has suspension frames for weightless exercises.
- General rehab, neurological rehab, spinal cord and traumatic vein or strokes. They also do orthopaedic and amputee rehab hence the amount of gym equipment (larger need for equipment with amputee patients).
- Acute = basic equipment or sub-acute = normal gym equipment because you trying to get them back to being able to exercise on a normal basis. (Preventative treatment) need to look at strokes and orthopaedics. (He suggested that all I need in terms of equipment is parallel bars and a flat bed bench with maybe a suspension system.)
- Each staff member has an office which can be used as a therapy space.
- There isn't a staff tea room or general meeting room and so Jurgens office doubles up as a small coffee station.
- The site was chosen to build the medical centre on it because the land was already owned by the developer and Belinda who had the intent of building a retirement community on the site. The demand for day theatres outweighed any interest from the elderly community. They are going to include an x-ray department.
- Need to have seated exercise stations so the elderly can sit and exercise with bands.
- COOL IDEA (have brail name tags imbedded in the handrails of the building, so as someone reaches a treatment area, they can identify the name of the treatment room by touch.)
- Lacking meeting areas. They going to have a multipurpose office area and then a conference area which would primarily be used by the social workers for treatment or discussion with the patient. (Question of whether or not the meeting/conference room should be separate from the treatment areas?)
- There are currently no day theatres in Rustenburg and so patients have to be admitted to hospital and stay overnight. The fee structure is for overnight and so the cost to the patient is higher than it should be.
- Netcare was interested in being a partner to the Day Theatre development. Life was harder to convince onboard with the scheme because they are the major hospital in

the area and so could potentially loose some income with the introduction of day theatres.

- The site was used as a house originally then a crèche and finally a school which was closed down for substandard facilities.
- Located close to the M4 and is on a main road although traffic does sometimes cause a problem due to congestion. Also located just up the road from a major hospital.
- The problem of access has been solved with the purchase of additional land at the back of the property which has access to a quieter road and is on the end of a panhandle. Additional access.
- Medicare and the rehab facility are two different entities and so the staff don't mingle all that much. There is no defined area for staff to congregate and so the building is lacking a heart. The nurses do congregate at the coffee shop.
- They have a major problem in terms of evacuating the top floors because bed ridden people won't be able to use the lift or stairs and would need to be transferred into a specialized wheelchair that can go down stair which they don't have. Also the fire stairs have no windows or doors and so smoke would be channelled up to each floor.
- Storage is an issue especially at reception because of the divided services and counters. Need more file storage for patient profiles. Additional reception was the original file storage area but was subdivided to cater for the secondary reception.
- Originally the ground floor was going to have a little cafeteria with an entrance onto the back courtyard.
- Very limited public transport in Rustenburg and the taxi's tend to focus their services in the centre of town. There are no nearby taxi stops but some staff and patients arrive by taxi and are dropped off at the gate.
- Pretty much a straight line service route for buses between Rustenburg an imghlaban township. Not a regular service and most are contracted by the local schools.
- They have their own vehicle for clients who are quadriplegics within the Rustenburg area. Ramp for wheelchairs and straps to secure the wheelchair.
- The patient profile is a general mix of young and old, male or female. This is because they are a general rehab which is strange considering they have a frail care centre/step down above them and an acute rehab ward opposite them. Sub acute step down, has a strong emphasis towards the elderly. The rehab centre deals with the younger people and its skewed more towards the disadvantaged.
- The meals are prepared by the cafeteria for the whole centre.

- The rehab centre does its own laundry, the acute rehab ward sub contracts a laundry service.
- General waste is collected by the municipality and the medical waste is collected by a specialised medical waste disposal service/ sub contractor.

PROBLEMS:

- Door width is that of a standard door for all toilets
- Door handles are regular door handles
- No aluminium kick plates on the bottom of the door
- Regular tap and faucet
- Sink heights are standard height and not wheelchair friendly.
- Level changes between passages and common spaces such as tea room or even frail care units. (5cm ramp. Its assumed that the architect was worried about drainage along the enclosed corridors)
- Lift is too narrow for a hospital bed. Hence transfers of bed ridden patients to a narrow gurney.
- Reception counters are too high to accommodate wheelchair visitors and so an additional reception counter needed to be built.
- Physio treatment studio too small to cater for the proposed growth of the centre. With the expansion, they will be getting a new gym area and rehab studio (division of rehabilitation spaces due to expansion = doubling up of offices, equipment and staff)
- Cobbled paving at the entrance is a major obstacle for people in wheelchairs or elderly who use walkers
-They lack any facilities for the visually impaired... Lighting and wayfinding, material changes.

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HYPOTHESIS:

To determine an appropriate architectural/urban design intervention that will act as a catalyst between the varying demographics and socio-economic levels which divide South Africa's population as a result of its political history, with the emphasis on elevating the status and well-being of the elderly within society. The objective is thus to design a care environment, that fosters the recovery of the elderly as well as the community within which it is sited.

PROBLEMS & OBJECTIVES:

SOCIAL:

"Old people need old people, but they also need the young, and young people need contact with the old."
There are very few places where old and young combine to create a complete sense of community, and more often than not, the elderly are confined to retirement homes to free their families and friends of the "burden of care". If the elderly are to be integrated back into society socially, they first need to be integrated physically. This can be achieved by keeping the elderly mentally and physically fit for as long as possible before the natural onset of age associated illness and disabilities force them to be dependent on others.

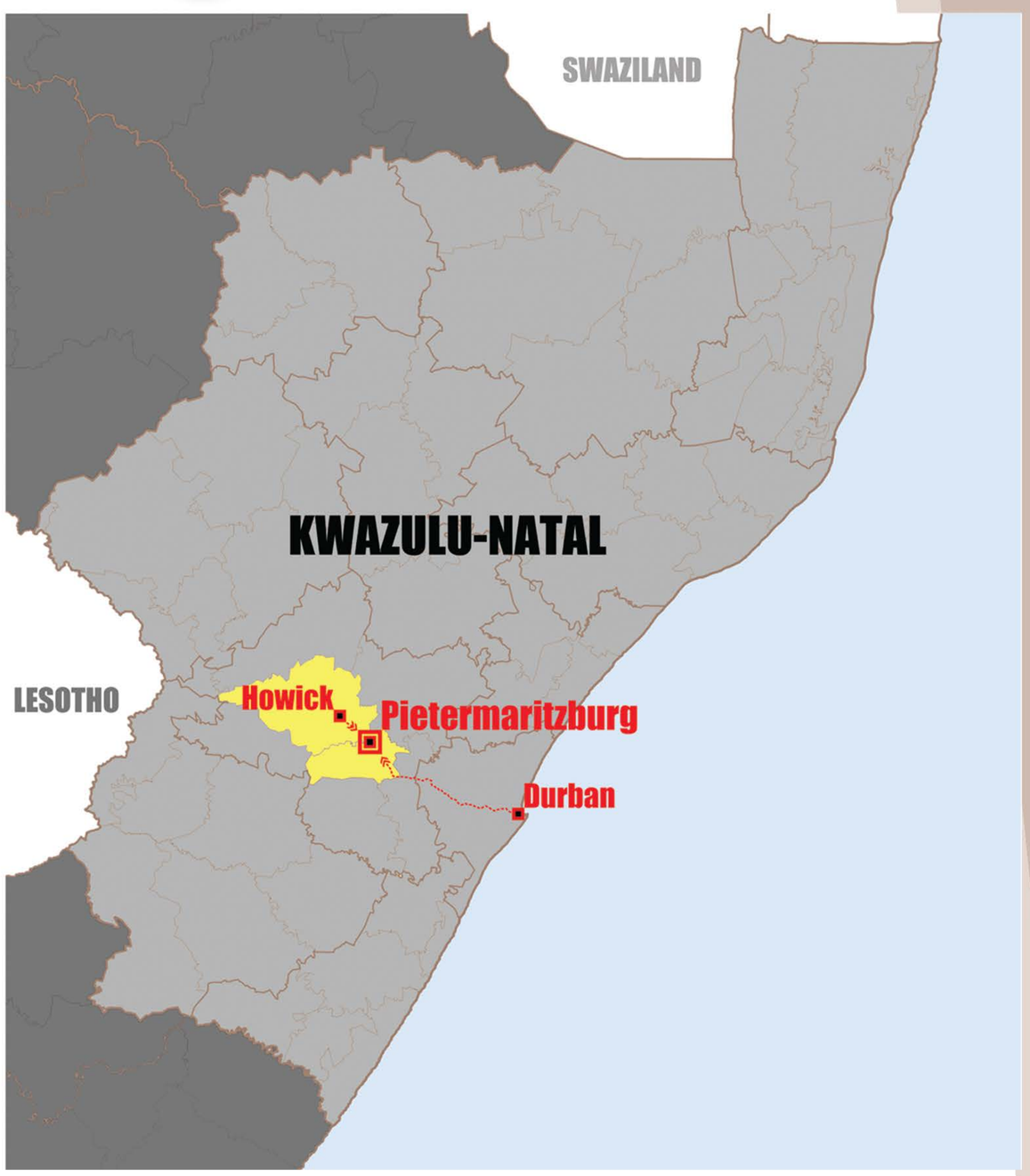
By grouping preventative care as well as post operative step down treatment facilities together it is believed that the resultant wellness centre can shift the perception of a healthcare facility from a place you go when you are ill to one where you go to keep well.

