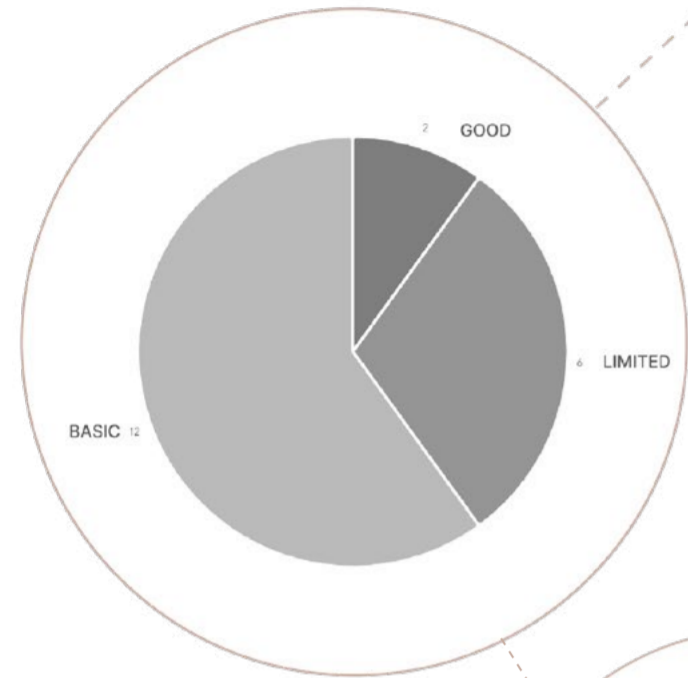


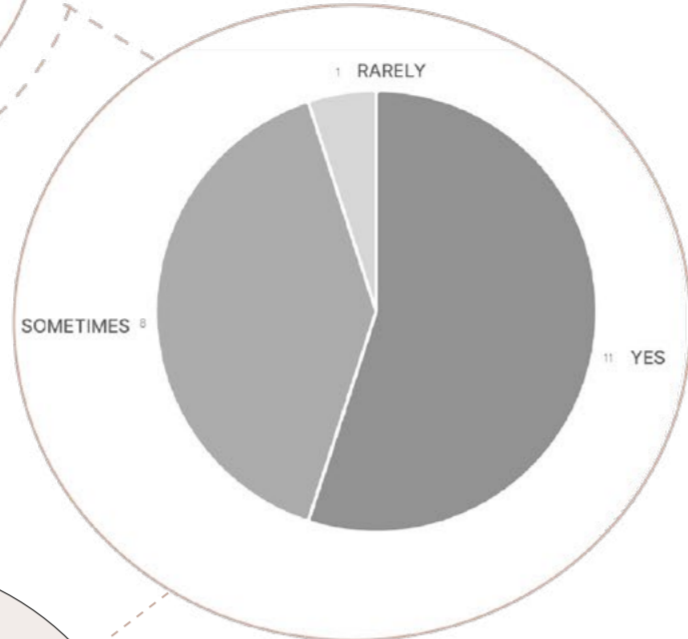
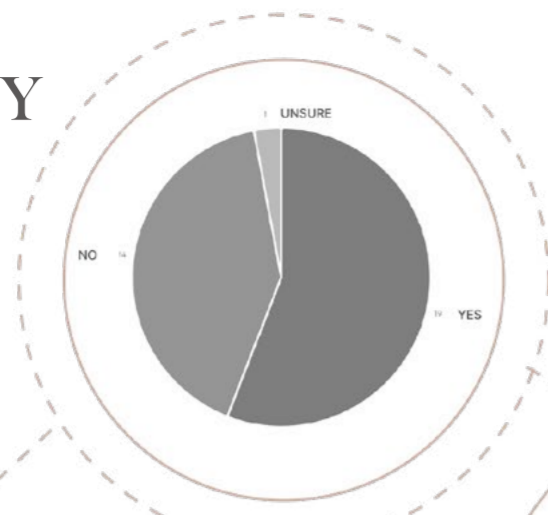
QUESTIONNAIRE SURVEY & DATA ANALYSIS

The aim of this public survey is to gauge the level of social inclusion and understanding towards people with hearing impairments. Another survey, aimed at DDH (deaf and hard of hearing) seeks to understand their needs in areas such as education, career development, communication methods and spatial experiences.

A total of 33 questionnaires were collected for the public. A total of 10 questionnaires were collected specifically for the hearing-impaired population. The people involved in the survey included myself, my family members and friends. At the same time, I visited several people with hearing impairments at my hearing aid fitting center. Among them, there were also two deaf individuals who were collected from the internet.

