

Access for All?

Evaluating the meaningful integration of Universal Design in Welsh public buildings through a Swansea case study.

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Abstract

This dissertation investigates the gap between legislative compliance and sensory equity within Swansea's urban regeneration. Moving beyond the technical checklist of the medical model of disability, the research evaluates the built environment through the lens of the social model, comparing the Swansea Arena with the Glynn Vivian Art Gallery.

The methodology employs audits combined with a critical analysis of theoretical frameworks from key theorists including Maslin (1985), Pallasmaa (2012) and more. Theoretical frameworks were used to develop three primary themes: dignity of arrival, movement, and sensory and cognitive performance. These findings are further contextualised within the legal landscape of the Welsh Building Regulations (2025) (Approved Document M).

Key findings indicate that while the arena successfully overcomes ocular centrism (Pallasmaa, 2012) by integrating neuro-inclusive measures into a high stimulus environment, the Glynn Vivian demonstrates the resilience of heritage through adaptive mediation. The design of both buildings proves that UD can be achieved successfully across different architectural timelines, transforming from a tick box compliance into meaningful social design.

By synthesising primary audit data with theories of UD, the research concludes that Swansea is transitioning beyond a tick box approach to remove physical barriers. Instead, the city is shifting toward a model where the entrance and layout of a building are fair for everyone. This suggests that true inclusion is not just about ramps, but about how a space feels and how easy it is to understand. The progress ensures that Swansea's main public buildings provide a genuine sense of belonging for all people, matching the goals of the Well-being of Future Generations Act (2015).

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Glossary of Terms

AOD: Above Ordnance Datum

BR: Building Regulations

BSL: British Sign Language

DAS: Design Access Statement

DOA: Dignity of Arrival

POE: Post Occupancy Evaluation

UD: Universal Design

WFGA: Well-being of Future Generations (Wales) Act 2015

Chapter 1 Introduction

In the contemporary built environment, the concept of accessibility has transitioned from a fringe regulatory requirement to a core pillar of architectural responsibility. However, a significant tension remains between compliant design—meeting the minimum legal standards set by Part M of the Building Regulations (BR) (Welsh Government, 2025) - and meaningful design, which seeks to provide a dignified and intuitive experience for all users regardless of ability (Goldsmith, 2000). In the context of Wales, this shift is further emphasized by the Well-being of Future Generations (Wales) Act 2015 (WFGA), which legally mandates public bodies to strive for more equality (Welsh Government, 2015).

Despite these legislative frameworks, the architectural profession often struggles to balance inclusive aspirations with the realities of heritage conservation, topography, and budget constraints. This research investigates whether current architectural practice in Swansea achieves true Universal Design (UD) or if it remains a "tick-box" exercise driven by the Equality Act (2010).

This work adopts a multi-layered research strategy approach, prioritising the lived reality of the built environment over theoretical compliance. By utilising a structured literature review as a foundation, the researcher established a comparative framework based on key theories. This framework is applied through in-depth case studies and primary site audits of two contrasting Swansea landmarks: the historic Glynn Vivian Art Gallery, and the Swansea Arena. This mixed methodology aims to uncover the critical gap between architectural intent and the functional reality experienced by the user. Ultimately this comparative analysis seeks to determine how effectively Swansea's public realm accommodates not only traditional physical mobility but also the complex sensory and cognitive requirements of a neurodiverse population.

1.1 Research Aims & Objectives

This work explores the extent to which UD is meaningfully integrated into Welsh public realm through a detailed comparative case study analysis of two distinct architectural buildings in Swansea. The primary aim is to critically investigate UD, examining whether architecture is moving beyond mere statutory compliance to achieve truly inclusive environments. Through a comparative study of two key buildings, this work evaluates the how physical, sensory and cognitive barriers are mitigated to facilitate a dignified user journey.

The research objectives are as follows:

- Conduct a literature review to define the Social Model of disability and establish a framework for meaningful design by evaluating foundational theorists alongside contemporary perspectives on inclusion.
- Analyse two case studies – the Glynn Vivian Art Gallery and the Swansea Arena – using a set framework to assess their physical and sensory inclusivity.
- Compare the architectural successes and failures of these buildings to determine if modern purpose-built architecture provides a more dignified experience than adapted heritage buildings.
- Evaluate the impact of the WFGA on the design process through the assessment of buildings, both through extensive research and site audits.

Despite the limitations of a localised study, the findings will offer valuable insights into the tension between heritage conservation and accessibility. This research will contribute to a growing body of evidence regarding the effectiveness of Welsh design policy in creating genuinely inclusive public spaces.

Chapter 2 Literature Review

2.1 Introduction

The evolution of inclusive design marks a shift from seeing disability as a medical problem to a broader philosophy known as UD (Mace, 1985). While UK laws like part M of BR (Welsh Government, 2025) and the Equality Act (2010) are robust, a gap often remains between following the rules and providing a truly dignified experience (Bright, 2004; Goldsmith, 2000). In Wales, this is further scrutinised under the WFGA, which mandates a more equal Wales through inclusive infrastructure.

This review distinguishes between compliant design, a reactive tick box approach to minimum standards (Bone, 1996) and meaningful design, which anticipates diverse needs from a project's inception (Goldsmith, 2000). By moving from the medical model to the social model (Oliver, 1990), this chapter sets the framework for analysing Swansea's public realm.

Finally, this review expands beyond traditional mobility-centric access to address the sensory turn in architecture. Using Pallasmaa's (2012), critique of the ocular centrism of modern design, and mind friendly frameworks of Maslin (2022), the discussion justifies the comparative analysis of the built environment. The evaluation includes the high stimulus Swansea Arena, against the restorative, heritage Glynn Vivian Art Gallery. Ultimately, this chapter argues that for UD to be meaningful, it must move beyond the visible ramp and address sensory, and cognitive legibility of the built environment (Maslin, 2022; Goldsmith, 2000).

2.2 Legal Frameworks

The UK's legislative framework began from the Chronically Sick and Disabled Persons Act (1970), serving as the first to recognise people with disabilities and provide them with rights, though it was often criticized for its lack of enforcement and reliance on the Medical Model of disability (Oliver, 1990). This was superseded by the Disability Discrimination Act (DDA) (1995), which introduced the concept of reasonable adjustments, making it unlawful to discriminate against disabled people. However, Bright (2004) notes, the DDA only focused on preventing discrimination against people rather than mandating physical building standards.

The current gold standard for civil rights legislation in the UK is the Equality Act (2010). Unlike previous iteration of the law, the Equality Act (2010) places a proactive duty on service providers to anticipate the needs of the disabled population. Under Section 20 of the Equality Act (2010), there is a legal requirement to make reasonable adjustments to physical features

that put disabled persons at substantial disadvantage. For architecture, this means that inclusivity cannot be an afterthought or a reactive fix but instead must be embedded into the design from the start of a project. As Goldsmith (2000) suggests, while the law provides a baseline, meaningful design only occurs when the architect views these legal requirements as a fundamental responsibility rather than a burden.

While the Equality Act (2010) provides the legal “why”, Approved Document M (Welsh Government, 2025) provides the technical “how” by setting minimum standards for access. Yet, architectural theorists often identify a compliance gap within this framework. As Bone (1996) argues, Approved Document M is frequently treated by developers as rules that cover everything that is relevant to access for disabilities rather than the absolute minimum standard.

What sets the Swansea context apart is the WFGA 2015 (Welsh Government, 2025). This legislation requires Welsh public bodies to work toward a more equal Wales, defined as a society that enables people to fulfil their potential regardless of their background or circumstances (Welsh Government, 2025). The integration of this act into Swansea’s £1bn regeneration strategy means that projects are bound to a higher standard of social sustainability (Welsh Government, 2025). This act suggests that meaningful design is not merely an architectural choice, but a localised legislative mandate that proves to create a more inclusive city.

2.3 Theoretical Frameworks

2.3.1 The Evolution of Universal Design

The term UD was coined by Mace (1985, p.2), quoting “Universal design means simply designing all products, buildings and exterior spaces to be usable by all people to the greatest extent possible”. Since, the concept has evolved from a focus on physical access to a broader philosophy that addresses social, cultural and economic diversity (Preiser and Smith, 2011). It is an approach that seeks to strengthen social cohesion by valuing and celebrating human diversity (Preiser and Smith, 2011).

A key theory of modern UD is the curb-cut effect (Blackwell, 2017). This principle suggests that architectural interventions designed for those at the margins of physical and sensory ability ultimately provide a superior experience for the entire population (Blackwell, 2017). Rather than viewing accessibility as a burden for a minority, this theory frames inclusion as a catalyst for overall architectural quality. By removing spatial friction, UD facilitates what Seamon (1979) describes as body ballet: the subconscious, rhythmic coordination of movement within a space. When a building is truly inclusive, movement becomes habitual and

intuitive for everyone regardless of ability. Ultimately, UD ensures that the environment supports natural flow, reducing navigational anxiety and fostering a dignified experience for users.

2.3.2 From the Medical to the Social Model

To critically evaluate the inclusive performance of the built environment, one must distinguish between the Medical Model and the Social Model of disability. Traditionally, architecture was guided by the Medical Model, which views disability as an individual deficit or a biological problem to be managed through specialised, often segregated facilities (Oliver, 1990). In contrast, the Social Model of disability was championed by Oliver (1990), who posits that people are not disabled by their physical or cognitive impairments, but by the systematic barriers and exclusionary practices of the society in which they live. Under this framework, a building is essentially disabling if it fails to account for the diverse ways in which humans interact with space. This theoretical shift moves the responsibility away from the user to adapt to the building and instead places the duty on the architect to remove environmental disablers that prevent equal participation.

2.4 Demographic Context

To understand the necessity of meaningful architecture, the environment must be analysed alongside the demographic reality. Disability is not a niche consideration; it is a significant characteristic of the UK population. According to the Office for National Statistics (2022a), approximately 17.8% (10.4 million) of the population in England and Wales were identified as disabled under the Equality Act (2010) definition. In Swansea, this figure rises to 22.4% (53,500 people) being identified as disabled under the Equality Act (2010), comprising those whose daily activities are limited a lot (11.2%) or a little (11.2%) (Office for National Statistics, 2022b). This figure exceeds the national average, highlighting a local requirement for meaningful architecture intervention.