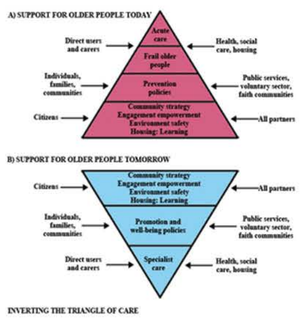
URBAN:

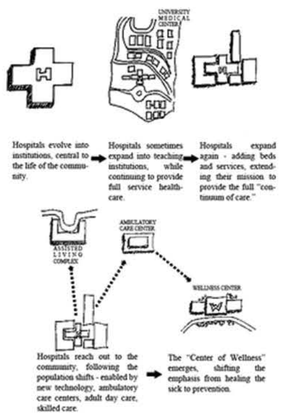
"The material spaces and places in which we live, work and engage in leisure activities are age graded and in turn, age is associated with particular spaces and places." (Laws,G cited in Foo, 1999:7)
By linking social identities to a specific place such as a retirement home or village, the lifecycle of a community where old and young combine
Social isolation of the elderly from the rest of society can cause depression and feelings of despair. Architecture for the elderly has in the past justified this break in social networking by saying that the elderly preferred to escape from the hustle and bustle of modern day life, to a quite, calm environment where they can reflect back on their lives. This kind of environment simply encouraged the elderly to disengage from society and become more dependent on others for care.

ARCHITECTURAL: Satellite medical buildings that are non institutional and encourage demographic amalgamation help to speed to recovery time of post operative patients. The form of the building should allow nature in but still remain as a defensible space as patients feel vulnerable in an unfamiliar environment









URBAN:

The wellness centre will act as an intermdeiate step between the hospital and home. In a similair fashion to a step down care facility although my design aims to aid in the healing process of the elderly by re-intergrating them back into society rather than making them heal in isolation in a retirement home. It will also act as a type of adult day care facility were children can drop their elderly parents for the day whilst they go to work. Their parents would be involved in a number of activities that stimulate physical and mental ability and prevent the onset of premature dependency do to age associated disibilities or illness. Their children would use the adjust mall apon returning after working all day to do their shopping before collecting their parents. This creates an economic cycle that supports the mall as well as promotes the use of the wellness centre by the elderly.

PROCESS

WELLNESS CENTRE FOR THE AGED

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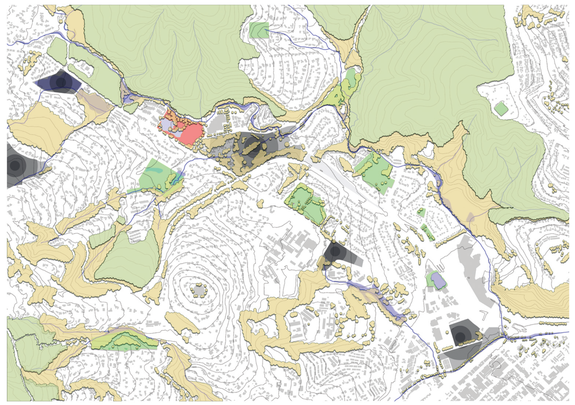
1 FIGURE GROUND STUDY



2 ZONING ANALYSIS



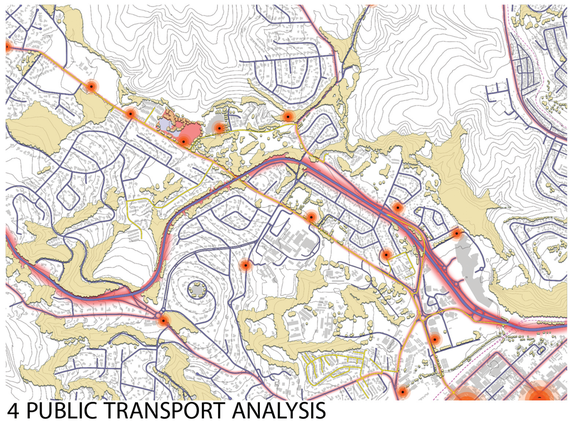
3 IDENTIFYING AREAS FOR DEVELOPMENT & TREED AREAS

SITE REQUIREMENTS:

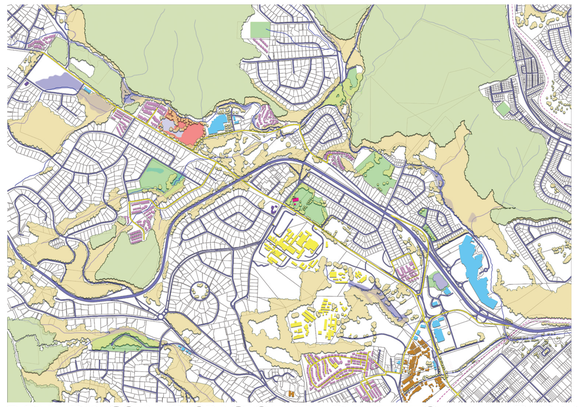
- Because the building must cater for those with physical disabilities, its best to locate the building on a relatively flat site to reduce the physical exercion needed to move about the building and its surrounding context.
- As the building has a medical component to it, it should be within close proximity to a general hospital for easy referrals and transfering of patients. However the priority should be to locate the building as close to its target demographic as possible.
- To aid in the process of healing, the individual patient needs to be exposed to a natural healthy environment as well as the community within which they live. According to Roger Ulrichs theory of evidence based design, these combined factors and the building environment can result in quicker recovery times in patients.
- Lastly the site needs to link to the community in such a way that the patient can be reintroduced into the lifecycle of the community, This was achieved on the Pietermaritburg site by locating the building next to cascades mall. As malls have become social nodes in our communities, drawing people of all ages and social backgrounds to them, they become a melting pot where intergenerational interaction can be encouraged.

LESSONS LEARNED FROM THE MACRO ANALYSIS:

1) The figure ground study shows that there are large tracts of land that have been left undeveloped. Reasons for this are probably as a result of the highway that cuts through the analysis area. These lost spaces are left as buffers or noise dampening barriers between the N2 highway and the residential area. These area should not be over developed as they create a green corridor adjacent to the highway.
2) The zoning diagram highlights the fact that the wellness centre has been sited within a residential area. This makes visits to the centre more convenient to those that live in the area. Plus these is a Large general hospital nearby to act as support should the be a medical emergency.
3)The green analysis shows the different types of foresst in the area which range from plantaions to parks and natural forest. By developing my urban site, i hope to connect these green areas with a pedestrian walkway which would become Pietermaritzburgs version of the Durban beachfront.
4) The public transport system relies heavily on taxi's rather than busses. This could be a problem in terms of access to my site for somebody with a physical disability as taxi's do not have specialised loading doors for the disabled. The number of taxi stops is relatively high and all taxi's routes take them to the Retief Street transport interchange where commuters need to catch a connecting taxi to their suburb or area. The roads that run parrallel to my side are heavily used early in the morning and late in the afternoon. Other than these times, the roads are generally very quite. Most are lined with trees so a large percentage of noise is absorbed by the trees.
5) The final analysis image shows the routes taken by the elderly from nearby retirement villages as well as any buildings or spaces which may interest the elderly.



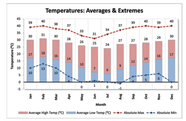
4 PUBLIC TRANSPORT ANALYSIS

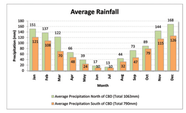


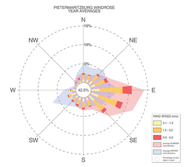
5 BUILDINGS AND SPACES THAT RELATE TO THE ELDERLY

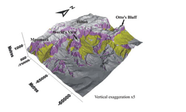
Site orientation guidelines for two of South Africa's main climate regions.

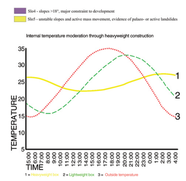
	Temperate regions	Hot humid regions
Adaptations	Maximise warming effect of sun in winter, maximise shade in summer, reduce impact of winter wind but allow air circulation in summer.	Maximise shade, maximise wind.
Relation to water	Close to water but avoid coastal fog.	Near any water.
Clustering	Around a common sunny terrace.	Open to wind.
Building orientation	North to north-east.	North towards prevailing wind.
Tree forms	Deciduous trees nearby on west, no evergreens near north elevation.	High canopy trees, deciduous trees near building.
Road orientation	Perpendicular to winter wind.	Broad channel, east-west axis.
Materials colouration	Medium.	Light, especially for roof.

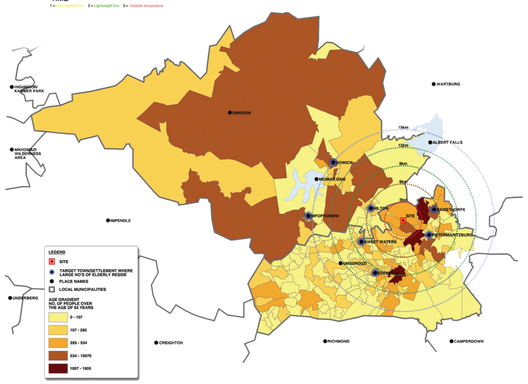












PMB CLIMATE:

A study of Pietermaritzburg's environmental and climatic conditions was conducted to determine the chosen sites potential, with regards to harnessing passive design strategies within the urban and architectural design.

GEOTECHNICAL ANALYSIS:

Pietermaritzburg's geological stratum is diverse across the city because of the cities location within a hollow which is surrounded by hilly terrain, especially to the North and North East of the CBD. The combination of sedimentary soils and slope gradients to the North of the city centre create a potentially unstable surface upon which to build. However just below the sedimentary layer lies the lower ecca strata which is comprised of sandstone beds which provide a secure footing upon which to construct a buildings foundations.

HYDRO-GEOLOGICAL:

Pietermaritzburg has a shallow water table which limits subterranean development to single level basements. Due to the altitude of the selected site, underlying sandstone ecca and the slope of the surrounding areas, the majority of rainwater that falls in the area is effectively dissipated by existing streams and rivers. There are areas of land along some rivers edges which are seasonally flooded to become sporadic wetlands. These flood plains can be taken advantage of by creating a permanent wetland that retains storm water runoff and moderates the flow of water into the sites bordering river. Care must still be taken not to build within the 100 year flood line.

