

# TROOP

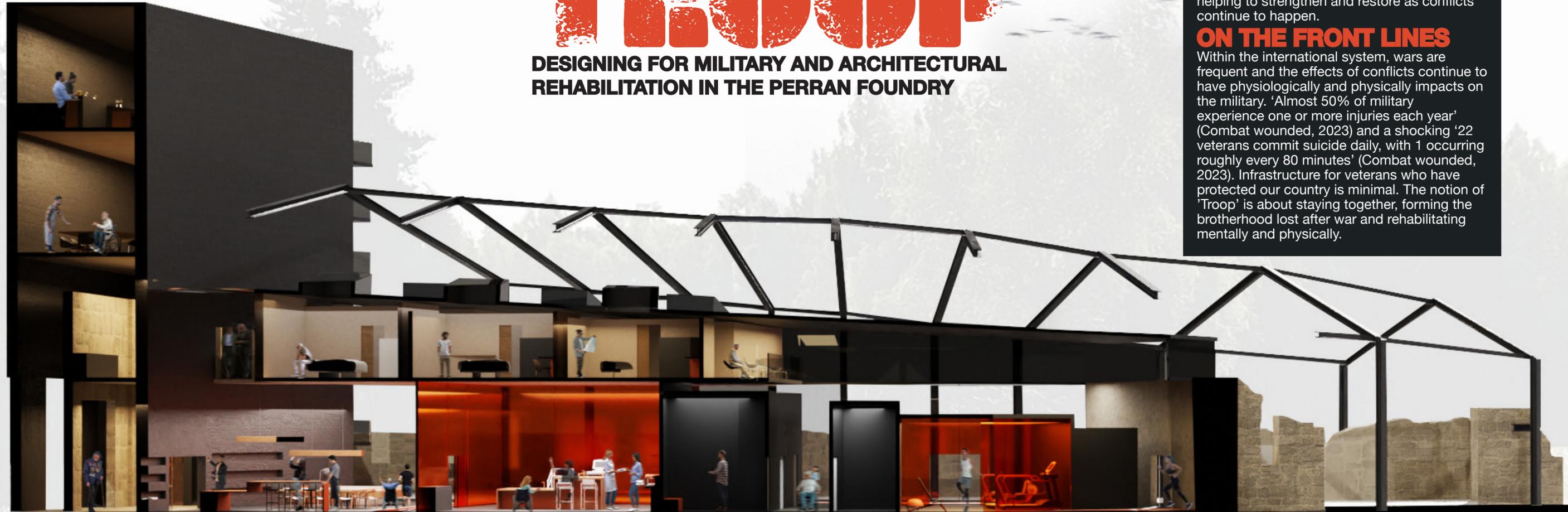
DESIGNING FOR MILITARY AND ARCHITECTURAL REHABILITATION IN THE PERRAN FOUNDRY

## THE PROPOSAL

We are often told of the devastating effects of wars across the world such as the ongoing conflict between Ukraine and Russia however, headlines often fail to mention the personal effects felt by those fighting on the front line. 'Troop' aims to bring light to this issue, offering rehabilitation, connection and protection, to those returning from conflict. 'Troop' proposes how prosthetics can be used for both user and architecture in similar ways, helping to strengthen and restore as conflicts continue to happen.

## ON THE FRONT LINES

Within the international system, wars are frequent and the effects of conflicts continue to have physiologically and physically impacts on the military. 'Almost 50% of military experience one or more injuries each year' (Combat wounded, 2023) and a shocking '22 veterans commit suicide daily, with 1 occurring roughly every 80 minutes' (Combat wounded, 2023). Infrastructure for veterans who have protected our country is minimal. The notion of 'Troop' is about staying together, forming the brotherhood lost after war and rehabilitating mentally and physically.



SECTION C-C

## HOW CAN INTERIOR ARCHITECTURE FORM A NEW TROOP THROUGH REHABILITATION OF USER AND ARCHITECTURE?

## BATTLE ISSUE

As of 2022 there were approximately **150,000 active personnel** in the UK armed forces, of this just **under half** leave the forces with **mental and physical injuries**, Specifically 40 incidents per 1,000 personnel (Thompsons, 2020).

