



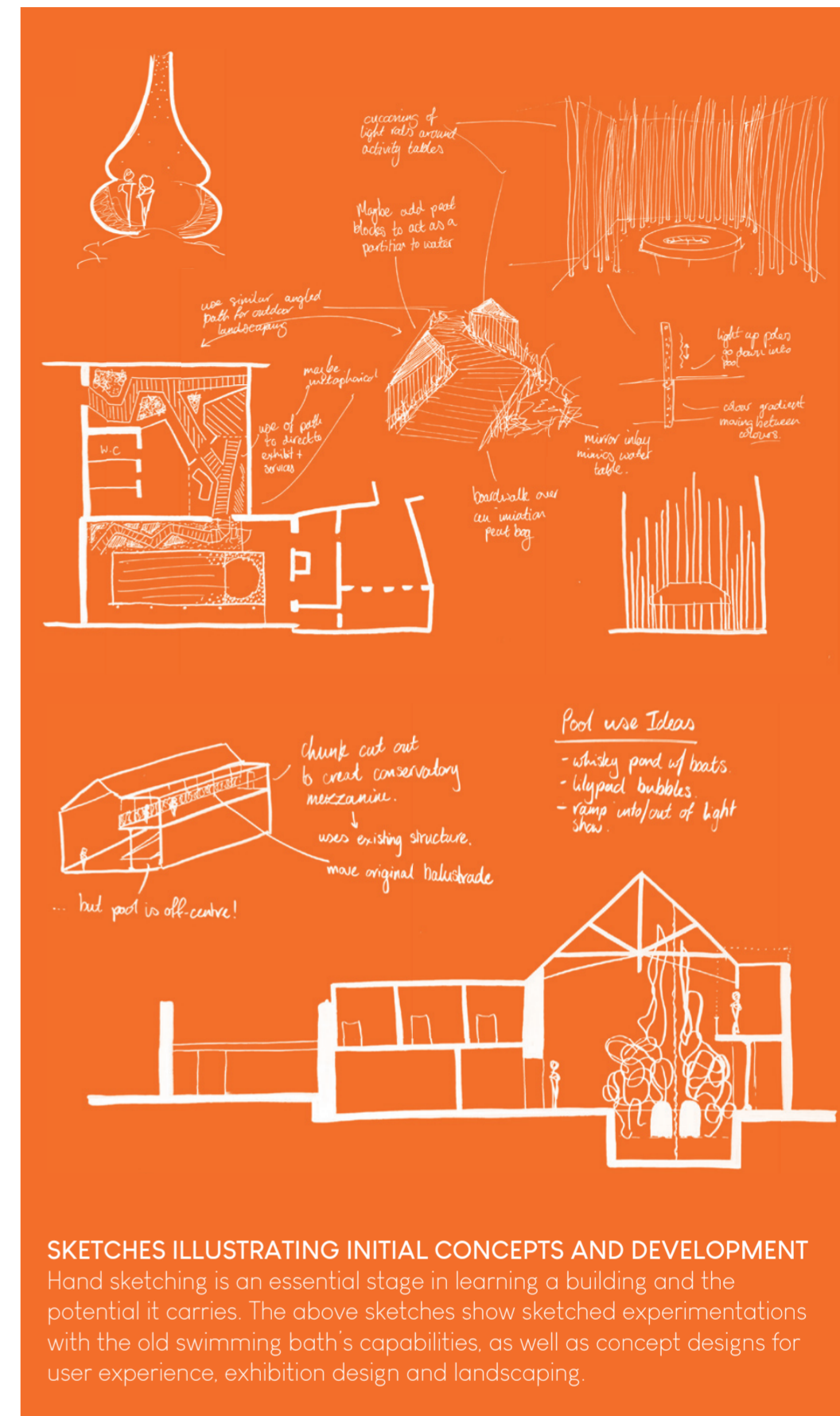
EXTERIOR OF THE SUSTAINABLE DRAM HUB



BAR/WHISKY TASTING AREA



EARTH & WATER ZONE OF EXHIBITION



SKETCHES ILLUSTRATING INITIAL CONCEPTS AND DEVELOPMENT  
Hand sketching is an essential stage in learning a building and the potential it carries. The above sketches show sketched experimentations with the old swimming bath's capabilities, as well as concept designs for user experience, exhibition design and landscaping.

# THE SUSTAINABLE DRAM HUB

## THE ISSUE

This project casts a fresh light on the growing role of sustainability in the whisky industry in Scotland by providing a space for the Scotch Whisky Association (SWA) to achieve their **goal to become a net-zero energy business by 2040**, five years ahead of the Scottish Government goal of 2045.

## THE SOLUTION

Tailored **business facilities and a three fold exhibition and whisky tasting area** accommodate both professional and general public visitors in a way that revitalises the perception of the scotch whisky industry in the light of sustainable, planet-friendly progress. This facility provides space for SWA members to consult with industry experts in an effective and collaborative way that creates a solid foundation for the whisky industries fight against the climate crisis.

It is essential that **a building facilitating planet-friendly change is in itself planet-friendly**, and so this project keeps sustainable practices in mind when designing both the new additions to the site as well as in the renovation of the original Victorian building.

## THE APPROACH

It is a goal of this project to confront and transform the idea of sustainability, not just within the scotch whisky industry, but within design practice as a whole. This facility shows that in the midst of a climate crisis we, as designers, can still create **modern, sleek, bold, and expressive spaces that fulfil sustainable ideals**.

## GOALS FOR CHANGE

This design of this project aligns itself with the **sustainability goals set out by the SWA and their adoption of the United Nation's Sustainable Development Goals**. These goals, and how they have been reflected within the design of this facility, include:



The healthy maintenance of clean water through the SWA's Water Stewardship Plan.

The exhibition highlights innovative water management.



Embracing a cleaner, more efficient future through self-sufficient energy production.

The facility generates its own energy through solar tiling.



Ensuring the change towards sustainable practices in all aspects of the whisky industry.

This project has produced new sustainable materials.



Increasing focus on peatland conservation to maintain healthy habitats and peat supply.

New landscaping creates safe habitats for urban wildlife.

TRANSFORMING A HISTORICAL INDUSTRY IN A WAY THAT PRESERVES, PROTECTS AND INNOVATES THE CREATION OF SUSTAINABLE SCOTCH.

