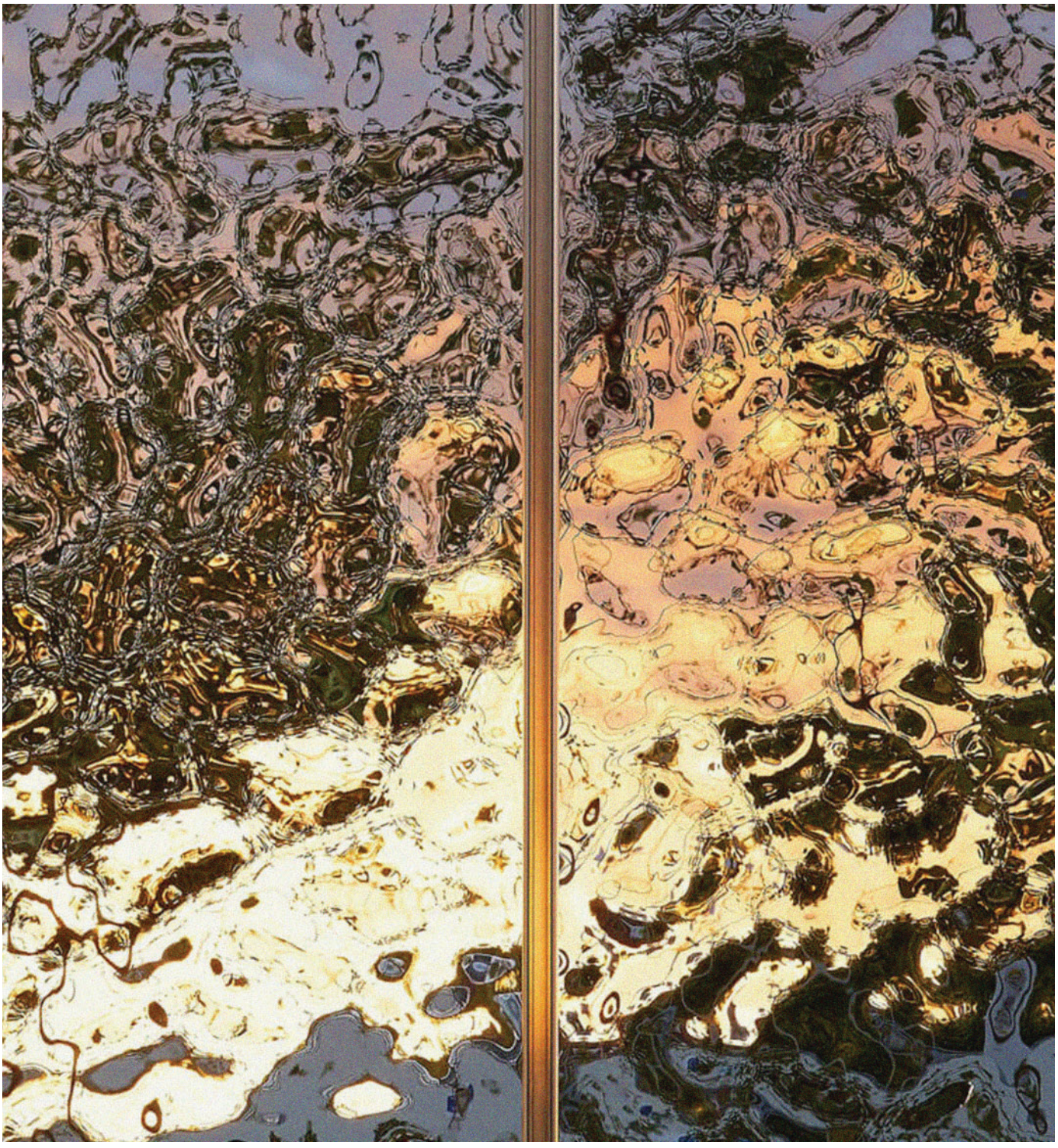
FROM STERILE TO SOOTHING

Portsmouth School of Architecture, University of Portsmouth

M24240-2024/25-SMSEP: Thesis Dissertation

How Healing-Focused Architectural Design Enhances Patient Wellbeing in UK Hospitals



Acknowledgements

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Author Declaration

I declare that the work presented in this thesis dissertation is entirely my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

While hospitals are often experienced as cold and clinical machines, precedents such as Maggie's Centres show that thoughtful design can be as healing as the treatments inside. This dissertation explores the transformative impact of healing design principles on patient outcomes, using The Maggie's Centre, with a focus on the Southampton facility, as a case study examining their implementation within a specialised setting. Key architectural features—such as biophilic design, spatial flow, and the strategic use of natural light—are explored to highlight their influence on emotional and psychological wellbeing; a side to treatment that is often overlooked, in favour of clinical functionality. Using a case study approach, the research examines how the Centre's therapeutic environment contrasts with traditional healthcare spaces and considers the role of private funding in enabling architectural innovation. Findings underscore the significant therapeutic potential of carefully considered architecture while addressing the challenges of translating these design strategies to larger, multifunctional hospitals. Recommendations aim to bridge the gap between specialised facilities like Maggie's Centres and larger, broader healthcare design practices such as the NHS.

Keywords: Healing architecture, patient wellbeing, hospital design, therapeutic environments, neuroaesthetics, biophilic design, healthcare funding, privatisation in healthcare

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Introduction

> " When designing physical spaces, we are also designing or implicitly specifying distinct experiences, emotions and mental states. In fact, as architects, we are operating in the human brain and nervous system as much as in the world of matter and physical construction. "
>
> **– Juhani Pallasmaa,**
> **The Architecture of Empathy (Pallasmaa et al., 2015)**

There appears to be a pattern with traditional UK hospitals being designed with a focus on functionality and efficiency, more often than not overlooking the therapeutic potential of their physical spaces. In recent years, however, there has been increasing recognition that architectural elements, ranging from the integration of natural light to the thoughtful use of communal spaces, can significantly influence the well-being of its patients.
This piece of thesis research investigates the concept of "healing architecture," examining how design decisions impact not only patient satisfaction but also clinical outcomes such as stress reduction and recovery times.
Drawing upon established theories in environmental psychology and neuroscience, this study explores the extent to which specific design drivers: natural light, green spaces, sensory considerations, and communal areas, contribute to a more holistic patient experience.
Contextualising these themes through an in-depth analysis of a case study–demonstrating how healing architecture works within the healthcare industry.
Maggie's Centre, a series of specialised cancer support facilities, that place architectural innovation at the forefront of patient care. Paying particular attention to Maggie's, Southampton.

Despite a growing body of literature suggesting that healing environments can lower anxiety and shorten hospital stays, there remain significant gaps in understanding how these principles scale or translate to diverse healthcare contexts. By comparing established research findings with the unique ethos and design of Maggie's Centres, this dissertation explores the opportunities and limitations of adopting healing-focused design across various settings.
It critically evaluates how principles of healing architecture—such as natural light, biophilic elements, communal spaces, and sensory-focused design—affect patient well-being and institutional outcomes. To provide clarity, it also examines existing literature on healing architecture and its

theoretical underpinnings. Design features of Maggie's Centre in relation to patient and staff experiences will be analysed–allowing to evaluate the broader applicability of these design concepts to typical UK hospitals, considering factors such as funding models & patient volume. Concluding, by proposing recommendations for integrating healing architecture principles in a variety of healthcare contexts.

It is important that the three following research questions are scrutinised: How do the key design elements of healing architecture—light, biophilia, communal spaces, and sensory considerations—contribute to patient wellbeing? What challenges arise when translating these design principles from specialised facilities like Maggie's Centre to larger, general hospitals? And, in what ways do funding sources and institutional policies shape the implementation of healing architecture?

Organised into 6 distinct chapters; Chapter 1 introduces the background, research aims, and relevant questions framing this written piece. Chapter 2 familiarises us with the case study, Maggie's Centre, Southampton. Using a precedent to set the scene that is to be unpicked, in relation to healing architecture, in later chapters. Chapter 3, builds upon a literature review, digging deeper into the theoretical and conceptual underpinnings of healing architecture. Therefore, laying a solid intellectual foundation for the subsequent empirical or case-based findings, while also exploring both patient-centric data and institutional perspectives. Chapter 4 develops the findings from the previous chapters by examining how the discussed design principles can be directly translated to the broader UK healthcare landscape, including public NHS hospitals, while acknowledging the legacy infrastructure & logistical complexities that pose challenges to their adoption. Chapter 5 explores various funding models, highlighting the charity aspect, and probing the potential of a public-private partnership in the context of healthcare. Finally, Chapter 6 concludes by summarising key insights and proposing a set of potential recommendations for future research and practical implementation for wider healthcare context application.

Fig. 2

Healing Architecture : A Concept

"Architecture is not about building the landscape of the machine, but the landscape of the human soul."

– John McAslan, (Financial Times, 2025)

The concept of Healing architecture emerged from the recognition that healthcare environments directly influence patient outcomes and overall well-being. Historically, healthcare design prioritised function and efficiency, often overlooking the emotional and psychological impact of the built environment. While this approach addressed urgent medical needs, it left little room for spaces that actively supported recovery beyond clinical treatment.

The idea that design can influence health outcomes has roots in historical facilities like the 20th-century Paimio Sanatorium by Alvar Aalto. This project demonstrated how design features—such as access to natural light and thoughtfully ventilated spaces—could enhance patient comfort and aid recovery (Woodman et al., 2016). These early examples offered a glimpse into how the environment itself could act as a therapeutic agent.