Sadly many leave the battlefield field, returning home to **battle their own conflicts**. The support veterans need is vast and often over looked. It is crucial that veterans receive the **help that is not only needed but wanted**. The sacrifices made by those is often not repaid.



## SOLUTION

To **rebuild the troop and brotherhood** built from the strong dynamic of the military, whilst **rejuvenating** an **architectural ruin** which has been **overworked** similarly to veterans.

The new space is to be **inspiring, creating ambition and purpose** through **rehabilitation to strengthen veterans and architecture**. There is also to be a strong focus on supporting the provisions of prosthetics that are disproportionately needed by those suffering physical disabilities from war wounds. It is to act as a transitional space from the battlefield to everyday life, a space they're always welcome back to.

## TROOP

noun

Plural noun: **Troops**; noun: **Troop**

**1** soldiers or armed forces

**2** a cavalry unit commanded by a captain

- a unit of artillery and armoured formation

- a group of three or more patrols

**3** a group of people

## 32 CURRENT CONFLICTS

**"30% OF VETERANS HAVE DISABILITIES AS A RESULT OF THEIR SERVICE"**



STATISTA, 2023

# SITE

## PERRAN FOUNDRY

Boring Mill within Perran Foundry in Perranworthal, Cornwall currently stands **ruinous** with just its walls remaining. It holds **fragility and character** and shows its history during the industrial revolution. Once being a prominent and influential building in the area this site gives **endless possibilities** for an **adaptive reuse project**.

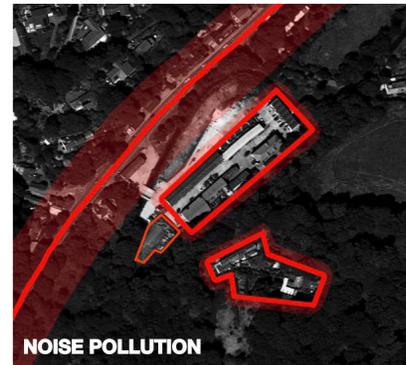
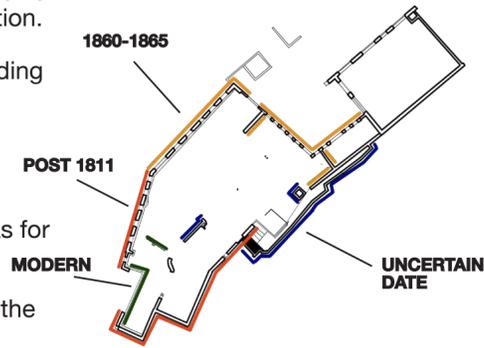
Its **wounds** are still evident however create a **strong backdrop** and canvas for a **new adaption**. Although it is in a **dilapidated state**, this site offers **potential for rehabilitation**, both for the **architecture and the user**.

Boring Mill a **grade II\*** ruin with a **square meteridge of 1773** was founded in 1791. Historic England states that it's **'first priority must be the stabilisation** of the building' as it has worked until ruin.

Various **windows and openings have been blocked off** on the Northwest facade. On the Southwest elevation the **ruinous walls** are evident and gradually **slope into the natural environment**.



SITE DIAGRAM - AGE OF SITE



# USERS



**SERVICE NUMBER: 25065603**  
**AGE:** 32 years old  
**INJURIES:** Loss of leg limb, PTSD and loneliness.  
**STORY:** Competed in the Invictus Games since 2018 after re-introducing swimming.  
**NEEDS:** A prosthetic leg for swimming and mental and physical rehabilitation while forming a brotherhood.



**SERVICE NUMBER: 25036865**  
**AGE:** 25 years old  
**INJURIES:** Anxiety, depression and burns to the hand.  
**STORY:** Currently living with her family due to being medically discharged from the marines.  
**NEEDS:** To regain strength both mentally and physically, while supporting other veterans.



