



Redefining the way NHS Front-Line Staff Experience
Home Life, After a Demanding Shift



Project Scope Baywell Living

According to NHSProviders.org, one of the primary barriers to retaining staff is the difficulty many face in securing housing near their workplace. This disconnection between home and work not only fuels long commutes and burnout but undermines the long-term stability of the NHS workforce.

Central Question : Could affordable, proximity-based smart homes for healthcare professionals be the key to improving both their well-being and the quality of care they provide?

Designed to enhance work-life balance, this concept merges sustainability, well-being, and innovation to create a living environment exclusive to healthcare professionals' needs—the first of its kind in south-west England.

By supporting NHS healthcare professionals and addressing the challenges they face, we can help them provide more effective and efficient care to their patients.

Site Challenge Analysis

Over the years, Bay View Court Hotel in Bournemouth has undergone a series of poorly considered extensions, driven by profit rather than thoughtful design. As a result, the building has become a visually overwhelming structure, with little regard for its coastal surroundings or architectural cohesion.

Compounding this issue, the hotel is built on a basement foundation, meaning that each successive extension has led to inconsistent interior floor heights, presenting a significant challenge for remodelling.

Plan of Action

- Establish a cohesive exterior design to improve curb appeal
- Remove all areas that aren't visually coherent e.g mis-matched roof
 - Improve natural light circulation
 - Improve user circulation inside & outside



Chosen Site - Bay View Court Hotel, Bournemouth East Cliff.

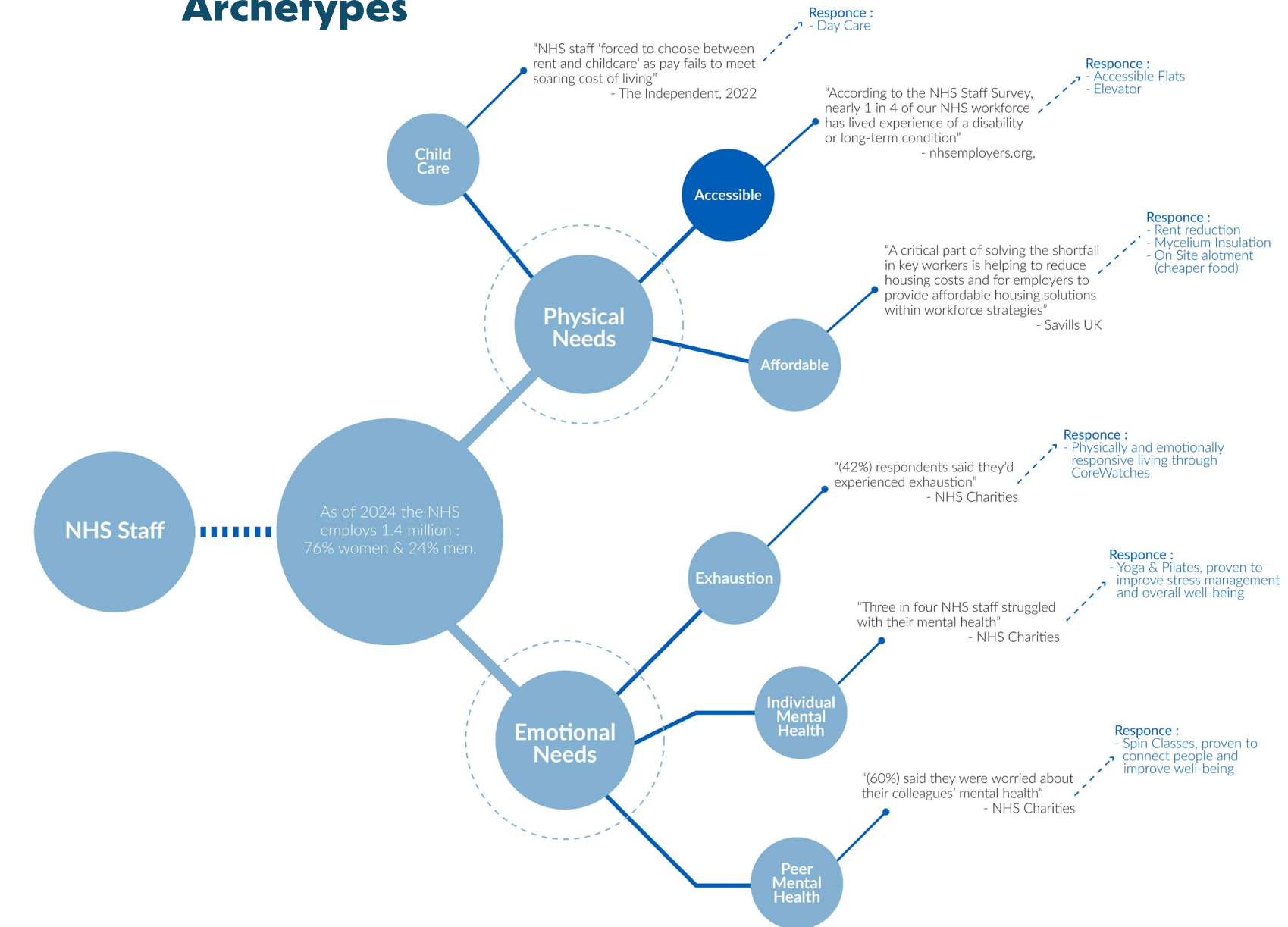
Site Characteristics - Cliff side, uninterrupted sea views, south facing garden, 10 minute drive from Royal Bournemouth Hospital, in line with scheme aims.