# LOCATING SUSTAINABILITY



121 GREAT JUNCTION STREET, LEITH



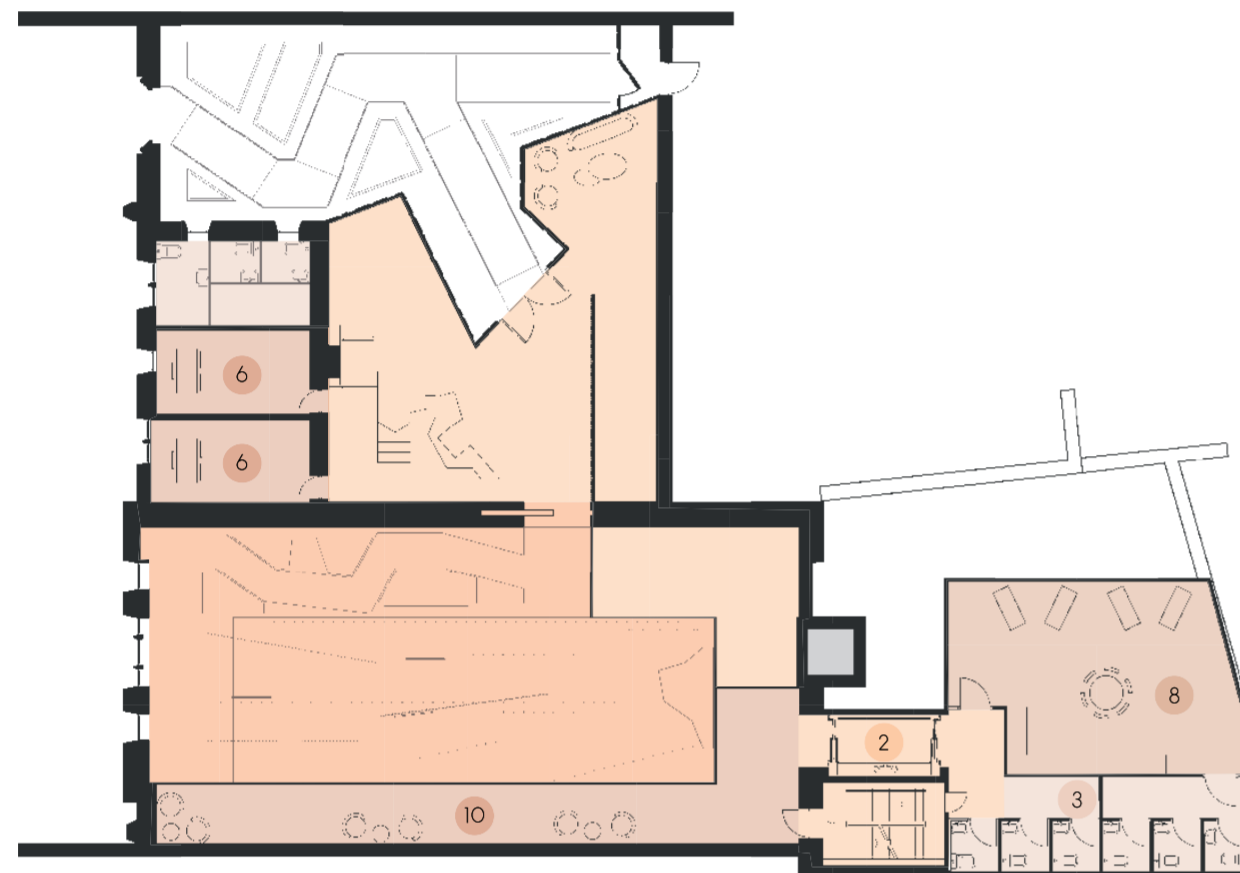
FACADE FEATURE



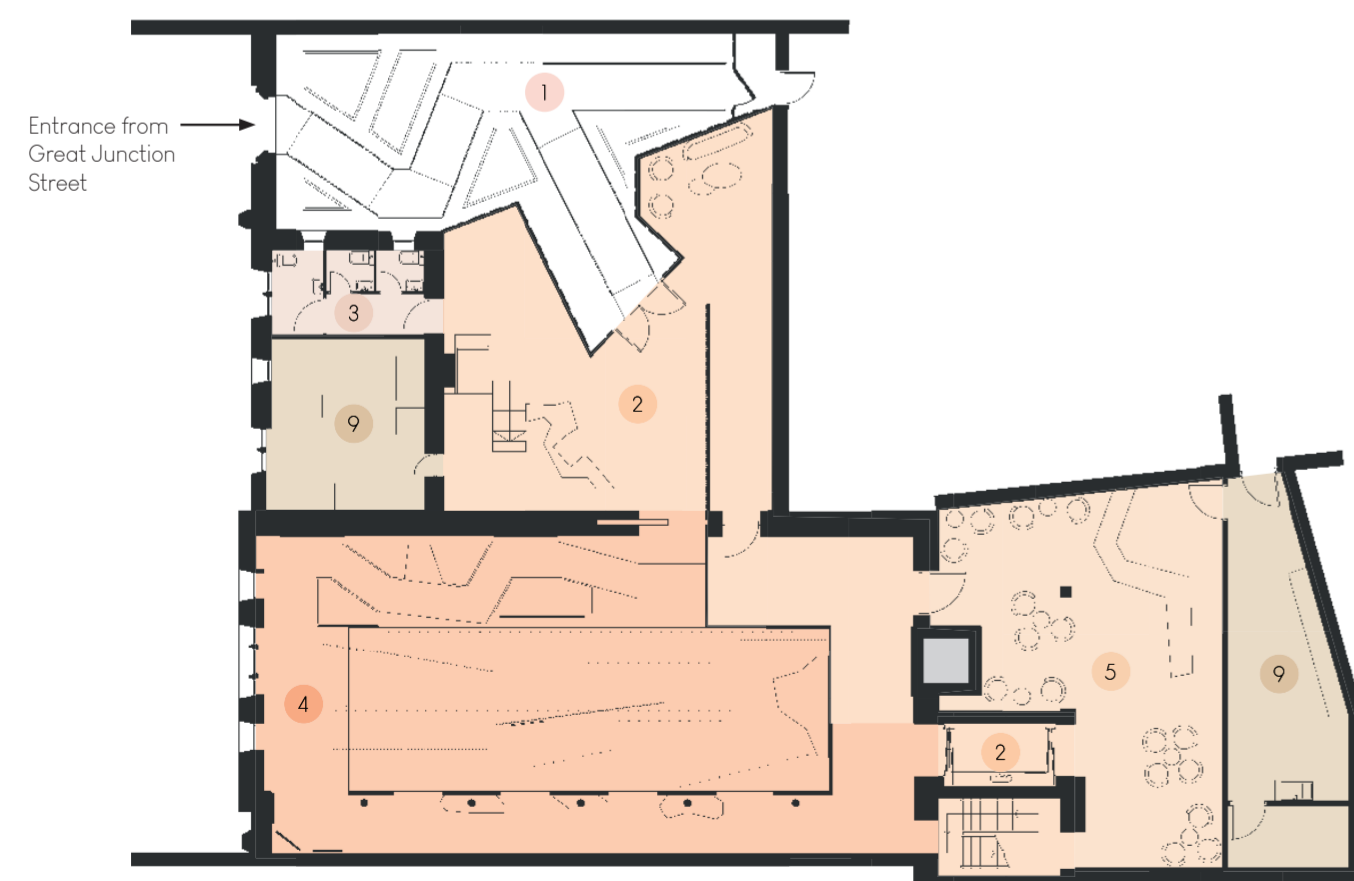
ORIGINAL TIMBERWORK



INTERNAL COLUMNS



FIRST FLOOR

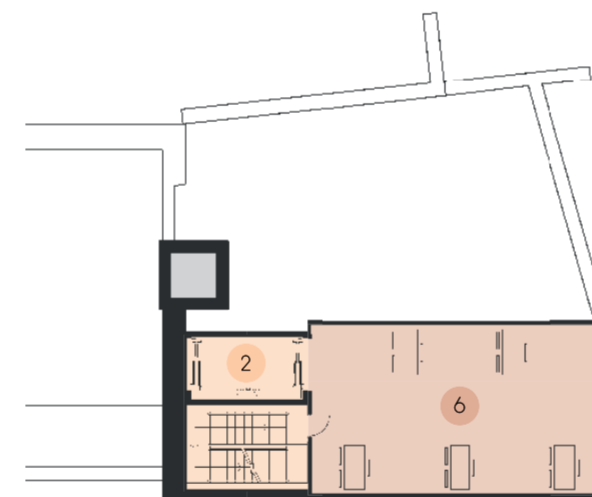


GROUND FLOOR

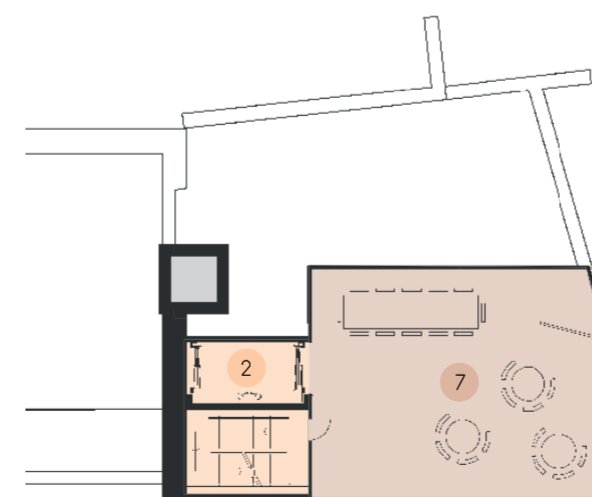


## VISITOR EXPERIENCE ZONES

- 1 Aroma Garden Entrance Way
- 2 Reception & Circulation Space
- 3 Public/Visitor WCs
- 4 Exhibiton Hall
- 5 Bar & Tasting Area
- 6 Communal and Private Offices
- 7 Collective Knowledge Sharing Space
- 8 Staff Facilities & Break-Out Space
- 9 Building Services
- 10 Observation Gallery



THIRD FLOOR



SECOND FLOOR



MODEL OF ORIGINAL FACADE

## LOCATION

Based in the **Old Dr Bell's Baths on Great Junction Street in Leith, Edinburgh**, this site makes use of a growing professional community within the area as well as strengthening transport links to the city centre and beyond. This is a listed building with many original features still intact, including the structure's **Victorian Gothic-style facade and internal timber vaulted ceiling and railing**.