MICRO-CLIMATE:

Factors that give Pietermaritzburg its subtropical climate are its latitude (29°37'S), its altitude of 658m above sea level, its distance from the coastline but particularly its local topography. Even the change in altitude across Pietermaritzburg itself, from the SE to the NE impact on the average annual rainfall in these two suburbs of less than 800mm in the drier SE compared to 1100mm of rain for the wetter NE. This makes the location of the wellness centre to the NE of the CBD ideal for including roof gardens into the design of the centre as they require 1000mm to be self-sufficient. This design feature lessens the heat island effect and the buildings impact on the sites ecosystem.

The sites higher altitude and the surrounding hillside means it is generally cooler than the rest of Pietermaritzburg during summer months because the sun sets behind the hillside earlier each day. The implications of this are that the westerly sun does not cause as much visual discomfort or solar radiation than it does on sites further south of the hillside.

The prevailing winds for the site during the day are predominantly from the East/South-East, as they are channelled up the Msunduzi valley. The South East winds are more frequent in the summer months and can be used to ventilate and cool the building.

Evening winds are mainly from the West/North-West, again being defined by the topography of the Msunduzi valley. The North-West winds bring with it the unpleasant dry Berg winds. Berg winds usually blow between April and September and cause temperature rises of up to 5°C.

On average Pietermaritzburg has 138 days of rain a year with the majority of them being afternoon thundershowers during the spring and summer months. The reason for this being the movement of SE winds

SITE SELECTION AND ANALYSIS

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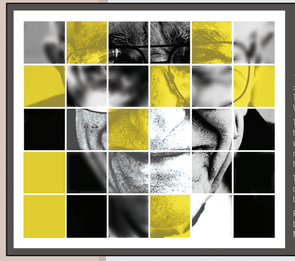


PIETERMARITZBURG

SOCIAL, HISTORICAL AND ARCHITECTURAL CONTEXT

> Pietermaritzburg was founded in 1838 by the first Voortrekker settlers in the area. They settled on a fertile tract of land alongside the Msunduzi River, surrounded by lush forests, hills and valleys. They named their new settlement after two of their leaders, Gerrit Maritz and Piet Retief. Six years later, the British upgraded the Voortrekker settlement to a military garrison town. Today, numerous Victorian and Edwardian buildings, quaint pedestrian lanes and other landmarks reflect the substantial British contribution to the development of the town.

Today, Pietermaritzburg is the Capital and second largest city in the province of KwaZulu-Natal. The Zulu name for the city is "umGungundlovu" meaning the place of the elephant and is the name of the Pietermaritzburgs District. Being the capital of KwaZulu-Natal has meant that several government offices needed to be relocated to Pietermaritzburg which has help sustain the local economy which relies mainly on the trade of aluminium, timber and dairy products. Pietermaritzburg is also well known for its large number of excellent boarding schools both public and private, a large number of which have been built in the early victorian style with the locally produced red brick. Maritzburg as it is popularly known as also boasts the first University of Natal which was later expanded to include the Durban and Westville Campuses. These educational institutions have emphasised Maritzburgs role as a city that promotes educational excellence.

The city of Pietermaritzburg was segregated during the Apartheid leadership which divided the Indian and Black populations between Northdale and the township of Edendale respectively. Today this division is still evident except within the CBD and other nodes of social interaction such as the Midlands and Cascades malls. The location of the Wellness Centre for the Aged site is directly between the two areas and thus serves all three major population groups as well as those that live within the CBD.

Pietermaritzburg is often referred to as the "sleepy hollow" because of the number of elderly that choose to retire within the city and its surrounding areas. The character of Pietermaritzburg is defined by the local artists, farmers who sell their produce at the locally held markets and along the famous Midlands Meander that starts in Pietermaritzburg and ends at the foothills of the Drakensberg Mountians.

GENERAL FACTS

ESTABLISHED> 1838
PROVINCE> KwaZulu-Natal
DISTRICT> Umgungundlovu
MUNICIPALITY> Msunduzi
TOTAL AREA> 649Km²
ELEVATION> 596m
TOTAL POPULATION> ±521 805
POPULATION DENSITY> ±804/Km²



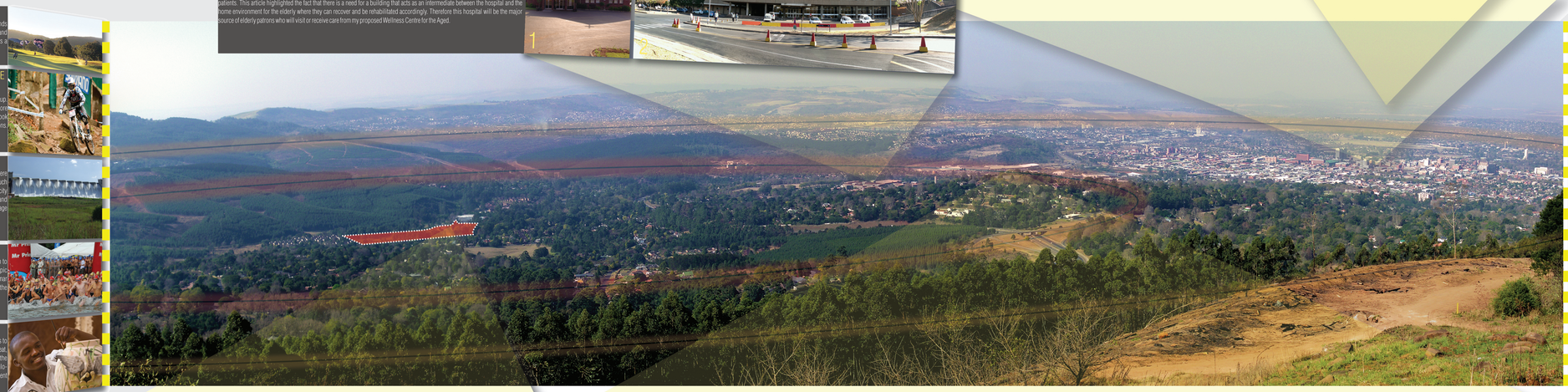
1:BUTTERFLIES FOR AFRICA
> Visitors are able to come into close contact with butterflies from around the world as they fly freely in an attractive, lush environment. It has become a prime tourist attraction for the region, while serving as a valuable educational tool and vital conservation asset.
2:SCOTTSVILLE RACECOURSE
3:GOLDEN HORSE CASINO
4:THE LION PARK
> Is a small game park and Lion reserve where tourist are guaranteed the chance to see one of Africa big five up close.



1:MARKET SQUARE TAXI RANK
> This new taxi rank located in the CBD close to the public library and the city hall is one of the two major taxi interchanges available to pedestrian who use public transport daily to commute to and from work each day. The other major taxi rank is the Retief Street Taxi Rank.
2:PUBLIC LIBRARY
3:CITY HALL
> Constructed in 1893, the Pietermaritzburg City Hall claims to be the largest brick building in the Southern Hemisphere. Various exhibitions and concerts are held at the City Hall, including frequent visits by the KwaZulu-Natal Philharmonic Orchestra.
4:COMRADES MARATHON
> An annual event which attracts 13000 runners who run the ±90km between PMB and Durban
5:ISANDHLWANA WAR MEMORIAL
> Situated in front of the Pietermaritzburg City Hall. The war memorial describes battle between the British colonialists and the Zulu impis that took place on 22 January 1879 and which ended with the British being defeated and some 1300 of their troops being killed



1:ALL SAINTS UNITED CHURCH
2:GREYS PUBLIC HOSPITAL
> This public hospital provides care to a large percentage of the Pietermaritzburg community. Its facilities of late have deteriorated slightly due to the lack of adequate funding. Even though its a large hospital, they still battle to find beds for all the patients that steam in daily. Several years ago, an article was written about the cause of this bed shortage. One of the major causes was the number of elderly patients who were occupying the wards for an extended period of time to their slower recovery rate when compared to younger patients. This article highlighted the fact that there is a need for a building that acts as an intermediate between the hospital and the home environment for the elderly where they can recover and be rehabilitated accordingly. Therefore this hospital will be the major source of elderly patrons who will visit or receive care from my proposed Wellness Centre for the Aged.



VICTORIA COUNTRY CLUB & ESTATE
> This 18 hole golf course is located in the scenic parklands adjoining the Queen Elizabeth Nature Reserve. Currently the land surrounding portions of the golf course are being developed as a residential and office park estate.

NISSAN UCI DOWNHILL MOUNTAIN BIKE WORLD CUP
> In 2009 Pietermaritzburg hosted the Nissan UCI MTB World Cup. An event of this stature has never been held in South Africa before and boasted some of the top athletes from around the world who took part in either the Cross Country, Downhill or 4 Cross competitions. Locally born Gregg Minnaar won the Downhill event.

MIDMAR DAM
> Water sport lovers congregate at the popular Midmar Dam where enthusiasts enjoy windsurfing, sailing, boating, canoeing and much more. The dam supplies water to Pietermaritzburg as well as the city of Durban. With the increased demand for water, the dam wall and existing facilities needed to be raised to increase the storage capacity of the dam.

MIDMAR MILE
> Every February, thousands of swimmers flock to Midmar Dam to compete in a mile long swim. Competitors are made up of Olympic athletes all the way down to recreational swimmers. The Midmar Mile is also recognised by the Guinness Book of Records as the worlds largest open water event.