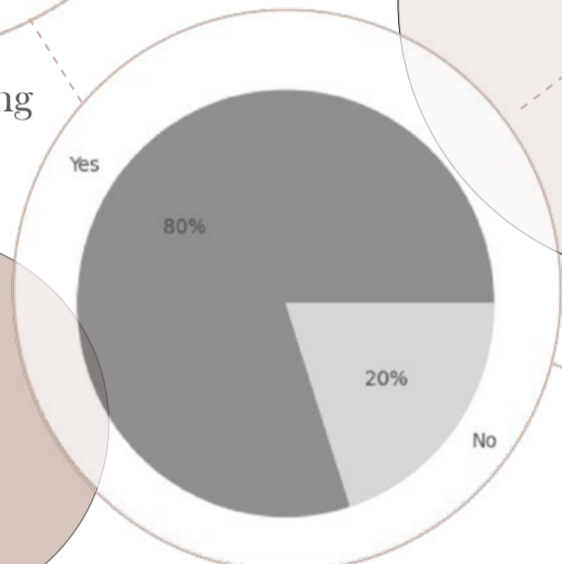


Contact with Hearing loss



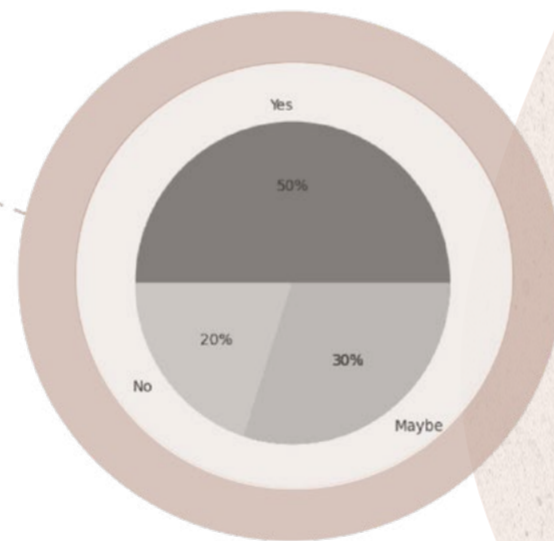
Recognition of hearing loss as a Disability

Understanding of hearing loss and deafness



Career Challenges

Interest in Mixed Workshops



Questionnaire

Hearing Loss and Deafness in Everyday Life: Public Awareness...



Empowering Deaf Learners: Survey on Learning, Communication...

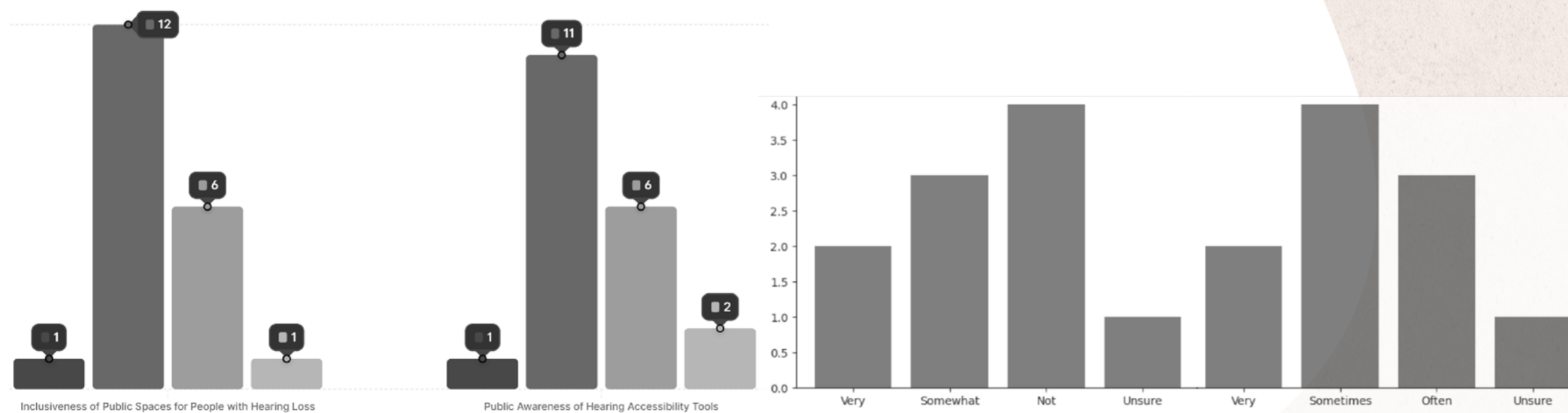


Public exposure to the deaf and hard-of-hearing (DHH) community is relatively common, but understanding remains limited. Many people feel only moderately confident communicating with sign language users, and awareness of accessibility tools is still low. This highlights the need for an educational and interactive space that promotes inclusion. Overall, the data reveals that the key challenges faced by deaf and hard-of-hearing users are not defined by a single limitation, but by the interaction between communication, environment, and social context. While multiple communication methods are already in use, their effectiveness is highly dependent on the spatial conditions in which interaction takes place.

Public inclusivity and hearing accessibility awareness

Accessibility of learning Spaces

Comfort in interaction



THE SITE: FRUIT MARKET GALLERY

Location: 45 Market St, Edinburgh EH1 1DF (next to Waverley Station)

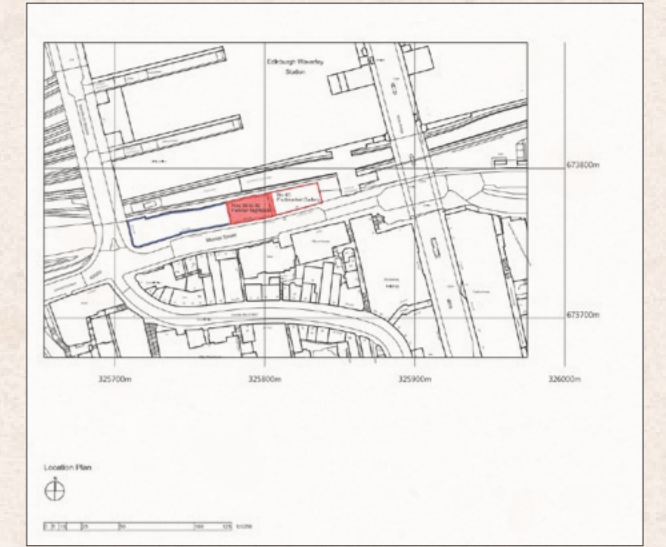
Type: Contemporary art gallery (converted historic fruit market)