This project shows that it is possible to adapt existing heritage spaces that can be effectively and efficiently turned to a contemporary purpose that conforms to sustainability standards. The design of this space respects the existing structures whilst incorporating two new twin extensions at the front and rear of the property which expand the buildings functional capacity and improve visitor flow and circulation.

## LAYOUT

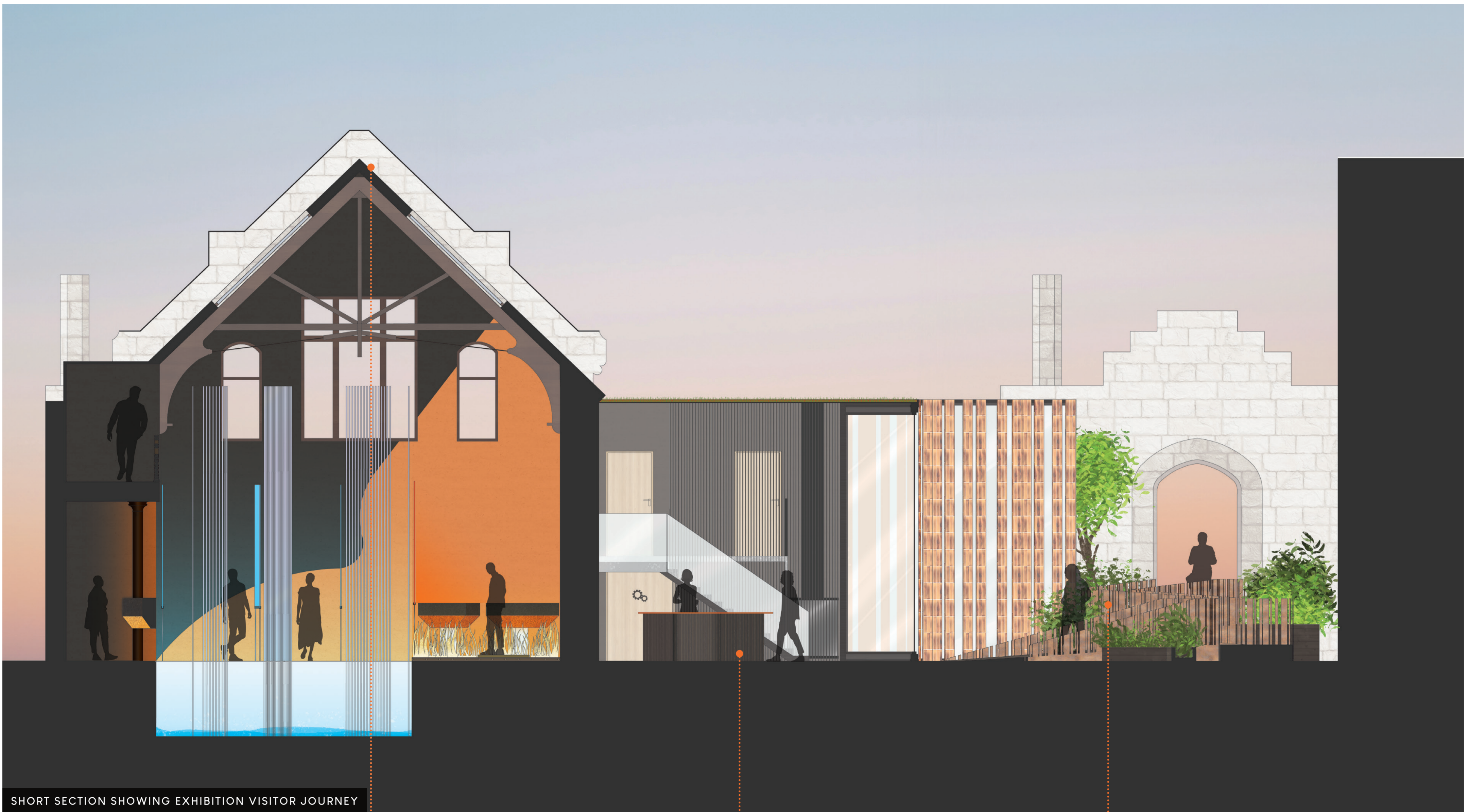
This facility is accessed via Great Junction Street, where visitors enter an eternal courtyard where they travel along a **winding ramp surrounded by plant-life reflecting the five whisky regions of Scotland**. Visitors area then welcomed into the first of the twin extensions, discovering a reception space where they can access the public exhibition and whisky bar/tasting area, or the business facilities to the front and rear of the properties.