MIDLANDS MEANDER
> In 1985 local artists, potters and weavers decided to join forces to create an arts and crafts route. Today there are over 160 places to eat, sleep and enjoy the local arts and crafts. History lovers flock to the area to view the large number of monuments dedicated to the Anglo-Boer war as well as the commemoration wall where President Nelson Mandela was arrested prior to his 27 year imprisonment.



DUSI CANOE MARATHON
> Is a gruelling three day canoe marathon which starts in Pietermaritzburg on the Msunduzi river and concludes at the uMgeni river mouth in Durban. This event has promoted grassroots development within the sport of canoeing and helped to uplift disadvantaged communities that run parallel to the race route.

ALEXANDRA PARK CRICKET OVAL
> Located between the banks of the Msunduzi river and Maritzburg College, the park is host to a number of sporting events, festivals and flea markets which take place on the first Sunday of each month. The parks facilities include the floodlit cricket oval, outdoor cycle rink, public pool and a number of sports fields.

CARS IN THE PARK
> Annually, Alexandra park is flooded with antique cars which have been meticulously restored and maintained. Placed on display for all to see, the cars are judged and awarded prizes according to their make and condition. Some of these cars are also put up for sale at the shows auction.

PIETERMARITZBURG UNIVERSITY
> The University of KwaZulu-Natal campus in Pietermaritzburg is the sister university to Howard College and Westville campuses and is the smaller of the three. The campus is made up of a number of Colonial buildings which date back to the early 18th century and which house the agricultural and humanities departments.

STEAM TRAIN TOURS
> The Umgeni Steam Railway is an organization run by volunteers who operate and maintain steam locomotives that have either been donated or bought by various sponsors such as Illovo sugar. Tours either start in Durban or Pietermaritzburg and traverse the valley of 1000 hills or the midlands meander respectively. These tours have been running for eighteen years now and attract up to 800 tourists and train enthusiasts per operating day.



1:BMX CIRCUIT
2:CASCADES MALL
> A small mall which used to be the hub of the residential area of Montrose, Chase Valley and other surrounding areas, which over the last four years has battled to attract patrons or new stores to rent shops within the premises. Checkers, Cricks and the nearby petrol stations are the anchor stores for the mall and are the life blood that have managed to keep the mall open despite the lack of interest in the mall. The drop in patrons is due to the new Liberty midlands mall which is only 1km away and which has a larger selection of stores to shop at. Even the Cinema closed down at Cascades because it couldn't compete against the size of the cinema at Liberty Midlands Mall.
3:LIBERTY MIDLANDS MALL
> This new mall was built to on the site of the old Corobrick factory which closed down about seven years ago. Its location is ideal for mass trade because it runs parallel to the N3 highway and is between the CBD, Montrose, Chase Valley and the Mountain Rise residential areas. Both Cascades and Liberty Midlands Mall are single storey buildings that cover vast areas of land and have little if any architectural merit in terms of response to the natural and social environments within which they are sited. The negative effects of this mall is that it has changed the trading environment within the CBD and other areas by leeching a large percentage of patrons and traders away from the city centre and instead focussed them along the highway within a disconnected environment.

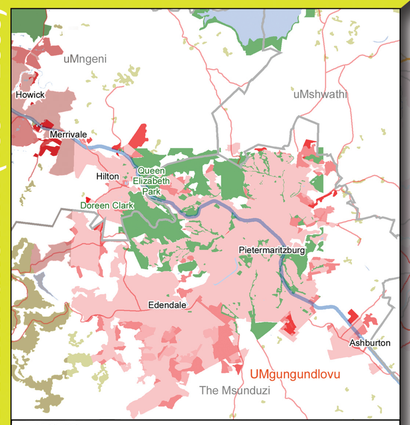
1:BIRD PARK
> This was once a protected piece of land which has now been overdeveloped by car dealerships in PMB
2:UCI BMX WORLDCUP
3:THE ROYAL AGRICULTURAL SHOW
> An annual show of crafts, agricultural products and livestock from around KwaZulu Natal as well as a theme park.
4:MARITZBURG BOWLS CLUB
5:QUEEN ELIZABETH PARK
6:ART IN THE PARK
> Local artists display and sell their work within the tranquil environment of Queen Elizabeth Park.

CONTEXT ANALYSIS

WELLNESS CENTRE FOR THE AGED

.4 URBAN ANALYSIS

PMB URBAN GROWTH (1994 - 2008)



LEGEND

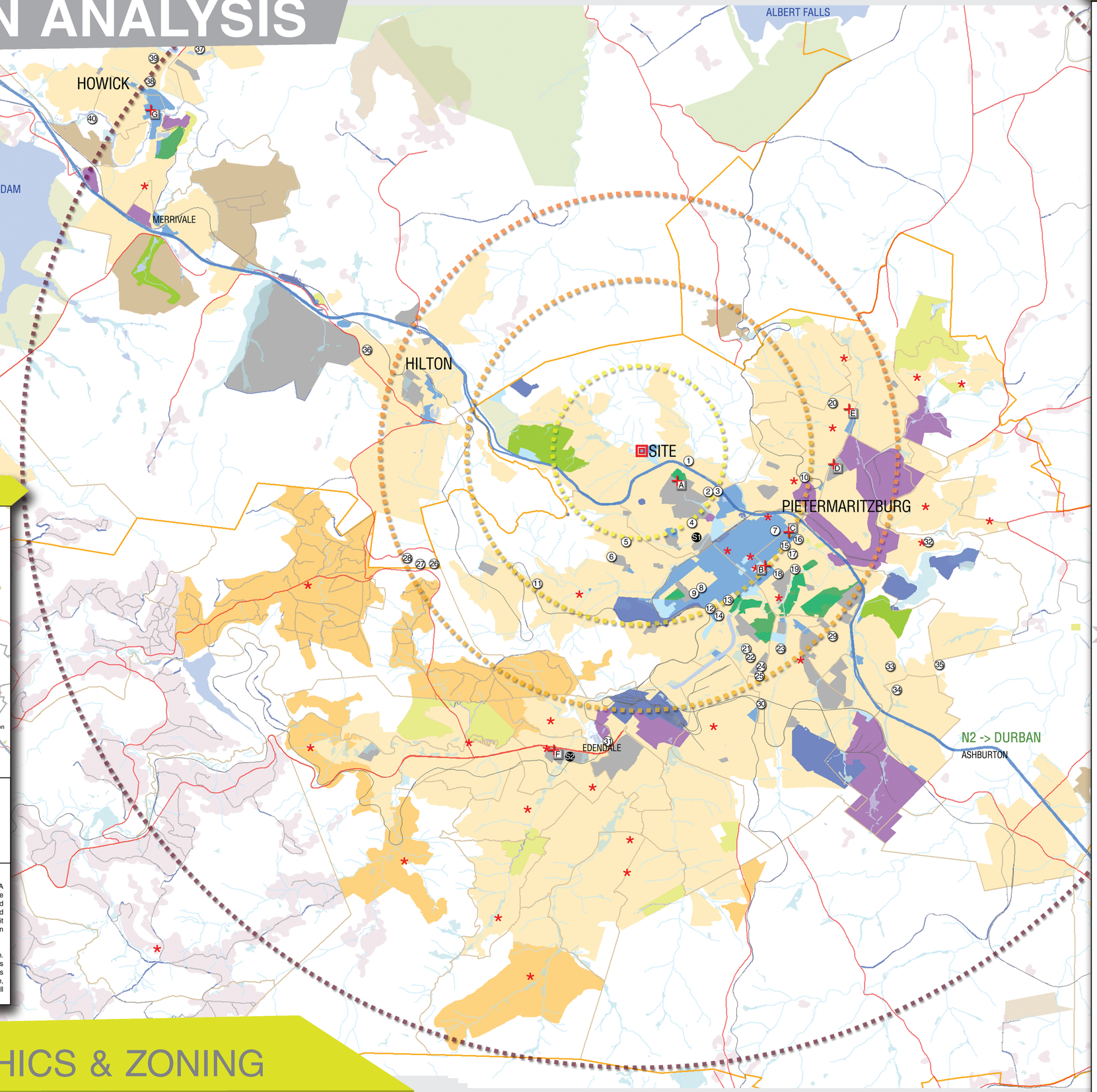
- 1994 Urban Edge
- 1996 Urban Edge
- 1998 Urban Edge
- 2000 Urban Edge
- 2002 Urban Edge
- 2004 Urban Edge
- 2006 Urban Edge
- 2008 Urban Edge
- Future Growth
- District Municipalities
- Local Municipalities
- Water Areas
- Parks
- Rural Settlements

Road Class
- National
- Primary

CONCLUSIONS:

This urban growth analysis shows how Pietermaritzburg has grown since 1994. A large amount of growth is happening in the CBD but what's also noticeable is the amount of growth occurring between Pietermaritzburg and Howick. It is believed that eventually these two cities will be joined in a similar fashion as Pretoria and Johannesburg. With this in mind, the site was selected to next to Cascades as it falls between the two cities and provides the most convenient access to those from PMB and Howick.

As development occurs between the two cities, the demand for land will grown. This demand could compromise the natural environment within which the Centre is located. Fortunately the topography of the land just north of the proposed centre is too steep to develop affordably. This means the views to the north of the centre, should remain plantation land, meaning the envisioned healing environment will not be degraded by development.