While Oliver's (1990) Social Model of Disability identifies environmental barriers as the primary cause of exclusion, architectural practice has historically suffered from a mobility centric bias. This often prioritises visible physical disabilities at the expense of those whose disabilities are invisible. Research indicates that globally 1 in 6 people live with a disability, with an estimate that 70% to 80% of disabilities are non-visible, including sensory processing disorders, chronic pain and neurodivergent conditions (Hidden Disabilities, 2026). By focusing on physical

clearances, architects risk creating normative environments (Hamraie, 2017) that exclude those with diverse cognitive or neurological needs.

These statistics highlight a compliance gap in architecture. If almost one quarter of Swansea's residents have a disability, yet only a small fraction utilises visible mobility aids, then a traditional tick box compliance like Approved Document M is statistically insufficient. The high prevalence of invisible disability in Swansea acts as a mandate, it proves that sensory and cognitive performance is not a design extra but instead should be a fundamental requirement for the functional successes of civic buildings.

2.5 Sensory Turn and Cognitive Inclusion

While accessibility traditionally focused on physical mobility, a sensory turn in contemporary theory acknowledges the diversity of human perception. For a design to be meaningful, it must move beyond visual aesthetics and address the invisible atmospheric qualities of a space, including acoustics, lighting and cognitive legibility. Pallasmaa (2012) critiques the ocular centric bias of modern architecture, arguing that the obsession over visual image detaches users from the environment. Thus, for individuals with visual impairments or sensory processing sensitivity, a building that only works visually can be exclusionary. Pallasmaa (2012) advocates for haptic and multi-sensory architecture, a vital shift for the 1,100 residents in Swansea living with severe sight loss (RNIB, 2024), for whom architectural navigation relies on tactile and acoustic cues.

Neuro-inclusive design further addresses the needs of the 15-20% of the UK population who are neurodivergent (The Neurodiversity Directory, 2026). Maslin (2022) introduces the concept of mind friendly environments, which aim to reduce cognitive load, which is the mental effort required to process complex or chaotic spaces. According to Maslin (2022), meaningful design must offer predictability and clarity. High-stimulus environments with harsh lighting or noise can trigger sensory overload, effectively disabling a neurodivergent user even if the building is physically accessible (Hewitt, 2022).

This is a critical consideration for the 22.4% of Swansea's population identified as disabled (Office for National Statistics, 2022b), many of whom navigate unseen sensory barriers. For example, the approximate 53,500 disabled residents in Swansea include a demographic with hearing loss, as the national average affects 1 in 5 people (RNID, 2026; Office for National Statistics, 2022b), for whom acoustic clutter is a major barrier. The technical benchmark for this is the PAS 6463:2022 (British Standard Institution, 2022), which provides a standard for

designing for neurodiversity. This code emphasizes the importance of both acoustic stillness and controlled lighting glare; two critical metrics used in sensory friendly architecture.

2.6 The Autoethnographic Lens in Architectural Research

In exploring the intersection of human experience and architecture, academic discourse has increasingly recognised the value of the autoethnographic lens. Autoethnography is a qualitative research method that utilises the researcher's experience to describe and critique cultural, social and spatial phenomena (Ellis, Adams and Bochner, 2011). This involves the researcher adopting their personal journey through a space and consider other people's experience to uncover its performance (Ellis, Adams and Bochner, 2011). Within architectural research, this approach provides a critical alternative to purely quantitative auditing, allowing for a deeper investigation into how physical structures translate into lived social realities.

2.6.1 Challenging the Mechanical Audit

While technical audits are common, Imrie (2003, p.48) argues that "the technical standards of the BR tend to reduce the body to a set of inanimate, mechanical dimensions." In this view, a pure technical audit – while necessary for legal compliance – frequently overlooks the sensory and psychological complexities inherent in navigating space (Imrie, 2003).

In contrast, an autoethnographic audit allows for the documentation of atmosphere, a quality that Zumthor (2006) posits is the true measure of architectural success. According to Wall (2008), the researcher's subjective sensory response is a legitimate source of academic data, especially when evaluating how a building feels to a user. This aligns with Duncan's (2004) assertion that subjectivity is a strength in qualitative research, providing a depth of insight that a spirit level or laser measure cannot convey. By documenting specific points during observations, the researcher can bridge the gap between statutory accessibility and meaningful inclusion. This theoretical background established that for a design to be truly inclusive, it must perform not just geometrically, but emotionally and sensorially.

2.6.2 Phenomenological Links

Autoethnography in architecture is deeply rooted in phenomenology, the philosophical study of conscious experience. Adopting this lens aids in moving beyond ocular centric tradition to explore the embodied experience of space, aligning with Pallasmaa's (2012) call for engagement with all the senses. It also associates with the foundational work of Merleau-Ponty (2012), who argued that the body is not just an object in space, but the very medium

through which we know space. In this context, the researcher's body becomes the primary tool for auditing, transforming a study from a detached observation of a building to a phenomenological state of experiencing the building.

This transition is further supported by Bachelard (1994), where he advances that architecture is not merely a structural shell, but a vessel for human emotion and memory. An autoethnographic audit allows the researcher to capture what Bachelard (1994) describes as the psychological resonance of a space, for instance, how grand scales of spaces might evoke a sense of awe.

Chapter 3 Methodology

This dissertation employs a multi-layered research strategy to investigate the integration of UD within Swansea's public architecture. The research methodologies include:

1. Comparative Case Study Analysis
2. Site Audits (Primary Data)
3. Synthesis and Comparative Framework

3.1 Purposive Case Study Selection & Analysis

Initially, the research was set to include interviews with architects to capture their understanding on accessible architecture and how they incorporated accessibility into their designs. However, after initial enquiries were made, it quickly became apparent that this approach would not be fruitful in the time available. Therefore, a comparative case study analysis method was adopted as an alternative, a strategy supported by Yin (2018) for investigating contemporary phenomena within their real-life context. This included a thorough review into the Design and Access Statements (DAS) of each building to support the primary findings. As stated by the Welsh Government (2017), a DAS is a formal document that addresses how the design responds to context, brief, vision and relevant policies, required by planning law.

The research begins with a purposive case study selection, utilising Swansea as a controlled geographical locus due to its ongoing £1bn urban regeneration scheme (Swansea Council, 2025). Two sites were selected to represent a chronological and typological contrast: the

Glynn Vivian Art Gallery, a Grade II listed heritage building representing restoration, and the Swansea Arena, a 2022 purpose-built assembly building representing contemporary compliance standards. By comparing two sites within the same geographical and legislative framework of Swansea, the study ensures that socio-political variables remain constant. This allows the work to focus specifically on the evolution of architectural standards, contrasting heritage constraints with contemporary design.

To ensure a valid and consistent approach, a comparative framework was developed based on the key themes identified in the literature review: Dignity of Arrival (DOA), grounded in Pallasmaa's (2012) theory of the sensory threshold; sensory and cognitive performance, utilising Maslin's (2022) mind friendly framework; and movement, applying Seamon's (1979) concept of the body ballet. These themes were structured into a table to provide a standardised protocol for data collection during the site audits. This table serves as the primary recipe for the comparison, ensuring that both the heritage and contemporary buildings are judged against the same criteria. Reiterating this consistency is important, as by using identical benchmarks, the research avoids subjective bias and ensures that the meaningful quality of the architecture is measured against the same UD standards established by Mace (1985). This approach ensures that the performance of the built environment is evaluated on the quality of the user experience, regardless of the building's age.

3.2 Site Audits (Primary Data)

Primary data collection is executed through observational site audits conducted in January and April 2026. These audits both follow a user journey, starting from the primary entrance and following the public circulation of buildings through the main spaces. Rather than focusing on technical measurements, this phased utilised a photographic survey to capture points of the building connecting to the comparative framework, so that the analysis of data can be successfully linked to evidence. The method also incorporated an autoethnographic study as explained in section 2.6, which involved the researcher doing a careful observation of the main spaces including the galleries in the Glynn Vivian and the auditorium and foyer in the Swansea Arena. Following the sensory ethnography framework established by Pink (2015), the researcher remained stationary for 10 minutes to evaluate acoustic reverberation, lighting and intuitive legibility which were all recorded in the comparative framework. These audits allow the researcher to interview the building itself, comparing the architectural intentions stated in the (DAS) with the actual built environment and how it works post occupancy. This approach is validated by Low (2016), who argues that spatializing

culture requires the researcher to use their own body as a primary data collection to uncover sensory landscapes that technical drawings often omit.

3.3 Comparative Analysis between Primary and Secondary Data

The final stage of the method involves a comparative analysis between primary and secondary data. The primary objective of this synthesis is to identify the compliance gap, specifically the disconnect between the theoretical inclusive goals of a project and its practical, post occupancy performance.

The DAS are utilised as the theoretical baseline for each site. These documents provide the blueprint for original design intent, including detail on how inclusivity is included. These official commitments are then cross referenced with the visual audits and autoethnographic studies recorded during the site visits. This method aligns with the principles of Post Occupancy Evaluation (POE), which Preiser, Nasar and White (2014) define as the process of evaluating buildings in a systematic manner after they have been occupied. The comparative framework acts as the mechanism for the synthesis as it allows for a direct, parallel evaluation where the intent from the DAS is verified or challenged by the results observed in the site audits. By judging both buildings against the same criteria of DOA, Sensory Performance and Movement, the analysis maintains a consistent standard.

Chapter 4 Case Study Findings

4.1 Case Study 1: The Glynn Vivian Gallery



Figure 1: Exterior image of the Glynn Vivian Art Gallery (Glynn Vivian Art Gallery, 2017)

The table below shows a simplified format of findings of the Glynn Vivian Art Gallery. Further discussion of each theme is in the findings below. For further information, refer to appendices A, B & C.

Table 1: Simplified Comparative framework for the Glynn Vivian Art Gallery (Author's own, 2026).