Size: Approx. 2,000 m²

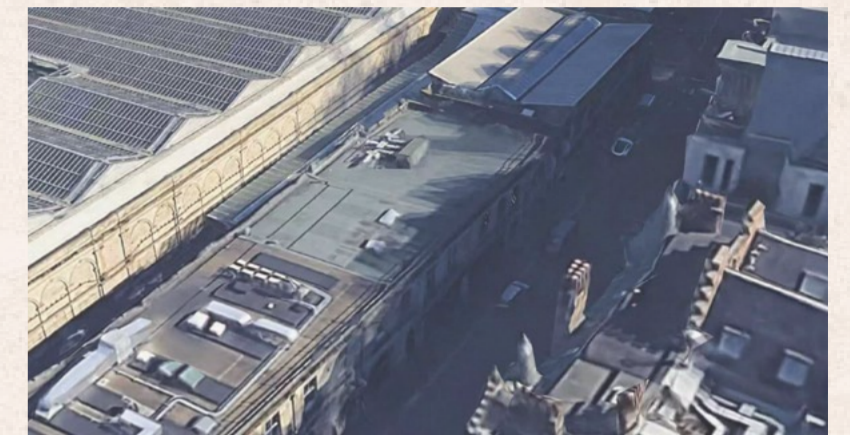
Character: Victorian industrial structure + minimalist contemporary interior

Access: Free public entry

Programme: Exhibitions by Scottish and international contemporary artists



Interior - Warehouse



Overlooking the landscape

History

18th Century - Mid-19th Century: Origins of Marketplaces and Market Prosperity (Core Function: Urban Public Market)

Early 20th Century - 1970s: The Rise and Decline of Fruit and Vegetable Warehouses (Railway-Supported Storage)



Mid-19th Century - Late 19th Century: Railway Expansion and Site Reshaping

1970s to the Present: Cultural Regeneration and Gallery Development (Contemporary Art Spaces)

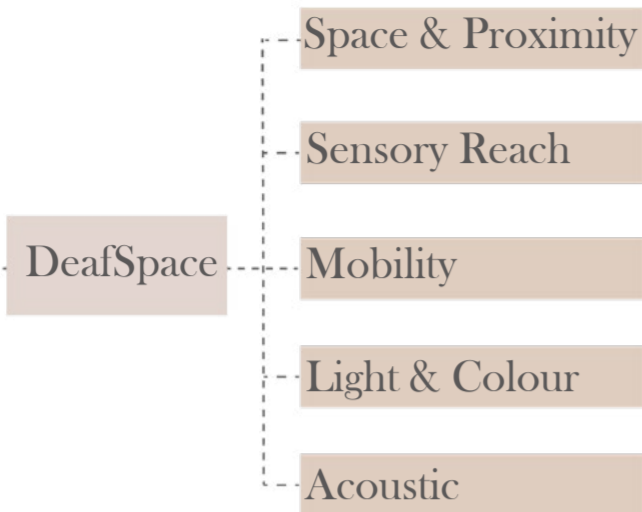
Why choose?

Located in the heart of Edinburgh, Fruitmarket Gallery was chosen for its cultural significance, public accessibility, and potential to bring deaf and hearing communities together. Its double-height spaces, industrial character, and strong natural lighting provide an ideal setting for applying DeafSpace principles and creating an inclusive environment for communication and social interaction.



DEAFSPACE AS DESIGN GUIDELINES

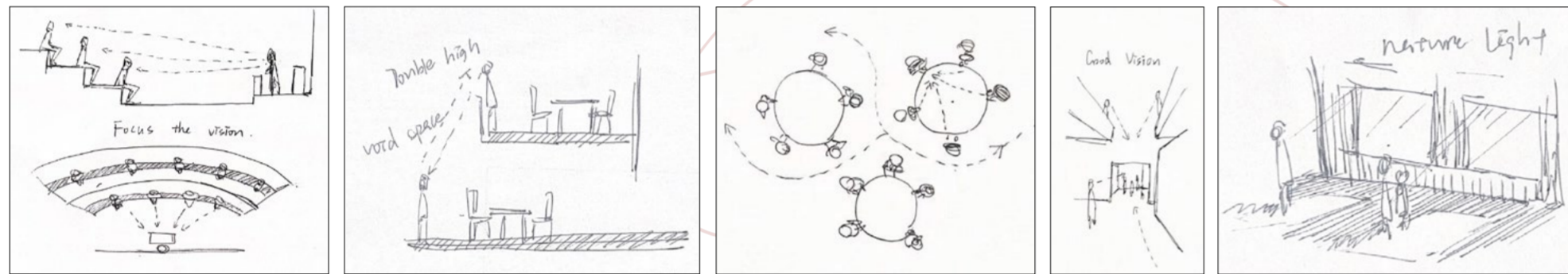
https://infoguides.rit.edu/ld.php?content_id=59890829&utm_medium=website&utm_source=archdaily.com



Before the design formally began, I identified an important guideline for designing spaces for deaf users. Therefore, this project follows the “DeafSpace” guidelines developed by Gallaudet University. Gallaudet University is a leading institution in the world for deaf culture and design research. These guidelines provide a comprehensive framework for creating environments that support visual communication, spatial comfort, and inclusive interaction.