The original stone portion of this reception space is now home to WC facilities, **energy storage for the solar roof tiling**, and two private offices accessible via stairs and platform lift.

The exhibition sits at the heart of the facility in the former bath house and its sectioned into three main zones, **focusing on the three main obstacles to the SWA achieving their net-zero energy goals**.

At the rear of the property sits the second of the twin extensions atop the former boiler room and chemical store and takes the form of a three story tiled shard that reflects the angle of the pool house roof.

In the original portion of the building sits the bar/tasting area with accompanying kitchen facilities. The first floor holds another set of WCs for both visitors and staff, as well as kitchen and storage facilities for staff working in the building. On the second floor lies a **collaborative work space that encourages active engagement between SWA members and sustainability experts**. The final third floor holds an open office space that **allows for a mixture of collaborative and independent work**.



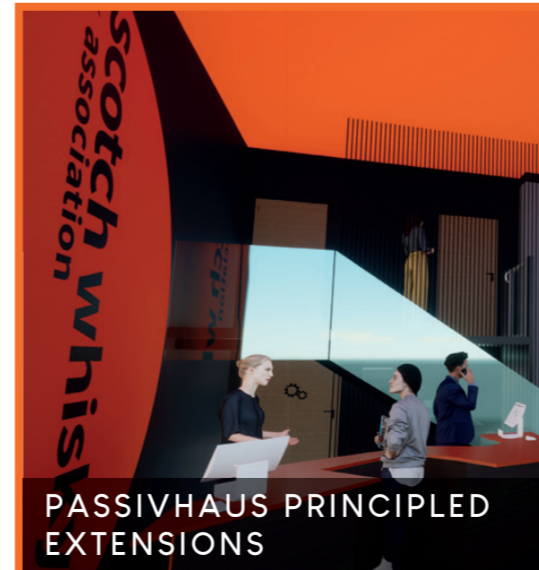
SHORT SECTION SHOWING EXHIBITION VISITOR JOURNEY

# BUILDING SUSTAINABILITY



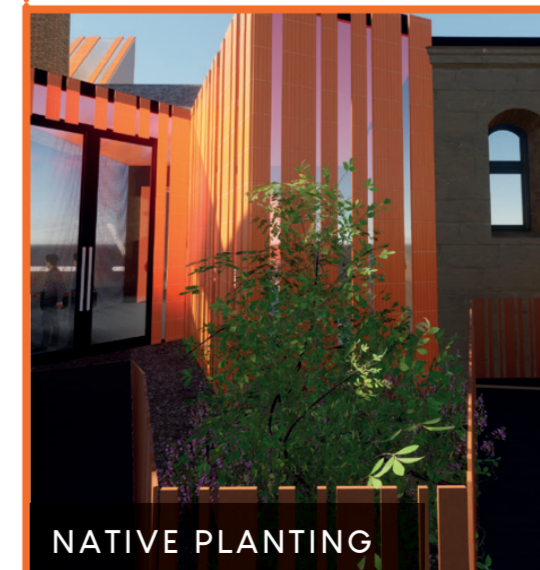
SOLAR TILING

The grey slate tiles on the roof of the pool space of the original building will be replaced by new **solar tiling produced by UK-based company XO EDGE**. While being aesthetically functionally similar to the original tiling, these solar tiles are able to generate power for the day to day running on the facility. As these are small individual units, tiles are able to be replaced when needed at a lower cost than traditional solar panels.



PASSIVHAUS PRINCIPLED EXTENSIONS

While it will be impossible to create a complete passivhaus of this facility due to the listed heritage portions of this property, implementing passivhaus principles will still go a long way to improving the buildings overall energy efficiency. All windows within the facility are **triple glazed** and all areas of the building, old and new will be fitted with the **highest quality insulation** to improve internal environmental stability.



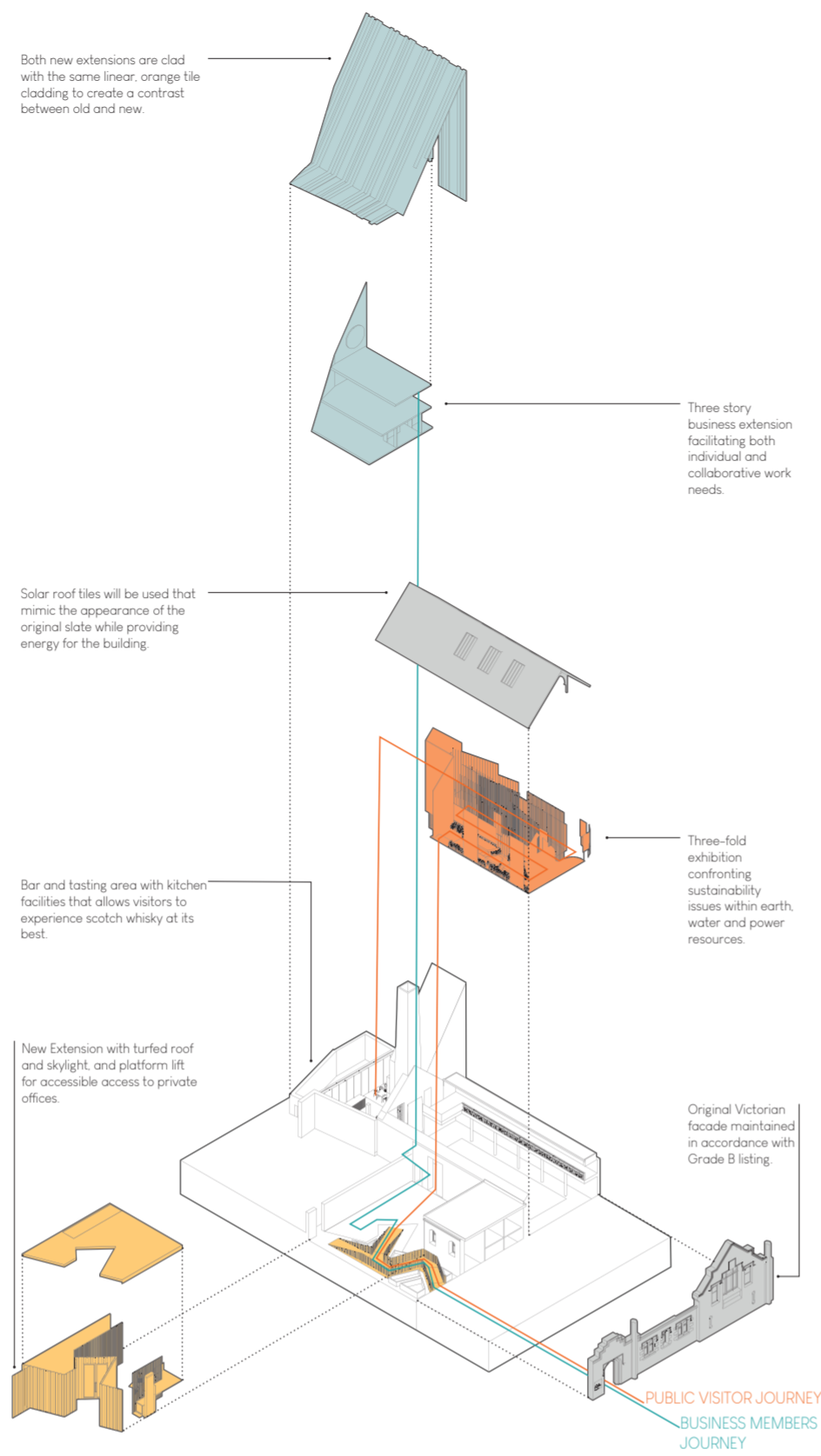
NATIVE PLANTING

The entrance to the facility is designed as a **pathway through the regions of Scottish whisky**. Five planters are populated with native plant species that mimic the scents of each of the whisky regions all while supporting local animal and insect life in a cityscape that has limited nourishing habitats. **For example the Lowlands region is planted with hardy heathers, honeysuckle and fresh grasses.**