Theme:	Criteria:	Look for:	The Glynn Vivian Art Gallery
Dignity of Arrival and Threshold Equity	Entry	Is there a single entrance for all? If there are stairs, is the alternative (ramp/lift) visible and equal quality?	• Single main street entrance. • Flush threshold, no steps/ramps. • Automatic double door.
	Transition	Is the move from outside to inside jarring (bright lights/noise) or calm? Is it an easy transition?	• Easy transition from outside to inside and vice versa. • Reception area is a bright and welcoming. • Natural lighting throughout.
	Legibility	Can you clearly see the entrance from the street? Signage?	• Entrance is sheltered and is recessed but clearly signed. • Interior is clearly signed, every room etc.
Movement and Navigation	Vertical movement	Is the lift central and celebrated, or hidden in a corridor?	• Lift is located next to reception, straight from the entrance. • Lift is large and accesses each floor of the gallery. • Easy to navigate from lift, central location. • A lot of stairs, but some are just a few steps because of how the gallery levels are split.
	Horizontal flow	Are corridors wide enough for two wheelchair users to pass? Are routes logical?	• Corridors are wide. • Routes are logical, all rooms are linked.
	Resting points	Are there regular seats for people with mobility or fatigue issues?	• There is seating in every gallery space and room. • In the video/audio room, there is only one bench.
Sensory Legibility and Cognitive Performance	Acoustics	Is there an echo? Is it overwhelming? Are there "Quiet Rooms"?	• Echo in main gallery space and most gallery rooms but rooms are quiet so not noticeable. • Calm and quiet environment. • Some rooms had audio playing at a comfortable volume. • Sign language was shown on screens.
	Lighting	Is it natural daylight (calming) or harsh strip lighting (stressful)?	• Natural lighting via rooflight and curtain wall. • Lighting tone is soft and neutral providing a calm environment.
	Visual contrast	Do walls and floors contrast clearly? (Essential for visual impairment).	• Soft contrasts – white walls with wood flooring. • Some rooms have dark walls (navy). • Audio/video room was not clearly or identifiable, low contrast curtain to floor.

4.1.1 Project Profile and Historical Context

The Glynn Vivian Art Gallery is a central cultural landmark within Swansea. Originally founded by the philanthropist Richard Glynn Vivian and opened posthumously in 1911 to house his private collection of art (Glynn Vivian Art Gallery, 2016). As a significant piece of Swansea's architectural heritage, the building is designated as Grade II listed. After a period of closure for an extensive multi-million-pound redevelopment led by Powell Dobson Architects, the gallery reopened to the public in October 2016, marking a new chapter in its effort to serve 21st century visitors (Glynn Vivian Art Gallery, 2016).

Architecturally, the original building reflects the Edwardian Baroque style, characterised by a monumental approach that prioritised symmetry and grandeur (Norberg-Schulz, 1986). However, like many buildings of its era, the design was inherently exclusionary, focusing more on aesthetics and utilising a stepped entrance that served as a physical and social barrier for users (Service, 1997). The architectural language of the period utilised these features as symbols of prestige and cultural importance.

4.1.2 Design Philosophy

The design philosophy underpinning the 2016 redevelopment was centred on the concept of inclusive heritage. The primary challenge was to reconcile a historic building that was designed during a period of institutional exclusion with a modern mandate for democratic, universal access (Powell Dobson Architects, 2011). This required a philosophy that viewed accessibility not as bolt on requirement, but as a fundamental architectural driver.

As identified in the project's DAS (Powell Dobson Architects, 2011), they aimed to create a socially inclusive environment, achieved through a philosophy of permeability, where the new extension acts as a connection between the separate historic wings of the gallery. Rather than forcing a disabled user to take a convoluted or secondary path, the architects prioritised a singular circulation loop, ensuring that the journey through the gallery is identical for all users, fulfilling the UD principle of equitable use (Mace, 1985).

Moreover, relating to Goldsmith (2000), the design sought to address the DOA. Historically, the Edwardian entrance served as a grand but exclusionary threshold, as shown by the red outline in figure 2. Whereas, the 2016 philosophy inverted this, moving the heart of the building to a transparent glass lobby at street level, shown by the blue outline in figure 2.

RESPONSE

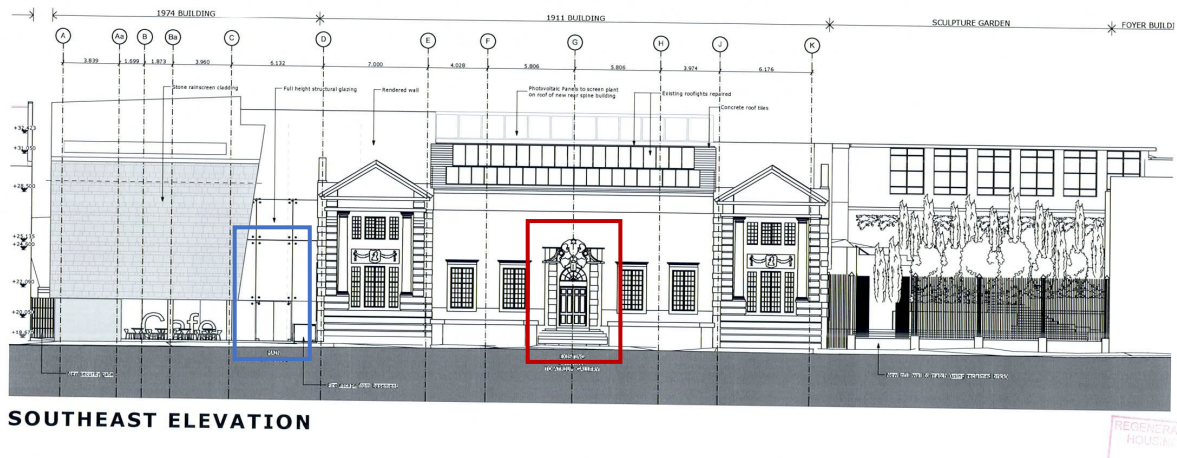


Figure 2: Proposed Southeast Elevation of the Glynn Vivian (Powell Dobson Architects, 2011a, p.86)

This transparency was a deliberate choice to make the gallery feel open to the diverse Swansea public, removing the psychological and physical barriers often associated with elite heritage structures. By doing so, the architecture actively contributes to the WFGA, specifically aligning with the goals of achieving “a more equal Wales” by removing barriers to participation and “a Wales of vibrant culture and thriving Welsh language”, by ensuring that Swansea’s artistic heritage is accessible to all (Welsh Government, 2015).

4.1.3 Physical and Technical Analysis

From a technical perspective, the redevelopment is defined by a series of architectural interventions designed to resolve the inherent physical barriers of the original Edwardian

floor plan, as shown in figure 3.

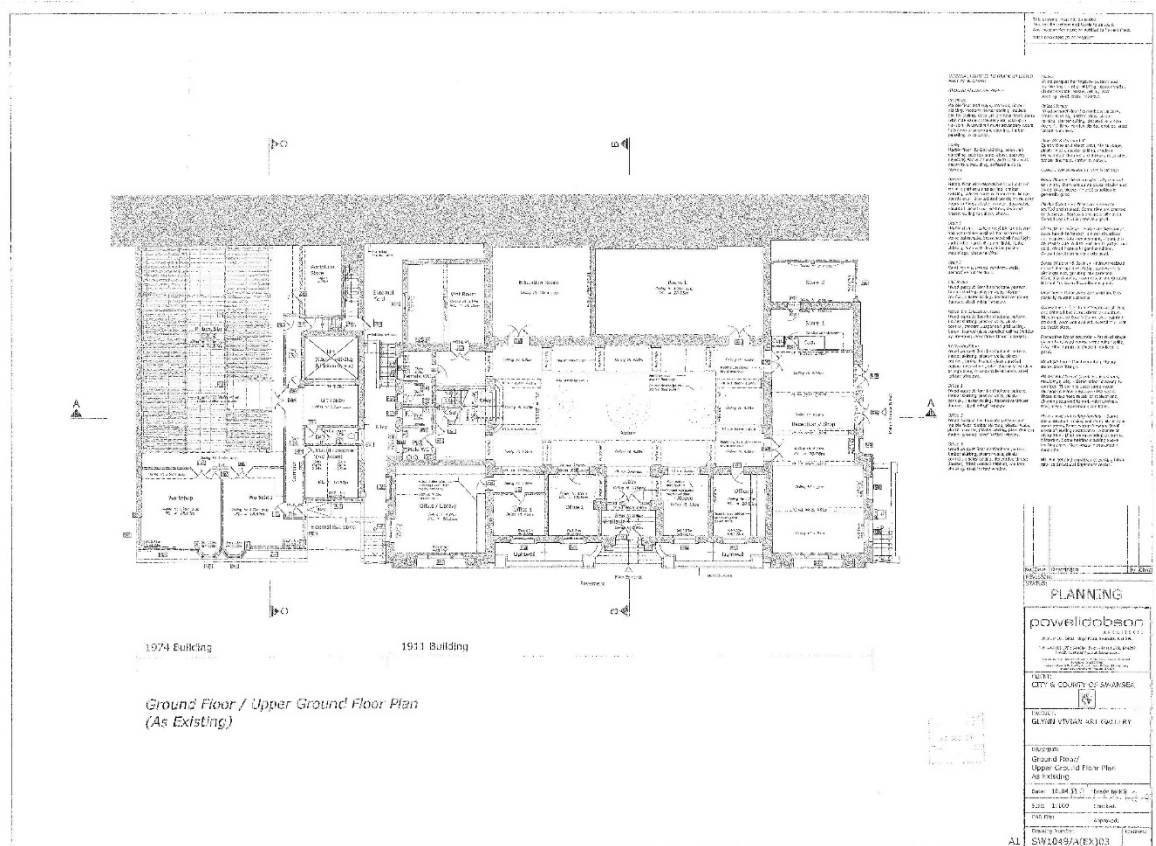


Figure 3: Ground Floor/ Upper Ground Floor Plan as Existing (Powell Dobson Architects, 2011b).

The most significant technical correction was the realignment of the primary threshold to achieve a seamless transition from street level to the interior. As seen in figure 3, the whole ground floor of the gallery was above street level, making it difficult for people with disabilities to access. By establishing a new level (shown in figure 4) that meets the external pavement, the architects bypassed the stepped entrance that had previously necessitated a segregated route for mobility impaired visitors. This correction ensures that the building functions as a singular, unified volume from the moment of arrival, eliminating the need for external ramps which often feel like an afterthought in heritage projects, and fulfilling the

requirements for a barrier free DOA (Goldsmith, 2000).