In the subsequent design process, I will consistently refer to the principles of “DeafSpace”, such as visual openness, clear sightlines, thoughtful lighting, acoustic control, and smooth circulation design. In summary, I hope this project can ensure that every part of the space meets the needs of deaf and hard-of-hearing users. These design considerations not only improve accessibility, but also promote dignity, independence, and meaningful social connections.

DESIGN DEVELOPMENT



The design development was guided by DeafSpace principles and focused on creating an environment that supports visual communication, social interaction, and spatial awareness. Early sketches explored circular seating arrangements to encourage face-to-face communication, stepped seating to improve sightlines, and open visual connections across the space. The introduction of a new mezzanine level within the double-height volume increased usable area while maintaining visual relationships between floors. Existing partitions were selectively removed to improve natural daylight penetration and strengthen connections between different activities. Circulation routes were reorganised to create clear and intuitive movement through the building.

Together, these interventions transform the existing Fruitmarket Gallery into a more inclusive environment where communication is supported through visibility, openness, and shared spatial experiences.

Focused / Private

- Staff office
- Workshop (For People with hearing impairments)
- Assistive Technology Lab

Shared / Interactive

- Gallery

Open / Social

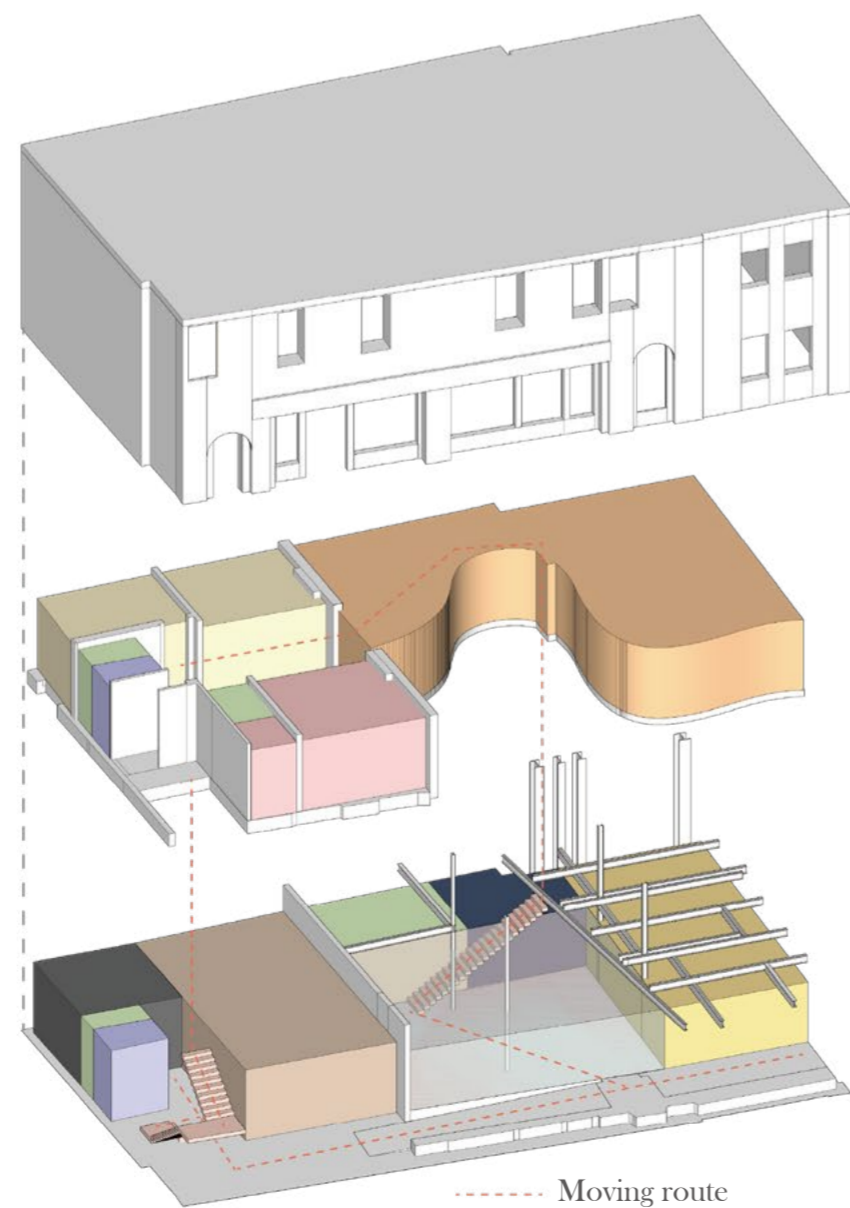
- Workshop (For the public)

Other

- Cafe
- Stair
- Elevator
- Storage
- toilet

The left-hand side illustrates the strategy for retaining and demolishing the existing building, whilst the right-hand side presents the final spatial organisation plan. In terms of functional arrangement, the layout unfolds from left to right in a hierarchy of ‘private–transitional/shared–open’. At the same time, continuous circulation routes connect the various functional zones, creating clear and fluid pathways.

