Reconnecting Life

of those with dementia back to their families and the wider society

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Abstract

Dementia has become one of the most feared diseases. It is feared more than cancer for those over 50 years of age. The progressive and distressing nature of the symptoms have been widely known to affect both the person with dementia as well as their families. Eventually, the family has to decide whether to take care of their loved ones themselves or send them to a professional care facility. Currently, dementia care facilities are generally disconnected from the community, confine the residents and lack stimulation. Inactive bodies and minds can result in agitation and faster progression of the disease.

Through multidisciplinary literature review, first-hand observations of the patient behaviours and a review of existing case studies, this thesis explores how landscape architecture can help in creating a better life experience for those with dementia who live in a care facility. The design ideas are near Te Hopai, an existing dementia care facility in Newtown, Wellington.

To overcome the stigmatised environment in the existing facility, this thesis explores the possibilities for bringing the residents out and encouraging the public into their territory, increasing social interaction. A wide group of people such as carers, families and the wider community were considered in the design. Te Hopai's surroundings, which are currently empty spaces and car parks, have been transformed into a functional and welcoming landscape which the public can use. The landscape has also been designed to encourage residents with dementia who were previously confined inside to experience the outdoor environment. Through designing a socially active, accessible and experiential space that is easy to navigate and interact with, this thesis hope to reconnect and improve the life experience of the person with dementia as well as their community.

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Fig. 01. Image showing the shrinkage of the brain as dementia attacks.

1 . 1 Problem Statement

Dementia is a fatal disease. It is an umbrella term used to describe a group of conditions that affect the function of the brain (fig 01). The most common type, Alzheimer's disease, affects about two-thirds of those with dementia (Alzheimers New Zealand). The number of people with dementia in NZ has currently reached 60,000 (fig 02) and is expected to triple by 2050 (Alzheimers New Zealand). The disease progressively attacks the brain, creating mental confusion, memory loss, disorientation, intellectual impairment or other similar problems (Mace and Rabins). As a result, it causes people with dementia to be less active, start wandering and lose their ability to communicate. As these conditions worsen, they affect family relationships, social interactions, connections with community and individual well-being.

Two-thirds of the population in NZ either know or have known someone with dementia (Alzheimers NZ). Carers generally feel defeated by this illness as they watched those with dementia worsen every day. Children, who often became the main carer, in many cases suffer from depression, emotional

trauma, social stigma and exclusion and are faced with financial hardship (Hutchinson, Roberts and Kurre). As the disease progresses, it becomes harder for those affected to live normally with their families due to disrupted sleeping patterns, unstable emotions and dependency. When taking care at home is no longer possible, those with dementia have to be taken care in a facility. "I never want to be put in a nursing home." This is a statement that most people say, no matter what age. This is because the public impression of a secure dementia unit is isolated, depressing and money-driven buildings that take away their freedom (Grande).

One of the main concern for people with dementia is wandering. A study in 2006 stated that 1 in 5 people with dementia wander. Adverse outcomes due to this behaviour include injuries and getting lost (Cipriani, Lucetti and Nuti). Those who have symptoms of wandering are kept in a secured unit. Locked doors keep these wanderers safe, not considering their freedom and well-being. For the person with dementia, finding locked

Dementia attacks 1 in every 100 people in NZ.

Fig. 02. The statistics of people with dementia in NZ.

doors around the building is distressing and they will try to open the door by force. Their unstable mood resulting from the stress may worsen their conditions.

Social isolation and loneliness amongst older people with dementia is widely known and has been recognized in international policy and in some national health strategies (Cattan, White and Bond). In a specialized dementia unit, security level is increased for the safety of the dementia patients. Fences are built to avoid elopement. However, the security created both visual and social barrier between people with dementia and the public. Unless the facility is made open for the public, there will not be any interaction between the residents and public. By losing connection to the society, those with dementia lose their purpose and sense of self. Some dementia facilities have tried to address this problem however, social interactions is still lacking in most facilities.

The specialized care unit for dementia is a recent development. In the first half of the 20th century, many people with dementia were taken care in mental hospital or asylum. Later, those diagnosed with dementia were moved to care homes, which reduced the population of mental hospitals by 75% (Calkins). Even though more research has been done, many still criticize the idea of rest homes because of these problems; social isolation, too institutional and lack of stimulations. Many of the intuitions are driven by money, where activities are minimal. The design of the outdoor spaces are not stimulating. As a result, most of the residents stay indoors and watch television. Lack of stimulation decreases brain functions, which can increase the progression of the symptoms. Many facilities have created a place of relief for carers who can no longer care for their families with dementia but they have not considered the importance of the experience of the place.

Fig. 03. Abstract image of how landscape architecture can bridge the separated community.

Designing for those with dementia is still a challenge today. While the increase of research in this field has helped new generation architects to improve the design of the buildings, very little attention has been paid to the landscape. Many have identified the effectiveness of outdoor spaces for those who are suffering mentally as positive, but design is often limited to small gardens. By pushing further the idea of bringing the community in and patients out (fig 03), **this thesis will explore in how landscape architecture could help in creating a better life experience for those with dementia who live in a facility.** The site chosen for this exploration will be at Te Hopai in Wellington, which is a facility that accommodates people with all stages of dementia.

1.2 Project Scope

The boundary of this project will be limited to Newtown area, which can be used by local residents and visitors (fig 04). The design for those with dementia will be tested on an existing facility called Te Hopai, which consists of three services which are rest home and respite, hospital and secure dementia unit. Understanding the different needs of different users who has different stages of dementia will be part of this thesis (fig 05).

Fig. 04. Boundary of the site and directions of entry

ZONE	SEVERITY	DESIGN OBJECTIVES	PEOPLE INVOLVED	SCALE
1	<p>MILD</p> <ul style="list-style-type: none"> - Trouble remembering things - Forgetting familiar objects/ names - Having noticeably greater difficulty performing tasks in social or work settings - Forgetting material that one has just read 	<ul style="list-style-type: none"> - Design healing and sensory landscapes that heals patients and communities passively. - Safe neighbourhood that allows patients to travel freely and independently - Connections to nature = social engagement = release stress 	<ul style="list-style-type: none"> - patients - families - carers - support workers - neighbours - friends - tourists - government - education sectors - rest of the societies 	L/XL
2	<p>MODERATE</p> <ul style="list-style-type: none"> - Gaps in memory, need a bit of help with daily activities - Difficulty in doing harder tasks. - Becoming moody or withdrawn, especially in socially or mentally challenging situations. - Become confused about where they are or what day it is. 	<ul style="list-style-type: none"> - Design therapeutic landscapes - Involve the patients and families in doing activities that stimulates their senses. - Using monastic gardens as examples. - Design dementia-friendly streets that are easy to navigate 	<ul style="list-style-type: none"> - patients - families - carers - doctors - support workers - neighbours - government 	M/L
3	<p>SEVERE</p> <ul style="list-style-type: none"> - Worsen memory - Personality change. - Need extensive help with daily activities. - Lose awareness of recent experiences and their surroundings - Tend to wander or become lost - Sleeping pattern problem and restless at night. 	<ul style="list-style-type: none"> - As secure as possible - Design pathways and spaces that help patients in navigating and orienting themselves - Peaceful environment, using Islamic gardens as examples. - Spaces that provides sense of safety and enclosure. 	<ul style="list-style-type: none"> - patients - families - carers - doctors - government 	S/M

Fig. 05. Overall scope of the project.

1.3 Methodology and Structure

This thesis follows a combination of research based design and research through design method consisting of six strategies (fig 06):

1. **Cross-disciplinary literature research**, which explores the problems of those with dementia. The sources of literature range from general studies of anthropology, phenomenology, health and well-being to specific studies of healing and therapeutic gardens.

2. **On-site observation** of people with dementia as well as their carers, with the assistance of variety of professional care organisation such as Alzheimer's NZ, Marry Potter hospice and other care facilities. Details regarding their daily activities or behaviours in space which are often not found in books can be better understood through observations.

3. Analysis of both **existing case studies** that are dementia related and **other precedents** that are

not necessarily dementia related. Non-dementia related precedents might have design ideas that the existing facilities are lacking therefore, filling that gap.

4. **Site analysis** involves both residents of Te Hopai and the community. Analysing the movement and flow within the space becomes an important tool in determining the opportunities of the design.

5. Following research are **design iterations** that test the ideas found from research, journals and observations. Results are being shown to peers such as carers, psychologists, doctors, architects and landscape architects. These peers then **evaluate** the design and their opinions and advice would be taken for design development.

The linear structure (fig 07) of this thesis is crucial as understanding the conditions of those with dementia is needed before designing.

Fig. 06. Design methodology.

Fig. 07. Linear structure of the thesis shows the design process.

Design Guidelines

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Fig. 08. Patients looking out into the garden.

2.1 Literature Review

Since 1990s, there have been changes to the approach in the design of hospitals and health care facilities (Marcus and Sachs). Environmental and social researchers, behavioral psychologists and design professionals have published many research documents detailing the positive outcomes of nature in relation with design (Smith, Roehll and Bonell). Dr. Ulrich, a professor of Architecture, researched how window views may influence patient's recovery. He found that patients looking out to a garden (fig 08) heal faster than ones that look out to a wall (Ulrich). By looking out, landscape became a turning point from focusing on pain and sickness into the focus of the beauty outside. Patients' sudden interest on the external things is the first sign of well-being (Sternberg). In a survey in Finland, staff observed that certain plants helped evoke patients' memories (Marcus and Sachs). Plants also helped in orienting spaces,

stimulating senses, creating positive emotions and encourage social interactions between staff and patients (Marcus and Sachs). Doing activities outside have been proven to heal patients. Taking care of plants become part of their daily activities and this help maintaining patients' functional abilities.