Rationale - Bay View was selected to support NHS healthcare professionals with affordable, community-focused living in a restorative setting. Perched on a coastal cliff, the site offers sweeping sea views that promote mental well-being—valuable for those in demanding healthcare roles.

- 1 Bay View Hotel - Chosen Site
- 2 Ocean Beach Hotel & Spa - Operational
- 3 Suncliff Hotel - Operational
- 4 Cottonwood Boutique Hotel - Operational
- 5 Ocean View Hotel - Closed
- 6 Grove Court Apartments
- 7 Grove Apartments
- 8 Eden Court Apartments

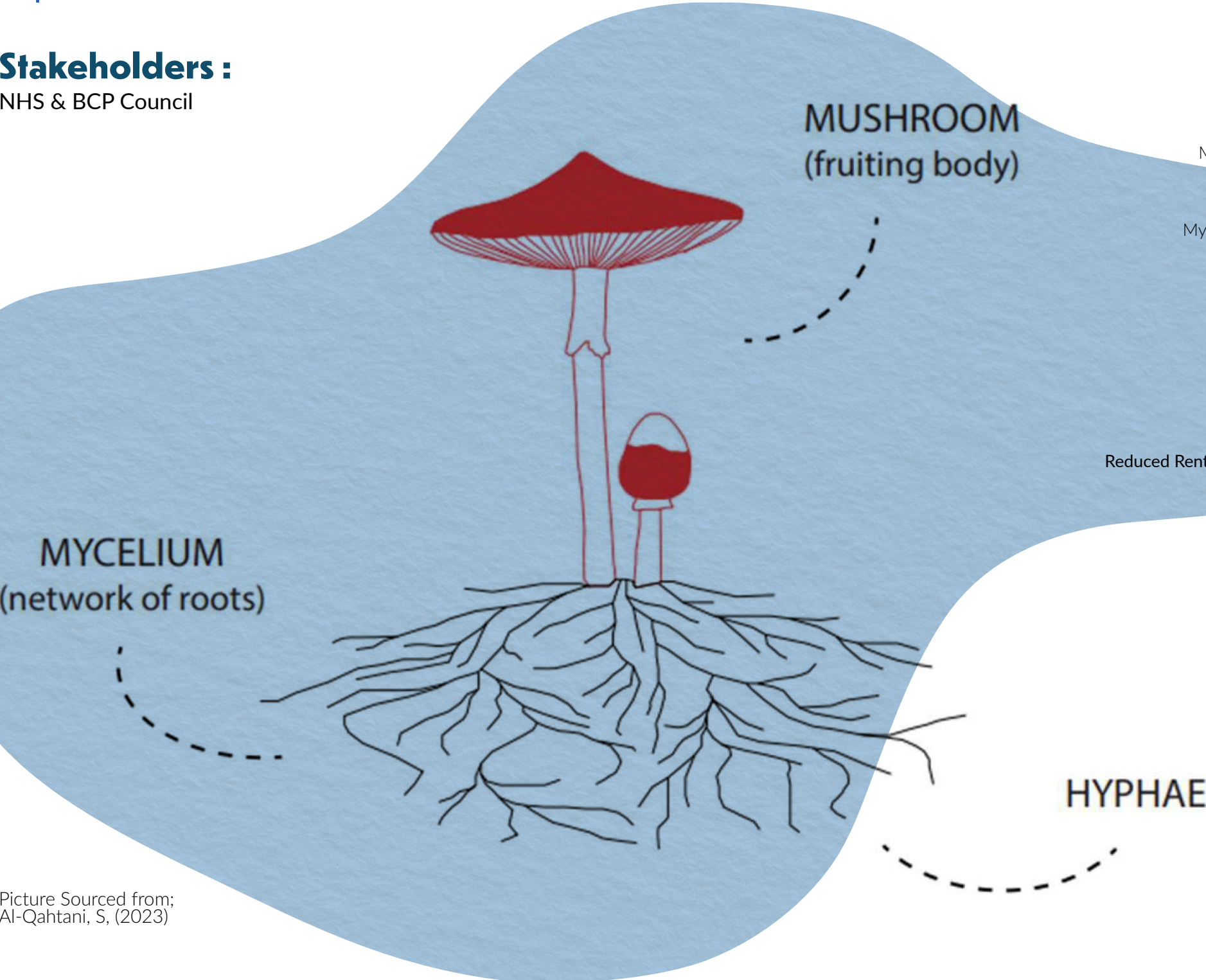


User Insights & Archetypes



Wicked Problem : “Research shows rising local housing costs are making it harder for NHS staff to secure affordable homes, contributing to staff retention issues, and increased commuting expenses.”

Stakeholders :
NHS & BCP Council



Picture Sourced from; Al-Qahtani, S, (2023)



Names : Jason, Walter & Micah
Ages : 40, 72 & 5
Situation : As Walter's health declined, his son Jason invited him to move in so they could care for him as a family. But with rising rent and Jason's demanding 9-12 hour NHS shifts, their current flat was no longer sustainable.

Needs : 3-Bed House Affordable Rent



Names : Kyle, Anita & Tess
Ages : 34, 28 & 6
Situation : Kyle has dedicated over a decade at the NHS, and as a result has faced many tough days – However since Covid-19 increased appointment backlog, daily public frustration & scrutiny has taken a toll on his mental health.