The establishment of healing architecture as a field took shape in the latter of the 20th century, bolstered by advancements in environmental psychology and research into the built environment's impact on human health. Roger Ulrich's (1984) study demonstrated that patients recovering from surgery in rooms with views of nature experienced faster recoveries and required less pain medication.

Findings like these strengthened the argument that healthcare spaces should be designed to reduce stress and promote recovery.

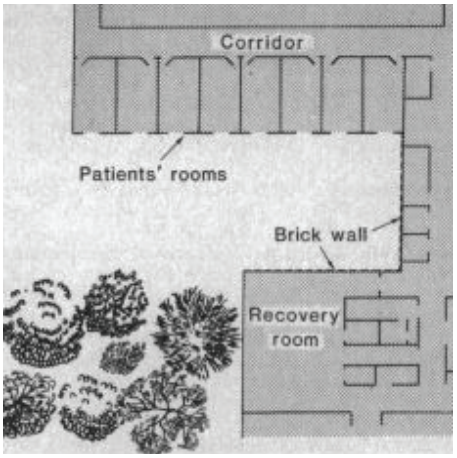


Fig. 4

In tandem with these developments, the rise of patient-centred care brought attention to the human experience within medical spaces. Healing architecture emerged as a way to bridge clinical functionality with designs that foster well-being. Maggie's Centres epitomise this shift, showing how environments can be transformed into spaces that provide holistic support. Increasingly, architects and healthcare professionals are collaborating to create holistic environments that emphasise patient dignity and comfort. Such

Fig. 3

endeavours incorporate natural materials, adaptable lighting, and restorative vistas, to name a few, aiming to provide both physical and psychological respite for patients, families, and its staff. Evidence-based design is key, as research demonstrates that thoughtful sensory stimuli—such as soothing sounds and meaningful artwork—enhance a welcoming atmosphere and improve clinical outcomes. By harmonising these elements, healing architecture continues to evolve, shaping the trajectory of compassionate healthcare design. Fully comprehending, and taking a serious approach toward the origins and evolution of healing architecture is essential for its successful integration into modern healthcare. This context lays the foundation for further exploration of how these principles can be implemented effectively.

Maggie's Centre : A Case Study

Project title : Maggie's Cancer Support Centre

Architecture : Amanda Levete Architects / AL_A

Location : Southampton General Hospital, UK

Landscape Design : Sarah Price Landscapes

Photography : Hufton + Crow

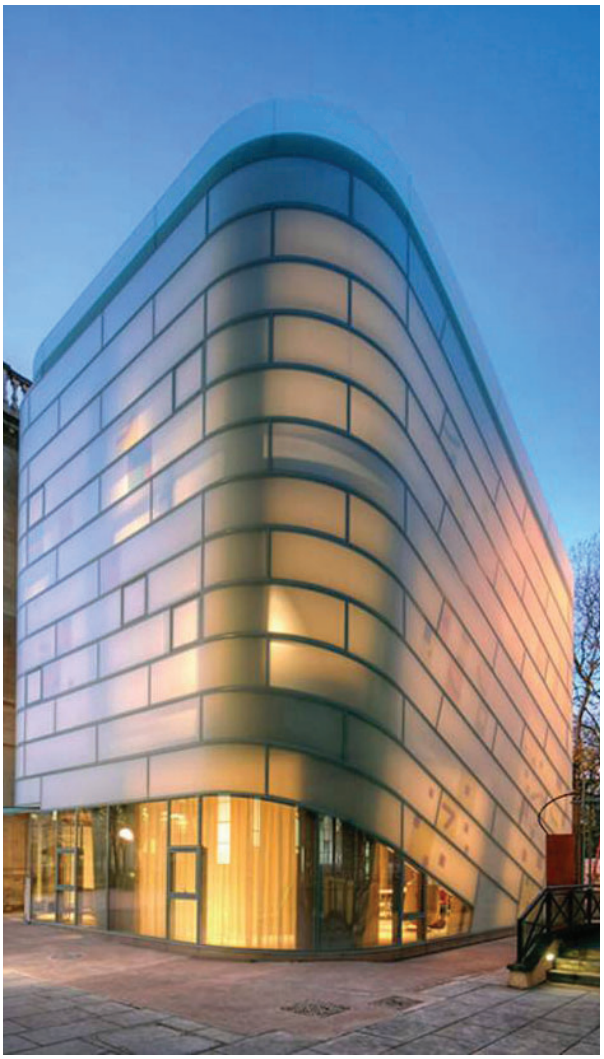
Fig. 6, Fig.7

Fig. 8

Fig. 9

Maggie's Centres were founded in 1996 by Maggie Keswick Jencks (Fig. 8), a writer, designer, and cancer patient, who recognised a critical gap in cancer care: the lack of emotional and psychological support for patients and their families. During her treatment, Maggie observed that hospitals, while providing essential medical care, often failed to offer spaces for patients to process their diagnoses, or find solace. This inspired her vision for a new kind of support centre, one that prioritised emotional and mental well-being alongside clinical needs (Jencks, 2010). The charity's mission was to create environments where patients could access practical advice and psychological support in a comforting and uplifting space. By addressing these unmet needs, Maggie's Centres have become a vital complement to traditional healthcare. Maggie's Centre, Southampton, opened in 2021 and continues this legacy of holistic care. Located adjacent to Southampton General Hospital's oncology department, the centre provides cancer patients and their families with a sanctuary distinct from the hospital's clinical atmosphere. Its proximity ensures accessibility while offering a contrasting environment designed to reduce stress and foster recovery (AL_A Architects, n.d.). The centre's design reflects the principles of healing architecture, creating a space that actively supports well-being through thoughtful integration of light, nature, and texture.

Designed by Amanda Levete (Fig. 9) and her team at AL_A–in alignment with Maggie's Charities Architecture and Landscape Brief (Maggie's, n.d.)–the Southampton centre exemplifies Maggie's ethos of blending emotional care with architectural innovation. The building features ceramic stoneware walls that harmonise with a garden designed by Sarah Price Landscapes. These tactile, calming walls connect the interior and exterior spaces, reinforcing a strong relationship with nature that is central to Maggie's philosophy (AL_A Architects, n.d.).



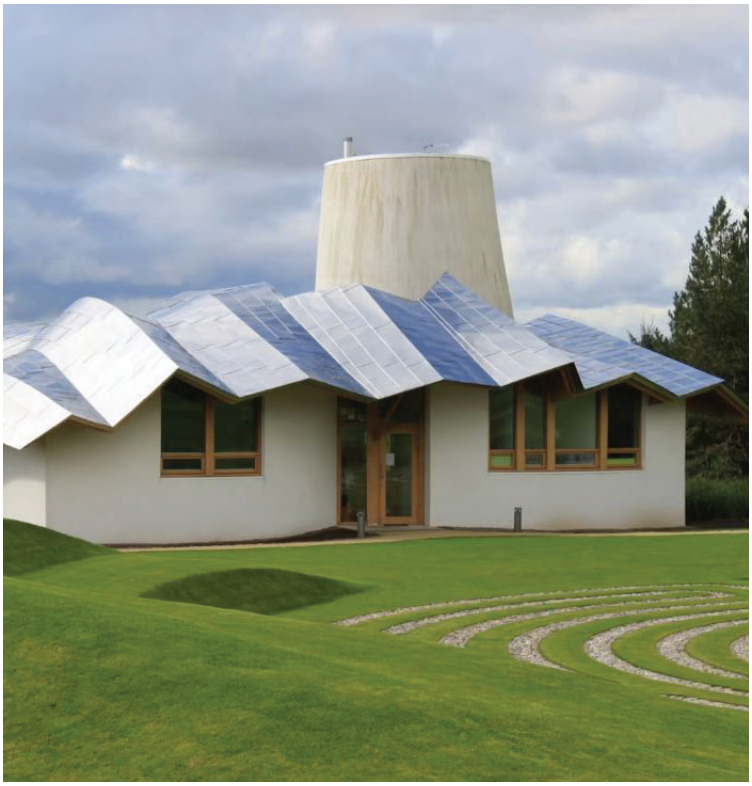


Fig. 14

(Adjacent page: other Maggie's precedents;Left to right: **Fig.10, Fig.11, Fig.12, Fig.13**)

In designing the interior, AL_A emphasised an open, flowing layout with adaptable communal areas that encourage interaction among patients, families, and staff. Furnishings are carefully chosen to create a homely atmosphere, providing cozy seating and discreet nooks for private conversations. windows maximize daylight, while thoughtful lighting design reduces harsh glare, further supporting a sense of calm. Visual and physical connections to the surrounding garden reflect Maggie's belief in nature as a healing resource, with greenery visible from nearly every vantage point. Such conscious design decisions showcase how architecture, when approached holistically, can profoundly impact deep emotional recovery and resilience.

Maggie's Centres, including the Southampton facility, offer counselling, group workshops, and informal support in spaces that foster community and tranquillity. They address the gaps Maggie Keswick Jencks identified during her own cancer journey, transforming healthcare environments into places of hope and holistic care (Jencks, 2010). By prioritising human connection and emotional well-being, the charity has redefined how cancer care is delivered.