While green outdoor spaces are proven to be positive, not all are beneficial for the patients. The design has to be stimulating as the most powerful healing place is in the brain and mind (Sternberg). Therefore, spaces that do not activate the brain and mind are not effective. Olmstead said that a carefully designed scenery will 'employs the mind without fatigue and yet exercise it, tranquilise it and yet enliven it' (Hoey). The idea of a stimulating space has to include three significant ideas: social interactions; autonomy; and, sensory stimulation.

Fig. 09. Open public space that encourage social interaction.

2.1.1 Social Spaces

Interaction and Permeability

People have many ways of communicating. Considering the different cultures and preferences, not everyone enjoys the same form of social interaction. However, it is the engagement, acknowledgement and presence, which make a social space so important. "Engaging in social relations is important for our personal identity, self-esteem and sense of belonging" (Wildevuur, Dijk and Hammer-Jakobsen). When someone is diagnosed with dementia, his or her daily life and routines are completely changed. Losing their job, families, friends and other connections are part of it. Just like everyone else, those who lose connection with other people become lonely, which deteriorates their mental and physical well-being. Pranikoff and Low said that an environment could not be therapeutic without social environment (fig 9). This was proven by the interview carried out by Ohman where the patients' desired outcome of quality of life are: access to social contact, meaningful activities and person's identity as well as being valued and respected.

Exchanging words is one way of communicating and acknowledging the presence of oneself. However, being acknowledged can be more significant for those with severe dementia who have lost their ability to communicate (Hoey). Mclean mentioned that "intersubjectivity of a personhood", which is the act of honoring the vulnerability of others, is a connection that can never be lost. The connection of the patients with their carer is an obvious example, however this bond could also be seen from strangers who acknowledge the presence of the patients through visual communication.

Through conversations with carers, it is also apparent that some prefer quiet, private space more than vibrant public social space. Even though socialising is important for our well-being, it is also important to consider private space. Many carers mentioned that patients enjoy peaceful environments where they can create a sense of ownership. A balcony may allow social

Fig. 10. Key objectives for a social space.

interaction depending on how tall the adjoining wall is (Bergeijk). This gives the resident a choice of interacting or being in their private space. Feddersen and Ludtke also gave an idea of having dual options for those with dementia. While social interaction gives a sense of belonging, private space provides sense of freedom, enjoyment, inner peace (Ohman).

In summary, providing both the options of public and private is important for the users. While public space allows acknowledgement, participation and activity, creating private space will give a sense of autonomy and ownership (fig 10).

Fig. 11. A walkway suitable for safe wandering.

2 . 1. 2 Sense-of-Place

Walking, way finding and therapy

Adapting to a new place is hard for everyone, especially those with dementia. Being unfamiliar to a new home, many of them develop behavioral problems of which wandering is the most troublesome (Lester, Garite and Kohen). Patients who wander may injure themselves, which causes trouble for the staff. Therefore, many care centers try to prevent patients from wandering. In order to do this, care providers have been known to restrain the patients in a locked building. However, recently many carers, doctors and designers have changed their point of view. Instead of preventing patients from wandering, care centers are designed as safe environments to allow safe walking (Fig 11) (Cipriani, Lucetti and Nuti). Medical researchers realized that often those who attempted wandering did it because of depression. Autonomy for walking in an outdoor space can help relieve patients to relief the stress and allows them to exercise their body and mind (Cipriani, Lucetti and Nuti).

Walking is a form of therapy. A study by Li et al. shows that exercise in green open spaces increases the activity of human immune systems. Research also found that 92% people who walk outdoors have decrease in depression (Mind). Buddhist monks pray while walking as it gives them a sense of inner peace. For some walkers, the daily walks are associated with "private spheres". It calms and allows them to be themselves. Sternberg uses labyrinth as an example. Different from a maze, it has one entrance, leading the walker on a single, gentle and calming path. It forces walkers to focus their attention on the path in front and their inner thoughts. Walking a labyrinth involves many features of tai chi, slow breathing, meditation and gentle exercise.

Many famous theorists such as Jean-Jacques Rousseau, Karl Marc, Henri David Thoreau, Friedrich Nietzsche, and Soren Kierkegaard have

Fig. 12. Key objectives for sense-of-place.

walked, wandered or strolled (Feddersen and Ludtke). According to Tilley, walking allowed walkers to be involved rather than being the spectator. It is the way of engaging and interacting with the world. As we walk, we became aware of the changes in our surroundings. The experiences and perceptions allow better understanding of our own position in the world (Long). Walking is also a form of architecture. When we walk, we know unconsciously how far off the edge is safe or which side is most comfortable. Our mind unintentionally shapes spaces as we go, which stimulates the brain and allows a form of mental mapping (O'Rourke). While the ability of mapping and navigating deteriorates as the disease worsens, stimulation can slow down the progress.

Difficulties in orientating and navigating are experienced by many of those with dementia. A space without signs and indications causes anxiety to the patients (Feddersen and Ludtke). With failing memories, getting lost becomes part of their daily life, as unfamiliar settings appear everyday. When designing an outdoor space, there are two different

ways to prevent patients in getting lost. The first one is to use objects that strike their line of vision. The most commonly used navigation tool is a landmark, sign or color. A directed path that allows easy navigation can also be helpful (Sternberg). The second option is to allow patients to walk aimlessly without having to look for cues and signs. Carers have addressed that wanderers tend to walk aimlessly and tend to travel along the path of least resistance. According to Debord, in his theory of derive, an individual may drop their objectivity and action and let themselves be drawn by the attractions of the terrain and the encounters they find. A landscape can be shaped to allow aimless walking. This way, wanderers can walk without having fear of losing their ways.

To summarize, wandering involves walking, which is regarded positive as long as patients can do it safely. Therefore, the design has to incorporate cues and easy navigation for patients to find their way back by themselves (Fig 12). By doing this, it helps to stimulate their sense of space and act as a form of meditation and therapy.

Fig. 13. A sensory stimulated space.

2.1.3 Sense-of-Self

Sensory experience and memory

Our body is used every day to experience and learn our surroundings. To do this, we use our basic senses such as touch, sight, smell, taste and sound. As dementia progresses, the patients' vision deteriorates. Most people rely on their vision to experience space but those with dementia can no longer rely on their vision. Therefore the experience of touching can be more significant for those suffering from dementia. It allows them to take actions and be part of their surroundings. Pallasmaa said, "The skin is the oldest and the most sensitive part of our organs, our first medium of communication. Touch is the parents of our eyes, ears, nose and mouth." Sternberg also said, "Touch is bonded to emotions from earliest childhood. Touch tells us a great deal about the world in a more fine-grained way than any other senses." Although touch may be the most experiential senses, the most important thing from sensory experience is its connections and meanings. Outdoor spaces that allow multisensory experiences are much more meaningful and unforgettable (fig 13) (Day).

Sensory experiences also articulate the involvement of our "being in the world" and strengthen our sense of reality and self (Pallasmaa). Even though memory is a really important aspect of our lives, it becomes complicated when people suffering from dementia can no longer rely on their memories and no longer remember who they really are. Sensory experiences became a central role for them, giving them a sense of identity.

Many of those with dementia have difficulties in controlling their emotions. This may be because of the gaps in their memories, which causes frustration and confusion, therefore triggering negative emotions. Emotions are linked to memories that are buried deep in our mind. When we experience a similar setting with our senses, it allows a certain emotion to arise. These kind of embodied memories are universal, primal and will last throughout dementia. It provides a vehicle for communicating long after verbal abilities are lost (McLean).

Fig. 14. Key objectives for sense-of-self.

Through the sensory experiences of an outdoor space, we can trigger positive emotions and bring pleasure to daily life. According to Feddersen and Ludtke, dementia can be similar to infancy. Those with dementia are 'like a child, exploring the newfound space around them' (Sternberg). Senses are something that we learn from early childhood and we can re-learn this in a daily situation. To achieve these sensory experiences, we need to understand the basics of comfort, enjoyment and safety.

In conclusion, while vision is one of the most dominant senses, it has been suggested that sense of touch can be more useful for those with dementia to be able to experience their surroundings. Stimulations using elements that create a multisensory experience can also create a meaningful place for the patients. As this experience is something that the human body always remember, which will trigger positive emotions and pleasure (fig 14).

2.1.4 Summary of Literature Review

The diagram below (fig 15) shows the relation of the three main categories. Ideas taken from various sources lead to the importance of well-being.

Fig. 15. Diagram of the literature findings and how they relate to each other.

Fig. 16. Vision difficulties for people with dementia.

Fig. 17. Key objectives for Social Space through observation.

2. 2 On-site observations

These observations were taken during visits to various rest home, secured dementia units and during social meeting with people with dementia.

These observations will be divided into the three categories previously used for literature review.