PMB LAND USE: AGED RESIDENCES & MEDICAL FACILITY ANALYSIS

LEGEND

- Site
- Retirement Home
- Hospital
- Step-Down Care Facility
- Clinic

Radial Rings From Site
- 2km
- 4km
- 6km
- Maximum Acceptable Travel Distance

- District Municipalities
- Local Municipalities
- Water Areas
- Parks

Road Class
- National
- Primary

Land use
- Administration
- Commercial
- Golf Course
- Industrial
- Informal
- Infrastructure
- Peri-Urban
- Residential
- Small Holdings
- Sports Field
- Utilities
- Rural Settlements

1 RETIREMENT HOME ANALYSIS:

NAME	TOTAL NO.	MALE	FEMALE
1) Evergreen	48	9	39
2) War Memorial Homes	70	30	50
3) Moth Cottages	55	7	48
4) Woodgrove Retirement village & Frail care	243	24	217
5) Clarendon House	20	4	16
2KM TOTAL:	436	74	370
6) Villa Assumpta Convalescent	28	5	23
7) Ayrian Benevalent Home	34	15	19
8) Jacaranda Lodge	82	16	66
9) Kenwyn	46	11	35
10) Isabel Bearmore Home	62	28	34
11) Sunnyside Park Home	160	49	110
12) PFRA	15	2	13
13) Rosewood Estate	160	16	144
4KM TOTAL:	587	142	445
14) Sunset Shelter	36	N/A	N/A
15) Victoria Memorial Home	35	5	30
16) King George V Memorial & Queen Mary Cottages	168	19	149
17) Emma Barter Home	103	9	94
18) SAVF Old Age Homes	27	3	24
19) Riverside Park Home	100	40	60
20) PAFPA	108	32	76
21) Jan Richter	250	46	204
22) The Nest	153	68	85
23) Marian Home For The Aged	9	4	5
24) Marian Villa	130	32	98
25) Kurume Flats	125	17	108
6KM TOTAL:	13	1	12
26) St. Mary's Home	1256	276	980
27) Azalea Gardens	17	4	13
28) Emuseni Old Age Home	132	13	119
29) Lutheran Gardens	55	16	39
30) Bethel	84	8	76
31) Golden Pond	10	N/A	10
32) Amberglen	62	14	48
33) Amberfield	650	156	494
34) Ambervalley	540	148	392
35) Greendale House	42	16	26
> 6KM TOTAL:	166	38	128
	1758	413	1345
GRAND TOTALS:	4037	905	3140

CONCLUSIONS:

Whilst Howick may have one of the largest aged populations within a smaller area, it should be noted that those that reside in the Howick retirement homes are generally the more affluent elderly. The site for the Wellness Centre was selected because it was conveniently located for all sectors of society, rich/poor. It also had the best link to both the natural environment and the community that surrounds Cascades mall.

From the numerical breakdown of the elderly population in the area, it is clear that the ratio of females to males is 3:1. This has huge design implications with regards to the number of ablutions to be provided for each sex. Special attention also needs to be paid to the ergonomic design of each space because female are generally shorter than males plus they shrink with age by up to 7th, while men only shrink by 5cm. This shrinking is caused by the compaction of the cartilage in the elderly persons spine.

A HEALTHCARE FACILITY ANALYSIS:

NAME	PUBLIC	PRIVATE
HOSPITALS:		
A) Grey's Hospital	☒	☐
B) St. Annes Hospital	☐	☒
C) Midlands Medical Centre	☒	☒
D) Northdale District Hospital	☒	☐
E) Daymed Hospital	☐	☒
F) Edendale Regional Hospital	☒	☐
G) Howick Hospital	☐	☒
STEP-DOWN CARE FACILITIES:		
S1) Wembley House Step-Down Care Facility	☐	☒
S2) Doris Goodwin Specialist TB & Step-Down Facility	☒	☐

OTHER MEDICAL FACILITIES:
There are 2 psychiatric facilities and 31 clinics within the vicinity of Pietermaritzburg.

CONCLUSIONS:

The site is located to Grey's Hospital which is the second biggest public hospital after Edendale. They are however run more efficiently than Edendale and provide a better standard of care.

The Wellness Centre will rely on referrals from all hospitals in within Pietermaritzburg and Howick but the greater number of hospitals lies within Pietermaritzburg CBD. Pietermaritzburg also offers greater diversity with regards to both public and private care facilities meaning that the Wellness Centre should not only cater for the wealthy but the poor as well. This affects how the centre is financed and so strategies must be included to help finance the building and its service, through a number of sources. The best solution is finance the building through a public private partnership. Additionally include let able office space for medical practitioners whose rental will contribute to funding the centre.

DEMOGRAPHICS & ZONING

WELLNESS CENTRE FOR THE AGED

.5 URBAN PROPOSAL

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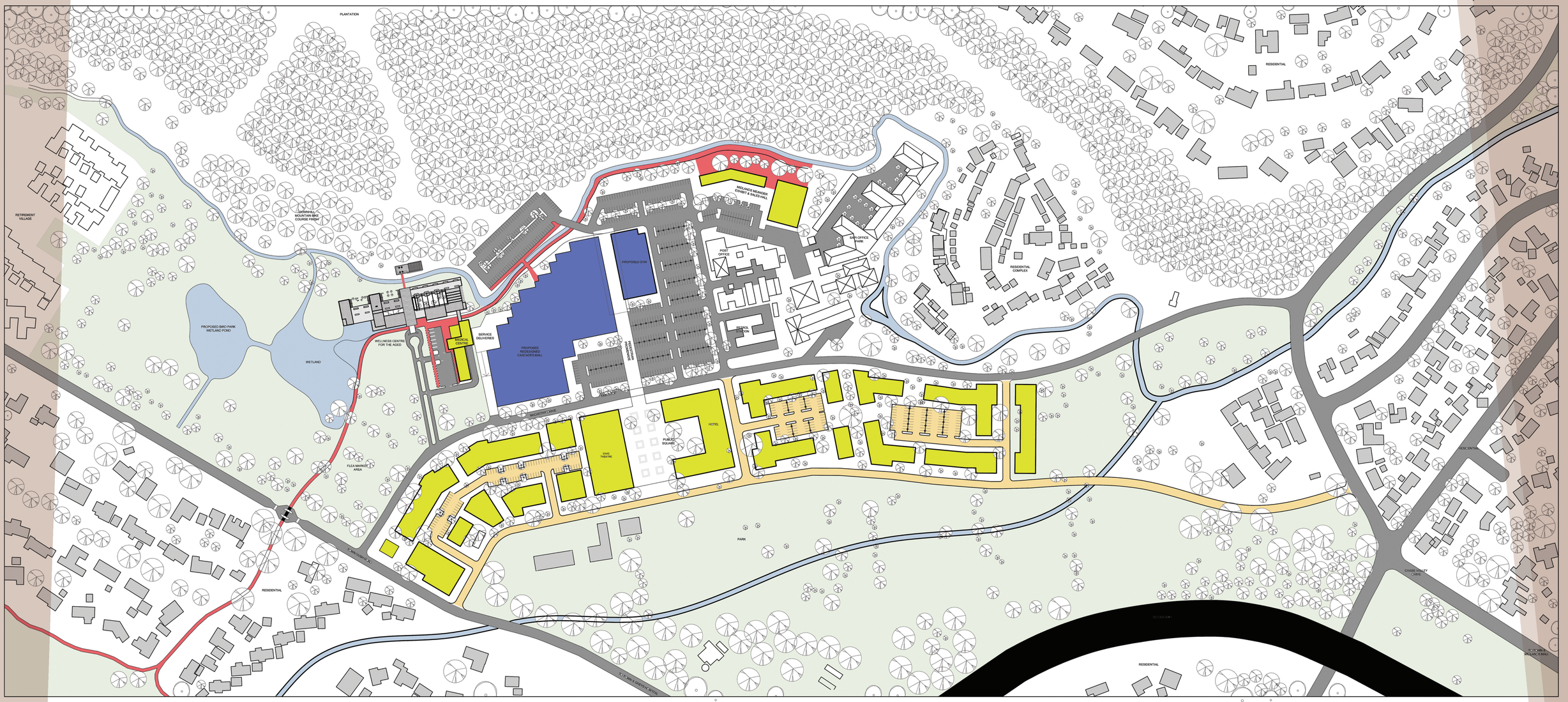

URBAN INTERVENTION 1:1500

WELLNESS CENTRE FOR THE AGED

.6 PLANS

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MONDI PLANTATION
PUBLIC PARKING
WATER FEATURE
DROP ZONE
DISABLED PARKING
PROPOSED PHASE 2 SATELLITE MEDICAL CENTRE
CASCADES LOADING ZONE
FORMALISED WETLAND
ERF 250
PARKING
RAMP
CASCADES MALL
PUBLIC PARK
BOUNDARY LINE
RAMP
McCARTHY DRIVE
MIXED USE DEVELOPMENT
PROPOSED TAXI RANK
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SITE PLAN 1:500