Needs : 2-Bed House Mental Health Support



Names : Marcus, Kathryn, Milo & Ty
Ages : 38, 36, 5 & 6
Situation : With both Marcus and Kathryn working for the NHS, the demands don't stop when they clock out. At home, caring for their boys, Milo and Ty, adds to their exhaustion – leaving little time to rest, reset, or connect as a family.

Needs : 3-Bed House Exhaustion Support



Names : Claire & Jacob
Ages : 31, 8 Months
Situation : Since separating from her partner, Claire has been raising Jacob alone. Each month, she struggles to juggle rent and rising childcare fees on a single income, often having to choose which to prioritise – a balancing act that's become increasingly unsustainable.

Needs : 2-Bed House Childcare Support

Proposed Solution; Affordability

My dissertation investigated the potential of mycelium as a sustainable insulation material to reduce CO₂ emissions in homes.

Mycelium is the root-like structure of mushrooms, consisting of a dense network of thread-like branches called hyphae. These networks grow naturally beneath soil have shown potential to absorb CO₂.

My dissertation has provided an evidence-based foundation proving that mycelium insulation significantly reduces energy bills due to its superior energy efficiency. This insight directly informs my FPP, which explores two key affordability strategies:

- Reduced Rent Model** – Healthcare professionals receive lower rent as they work for the NHS.
- Energy Savings** – Mycelium insulation, as demonstrated in my dissertation, improves energy efficiency, reducing overall utility costs for residents.

Dissertation findings indicate that mycelium insulation can reduce energy consumption by:

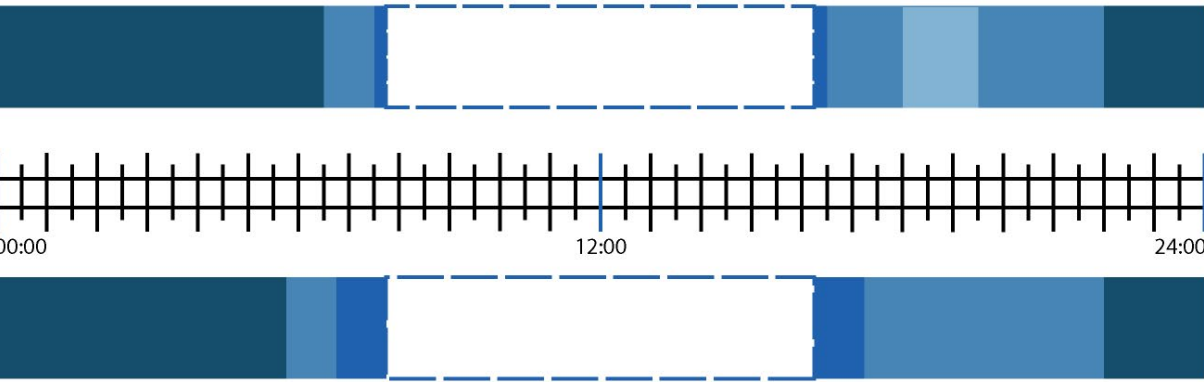
87.4% in winter
55.9% in summer

Final Figures
Fixed rent : £1170
10% NHS Staff Discount : £117

Rent : £1000/PCM, £250/Week Standard Apartment
£800/PCM, £200/Week Shared Apartment