While all Maggie's Centres share a commitment to creating spaces that support emotional and psychological healing, the Southampton centre incorporates distinct architectural and contextual features that set it apart from its counterparts. In addition to its proximity to the hospital, a defining aspect of Maggie's Southampton is its response to the challenging site. Amanda Levete's approach was to transform this unremarkable urban space

Fig. 15

into a restorative haven. This idea shaped not only the architectural form but also the integration of natural elements throughout the site. The architectural expression stands apart from other Maggie's Centres with its use of custom ceramic stoneware blocks and reflective metal cladding, creating a light, tactile, and dynamic presence that contrasts with the bold geometric forms of Zaha Hadid's Kirkcaldy design (Fig. 15) (Zaha Hadid Architects, n.d.), or the warm, traditional materials seen in Marks Barfield's Cambridge Mosque (Fig. 16 & 17) (Cambridge Mosque - Marksbarfield.com, n.d.).

Fig. 16, Fig. 17

Theoretical Context

As mentioned,
one as a nation, must fully understand the principles of healing architecture in order to administer it effectively.

Healing architecture focuses on creating environments that actively support recovery and reduce stress, blending functional requirements with design elements that promote holistic well-being. Simultaneously, healthcare environments are more than functional spaces for medical treatment—they influence the emotional and psychological well-being of those within them. This chapter synthesises insights from literature and theoretical frameworks, examining the design principles that underpin healing architecture. These principles include natural light, biophilic integration, sensory design, communal spaces, and wayfinding. Drawing from environmental psychology, neuroscience, and evidence-based design (EBD), the chapter explores how these elements contribute to patient well-being while addressing the practical challenges of implementation in diverse healthcare contexts.

Evidence-Based Principles

Evidence-Based Design (EBD) principles provide a framework for creating healthcare environments that actively support healing and well-being. These principles, rooted in empirical research, highlight specific architectural features that influence physical, emotional, and psychological outcomes. While their application varies, certain foundational elements have become central to healing architecture.

Biophilic Design

Imagine stepping into a space that immediately connects you with nature—this is the essence of biophilic design. Biophilia, a term combining the Greek words for life (bios) and love (philia), describes our innate connection to nature. Coined by Erich Fromm in the 1960s and popularized by Edward O. Wilson in 1984, it reflects both a psychological need and an evolutionary trait (Fromm, 1964; Wilson, 1984). Wilson argued that humans evolved in close harmony with nature, embedding a deep affinity for life into our genetics. This connection explains why natural elements—greenery, water, and living creatures—bring us peace and joy. While rooted in ancient traditions valuing harmony with the environment, biophilia remains vital today, reminding us of our interdependence with the natural world.

Fig. 18

Is this simply the same as landscape design? You ask. They are not the same, no. However, they do share overlapping principles. Biophilic design goes beyond outdoor landscapes to include interior spaces, architecture, and even sensory experiences like lighting, materials, and airflow. Inspired by the concept of biophilia, the human affinity for natural environments (Wilson, 1984). In this case, the focus centers on creating environments that evoke the psychological and physiological benefits of being close to nature. This emphasises holistic integration of nature throughout all aspects of the built environment, indoors and out. On the other hand, landscape design

Fig. 20

concentrates on the planning and arrangement of outdoor spaces, including gardens, parks, and other public areas, to achieve aesthetic goals, often with sustainability in mind (Francis, 2001). Typically, the focus is on how humans interact with outdoor spaces rather than their integration into architecture. Biophilic design reconnects patients with nature, fostering calmness and hope through the incorporation of natural elements like greenery, garden views, and organic materials. Ulrich (1984) demonstrated that post-operative patients with views of greenery experienced fewer complications and required less pain medication, while White et al. (2013) found a 40% reduction in stress among individuals with access to green spaces (add diagram representing data). These benefits underscore the emotional and psychological potential of biophilic design, which integrates natural features such as water, foliage, and earthy materials to promote recovery and resilience (Battisto & Wilhelm, 2019).

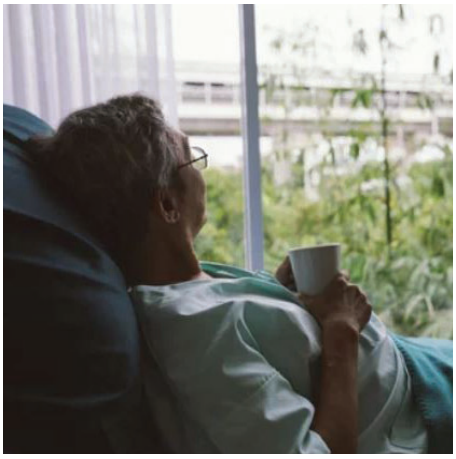


Fig. 19

The biophilic design of Maggie's Centre, Southampton, exemplifies these principles, transforming a site surrounded by carparks and hospital buildings into a tranquil sanctuary. Inspired by the idea of transporting a garden from the New Forest, Amanda Levete and her team at AL_A, in collaboration with Sarah Price Landscapes, created lush gardens featuring pathways, seating areas, and seasonal planting. These outdoor spaces offer opportunities for reflection and interaction, aligning with biophilic principles. Inside, custom ceramic stoneware blocks

(Fig 21) visually connect the building to its natural surroundings, with their earthy tones complementing the landscape. Expansive windows and reflective metal cladding further integrate natural light and garden views into every interior space, ensuring a constant relationship between the indoors and outdoors (Kellert, 2005).

While biophilic design is transformative, its scalability in mainstream healthcare remains challenging. Implementing features like gardens and living walls in public hospitals can be resource-intensive. Introducing green spaces, like therapeutic gardens, green sedum roofs, or courtyard landscaping, adds expense. For instance, the average cost of establishing a therapeutic garden ranges from £30,000 to £100,000, depending on the size and complexity (NHS Forest, 2022). Green roof installations can cost between £120 and £300 per square meter, making them a substantial investment for large hospital facilities (The

"I think our culture thinks spending time in nature is nice or a luxury or a kind of commodity or privilege, when actually […] it is a right, and it's an important part of public health."

- Lucy Jones, (Jones, n.d.)

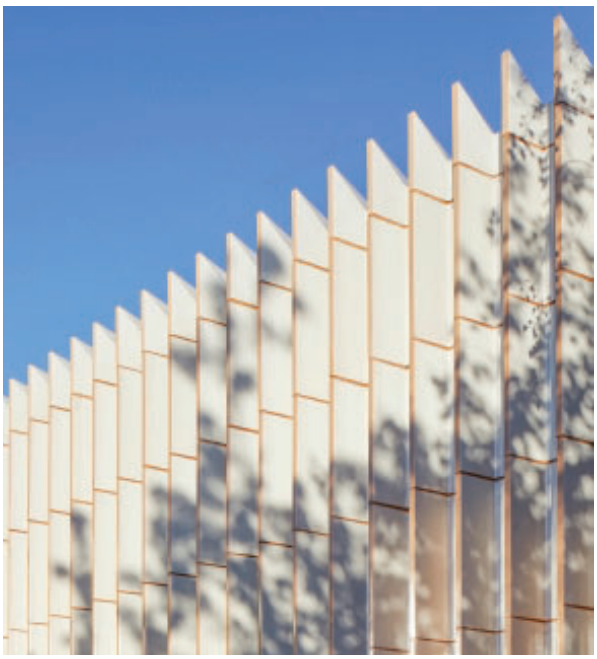


Fig.s 21, 22, 23

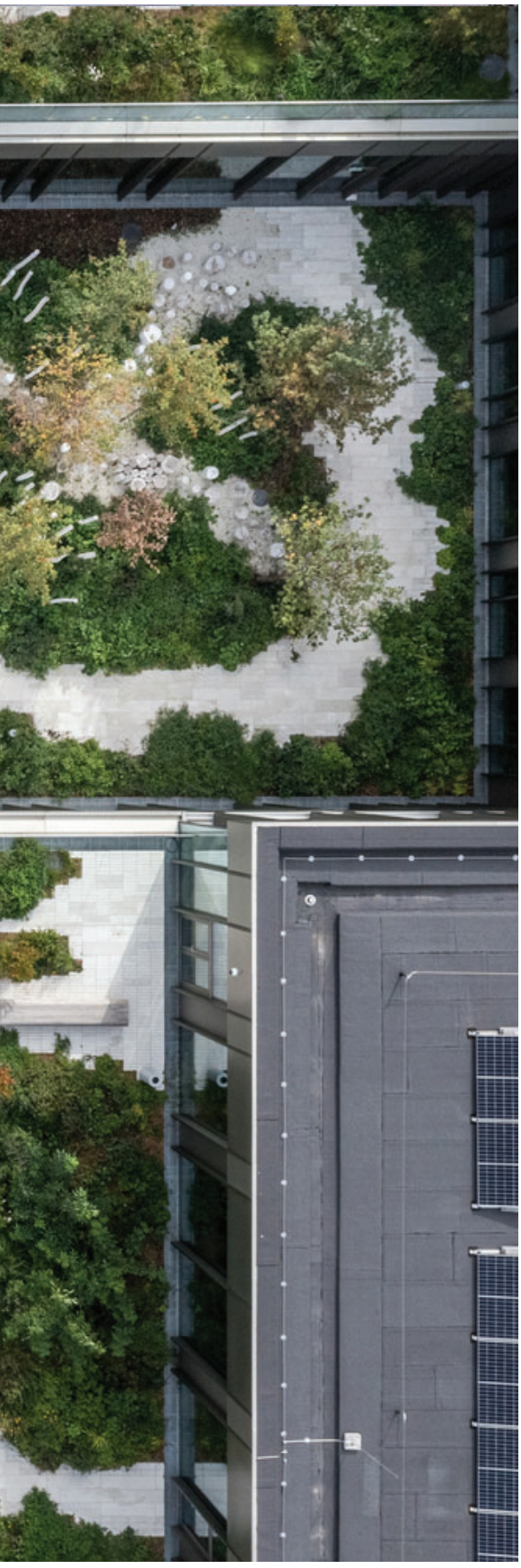


Fig. 24

Fig. 25

Renewable Energy Hub UK, n.d.). Additionally, the NHS Forest initiative reported an average cost of £5,000 per tree-planting project to improve hospital grounds, with ongoing maintenance adding to operational budgets.