WELLNESS CENTRE FOR THE AGED

.7 PLANS

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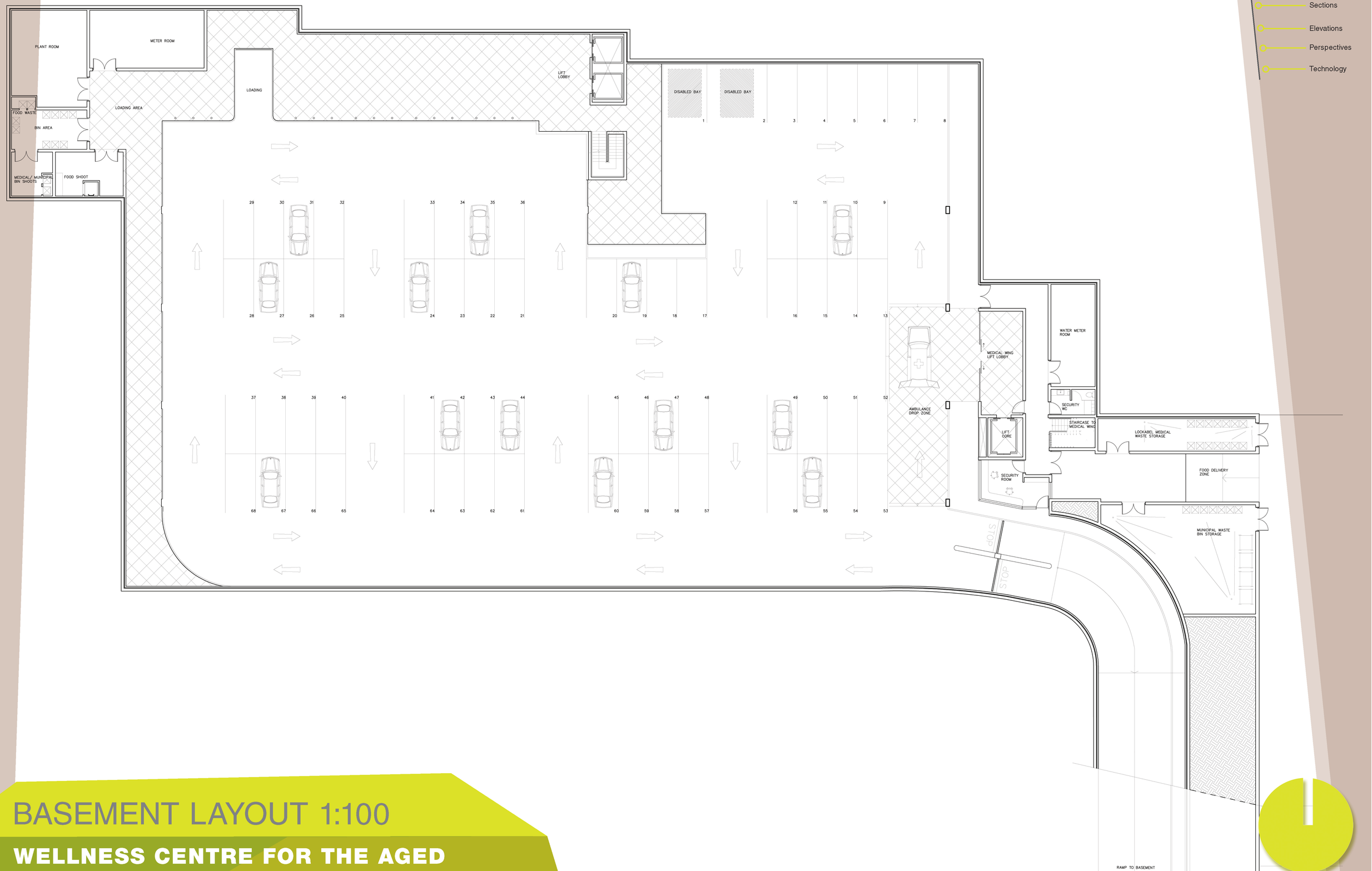

BASEMENT LAYOUT 1:100

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GROUND FLOOR 1:100

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FIRST FLOOR 1:100

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.10 SECTIONS

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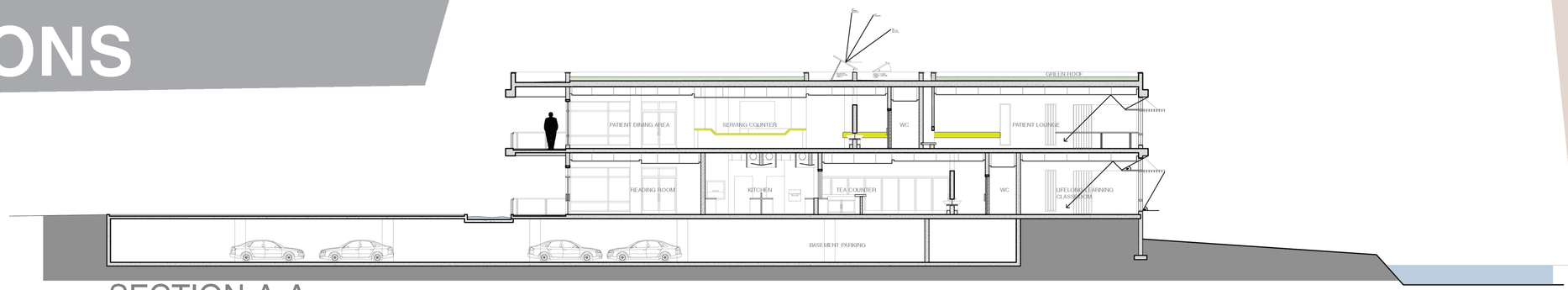
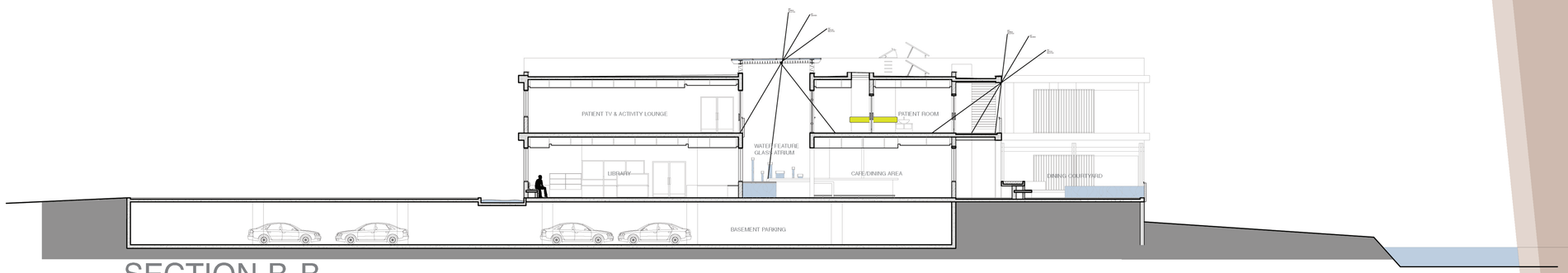


SECTION A-A



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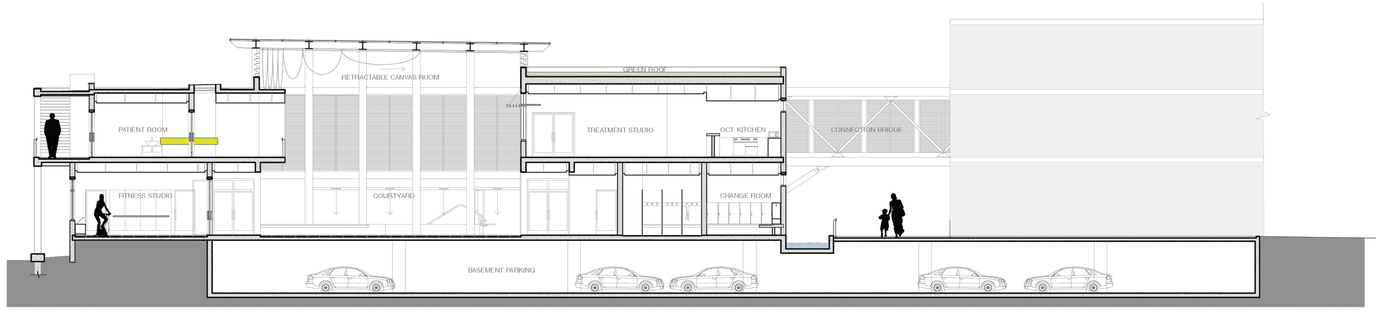

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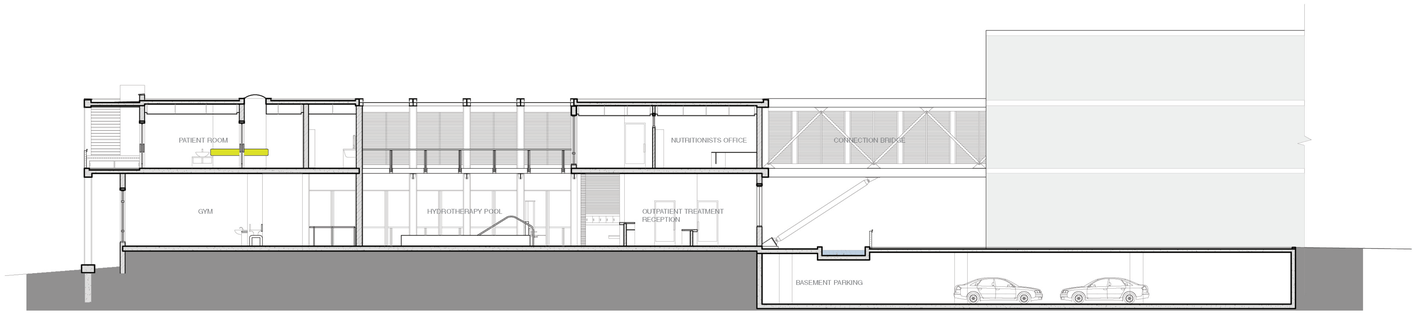

SECTION E-E

SECTIONS 1:100

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.11 ELEVATIONS

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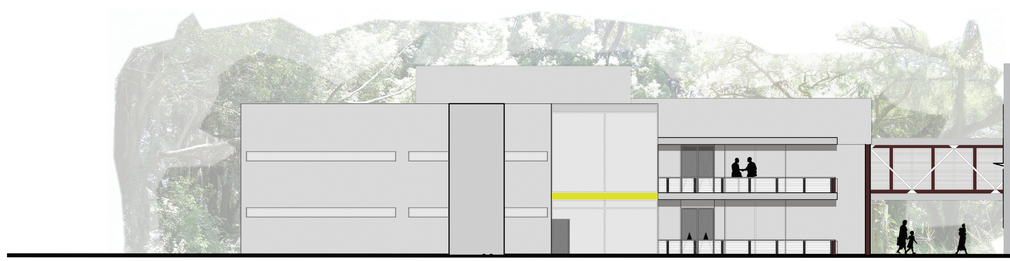
NORTH ELEVATION



SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION

SCALE 1:100

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.12 TECHNOLOGY

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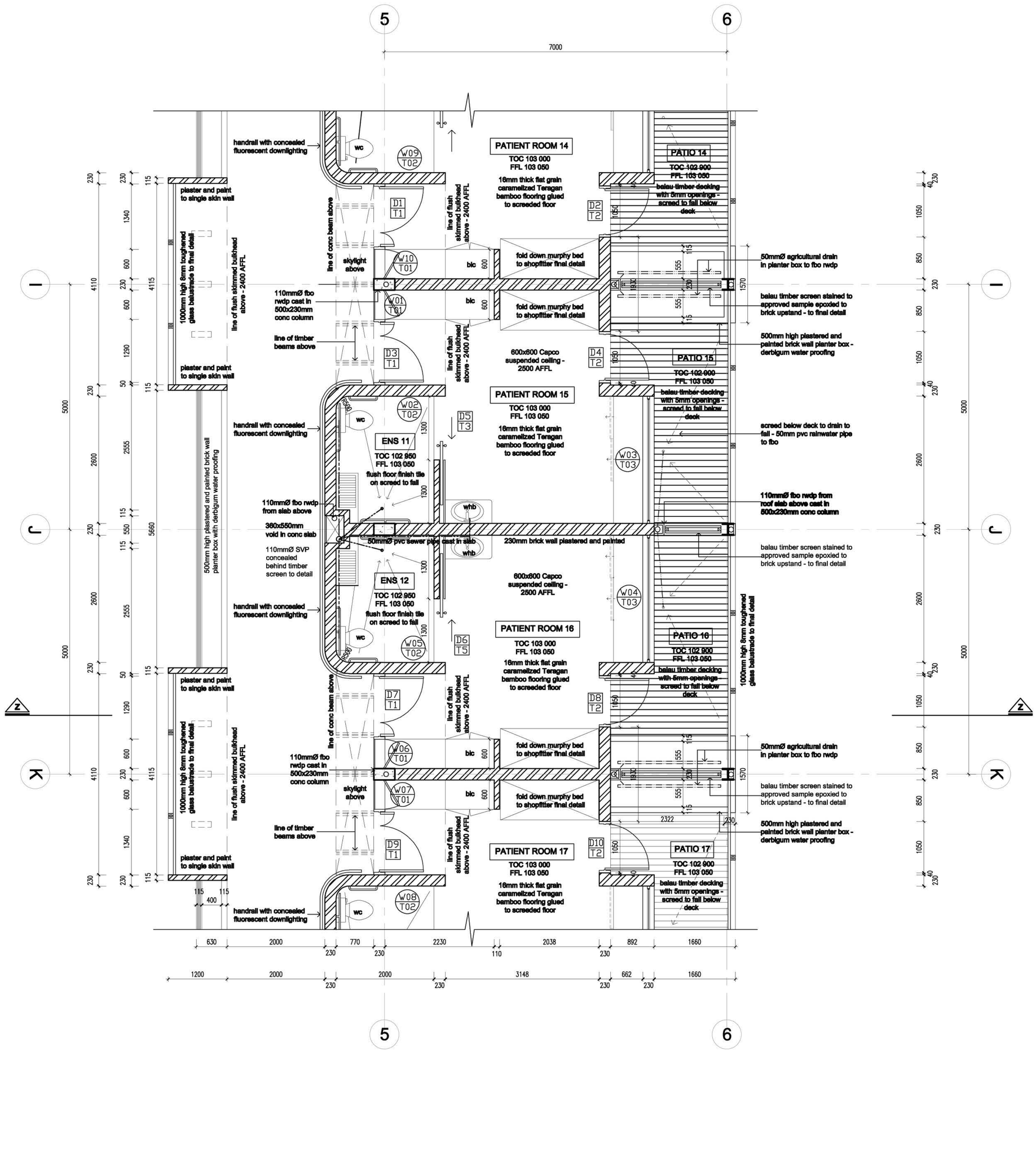

TECHNICAL PLAN 1:50

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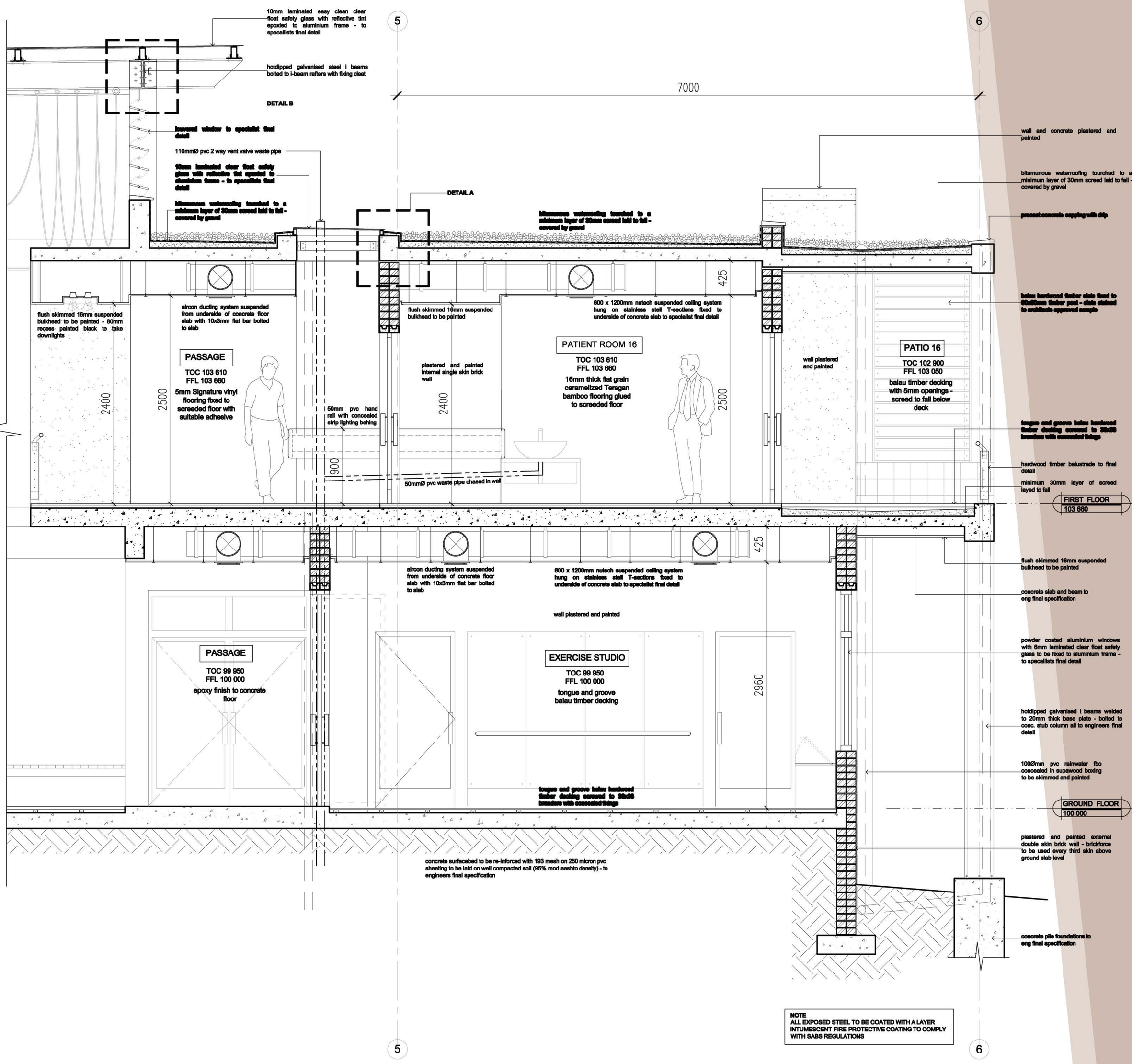