EARTH ZONE OF EXHIBITION

# INNOVATING SUSTAINABILITY



AXONOMETRIC OF EXHIBITION LOCATION

**THE EXHIBITION**  
This central exhibition space is integral to confronting the public perception of this sustainability within the scotch whisky industry by **highlighting the three most significant obstacles to the SWA achieving their net-zero energy goals** through both sustainable design and sustainable construction. These sections are broken down into:

**THE EARTH ZONE** – Focusing on peatland conservation and domestic barley production.  
**THE WATER ZONE** – Looking at the management of this most important natural resource to the industry.  
**THE POWER ZONE** – Exposing how a current lack of infrastructure is preventing the use of more planet-friendly technologies.

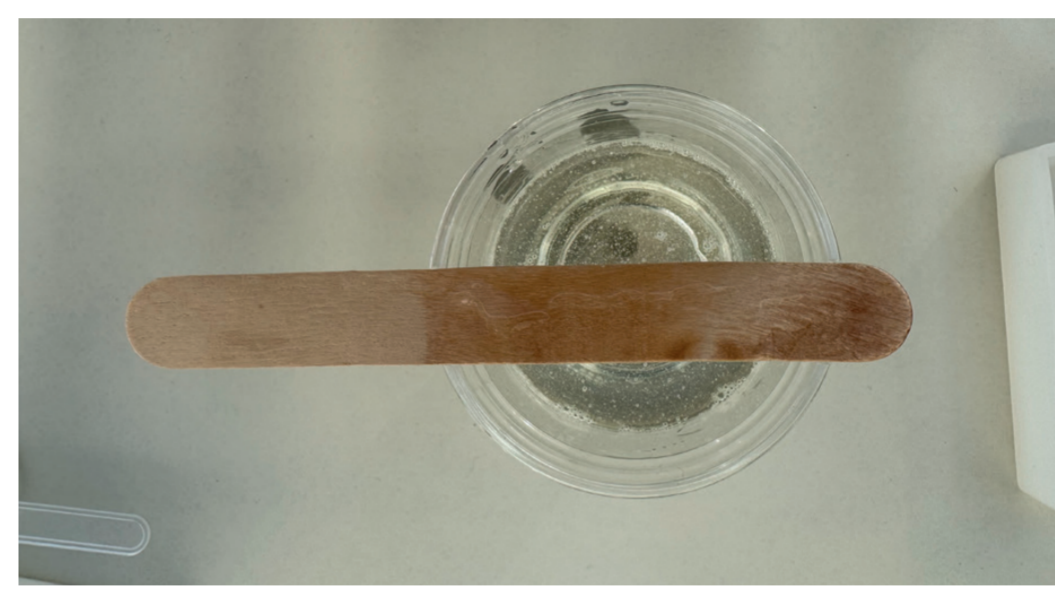
**MATERIAL DEVELOPMENT**  
It is essential that as many of the materials as possible used within this project have sustainable credentials and so I developed a new material to be used in the Earth Zone of the exhibition to **replace more environmentally damaging materials such as acrylic**. This material is a **composite comprised of a bio-epoxy resin and dried draff fibre**. Draff is the term for barley mulch leftover from the mashing process during distillation and has traditionally been sold to farmers as cattle feed. This composite sheeting is used in the Earth Zone as a component of a floor-based light feature, a model of which is seen above, that is designed to **mimic a healthy peatland landscape** when tiled together. Images and descriptions to the right detail the process of the development and creation of this new sustainable material.



**STEP 1: Material Sourcing**  
This first phase of the process involved the gathering of materials which includes, from left to right in this right-hand image:

- Draff, barley mulch leftover from the mashing process of distilling which has been dried using heat in order to remove any moisture.
- Standard silicone mould for shaping samples.
- Bio-epoxy resin, brand pebeo gede, comprising of resin, hardener, and mixing paraphernalia.

This material development uses commercially available bio-epoxy resin which is not fully sustainable but is used in place of fully sustainable bio-epoxies yet to be made available to the open market.



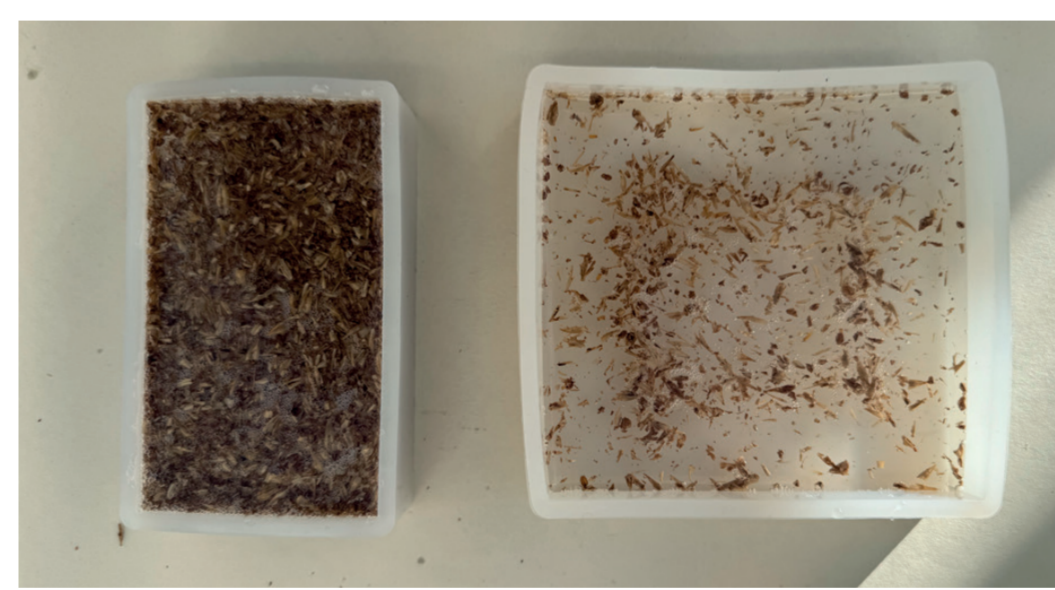
**STEP 2: Mixing Bio-Epoxy**  
This phase required the careful mixing of the bio-epoxy solution was comprised of a 2:1 ratio of resin solution to hardener. The two solutions are combined and thoroughly mixed to ensure the chemical reaction that results in the complete curing and hardening of the mixture.