2 . 2. 1 Social Spaces Interaction and Approach

Without experience, some people may find it difficult to communicate with those with dementia. The disease affects their perceptions and ability to communicate. Through observations and conversations with carers, several ways to approach those with dementia became apparent. The diagram (fig 16), shows how people with dementia are unable to notice anything outside their peripheral surroundings. Patients can notice those who approach them directly from the front more easily and can form conversation without having to startle the patients.

Losing the ability to communicate, those with dementia connect with other people by watching what other people do. Through carers, it was also apparent that they enjoy the company of children and animals.

Dementia can also affect hearing. Patients are often disturbed by ringing noises, often described as noise hallucination. Being in a vibrant open space is unsettling for those with dementia. Hearing noises that come from behind can make them feel more insecure than when it comes directly in their vision line. When sitting out in the public, they prefer to have their back against a wall. Therefore when socialising, being in a smaller group with less noise is more preferable than vibrant open spaces.

In general, people with dementia will feel more comfortable interacting with other people when they are; approached directly, able to view into the crowd and their activities and being divided into smaller groups (fig 17).

2.1.2 Sense-of-Place

While there are few cases of younger-onset dementia, most of the people with dementia are over 65 years old. As shown in the diagram (fig 19), with age their posture changes. Often, the design of a facility is undertaken by someone who is not fully aware of the problems that people with dementia are facing. Frames, name plates or other signs are often hung too high for the residents to even notice. Lowering the signs can allow residents to be more oriented and independent.

Accessibility is an issue in dementia facilities. For security purpose, there are locked doors around the building including those to garden spaces. Locked doors become an obstacle for residents

who like to go for a walk at the backyard. Resident who wanders may at times be stopped by a locked door, which causes disorientation. Unable to open the door, residents often become agitated and restless and attempt to open it by force. Many facilities have damaged doors as a result. Accessibility can be increased with a safe and secure environment.

To make a more comfortable living space for those with dementia, they need to gain access to wherever they want to go. Signs and cues are very useful to allow them to wander independently (fig 18).

Fig. 18. Key objectives for sense-of-place through observation.

Fig. 19. Change in posture and how it affects placement of objects.

complicated pattern path

simple visible path

Fig. 20. Difference between clear path and complicated path.

memory and self identity
Sense of Self

Attraction

Colours

Familiar objects

Fig. 21. Key objectives for sense-of-self through observation.

Fig. 22. Image distortion seen by those with dementia (bottom right).

2.1.3 Sense-of-Self

The way people with dementia visualise an object or a person's face can become distorted—looking like a puzzle (fig 22). Families and friends can no longer be identified as the disease progress further. When designing, complicated patterns and interesting paths are better avoided as residents with dementia find it more confusing. Colour contrast for a path or wall is easier to look at than patterns (fig 20).

As dementia worsens, daily routines can also become a challenge. However, patients need enough stimulation to keep their brain active. Many facilities put statues or objects that stand out, which

often intrigue those with dementia. Something that catches their eye and allows them to touch can be a part of their daily activity that stimulates their brains and memories.

To make a better living environment for those with dementia, the design and use of object should suit their abilities. When designing their outdoor home environment, objects of attractions, familiar surroundings and clear defined scenery has to be considered carefully (fig 21).

social and communication
Social Space

navigation and activities
Sense of Place

memory and self identity
Sense of Self

Autonomy

Ability to watch

Acknowledgement

Making connection

Direct approach

Walking

Accessibility

Therapy

Learning

Lower cues &
signs

Multisensory

Learning senses

Experiencing life

Linking memories

Familiar objects

Smaller groups

Dual Options

Navigation

Independence

Attraction

Colours

2. 3 Summary

Though much research has been published on the medical and social aspects of dementia and a growing literature exists with respect to the theoretical ideas for dementia design, advice on designing the landscape for dementia is still lacking. This chapter combines findings from literature and personal observation (fig 23). While general guidelines can be found throughout the literature, details about how specifically those with dementia behave in a space can only be garnered through observation. A combination of both will guide the design in both the wider context as well as in smaller details. These discoveries have been divided into three main categories: social space; sense-in-space; and, sense-in-self. These categories relate with each other and work to address issues in different scales. Using them as design guidelines can help designers to explore new ways in designing for dementia related environments that give social interaction, autonomy and better life experience for those affected

Fig 23. Combined key objectives from literature review and observation

Case studies & Precedents

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3.1 Analysing the existing

The case studies are existing dementia facilities from around the world. They are analysed using guidelines from literature review and personal observation. The strengths and weaknesses

of these facilities can be identified through the number of objectives implemented in the design. The meaning of each symbol can be referred to in chapter 2.

3.1.1 The Village at Waveny Care Centre Connecticut, USA Reese Lower Patrick and Scott

The care center has a main public space, called 'Main Street' (fig 27). The architect got the idea from a commercial street at downtown New Canaan, where most of the residents are from. The public space is used for meals, listening to music and for sport activities (fig 24, 25 & 26) (Waveny Lifecare Network).

Strengths

- The familiarity of the interior stimulates resident's memories.
- Open space allows wandering without fear of getting lost (fig 24 & 25).
- Colorful walls and doors help residents navigate (fig 24).
- Routine fun activities keep residents entertained (fig 25).

Weaknesses

- Locked doors between the interior space and the outdoor space decreases accessibility.
- Wayfinding is limited to color indications.
- Lack of stimulating elements in the space.
- Residents are mostly kept indoors, limiting their social connection with the public.

3. 1. 2 De Hogeweyk 2009

Weesp, Netherlands

Dementia Village Architects

De Hogeweyk village is a dementia village in Netherlands. With 23 different housing units, it accommodates up to 150 dementia patients. Open spaces are designed to suit different cultural needs from various patients. (fig 28). Some are small courtyards (fig 31), which restrict movements but allow intimate human-nature relationship. Others like Vilverpark have a defined path, which allows easy navigation and allows residents to wander in a loop while experiencing multisensory surroundings. The Het great square (fig 30) allows freedom of access and social interaction (Hogeweyk).

Strengths

- All gardens and open spaces are connected and accessible, allowing residents to explore and discover the area.
- Outdoor environment has been secured for safe wandering.
- Many choices of activity, providing different sensory stimulations.
- Few pocket parks allow those who prefer to socialise in smaller groups.
- The development of the facility has been integrated with other residential developments. (fig 29).

Weaknesses

- Undefined pathways may cause disorientation for some residents.
- The facilities have limited interactions with the public.

Fig. 28. Plan of the Hogeweyk Village, showing location of all the open spaces (Top left).
 Fig. 29. Development plan for the neighbouring houses. (middle left).
 Fig. 30. Big open Square to encourage socialisation (bottom left).
 Fig. 31. Smaller garden for smaller group of people (bottom right).

3. 1. 3 RUKUN Senior Living Sentul, Indonesia Founder: Herman Kwik

Rukun senior living consists of three different facilities; rest home, secure dementia unit and a hotel (Rukun Senior Living). The inclusion of a hotel is to solve the stigma of a rest home and those with dementia. The public are allowed to join the resident's activities. The design of the facility is made familiar to the resident's lifestyle, which is modern apartment style with outdoor pool and fishing pond (fig 32).

Strengths

- Involvement of the public and residents (fig 33).
- Varieties of outdoor and indoor activities that suits both groups.
- Design of apartment is familiar to the residents' lifestyle.

Weaknesses

- The dementia unit is not purposely built for those with severe dementia.
- Park is not safe for wandering or independent walking (fig 35).

Fig. 32. The outdoor space shared by everyone (top).
 Fig. 33. Residents and hotel guests fishing together (middle left).
 Fig. 34. Caretakers meeting (middle right).
 Fig. 35. Path in the small courtyard (bottom).

3. 1. 3 Kandahar Court Masterton, New Zealand Presbyterian Support Central

The Kandahar Court (fig 36) is a specialised dementia unit located in a suburban area of New Zealand. It contains 25 beds and accommodates those at the end of the stage of dementia. The facility follows the Eden Alternative principles as a model for care, supporting residents to continue living independently as they were before entering the facility (Presbyterian Support Central).

Strengths

- The facility allows pets, which most residents find enjoyable.
- Students from nearby schools often visit the facility, giving opportunities to connect with residents.
- Daily routines such as mowing grasses and gardening are available (fig 37).
- Attractive objects are installed around the facility (fig 39).

Weaknesses

- Most of the outdoor spaces do not give options for those who wish for privacy.
- Tall fences installed throughout the facility looks unwelcoming (fig 39).
- For security, many doors that lead outside are locked, limiting accessibility.
- Signs on the walls are placed too high to be noticeable by residents.
- Lack of stimulating multisensory activity.

Fig. 36. Overview of Kandahar Court (top).
 Fig. 37. Raised beds in the garden (middle left).
 Fig. 38. Looking out into the garden (middle right).
 Fig. 39. Overview of the garden with tall fence around (bottom).

3.2 Precedent studies

The following precedents have been analysed according to categories formed from the literature review. These categories help to identify the strengths

of each precedent. These precedents are not necessarily dementia related.

3.2.1 Haarlemmer Houttuinen Housing Amsterdam, Netherlands Herman Hertzberger

Hertzberger explores the idea of public and private within residential area. The street is called 'Living Street' with pedestrian access only which allow children and neighbours to play and mingle on the street (Bergeijk).