**SERVICE NUMBER: 18199408**  
**AGE:** 85 years old  
**INJURIES:** Partial blindness to the right eye and loneliness  
**STORY:** Since retiring from active duty Harry has spent 60 years collecting for the British Legion  
**NEEDS:** To form a brotherhood which greatly impacted his life when serving in the army



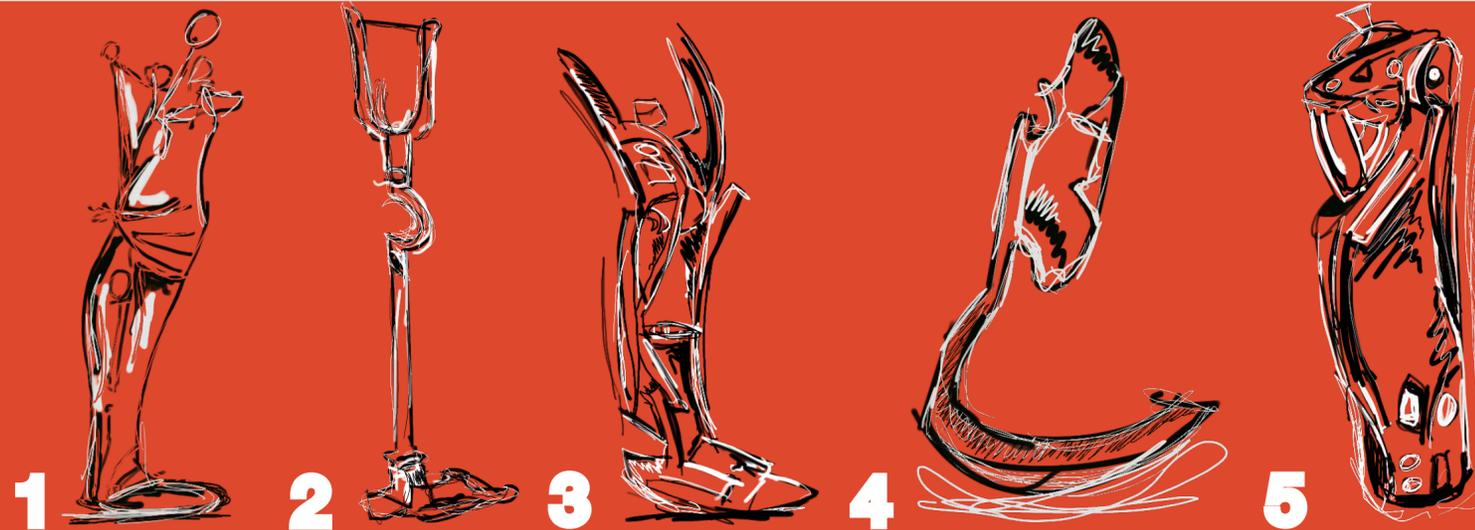
INITIAL CONCEPT MODEL OF PROSTHETIC FRAME OVER RUIN

# STRATEGY

## PROSTHETICS THROUGH THE YEARS

**Adjective: prosthetic**  
 Denoting an artificial body part, such as a limb, a heart implant.

**noun: prosthetic**  
 An artificial body part; a prosthesis.



The concept and strategy comes from prosthetics. Through the years prosthetics have drastically changed with the progression of technology. Society has normalised the use of prosthetics, with many wanting to show off their new addition rather than hiding away. It is this which has been taken forward to provide a new prosthetic for an architectural ruin.

# CONCEPT THE PROSTHETIC

**6 THE VIEWING TOWER PROTECTION**  
The viewing tower stands at the entrance of the building looking over the architecture.

**5 THE PROSTHETIC FRAME STRENGTHENING AND REPLACING**  
The I beam steel frame acts as an exo-skeleton, supporting the wounded ruin. The pitch of the frame resembles the old pitched roof which has dilapidated