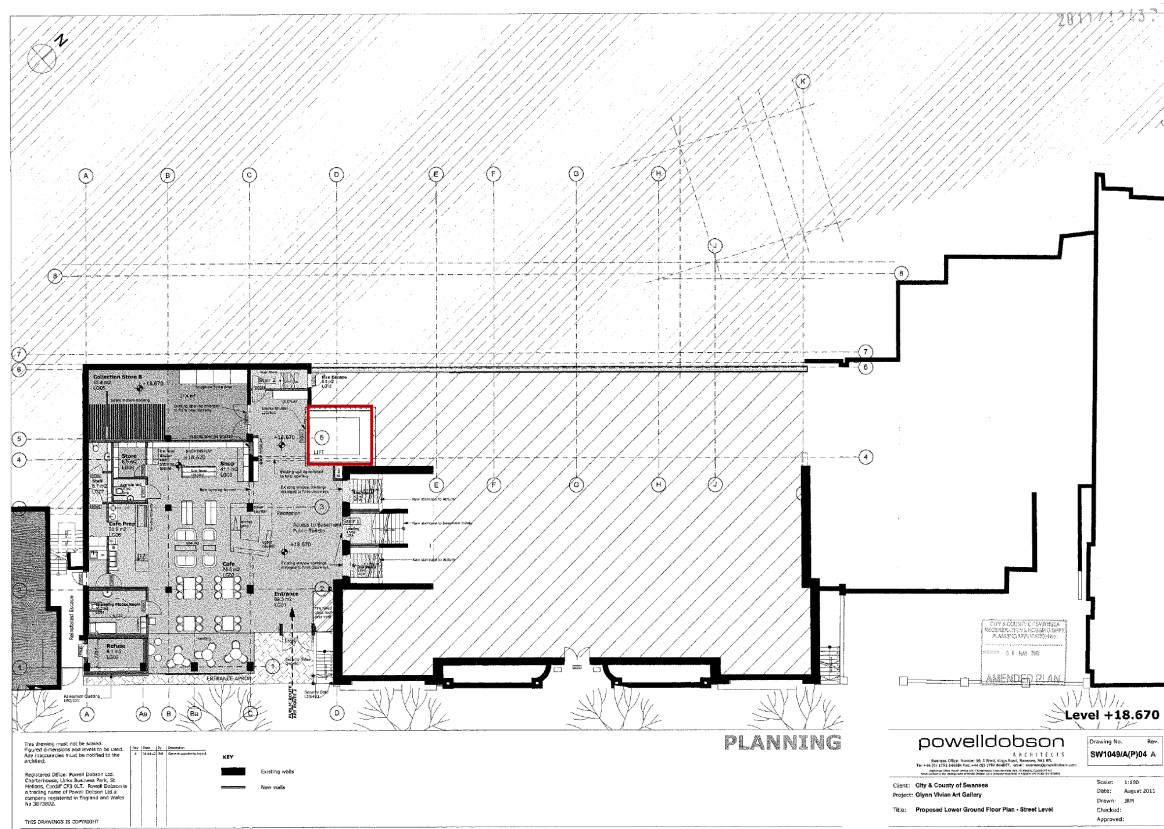


Figure 4: Proposed Lower Ground Floor Plan – Street Level (Powell Dobson Architects, 2011c).

Vertical permeability within the building is managed through a centrally positioned, high-capacity passenger lift housed within the entrance. A critical technical feature of this is its co-location, as it is situated directly adjacent to the main staircase, both of which sit opposite the reception desk, as identified in figure 4. In terms of UD programming, this proximity is vital as it prevents the spatial segregation of visitor groups, ensuring that the path of travel remains identical for both able-bodied and disabled users. The lift itself serves as a technical bridge between the new extension and historic wings, featuring a high contrast tactile interface and audible floor announcements that adhere to the rigorous sensory standards of Approved Document M, as enforced by the Welsh Government (2025) (Glynn Vivian Art Gallery, 2016). By determining the lift in a highly visible, bright area rather than hiding it away, the design celebrates the act of inclusivity for all.

The extension utilises a polished concrete floor which provides a smooth, low resistance surface for wheeled users. Modern surfaces meet the original floors of the 1911 galleries with flush level thresholds, minimising trip hazards and ensuring a fluid transition between the old and new architectural language as pictured in figure 5. Additionally, the substantial use of glazed curtain walling in the extension allows natural light to penetrate through the

reception, as well as some gallery spaces, assisting users with visual impairments by reducing the glare to shadow ratio, often found in older buildings, creating a more legible and navigable environment that supports the principle of low physical effort (Mace, 1985) and overall creating a brighter atmosphere in the gallery, as seen in figure 6.



Figure 5: Modern floor meeting original floor, showing flush threshold (Author's own, 2026)



Figure 6: New curtain wall extension providing natural lighting (Author's own, 2026).

4.1.4 Environmental and Sensory Performance

The sensory landscape of the Glynn Vivian is characterised by a quiet legibility, where the architectural transition from the urban exterior to the interior is managed through a gradual sensory decompression. While the main entrance is sheltered and stepped back from the primary façade and central point of the pavement, the clarity of the signage ensures that the building remains legible from the street, successfully signalling the point of arrival without overwhelming the visitor with visual noise. This is shown in figure 7, where named signs and arrows point toward the entrance.



Figure 7: Street view of entrance to the Glynn Vivian Art Gallery (Author's own, 2026).

Utilising an autoethnographic lens, the researcher observed that the move from the street through the automatic glass double door is notably smooth, avoiding the jarring atmospheric shifts often found in modern commercial venues (see figure 8). The reception area serves as

a calming transition space where natural light flows in from the glazed extension, preventing harsh visual contrast and ensuring that the entrance is not only physically accessible but cognitively welcoming through the atmospheric softness.



Figure 8: The Glynn Vivian entrance: Automatic double door (Author's own, 2026)

Throughout, the cognitive legibility is immediately established through clear, high contrast signage and strategic placement of floor plan maps at decision points, a main one being the base of the main staircase as evidenced in figure 9. This provides visitors with a mental map

of the gallery, reducing navigational anxiety that often occurs in complex buildings, allowing people of all abilities to have a smooth experience.



Figure 9: Main staircases and gallery map (Glynn Vivian Art Gallery, 2016).

The lighting strategy features a central rooflight in the atrium (pictured in figure 10) which allows natural daylight to permeate the core gallery space, supplemented in windowless rooms by a neutral, soft artificial tone of lighting. This avoids the stressful tone of harsh strip

lighting, creating an inviting atmosphere that highlights the artwork without causing sensory fatigue.



Figure 10: Rooflight above mezzanine level (Author's own, 2026).

Acoustically, the gallery maintains a “hush” that aligns with the sensory turn identified by Pallasmaa (2012); while a slight echo persists in the larger rooms, the researcher noted that this was not overwhelming. Instead, the audible sound of footsteps throughout the space enhanced the sense of stillness. The integration of quiet audio soundtracks in some rooms, provided an immersive experience layer to the gallery without becoming intrusive, accompanied by the presence of digital screens featuring British Sign Language (BSL) interpretation throughout the gallery spaces. By employing these multi-sensory features

within primary areas, the Glynn Vivian moves beyond basic accessibility to provide a truly inclusive sensory landscape that respects visitors.



Figure 11: Digital screen displaying BSL in gallery space (Author's own, 2026).

However, the autoethnographic audit identified specific points of sensory friction within the otherwise legible environment. A substantial challenge in legibility was observed at the entrance to the projector room. As shown in figure 12, the use of a heavy, black blackout curtain, unmarked and difficult to move, created a moment of uncertainty. In an environment where signage is exceptionally clear, this unmarked threshold stood out as a barrier, proving it difficult to identify the room as a public space. This specific instance highlights the heritage gap in sensory design, where the technical requirement for darkness in a digital display room overrides the building's UD logic.



Figure 12: Unmarked black curtain entry to projector room (Author's own, 2026).

Throughout, the mix of light herringbone wooden flooring paired with white walls provides a soft, aesthetically pleasing contrast in most spaces (shown in figure 13). Whereas figure 14 exhibits some rooms adopting the use of deep navy walls. While intended to create an atmospheric backdrop for artwork, darker surfaces can appear dull or too heavy under controlled lighting, potentially reducing the visual definition of the room for users with low visual acuity.



Figure 13: Wooden herringbone flooring with white walls (Author's own, 2026).



Figure 14: Wooden herringbone flooring with dark navy walls (Author's own, 2026).

4.1.5 Evaluation

The evaluation of the Glynn Vivian Art Gallery, conducted through a rigorous site audit and an autoethnographic lens, positions it as a benchmark for meaningful UD in a heritage context. The redevelopment has successfully transitioned the building from a state of exclusion to one of 21st century inclusion, not just in its adherence to Approved Document M, but in its commitment to principle of UD. The singular, street level entrance and the co-location of vertical circulation facilities ensure that the building functions as a unified environment where user journeys are neither secondary nor segregated, allowing everyone to experience the building equally. This approach embodies the principle of Equitable Use (Mace, 1985), proving that heritage constraints can be overcome to provide a dignified experience for all.

Sensory inclusion is a standout feature of the building's daily operations, representing a gold standard approach to neurodiversity and hearing impairment. The integration of quiet audio soundtracks and dedicated screens featuring BSL in certain spaces ensures that the collection is multi-sensory and linguistically accessible. The proactive sensory features

complement the “hush” of the galleries, creating a calm, predictable environment that supports the WFGA goal of a more equal Wales (Welsh Government, 2015).

However, the audit identified a singular isolated point of sensory friction that serves as a critique, the entry to the video display room – marked by an unlabelled curtain – presenting uncertainty. This minor anomaly stands in stark contrast to the otherwise remarkable legibility found throughout the gallery. It highlights the ongoing need for fine tuning in UD, where even a well sighted building can encounter problems with design. Though ultimately, the Glynn Vivian serves as a triumphant example of architectural empathy within Swansea, proving that when heritage is treated with creative inclusivity, it can become a successful, welcoming space.

4.2 Case Study 2 Swansea Arena



Figure 15: Exterior view of the Swansea Arena (AFL Architects, 2022).

The table below shows a simplified format of the findings of the Swansea Arena. Further discussion of each theme is in the findings below. For further information, refer to appendices A, B & C.

Table 2: Simplified Comparative framework for the Swansea Arena (Author's own, 2026).