- The retained structure
- The demolished structure



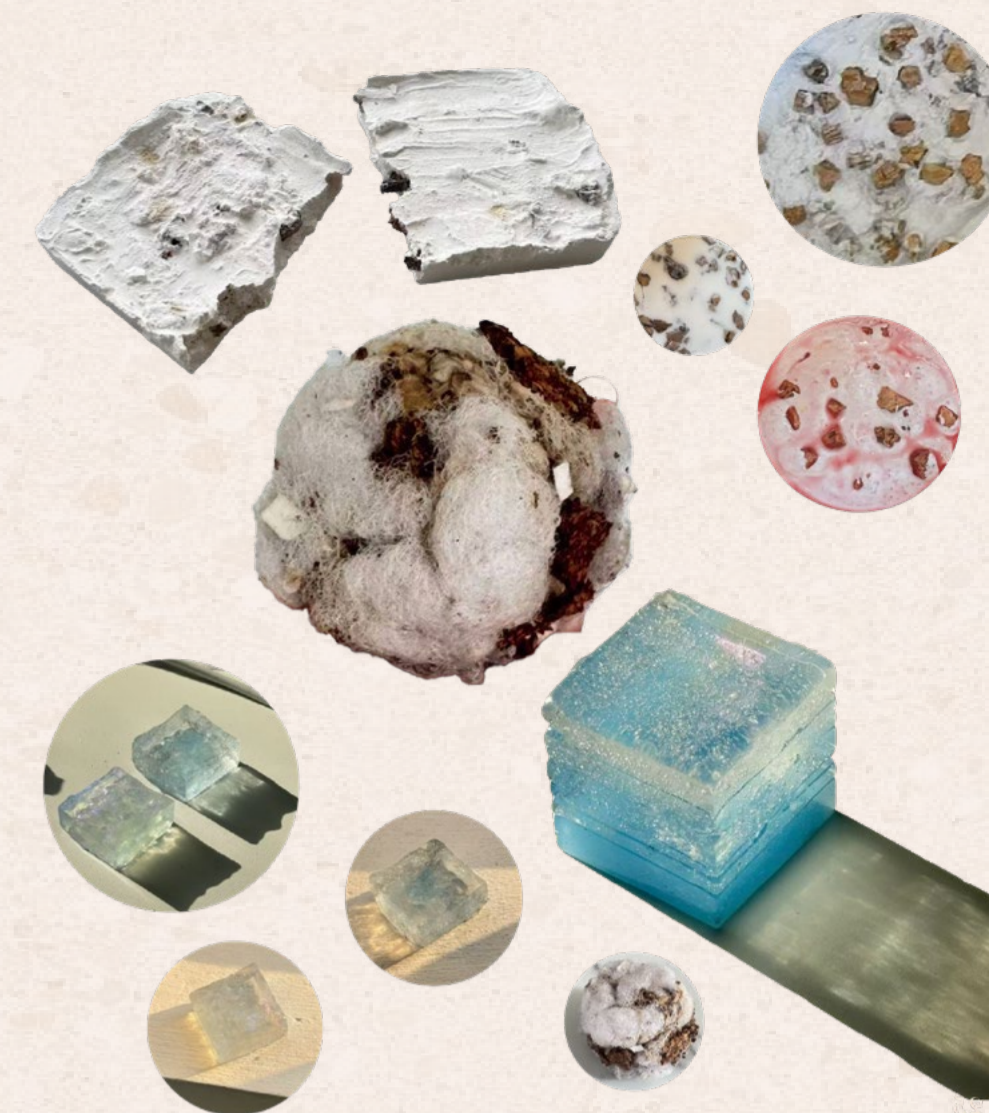
MATERIAL DESIGN AND SELECTION

These three material experiments explore different ways of translating sound into other sensory experiences in response to my deaf-focused project. The porous cork-fibre composite and cork-gypsum material both investigate how texture and internal cavities can reduce sound reflection and improve acoustic comfort, supporting clearer communication for deaf and hard-of-hearing users. In contrast, the layered wax material focuses on visual perception, using light, transparency, and depth to express how information can be conveyed without sound.

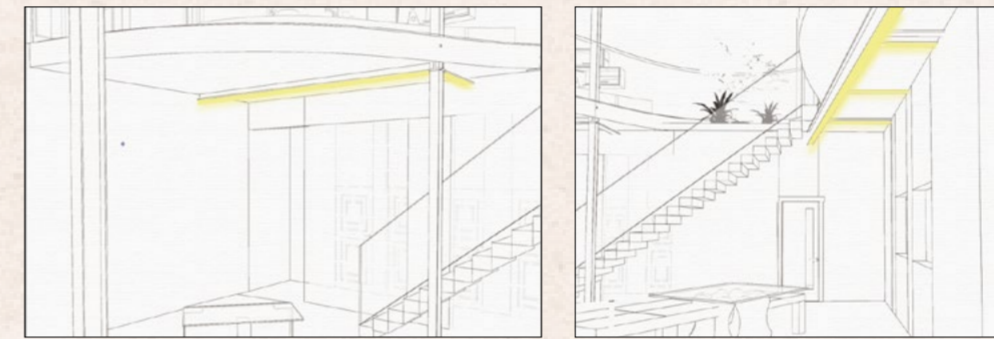
Together, these materials reflect a shift from hearing-based experience to a more inclusive, multi-sensory approach through touch, space, and visual cues.