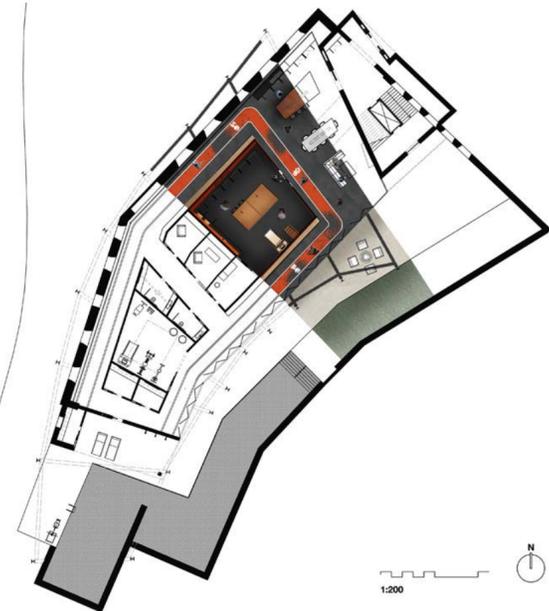
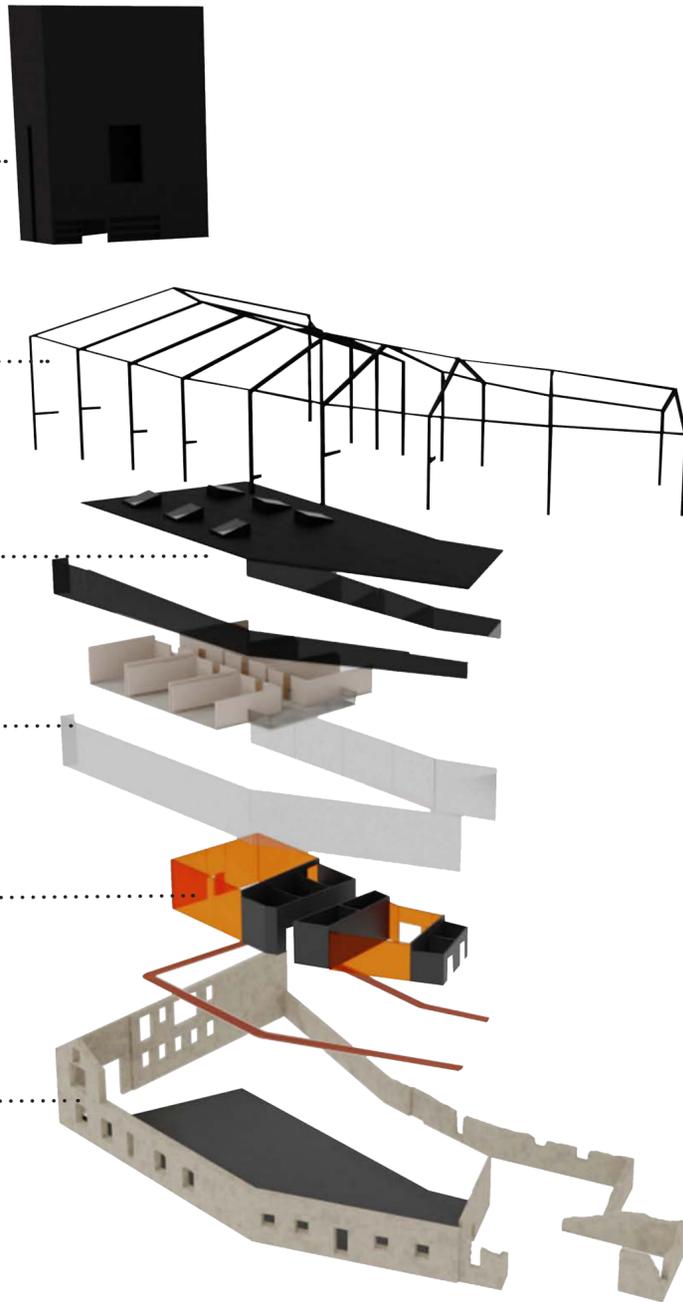
**4 ROOF PROTECTION**  
The flat sloping roof protects the new architecture from the natural environment and doesn't distract from the ruin

**3 GLASS HIGHLIGHTING**  
Layers of glass sit away from the existing walls so that what's still there is remembered and not hidden

**2 PODS REHABILITATING**  
Pods are located throughout the centre of the space, not touching the existing architecture, but providing space for mental and physical rehabilitation

**1 BORING MILL WOUNDED**  
After years of use, Boring Mill has fallen into partial ruin and has been left. Without intervention the ruin will fall into complete dilapidation