Maggie's Centres leverage philanthropic funding and smaller patient populations to create restorative environments, but replicating these lush landscapes in high-demand public hospitals poses logistical and financial obstacles. Nevertheless, Maggie's Southampton illustrates the power of biophilic design to nurture emotional and psychological well-being, offering inspiration for wider applications despite inherent challenges.

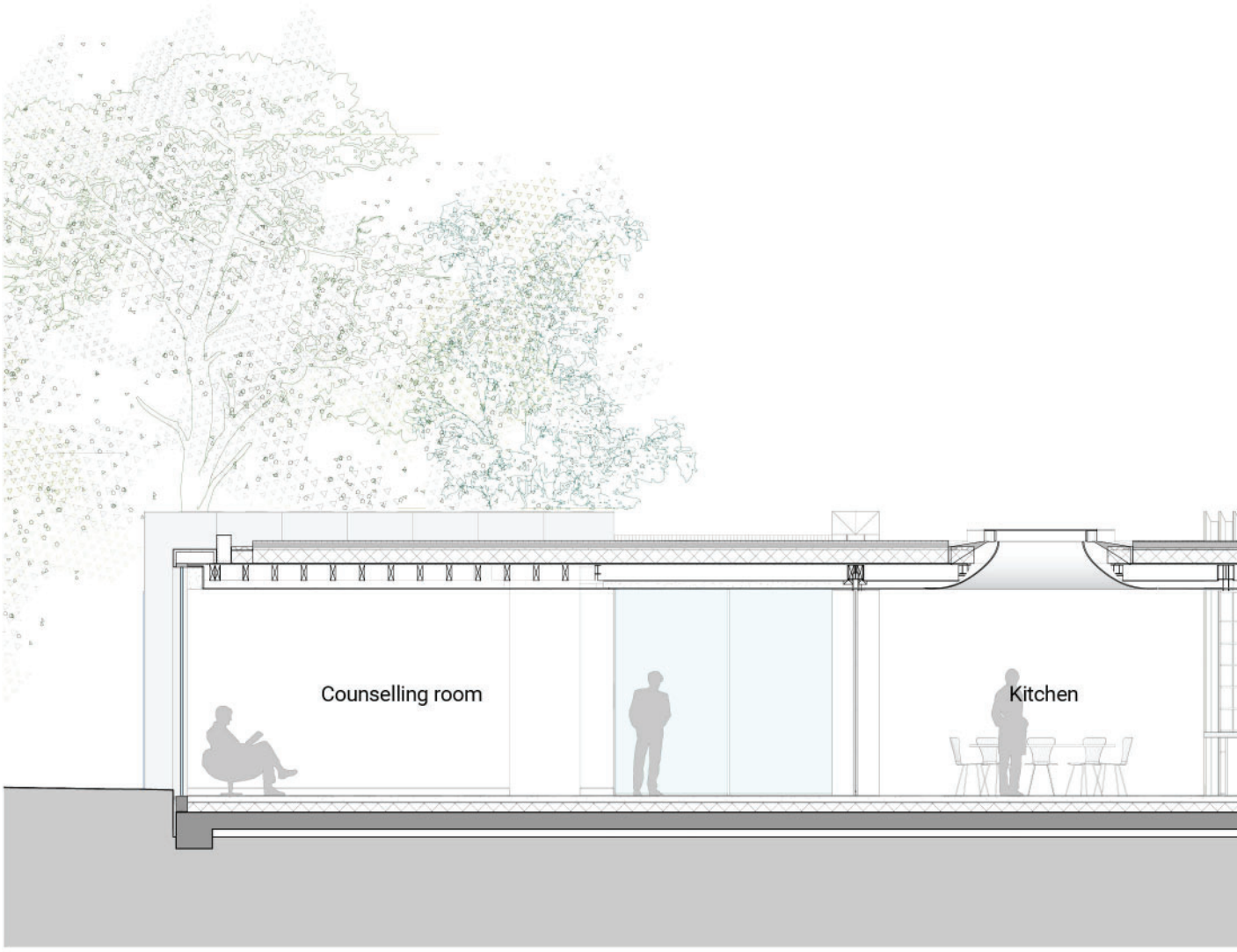
Natural Light

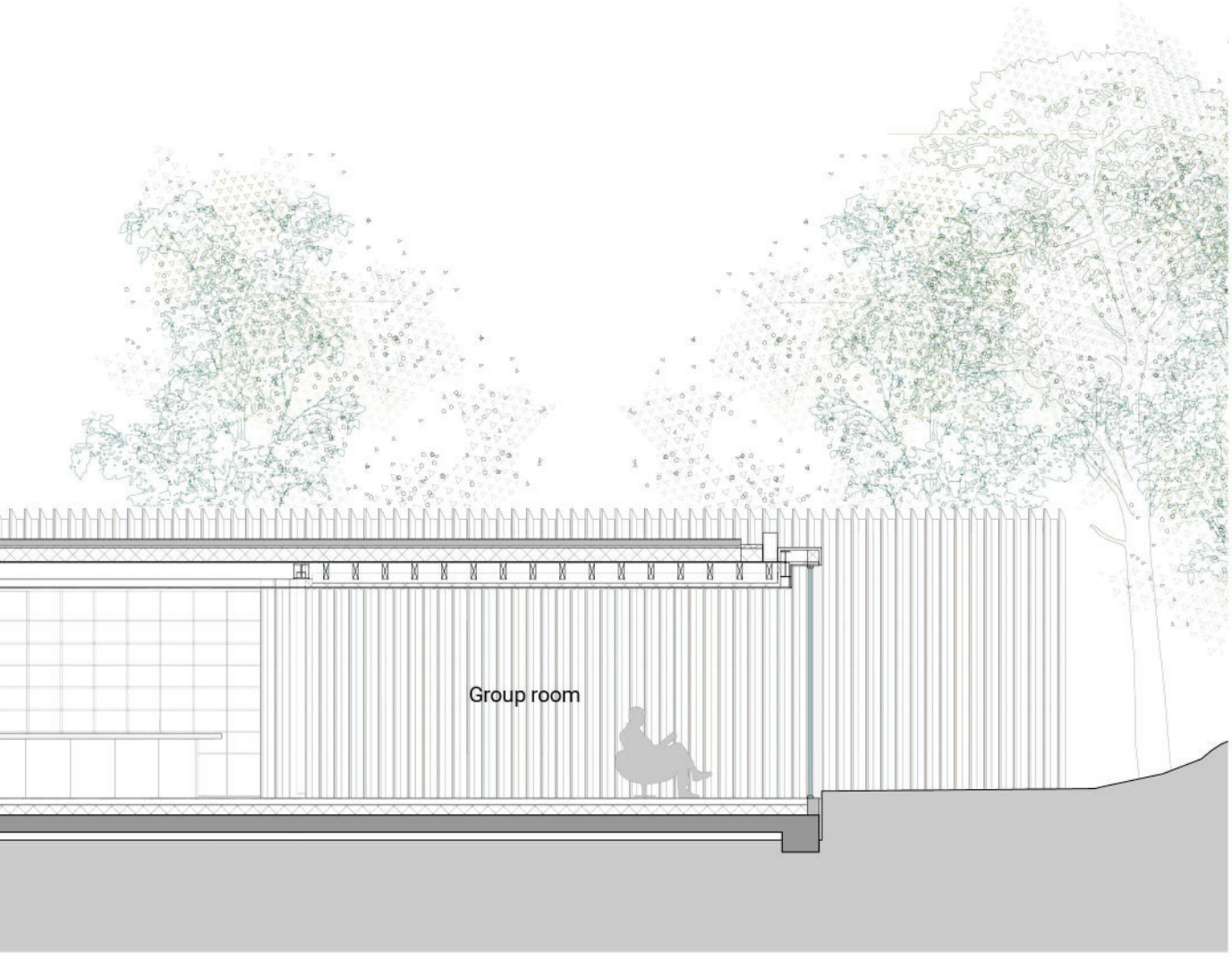
Natural light has transformative effects on health and recovery, with studies consistently supporting its therapeutic benefits. Beauchemin and Hays (1996) found that patients in sunlit rooms experienced shorter hospital stays, averaging 7.3 days compared to 8.1 days in darker rooms. Similarly,

Fig. 26

Benedetti et al. (2001) observed a 22% reduction in depression among psychiatric patients exposed to increased morning sunlight. These findings highlight the role of natural light in regulating circadian rhythms and improving sleep quality, both essential for healing (Frisone, 2017). Amanda Levete's design for Maggie's Centre, Southampton, exemplifies how natural light can be strategically incorporated into architecture. Floor-to-ceiling windows flood interior spaces with sunlight, while skylights along circulation paths ensure even the most internal areas are illuminated. The orientation of rooms optimises sunlight exposure (draw sketch), fostering a sense of openness and warmth, aligning with research showing that daylight reduces stress and enhances mood (Ulrich, 1991). Despite its benefits, implementing natural light in healthcare design presents its own set of challenges. Retrofitting existing facilities is often expensive and technically demanding. Improving natural light within hospitals typically requires extensive structural modifications, such as enlarging windows, installing skylights, or reconfiguring layouts. These interventions are costly, with estimates suggesting that projects to retrofit hospital facades for improved daylight access can range from £1,500 to £2,500 per square meter (CIBSE, n.d.). A study on healthcare retrofits in Europe indicated that daylight optimization through glazing upgrades in older buildings required investments upwards of €50,000 (£43,000) per ward (European Commission, 2018). Bright, open layouts, like those in Maggie's Centres, are difficult to adapt to acute-care environments due to space constraints and competing operational needs. However, Maggie's Centre, Southampton, demonstrates the potential of natural light as a fundamental element of healing architecture, offering valuable lessons for balancing functionality with well-being.