Residents are given dual options whether to talk to their neighbours or stay in their private zone. An example of this is shown in the balcony where the dividing wall is designed with two different heights. One part is about 2 meters high and the other one is just above 1 meter which allows the neighbour to socialise if they prefer to.

Strengths

- Dual options of social and private zone are provided (fig 42).
- It is easy to make interactions with neighbours and passerby (fig 43).

Fig. 40. Architectural drawing of the house

Fig. 41. Section

Fig. 42. Adjoining wall can allow interactions for neighbours.

Fig. 43. Social opportunity between residents and public.

3. 2. 2 Iidabashi Plano

2-7-2 Fujimi Chiyoda-ku Tokyo, Japan

Earthscape

This project highlights the importance of creating marks on the floor. People passing by can read and locate historical buildings and important places by looking at the navigation markings on the tiles (Landezine)(fig 44). The 'knowledge lines' and the use of navigation signs on tiles, which is an important example for creating cues and signs for those with dementia.

Strengths:

- Simplicity of arrow and picture are easy to understand (fig 45).
- The images on the ground are familiar, linking to people's memories (fig 46).
- Simple cues and signs on tiles can be used as navigation (fig 47).

Fig. 44. Plan of the pocket space (left).

Fig. 45. Inscriptions on path (top right).

Fig. 46. Marks on the pavement (bottom right).

Fig. 47. Following markings on the pavement when walking (bottom).

3. 2. 3 Carol Shields Memorial Labyrinth Winnipeg, Canada ft3

Carol Shields Memorial Labyrinth (fig 48) is designed for meditation, healing and reflection. Away from urban area and surrounded by water of Red River and overgrown shrubs, this place allows visitors to truly enjoy being in nature.

Strengths

- Inscriptions along the path are therapeutic as users walk and read, making the path memorable (fig 49).
- Following the path in a labyrinth is a very calming activity, healing those who have a disturbed mind (fig 50).

Fig. 48. Overview of the labyrinth (top).

Fig. 49. Inscriptions on the side of the path (bottom left).

Fig. 50. People walking on the labyrinth (bottom right).

3. 2. 4 Nouvelle at Natick Natick (MA), USA. Martha Schwartz Partners

This rooftop deck (fig 51) is used as a social space, connecting the residences and encouraging interactions between neighbours. The wooden path stretches over the entire roof, providing seating opportunities where people can stop to enjoy the scenery (Martha Schwartz Partners). The mixture of ornamental plants, flowering perennials, and evergreen shrubs with a lively pattern create different scenes that stimulate the various senses (fig 56).

Strengths

- Clear defined path, allowing users to navigate their way easily (fig 53).
- Using colour contrast also helps in defining the path from the rest of the park.
- Stimulation for the brain as users walk through different places with different scenes and activities (fig 54).
- A few pocket spaces around the park provide areas for those for seek privacy (fig 55).

Fig. 51. Plan of the rooftop garden.

Fig. 52. Seating along the path (top left).
 Fig. 53. Clear defined path (top right).
 Fig. 54. Activities in the garden (bottom left).
 Fig. 55. Pocket seating area (bottom right).

Fig. 56. Overview of the garden (right).

3. 2. 5 Texture

Kortrijk, Belgium

Studio Basta and Wagon Landscaping

The idea behind this design is based on the QR-code of the texture museum (fig 59). The result is a maze of tall grasses approximately one meter tall, which recall the flax-fields along the "Golden River" Leie (fig 57) (Landezine). The maze functions as a play area, with tall benches overlooking the whole site. The tall grasses provoke a familiar atmosphere, providing a sensory and therapeutic experience.

Strengths

- The path invites users to wander and discover intimate spots (fig 58).
- Texture of tall grasses is very stimulating to touch.
- Familiar scenes of nature, which everyone can relate to.

Fig. 57. Overview into the landscape

Fig. 58. How the public use the element in the landscape.

Fig. 59. Plan and section of the design showing heights of seats compared to the people and the plants.

3. 2. 6 Garden of the senses Castellon, Spain VAM10 Architecture and landscape

This project uses sensory stimulation as an instrument of learning. It has shaped the garden as a sequence that changes with each section. Sight, hearing, smell, taste and touch are represented individually but still connected through adjoining sections. The park uses one element such as water in many different forms, depending on which sensory intentions it is for. Sound effects, different textures and wide range of smells and edible plants create multisensory experience in the park, which educate and stimulate the users (Landezine, Garden of the Senses).

- This park educates users to different sensory stimulations.
- Multisensory experiences.
- The park consists of different spaces that have distinctive features which act as a landmark (fig 63).

Strengths

Fig. 60. Plan of the garden.

Fig. 61. Flower garden inducing sight and smell sensory experience (top left).

Fig. 62. Pocket seating area within the park (bottom left).

Fig. 63. Sculpture and water feature creating interest for the viewers (top right).

Fig. 64. Water feature and seats around it for peaceful moment (bottom right).

		Autonomy	Ability to watch	Acknowledgement	Making connection	Direct approach	Smaller groups	Dual Options	Walking	Accessi- bility	Therapy
CASE STUDIES	The Village
	De Hogeweyk	✓	✓		✓		✓	✓	✓	✓	✓
	Rukun Senior Living		✓	✓	✓		✓				✓
	Kandahar Court			✓	✓						✓
		$\frac{2}{4}$	$\frac{3}{4}$	$\frac{2}{4}$	$\frac{2}{4}$	$\frac{1}{4}$	$\frac{2}{4}$	$\frac{1}{4}$	$\frac{2}{4}$	$\frac{1}{4}$	$\frac{4}{4}$
OTHER PRECEDENTS	Haarlemmer Houttuinen		✓	✓	✓	✓		✓			
	Iidabashi Plano				✓						
	Carol Shields Labyrinth	✓							✓	✓	✓
	Nouvelle at Natick	✓					✓	✓	✓		✓
	Texture						✓		✓		
	Garden of the Senses		✓				✓	✓			✓
		$\frac{4}{9}$	$\frac{5}{9}$	$\frac{3}{9}$	$\frac{5}{9}$	$\frac{2}{9}$	$\frac{5}{9}$	$\frac{4}{9}$	$\frac{5}{9}$	$\frac{2}{9}$	$\frac{7}{9}$

Fig. 65. Summary of objectives achieved by each case studies and precedents.

	Learning	Lower cues & signs	Navigation	Independence	Multisensory	Learning senses	Experiencing life	Linking memories	Familiar objects	Attraction	Colours	
				✓			✓	✓	✓	✓	✓	11 21
				✓	✓	✓	✓	✓	✓	✓	✓	16 21
							✓	✓	✓	✓		9 21
							✓	✓	✓	✓		7 21
	$\frac{0}{4}$	$\frac{0}{4}$	$\frac{0}{4}$	$\frac{2}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{4}{4}$	$\frac{4}{4}$	$\frac{4}{4}$	$\frac{4}{4}$	$\frac{2}{4}$	
												4 21
		✓	✓					✓	✓	✓		6 21
	✓		✓	✓								6 21
	✓		✓	✓				✓			✓	10 21
				✓		✓		✓	✓			7 21
					✓	✓		✓		✓		8 21
	$\frac{2}{9}$	$\frac{1}{9}$	$\frac{3}{9}$	$\frac{5}{9}$	$\frac{2}{9}$	$\frac{3}{9}$	$\frac{4}{9}$	$\frac{8}{9}$	$\frac{6}{9}$	$\frac{6}{9}$	$\frac{3}{9}$	

3. 3 Summary

These case studies have been analysed for their strengths and weaknesses using the guidelines from the literature review and observations. The diagram (fig 65) shows the requirements met by each case study. It is evident that most facilities focused on achieving the design categories for sense-of-self, with its focus on the person and what

they experience at an immediate level. Designs that centers around navigation and the social experiences, including interactions between residents with the existing community, are still lacking. Other precedents were analysed for ideas that could fill the gaps found in the existing case studies.

Pre-design

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- Existing Residential secured unit/
Dementia Specialist
- Wellington City Center
- Suburban City Center

3.1 Introduction to site

In Greater Wellington Region, most dementia care facilities are located in peaceful and friendly suburban, residential areas (Fig 66). Through literature review, participation and socialization have proved to be as significant therapy as a peaceful environment. For this reason, the design will be tested on a busier area, which involve more of the public.

One of the existing dementia care facilities in Wellington is located in Newtown, a suburb 10 minutes away from Wellington city center (fig 67) and adjacent to the Wellington Hospital. Newtown is a working-class suburb with a diverse cultural ethnicity (fig 68) due to its population of immigrants, students and young professionals as well as those employed by the hospital. With its location not far away from schools, universities and offices, it is normal to see all kinds of people walking on the streets.

Fig. 66. Location of specialised dementia unit around Greater Wellington Region.

Fig. 67. Map of Newtown area.

Although the facility is located away from the main traffic corridors and is currently lacking from pedestrian connections, it has potential for increased social encounters. The existing facility, Te Hopai, is better known as a rest home. However, it also has a specialised dementia unit that can accommodate people of different levels of dementia.

Fig.68. Statistics of Newtown cultural diversity compared to Wellington city

4.2 Site analysis

The testing site, adjacent to Te Hopai, is located within the hospital area. Two busy roads surround it--Riddiford Street and Mein Street. It is not unusual to see significant movement from both vehicles and people within this area especially during peak hours (fig 69). Those living around the hospital may find this normal however, for others, it can be slightly intimidating.