Theme:	Criteria:	Look for:	The Swansea Arena
Dignity of Arrival and Threshold Equity	Entry	Is there a single entrance for all? If there are stairs, is the alternative (ramp/lift) visible and equal quality?	• Single main street entrance. • Flush threshold, no steps/ramps. • Automatic double door.
	Transition	Is the move from outside to inside jarring (bright lights/noise) or calm? Is it an easy transition?	• Easy transition from outside to inside and vice versa. • Reception area is a bright and welcoming. • Natural lighting throughout.
	Legibility	Can you clearly see the entrance from the street? Signage?	• Entrance is sheltered and is recessed but clearly signed. • Interior is clearly signed, every room etc.
Movement and Navigation	Vertical movement	Is the lift central and celebrated, or hidden in a corridor?	• Exterior lift is glass and leads straight to main entry from street level. • Interior lift is behind staff only doors, monitored due to safety. • Lift access to all floors and levels of auditorium. • The stairs between floors are in the main foyer area.
	Horizontal flow	Are corridors wide enough for two wheelchair users to pass? Are routes logical?	• Corridors are wide. • Routes are logical and well linked.
	Resting points	Are there regular seats for people with mobility or fatigue issues?	• In the main foyer, there are rest points. • There is no seating in corridors, but the path from main entry to the arena seating is simple, people can get to their seats quickly.
Sensory Legibility and Cognitive Performance	Acoustics	Is there an echo? Is it overwhelming? Are there "Quiet Rooms"?	• Echo is significant in corridors and staircases. • Foyer has good sound control. • Theatre has amazing sound control. • Arena works with InclusAbility charity group during events to provide quiet rooms.
	Lighting	Is it natural daylight (calming) or harsh strip lighting (stressful)?	• Natural lighting in foyer aided by soft artificial lights. • The lighting throughout is a bright white shade but balances well with the dark interior.
	Visual contrast	Do walls and floors contrast clearly? (Essential for visual impairment).	• The flooring ranges from dark brown to dark grey, while walls are black, this is a good contrast between the two. • Stair nosing is brighter on stairs so that steps are easy to distinguish.

4.2.1 Project Profile and Historical Context

Completed in 2022 as the centrepiece of the £135 million Copr Bay development, the Swansea Arena represents a pivotal shift in the city's contemporary urban morphology (Williams, 2022). The design is a result of a collaboration between ACME, who provided initial architectural concept and masterplan, and AFL Architects, who served as the lead architects for the projects technical delivery (ACME, 2022; AFL Architects, 2022). Defined by its monolithic circular form, wrapped in approximately 97,000 digital LED pixels, this façade acts as a canvas, establishing the building as a visual anchor in Swansea (ACME and Swansea Council, 2018). Its construction marks a departure from the city's post-industrial past, moving towards a master planned vision of a vibrant and viable urban core, as outlined in the DAS (ACME and Swansea Council, 2018).

The site's context is defined by a significant topographical shift, with the arena situated on an elevated podium level approximately 12.50m Above Ordnance Datum (AOD). This elevation being a deliberate master planning choice by ACME to separate the pedestrian realm from the heavy traffic of Oystermouth Road below (ACME and Swansea Council, 2018). Access to the Arena is facilitated by the Copr Bay Bridge, a pedestrian landmark that connects the city centre directly to the coastal park and arena's main plaza as shown in figure 16.



Figure 16: Aerial view of the Swansea Arena, plaza and Copr Bay bridge (ACME, 2022).

Consequently, the complex, multi-level context dictates that the building functions as a bridge between the diverse urban environments of Swansea.

With a capacity of 3,500, the Arena is programmed as a multipurpose venue designed to host a range of activities, from large scale productions to conferences and exhibitions (ACME and Swansea Council, 2018). Its profile is shaped by the logistical demands of a high-capacity entertainment hub, requiring large interior volumes and robust public spaces. The building sits as a functional gateway within the masterplan, acting as a physical and cultural anchor for the city's regeneration.

4.2.2 Design Philosophy

The design philosophy of the Swansea Arena is rooted in the concept of urban porosity, a vision developed by ACME to reconnect the city with its waterfront (ACME and Swansea

Council, 2018). This is physically manifested in the podium strategy, which elevates the public district to create a vehicle free sanctuary. The programming intent was to provide a safe and expansive pedestrian district that prioritises the comfort of the public, ensuring that the Arena's exterior and the surrounding park function as a space accessible to all, regardless of the venue's event schedule (ACME and Swansea Council, 2018).

Inclusive design was drafted as a core architectural driver by AFL Architects, moving beyond statutory minimums to establish a gold standard for modern public design (AFL Architects, 2022). The philosophy emphasises a seamless and intuitive user journey, characterised by cognitive legibility. This is reflected in the design of the main entry foyer, which utilises extensive glazing to provide natural lighting and clear internal sightlines. This design intent was to minimise anxiety and allow visitors to orient themselves spatially from the point of arrival. By prioritising transparency and ease of movement, the design seeks to create a welcoming atmosphere that supports the psychological and physical safety of the visitor.

Unlike older venues where accessible facilities may not have been prioritised, the goal was to integrate inclusive features into the primary architectural layout meaningfully, looking past the bare minimum of BR. This is evidenced in the distribution of accessible seating across the auditorium, within proximity to exits ensuring that various sightlines are available to all. The inclusion of specialised facilities, such as the changing places room, was a foundational requirement of the brief, marking the Arena as the only building in Swansea with this feature. This views meaningful design and access as a prerequisite for 21st century architecture, ensuring the Arena serves as a truly universal platform for the diverse population of Swansea and beyond.

4.2.3 Physical and Technical Analysis

From a technical perspective, the Swansea Arena is engineered to facilitate high-capacity flow, utilising a singular threshold strategy that ensures a seamless transition from the exterior to the interior public concourse. The primary entrance features wide span, automatic glass doors as a standard entry, accompanied with manual push bar doors. Although the primary barrier free entry removes the physical resistance of manual doors, adhering to the UD principle of low physical effort (Mace, 1985), the need for push doors is essential during events to ensure people leave and enter the arena safely. The foyer opens into a vast, double height space with a wide span concourse that provides ample manoeuvring space for all types of users, exceeding the minimum width requirement of Approved Document M (Welsh Government, 20. The generosity of the space is designed to prevent crowding, ensuring that the experience of the building remains fluid even during peak event times.

Vertical circulation is managed by high-capacity lifts that are strategically located near to the primary staircases to maintain a unified path of travel. As observed during the site audit, these lifts are centralised to ensure that visitors who require to use the lift are not diverted to further routes, thereby upholding the DOA and ensuring social integration within the venue.

Furthermore, AFL Architects (2022) achieved visual equity through ensuring 768 of 788 seats provide unrestricted views. Insight from a conversation with the Arena Technical Manager (2026) confirm the auditorium's spatial adaptability, as seating is modular and can be removed to accommodate wheelchair users. Figure 17 also shows accessible seating platforms, which are close to the exits and recessed for comfortable space. As illustrated in figure 18, the Arena Technical Manager (2026) also confirmed that peripheral accessible seating was removed, to avoid the marginalisation of disabled patrons at the rear of the venue. This fulfils Mace's (1985) principle of equitable use, by ensuring inclusive seating is an integrated rather than segregated component of the layout.



Figure 17: Accessible seating platform in the Swansea Arena auditorium showing space for wheelchairs (Author's own, 2026).



Figure 18: Area at the top of auditorium where accessible seating was removed (Author's own, 2026).

The most substantial intervention for inclusivity within the site is the provision of a dedicated Changing Places facility. This room is technically specified to accommodate user with complex care needs, featuring a ceiling hoist system, a height adjustable adult sized changing bench and a peninsular toilet with sufficient space for assistance on both sides, as shown in figure 19 (Astor Bannerman, (2022)). The facility also includes a height adjustable washbasin and non-slip safety flooring, meeting the technical standards of section 5 of the Part M BR (Welsh Government, 2025). This commitment to high level technical provision

ensures that the venue can support long duration visits for all patrons, moving beyond basic legislative compliance toward a robust and functional model of universal accessibility.



Figure 19: Changing Places facility at Swansea Arena (Author's own, 2026).

4.2.4 Environmental and Sensory Performance

The sensory atmosphere of the Swansea Arena is defined by high energy approach, adopting an autoethnographic lens, the researcher observed that the sensory journey begins with an exceptionally legible arrival. Shown in figure 20, the primary entrance is visible from the surrounding plaza, bolstered by the bilingual “Croeso/Welcome” branding directly into the glazing adjacent to the main door. This provides immediate cognitive reassurance and a clear sense of orientation before the visitor even crosses the threshold. The transition is mediated by a wide span glass façade that allows significant natural light to permeate the foyer during the day, while the interior corridors utilise soft white LED lighting to mimic the natural tone where daylight can't reach, reducing harshness often associated with bright lighting. This lighting strategy ensures that the transition from the bright exterior to the atmospheric interior remains visually smooth; the juxtaposition of light is aesthetically

balanced rather than startling, creating a seamless experience for visitors with sensory or visual sensitivities in both nighttime and daytime conditions.



Figure 20: View of the Swansea Arena's main entrance (Author's own, 2026).



Figure 21: Corridor in the Swansea Arena showing lighting and contrasts (Author's own, 2026).

The arena's acoustic profile is defined by a management of auditory comfort that defies the building's immense volume. In the auditorium, low reverberation is achieved through tiered absorptive panels that covert kinetic energy into thermal energy via viscous friction (Long, 2014). This reduction in acoustic clutter is an important neuro inclusive measure, preventing sensory overload associated with echoing environments (Cox and D'Antonio, 2017).

The Kriskadecor ceiling throughout the arena is inspired by the fluidity of bale tutus, with the chains introducing a sense of movement and warmth into the vast interior, as pictured in figure 22 (Kriskadecor, 2022). This light, translucent décor creates an ethereal quality that softens the buildings scale (Kriskadecor, 2022). Beyond its decorative impact, the Arena Technical Manager (2026) confirmed that the moving nature of the chains prevents the accumulation of dust, a practical, hygienic benefit that supports long term air quality and maintenance.

