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Abstract

This dissertation focuses on biophilic architecture and how it has been used in connection with Maggie's centres. The author has explored three different Maggie's centres, Cardiff, Edinburgh, Yorkshire.

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1.0 Introduction

This study will explore how biophilia in architecture, specifically Maggie's centres, and how it can be used to provide health benefits to the building's users, particularly the ones that suffer from long term illnesses such as cancer. The study will focus on the use of biophilia in the centres which provide cancer care, through exploring three case studies, Cardiff, Leeds and Glasgow, and how biophilia affects the centre. Firstly, there will be a brief introduction on the concept and history of biophilia. Followed by an introduction about Maggie's centres and its history, and finally a brief explanation of why biophilia is so important to Maggie's centres and the user's health.

1.1 What is Biophilia

Biophilia is a term to describe the connection between human tendencies and the want to connect with nature and other living things. This is evident from the origin of the word, which comes from the Greek language and translates to "love of life" (Merriam-Webster, 2026).

The term biophilia was devised by psychologist Erich Fromm (Stone, 2022) in 1964 to describe "*the biological drive towards self-preservation*" (Merriam-Webster, 2026). The meaning of the word 'biophilia' was then broadened and "popularised by biologist Edward O. Wilson in the 1980's" (University of the Built Environment, 2025), to describe his work in the field of biology and natural science.

Edward O. Wilson was a Research Professor Emeritus at Harvard University (E.O. Wilson Foundation, 2025) where his research was fundamental to the foundation and understanding of biophilia. His main field of research was in natural science, and he was "considered one of the greatest natural scientists of our time" (E.O. Wilson Foundation, 2025). He had a great impact on the preservation of biodiversity on the planet; and he received over "150 international awards" (E.O. Wilson Foundation, 2025), winning the Pulitzer Prize multiple times for his books, *On Human Nature* and *The Ants* (E.O. Wilson Foundation, 2025). Wilson published another book in 1984, *Biophilia* (E.O. Wilson Foundation, 2025) which looked at "the evolutionary and psychological basis of humanity's attraction to the natural environment." (E.O. Wilson Foundation, 2025).

This work is said to have introduced the term "biophilia" to the modern language. In 1986 Wilson "gave the opening address at the seminal convening of the National Forum on Biodiversity" (E.O. Wilson Foundation, 2025), which was where he introduced the term biodiversity into the collective vocabulary of the international media.

The concept of biophilia in architecture and design refers to, “architecture and urban planning that mimics natural environments to enhance and improve well-being” (University of the Built Environment, 2025). According to Terrapin Bright Green, there are three main values when it comes to this concept: nature in the space, natural analogues and nature of the space (Terrapin Bright Green, 2014).

Nature in the space is divided into seven subcategories:

- Visual connection with nature - able to see elements of nature, living systems or natural processes.
- Non-visual connection with nature – these can be based on: auditory, smell, taste, touch stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.
- Non-rhythmic sensory stimuli – stochastic and ephemeral connections with nature that may be analysed statistically but not be predicted precisely.
- Thermal airflow variability – subtle changes to air temperature, relative humidity, airflow across the skin, and surface temperature that mimic natural environments.
- Presence of water – a condition that enhances the experience of a place through the seeing, hearing or touching of water.
- Dynamic and diffuse light – leveraging varying intensities of light and shadow that change over time to create conditions that occur in nature.
- Connection with natural systems – awareness of natural processes, especially seasonal and temporal changes characteristic of a healthy ecosystem.

Natural analogues can be divided into three subcategories:

- Biomorphic forms and patterns – symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.
- Material connections with nature – material and elements from nature that, through minimal processing, reflect the local ecology or geology to create a distinct sense of place.
- Complexity and order – rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature.

Nature of the space can be divided into four subcategories:

- Prospect – an unimpeded view over a distance for surveillance and planning.
- Refuge – a place for withdrawal, from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.

- Mystery – the promise of more information achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.
- Risk/ Peril – an identifiable threat coupled with a reliable safeguard.

1.2 What are Maggie's centres

Maggie's centres are mostly based in the United Kingdom, and they were founded by Maggie Keswick Jencks (The Arc Agency, 2026) who was the wife of Charles Jencks, an architect historian. The centres were created using Maggie's own experience of having cancer, to create a new type of cancer care (Maggie's, 2026), with the focus on buildings and their connection to healing (The Arc Agency, 2026). Maggie herself "was a writer, gardener and designer" (Maggie's, 2026) but when she was 47, she was diagnosed with breast cancer which she overcame but 5 years later in 1993 she was told that it had returned. After hearing the diagnosis Maggie and her husband were left outside of the doctor's office in a "windowless corridor" (Maggie's, 2026) to process the news, where they then discussed how there was a need for somewhere "better for people with cancer to go" (Maggie's, 2026).

Therefore, they developed the idea of a centre that was outside of the hospital but still nearby, which was the start of the Maggie's centres. While they designed the blueprints for the centres together (Maggie's, 2026) they also enlisted the help of architects, including their friends and others who were recommended for later projects.

Unfortunately, Maggie died in 1995 from cancer with the blueprints for what would become the very first Maggie's centre on her hospital bed (Maggie's, 2026), leaving her husband to carry on her legacy. Since then, Maggie's has opened 27 different Maggie's centres all over the UK and more recently three abroad, with plans to build a Maggie's centre next to every specialist National Health Service (NHS) cancer hospitals.

Although a brief for all new Maggie's centres to follow was developed in 2015, with each centre having their own unique features and are also site specific. The brief is mostly about the feelings the design of these places needs to convey to the people who will be visiting them (Maggie's, 2015). The brief includes the building, the landscape, the design of the interior and the art on the walls (Maggie's, 2015).

The centres must be designed to be inviting and safe as well as bold and self-confident so that the users can re-gain their confidence and be "in charge of their lives" (Maggie's,

2015). Therefore, the Maggie's team encourage their landscape designers and architects to work closely together from the very beginning of the project.

The brief for the landscape designers includes incorporating scent as well as sight (Maggie's, 2015) into the design and considering how their planting will be affected in the rain as well as the sun. They must also create areas which will have filtered privacy (Maggie's, 2015) so that the users can experience both private and public areas. The use and positioning of external planting is an important factor, as the centre will be in use all year round, which allows the users to enjoy nature from a sheltered place, seeing features such as the branch of a tree moving in the wind (Maggie's, 2015). This also means that the architects must design the centres so that there are as many opportunities as possible to look out at the plants from all internal spaces of the centres.

Each centre must retain a relationship with the nearby hospital and its surroundings. Therefore each centre is usually built within the grounds of cancer specialist hospitals or departments (Maggie's, 2015), as the "hospital's job is to diagnose and treat cancer" (Maggie's, 2015) while the job of Maggie's "is to help the person who is being treated for cancer with the major upheaval it brings" (Maggie's, 2015). This is portrayed by the fact that the hospitals focus more on the disease whereas the Maggie's centres focus more on the person.