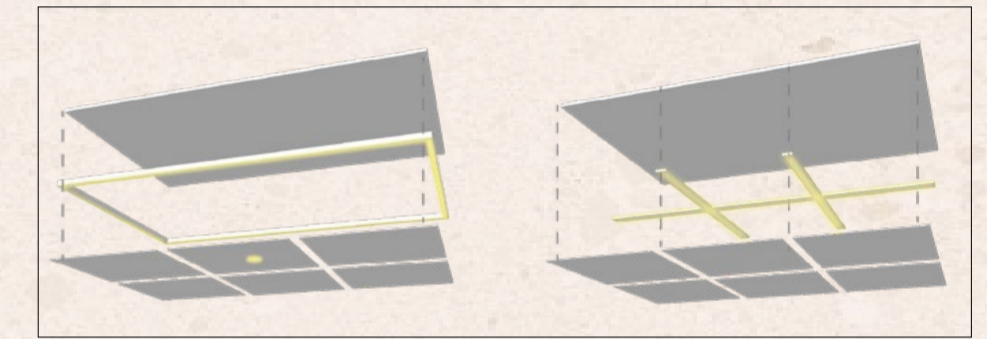
Additional material board



LIGHTING DESIGN



Linear LED strip lights are integrated along the exposed steel framework within the double-height circulation space. The lighting improves visibility and wayfinding while emphasising the structural rhythm of the building. By providing soft and continuous illumination, it supports visual communication and creates a welcoming atmosphere for both deaf and hearing users.



Within the café and consultation areas, LED lighting is integrated into the acoustic ceiling panels to create a uniform and glare-free environment. The combination of sound absorption and indirect lighting improves visual comfort, reduces distractions, and supports the clear facial visibility essential for effective communication.

DESIGN REFLECTION: APPLYING DEAFSPACE DESIGN GUIDELINES

Visual Connection

Double-height spaces and open sightlines support visual awareness and communication between users.

Space & Proximity

Circular seating and curved layouts encourage face-to-face interaction and sign language communication.

Light & Colour

Soft, even lighting reduces glare and improves visibility of facial expressions.

Circulation

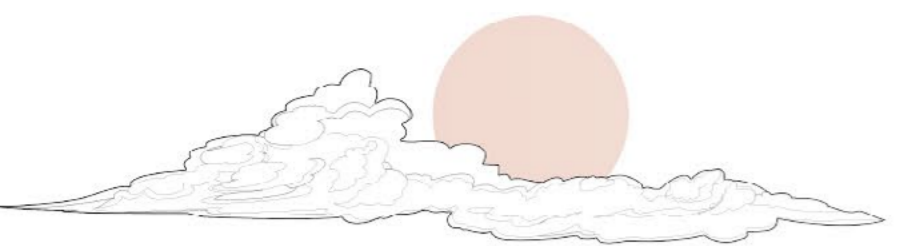
Wide routes and gentle transitions improve orientation and movement throughout the building.

Acoustic Comfort

Acoustic panels and absorbent materials reduce reverberation and create a calmer environment.



South Section

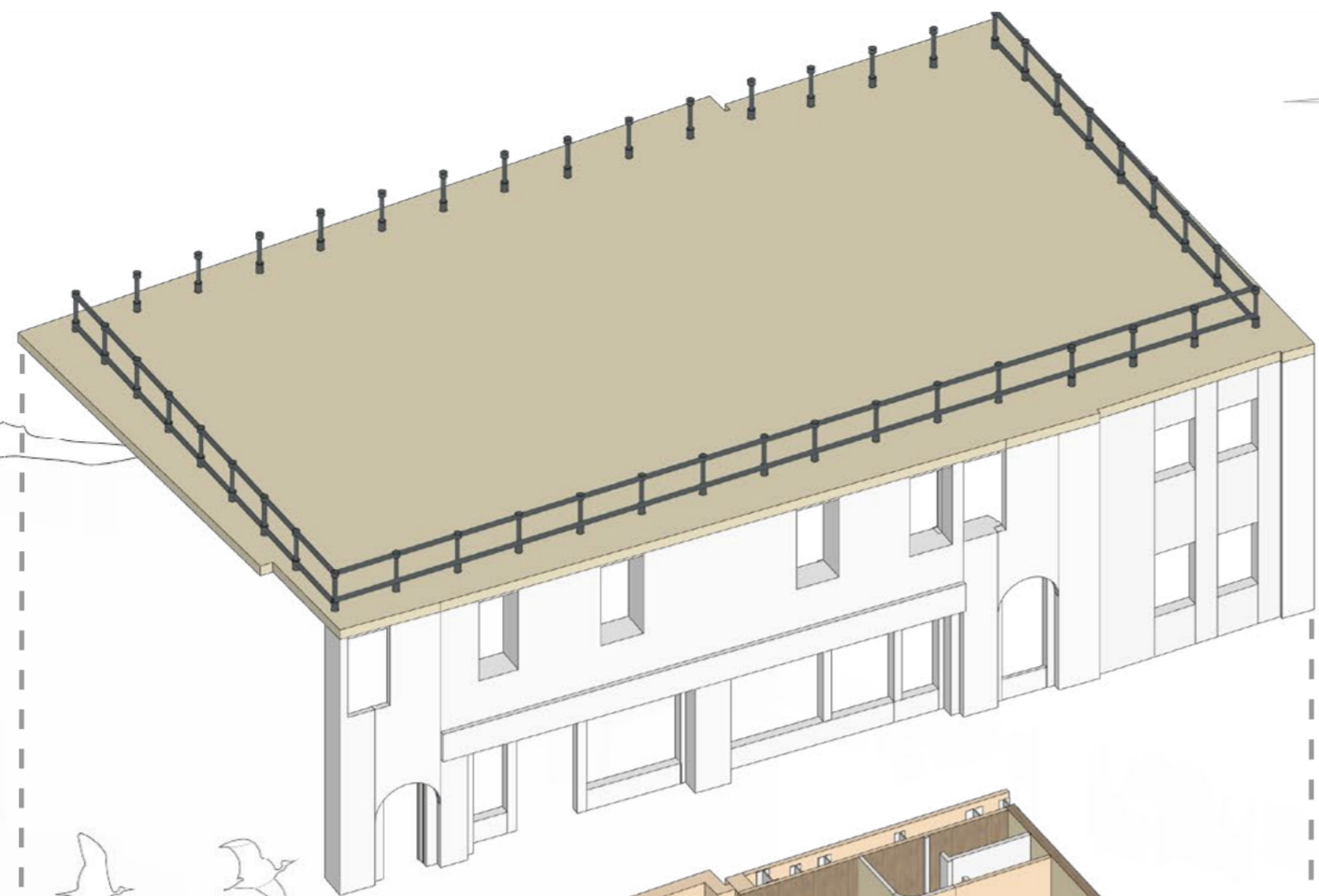


The design adopts a calm and visually accessible material palette inspired by DeafSpace principles, creating an environment that supports communication, comfort, and social interaction.