Comparative Analysis

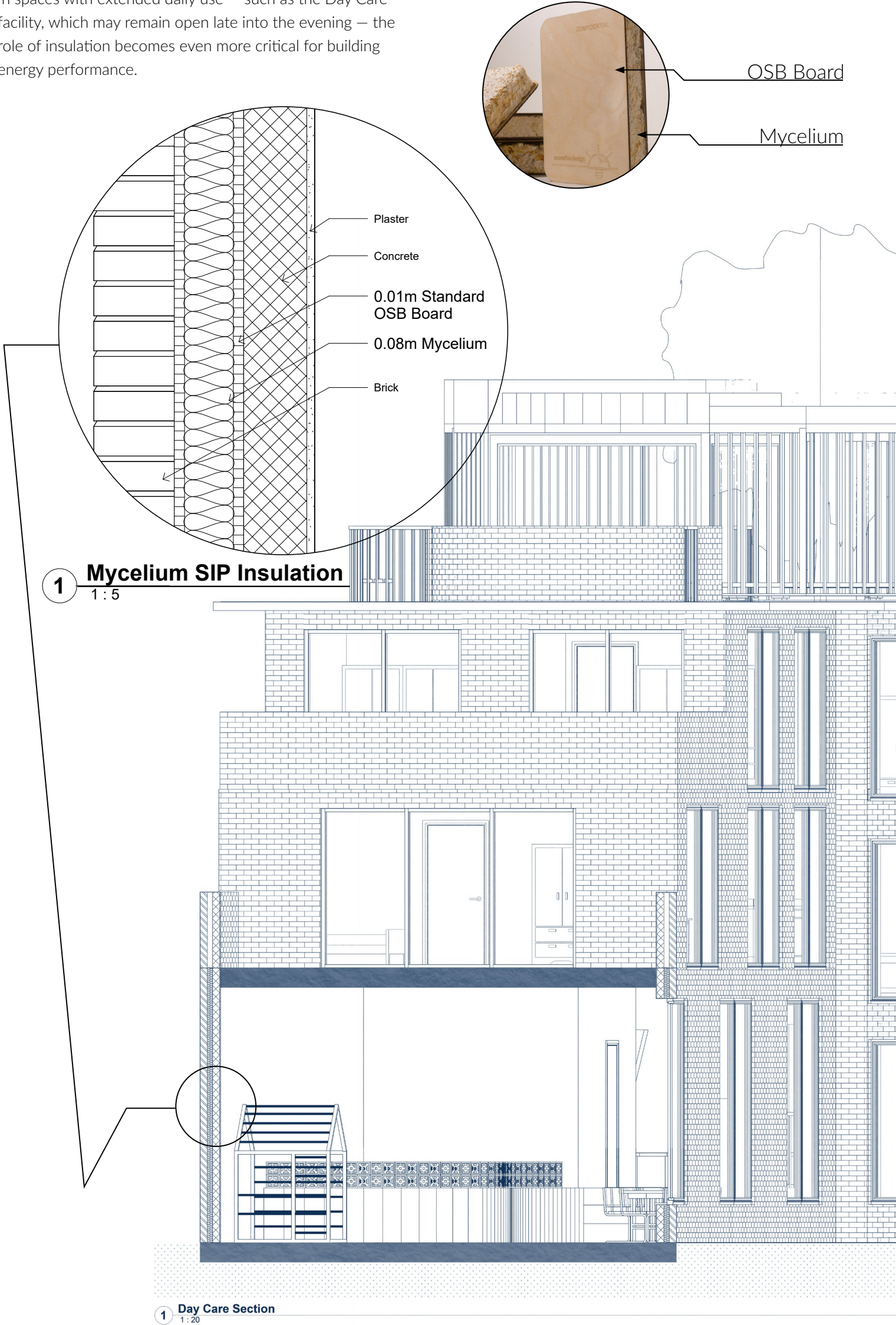
User Schedule Living at Baywell Living



User Schedule Not Living at Baywell Living



In spaces with extended daily use – such as the Day Care facility, which may remain open late into the evening – the role of insulation becomes even more critical for building energy performance.



1 Mycelium SIP Insulation 1 : 5

1 Day Care Section 1 : 20

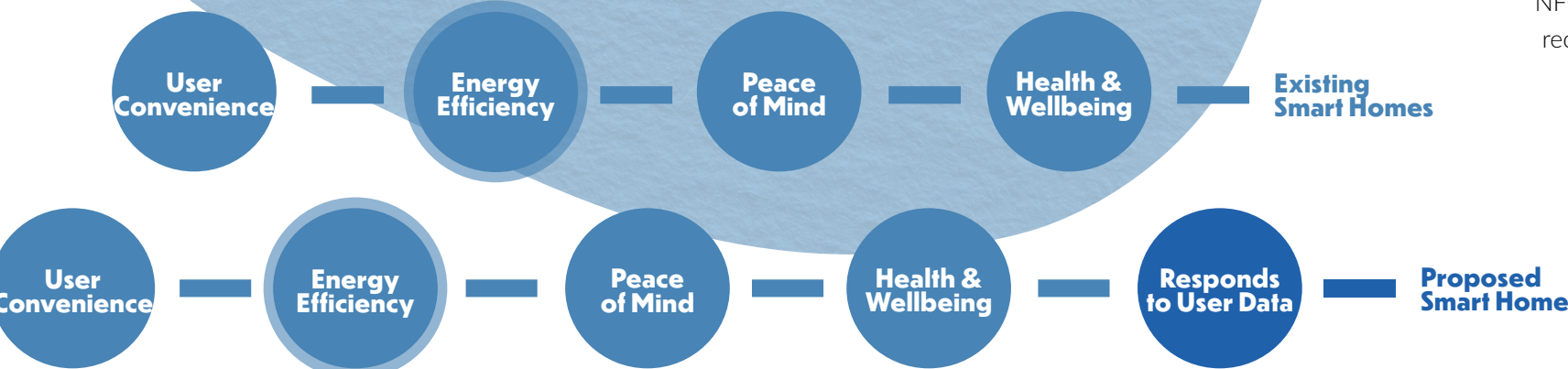
Unique Selling Point - Echo Home

Echo Home - Smart Hub

While today's smart homes allow users to control lighting and heating remotely via smartphones, my scheme reimagines this interaction by placing user well-being at the centre. Rather than relying on manual input, Echo Home responds to real-time biometric data, automatically adjusting the environment to meet immediate physical and emotional needs — offering a more intuitive and personalised experience. With this advanced functionality, Echo Home sets itself apart from existing systems like Google Nest, Amazon Echo, and Apple HomePod.

Challenge Reflection - Echo Home's Development

The initial development of Echo Home's form took cues from existing screen-based products like the Echo Show and Google Nest Hub. However, feedback during my second crit highlighted concerns around surveillance, especially considering Echo Home's ability to gather real-time biometric data from CoreWatch (advanced version of existing smart watches). The visual presence of a screen felt overwhelming and intrusive, prompting a shift in direction. To move away from a data-centric, screen-based interface, I began exploring how Echo Home could instead promote reflection, expression, and emotional well-being — becoming a supportive tool, not just a responsive one. This led me to investigate the therapeutic potential of mosaic art and journaling.



Direction Thought Process

Art on Mental Health

Art has always been an outlet for human expression, allowing individuals to convey emotions, thoughts, and experiences visually. Numerous studies have shown that engaging in creative activities can reduce stress, anxiety, and symptoms of depression.