The spatial requirements that each centre must have according to the brief are as follows:

(Maggie's, 2015)

- Entrance: The entrance should be obvious, welcoming, and not intimidating, with a place to hang your coat and leave your brolly. The door should not be draughty, so perhaps there should be a lobby.
- Entrance/welcome area: We think of this as a "pause" space, in which a newcomer can see and assess what's going on without feeling they have to jump right in. The first impression must be encouraging. There should be somewhere for you and a friend or relative to sit, a shelf with some books and an ability to assess, more or less, the layout of the rest of the building.
- Office: The office space should be discreet but positioned so that a member of staff working at their desk can spot somebody new coming into the Centre, (there will be no reception desk). There should be generous storage room for stationery and leaflets. Space will be needed for a photocopier, printer, server etc. Each of the three main workstations needs a telephone, computer point and light, shelf and drawer space. As well as the main ones there should be six smaller workstations.

- Kitchen: The kitchen area should have room for a large table to seat 12 and is usually the main hub of the building. A fairly large “island” with additional seating for two to three people is essential for nutrition workshops, and extra space for setting up food or drinks. You need to be able to move around the table, and between it and the island. The layout of the kitchen should encourage people to help themselves to tea and coffee. We need ideally two dishwashers (or one large and one small), a large fridge or two smaller ones, one and a half sinks, an oven and a hob.
- Notice board: There should be space for a notice board to include fundraising and programme messaging – somewhere subtle, not too “in your face” but visible.
- Library: A place to find books and information and be able to sit and look at them comfortably. Some part of the library needs to have shelving for leaflets and booklets. This space could well be integrated with the “pause space” or an extension of it.
- Sitting rooms: We need three “sitting rooms” which can be shut off from each other or opened up depending on how they are to be used:
 1. The first large room will be used for relaxation groups, t'ai chi, yoga, lectures or meetings and should provide space sufficient to accommodate 12 people lying down and storage room for folding chairs and yoga mats. It also needs to be able to store table(s) for up to 10 people. A flexible space with options to provide more or less privacy would be helpful. The noise from the main hub area of the building needs to be buffered...it doesn't have to be completely sound-proof. It helps if this room is contiguous to the kitchen area, so that it is also possible to have fundraising events there.
 2. The second medium-to-large sized room will be used for workshops and sessions, and needs a table able to seat 12 people, which could be permanent or easy to assemble and store. This room doesn't have to be completely sound-proof either, but should be able to be private and not to be looked in on.
 3. A third smaller sitting/counselling room for up to 12 people with a fireplace or stove which doesn't have to be very big - it makes for a friendlier atmosphere if people have to budge up a bit.
- Consultation rooms: Two small rooms used for counselling or therapy, these need windows looking out to grass/trees, or at least a bit of sky. One of the rooms should be able to take a treatment bed. Both should be sound-proof and private when in use, but open when not in use.
- Toilets: two toilets with washbasins and mirrors, which should be big enough to take a chair and a bookshelf and one of them must have disabled access. They

must be private enough to cry. They must be nice places; they should NEVER have gaps beneath the doors.

- Retreat: A very small quiet space to have a rest or lie down would be good.
- Views out: It is important to be able to look out and even step out from as many of the internal spaces as possible even if it is only into a planted courtyard. Planting works well here too. It not only gives a focus to look out at, it can filter privacy in a room with glass doors or windows to the outside. We want the garden, like the kitchen, to be a space for people to share and feel refreshed by.
- Views in: The interior shouldn't be so open that people feel watched or unprotected.
- Parking: Most projects require some parking spaces.

1.3 The connection between Maggie's centres and Biophilia

Maggie's centres are designed to provide a healing environment reflecting one of the major aspects of biophilia which is that there is an intimate relationship between our emotions and the things around us (Zumthor, 2010). This is seen in the way that humans have a need for nature. There are two main hypotheses for that statement which are *the biophilia hypothesis* and *the topophilia hypothesis* (Need for Nature, n.d.).

The *biophilia hypothesis* considers the idea that humans are born with a desire to connect with other living things, such as plants, animals or other humans. This desire is rooted in human's evolutionary past, and it is thought that other living things have a calming effect, making humans feel whole and inspired, which is what the Maggie's centres aim to achieve with the visitors who use the centres.

The *topophilia hypothesis* suggests that humans have a deep love for places, stating that as well as connecting with nature in general, humans often feel emotionally tied to specific places (Need for Nature, n.d.). This is evident in the design of the Maggie centres as they draw inspiration from the surrounding city or environment and aim to provide a familiar, warm, and welcoming atmosphere that enables the user to connect back to their childhood.

2.0 Methodology

The question which this dissertation seeks to answer is 'Can biophilic design have a positive effect on health and psychology of the users in Maggie centres. The author believes that evaluating case studies is one of the most effective approaches to answer the question. The case studies selected include Yorkshire Maggie's centre (Leeds Maggie's centre) (Maggie's, 2019a), Cardiff Maggie's centre (Maggie's, 2019b), and Edinburgh

Maggie's centre (Maggie's, 1996). These UK case studies have been selected as they are all healing and wellbeing centres located in the UK, each have their own unique use of biophilic design and use, as well as being designed during different times. The study will include exploring whether the use of biophilia in the designs has evolved over time and the impact this has had on the overall building design, particularly in relation to improving health and wellbeing of occupants.

It is anticipated that each case study will provide the author with a different analysis on how they are being used and will allow the author to assess how the design and biophilic approach affects the usage and how the people who use these spaces are affected.

Due to various constraints, the author was only able to visit one of the case studies, Maggie's Cardiff. However, extensive research was conducted to inform the author's opinion and analysis on them. This research includes primary techniques such as questionnaires, which were sent to users of these centres; an analysis of each case studies location, visual analysis of the design and layout using photographs, site drawings, and diagrams. Secondary research included the use of books, research papers, architecture websites and other factual websites. Using these research methods, the author aims to provide a comprehensive understanding of how biophilia helps with the health and wellbeing of Maggie centres users.

The resulting interpretation may be influenced by the authors own perspective due to the nature of the chosen methodology and time.

The author will use a structured analysis for the case studies which will first focus on the use of the building, as informed by the building users and whether they believe the design of the building impacts their experience of it. This will be measured by asking the users of the build as well as comparing the build to the *Maggie's Architecture and Landscape Brief* (Maggie's, 2015) and how closely the final design follows the brief.

The second focus will include exploring how biophilia has impacted the design, including whether the biophilic design added to the quality and experience of the building; and whether the building can claim to be biophilic. This will be measured by the author using a similar scoring method as the *Biophilia Quality Matrix* (Wijesooriya, Brambilla and Markauskaite, 2025) as interpreted by the author.