Te Hopai is hidden behind the dominating hospital buildings (fig 70 & 71) against the town belt. Its immediate surroundings are large surface car parks (fig 72 & 73). Tall shrubs hide most of the facility (fig 74). Te Hopai has two entrances: one directly at the end of Owen Street, and the other through Hospital Road which is more indirect (fig 69). Many visitors have had difficulty in finding Te Hopai.

Fig. 70. Hospital tower seen from residential area.

Fig. 71. Hospital seen from Alexandra Park.

Fig. 72. Road leading to the entrance of Te Hopai.

Fig. 73. Looking up at Te Hopai from the car park.

Fig. 69. Map showing the traffic condition around the area and the main entrance into Te Hopai.

Fig. 74. Entrance into Te Hopai covered with unmaintained plants.

- Town belt
- Healthcare
- Education
- Worship places
- Residential
- Retail
- Govt House
- Main road
- Secondary road
- Tertiary road

Fig. 75. Building use plan. The intensity of hatches represent the busyness of the place (left).

Fig. 76. Main destinations that people go to (right).

The red dotted lines on the map show pedestrian movements and flows through the surroundings (fig 77). Many pedestrians use the car parks and hospital areas as a shortcut. Most of these people are Wellington Hospital staff, on their way to work or to drop their children at school; others are on their way to University and other jobs.

Fig. 77. Flow diagram showing movement and their places of destination.

Fig. 78. Elevation difference between Te Hopai and the carpark.

Fig. 79. Looking into the building from the other carpark.

Windows (fig 78 & 79) provide visual connection between residents of Te Hopai and the public. The blue arrows in the plan show the directions of viewing points, whether it is inside looking out or outside looking in or both ways. The following

section (fig 80) shows the current relationship between the residents and public. It shows how elevation difference is used for privacy or to have visual connection.

Fig. 80. Section a showing the building elevation position relative to its surroundings.

There is an important shortcut (fig 82) between the Te Hopai facility and Department of Radiation. As shown in the section above, public who use this shortcut can look down and see into the lounge of the facility (fig 81). However, the overgrown shrubs are possibly used for privacy screen to stop people from looking in.

Fig. 82. The shortcut

On the Eastern side of Te Hopai, there is an unused flat space adjacent to the town belt. Through the fence, the general public can look into Te Hopai's backyard. The fence and the difference in elevation however, prevent the two parties from interacting (fig 84). The fence (fig 83) facing towards Te Hopai is unattractive and could make the public wonder what is actually over the fence and why such security is required.

From the surrounding landscape it appears that Te Hopai is trying to separate the residents from the public. However, through literature and case studies, we found positive effects on interactions and therefore, carefully opening up Te Hopai could be an opportunity.

Fig. 83. Wire fence separating the facility from the public.

Fig. 84. Section c showing possibility of interaction from the separated areas.

4.3 Design Opportunity

Fig. 85. Opportunities of interaction for residents of Te Hopai and people from the surrounding area (left).

Fig. 86. The possible users around the area from the highest to the lowest (right).

Through the analysis, possibilities for public interaction from different parts of the facility are apparent. The landscaping of high security fencing and overgrown vegetation make Te Hopai look dangerous and even threatening. The threat could be minimised by carefully opening up the facility to the public, increasing social interaction and reducing the stigma.

The diagram on the left (fig 85) shows that by designing around Te Hopai, there are opportunities of attracting more people (fig 86) to visit the site not as a shortcut but potentially as a place of destination.

Fig. 87. Initial focus.

Fig. 88. 5 main zones.

Increasing social space and public interaction with residents of Te Hopai is the focus in the initial design (fig 87). The section drawings on page 77, 79 and 81 show that elevation height and distance determine barrier between public and residents of Te Hopai. Experimenting with elevation and distance to increase connectivity, the initial design looked into 5 different zones (fig 88).

A public path is proposed, which will be tested for its potential for interaction. In each zone, the design focuses on interactions between residents of Te Hopai and different users of the public space. Experiments with changing elevations can affect the way people move around the space.

The key objective of zone 1 is to allow public to utilise the space while still giving the residents of Te Hopai their own private space.

Fig. 89. Zone 1 iterations.

The following images (fig 89-98) show the test and results after the height and distance between the public ground and Te Hopai ground is altered. The result in collages shows better environments for interaction that could be further developed.

Fig. 90. Best option showing the use of trees as semi-permeable barrier.

The key objective of zone 2 is to create an interactive social space and provide activities such as gardening or picnic areas for families and visitors.

Fig. 91. Zone 2 iterations.

Fig. 92. Best option using two elevated path to create a social space in the middle.

option 1

option 2

option 3

option 4

The key objective of zone 3 is to allow public use of the open space as an area for activities. Residents of Te Hopai can choose to interact or watch from afar.

Fig. 93. Zone 3 iterations.

Fig 94. Best option using terraces to decrease the height difference while still maintaining the boundary.

The key objective of zone 4 is to allow pedestrians who uses this walkway to engage in small activities and social interaction with the residents of Te Hopai.

Fig. 95. Zone 4 iterations.

Fig. 96. Best option showing a social place to increase interaction.

Fig. 97. Zone 5 iterations.

Fig. 98. Best option using plants and slight slope as soft barrier.

4 . 4 Summary and Reflection

In this chapter, possibilities for the residents to interact visually, verbally or both were explored in section. In the design review and in review with Te Hopai staff, the idea was well received. Critics liked the idea of the acknowledging those with dementia and how social space could help them cope the illness. The use of section and collage to test the idea for each zone was a successful means of communication. The design in this stage was loose, giving opportunity for further development in the next design phase.

For further development, the conditions of the residents needed greater clarity. Instead of focusing on individual moments, it would be clearer to design according to the residents' stage of dementia. Further possibilities for interaction by stage of dementia needed to be carried out. It would also be important to show how the design could give impact to both the residents of Te Hopai as well as the community. Showing the design from the residents' point of view and public's point of view could help viewers understand the qualities of the design better.

Design

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Developing from the pre-design phase, the design chapter focuses on the three existing areas of Te Hopai which are: the rest home; the hospital; and, the dementia secured unit. As analysed in the previous chapter, the area around Te Hopai is commonly used as a shortcut by many, creating an opportunity for social interaction. Introducing interventions along the path could slow the walking pace of the public which might allow them to be aware of the facilities and who lives there.

The design chapter has been divided into three sections one for each of the stages of dementia. The term 'stages' indicates the severity of dementia, which is a progressive disease. People who live in rest home often have mild dementia, therefore this facility is in stage one dementia design. Stage 2 is progressed and bedridden and stage 3 is severe to the end of life. In each stage, there will be different aims for the different resident needs. The design will also follow the main categories from literature review: social space; sense of space; and, sense of self. The social space will be experimented at a larger scale while the other categories will be explored more as the design is developed.

5. 1 Residents of Te Hopai

Te Hopai provides 3 different services for their residents (fig 99):

1. **Rest home** provides services for 29 residents. It has two courtyards and all rooms face outdoors. This unit includes respite for temporary care.
2. 60 rooms of **hospital care** for those who needs continuous care.
3. 16 rooms in a **secured dementia unit** for those with severe dementia

stage 1

Fig. 100. Rest home and respite unit.

5.2 Stage 1 Dementia Design

Rest Home and Respite Unit

Half of the residents in the rest home suffer from mild dementia. As long as the symptoms of dementia do not involve wandering or elopement, residents can stay in an unsecured unit. Residents are free to leave the building and pursue their own activities as they choose.

In the mild stage of dementia, the affected areas of the brain involve learning and memory, and thinking and planning (fig 101). The affected brain creates difficulties that these people have to face everyday as shown below (fig 102).

Fig. 101. The affected area in the brain.

Emotionally unstable

Finding simple task more difficult

Losing interest in hobbies and daily activities

Afraid and avoid to try new things

Fig. 102. Difficulties faced by those with mild dementia.

The rest home unit is currently surrounded by steep hill on its northern and eastern side and overgrown shrub on the west side (Fig 103). The surroundings feel unwelcoming for the public who walks past this area. The hidden entrance, the lack of visibility and removal from the public is detrimental to the well-being of the residents and contribute to stigma. There are opportunities to create open more access in order to bring the residents of Te Hopai out and bring the different users (Fig 104) in.

Fig. 103. Existing condition (top).

Fig. 104. Potential users (bottom).

The following diagrams (fig 105) explore a series of proposals, which increase accessibility into this area, increasing the amount of potential interaction between the residents and the public. In a rest home, the amount of interaction can be increased carefully, without causing interruption. Changing ground level experiments with visual connection while reducing the barrier.

Fig. 105. Diagram of existing flow (bottom) and different intervention proposal which affect the flow.

5.2.2 Overall Design

The proposed design (fig 106) shows roughly the elements in the space that change the flow of movement and increase the interaction that can happen while both residents and public carry out their daily activities.

Fig. 106. Overall plan.