Section A-A





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Group room
Quiet room
Plant
Kitchen
Group room
Storage
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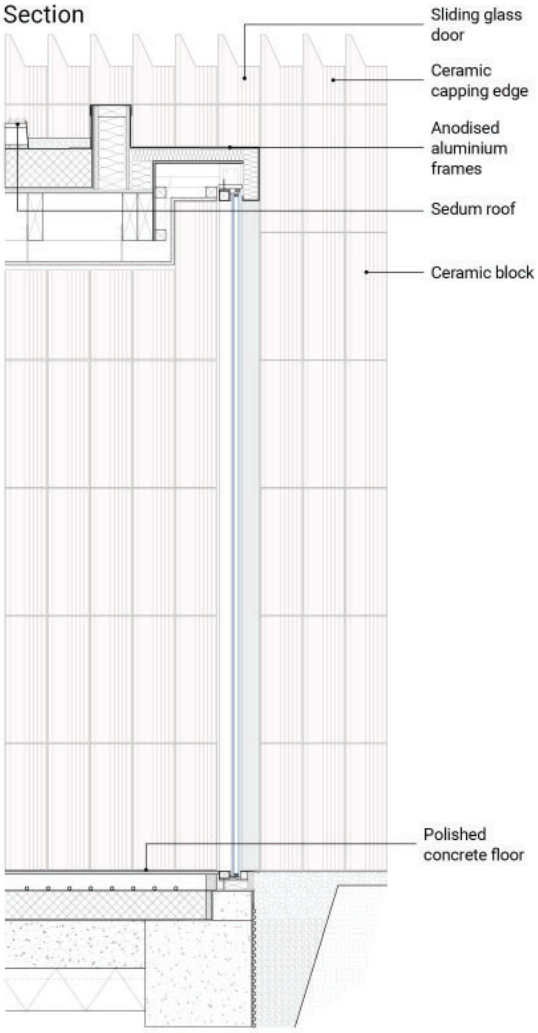
Section



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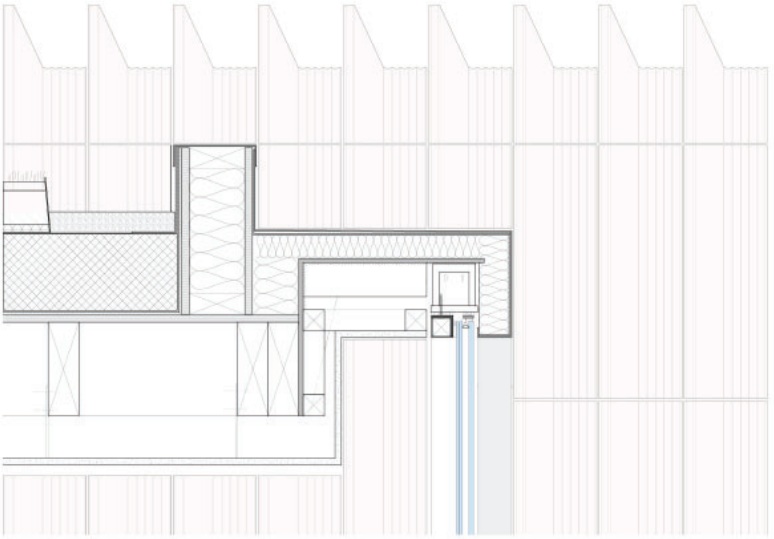

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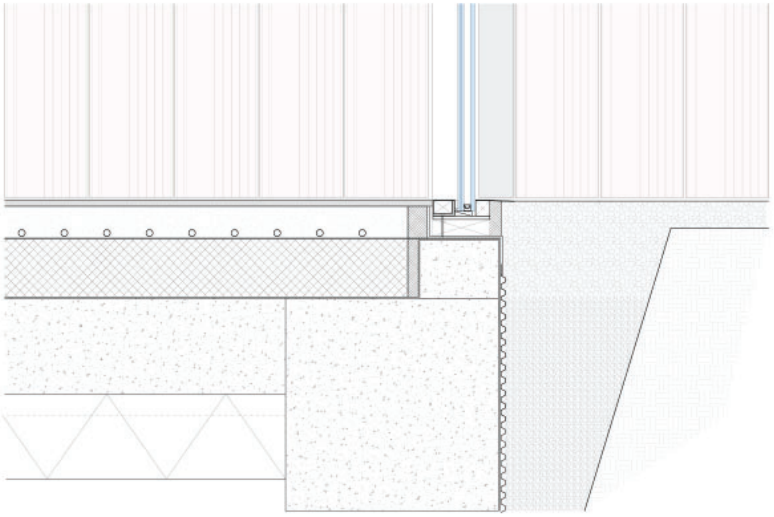

Fig. 30

Communal Spaces

Social connection is a cornerstone of healing architecture, with communal spaces fostering interaction and reducing the loneliness often associated with medical treatment. At Maggie's Centre, Southampton, the design team prioritised community during challenging times, recognising the importance of spaces that encourage informal conversations and peer support. Communal areas such as the open-plan kitchen and central lounge are intentionally positioned at the heart of the building to create a welcoming atmosphere where connections naturally form, even over a simple cup of tea. The design corresponds to the ultimate rule of Maggie's design blueprint: the 'kitchen table', and encouraging gathering around it (Maggie's, n.d.). These shared spaces become places of mutual understanding and emotional support, providing patients with a sense of belonging.

Complementing these communal areas are smaller, private rooms and quieter nooks that offer opportunities for introspection or personalised counselling. This thoughtful balance ensures that each individual can find the type of environment they need, whether for interaction or solitude.

Despite these successes, challenges remain. Communal spaces alone do not guarantee meaningful interaction, as factors like design quality, cultural considerations, and patient demographics play critical roles. While Maggie's Centres focus on intimate, patient-focused settings, larger hospitals face stricter operational

constraints requiring them to balance privacy with opportunities for social connection. Nevertheless, Maggie's Southampton exemplifies how intuitive layouts and sensory design can seamlessly integrate communal and private spaces, serving the diverse emotional and practical needs of its users (Lawson et al., 2010).

Sensory Design

Have you ever entered a space and immediately felt at ease? Sensory design seeks to create such experiences by carefully addressing how people perceive and interact with their surroundings. By considering elements like colours, textures, acoustics, and lighting, sensory design shapes emotions and, when thoughtfully implemented, reduces stress.

Fig. 31

Softer acoustics, for example, warm colour palettes and natural materials are known to promote relaxation (Pallasmaa, 2015). Maggie's Centres exemplify the power of sensory-sensitive design, with their use of soft lighting, tactile materials, and calm aesthetics fostering emotional comfort and well-being.

The sensory aspects of Maggie's Centre, Southampton, further enhance the user experience. Soft, earthy tones found within the building create a tranquil atmosphere, while textural contrasts—such as the smooth wooden finishes, stark metal accents, and bold fabric upholstery—engage the sense of touch, reinforcing a human-centred feel. Externally, reflective metal cladding adds another layer of sensory engagement, mirroring the movement of light and the surrounding landscape to create dynamic and evolving visuals. These features foster a connection to the environment and contribute to emotional relief (Pallasmaa, 2015).

Fig. 32

Fig. 33

However, isolating the effects of individual sensory factors can be challenging due to their interdependence, and sensory preferences vary widely among users. High-traffic wards or emergency departments may also struggle to adopt such features due to rapid patient turnover and the prioritisation of clinical functionality. Despite these challenges, Maggie's Southampton illustrates the transformative potential of sensory design in healthcare, demonstrating how thoughtful environments can evoke calmness and emotional ease. Moreover, the interplay of sensory design with other architectural elements, such as biophilic integration and natural light, enhances its impact. This synergy ensures that users experience a multifaceted sense of relief and comfort. As more studies validate these approaches, their broader adoption across both public and private healthcare settings will help shape environments that cater not only to physical healing but also to emotional and psychological well-being. Combining these elements with cost-effective strategies could ensure their accessibility to a wider population, proving that thoughtful design has far-reaching implications in healthcare transformation.

Theoretical Frameworks

Environmental psychology

Environmental psychology examines how physical surroundings influence behaviour, mood, and stress, as one. Stress Reduction Theory (SRT) (Ulrich, 1991) – explaining how exposure to certain environmental features, particularly natural settings, can reduce stress and promote recovery in individuals– highlights how natural elements lower anxiety, while Attention Restoration Theory (ART), proposed by Rachel and Stephen Kaplan, (Kaplan, 1995) demonstrates how restorative environments improve focus and reduce mental fatigue. These theories underpin design strategies such as integrating daylight and green spaces into healthcare settings. In natural settings, these processes often occur simultaneously. For instance, a walk in a park can both calm anxiety (SRT) and help regain focus (ART). These work as complementary mechanisms.