Soft neutral tones, natural timber finishes, and textured surfaces are used throughout the project to reduce visual distraction while enhancing spatial warmth and orientation.

Acoustic performance plays a key role in the design, with PET felt panels, slatted timber acoustic panels, and micro-perforated acoustic surfaces integrated to improve sound quality and create a more comfortable environment for both deaf and hearing users. Frosted textured glass provides privacy while maintaining visual connection and natural light transmission.

Existing steel structures are retained and combined with new interventions, celebrating the character of the former Fruitmarket Gallery while creating a contemporary and inclusive community space. Together, the materials, lighting, and spatial organisation promote a welcoming atmosphere that encourages interaction, learning, and engagement.



ISOMETRIC DIAGRAMS

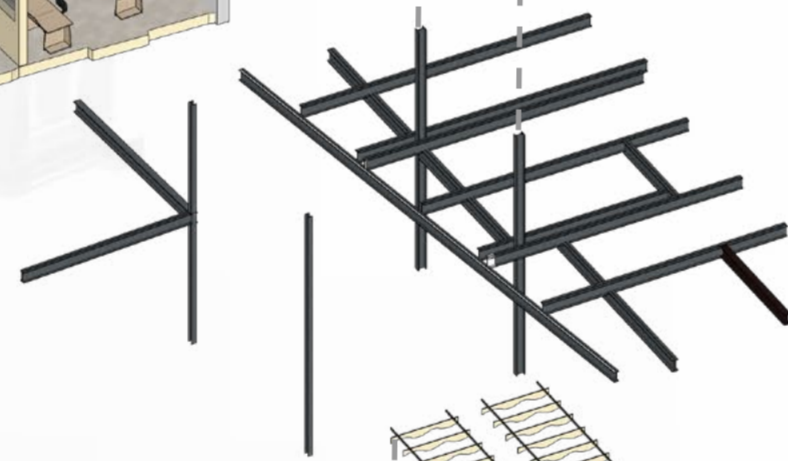
FACADE

The building's façade features a large number of glass windows. Decorative parapet railing on the roof, used for safety and as a historic architectural detail.



FIRST FLOOR

From left to right, the main functions are the consultation room, the technology support laboratory and the inclusive café.



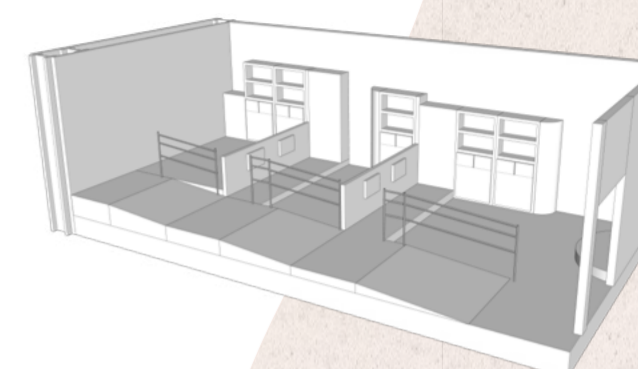
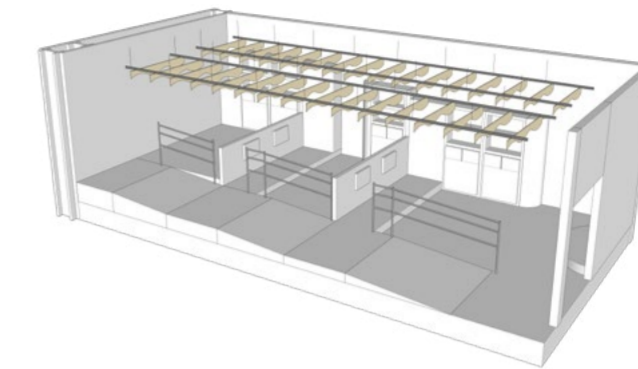
STRUCTURE

The interlacing steel framework within the building serves both a structural and decorative purpose.

SOUND-ABSORBING PANELS OF THE KEY SPACE

GROUND FLOOR

From left to right, the main functions are staff offices, skills workshops, an interactive gallery and public workshops.



The space is organised with a stepped floor and small platforms connected by a ramp, creating clear levels while maintaining accessibility. Acoustic ceiling panels and integrated lighting help control noise and provide a comfortable visual environment. Functionally, the space is designed to support both workshops and lectures. In its workshop mode, it encourages face-to-face interaction for activities such as sign language learning and group work, with screens providing subtitles for accessibility. When reconfigured, it becomes a lecture space with clear sightlines towards a central presentation area.