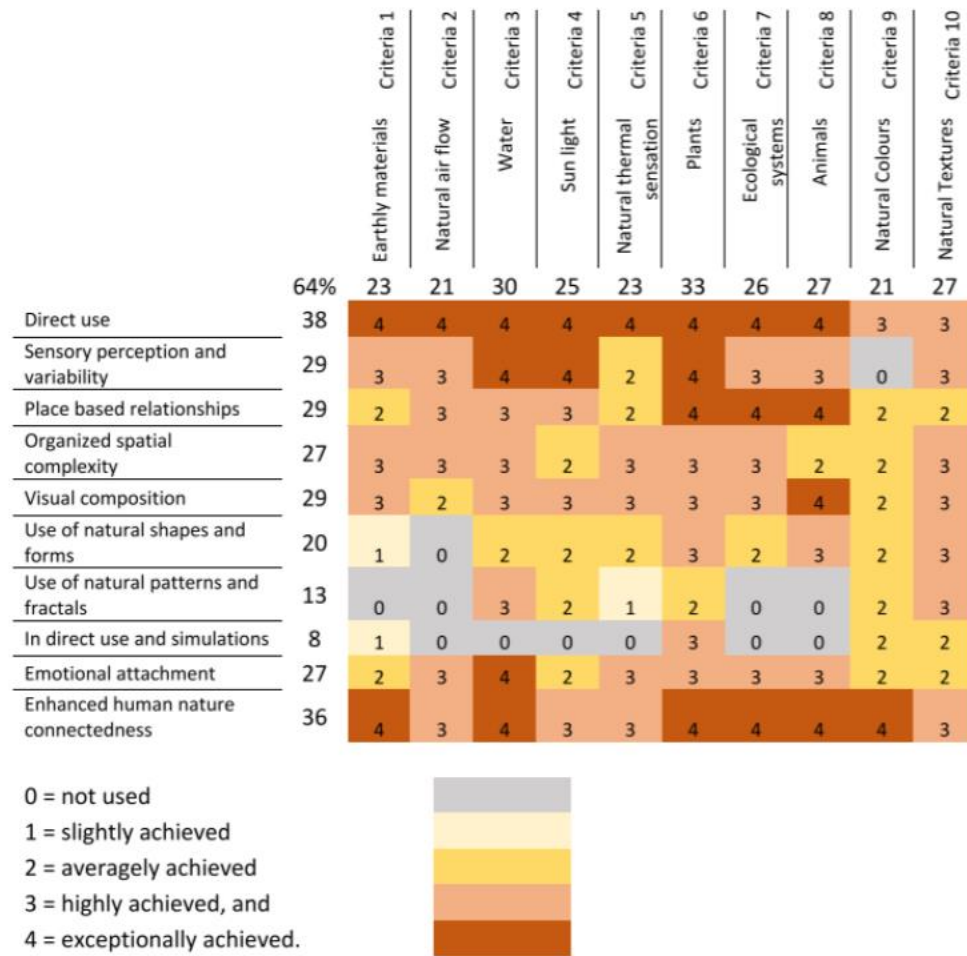


Figure 1

The final focus is to assess whether biophilia had a positive or negative impact on the buildings' user's well-being, or any impact at all, as interpreted by the author from the research undertaken within the study.

Unfortunately, the author was unable to receive any data from users of the building due to privacy issues, but the author was able to get an interview with Jason Warren who is currently the Property Projects Lead of Maggie's.

3.0 Introduction

The Cardiff Maggie's centre is located at the Velindre Cancer centre which is located to the Northwest of Cardiff. The centre was designed by Dow Jones Architects who were commissioned in 2011. They worked closely with Cleve West who was the landscape designer and structural engineers MOMENTUM. The scheme for the centre was funded and received planning permission in April 2014 (Archello, 2026). The centre was completed in

March 2019 (Williams, 2019) after work had first started on site in “April 2018” (Williams, 2019).

The scheme was originally designed with anticipation of the hospital's expansion onto the neighbouring site on Velindre Road, but the masterplan for the hospital was “revised for a different site and with a significantly longer programme” (Archello, 2026) which eventually led to Maggie’s feeling like they “should deliver an interim centre in order to be able to start supporting patients” on the site “until the larger hospital development comes to fruition”. Therefore, the size of the interim centre, which is intended to be used for 10 years originally could be used indefinitely, is “240m² as opposed to 350m²” (Archello, 2026) which resulted in a “smaller, quicker and cheaper” (Archello, 2026) build approximately “one third of the budget of the original building” (Archello, 2026), and being completed within “sixteen months since choosing a site” (Archello, 2026). A new site was chosen for a new Maggie’s centre according to one of the staff members, but the author was not told where it would be in Cardiff, just that it would be nearby a cancer centre.

3.1 Biophilic aspects of the centre

This section focuses on how the biophilic aspects used within the Cardiff Maggie’s centre are portrayed within and how the design principles are used to establish strong relationships between humans, nature and the building.

There are many different aspects to biophilia, and the ones used predominantly in the Cardiff Maggie’s centre are the use of natural materials, natural light and visual connection with nature and the use of natural forms.



figure 2

One such use of natural forms is how the roof was designed as seen in *figure 2*, “a series of pitched roofs at 45 degrees to the triangular plan provide an uneven and undulating collection of pitches that look both like a bunching of houses and like the characteristic hunkering form of the local landscape” (Van Es, 2025). The local landscape refers to the surrounding mountains of Cardiff, whilst the author hypothesises that the collection of pitched roofs refers to old metal barns / sheds that are located throughout the Welsh countryside, this claim was backed up as when the author when to the centre the author was told by one of the staff working there that the build was designed with that in mind.



figure 3

To the Northwest of the site is a line of trees which enclose the small garden of the Maggie's centre as seen in *figure 3*. The garden was designed by landscaper Cleve West; the plants are on a slope down towards the trees, a complaint from one of the staff members told the author that the soil is only about 20cm deep, which meant that they could only plant plants with shallow roots. However, on the outside of the centre, larger plants could be used, as seen in *figure 4* to help make the centre more vivid and colourful as well as providing a pleasant atmosphere. This aspect addresses the use of visual connection to nature as being able to see vegetation and natural plants “has been

proposed as a solution to achieve physiological relaxation and stress recovery” (Jo, Song and Miyazaki, 2019).



figure 4

The Maggie’s centre makes use of natural light especially through features such as a specialised room which is in the heart of the centre called “the “cwtch” - named after the small, intimate rooms found in typical Welsh homes” (Griffiths, 2019). This small room is illuminated by a single large roof light and with a small hatch window that can be opened or closed depending on the user of the room as seen in *figure 5*. The cwtch is painted in a sky-

blue colour which reflects the light down from the skylight as seen in *figure 6* which in the authors opinion, enhances the biophilic aspects of natural light coming into the building.