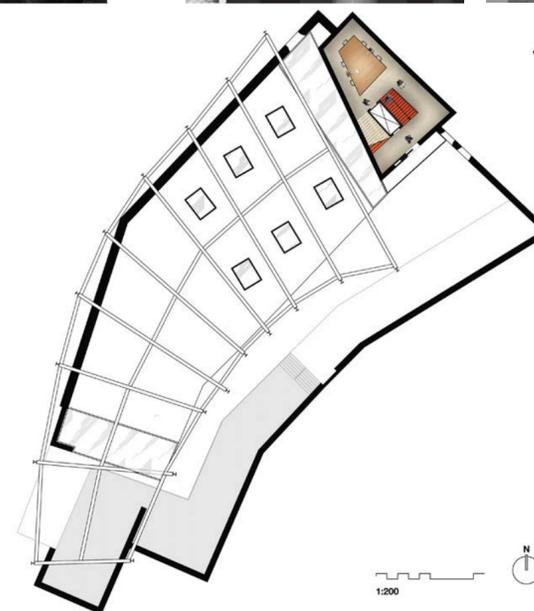
# PLANS GROUND FLOOR PLAN



**GROUND FLOOR**  
Veterans enter through the viewing tower which leads into the social dining and living space. Veterans are able to look into the prosthetics lab and watch veterans trial their new prosthetics on the prosthetics track. 1:1 rooms are located behind the lab allowing for mental rehabilitation. Toilet and changing facilities are available either side of the gym. The exterior space has a swimming pool and garden space for relaxation.



**FIRST FLOOR**  
Stairs and an elevator are located within the viewing tower allowing veterans to get to all floors. Six bedrooms are on the first floor, allowing veterans to stay for a period of time.



**SECOND FLOOR**  
The second floor tower is a meeting room, but can be adapted into event space.

**THIRD FLOOR**  
The NAAFI bar sits within the third floor of the tower. Providing space for veterans and visitors to socialise

# PROSTHETIC LAYERS

There are 4 main layers to the rehabilitation of the architecture. The new prosthetic frame follows the pitch of what used to be within the site and connects to the existing architecture, stabilising what remains of the ruin. The memory of the building is supporting the existing architecture and the new architecture for the veterans within the space.

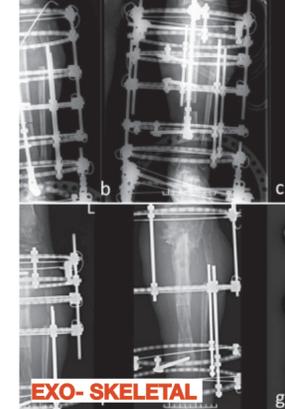
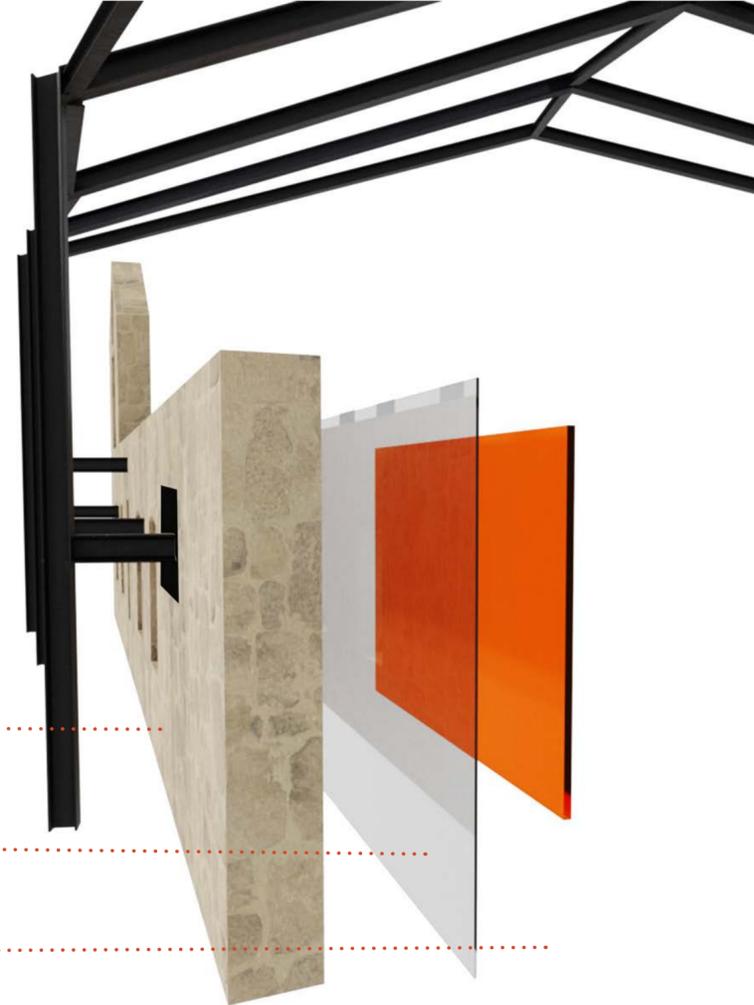
The glass acts as a new beginning for the site. It leaves a small gap between the old and new, celebrating what's left, giving it a new life. The pods within the space act as the organs of the building, sitting within the centre of the space, the pods are there for rehabilitation and acceptance.