Journalling on Mental Health

"Journalling enhances mental clarity & emotional processing, helping to manage stress & anxiety. Regular writing can boost self-esteem & mindfulness by encouraging reflection & personal growth. Incorporating journalling into daily routines supports goal setting, creativity & overall well-being" - (Positive Psychology, 2018)

Art on Mental Health - Case Study

"In a study of patient anxiety and agitation in a mental health facility, Nanda et al. (2010) found that anxiety and agitation decreased significantly in the inpatient unit where visual art was installed, demonstrating that exposure to visual art can create a more therapeutic environment. These and related studies indicate that visual art can transform the mental health experience." - (Medium, 2024)

Mosaic Art - Overview & Research

When it comes to mosaic art, the act of piecing together intricate designs provides a unique therapeutic experience;

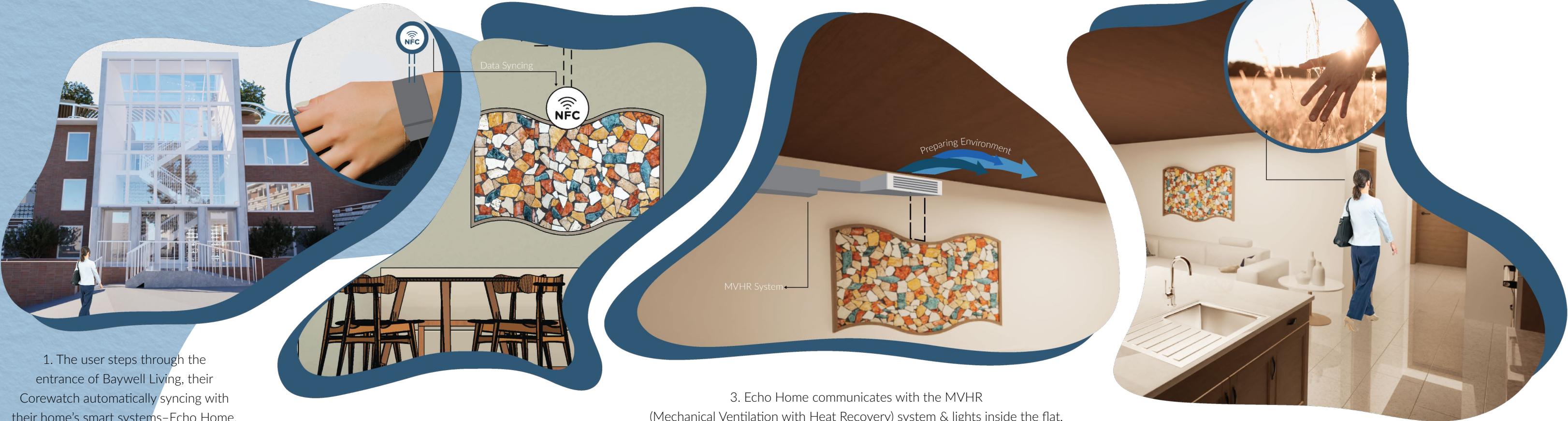
Visual : "Handmade mosaic artwork provides calming effects, encourages mindfulness, allows for emotional expression, and gives a sense of accomplishment."

Practical : "Creating mosaic art can reduce stress, anxiety, and symptoms of depression while promoting mindfulness and emotional expression."

Community : "Mosaic art can build community through shared interests, and group sessions can promote healing and emotional processing."

All - (ChicMosaic, n.d)

Echo Home Storyboard, Altering Environments



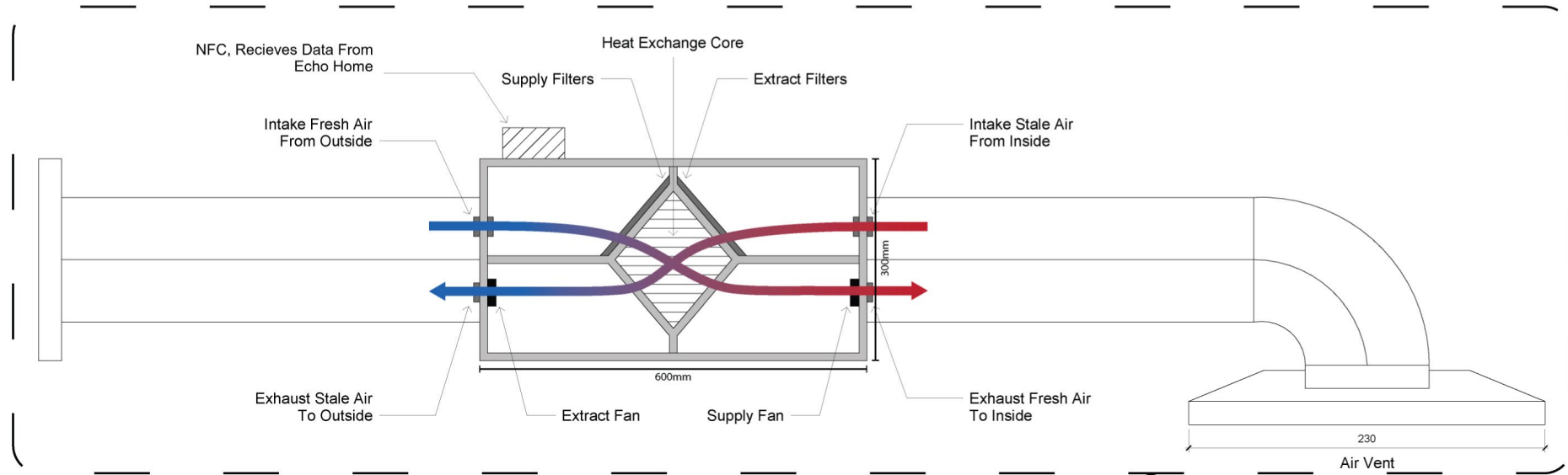
1. The user steps through the entrance of Baywell Living, their Corewatch automatically syncing with their home's smart systems—Echo Home.