PATH LEADING TO
THE OUTSIDE OF THE
FACILITY

OPEN GROUND
SUITABLE FOR
MORNING ACTIVITIES

SMALLER OPEN
SPACE SUITABLE FOR
SMALLER GROUP

GARDENING AND
OTHER EVENING
ACTIVITIES

PATH LEADING TO
THE OUTSIDE OF THE
FACILITY

8 am. AT THE LOUNGE LOOKING OUT FROM THE WINDOW

9 am. AT THE FRONTYARD EXERCISING

10 am. WALKING ALONG THE AROMATIC GARDEN

8 am. STAFF / VISITOR WALKING IN THE GARDEN

8 am. PUBLIC WALKING TO WORK/OTHER PLACES OF DESTINATION

9 am. STUDENTS GOING TO SCHOOL

2 pm. READING A BOOK UNDER THE TREE.

4 pm. GARDENING

5 pm. WATCHING / PLAYING SPORTS

RESIDENT
ACTIVITIES

10 am. PEOPLE WALKING ON THE HILL

4 pm. CHILDREN WALKING HOME FROM
SCHOOL

5 pm. PLAYING SPORTS

PUBLIC
ACTIVITIES

5. 2. 3 Detailed Design

Previously, the design emphasised accessibility and ways to create more interaction while putting aside the focus on the residents of Te hopai. While social life is an important factor, it is also important to design a place that could give residents a sense of home and allow them to experience life actively.

The design (fig 107) aims to provide as many activities as possible. Transforming empty spaces and car parks into various functional spaces gives choices and freedom for residents. The areas that were fenced off have been opened up to decrease the stigma and encourage social interaction. Around the facility, there are exercise grounds, gardening areas, aromatic gardens, open spaces and small enclosed space for those who prefer solitude. The design uses both softscape and hardscape elements to provide for different uses.

Fig. 107. Map showing the location of the main features of the garden.

2

3

4

Fig. 108. Sheltering plants on the exercise ground.

Fig. 109. Fragrant plants.

Fig. 110. Sheltering plant and shrubs which create a secluded area.

Fig. 111. Various medicinal and edible plants. As well as hardy and easy maintenance plants.

Planting Plan

Sheltering plants

1.

Ackama rosaefolia
Makamaka (Tree)
6m h x 4m w
Good specimen tree for smaller garden.

Hardy plants

2.

Coprosma propinqua
(shrub)
3m h x 2m w
Hardy and easy to maintain plant

3.

Apodasmia similis
Jointed rush, Oioi (grass)
1.5m h x 1m w
Hardy plant, tolerant on dry or wet condition

4.

Centella uniflora
(groundcover)
0.1m h x 1m w
Fast growing and hardy

Relaxing (aromatic) plants

5.

Pittosporum tenuifolium
Kohuhu (tree)
6m h x 4m w
Aromatic leaves often made into perfume

6.

Raukawa edgerleyi
Raukawa (tree)
6m h x 4m w
Scented leaves can be rubbed on bodies to create aromatic perfume

7.

Pseudowintera colorata
Horopito (shrub)
8m h x 2m w
Leaves are aromatic and pungent

8.

Mentha cunninghamii
Native Mint, Hihoi
0.15m h x 0.4m w
Minty and refreshing smell

NZ significant plants (food & material)

9.

Elaeocarpus dentatus
Hinaiu (tree)
10m h x 6m w
The berries are rated as third most important Maori food source

10.

Leptospermum scoparium
Manuka (shrub)
2m h x 1.5m w
Leaves and barks are used for various medicinal purpose

11.

Phormium tenax
Harakeke (shrub)
3m h x 3m w
Leaves can be used for many different purposes

12.

Cortaderia fulvida
Toetoe (grass)
1.5m h x 2m w
Stalks can be used for medicine and weaving

13.

Tetragonia tetragonioides
NZ Spinach (Herb)
0.2m h x 2m w
The foliage can be used a substitute for spinach

Medicinal Edibles

14.

Aristotelia serrata
Wineberry (tree)
8m h x 2m w
Leaves and bark has medicinal properties for rheumatic and sore eyes

15.

Macropiper excelsum
Kawakawa (shrub)
2m h x 1.5m w
Leaves can be chewed and used for external and internal medicine

16.

Metrosideros fulgens
Climbing rata, Aketea (vine)
6m h x 3m w
Sap used for eye trouble

17.

Acaena anserinifolia
Bidi-bidi, Hutiwai (groundcover)
0.15m h x 1m w
Leaves can be used for internal and external wounds. Plants can also be infused for tea

Planting list *

The selections of plants are chosen for easy maintenance while also giving advantageous properties for the users.

* Reference of plants in figure list

Fig. 112. Section A showing different ground level used for different purposes.

Activities

Although residents are allowed to wander outside Te Hopai, there are also activities available within the facility ground. The use of retaining walls, slope, raised beds and elevated platforms create different spaces for various activities (fig 112). The different spaces consist of:

- A gardening area (fig 112) with easy maintenance, hardy and medicinal plants.
- Sheltered areas (fig 113) with sheltering trees and shrubs that provide for those who wish to spend their time alone.
- An open grass area (fig 114) on the western side of the building, which can accommodate group exercises as well as interaction among residents and the public.
- An aromatic garden (fig 115), which induces respiration and relaxes body and mind.

Fig. 113. Section B. Sheltered and secluded garden.

Fig. 114. Open ground which is ideal for morning activities.

Fig. 115. Aromatic pathway.

stage 2

Fig. 116. Hospital unit.

5.3 Stage 2 dementia design

Hospital unit

The hospital unit (fig 116) accommodates those who are suffering both mentally and physically. In this unit, severe dementia patients can stay unsecured due to their immobility, which prevents them from wandering and elopement. The affected part of brain for moderate dementia affects speaking and understanding speech and their sense of where their body is in relation to objects around them (fig 117). The diagram below (fig 118) shows the difficulties faced daily.

Fig. 117. The affected area in the brain.

Constant assistance
needed

Immobility

Health issues

Unable to do basic daily
routine

Fig. 118. Difficulties faced by those with mild dementia.

The hospital unit is divided into two wings; an older building on the southwest and the new building on the southeast. Many local residents use this area as a shortcut. Their existing path follows along the old building but is elevated by 2-3 meters and surrounded by overgrown shrubs. These shrubs are used for screen as passerby can look into the lounge.

Car parks are available just outside the new southeast building, which creates a barrier for interaction (fig 119). The building is at the same elevation as the car park, which creates opportunities for social interactions. However, since there are no available activities, the patients rarely go out, preventing socialization.

Fig. 119. Previous condition (top)

Fig. 120. Potential users (bottom)

PRIMARY USERS

The following diagrams (Fig 121) explore different ways of increasing accessibility as well as to creating a place of destination for both the patients and public. The top two diagrams experiments with the relocation of car parks, creating new shortcuts and new activities suitable for all the potential users. The new proposed paths have been woven together to increase interaction between the public (fig 120) and residents of Te Hopai.

Fig.121. Existing flow and proposed interventions which create a new flow.

5.3.2 Overall Design

The existing car park has been relocated away from the facility, creating a large open space which can be used by residents of Te Hopai, local residents and other people. The proposed design (fig 122) introduces new elements into the space changing the flow of movement, which in turn affects the interactions that can occur while both residents and public carry out their daily activities.

- Public Movements
- Resident Movements
- Te Hopai Property boundary

Fig. 122. Overall plan.

→ COMMUNITY BACKYARD

→ UNIVERSAL PLAY AREA FOR BOTH THE
RESIDENTS AND PUBLIC
(therapy area where residents of Te Hopai
meet the public)

→ NEW DROP-OFF ZONE

→ NEW CAR PARK PLACED FURTHER AWAY
FROM THE OPEN SPACE

→ NEW ENTRANCE INTO THE CAR PARK

8 am. LOOKING OUT THE WINDOW FROM THE ROOM

9 am. OUTDOOR BREAKFAST

10 am. WALKING ALONG THE GARDEN

8 am. BIRDS OUTSIDE THE FACILITY

9 am. PUBLIC ON THEIR WAY TO WORK

10 am. LOOKING INTO THE GARDEN

2 pm. IN THE GARDEN WITH FAMILIES / VISITORS

4 pm. INTERACTING WITH CHILDREN IN THE GARDEN

5 pm. PLAYING WITH ANIMALS IN THE GARDEN

RESIDENT ACTIVITIES

1-2 pm. LUNCH IN THE GARDEN

4 pm. CHILDREN PLAYING

5 pm. PEOPLE FROM SPCA VISITING THE GARDEN

PUBLIC ACTIVITIES

- Path from Northwestern side of Te Hopai.
- Forest Habitat.
- Rocky Garden.
- Path from TownBelt.
- Wetland/Stream Habitat.
- Outdoor Seating for Residents.
- Wooden path for public.
- Meandering Red Path.
- Grass Mounds.
- Picnic/BBQ Table.
- Drop-off zone.
- Flower Garden.

5. 3. 3 Detailed Design

The aim of the design is to create a garden that both the patients and the public could visit. Most of the patients who use the garden are in wheelchairs. They can only access the red path as it has been elevated slightly by (200mm). For safety and security reason, berms (fig 124) are proposed along the path to prevent patients from falling off the edge of the path. The slight raised elevation defines the path to keep patients on track, however it does not create barriers for social interactions as public can step up onto the path easily.

The garden is designed to give different experiences as the patient follows the path (fig 123). It uses various types of plants that would create different atmospheres which in turn reflect the different lifestyles of the individual residents (fig 125). Along the path, patients can watch or communicate with visitors who use other features in the garden such as the grass mounds and the BBQ tables.