figure 5

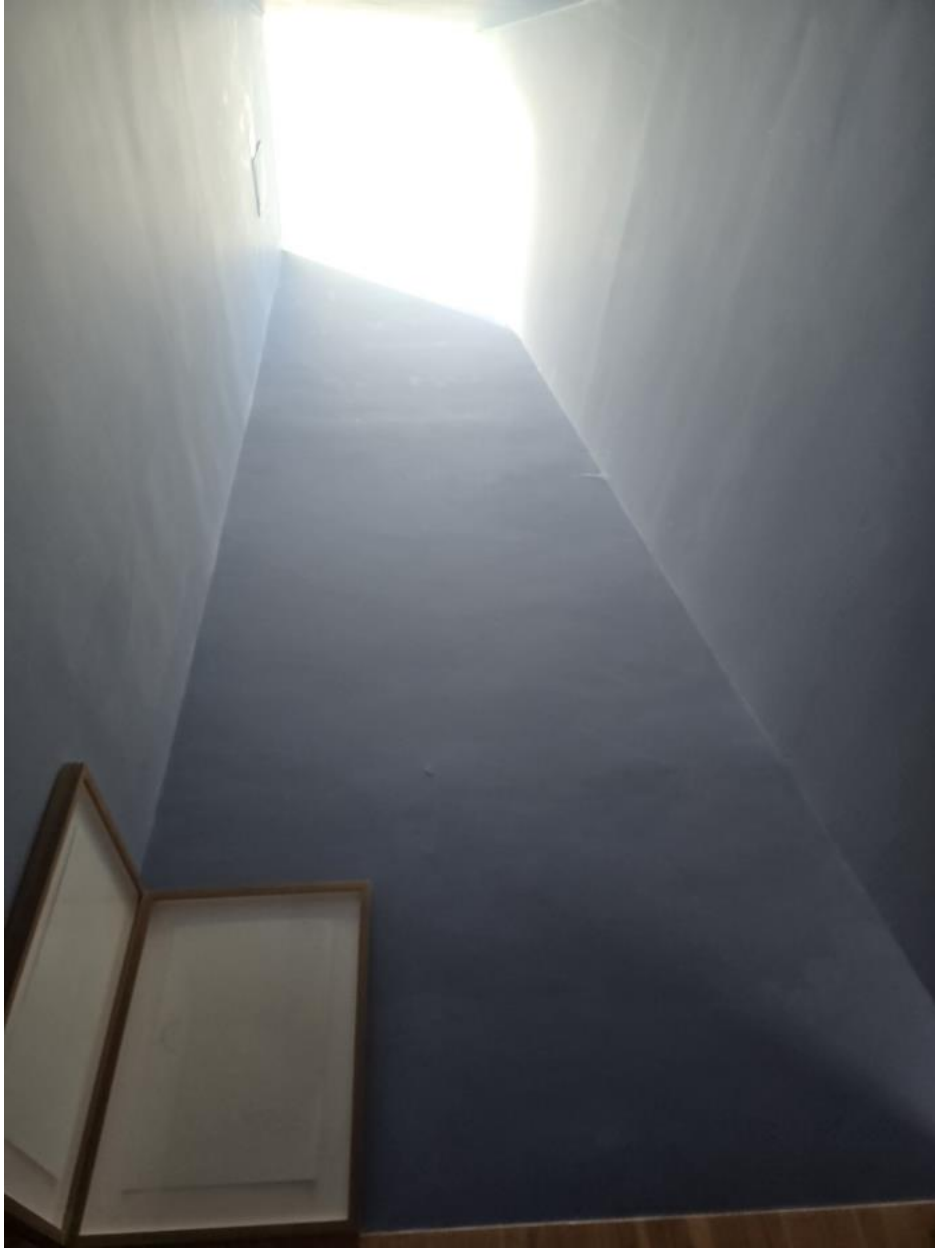


figure 6

3.2 Materials

An important aspect of biophilia is the materials used within the build, and the Maggie's centre makes great use of natural materials and natural looking materials. The main material used on the inside of the Maggie's centre is wood, specifically Douglas fir timber. "The timber brings a warmth and softness" (Archello, 2026) to the centre allowing for the visitors and users to relax and feel safe compared to the harsh environment of the city in the authors opinion. The wood elements were used in multiple areas of the centre

specifically the internal walls as well as the furniture and central communal space as seen in *figure 7*, as the touching of natural wood “can be profoundly grounding” (Ecohardwood, 2024).



figure 7

The floor of the centre was made of polished concrete with underfloor heating, this aligns with another aspect of biophilic design, specifically the touch and sensory engagement as the warmth coming from the floor could feel calming and enhance the comfort of the space. The floor also encases hidden electrical plugs as seen in *figure 8* so that they are able to change the internal space as they see fit.



figure 8

The construction of the centre was a “relatively low budget construction method of timber frame and OSB” (Williams, 2019) which is a sustainable material as well as allowing for the roof to have deep ridges that in the authors opinion allows for the interior to look a lot larger and brighter as the roof was painted white as seen in *figure 9*.



figure 9

Corrugated steel cladding which had been weathered to look like an old metal rural shed is used for the exterior cladding, while the orange hue representing bracken that grows on the neighbouring hills in autumn (Griffiths, 2019). One of the special features of the centre is the rain drainage system as the rain gutter is made of chain links which emit a pleasant sound as rain runs down, as well as making the space look a lot more relaxing as seen in *figure 10* as the chain gets rid of the need for traditional rain gutter systems.



figure 10

Customised bollards which were designed by Antony Gormley were used at the front of the centre, wrapping around the plot's boundary. They are placed so that they prevent cars from being parked against the centre and allow enough space for a path between the centre and the bollards as seen in *figure 11*.



figure 11

3.3 How do these aspects help the centre in being unique

The centre contains many unique features compared to standard buildings such as “the cwtch” area and a small library area which contains a small fireplace which has custom tiles designed by Linda Florance which are seen in *figure 12*. The lighting fixtures which droop down from the wall and originates from one area as seen in *figure 12*. The shape of

the roof is also unique as the roof is slightly off-centred and as it rises and falls at 45-degree angles along the centre it allows for a high ceiling which carries the light up and illuminates the space, giving the sense of freedom.



figure 12

The interior of the centre is also unique in the way that the centre collaborated with multiple different artists as well as the National Museum of Wales. These artists were chosen from the start as the Maggie's centres always look for opportunities to collaborate with local artists and integrate their work into the centre. Even the mugs used in the centre,

although not an architectural feature, were well considered and were made specifically for the centre by ceramicist Lisa Krigel, reflecting brutalist architecture.

The bollards that align the perimeter of the site were originally designed for “Bellenden Road in Peckham” (Architonic, 2019) but were donated to the centre. As well as the bollards the exterior signage was custom made by ceramicist Pat O’Leery which can be seen as you enter the centre as seen in *figure 13*.



figure 13

The wall art within the centre was carefully selected by the curator of the National Museum of Wales, Mike Tooby, and has been lent to the centre with the intention to rotate a collection of works not currently on display at the museum (Architonic, 2019). The starting point was Osi's painting with other similar artists chosen who "share an interest in landscape" (Architonic, 2019) as well as ones who had a personal connection with the artist Osi.

Each of these elements were designed with the users in mind so that they could feel at ease and safe, the biophilic elements allow for the users to feel closer with nature while the decoration was designed so that the users could feel like they are in a safe space like their own home. From the cushions which were designed to "reflect Welsh blankets" (Architonic, 2019) to "the cwtch" which was designed to represent a small room that the user can use to cry or when they want to feel alone, each aspect of the centre was designed to be a unique place that the user could rely on in the authors opinion.

3.4 Why was the centre designed the way it was

The centre was designed so that it could reduce stress and the anxiety that cancer brings, it was also designed so that the centre promotes a calm and dignified atmosphere. The calm tones of the natural wood allow for the users to relax as they are able to feel close to nature in the authors opinion. While the large windows to the northern side allow the users to engage with the natural vegetation which could distract them away from the dull grey of the car park to the south.

The entry was designed so that when the visitors come in, they are greeted by a green courtyard which gives the visitor a sense of ease, they are then greeted by a small entrance area that includes hidden toilets and a space to hang coats, which then opens up into the central area.

The internal space of the centre was designed to promote social interaction; this can be seen from the layout of the centre as shown in *figure 14*. The layout contains a large communal area with a large open plan kitchen which allows for the users to conduct cooking classes and allows for social interaction between each other. Also included in the open space is a long dining table which allows for users to either eat, conduct communal gatherings and or work.