2. Corewatch seamlessly connects with Echo Home via NFC, initiating a data handover in real time. Echo Home receives the user's biometric data — such as heart rate and stress levels — and interprets their emotional and physical state

3. Echo Home communicates with the MVHR (Mechanical Ventilation with Heat Recovery) system & lights inside the flat. The home begins to respond: adjusting airflow, temperature and lighting to create the ideal environment based on the user's current needs.

4. By the time the user steps into their flat, the space has already adapted — warm and cocooning in response to stress, or fresh and uplifting when fatigue is detected — creating a responsive, ever-changing environment that supports mental well-being after a demanding shift.

1:2 Scale, MVHR System



MVHR System

MVHR (Mechanical Ventilation with Heat Recovery) systems are commonly used in Passivhaus buildings and align with Baywell Living's sustainability goals. These systems circulate fresh air throughout each flat while extracting stale air, helping to maintain a clean, healthy indoor environment. In this scheme, the MVHR system is controlled by Echo Home, which sends real-time instructions based on biometric data — adjusting airflow to support the user's well-being.

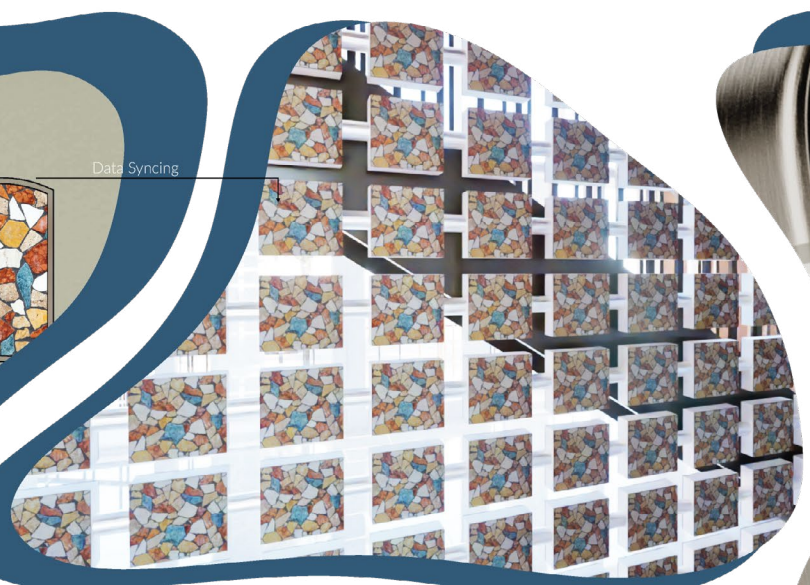
Echo Home Storyboard,
User Connection



1. The user steps into Baywell Living, exhausted and emotionally drained after a demanding 11-hour shift.



2. In their personalised environment, they select and place a mosaic tile that best represents their day—whether it reflects a specific emotion, experience or moment, symbolic that they made it through another day.



3. Echo Home reads the tile's unique magnetic chip and visually translates it onto the community memory wall, located in the core stairwell of Baywell. Everyday, as each resident contributes, the wall becomes an ever-evolving artwork—symbolising its supportive community.



4. The CoreCare app then links users with contrasting reflections and notifies them of nearby colleagues, suggesting shared activities like yoga or rooftop breaks—nurturing peer support and emotional connection.

USP Proposal in Overview - For the User

Echo Home responds to real-time biometric data, automatically adjusting their home environment to meet immediate physical and emotional needs - offering a more intuitive and personalised experience. Personal contributions to Echo Home's appearance through mosaic serve as a visual mood journal, allowing individuals to reflect and track what brings them comfort and relaxation after long shifts, ultimately supporting them to unwind more effectively and efficiently in the future.

USP Proposal in Overview - For the Community

Essentially, Echo Home is a smart hub that controls user environments using real-time biometric data, while also serving a practical, reflective purpose. It not only supports mental well-being through personalised environments and low-commitment creative expression, but also encourages subtle human connection through emotional threads. Designed for users with high-pressure roles (like those in the NHS), Echo Home transforms passive data into an active tool for self-care, reflection and community.