Fig. 34, Fig. 35

"We have recently found that when we look at things we consider beautiful, there is increased activity in the pleasure reward centers of the brain. Essentially, the feel-good centers are stimulated, similar to the states of love and desire",

- Semi Zeki

Neuroscience & Neuroaesthetics

Neuroscience provides deeper insights into the sensory and emotional impacts of design. In the context of the built environment, neuroaesthetics explores how the brain perceives and responds to beauty in the surroundings, influencing emotions, cognition, and physical health. Coined by Semir Zeki in the early 2000s, it bridges neuroscience and design, studying how elements like colour and form affect the brain's reward and emotional centers. It is said that the following three key brain areas are involved: the orbital frontal cortex, which processes pleasure and reward, the amygdala, registering an emotional response, and the visual cortex, importantly interpreting form, color, and

patterns.

Neuroaesthetics explores how elements like curved forms, harmonious colours, and natural materials stimulate brain regions associated with calmness and healing (Chatterjee, 2014). Conversely, overstimulating environments with harsh lighting or excessive noise elevate stress hormones, underscoring the importance of sensory-sensitive environments. Neuroaesthetics shows that beauty in design is not just aesthetic but therapeutic, transforming sterile spaces into environments that actively support healing and recovery.

Emotionally speaking, walking into Maggie's Centre is designed to feel like stepping out of a hospital and into a sanctuary. The abundance of natural light streaming through large windows, the soft pastels of the ceramic walls, and the presence of greenery create an atmosphere of calm and hope. These elements are not just aesthetic; they actively support emotional recovery. Many visitors have expressed how the bright, open spaces feel uplifting, offering a much-needed reprieve from the often harsh and clinical surroundings of a hospital (Ulrich, 1991; Kellert, 2005).

Moreover, neuroaesthetics highlights the importance of design elements that cater to universal human responses while allowing for cultural and personal variations. For example, studies suggest that certain patterns and textures evoke cross-cultural feelings of comfort and familiarity, while others may have culturally specific associations (Chatterjee, 2014). These insights guide the creation of spaces that are both inclusive and restorative, adapting aesthetic principles to diverse user needs.

Evidence-Based Design (EBD)

EBD uses empirical research to guide architectural decisions, bridging the theory and practice. Studies reveal that features like accessible green spaces and intuitive wayfinding reduce hospital stays and improve patient satisfaction (Ulrich et al., 2008). Evidence-based design ensures that design choices are rooted in measurable outcomes, providing a framework for implementing

Fig. 36

healing architecture principles effectively.

At Maggie's Centre, Southampton, the principles of EBD are evident in its design. The integration of lush gardens, designed by reflects the value of green spaces in reducing stress and promoting relaxation. Pathways and seating areas within the garden offer spaces for reflection and informal interaction, enhancing emotional well-being. Internally, intuitive layouts (sketch) and open sightlines create a welcoming and easily navigable environment, ensuring visitors feel at ease from the moment they enter.

By aligning its design with EBD principles, Maggie's Southampton demonstrates how architecture can actively support both emotional and physical recovery.
Beyond Maggie's Centres, EBD principles can inspire broader improvements in healthcare design. For example, incorporating daylight, noise reduction, and ergonomic layouts into high-traffic hospitals could improve both patient outcomes and staff well-being (Ulrich et al., 2008). These design elements not only contribute to recovery but also reduce burnout among healthcare workers, fostering a more resilient system.

Fig. 37

Challenges & Limitations

Despite the demonstrated benefits of healing architecture, practical constraints often hinder its broader application. Public hospitals, especially within systems like the NHS, face significant challenges, including budgetary limitations, outdated infrastructure, and high patient volumes. A nurse named Lorraine, working in Birmingham, told BBC Radio 5 Live the following "Patients are collapsing in the waiting room. It's just hectic," ('Patients Are Collapsing in the Waiting Room': A&E Nurses Speak Out, 2025).

These factors often necessitate compromises in design, prioritising clinical efficiency over psychological comfort (Lawson et al., 2010). Conversely, private-sector facilities, with greater funding flexibility, are better positioned to adopt innovative designs that blend functionality with patient-centric features. Specialised centres like Maggie's implement healing architecture more comprehensively due to their smaller scale and focused purpose. However, scaling these principles to larger hospitals requires creative adaptations to balance operational efficiency with patient well-being.

Fig. 38 , Fig. 39

Maggie's Centre, Southampton, exemplifies both the potential and challenges of healing architecture. Located near Southampton General Hospital, the centre is surrounded by urban infrastructure, including car parks and hospital buildings. The architects envisioned it as a "piece of garden transported from the New Forest" (AL_A Architects,

n.d.), but the surrounding clinical environment remains a stark contrast, placing pressure on the landscape design to mitigate this disconnect. The centre's bespoke design elements, such as the custom ceramic stoneware blocks, contribute to its calming aesthetic, made possible through its charitable funding model (Jencks, 2010). While this model allows for innovation and architectural freedom, its reliance on donations introduces financial constraints, limiting the scalability of such high-quality environments within publicly funded systems.

Despite these challenges, Maggie's Centre, Southampton, offers valuable insights for adapting healing architecture principles. Its emphasis on natural light, biophilic design, and intuitive spatial layouts demonstrates how human-centred architecture can transform healthcare environments. While the bespoke features of Maggie's Centres may be resource-intensive, the underlying principles can inspire cost-effective applications in larger hospitals. Simplified materials, efficient use of natural light, and strategic greenery integration could provide scalable solutions without compromising patient well-being.
Maggie's success highlights the importance of public-private collaboration, offering a model for integrating private funding into public healthcare systems. By addressing financial and operational limitations, the principles exemplified by Maggie's Centres could serve as a blueprint for embedding healing architecture into diverse healthcare contexts.

This chapter integrates theoretical insights and empirical evidence to explore the principles of healing architecture and their practical applications. By drawing on environmental psychology, neuroscience, and evidence-based design, it highlights how design elements such as natural light, biophilic integration, sensory design, and communal spaces promote recovery and emotional well-being. While specialised facilities like Maggie's Centres exemplify these principles, broader application in mainstream healthcare requires thoughtful adaptation to address operational and budgetary constraints.

Broader Implications of Healing Architecture in UK Hospitals

While successful in smaller facilities like Maggie's Centres, applying the aforementioned principles to large NHS hospitals presents unique challenges. This chapter further explores the potential benefits, barriers, and opportunities for integrating healing architecture into the UK's public healthcare system.

Benefits of Healing Architecture in UK Hospitals

We have explored how healing architecture principles, such as natural light, biophilic design, and sensory-sensitive spaces, can significantly improve patient recovery and well-being. Implementing these features in NHS hospitals could enhance patient satisfaction while reducing readmission rates. Paramount at a time where pressures and challenges are rising exponentially. It is not just the patients that benefit from these principles, hospital staff, who spend vast hours working at a time, experience high levels of stress due to demanding workloads and challenging environments. Healing architecture can positively affect staff by creating spaces that support mental health and productivity. For instance, break rooms with access to natural light and quiet outdoor areas for respite can improve job satisfaction and reduce burnout.

When considering healing architecture in the context of healthcare, one must not forget the significance of operational efficiency. These principles can streamline hospital operations by improving patient flow and wayfinding. Intuitive layouts reduce confusion, enhancing both patient experience and staff efficiency. Thoughtful design also improves infection control through strategic spatial arrangements and material choices.

Moreover, integrating these principles can lead to long-term economic benefits. Reduced readmissions and improved staff retention decrease costs associated with patient turnover and recruitment. By prioritising holistic recovery and employee well-being, NHS hospitals can create sustainable systems that address the needs of both patients and staff.

Challenges in Applying Healing Architecture to UK Hospitals

It is no secret that public hospitals in the UK face significant budgetary pressures, often understandably prioritising urgent clinical needs over architectural innovation. Unlike privately funded facilities, NHS hospitals operate under strict financial limits, making high-quality materials and bespoke designs less feasible. For instance, the NHS capital budget would need to nearly double, from £7.7 billion to £14.1 billion, to address infrastructure backlogs and modernize facilities (NHS Confederation, 2023). However, cost-effective adaptations—such as increasing access to daylight or incorporating small doses of low-maintenance greenery—could make healing architecture principles more achievable.

Fig. 40

Fig. 41

Legacy Infrastructure & Logistical Challenges

We know that many NHS hospitals are housed in outdated buildings that were not designed with modern healthcare demands or healing principles in mind. Retrofitting these facilities to align with healing architecture requires substantial investment and careful planning. We must consider factors like limited space and structural restrictions while ensuring that treatment can continue uninterrupted during development and construction. NHS hospitals, more often than not, operate at full capacity, making significant design changes complex. The high volume of patients and the need for efficient clinical operations sometimes conflict with the goals of healing architecture. For instance, creating biophilic spaces or improving wayfinding may require extensive reconfigurations, which can be disruptive and costly. However, these challenges are not insurmountable. Phased retrofitting, where changes are implemented incrementally, allows hospitals to adopt healing architecture principles without causing major disruptions. Modular designs and prefabricated elements can further facilitate upgrades,

Fig. 42

reducing both time and cost implications.

Wider Case Studies and International Comparisons

It is important that after analysis, we learn from Maggie's Centres spaces. These precedents offer valuable lessons for integrating healing architecture principles into NHS hospitals. Other countries provide examples of large-scale integration of healing architecture. For instance, Singapore's Khoo Teck Puat Hospital incorporates rooftop gardens, natural ventilation, and intuitive layouts, enhancing both patient care and sustainability. Similarly, Scandinavia's hospitals prioritise daylight and patient-centred design, offering models for how healing principles can be embedded in public healthcare systems (Khoo Teck Puat Hospital, n.d.). These international examples demonstrate how integrating healing architecture at scale can simultaneously address sustainability, patient well-being, and operational efficiency.