The centre also includes three sitting rooms, one large room to the north which is used for small communal workshops as it is able to be closed off by a large wooden door and reduce the noise from spreading. The other two rooms are situated to the south with a

medium sized room used for private group discussions whilst being large enough to allow a bed inside if needed. The small room is used for private discussions as well as both rooms are soundproof but contain a large glass wall separating them from the central area.



figure 14

To the east of the central area is the “cwtch” which is a focus point of the centre as it rises to the roof and takes up a lot of the spaces view, but it allows for a hidden corner which was designed as a small library and relaxation spot with a small fireplace and reading lights.

3.5 Conclusion

The Cardiff Maggie's centre is one of Maggie's unique centres as it contains many different biophilic elements even though it is a temporary centre. The architecture of the centre allows for the biophilic elements to stand out and allows for the architecture to be part of the healing process.

This is experienced in features such as the use of bare timber walls which allows for the users to have a better healing environment as they feel closer to nature and are able to feel the natural wood. The furniture also helps as most of it is also made of wood with soft cushions on top allowing for a pleasant space for the users to sit and enjoy the nature outside.

The various features of the centre identified provide evidence to the author that biophilic design can be implemented even on a small scale and with a low budget.

Overall, the Cardiff Maggie's centre can be considered a good example of a biophilic building as it blends the biophilic aspects well with the architectural form and allows for the centre to be a healing and calming place. The centre demonstrates a positive application of biophilia in the modern world which can be seen by the fact that the centre has won multiple awards including the RSAW Welsh Architecture Award 2021, RIBA National Award 2021 (RIBA, 2021).

4.0 Intro

The Edinburgh Maggie's centre was the first centre to open and was the foundation for the rest to follow. The idea for the centre was first decided in 1994 after Maggie herself was diagnosed for the second time with cancer, she believed that there needed to be a separate place for people to go to, to deal with the cancer diagnosis. Which is why in 1995 Maggie and her husband talked with architect Richard Murphy from Richard Murphy Architects and produced plans to convert an old stable building which was within the hospital's grounds. Unfortunately, Maggie died on the 8th of July 1995 before the centre was fully opened, which happened in 1996, where it was then made accessible to all. The centre grew in popularity and was in need of more space, so in 2000 an extension was added to the centre welcoming more guests. The unique part of this Maggie's centre is that it is the only one which was built as redevelopment of an old original building.

The centre was designed with numerous different people and companies as Maggie and her husband Chales Jencks were part of the architecture world they received help from architects; Richard Murphy, Ed Hollis and Oliver Chapman for phase 1 of the project. Which then grew in phase 2 as the architects; Matt Bremner, Ian Strakis, Clare Gaffney and Keith Ross were used and then in phase 3 the final architects to help work on the project were Darryl Roberts and Tom Hetherington. The client for the centre was Maggie Keswick Jencks Cancer Care Trust with the contractor being John Dennis & Co, the cost of the project was <£500,000 for phase 3.

The centre is located within the grounds of Western General Hospital, in Edinburgh and allowed for other Maggie's centres to be built within hospital grounds, as the other hospitals saw how successful the Edinburgh one was, which is why within 10 years of the original Maggie's centre being completed four more centres were opened. And currently there are 27 centres across the UK which were all take inspiration from the original in Edinburgh.

The centre has won multiple awards, including the 1997 RIBA Award / Department of Health National Award for its excellence in design, the centre can be recognised as one of the pioneering spaces for cancer care and its impact on how biophilic elements are now part of healing architecture.

4.1 Biophilic aspects of the centre

This section will focus on the biophilic elements of the Edinburgh Maggie's centre and how they are portrayed within the centre and to others and how the elements of biophilia had intertwined with the Maggie's centre and how they create a sense of strong relationships between humans, nature and the building.

The aspects of biophilia used within the Edinburgh centre are of natural light, an integrated garden which allow for a visual connection and a connection with nature, a biophilic form in the way the building flows and the use of natural materials.

The building makes great use of natural light as the centre contains skylights as well as large windows that look out into a small courtyard and out towards the large garden space. The garden was a key part of the design for the centre as Maggie herself was a gardener and felt that a connection with nature was needed when designing. This has been proven by the fact that it can reduce stress and is part of the biophilic meaning of being in the natural space, as it allows for the visual connection to nature and the non-visual connection such as auditory, smell and touch. "Green Spaces allowed me to remember joy and hope

through connection with others in nature whilst writing, or drawing or simply daydreaming” (Bridge Awards, n.d.).

The use of natural materials in the build also allows for the user to have a sense of calmness and allows for the user to have a sense of place and allows for the user to connect more to the space.

4.2 Materials used -

The centre makes use of its existing horse stable structure as it keeps the old stone and timber and through this the centre creates a strong connection with the local area and the local architectural context. The external roofing of the centre uses slate which is a traditional material for the area and allows for the user to have a deeper connection as it could remind them of a safe space such as their home.

The centre uses “highly coloured metal” (Jencks, 1996) as the structure of the extension and to support the 2nd floor of the centre, they also surround a glass block wall which is located in the centre of the building and allows privacy for those who are wanting it as the wall separates the external courtyard from the kitchen and table area as seen in *figure 15*.

The centre makes use of these colourful and modern materials as they wanted the material to be woven between the old materials and the new allowing for the contradictory materials to stand out and enhance each other. The flooring of the centre is made of wood and allows for the user to feel connected and grounded as they walk throughout the centre. The wooden finishings are also accompanied by wooden sliding doors which allows for the user to feel the natural textile, and this creates a feeling of grounding as it balances out the harsh materials of the outside world.



figure 15

The internal walls of the centre were painted bright lively colours as this has been proven to reduce stress as well as be an energizer and has been proven to lift the mood as they can be associated with joy and creativity.

4.3 How do these aspects help the centre in being unique

The Edinburgh Maggie's centre can be classed as being the most unique of the Maggie's centres as it was the first centre to be constructed, but it was not a new build like most other Maggie centres, as at the time the site was originally an old stable building which was then converted to match what Maggie had envisioned.

The contrast between the newer Maggie centres and the Edinburgh centre can be seen through its design process and construction, this is because of the fact that the Edinburgh centre was one of the first to have had extensions added onto the original centre.

But like other centres the use of art was popularised within the Edinburgh centre, and this can be seen by the use of "Paolozzi prints on the walls" (Writing 25, 2010) which add a sense of character to the space. The use of these prints brings a feeling of creativity and

provides the visitors with an opportunity to distract themselves and get lost in the art which can further their healing process.

The centre contains a brightly coloured staircase as seen in *figure 16* which connects the ground floor with the upper atrium allows for the user to connect the centre with the atmosphere of being home. This feeling of being at home is what was the intended goal of the centre as they did not want the user to feel like they were in another standard clinical building.



figure 16

4.4 Why was the centre designed the way it was

As the Edinburgh centre was the first centre to be constructed for Maggie's there were many difficulties in its design. One such difficulty was the layout of the centre as the centre has a 'wayfinding experience' which could lead the visitors to getting lost or confused if it's their first time visiting the centre. This can also be said due to the lacking amount of clear guidance within the centre, which was the opposite of what the centre was aiming for with trying to "facilitate a free-flowing movement through space" (Writing 25, 2010).