Fig. 123. Plan showing the important features of the design (left).

Fig.124. Berm on the edge of the path protect users from falling off (top).

Fig.125. Overall section showing the different surroundings as people move through the garden (bottom).

Fig. 126 Before and after image of what the resident view from their rooms.

Before and after image of what the public view before entering the property.

Fig. 128. Planting plan.

Plants

Immobile patients are no longer active, therefore what they view everyday becomes more important. Plant species that are familiar have been chosen to that remind the patients of home. These plants have come from a variety of NZ habitats to reflect the variety of plants the patients might have experienced.

1. *Cyathea dealbata*
Silver Fern, Ponga (tree)
8mh x 5mw

2. *Ackama rosaeifolia*
Makamaka (Tree)
6mh x 4mw

3. *Asplenium oblongifolium*
Shining spleenwort (fern)
1 mh x 1mw

4. *Pittosporum eugenioides*
Lemonwood (tree)
6mh x 3mw

5. *Melicytus ramiflorus*
Mahoe (tree)
5mh x 3mw

6. *Macropiper excelsum*
Kawakawa (shrub)
2m h x 1.5m w

Forest habitat

Plants usually found in a forest. Gives off cool, sheltered atmosphere. Has calming effect for those who seeks peacefulness and solitude

Fig. 129. Sketch of the experience in the forest habitat (top).

Fig. 130. Arrangement of plants (bottom).

7. *Metrosideros robusta*
Northern Rata (tree)
10mh x 5mw

8. *Pseudowintera colorata*
Horopito (shrub)
8m h x 2m w

Macropiper excelsum
Kawakawa (shrub)
2m h x 1.5m w

9. *Sophora microphylla*
Kowhai (tree)
8m h x 5m w

10. *Arthropodium cirratum*
Rengarenga Lily (lily & iris-like)
0.6mh x 0.5mw

11. *Lobelia angulata*
Panakenake (groundcover)
0.1mh x 3mw

Distinctive plants

a collection of distinctive commonly used plants around NZ. This gives familiar feeling especially for those who has lived in NZ their whole life.

Fig. 131. Arrangement of plants (top).

Fig. 132. Resident views into the familiar plants (bottom).

12. *Cordyline australis*
Cabbage Tree (tree)
8m h x 3m w

13. *Phormium tenax*
Harakeke (flax)
3m h x 3m w

Stream/Wetland habitat

consist of both streambanks and wetland plants. Using cabbage trees that are familiar to most New Zealanders and especially meaningful to Iwi (native Maori).

14. *Cortaderia fulvida*
Toetoe (grass)
1.5m h x 2m w

15. *Carex solandrii*
(grass)
0.6m h x 0.6m w

Fig. 133. Cabbage trees familiar as navigation tool (top).

Fig. 134. Arrangement of plants (bottom).

16. *Muehlenbeckia astonii*
(shrub)
1.5 m h x 1 m w

17. *Poa cita*
Silver tussock (grass)
1 m h x 1 m w

18. *Brachyglottis greyi* x *repanda*
Rangiora (shrub)
4 m h x 2 m w

19. *Astelia banksii*
Wharawhara (lily & iris like)
1 m h x 1.5 m w

20. *Coprosma acerosa*
(groundcover)
0.4 m h x 1 m w

Fig. 135. Shrubs tall enough to allow users to feel its texture (top right).

Fig. 136. Arrangement of plants (middle right).

Low shrubs

Familiar low plantings that allow patients to touch.

21. *Scleranthus brockiei*
(groundcover)
0.15 m h x 0.5 m w

22. *Carex comans*
Maurea (grass)
0.3 m h x 0.4 m w

23. *Carex albula*
White sedge (grass)
0.3 m h x 0.3 m w

24. *Pachystegia insignis*
Marlborough rock daisy (shrub)
0.5 m h x 0.5 m w

Rocky plants

Familiar groundcover and herbal alpine plants.

Fig. 137. Arrangement of plants (bottom left).

Fig. 138. Viewing into the rocky garden (bottom right).

Flowering plants

Chosen for its vibrancy and fragrance.

Fig. 139. Arrangement of plants (top).

Fig. 140. Flowering plants gives pleasant experience for the users (bottom).

Fig. 141. Outdoor dining.

Fig. 142. Grass mounds.

Fig. 143. BBQ and picnic area.

Activities

Without any vehicular movement, users are free to wander around the garden securely. Patients can dine outside (fig 141) and experience the different atmospheres and views. The path and the surrounding plants are designed for residents to move in a slower pace. The various scenery they view along the path links to their memories, reminding them of home.

Users such as students, staff, local residents and strollers can directly access the garden. Children can use grass mounds (fig 142) as play areas and the BBQ tables (fig 143) provide cooking facilities for families who gather crops from the nearby community garden.

Orientation and navigation

The path is curved and windy and the plants have been arranged to ensure that patients can still overview their surroundings. This avoids insecurities and feeling of being lost. The height of the dense leaves (fig 144) is below 800mm and above 1500 mm, therefore require routine maintenance.

Fig. 144. Height of the plants in relation to residents and other users.

Path

The defined, vibrant red path (fig 146) offers easy navigation for the users. The total distance of the path is approximately 300 meters. The shape of the path provides the opportunity for residents to become more active while stimulating the brain. The winding nature of the path creates a relaxing journey for both residents and visitors.

Fig. 145. The red path used to orientate and navigate residents.

stage 3

Fig. 146. Secured dementia unit

5. 4. Stage 3 dementia design

Secured Dementia Unit

Fig. 147. Elopement by climbing fences.

Fig. 148. Affected part of the brain.

One of the main reasons for securing residents (fig 146) is due to wandering and attempts at elopement (fig 147). Often people with dementia get lost and even injured during this process and therefore need to be kept safe inside the building

These people suffer from severe dementia in which they lose their ability to communicate; to recognize family and loved ones and to care for themselves (fig 148). The diagrams below (fig 149) also show the difficulties that they may be facing everyday.

Communication becomes impossible

Completely disorientated with surroundings

Short term memory affected

Inability to recognise family, friends or even everyday objects

Fig. 149. Daily difficulties.

The current situation of the site is unsuitable for interaction between the residents of Te Hopai and the public. The overgrown shrubs and different in elevation height create a barrier between the two (fig 150). Ideally, this area is to be used by different users as shown below (fig 151). This area needs to be designed to slow down the passerby and make it into a stopping point.

STAGE THREE
SEVERE DEMENTIA

PRIMARY USERS

Fig. 150. Previous condition (top left).

Fig. 151. Potential users (bottom right).

The diagrams (fig 152) show proposals that increase accessibility through the site while also introducing new open space that could make them stop. Experiments were undertaken with terraces and different pathways that could bring the public closer to the residents of Te Hopai without crossing over the private property.

Fig. 152. Existing flow and proposed interventions that create a new flow in the space.

5. 4. 2 Overall Design

The car parks have been transformed into an underground car parking with a terraced surface. This open space is aimed to attract patients and staff from Wellington Hospital building for recreation and relaxation. The terrace uses stairs and ramps with universal access for patients with walking difficulties. The park has a mixcourt, which can be used for tennis, badminton or basketball. This feature invites public and residents of Te Hopai rest home to interact while being watched by residents from secured unit.

Fig. 153. Overall plan.

STAIRS AND RAMPS
LEADING TO WELLINGTON
HOSPITAL

SMALL OPEN
SPACE

NEW ROAD TO
UNDERGROUND
CARPARK

MIXCOURT

SENSORY WALK
FOR DEMENTIA
PATIENTS

8 am. LOOKING OUT THE WINDOW FROM THE ROOM

9 am. LOOKING OUT INTO THE GARDEN FROM THE LOUNGE

10 am. INTERACTING WITH RESIDENTS OF REST HOME

8 am. BIRDS OUTSIDE

9 am. RESIDENTS FROM REST HOME LOOKING INTO THE GARDEN

10 am. INTERACTING WITH RESIDENTS OF SECURED UNIT

2 pm. IN THE SENSORY GARDEN

4 pm. INTERACTING WITH PEOPLE
WALKING PAST

5 pm. WATCHING PEOPLE PLAYING
SPORTS

RESIDENT ACTIVITIES

2 pm. PEOPLE LOOKING INTO THE
SENSORY GARDEN

4 pm. WALKING PAST TE HOPAI FROM
WORK/SCHOOL

5 pm. PLAYING SPORTS WITH RESIDENTS
AS SPECTATORS

PUBLIC ACTIVITIES

5. 4. 3 Detailed design

Fig. 154. Plan showing the overall experience of the place.

Fig. 155. Section C showing the boundary between residents of Te Hopai and the public.

To address concerns of wandering and escaping, the existing facilities keep areas secure by locking doors, which can only be accessed by staff. There is currently access to the courtyard however, it lacks in stimulation and does not attract residents to go into it.

The proposed design aims to create a pathway, which encourage residents to enter and exit the building in a continuous loop, allowing them to wander safely. The sensory garden uses plants that stimulate and create a multisensory experience to make the journey pleasant. By being able to walk outside freely, patients' agitation is reduced and, their navigational ability is improved as well as increasing their quality of life.

sound

sight

touch

smell

taste

Fig. 156. Elevation D showing the overall arrangement of the garden seen by the public.