INFORMATION

Fig. 46

Potential Methods and Opportunity for Broader Integration

Public-Private Partnerships

Collaboration with private and charitable sectors offers opportunities to incorporate healing architecture into NHS hospitals. Initiatives like Maggie's Centres demonstrate the potential of combining private funding with public healthcare to create supportive environments. Expanding such partnerships could help NHS hospitals overcome financial barriers.

Cost-Effective Adaptations

Not all healing architecture elements require substantial investment. Simple interventions, such as repainting walls in calming colours, enhancing access to natural light, and adding low-maintenance greenery, can create more patient-friendly environments within existing budgets. These smaller, incremental improvements can act as stepping stones toward more comprehensive adoption of healing architecture principles.

Policy and Planning Reforms

National policies could incentivise the integration of healing architecture in public hospitals. For instance, design standards for new NHS facilities could include provisions for biophilic design and intuitive layouts. Funding schemes could prioritise projects that enhance both patient care and staff well-being. Policymakers could also explore tax incentives for hospitals incorporating sustainable and patient-centred designs, encouraging broader adoption across the healthcare sector.

Recommendations for UK Public Healthcare

Evidently, there is transformative potential for UK hospitals, offering measurable benefits for operational aspects, and also its patients & staff. While financial and logistical challenges exist, opportunities for collaboration, incremental adaptations, and policy reforms can help bring these principles into public healthcare.

Potential Recommendations

By learning from smaller-scale successes like Maggie's Centres and international models, UK hospitals can evolve into environments that not only treat illness but also support holistic recovery and well-being. As these principles gain traction, the future of healthcare design will increasingly prioritise human-centred, sustainable solutions that enhance the lives of patients and staff alike.

- Establishing guidelines that incorporate healing architecture principles into new NHS building projects. These do exist, but are seemingly not taken seriously by many designers. For example: A ratio of green space to be implemented, depending on the size of the healthcare facility. This provides a more specific guideline that can be adapted to each project–rather than trying to aim for the unachievable.

- Encouraging public-private partnerships to fund innovative design interventions.

- Prioritising cost-effective, scalable adaptations that align with NHS constraints.

Privatisation and Its Potential Role in Healing Architecture

Privatisation is increasingly shaping healthcare delivery in the UK, filling gaps left by the overstretched NHS. Rising demand for quicker access to care and more personalised treatment has positioned private providers and charitable organisations as vital contributors to healthcare innovation. These sectors, often less constrained by rigid budgets and large-scale patient demands, have the flexibility to explore healing architecture principles more fully. This chapter examines the ways in which privatisation enables architectural innovation, considers its challenges, and evaluates opportunities for collaboration with public systems.

Philanthropic Funding and Its Influence on Design Decisions

Philanthropic funding, as seen in charitable models like Maggie's Centres, profoundly influences architectural outcomes. Unlike NHS hospitals, where budgets are allocated primarily for operational and clinical necessities, Maggie's Centres benefit from donor-driven funding that prioritises design as a core element of care. This financial model allows architects to incorporate bespoke features such as biophilic gardens, sensory-focused interiors, and high-quality materials. For example, the custom ceramic stoneware blocks at Maggie's Centre, Southampton, were made possible through philanthropic funding, showcasing how unrestricted investment fosters innovation and creativity in design (Jencks, 2010).

Fig. 47

Philanthropy also enables flexibility in project timelines and budgets, allowing architects to experiment with healing-focused principles without the pressure of cost-cutting measures often seen in publicly funded projects. However, this reliance on donations introduces challenges, including the variability of funding and the potential for inequitable access. Facilities like Maggie's, while free at the point of use, are dependent on the success of fundraising campaigns, which can fluctuate based on economic conditions or donor interest. Additionally, the high cost of creating these bespoke environments limits their scalability across larger, high-volume healthcare settings, such as NHS hospitals.

The Role of Government Funding in Public Healthcare Architecture

In contrast, NHS hospitals operate within tightly controlled budgets, funded by government allocations that prioritise clinical functionality over aesthetic or environmental considerations. Government funding for healthcare architecture in the UK is primarily allocated through

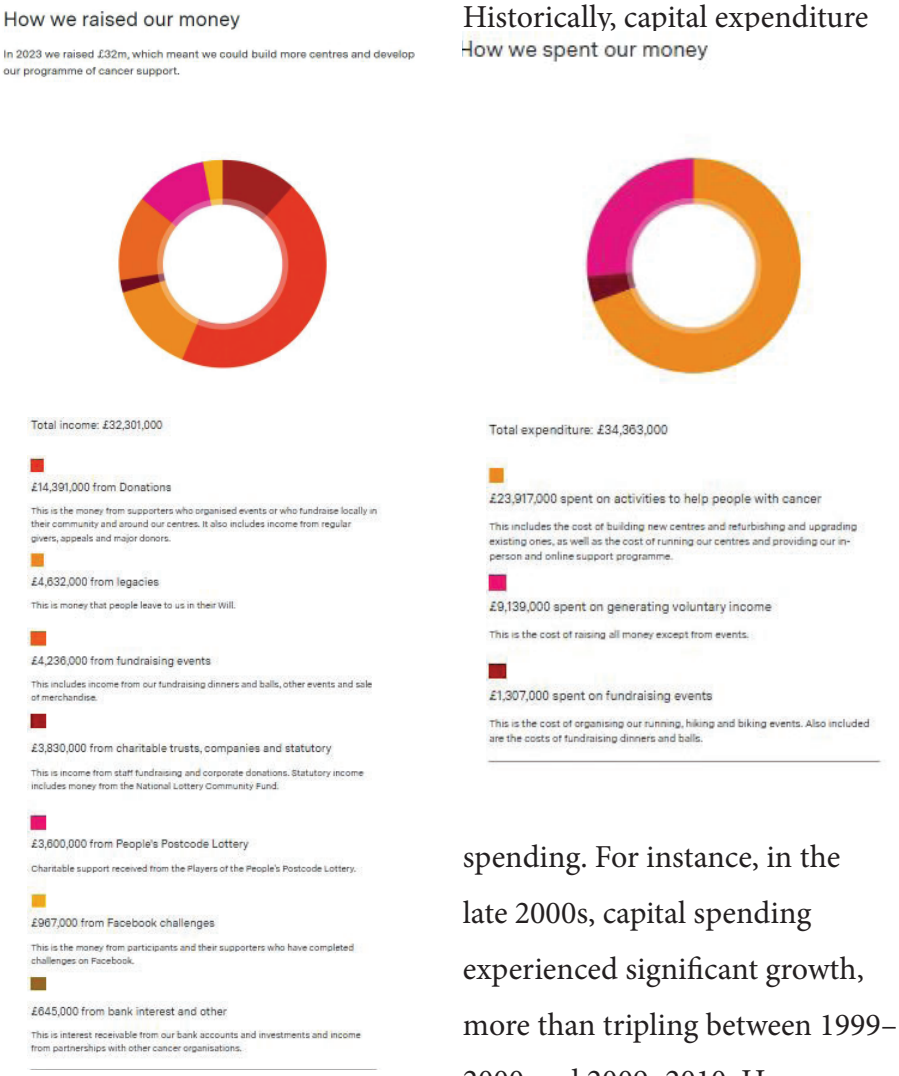

Fig. 48

capital expenditure within the National Health Service (NHS). This capital spending covers investments in infrastructure, including the construction and maintenance of hospital buildings and the procurement of medical equipment.

Historically, capital expenditure spending. For instance, in the late 2000s, capital spending experienced significant growth, more than tripling between 1999–2000 and 2009–2010. However, this was followed by a reduction of about 30% from 2009–2010 to 2016–2017. In recent years, there has been a resurgence in capital investment, with spending in 2022–2023 being 68% higher than in 2016–2017 and 18% higher than in 2009–2010 (Johnson & Chandler, n.d.).

Looking forward, capital budgets are projected to rise to £11.7 billion by 2024–2025, driven by initiatives to build or upgrade hospitals, establish new surgical hubs, and enhance various community diagnostic centers. Despite these plans, financial pressures sometimes necessitate reallocating capital funds to support day-to-day NHS operations (The Kings Fund, 2024). Challenges remain, with reports highlighting a significant maintenance backlog that underscores the need for continued and substantial capital funding to ensure healthcare facilities are fit for purpose (NHS Confederation, 2024).

This approach reflects the scale and diversity of patient needs that public hospitals must address, often serving as the primary healthcare providers for vulnerable populations. While government funding ensures universal access, it frequently restricts architectural innovation, as funds are directed toward medical equipment, staffing, and infrastructure maintenance rather than transformative design features like biophilic elements or sensory-

-sensitive spaces.

The emphasis on efficiency and cost-effectiveness in NHS projects often results in utilitarian designs that, while functional, lack the healing potential seen in privately funded facilities. As touched upon previously, retrofitting existing NHS hospitals to include features such as landscaped gardens, intuitive layouts, or natural materials is costly and logistically challenging.

For example, high-patient-volume wards and emergency departments may struggle to incorporate sensory design elements due to space constraints and the prioritisation of clinical throughput. These limitations highlight the difficulty of translating the principles of healing architecture into large-scale public healthcare systems.