**1 THE PROSTHETIC FRAME SKELETON OF THE BUILDING**

**2 BORING MILL EXISTING WOUND**

**3 GLASS DIVIDE NEW BEGINNING**

**4 ACRYLIC PODS HEART OF THE SPACE**





**THE PROSTHETIC TRACK**  
The 70 metre prosthetic track wraps around the ground floor, providing space for trialling custom fit prosthetics made in the prosthetic Lab.



**THE VIEWING TOWER**  
The viewing tower can be seen through the void above the ground floor and below the glass roof. The charred timber contrasts with the burnt orange interior, standing over and protecting the rest of the building.  
The bridge connecting the tower to the first floor accommodation can also be seen.

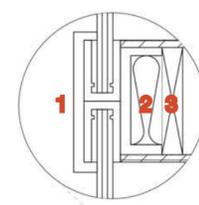


**SOCIAL SPACE**  
The social space is the first space the veterans will be welcomed into when walking through the tower entrance of the building. Veterans are also able to look into the prosthetics lab to see their prosthetics being made.

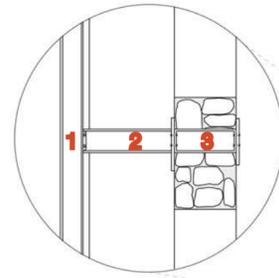


**PROSTHETICS LAB**  
The prosthetics lab sits centrally in the space. The walls are made from acrylic, allowing veterans to see their custom fit prosthetics being made. By doing this it reiterates the importance of not hiding away from their wounds.