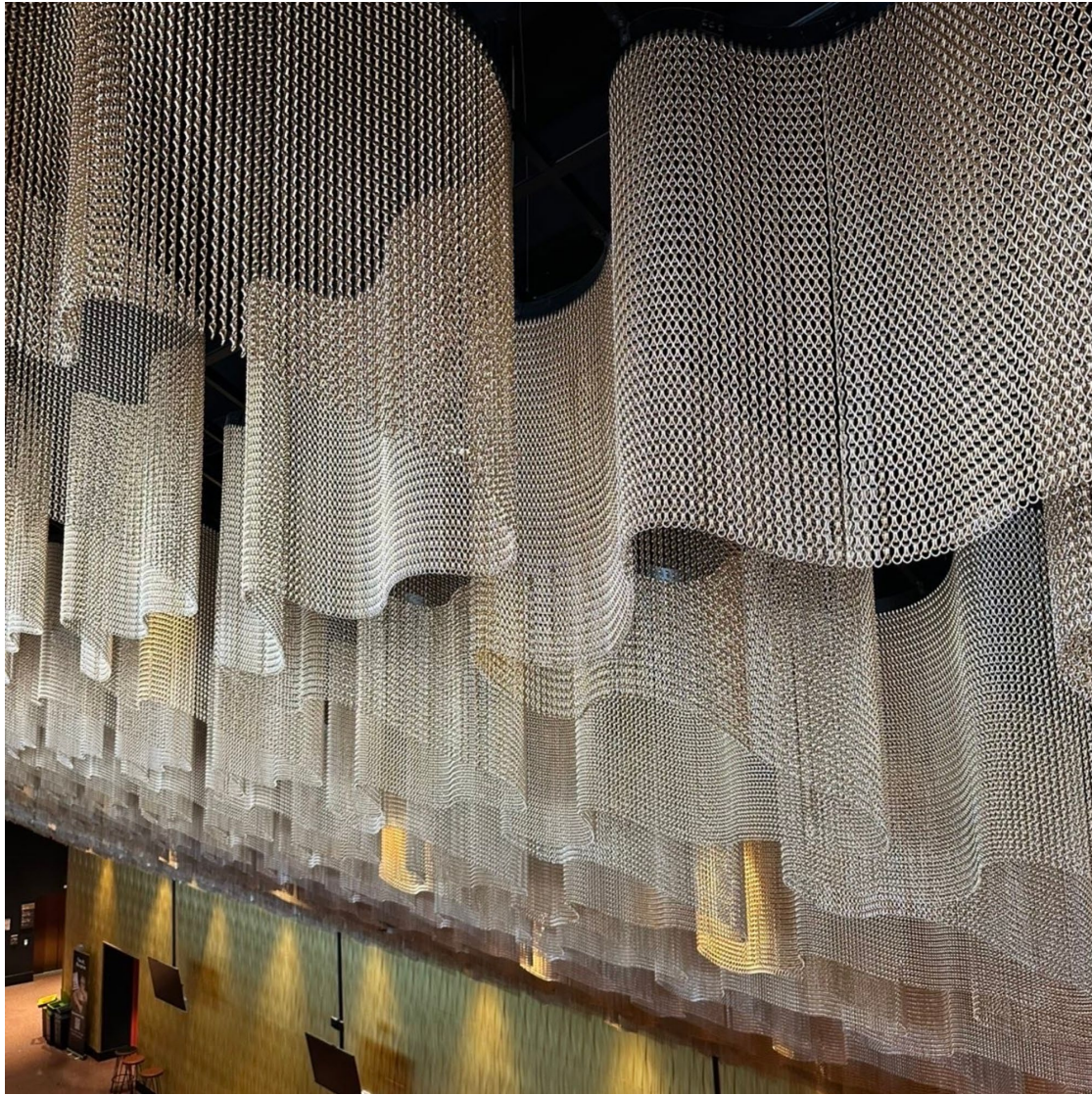


Figure 22: Kriskadecor mesh ceiling in the Swansea Arena foyer (Author's own, 2026).

4.2.5 Evaluation

The arena demonstrates inclusive excellence, exceeding the minimum requirements of Approved Document M (Welsh Government, 2025). The design aligns with the comprehensive benchmarks of BS 8300-2:2018 (British Standards Institution, 2018) through a seamless threshold transitioning from the ACME designed plaza into the AFL delivered venue. By integrating high specification facilities and central vertical circulation, the project supports Mace's (1985) principle of equitable use, ensuring a shared social experience without segregation.

Chapter 5 Findings and Discussion

5.1 Theme 1: Dignity of Arrival and Threshold Equity

5.1.1 Entry

Following Goldsmith's (2000) principle of DOA, the Swansea Arena achieves a high degree of threshold equity through its integrated plaza. The entry is not a specific point but a gradual, level access transition that eliminates the friction associated with segregated access. This invisible accessibility ensures that all users enter via a singular, shared path, reinforcing the WFGA goal of a more equal Wales (Welsh Government, 2015).

Similarly, the Glynn Vivian provides a compelling example of adaptive access. While the original 1911 grand entrance is no longer of function (serving only as an emergency exit), it remains the building's dominant visual landmark. The monumental stairs and ornate doors still pose a prestigious aura on the street, yet they now only function as a decorative barrier. However, the decision to shift the primary entry point was a functional necessity to achieve universal access (Powell Dobson Architects, 2013). The new entrance avoids the bolt on stigma, instead, it is a successful intervention that works in dialogue with the historic shell. By recessing the new entrance, the architects allowed the original Edwardian Baroque façade to retain its monumentality, while still providing a modern, street level hub that is more welcoming to the diverse public. Rather than feeling like a secondary route, the 2016 entrance follows the natural evolution of the site, reconciling the 1911 building with contemporary inclusive requirements. In this sense, the Glynn Vivian succeeds where many heritage buildings fail, maintaining the spirit of place (Norberg-Schulz, 1980) while ensuring that disabled residents in Swansea are invited through a space that feels intentional and architecturally improved.

5.1.2 Transition

Following Merleau-Ponty's (2012) theory of embodiment, the body does not simply enter a space but adapts to it through a complex sensory process. At the arena, this transition is characterised by a high-volume threshold. From a phenomenological perspective, this transition aligns with Pallasmaa's (2012) critique of ocular centric architecture. While the arena's foyer is visually stunning and physically frictionless, it prioritises the image of arrival over the sensory comfort of the user. For the 15-20% of the neurodivergent population (The Neurodivergent Directory, 2026), this transition lacks the sensory refuge required to recalibrate from external street noise. As Maslin (2022) posits in the framework for mind friendly design, a successful transition should provide a gradual reduction in sensory stimuli.

The arena's transition succeeds for the able-bodied user, but risks being a site of sensory overload for the invisible majority, as discussed in section 2.5.

Contrarily, the Glynn Vivian's modern extension functions almost as a recalibration zone, rather than an abrupt shift. The transition into the space provides a tempered environment that mediates between the street and historic galleries. Primary audits noted the bright elements and diffused lighting within the reception. This architectural buffering aligns with Zumthor's (2006) concept of atmosphere, where the quality of a space is defined by its ability to hold the tension between the interior and exterior.

By providing a quieter transition, the galley accommodates the sensory and psychological complexities that Imrie (2003) argues are often stripped away by standard BR. This thoughtful mediation of the threshold directly contributes to the WFGA (2015) goal of a more equal Wales, as it proactively designs for sensory diversity rather than just physical clearance. While the arena offers a high energy transition, where the user moves through a busy exterior to a busy interior, the gallery offers a much more dignified one. Redesigned heritage spaces foster inclusion by slowing the sensory journey, ensuring the movement and clarity needed for all users.

5.1.3 Legibility

Lynch (1960) defines a legible environment as one that is imageable and offers a recognisable pattern of landmarks and paths. The arena achieves high legibility through its LED digital skin, functioning as a beacon in the urban landscape (ACME and Swansea Council, 2018). However, primary audits identified a micro legibility challenge during non-event periods. On quieter days, the numerous doors around the perimeter can obscure the primary entry. As discussed in Section 4.2.4 and shown in figure 20, the main entrance is clearly marked with a "Croeso/Welcome" sign and features an automatic door operated via a push button. This feature is a meaningful inclusion providing functional autonomy for users with limited mobility or stamina, enabling independence without reliance on a manual door.

Internally, the arena's navigation remains consistent and effective, with clear signage for essential facilities such as lifts and WC'S, facilitating what Seamon (2000) describes as the body ballet of intuitive movement. Importantly, the building exhibits what Newman (1972) identifies as successful zoning. Using signage complemented by the orientation of the floor plan, the arena creates a clear distinction between public facing areas and restricted back of house zones. This allows users to easily pilot through the building, reducing the risk of entering unauthorised areas.

The Glynn Vivian, dissimilarly, relies on a more nuanced approach to architectural legibility. As discussed in 5.1.1 and shown in figures 7 & 8, the 2016 entrance is recessed from the primary Edwardian façade. Although this position makes the entry less conspicuous, the audit found that the architects employed a contrast in materials and signage to enhance visibility. The sheltered entrance serves a dual function by offering physical protection from the elements and a sensory buffer for users before they enter the interior.

Internally, the gallery's legibility is supported by a system of maps and signs located at the main staircase and every room. Although the building's history, from 1911, 1974 and the 2016 extension results in a fragmented floorplan unlike a purpose-built core, the comprehensive signage mitigates the risk of disorientation. As Maslin (2022) suggests, a mind friendly building must offer multiple ways to understand space, both through physical layout and visual cues. This approach is particularly valuable in heritage buildings, where creating a logical flow between different eras can be challenging. Still, the gallery proves that adaptations can be done effectively.

5.2 Theme 2: Movement and Navigation

5.2.1 Vertical Movement

For Swansea's disabled population of 22.4%, the placement and status of a lift dictate whether their movement through a space is treated with dignity or relegated to a service function. The arena presents a slight contradiction in this regard as externally; the vertical access is celebrated through a glass lift. This lift is located on street level below the arena and takes users straight up to the main entrance 12.50m AOD. By placing the lift alongside the large spiral staircase (see figures 23 & 24), the design avoids what Goldsmith (2000) describes as segregated convenience, meaning the lift is not a hidden necessity but a prominent part of the vibrant identity of the arena as promised in the ACME and Swansea Council (2019) DAS.



Figure 23: Glass lift outside Swansea Arena (Author's own, 2026).