Names : Marcus, Kathryn, Milo & Ty
Ages : 38, 36, 5 & 6

Archetype 3 :
NHS Partners

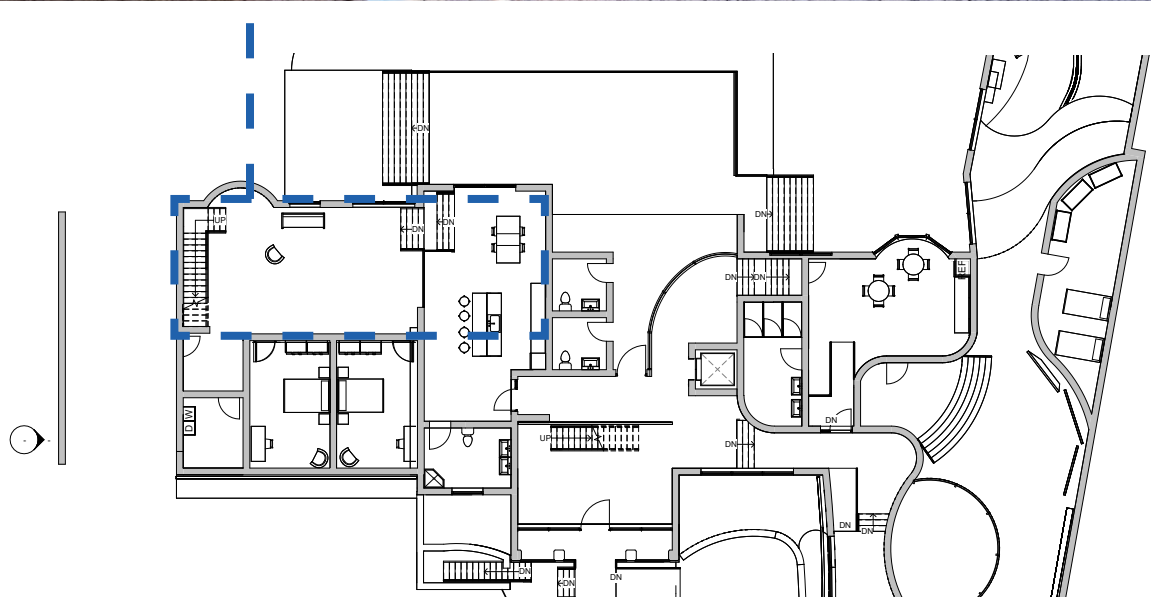
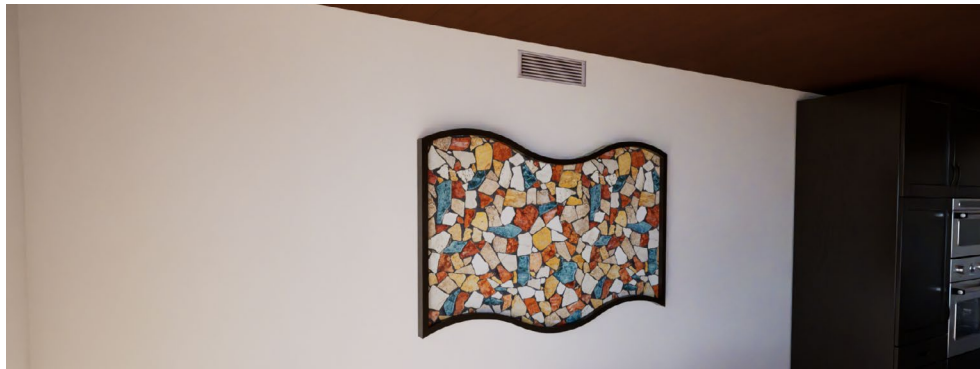
Situation : With both Marcus and Kathryn working for the NHS, the demands don't stop when they clock out. At home, caring for their boys, Milo and Ty, adds to their exhaustion - leaving little time to rest, reset, or connect as a family.

Needs : 3-Bed House Exhaustion Support

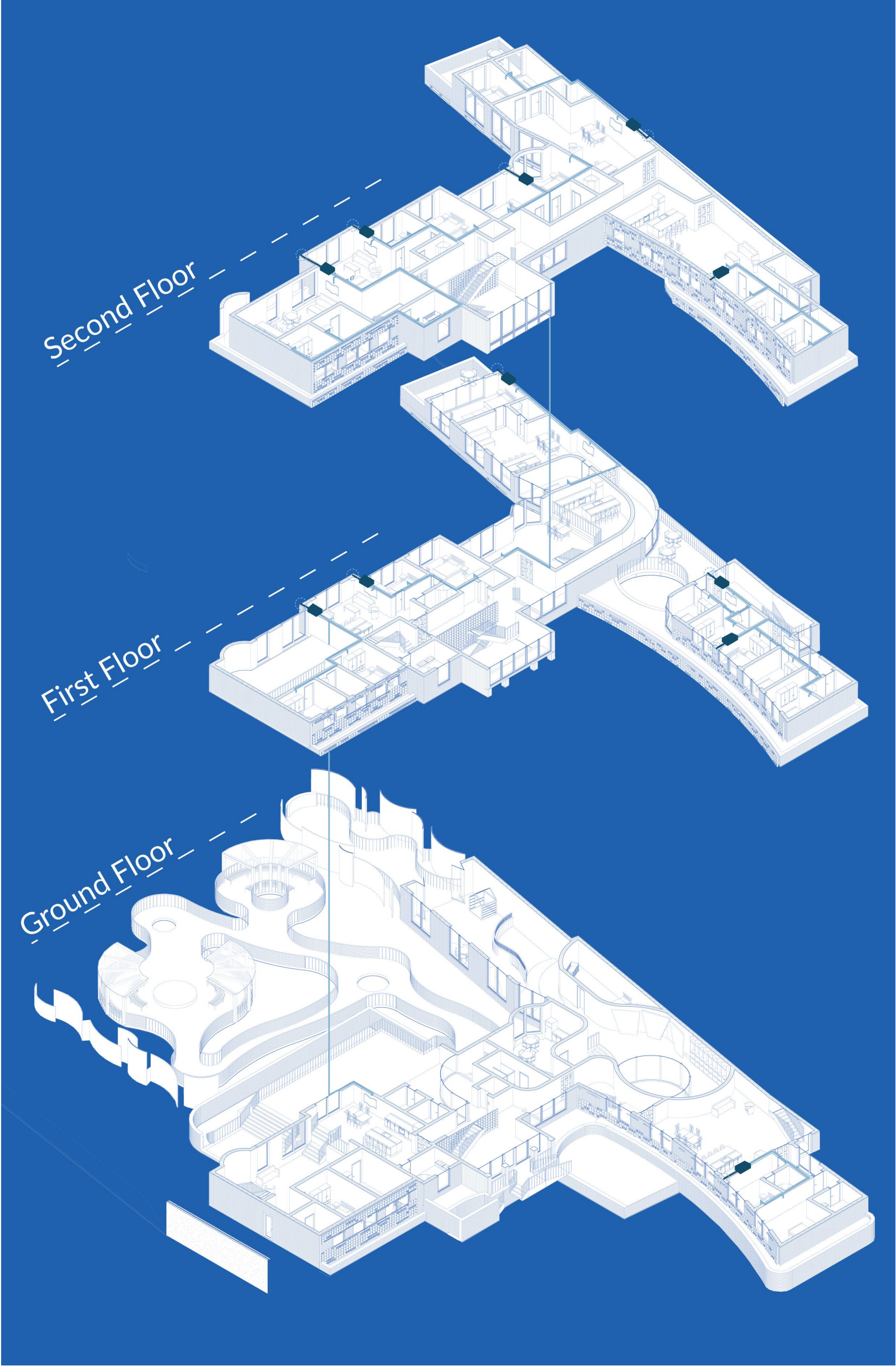
Archetype three is a family of four navigating the intense physical and emotional demands of NHS life. Both Marcus and Kathryn hold high-pressure roles within the healthcare system, while simultaneously raising their two young sons, Milo and Ty. Baywell Living addresses this exhaustion by ;