This stage was completed according to the instructions provided with the bio-epoxy and was successful but for the multitude of air pockets within the solution. These bubbles would not dissipate and so further development is required to smoothen out the mixture potentially through different mixing methods and/or the use of a heat gun at the curing stage.



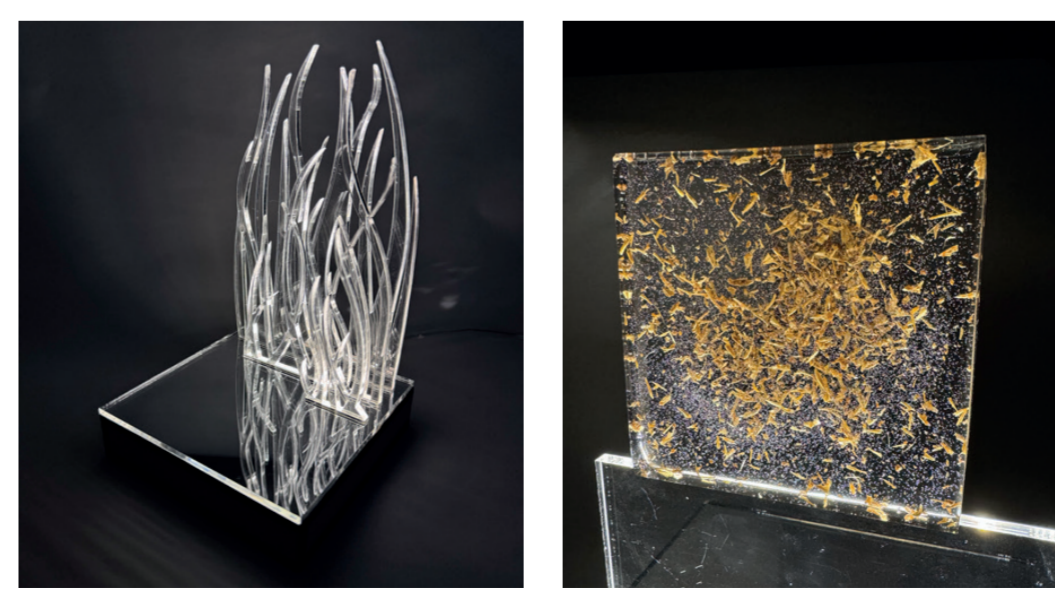
**STEP 3: Adding Draff**  
The third stage involved a practice in the creation of resin art and general use called 'inclusion' which involves the addition of another material, in this case draff, after the mixing stage.

As this is an experimental exploration of alternative uses of draff, this development process involved making three separate samples with varying amounts of draff. This was done for a number of reasons; the first being to test if the quantity of draff content had any effect on the structural stability of the end product, and the second was to explore the aesthetic qualities of the final epoxy sheeting. As this material is intended to be used as a component of a light feature the three samples created contain 5g, 1g, and 0.5g of draff mix in order to test for the desired level of translucency within the material.



**STEP 4: Pouring**  
Following the settling process that allowed the draff to settle into the bio-epoxy solution, the mixtures were poured. Two types of moulds were used in this process, the first being a deeper rectangular mould (seen on the left hand side of the left image), this mould was used for the first test which included 5 grams of dried draff content, this sample was decided to be too dense and so the next sample, also using the rectangular mould contained only 1 gram of dried draff. This improved the light quality but was still felt to be too densely packed for the dried light qualities of the material.

The second mould, a flatter square mould around twice the size of the rectangular moulds, was used to create the final sample which included 0.5 grams of dried draff content. This sample was felt to have the desired aesthetic and light qualities for its designed purpose.



**STEP 5: Testing**  
The three samples created for this material development were testing by placing the edge of the sample onto an LED strip to see how the materials would cast the light up through the material.

As previously mentioned, the 5 gram and 1 gram samples were considered too dense and would limit the amount of light being transmitted through the material.

The near-left image shows the final sample with 0.5 gram dried draff content and illustrates how the light interacts with the draff within the epoxy, creating a golden glow that will be able to be used to mimic organic content in a contemporary manner. The far-left image shows the grass-like panels within the light feature that will be cut from this new composite material.

# PRACTICING SUSTAINABILITY

PRIVATE OFFICE SPACE



OPEN PLAN OFFICE SPACE



COLLABORATIVE WORKSPACE



RECEPTION TOWARDS BUSINESS ENTRANCE

## FACILITY

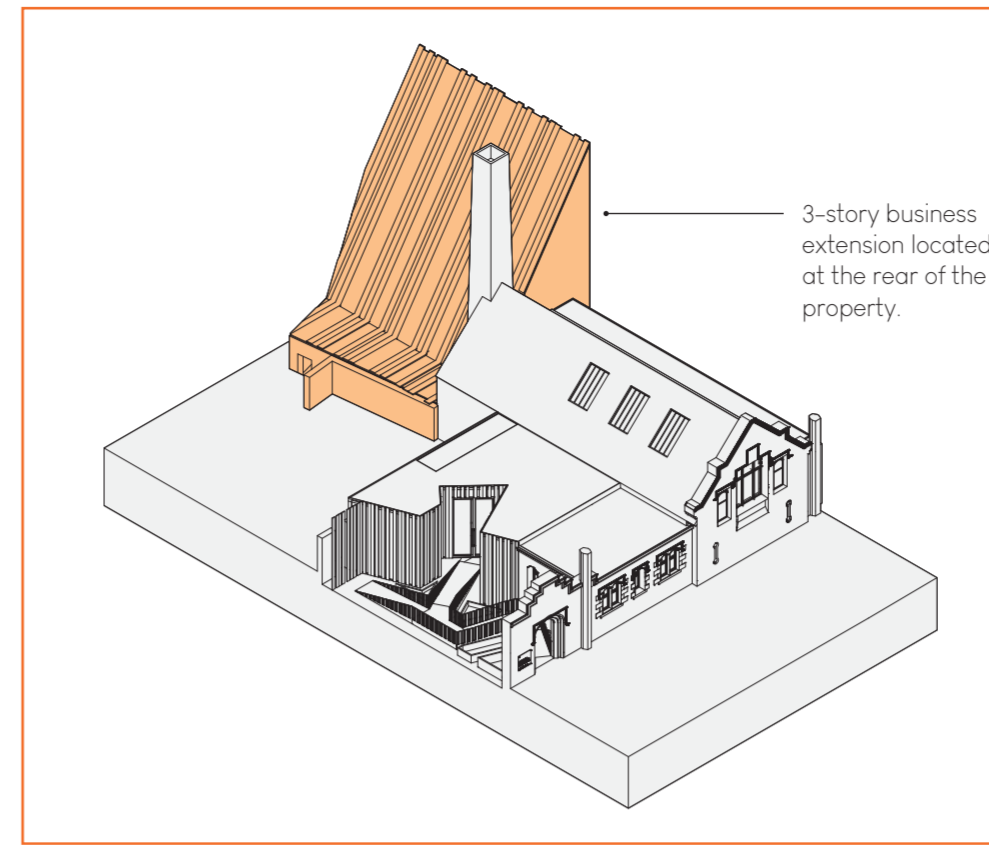
The core objective of this project is to provide spaces for SWA members to come together with industry experts in sustainability to develop and implement planet-friendly change that will facilitate the SWA's goal of becoming a net-zero energy business by 2040.