Figure 24: Spiral staircase next to glass lift outside of Swansea Arena (Author's own, 2026).

Contrarily, the internal lifts are located behind staff only doors. Although these are unlocked during events, they are monitored by staff which creates a barrier of permission, contradicting the UD goal of navigational independence. As Imrie (2003) argues, when a disabled user is pointed toward a lift or must wait for a door to be monitored, their movement is reduced to a mechanical manoeuvre rather than natural ease of movement. Highlighting a tension in the arena's design, while it is physically compliant; it periodically relies on assisted access, which can induce boundary anxiety in users with disabilities (Maslin, 2022). However, as discussed with Arena Technical Manager (2026), this is due to the Terrorism (Protection of Premises) Act (2025), ensuring that safety in the venue is prioritised.

The Glynn Vivian utilises the lift as an integrated feature to navigate its complex, multi-level floorplan. The audit found the primary lift is located facing reception and adjacent to the staircase. This provides visitors with a direct path from the entrance, making it easy to find and navigate the gallery. Nonetheless, the meaningful success of the gallery's vertical movement lies in its consistency, as the lift is of significant scale and provides reliable access to every floor of the split-level site. While the building contains various incremental

level changes (small sets of stairs), the comprehensive signage and central location of the lift help mitigate potential disorientation. This highlights how strategic placement of vertical circulation fosters independent navigation, ensuring that accessibility is woven into the layout.

5.2.2 Horizontal Movement

Horizontal movement dictates a building's tempo. To be inclusive, design should facilitate a body ballet as discussed in section 2.3, a natural rhythm allowing the user to move instinctively without conscious planning.

The arena achieves navigational clarity (Maslin, 2022) through spatial generosity. The audit observed corridor widths exceed the 1200mm minimum mandated by Approved Document M (Welsh Government, 2025), often reaching the 1800mm recommendation for dual wheelchair passage. The layout is strictly destination oriented meaning every corridor leads directly to public areas, minimising users cognitive load. This predictable, purpose-built logic fulfils Requirement M1 of the BR, ensuring visitors can access all facilities independently.

The Glynn Vivian employs a different strategy to also achieve meaningful flow. Despite heritage constraints, the layout creates a legible path (Lynch, 1960) where rooms follow an intuitive, sequential loop. This arrangement reinforces Seamon's (1979) theory by allowing visitors to flow through the gallery habitually rather than relying on constant navigation. By also maintaining unobstructed widths across its three architectural eras, the gallery meets the reasonable provision standards of Approved Document M (Welsh Government, 2025).

Ultimately, both buildings prioritise spatial equity within horizontal design. By providing wide, logical routes that avoid spatial friction, both move beyond basic compliance. They create environments where movement is a dignified experience rather than a series of navigational obstacles, with the gallery proving that heritage sites can be adapted to meet UD principles.

5.2.3 Resting Points

For individuals with mobility impairments, chronic fatigue or neurodevelopmental conditions, the availability of rest points is a fundamental requirement for functional autonomy. As argued by Maslin (2022), resting points act as sensory refuges, allowing users to recalibrate and manage the cognitive load of navigating complex environments.

The audit of the Glynn Vivian revealed a consistent level of provision, with seating located in every gallery space. This integrated approach ensures that the visitors journey is not a test

of physical endurance, aligning with the UD philosophy of accommodating diverse physical needs (Goldsmith, 2000). However, a challenge was noted in the projector room, while a small bench is provided, its positioning means that standing visitors can easily obstruct the view of those sitting (see figures 25 & 26). This creates a spatial conflict where the seated user is excluded from the primary visual experience, failing to provide the sightlines required for inclusivity (British Standards Institution, 2018).



Figure 25: Bench next to unmarked curtain in projector room (Author's own, 2026).



Figure 26: Projector room at the Glynn Vivian (Author's own, 2026).

In the arena, resting points are concentrated in the main foyer and bar areas, with seating provided across various levels. This provision aligns with the guidance in Approved Document M, Section 4.7 (Welsh Government, 2025), which stipulates that seating should be provided in entrance halls for people who may have difficulty standing for long periods. The audit noted that while there is no seating in corridors to not block access, the routes from the main foyer to the auditorium are designed to be simple, allowing guests to reach their seats easily.

5.3 Theme 3: Sensory Legibility and Cognitive Performance

5.3.1 Acoustic Performance

Swansea arena manages a complex acoustic profile necessitated by its function as a high-capacity performance venue. As Long (2014) notes, venues are uniquely challenging

because the acoustics required for high quality music often conflict with speech legibility. As discussed in chapter 4.2.4, the audit found that the auditorium utilises soundproofing panels designed to eliminate echo and improve sound quality, shown in figure 27. Technically, these prevent overlapping reflections from creating a wall of sound that mask clear acoustic legibility, as confirmed by the Arena Technical Manager (2026). This level of control is essential for user experience, particularly those with hearing impairments or sensory processing sensitivities.



Figure 27: Soundproofing panels in the Swansea Arena auditorium (Author's own, 2026).

To mitigate sensory overload, the Arena Technical manager (2026) highlighted a partnership with the InclusAbility charity to provide quiet rooms. These recalibration zones allow users to

watch live performances via screen in a controlled, low stimulus setting, directly fulfilling PAS 6463:2022 (British Standard Institution, 2022) standards for neuro-inclusive design.

In contrast, the gallery offers traditional acoustic stillness. While the audit recorded slight echo in the grand ceiling gallery rooms, this was described as calming as it allowed for the sound of footsteps through the space. This aligns with Seamon's (1979) concept of body ballet, where the sound of one's own movement provides a rhythmic cue for spatial awareness, providing a comfortable environment. The gallery remains a calm and quiet environment, with audio visual exhibits kept at comfortable volumes, supplemented by BSL on screens to ensure meaningful inclusion for the deaf community.

Ultimately, the acoustic performance of each building reflects their typological needs. The arena utilises advanced absorptive and diffusive technology to manage its high stimulus function, while the gallery relies on its inherent stillness to support quiet contemplation. Both sites, however, demonstrate an awareness of the social model of disability by providing spaces that reduce the mental effort required for auditory processing.

5.3.2 Lighting

The arena manages the transition between its bright, digital exterior and dark interior through a balanced lighting strategy. The audit noted that while the transition into the foyer could feel harsh, the presence of natural lighting through the glazing mitigates this, creating a bright, chilled atmosphere. Throughout the corridors and lower levels, the arena utilises a bright white tone of artificial lighting. This brightness balances well with the dark walls and high ceiling, vital for fulfilling PAS 6463:2022 (British Standards Institution, 2022), which emphasise the control of lighting glare and high contrast shadows to support neuro inclusive navigation and reduce visual noise for visitors with sensory processing sensitivities.

The Glynn Vivian utilises blending historic architectural features with softer lighting. The audit recorded natural lighting flowing through the mezzanine and some gallery rooms, which provide an organic, changing quality of light that connects the user to the passage of time, a key element in Seamon's (2000) phenomenology of space. In areas without windows, the lighting tone remains soft and neutral, complementing the artwork and creating an inviting atmosphere that avoids the ocular centric bias criticised by Pallasmaa (2012).

Ultimately, both sites demonstrate that meaningful lighting is about predictability and comfort. The arena uses its dark palette to absorb and balance bright functional lighting, while the gallery uses its rooflights to ground the visitor in a natural environment. In both

cases, the intentional avoidance of harshness ensures that the built environment does not become a sensory barrier, allowing for a more inclusive and dignified experience for users.

5.3.3 Visual Contrasts

Visual contrast is a critical navigational tool that enables users to distinguish between different architectural planes, such as the transition from floor to wall. As Mace (1985) emphasised in his original definition of UD, products and environments must be usable by all people without the need for specialised adaptation. In this context, contrast serves as the primary visual map of a building.

The audit of the arena highlighted a tension between its contemporary dark aesthetic and the requirements for inclusive navigation. The interior is characterised by a dark palette, with floors being brown and walls in black (shown in figure 21). While this creates a high contrast relationship between the two planes, (required under Approved Document M, Section 3.10), the overall low light environment may present a challenge during peak times when crowds are dense. However, the arena demonstrates great compliance within the auditorium and main staircases, where bright stair nosing is utilised to make steps easy to distinguish. This satisfies Section 3.51 of Approved Document M (Welsh Government, 2025), which stipulates that all nosing must be made apparent through permanent contrasting material to prevent missteps for those with residual vision.

Conversely, the gallery utilises soft contrasts that align with its heritage. The audit recorded a mix of light and medium shades of herringbone wooden flooring against white walls in most gallery spaces (see figure 13). While this creates a calm atmosphere that avoids the ocular centric bias criticised by Pallasmaa (2012), it relies on a subtler range of light reflectance values. The RNIB (2023) recommends a minimum of 30 points of LRV difference between adjacent surfaces to ensure they are distinguishable. While the main galleries achieve this through high contrast planes, the projector room presents a significant sensory barrier as the entrance is obscured by a black heavy curtain. This was not clearly signed or identifiable, making it difficult to see and move as previously discussed in section 4.1.4.

From the perspective of neuro inclusive design, this lack of visual clarity increases the cognitive load on the user, as if they cannot intuitively identify whether a room is open to the public due to a lack of visual cues, the environment becomes exclusionary (Maslin, 2022). As Maslin (2022) argues, meaningful design must offer predictability, allowing users to mentally prepare for and understand the function of a space before crossing the threshold.

Chapter 6 Conclusion

6.1.1 Conclusion

Swansea's ongoing regeneration represents a profound social contract between the built environment and its residents. However, this trajectory is at risk if designers remain stuck in an ocular centric loop, focusing on how buildings look in planning renders rather than how they function for a diverse population. The Swansea Arena represents a great example for the future of an internal spatial logic that is destination oriented and well thought out to suit both the function of the building and needs of users. The Glynn Vivian represents the resilience of heritage, proving that even a century old building can be restored toward inclusivity through sequential flow and careful planning.

As Pallasmaa (2012) argued, architecture is the art of reconciliation between the world and us. In a city where almost a quarter of the residents identify as disabled, meaningful design is not an optional luxury, but a fundamental requirement for social justice. While minor sensory issues persist in both sites, the overachieving success of these projects lies in their move toward UD, where the environment adapts to the user rather than forcing the user to adapt to the environment. By addressing the invisible qualities in alignment with the WFGA (2015), Swansea can ensure that its urban landscape provides dignity, autonomy and a sense of belonging for every resident, which they have proven successful of already.