However, the centre was designed with the kitchen in the centre of the building which has been constant throughout most Maggie's centres. The kitchen was designed so that it could create a sense of unity and inclusion, this can be seen in the way that the kitchen includes a double height ceiling, making it a focal point for the users to gather and interact with each other. The kitchen features multiple tall, frosted glass brick windows as well as a glass floor to ceiling door which opens out into the courtyard, this section of wall allows for privacy but also maximising the influx of natural light into the space. The contribution of the natural light into the space allows for the biophilic effect of feeling the warmth which contributes to the healing effect of the centre, as natural light has been proven to have an impact on peoples psychological wellbeing (Wang et al., 2023).

The centre can be divided up into 6 main sections as seen in *figure 17 and 18*, the first section can be classed as the kitchen and communal area where the main entrance is located. To the west there is a medium sized extension which was added on, this space was designed with a fireplace and large ceilings but room was also made large enough so that the centre could put on group sessions or just be a space the visitors can use to get away from others.

The centre contains two smaller rooms which can be classed as small counselling rooms which were designed for one-on-one talks and or just small private areas that the visitors can use to hide and get away if they feel upset, these rooms have been designed so that the visitors are able to look out of windows at the greenery and get a sense of peace. But they have also been designed so that one is large enough to allow space for treatment beds to come in.

The centre also contains one large sitting room on the ground floor which features a large table that can be used for activities as well as two sofas in which the users can have group therapy or can be used for relaxation groups or activities such as yoga.

Finally, upstairs contains two areas, one large area which can be used as office space for the workers of the centre, which allows them to stay out of the way of the visitors if needed. And the second area contains two small rooms which can be used by visitors if they want to hide, in the authors opinion these small rooms were placed upstairs so that visitors could get a familiar touch, as it could replicate going up to a bedroom which makes the centre feel more like home and allows for the user to relax more efficiently but also provide a private area.

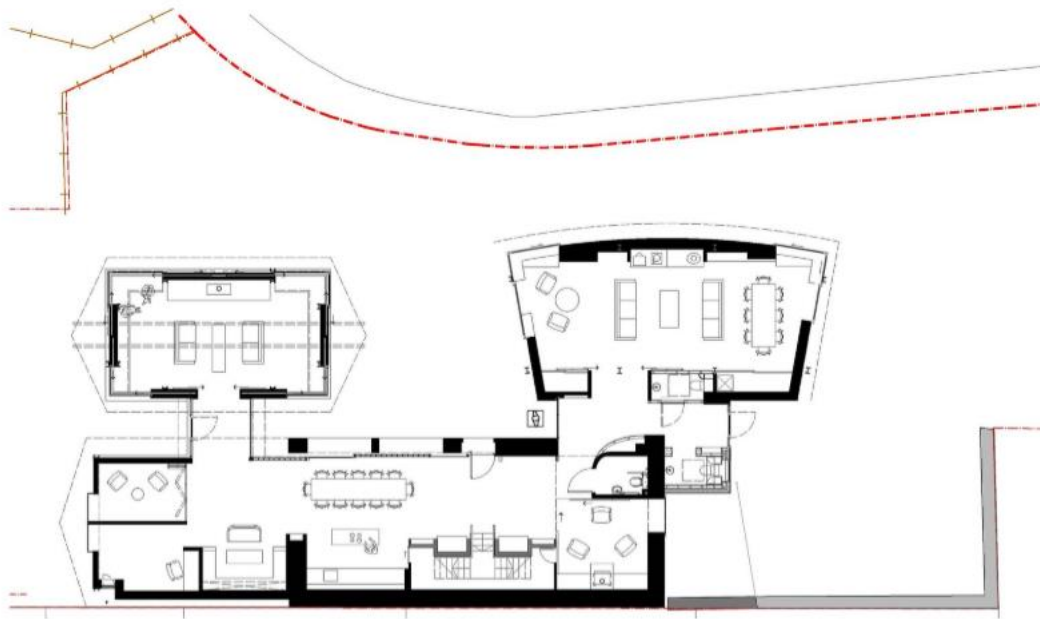


figure 17

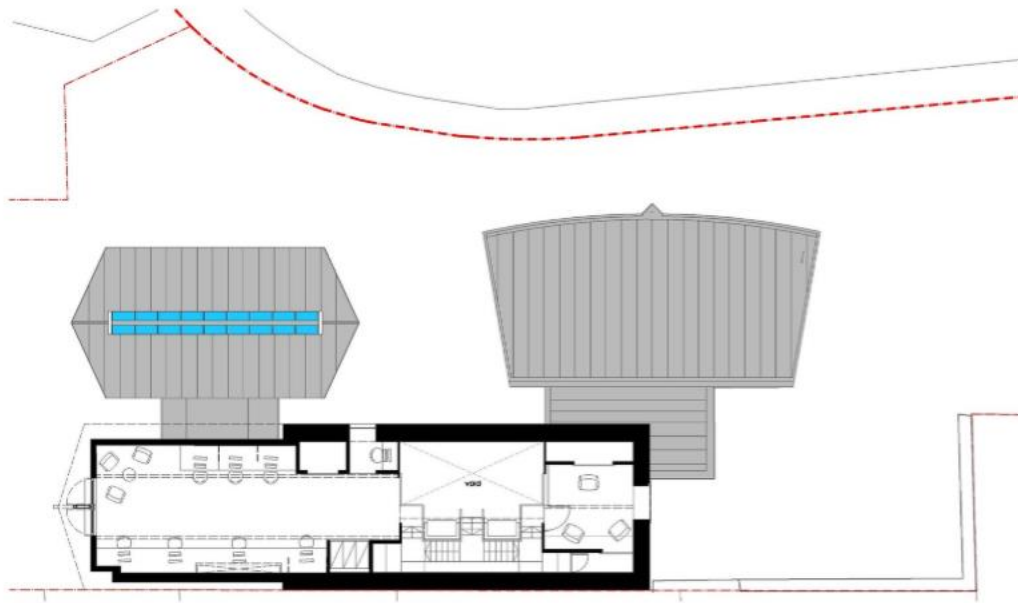


figure 18

4.5 Conclusion

The Edinburgh Maggie's centre can be classed as one of the greatest leaps forward in cancer care in the authors opinion, this Maggie's centre set off a chain reaction in which care was placed on the aftereffects of getting cancer. Even though the Edinburgh Maggie's centre was created so early on it still retains aspects of biophilic design and allows for architecture to also be part of the healing process.

The small scale of the centre, which resulted in the extensions, make the centre feel like it was on a domestic scale and make for the users to feel like they are heading round to a friend's house. And the biophilic elements of the centre create a pleasant healing environment that brings people together.

This can be seen in the use of natural light that was used in the building as the centre makes excellent use of large windows which allow for the light to penetrate throughout the centre. As well as the large garden to east of the centre which allows the visitors to interact with nature itself but also be shielded from harsh wind and possible looks which the visitor could find displeasing as the garden is enclosed and provides a safe environment.

Overall, in the authors opinion the Edinburgh Maggie's centre can be classed as a successful place for healing, but is slightly let down in the biophilic form, the author understands that the architects used an existing building which reduced the amount of biophilic aspects that could be placed within the design. But the author believes that if the centre was never built none of the other centres would be built and biophilic architecture might not have been what it is today.