Consultation with the SWA revealed the importance of providing space for SWA members and industry experts to work together in a variety of ways and settings. As previously mentioned, a new extension to the rear of the property provides a variety of tailored spaces to facilitate this work in a way that suits the needs of each meeting. These include private offices, open offices and a collaborative workspace, as well as staff support facilities that accommodate the practical needs of office-based work, including storage and kitchen space.

This project's central goal is to create a facility that can effect sustainable change within the scotch whisky industry without sacrificing modern and dynamic design, through the use of planet friendly material choices and energy conscious design decisions.

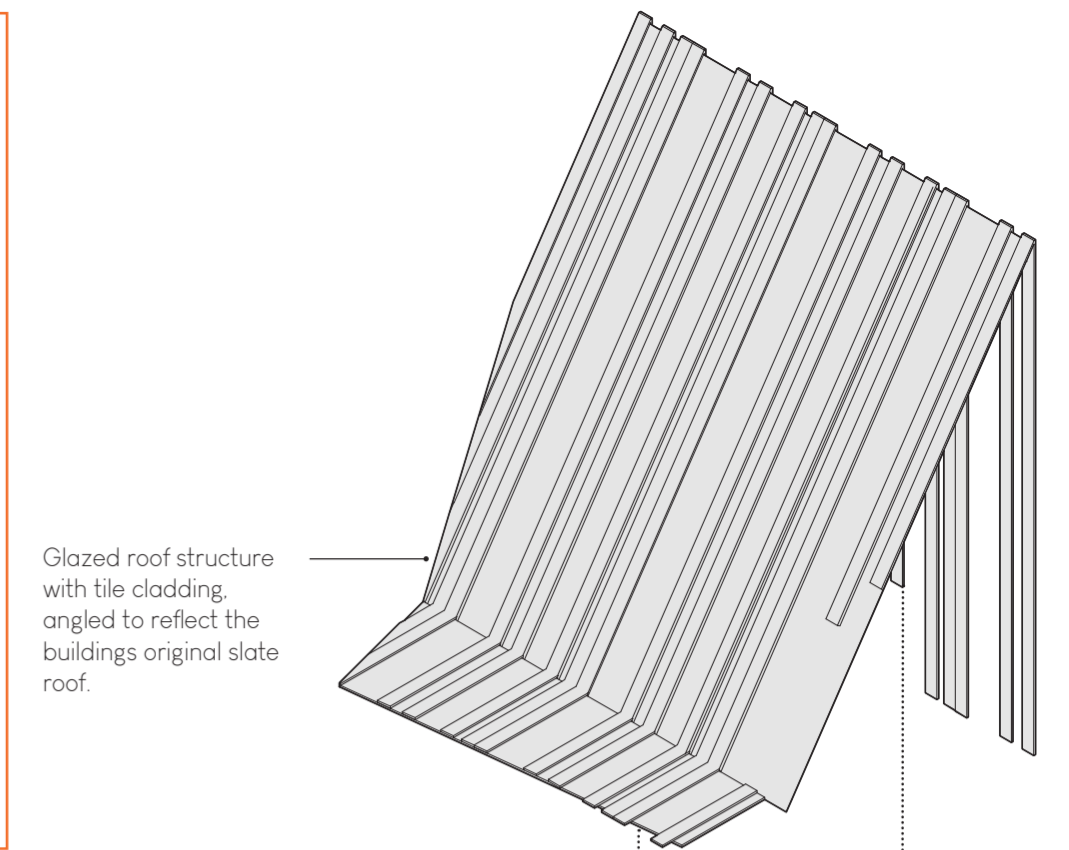
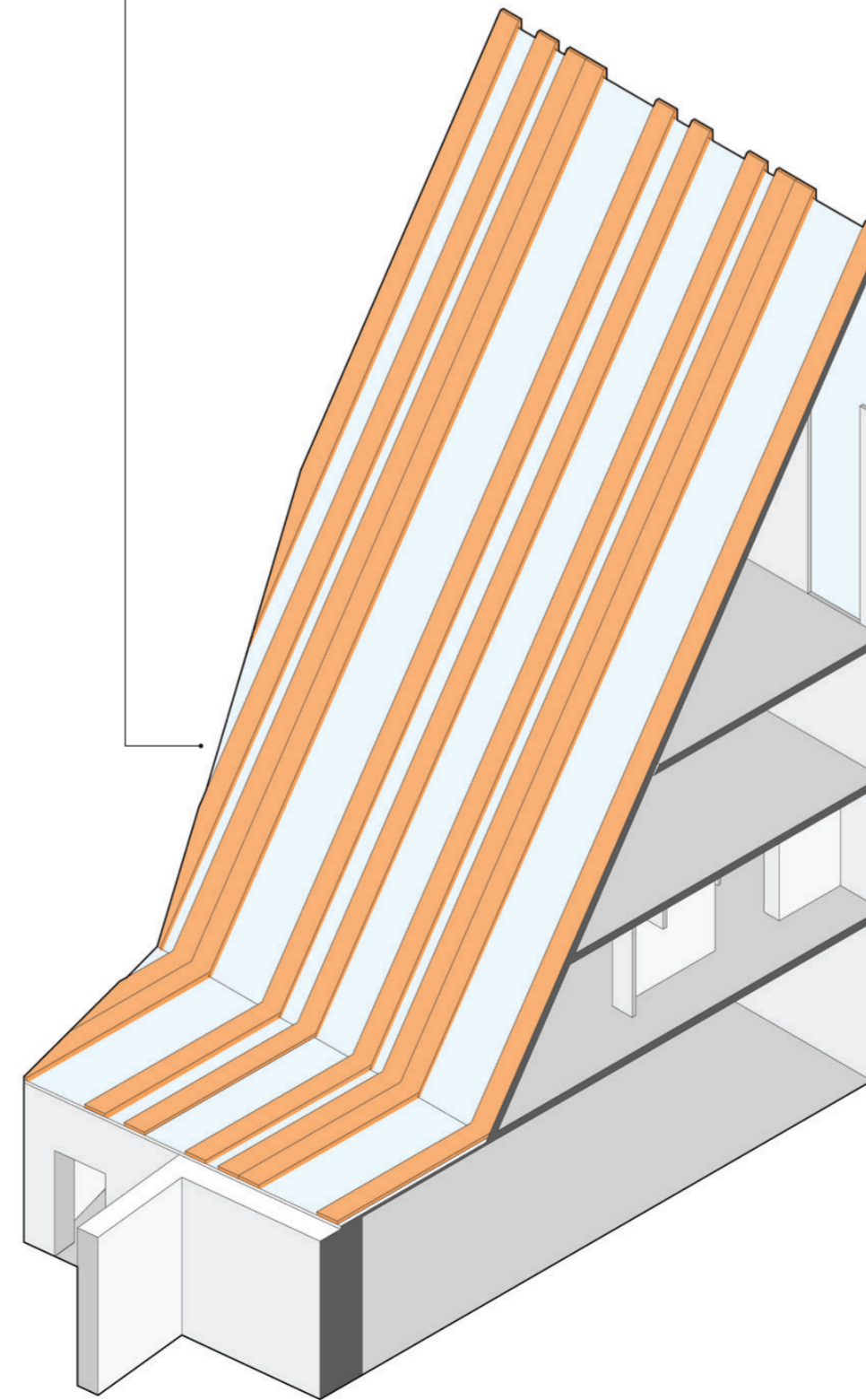