Balancing Private Innovation with Public Equity

Despite these challenges, privatisation offers opportunities for collaboration with public healthcare systems to enhance patient environments. Maggie's Centres exemplify how philanthropic funding can complement NHS services, creating spaces that prioritise well-being alongside clinical care. Co-located with NHS hospitals, these centres demonstrate the potential for healing architecture to bridge the gap between private innovation and public accessibility.
Public-Private Partnerships (PPPs) represent another pathway for integrating healing architecture into NHS hospitals. By leveraging private funding and expertise, PPPs could co-finance projects that incorporate elements like green spaces, sensory-sensitive interiors, or dedicated communal areas. For example, private contributions could support the creation of biophilic courtyards within NHS facilities, offering patients restorative environments while ensuring inclusivity and access for all demographics. Such partnerships could also extend to the development of modular healing spaces, designed to be integrated seamlessly into existing hospital infrastructures, reducing disruption while enhancing patient care.

The Challenges of Private Influence

While privatisation enables innovation, it also raises concerns about equity. Facilities funded by private or philanthropic sources often cater to wealthier demographics or specific communities, excluding broader populations from these benefits (Carey, n.d.). The bespoke features of Maggie's Centres, such as their intimate, patient-focused designs, are difficult to replicate at scale due to the high cost of materials and the specialised nature of their services. Public hospitals, in contrast, must balance the needs of diverse populations with limited resources, making the integration of similar principles challenging.

Moreover, the profit-driven motives of private healthcare providers can sometimes conflict with the inclusivity goals of public systems. While private facilities

While private facilities often prioritise patient experience through high-quality design, this focus can inadvertently widen healthcare inequalities by limiting access to those who can afford premium services. This tension highlights the need for collaborative models that balance innovation with universal accessibility.

Recommendations for Collaborative Models

To maximise the benefits of privatisation while addressing its limitations, collaborative approaches are essential. Expanding partnerships like those seen with Maggie's Centres could help bring healing architecture into public healthcare environments. Key recommendations include:

- **Targeted Philanthropy for Public Projects:** Encourage donors to support specific architectural enhancements within NHS hospitals, such as biophilic gardens or sensory-sensitive areas, to improve patient environments without compromising accessibility.
- **Scalable Design Solutions:** Develop cost-effective adaptations of healing architecture principles that can be implemented within public hospitals, such as increasing access to natural light or integrating low-maintenance greenery. Modular solutions, like prefabricated sensory rooms, could provide quick and affordable improvements.
- **Policy Incentives for Innovation:** Introduce government incentives for public-private collaborations that fund healing-focused design projects, ensuring equitable access to transformative healthcare spaces. These policies could include tax benefits for private entities that contribute to public hospital improvements.
- **Incorporating Flexibility in Private Funding:** Private donations could be earmarked for incremental improvements in public hospitals, enabling gradual adoption of healing architecture principles without disrupting existing operations. Clear guidelines could ensure that such funding aligns with NHS priorities.

Privatisation has shown significant potential to advance healing architecture through its capacity for innovation and bespoke design. However, its limitations, particularly regarding equity and scalability, underscore the importance of inclusive models that balance private creativity with public accessibility. By fostering collaboration between philanthropic organisations, private healthcare providers, and the public sector, healing architecture can be integrated into diverse healthcare settings, benefiting all patients regardless of socioeconomic status. As these collaborative approaches evolve, they may offer a blueprint for the future of healthcare design, where innovation and inclusivity work in tandem to create environments that truly heal.

Fig. 49

Final Recommendations & Conclusion

The evolution of healthcare architecture in the UK reflects a shift from utilitarian designs focused solely on functionality to spaces that actively contribute to patient well-being. Early NHS facilities were designed to address immediate post-war healthcare needs, prioritising efficiency over emotional and psychological considerations. However, this approach often overlooked the healing potential of thoughtfully designed environments. Facilities like Maggie's Centres, which integrate comfort and holistic support, with community, alongside clinical care, demonstrate how architecture, with a focus on healing design, can profoundly influence recovery and overall outcomes. This transformation underscores the growing recognition of healing architecture as a vital component of healthcare delivery.

Healing architecture profoundly benefits patient well-being by integrating key design elements such as natural light, biophilic features, communal spaces, and sensory-sensitive environments. The strategic use of natural light, as seen in Maggie's Centres, enhances mood, reduces stress, and regulates circadian rhythms, contributing to better recovery and sleep quality. Similarly, biophilic design fosters emotional well-being by connecting patients with nature through greenery and natural materials, sometimes water too, which have been shown to reduce anxiety and accelerate healing. Communal spaces play a vital role in building supportive communities by fostering informal interactions and alleviating the loneliness often associated with medical treatment. Sensory design complements these principles by creating calming atmospheres through the thoughtful use of colors, textures, and also acoustics. Ultimately, when the aforementioned elements are combined, they create environments that holistically support patient recovery and well-being.

Reflections on Healing Architecture

It is illustrated that Maggie's Centres highlight the power of healing architecture by prioritising patient and family well-being through carefully crafted spaces. For example, the Maggie's Centre in Southampton offers not only support to patients but also to their loved ones, recognising the broader impact of illness on families. This comprehensive approach to healing, which addresses both the individual and their support network, provides a valuable lesson for general hospitals. However, replicating such environments within NHS hospitals remains a challenge. Maggie's reliance on charitable funding enables bespoke designs that are difficult to adapt to the resource-constrained and high-volume context of public hospitals. The contrast between Maggie's Centres and NHS facilities raises an important question: how can the principles of healing architecture be incorporated into larger, publicly funded healthcare systems? General hospitals must serve diverse populations, often with limited budgets, but they also stand to benefit significantly from design improvements that prioritise both functional efficiency and emotional well-being.

While Maggie's Centres are free at the point of use to its user, their funding model, reliant on donations, is not directly transferable to the NHS. One key issue is the sheer scale and complexity of larger hospitals, which serve diverse and high patient volumes, making it difficult to replicate the intimate and patient-focused designs of specialised facilities like Maggie's Centres. Further to this, many NHS hospitals are often seen still operating within legacy-infrastructures that are not conducive to modern architectural adaptations. Retrofitting these buildings for natural light or biophilic design often proves costly and logistically challenging. A 2021 report from the NHS Estates team highlighted that the cost of retrofitting just one mid-sized hospital to meet modern design standards, including healing architecture elements, could exceed £10 million.

This does not account for the logistical disruptions caused by construction, such as temporary ward closures or operational adjustments. This underscores the substantial financial commitment required to retrofit NHS hospitals with healing architecture features, despite their proven long-term benefits overall well-being. Operational priorities in general hospitals, which tend to focus on clinical efficiency over psychological comfort, also pose barriers to implementing sensory-sensitive materials or creating spacious communal areas, particularly in high-traffic environments such as emergency departments.

However, the emphasis on holistic support and community-focused design in Maggie's Centres offers powerful insights for adapting healing architecture to larger hospital contexts. For instance, incorporating facilities that support not only patients but also families—such as quiet rooms, gardens, or communal areas—could improve the overall healthcare experience in public hospitals. These adaptations would align with Maggie's ethos of addressing the emotional and psychological dimensions of care, albeit on a broader scale.

Comprehensive Recommendations

With the final objective to bridge the gap between the ideals of healing architecture and the practicalities of NHS operations, the following recommendations are proposed:

- **Incremental Integration:** Implement cost-effective elements of healing architecture, such as access to natural light, biophilic features, and calming colour schemes, in new NHS hospital designs and retrofits.

- **Policy Ratios:** Establish guidelines for integrating healing architecture policies, such as green spaces, relative to the scale of the hospital project. For example, smaller facilities might aim for 10–15% green space coverage, while larger hospitals could allocate 20% or more to gardens and courtyards.

- **Focus on Community Spaces:** Allocate resources to create areas within hospitals that support families and caregivers, inspired by Maggie's approach to holistic care. These could include communal lounges, garden spaces, or multi-purpose quiet rooms.

- **Collaborative Funding Models:** Encourage partnerships between public, private, and charitable sectors to fund and implement healing architecture initiatives, ensuring accessibility for diverse populations.

- **Policy Incentives:** Encourage partnerships oritise healing-focused design in healthcare projects, embedding principles of emotional and psychological support into standard practices for hospital planning. Then focusing on the distribution of these guidelines, in order for them to be taken seriously and into consideration.

- **Research & Evidence:** Continue studying the impact of healing architecture on patient outcomes, staff well-being, and operational efficiency to build a stronger case for its integration into public healthcare.

Final Thoughts

The case study of Maggie's Centre, Southampton, provides a focused example of how healing architecture can positively impact healthcare delivery. However, as this research has examined a specific model within UK healthcare, it represents only part of a broader narrative. Further studies are essential to explore how these principles could be adapted for larger, general hospital environments, addressing gaps in knowledge and providing a more comprehensive understanding of healing architecture's potential.

Healing architecture represents a transformative approach to healthcare design, offering measurable benefits for patients, families, and staff. It is vital that we apply what we have learnt; and that if we think more strategically, we can significantly improve the wellbeing of patients in public hospitals. By setting achievable goals, such as proportional green space integration and incremental design improvements, the NHS can move toward environments that actively support well-being. Through collaboration and ongoing research, the principles exemplified by Maggie's Centres can inspire healthcare systems to prioritise holistic healing, ensuring that every individual feels valued, supported, and cared for. Expanding this vision beyond specialised centres into everyday hospital settings could mark the beginning of a much-needed transformation in the UK's healthcare landscape.

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