5.0 Intro

The Leeds Maggie's centre is located in the Leeds St James University Hospital's grounds and was completed in 2020 after being commissioned in 2012. The centre was designed by Heatherwick Studio, with the aim of creating a home for people affected by cancer. with the project leads being; Neil Hubbard, Rebeca Ramos and Angel Tenorio. The centre has an area of 462m² and is Maggie's 26th centre in the United Kingdom. It was the first completed healthcare project designed by the studio (ArchDaily, 2020), with Thomas Heatherwick stating that it was a "tremendous experience and honour to design the Maggie's centre" (Heatherwick, 2020) with the aim of building a centre that could be like a home for people effected by cancer.

The site of the centre was situated on a small grassy hill with a six-metre level difference, adjacent to a car park and surrounded by hard landscaping. The centre was designed around sustainability and biophilic concepts, aimed at creating a 'healthy' feeling space. The landscape was carefully designed to combat the challenging nature of the urban setting, making use of roof space and for roof gardens and providing natural vegetation immediately adjacent to the building.

5.1 Biophilic aspects of the centre

The centre was designed with biophilia and sustainability in mind and this can be seen in the way that the centre uses; integrated vegetation planting, natural light, natural materials, a visual connection with nature, and biometric forms. The Leeds centre could be classed as one of the most biophilic centres Maggie's have created in the United Kingdom as in the authors opinion the centre looks like it had been hidden behind plants and greenery.

The centre's focus on sustainability and biophilia resulted in the use of a prefabricated spruce timber construction system. With the walls being of porous materials such as lime plaster for the wall finish (IQD, 2020) allows the centre to help have a naturally ventilated building as it helps to stabilise the internal humidity of the building by absorbing and

releasing moisture (Mix Interiors, 2020). The internal timber system is visible throughout the centre as the timber protrudes from the wall as fins as seen in *figure 19*.

The centre contains two tables which were specifically designed for the centre, taking inspiration from the building's timber fins (Maggie's, 2020), as the tables were built using cork and engineered beech timber. The use of these materials provides users with a connection to nature as they are able to feel the wood and get a sense of closeness with the natural material which also surrounds them in the building's interior.



figure 19

The centre is estimated to contain 17,000 plants within the building and its surrounding garden. It also contains 23,000 bulbs which the visitors can be encouraged to help tend to. The garden on the roof was inspired by the local Yorkshire woodlands and features many native species of English plants. This connection to the local vegetation and encouragement to tend to the plants allows the users to experience a strong connection with nature as they can not only view the plants which is part of the visual connection with nature but allows them to have a material connection with nature.

The centre is a multi-floor building made up of three interconnected levels - each with large windows providing views of the surrounding greenery and plants. As well as the views, the large windows provide sunlight to penetrate the building, allowing users to enjoy natural light and feel the warmth of the sun, as well as benefiting them as natural light has a health benefit as it has been proven to reduce stress and aid in treatment of depression (Harvard Health Publishing, 2022).

5.2 Materials

By only using natural, sustainable materials and immersing the building in thousands of plants, the designers had an opportunity to create an extraordinary environment capable of inspiring visitors with hope and perseverance during their difficult health journeys (ICON Magazine, 2020).

The centre's structure is made of a sustainably sourced spruce timber frame, which was prefabricated off site and left exposed internally and externally. Undulating glulam supports are used throughout the building. The frame was curved towards the top as seen in *figure 20* reflecting the architects' inspiration for the centre, which was bath-tubs found in his grandmother's garden (Light Bureau, 2020). The author proposes that this also led to the internal space being painted white, which also allows the light to reflect off the white walls and bounce onto the roof from the lights situated on the walls.

The architects' approach to the use of light within the centre to emphasise the tranquil atmosphere of the centre by placing warm lighting in small niches which held plants, as well as small reading nooks which allowed the users to relax. Elsewhere the lighting is made up of simple up lights which illuminate the centres soffits. Externally the lighting was designed so that it would appear small scale and like a garden's lights which appear randomly placed. but were actually carefully planned to make the most out of the external foliage.

Micro cement was used for the flooring, providing a seamless and highly durable flooring, which allowed the centre to have underfloor heating which works well with the natural ventilation within the centre.



figure 20

5.3 How do these aspects help the centre in being unique

The Leeds Maggie's centre differs from other centres as the centre had a restraint in its location due to it being built and a large difference in height, but this meant that the architects worked around the height difference by creating a three floor structure. The use of timber fins results in the centre having a unique shape and organic interior finish, also allowing the introduction of small shelves to be placed between each fin as seen in *figure 21* as they rise from the floor to the ceiling.

The external landscape of the centre is unique in the way it uses 17,000 plants which surround the centre and allow for a feeling of being within a large garden instead of a hospital. The use of plants within this Maggie's centre is unique in the amount used as typical centres use trees and other vegetation, but due to the centre's location large trees were not an option which gave the landscape designer a challenge.



figure 21

Other unique features of the Leeds centre are the internal greenery as this Maggie's centre used natural vegetation instead of large pieces of artwork which are commonly found within Maggie's centres. The author found this strange as they believed that the centres use art to create a feeling of home and relaxation and provide a distraction for the people who use the centre.

5.4 Why was the centre designed the way it was

The concept for the centre was to construct it as three large planters (ICON Magazine, 2020), but there is also reference to it resembling a mushroom, which all surrounds a

central area called 'the heart' (Heatherwick, 2020). There are three large 'planters', each on a separate level due to the fact that the centre was built on an inclined site.

The centre drew upon Maggie's philosophy and belief that a great design can help people feel better, and this was shown in the way that the Leed's centre was designed as they made use of "several 'healthy' materials and energy-saving techniques" (Mix Interiors, 2020). The aim of the architects and companies they worked with was to build a safe 'home' for people that are affected by cancer and is the opposite of the standard hospital environments.

The centre of the build named the 'heart' contains a kitchen and large table for group social integrations as the Maggie's charity places an importance on having a central area in which people can gather and communicate. The table used within the kitchen was made of cork and the use of cork was decided as it would fit in with the surrounding theme of the centre, but cork was also chosen as it has a natural acoustic absorption property which allows for practical use when the users have a discussion, and have a large gathering before moving. Which is why this area was placed in the middle of the build with the three areas protruding from the central 'heart', meaning that every visitor has to pass through the heart to visit the other sections of the centre.

Each 'planter' section contains an enclosed counselling room, but a challenge the architects faced was ensuring that each space felt unique and had its own character but still related to the overall feeling of the centre.

The counselling rooms are designed for two different situations, the small one for one to one intimate conversations and the larger ones are designed so that they feel different compared to the small one as the large ones are designed to allow for exercises and group activities.

The centre was also designed to have a different feel between common areas and small nooks which were designed for reading and quiet spaces which allow the users to have a safe space to hide if they want. These sections were differentiated by the fact that they used different tones, colours and texture in each section, but still kept to a 'cohesive palette'.

The architects also paid careful consideration to the furniture and finishings within the centre as they wanted to make sure that the centre removed any aspects of a clinical healthcare environment. This was shown as they used wood finishes in the bathrooms instead of the standard cold stainless steel bathroom fittings as wood gives a warm natural

feeling. The feeling continued out of the bathroom and continued with the use of natural fibre within the furniture upholstery and the colours used on them as they were chosen to be greens, ochres and sand colours to replicate the natural world.

The garden was designed as a homage to the late Maggie as she herself was a gardener and she understood how calming and restorative it is to be gardening, which is why the Leeds Maggie's centre was designed so that visitors can go out into the garden and help with the care of the plants and garden.