KEY SPACE DESIGN Public Workshop

CEILING

THE STEEL FRAMEWORK WITHIN THE CEILING

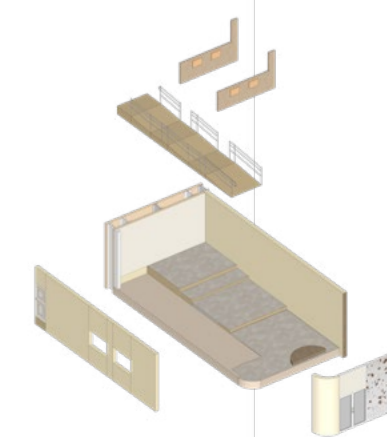
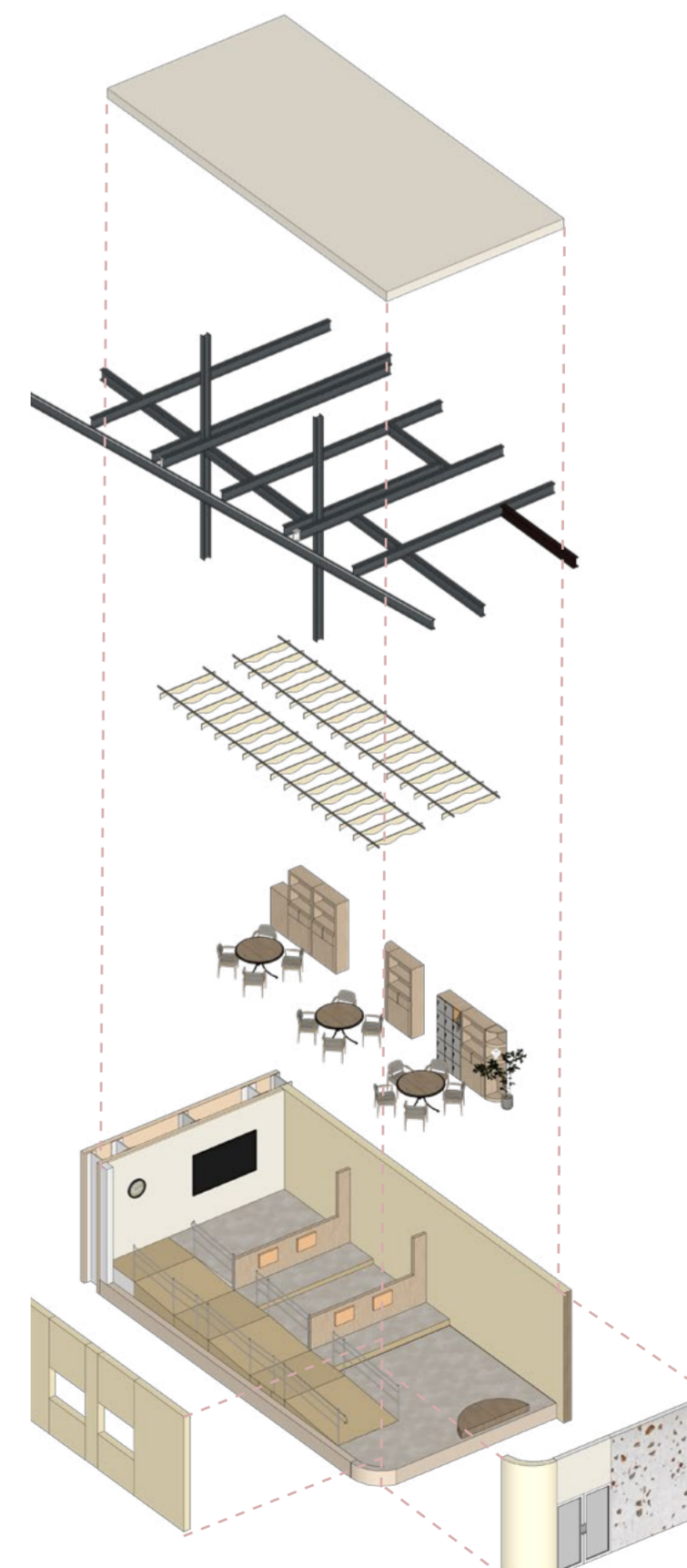
The existing steel structure of the site blends seamlessly with the newly added floor slabs. The steel structure is enclosed within the floor slabs.

SOUND-ABSORBING PANELS

FURNITURE

The layout of the furniture can be adjusted to suit changes in the room's function

BASIC STRUCTURE



Design Outcome

3D Renderring



Public Workshop



Inclusive Cafe



The final design creates an inclusive environment that supports communication, learning, and social interaction between deaf, hard-of-hearing, and hearing users. Through clear sightlines, open circulation, visual connectivity, and carefully controlled lighting, the space encourages confident communication while providing opportunities for skill development, social engagement, and community participation.



Corridor



Entrance



Interactive Gallery



Consultation Room

Floor Plan



- | | |
|--|------------------------|
| A: Consultation Room A (Psychological) | A: Staff Office |
| B: Consultation Room B (Careers) | B: Fire Stair |
| C: Elevator | C: Skills Workshop |
| D: Fire Stair | D: Interactive Gallery |
| E: Disabled toilet | E: Reception |
| F: Assistive Technology Lab | F: Storage |
| G: Inclusive Café | G: Public Workshop |
| | H: Elevator |
- First Floor ■ Ground Floor

Perspective Section Drawing



Physical Model

The sectional model focuses on the Public Workshop, the project's primary space for learning, collaboration, and community engagement. Located within the retained double-height volume, it benefits from visual connections across floors, improved daylight access, and clear spatial organisation, creating an inclusive environment that supports communication between deaf and hearing users.