Marcus & Kathryn : The Echo Home concept within Baywell has been intentionally designed to address burnout and physical tension. By using data-responsive environments, Echo Home can intuitively adjust lighting and temperature based on stress levels and emotional needs, creating calming atmospheres that promote rest and mental clarity. This personalised care allows Marcus and Kathryn to decompress effectively either privately or through social connection, helping restore balance between their demanding careers.

Milo & Ty : Previously, home life for Milo and Ty was marked by unpredictability and emotional tension, as their parents struggled to manage exhaustion and supporting them simultaneously. Within Baywell Living, they now experience a calmer, more structured environment where quality family time is prioritised strengthening their emotional development.



Air in/out Air Circulating



MVHR Scope

Baywell Living's services are fully integrated and concealed within floor cavities to maintain a clean aesthetic while ensuring functionality. The core of the system is an MVHR (Mechanical Ventilation with Heat Recovery) unit controlled by Echo Home - which has been individually allocated to each flat. This allows for personalised environmental control, supporting both comfort and energy efficiency.

In the services diagram, the dark blue boxes indicate the MVHR units located in each apartment. Dark blue lines represent the flow of stale air being extracted from the internal spaces, while the light blue lines show the path of fresh, filtered air being circulated back into the flats. This strategy ensures continuous ventilation throughout the building while minimising heat loss, aligning with Passivhaus principles.

User Comfort & Sustainability

Energy & Water Capture Facades

The design process began by exploring wave-like forms inspired by the site's coastal topography. Water and waves are often associated with calm and relaxation, aligning with the emotional tone I aim to evoke. Guided by the core design principle of my scheme—repetition, these flowing forms are echoed throughout the scheme, creating a consistent visual language that reinforces a sense of serenity.

Overview

The lighting scheme at Baywell Living has been designed with a strong focus on sustainability, occupant well-being, and energy efficiency.

The central atrium—serving as both the main circulation hub and focal point of the building—features lighting powered by renewable energy generated from the building's energy-producing façades. This conscious design decision allows for the entrance and atrium lights to remain illuminated 24/7, ensuring that residents returning from varying shift patterns always arrive to a welcoming, safe, and well-lit environment. Keeping these lights on continuously not only promotes a sense of security but also aligns with the building's ethos of people-centred design, without relying solely on the national grid. However, all other general lighting on the ground floor and others will be powered by the grid.

Overall, the lighting approach balances sustainable energy use with practical human needs, aligning with Passivhaus principles and the wider goals of the Baywell Living scheme.



Façades Material Discussion

The external façades will use porcelain blocks, chosen for their exceptional performance in coastal environments. Porcelain is impervious to water, with an absorption rate of less than 0.5%, making it ideal for areas exposed to rain and high humidity. It is also resistant to salt, pollution, and chemical corrosion, offering long-term durability against the challenges of a seaside location. In addition, porcelain is scratch-proof, UV-resistant, and capable of withstanding extreme weather and temperature fluctuations, ensuring both resilience and longevity in the building's exterior.

Façades Function

This detail area shows how the façade's inner systems will operate. Porcelain blocks are suspended in a way that allows them to swing in response to both wind and water weight. This motion activates two outcomes: it channels rainwater into a concealed capture system and simultaneously generates small amounts of vibration energy to support the building's power needs. It's piping is discreetly integrated behind vegetation, preserving residents' views and maintaining the overall visual quality of the façade. While the building will not rely solely on this system for its utilities, it plays a valuable supporting role in the wider sustainability strategy.