5.5 Conclusion

The Leeds Maggie's centre can be considered a success in the use of biophilic construction as the centre welcomes on average 110 visitors a day. The centre makes great use of the natural biophilic aspects of wooden fins which allow for a natural calming effect.

The centres use of biophilic design allows for an improved emotional atmosphere due to the surrounding greenery and natural feeling of being within nature, the foliage that surrounds and is within the centre allows for it impact most of the five senses such as smell, as the amount of flowers would give off the impression of being within a field of flowers. Due to the use of encouragement to go out and help with the care of the plant's visitors are able to touch and feel the natural world. The visitors are also able to listen to the plants as the wind brushes past while the users are either reading in a nook or as they walk into the centre brings them away from the busy life of the surrounding area and into a quiet tranquil space. Finally, the sight of natural vegetation creates a calming effect as being in the natural environment creates a sense of wonder and excitement.

Due to the centre being covered in plants the user gets to feel like they are stepping into another world in the authors opinion as the architect had woven natural forms with the natural world. And in the authors opinion this drastic change between the harsh hospital buildings and the centre creates a space that allows for the user to relax and feel safe even though their world could feel hectic and unpredictable, the centre is a constant place where they are able to go back to and feel safe with likeminded individuals and support staff.

Conclusion

This dissertation has explored the use of biophilic design in Maggie's centres and whether it can have a positive effect on health psychology of the ones who use them. Through the

analysis of the Cardiff Maggie's centre, Edinburgh Maggie's centre and the Yorkshire Maggie's centre (Leeds Maggie's centre). The author has found that this study demonstrates that biophilic design can contribute significantly to the emotional support and health of its users by creating a healing environment.

The research had identified that Maggie's centres always try to incorporate some form of key biophilic principals in its centres, whether it's the nature in space, natural analogues or nature of the space. These categories of biophilic design help distinguish Maggie's centres from traditional clinical healthcare centres as they replace the feelings of anxiety, stress and isolation with a sense of relaxation, calmness and togetherness, which in the authors opinion is what the centres were originally designed for. But the authors findings suggest that the architecture of the centres can have a large impact in the healing process by influencing the user's mood in a positive way by reducing stress.

Each of the case studies the author researched demonstrated different but also similar interpretations of biophilic design. This can be seen in contrast at the number of plants used between the Cardiff Maggie's centre and the Leeds Maggie's centre. Granted each centre had constraints and challenges whilst being designed such as the Cardiff Maggie's centre being only a temporary centre and was therefore given a smaller site. And the Edinburgh's challenge of retrofitting an old building to become a place of relaxation, and Leeds had the challenge of a difficult site. But each centre made great use of their challenges and turned them into positives.

In the authors interpretation the Cardiff Maggie's centre scored 150 on the *Biophilia Quality Matrix* (Wijesooriya, Brambilla and Markauskaite, 2025) as shown in *figure 22*, while the Leeds Maggie's centre scored 161, as seen in *figure 23* and the Edinburgh centre scored 122 as seen in *figure 24*.

From these scores the author can summarise that the biophilic score increases with more modern Maggie's centres as the importance and techniques of biophilic construction becomes more apparent.

However, this data can be interpreted differently as this was based off the authors opinion using limited research, which meant that the author opinion was based off secondary research methods.

	Total	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10
		Earthy materials	Natural air flow	Water	Sun light	Natural ventilation sensation	Plants	Ecological systems	Animals	Natural Colours	Natural Textures
Direct use	16	1	2	0	3	1	1	0	0	4	4
Sensory perception and variability	15	1	1	0	1	2	1	0	1	4	4
Place based relationships	17	2	1	1	2	1	2	1	0	3	4
Organized spatial complexity	13	1	1	0	2	1	0	0	0	4	4
Visual composition	21	3	1	1	3	1	3	1	0	4	4
Use of natural shapes and forms	18	4	1	2	1	1	2	0	0	3	3
Use of natural patterns and fractals	10	3	0	0	1	0	2	0	0	2	2
In direct use and simulations	15	3	2	0	2	1	1	0	0	3	3
Emotional attachment	11	2	0	0	1	1	2	1	0	2	2
Enhanced human nature connectedness	14	2	0	0	2	1	2	0	0	3	4
	150										
Legend											
	0	not used									
	1	slightly achieved									
	2	averagely achieved									
	3	highly achieved									
	4	exceptionally achieved									

Figure 22

	Total	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10
		Earthy materials	Natural air flow	Water	Sun light	Natural ventilation sensation	Plants	Ecological systems	Animals	Natural Colours	Natural Textures
Direct use	25	3	2	1	3	3	4	2	1	3	3
Sensory perception and variability	17	2	2	0	2	1	4	0	0	4	2
Place based relationships	18	2	1	0	2	1	4	0	0	4	4
Organized spatial complexity	12	1	1	0	2	1	3	0	0	2	2
Visual composition	19	2	1	0	3	2	4	1	1	3	2
Use of natural shapes and forms	13	1	1	1	2	0	4	0	0	2	2
Use of natural patterns and fractals	14	2	1	0	2	1	4	0	0	2	2
In direct use and simulations	16	1	2	0	2	1	4	1	1	2	2
Emotional attachment	13	1	0	0	1	1	4	1	1	2	2
Enhanced human nature connectedness	14	1	0	0	2	1	4	1	1	2	2
	161										
Legend											
	0	not used									
	1	slightly achieved									
	2	averagely achieved									
	3	highly achieved									
	4	exceptionally achieved									

Figure 23

		Earthy materials	Natural air flow	Water	Sun light	Natural ventilation sensation	Plants	Ecological systems	Animals	Natural Colours	Natural Textures
Direct use	16	2	1	0	3	2	4	1	0	1	2
Sensory perception and variability	12	1	1	0	3	0	3	0	0	2	2
Place based relationships	10	1	0	0	2	0	3	0	0	1	3
Organized spatial complexity	12	1	1	0	3	0	3	0	0	2	2
Visual composition	15	3	0	0	3	0	2	1	1	3	2
Use of natural shapes and forms	7	1	0	0	1	0	2	0	0	1	2
Use of natural patterns and fractals	10	1	1	0	2	0	2	0	0	2	2
In direct use and simulations	14	1	1	0	3	1	3	1	0	2	2
Emotional attachment	14	2	0	0	2	1	3	1	1	2	2
Enhanced human nature connectedness	12	1	0	0	2	1	2	1	1	2	2
	122										
Legend											
	0	not used									
	1	slightly achieved									
	2	averagely achieved									
	3	highly achieved									
	4	exceptionally achieved									

Figure 24

If the author could do future studies on this topic they could benefit from doing more direct, primary data research, such as visiting all the case studies to gain a better understanding of each one. They could also conduct more interviews, with people who had past experiences with the centres.

Overall, this dissertation concludes that Maggie's centres demonstrate just how much architecture can become an active part of healing the patients rather than just being a nice space. Through the use of natural materials, light and nature the centres show how biophilic designs help create an environment that promotes healing and comfort as well as social interaction giving the users a sense of safety as they battle cancer. Therefore, this study suggests that biophilic designs should be incorporated more into other aspects of life such as office buildings as biophilic architecture has in the authors opinion shown a positive impact on psychological health.

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