SECTION Z-Z 1:25

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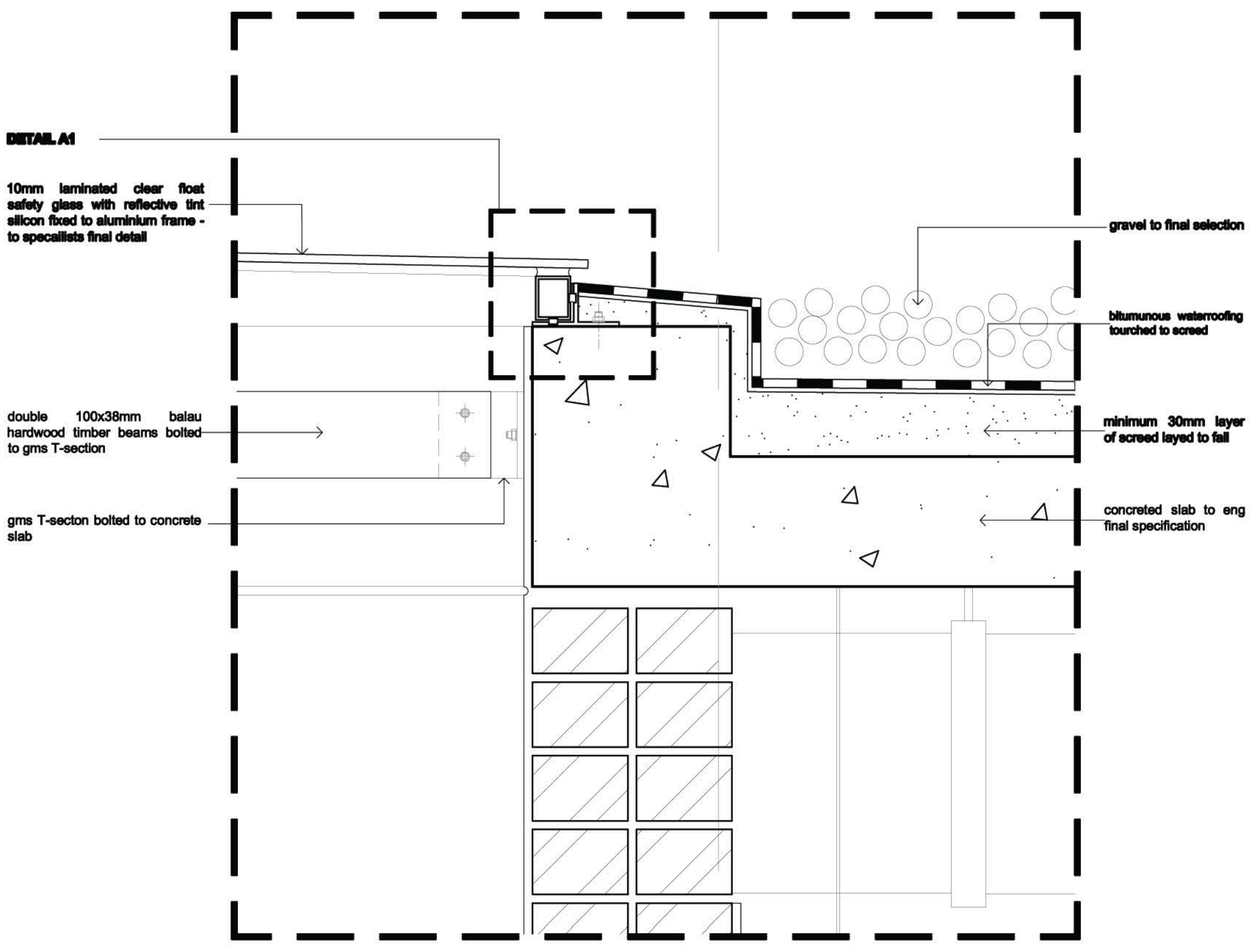
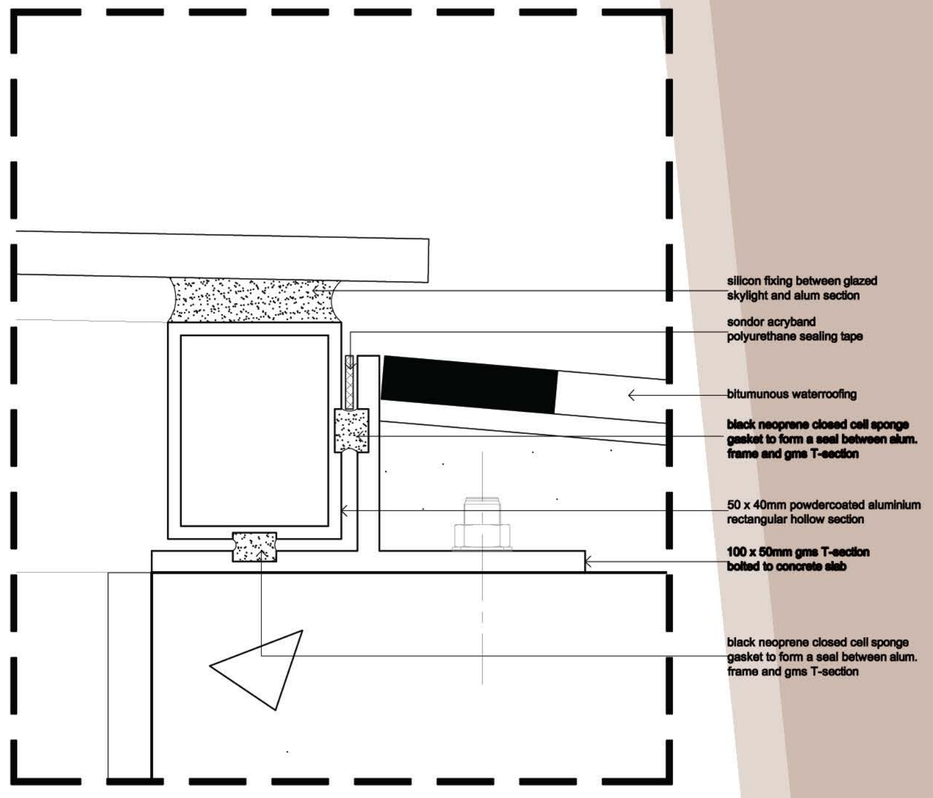
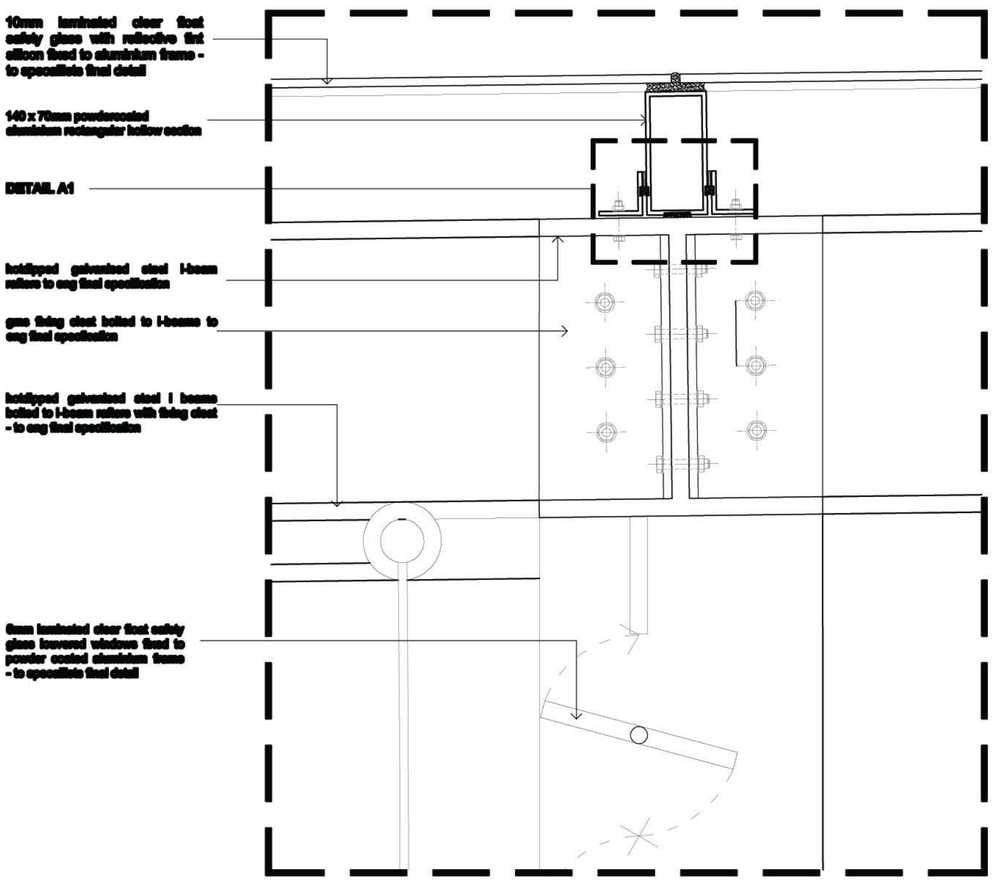


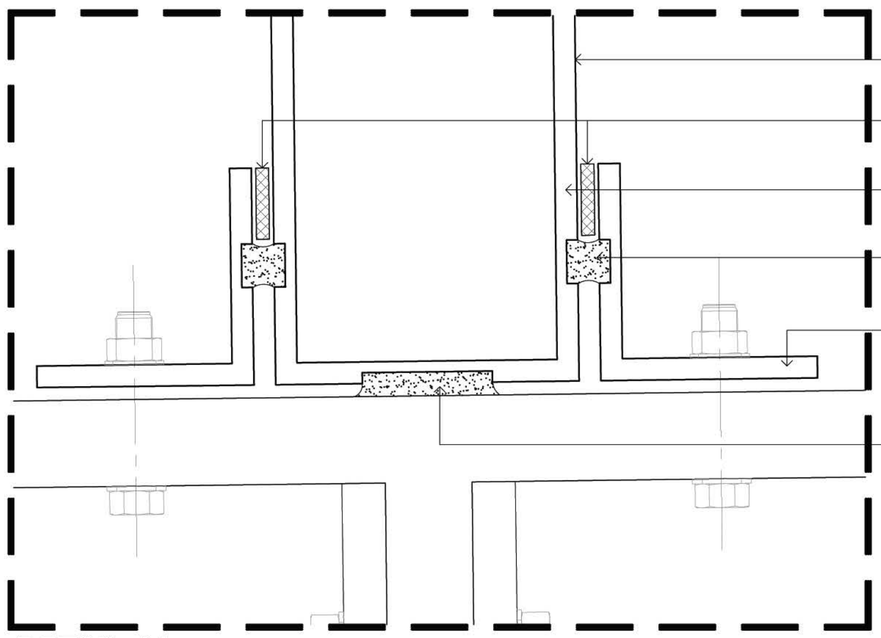
DETAIL A
SCALE 1:5



DETAIL A1
SCALE 1:1



DETAIL A
SCALE 1:5



DETAIL A1
SCALE 1:1

DETAILS

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VIEW OF SOUTH EAST CORNER FROM WETLAND



VIEW OF NORTH WEST CORNER FROM RIVER



VIEW OF NORTH EAST CORNER FROM CASCADES MALL WALKWAY

3D PERSPECTIVES

WELLNESS CENTRE FOR THE AGED