RECEPTION DESK

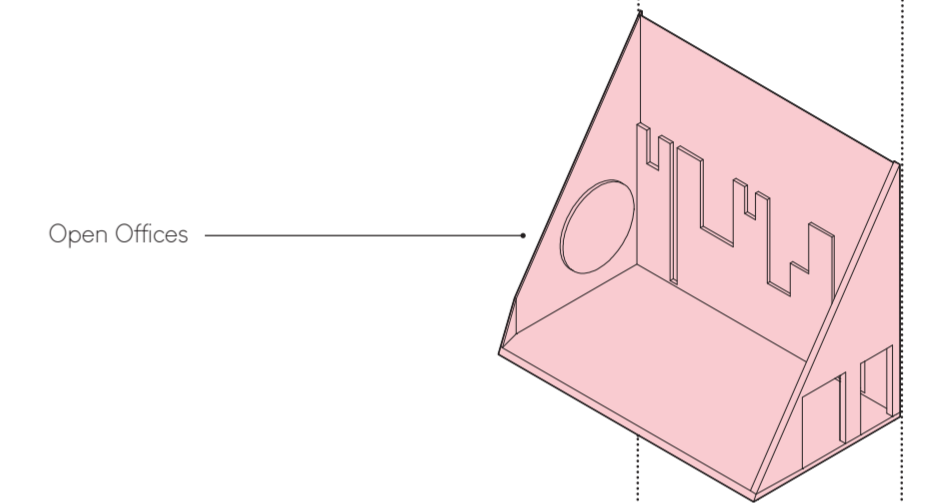


3-story business extension located at the rear of the property.

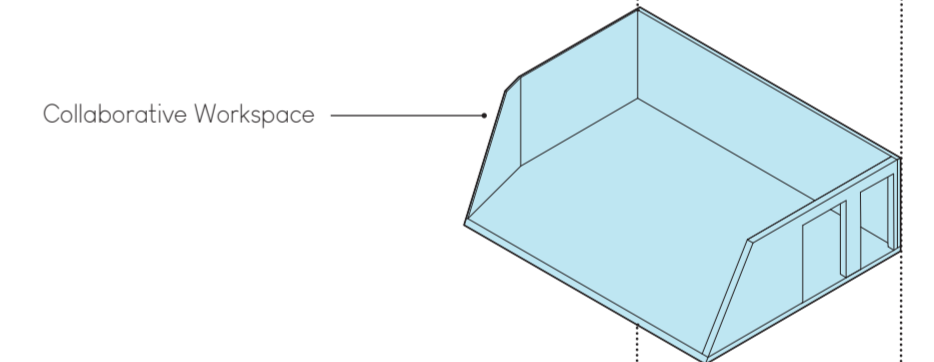
The South-East facing extension allows an abundance of natural light into all of the centre's key work and collaboration areas. The orange tile cladding of this business zone matches that of the new reception extension added to the front of the building so create a sense of the new enveloping the old.



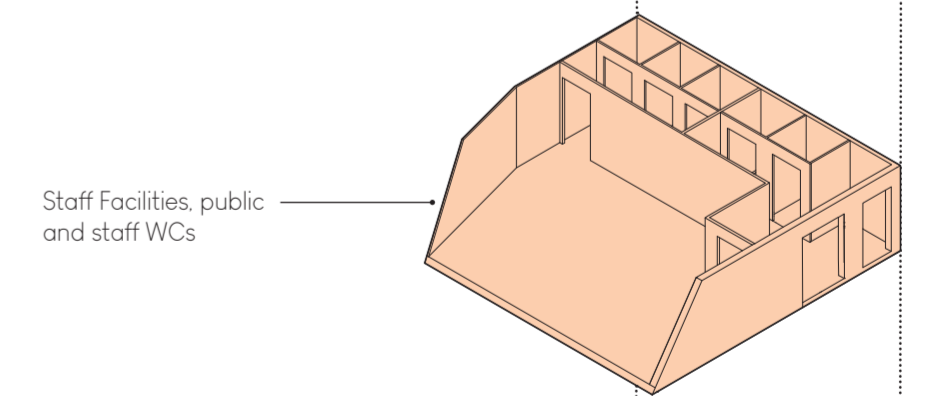
Glazed roof structure with tile cladding, angled to reflect the buildings original slate roof.



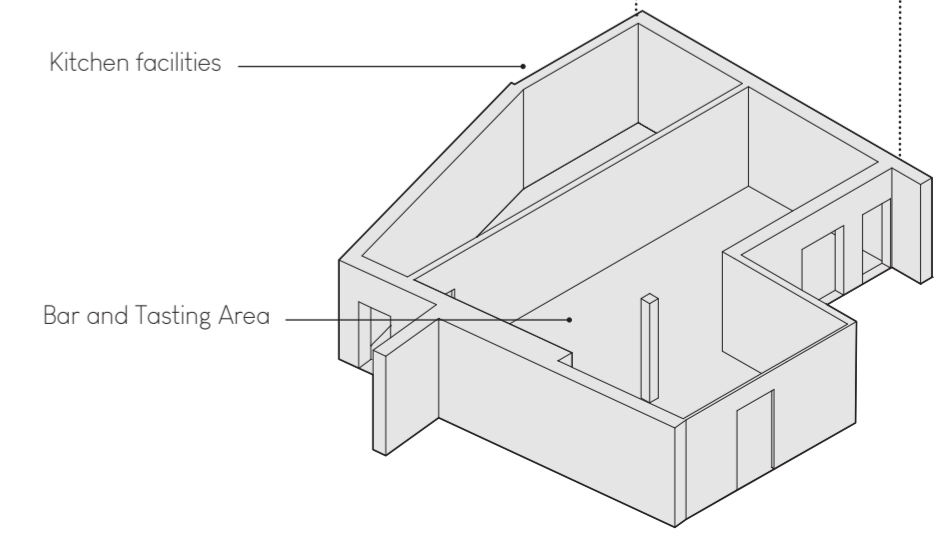
Open Offices



Collaborative Workspace



Staff Facilities, public and staff WCs



Kitchen facilities

Bar and Tasting Area