6.1.2 Current State of Accessibility in Swansea

The current state of accessibility in Swansea reflects a shift in compliance. This research indicates that while physical accessibility which is governed by the mandates of Approved Document M (Welsh Government, 2015), is now a localised baseline, the city's regeneration is beginning to embrace the more comprehensive benchmarks of BS 8300-2:2018 (British Standard Institution, 2018). This transition is evident across the Copr Bay development, where the Swansea Arena eliminates the psychological friction of segregated entry. By operationalising Goldsmith's (2000) principle of DOA, the venue ensures that its primary circulation is a shared social experience, fundamentally supporting the WFGA (2015) goals.

However, the current state also reveals a critical distinction between purpose built and adaptive heritage buildings. The Swansea demonstration that high-capacity civic sites can integrate sensory predictability into their foundational logic. The Glynn Vivian illustrates the resilience of the historical environment, proving that even a century old shell can be successfully mediated through design.

While the arena succeeds in providing high energy but predictable destination, the Glynn Vivian succeeds in providing restorative stillness. Together, these buildings suggest that Swansea is moving toward a state of UD, where the architectural focus is no longer only on allowing access, but on fostering a genuine sense of belonging and autonomy for a diverse public.

6.1.3 Recommendations for Architects

To ensure that future developments in Swansea and beyond achieved true UD, it is recommended that architects strive further than just the minimum requirements of Approved Document M BR and continue to adopt BS 8300-2:2018 and PAS 6463:2022 into their design principles. These standards prioritise the mind friendly aspects of the environment, such as lighting, acoustics and predictability, which are often features that are pushed aside in projects (British Standard Institution, 2022; British Standard Institution, 2018). Architects should prioritise the creation of mind maps and clear affordances (Gibson 1979), to improve the navigational ease of complex civic buildings, ensuring that a user's cognitive load is minimised upon entry.

Additionally, future practice should prioritise visual equity as evidenced by the AFL Architects (2021) approach to the arena. By utilising sightline modelling and modular seating that can be removed to accommodate numerous wheelchair users, architects can create reactive environments that do not marginalise disabled users to the periphery but instead allow everyone to have equal experiences. Also, rather than viewing historic buildings as obstacles to inclusion, architects should follow the Glynn Vivian model, using modern, transparent interventions to act as dialogue with the historic shell. This allows buildings to maintain their spirit of place (Norberg-Schulz, 1980), while ensuring the monumental ghost of the past no longer function as exclusionary gatekeepers for the diverse present public.

6.3 Future Research

To bridge the gap further between architectural intent and lived experience, future research should expand into the following areas:

- Interviews with Architects: Primary interviews with lead architects from ACME, AFL Architects and Powell Dobson Architects to reconcile design aspirations with the realities of budget, security and design constraints.
- Student outlook: Questionnaires for architecture students to assess how UD is prioritised within current education and if future designers feel like they have enough knowledge to handle sensory design.

- Public Lived Experience: Large scale surveys to capture responses of the public, identifying any successes or failures in the design that sole audits may overlook and gain insight on how a diverse group interact with buildings.
- Autoethnographic Study: A deeper dive into autoethnographic studies, documenting the researchers own physiological and cognitive responses over longer periods of time to provide more detailed accounts of the built environment.
- Technical Audit: Although audits were done, a further approach with technical equipment to assess certain aspects of the buildings such as lighting levels, sound levels, door thresholds, width of corridors etc.

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Appendix A: Table showing Theme 1: Dignity of Arrival and Threshold Equity

Criteria	Look for	The Glynn Vivian Art Gallery	Swansea Arena
Entry	Is there a single entrance for all? If there are stairs, is the alternative (ramp/lift) visible and equal quality?	- Single main street entrance through an automatic door for all visitors. - The entryway is flat, no stairs or ramps.	- Many ways to get to the arena main entrance including bridge, exterior stairs and glass lift which all lead to the main entrance. - The lift is more comfortable than stairs as the arena sits high above street level. - Automatic double doors
Transition	Is the move from outside to inside jarring (bright lights/noise) or calm? Is it an easy transition?	- Easy transition from outside to inside and vice versa. The reception area is a calm and welcoming. - Natural lighting flows through the glazed extension so there is no harsh contrast between the outside and inside.	Glazing is prominent across the entry façade of the building which lets natural light into the public concourse/ foyer area, allowing the transition to be smooth, even though the inside is aesthetically dark,
Legibility	Can you clearly see the entrance from the street? Signage?	- Entrance is sheltered and is stepped back from the front façade, but it is clearly signed in multiple places. The signage and architecture make the entrance stand out and easy to find. - Interior is clearly signed, map of gallery by main staircase, labels on all rooms, directions to each room etc.	- During a quiet day (no events) the entrance can potentially be easy to miss as there is many doors around the arena, however, the main entrance has multiple doors with one main automatic door which opens via a button. - Next to the main door, there is a sign on the window saying "Croeso, Welcome". - The interior is signed consistently and effectively; WC's, lifts, seats etc. are all easy to navigate.

Appendix B: Table showing Theme 2: Movement and Navigation

Criteria	Look for	The Glynn Vivian Art Gallery	Swansea Arena
Vertical movement	Is the lift central and celebrated (e.g., glass/atrium) or hidden in a corridor?	- Lift is located behind the reception desk, straight path from the entrance to the building, potentially a bit hidden as its not clearly visible from when you enter. - Lift is very large and accesses each floor of the gallery, great feature as the gallery is spread across many levels. - Apart from entry level lift, the lifts on the gallery levels are easy to navigate to and from, easy to see through doors and clearly signed. (They are not in the main gallery space.) - A lot of stairs, but some are just a few steps because of how the gallery levels are split, no large staircases.	- The exterior glass lift is celebrated as a main feature leading to the main entrance of the arena, sitting 12.50m above street level (AOD). This lift is seen when walking southwest towards the arena, while on the other sides there is a ramp leading to the main level. There is a large spiral staircase next to the lift, both of which lead straight to the main entrance. - On the interior, the lift is not celebrated, oppositely, it is hidden behind staff only doors during daytime. However, during events in the, these doors are opened and monitored so that the public can access all floors to the arena seating. All guests are pointed towards the lifts, and they are clearly signed. - The stairs between floors are clearly visible as they are in the main foyer area, these are large and suitable for large groups of people to use at once.
Horizontal flow	Are corridors wide enough for two wheelchair users to pass? Are routes logical?	- Corridors are wide and provide a lot of space for multiple people and/or wheelchairs to pass through. - Routes are logical, all rooms are linked either by doors or can follow in order, easy flow.	- Corridors are plenty wide and provide a lot of space for multiple people and/or wheelchairs to pass through. - Routes are logical, each corridor that is open to the public leads to places where people need to be going, toilets, main arena space, meeting rooms etc. Everything is well linked.
Resting points	Are there regular seats for people with mobility or fatigue issues?	- There are chairs/ benches in every gallery space and room. - In the video/audio room, there is a bench to the left of the curtain as you enter, this is the only bench in the room so if there are people stood in front watching the video, it will obstruct the view of the person sitting down.	- In the main foyer, there are rest points, with seating on levels. - There is no seating in corridors, but the path from the main entry to the arena seating is simple, where people can get to their seats quickly and easily.

Appendix C: Table showing: Theme 3: Sensory Legibility and Cognitive Performance

Criteria	Look for	Glynn Vivian	Swans Arena
Acoustics	Is there an echo? Is it overwhelming? Are there "Quiet Rooms"?	- Echo in main gallery space and most large gallery rooms, but this is expected as there is little soundproofing. - Most rooms are quiet, so the echo isn't noticeable. - The gallery is not overwhelming sound wise, very calm and quiet environment, the slight echo is almost even calming as you can hear footsteps throughout the space. - Some rooms had audio playing through screens, but it was at a comfortable volume. Note: Sign language was also shown on screens.	- Echo is significant in corridors and staircases. - Foyer has good sound control, barely an echo and it is a comfortable space to be in. Note that during a show/event, this can potentially be overwhelming due to noise. - Theatre has amazing sound control due to the tiered, colour co-ordinated sound proofing panels which all control different sound levels. These help to eliminate echo and improve the sound quality of shows to create positive experiences for guests. - Arena works with InclusAbility charity group during shows/events to provide 'quiet rooms'/ private rooms for people who get overwhelmed, where they can watch the show in a calmer space. TVs are connected to the rooms which provide all the sound and light from the main stage, allowing people to watch exactly as shown on stage without missing out.
Lighting	Is it natural daylight (calming) or harsh strip lighting (stressful)?	- Natural lighting through the centre gallery space via rooflight. - Most rooms do not have windows; however, the lighting tone is soft and neutral which provides a calm environment in the whole space. Each room feels inviting and highlights the spaces without harshness.	- Although the transition looks like it would be harsh due to the dark interior of the foyer, the natural light peeking through the glazing makes it a calming atmosphere. - The lighting throughout the arena, including corridors, public concourse area and the event area is a bright white shade, but it balances well with the dark walls and high ceilings, providing a calm, low toned environment without harshness.
Visual contrast	Do walls and floors contrast clearly? (Essential for visual impairment).	- Soft contrasts combined by a mix of light and medium shades of herringbone wooden flooring and white/cream walls in most gallery spaces with a touch of soft lighting. - Some gallery rooms have dark walls (navy), may potentially feel a bit dark/dull to some people against the art displayed. - Audio/video room was not clearly signed or identifiable, the entrance was a black heavy curtain which was difficult to open – overall very unclear if there is a room behind that's	- The interior is quite dark, so this can be an issue when it comes to contrast and moving around the building, especially during peak times. - The flooring throughout is dark, ranging from dark brown to dark grey, while walls are black, this is a good contrast between the two. - Stair nosing is brighter in main staircases and between arena seating so that steps are easy to distinguish. - Fire stair walls and stairs are grey, with black nosing and black skirting to highlight where the stairs are, particularly useful for visual impairment because the edge is distinguishable.

		open to the public. The curtain can be difficult to see and move, and the room itself is also very dark (note that this is a video display room, so blackout curtain and darkness is needed.)	
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