Activity and Slope Intensity

With a suitable environment, wandering has been considered positive by many researchers. However, when there are corners or dead-ends, patients tend to stop, not knowing how to proceed. Therefore, a continuous loop around the building like the paradox stairs (fig 157), can lead the patients around, in and out of the buildings.

Fig. 157. The Paradox Stairs (from the movie inception).

A slight slope will allow the wanderers to follow the path more easily. The width of the path has been widened on the top of the slope to create an illusion of being less steep (fig 158).

Fig. 158. Path made to look less steep by widening the top.

In the current building, patients can only explore two of the small courtyards. The proposed design extends the front of the facility, which is currently covered with shrubs. By installing automatic doors that leads to the garden, patients can freely walk outside. The sensory garden is located in the extended area.

Fig. 159. Axonometric of the unit showing its interior and exterior.

Fig. 160. Planting plan (left).

Fig. 161. Overall arrangement of the garden (right)

Aesthetically pleasing

Attractive to birds

Textured plants

Aromatic plants

Edible

Plants *

Often people with dementia over the age of 65 have problems with eyesight. Even though vibrancy and movement can still be seen, details are less noticeable. Stimulation on other senses like smell, touch and sound are more important in this case.

* Reference of plants in figure list

Fig. 162. Textural plants on a height that allow touching (bottom right).

Fig. 163. The sound of birds lead residents to go out to the garden (left).

Fig. 164. Experience in the garden (right).

Fig. 165. Shelter and seating areas in the garden.

Fig. 166. Making a shelter that resembles a bus stop

Fig. 167. Sheltered seat that encourage residents to sit and view out.

Seats, shelter and fence

Along the path, there are several seats and shelter where residents can stop and experience their surroundings (fig 165). The shelter is made to resemble a bus stop (fig 166), which triggers their memories and invites them to sit down. The seat allows resident to look over to the sports court where residents could watch activities (fig 167). As communication is difficult, being able to sit and watch others is entertainment.

The fences on the edge the path are made higher than normal fences which are 2 to 2.5 meters to prevent residents from climbing over (fig 168). While the alternating height of the fence prevent elopement, it also help to maintain the aesthetic of the place. The fence is made up of steel and made to be thin enough to appear unobtrusive, making the facility and the residents look welcoming to the public.

Fig. 168. Design of the fence.

Material and Color

Color contrast can be challenging for those with dementia. Many facilities that were not designed for dementia patients created difficulty when a patient's movements are disrupted from objects' colors (fig 170). However, color can be used as a tool to guide these residents to places they are encouraged to go. A bright path in contrast to the other places can orientate the resident's movement.

Fig. 169. Bright coloured path contrast to the other surfaces make it easy for residents to navigate themselves.

Fig. 170. People with dementia see dark colour path as a hole..

Fig. 171. Contrast in different materials.

Orientation and navigation

Other than colours, it is also important to use simple signs to navigate the residents (fig 172). Most elderly people tend to look down due to their posture so these signs should be located on the path or below eye-level. All of these elements: plants, shelter, seats, signs and colours are the landscape hints used to increase independency of the residents (fig 173).

Fig. 172. Sign and arrow on the path navigate the users (top left).

Fig. 173. How each element helps to orientate the users (bottom).

empty facility

+

plants

+

furniture &
shelter

+

defined path

Fig. 174. Planting bed also help residents to walk in directed loops.

5.5 Masterplan

The masterplan (fig 175) shows the overall flow of people in this area. The three key areas that are affected by these change of movements are highlighted. These key areas (rest home, hospital and secured unit), as shown in the previous chapter

are the main interventions proposed to create a better environment for both the residents of Te Hopai as well as the public. An increase in indirect flows allow for improved interaction between the residents and public.

a mix court which can be accessed by staff and patients from Wellington hospital.

One of the two main entrances to the rest home unit comes from Hospital Road. As approaching the facility, visitors will see directly into the small garden area, where they can drop off their family member(s). Visitors are also exposed to the exercise ground and the garden in the secured unit (fig 176).

Fig. 176 Entrance through Hospital Rd.

The other entrance is through Owen St, which also access into the Hospital unit. Visitors can drop off their family member(s) in the drop off zone and park their car in the parking area. As they drive past the area, visitors are exposed to the garden outside the hospital (fig 177).

The first impressions of Te Hopai have become far more welcoming for the public. The design transforms car parks and empty spaces into gardens and areas that can now be used by everyone.

Fig. 177. Entrance through Owen St.

Discussion & Conclusion

Fig. 178. Comparison of how the three facilities meet the objectives.

The design of the landscape in all its stages have followed the objectives developed through the literature findings and personal observations. Due to the different users and different stages of dementia, some spaces may have focused on one aspect more than another. This section will discuss how and why they differ (fig 176) and how each of the objectives has been achieved.

social space

STAGE 1 STAGE 2 STAGE 3

STAGE 2 STAGE 3

STAGE 1 STAGE 2 STAGE 3

STAGE 1 STAGE 2 STAGE 3

STAGE 2 STAGE 3

STAGE 1 STAGE 3

STAGE 1

STAGE 1

Fig. 179. Sectional perspective of the rest home (top).

Fig. 180. Sectional perspective of the hospital (bottom left).

Fig. 181. Sectional perspective of the secured unit (bottom right).

The Rest Home Unit (fig 179) focuses on giving freedom and allowing for meaningful activities. These activities increase interaction with other Te Hopai residents and with local community residents. Compared with the rest home, the patients in the Hospital Unit (fig 180) are

STAGE 2

more constrained and inactive. The red path, designed for security and safety allows these residents to freely engage with the familiar surroundings and to interact with the different users. Similar to the hospital unit, the Secured Dementia Unit (fig 181) also encourages residents

to watch activities outside of the unit; however, these residents are unable to leave the unit. Different elevation levels allow residents to still interact with the public who walk past.

STAGE 3

sense of space

STAGE 1 STAGE 2 STAGE 3

STAGE 1

STAGE 1 STAGE 2 STAGE 3

STAGE 1 STAGE 2 STAGE 3

STAGE 2 STAGE 3

STAGE 2 STAGE 3

STAGE 1 STAGE 2 STAGE 3

In the Secured and Hospital Units, residents require more assistance with orientation and navigation. Therefore, compared with the rest home unit, these units focus more on giving navigation cues which increase independence. Having less trouble with navigation and orientation, the residents from the rest home are given more opportunity to explore and access other areas outside of the facility.

The design of the rest home focuses on giving accessibility and activities and freedom.

Fig. 182. The different flow and movement in each zone.

sense of self

The everyday experience of those who currently live in a rest home are not focused on sensory stimulations. Activities that give them a similar routine that have likely been experienced at home are much preferred. Familiar activities such as gardening (fig 183) can link to their memory and provide a better living experience. In the Hospital and Secured Unit, connecting to memory works

in a different way. As the disease progresses, the residents' memories are from periods much earlier in their past lives. Comfort is experienced through familiar sensory experiences. Rather than performing similar activities or routine, it is the familiar sight of children or families (fig 184); touch, smell and sound (fig 185) that triggers their memory.

STAGE 2

Fig. 183. Edible Garden in the rest home (left).

Fig. 184. Experience as residents follow the path (top right).

Fig. 185. Garden in secured dementia unit (bottom right).

STAGE 3

Dementia is one of the most challenging diseases. Its progressive nature often results in broken families, social isolation, disconnection from society and low quality of life. Very few facilities are designed specifically for dementia patient needs. In response to these issues, this thesis look into how landscape architecture might help in creating a better life experience for those with dementia who live in a care facility.

Through a multi-disciplinary literature review, a review of case studies and from personal observations, a design guideline was created which suggests that the environment that dementia patients live in should encourage social interaction, promote independence and stress the experiential.

The final design addressed these issues as set out earlier in this chapter. In the pre-design phase, the design was tested by analysing the existing environment of Te Hopai. Observing movements of people and possibilities for social interaction. The design was then divided into three zones. Each zone addressed a different dementia stage. The design was explored in various scale, where each scale uncovered a different use of elements and space. The key interventions can attract public users and have left a better impression of Te Hopai for visitors. The design has transformed what was formerly car parks and underutilised spaces into a place of destination bringing together the different communities and improving the lives of all.

The focus of this thesis has been to create environment that promotes social connection, facilitates navigation in space, encouraging those with dementia to be more independent. It also seeks to provide multisensory experiences that stimulate resident's memories. Matching the progression of the disease, each zone has been designed to meet this requirement.

For years, many have stigmatized those with mental illness. The idea of opening up the facility for the wellness of the residents with dementia and public has been considered important but challenging for medical staff and researchers. This thesis explores ways to reduce the stigma and

improve the life quality for those with dementia, their carers and the general community using information from literature and observations. Due to the constraints of time, this thesis could only test interventions for short-term interactions. The ideas in the thesis have much more potential for further development. With the increasing numbers of people coming into Newtown, more housing is needed. Explorations on building a community within a dementia facility could help to further address the stigma and allow those with dementia to live in a facility while still being part of society.

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102. Difficulties faced.

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147. Affected area.

148. Daily difficulties

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* All images of plants in page 117 & 157 are taken from:

Oratia Native Plant Nursery. N.p., 2007. Web. 2015.