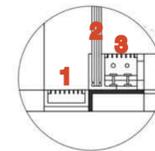
## TECHNICAL SECTION



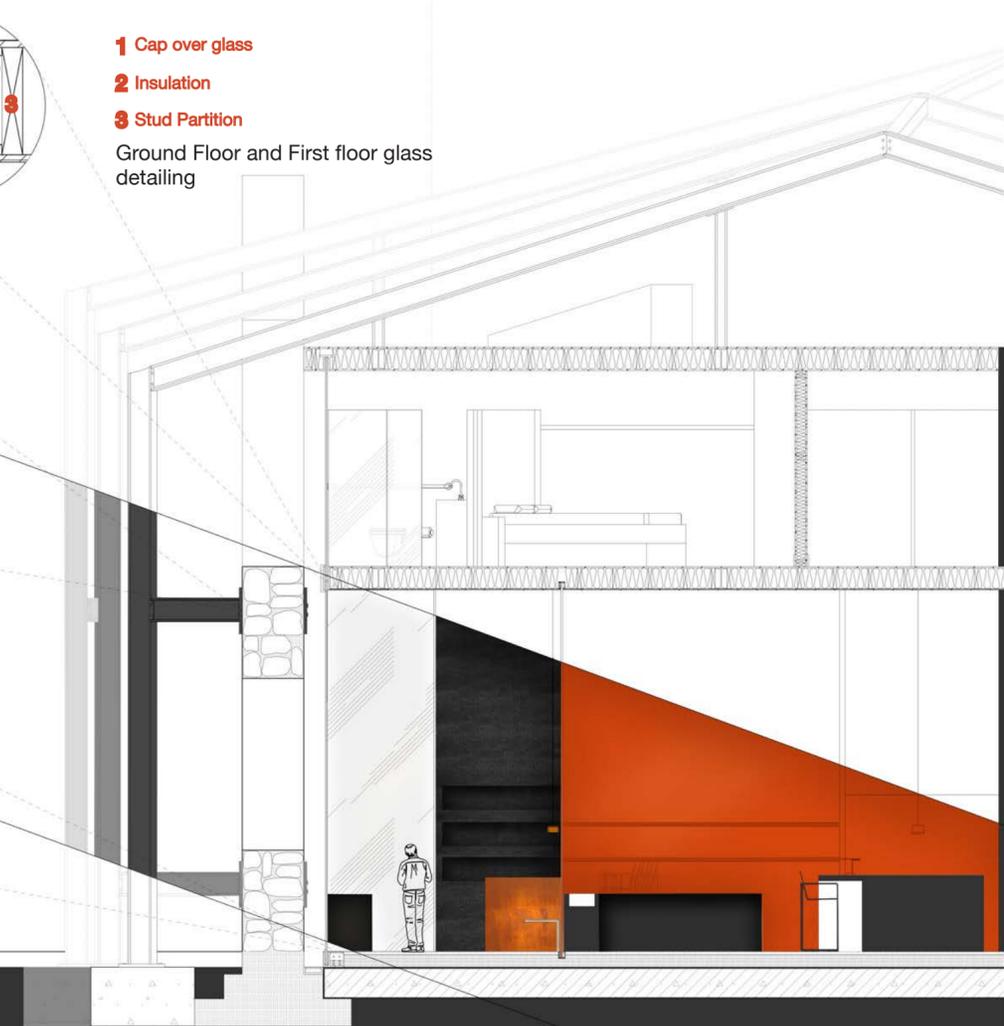
- 1 Cap over glass
  - 2 Insulation
  - 3 Stud Partition
- Ground Floor and First floor glass detailing



- 1 I Beam Frame
  - 2 Connecting beam to existing
  - 3 Steel box lintel through existing
- I Beam frame connecting to existing architecture to help stabilise the ruin which is falling into ruin



- 1 Ventilation
  - 2 Double glazed glass
  - 3 Vents and under floor heating
- Ground floor detailing of glass, vents and under floor heating



### SECTION A-A



### SECTION B-B



**THE NAAFI BAR**  
 NAAFI, stands for the Navy, Army and Air-Force Institutes which was created in 1921. On the third floor of the viewing tower is the Troops NAAFI Bar for veterans staying, but also visitors. It offers the opportunity for those to socialise and bond.



**“ BONDS THAT NEVER BREAK”**  
**GYM**  
 The gym provides a space for veterans to rehabilitate. A variation of gym equipment allows for this and can be moved to the outside patio area for larger group sessions. A skylight above allows for extra light and can be seen down into from the first floor.



**THE VIEWING TOWER**

## MATERIALITY SPECIFICATION | SUSTAINABILITY

Although very little remains within the site any natural materials such as stone are to be reused within the materiality of this project. Other selected material are sustainably chosen, whether this be from local companies, reduced production and travel emissions, recycled and overall durability. Hard architectural materials such as Shou Sugi Ban (Charred Timber), resin panels, copper and perforated metal are used to elevate the space whilst holding sustainable qualities. Much of the furniture within the site is to be bespoke, made off site to measure to reduce waste and to be made from unwanted materials to decrease the need of new materials.

- 1 RECYCLED RUBBER - PROSTHETICS TRACK
- 2 ACRYLIC SHEET - PROSTHETIC LAB - GYM
- 3 PERFORATED STEEL - STAIRS
- 4 CORTEN STEEL - COUNTERS
- 5 LIMESTONE - WALL COVERING
- 6 SHOU SUGI BAN (CHARRED TIMBER) - VIEWING TOWER
- 7 SLATE FLOOR TILES - GROUND FLOOR
- 8 MATT PAINT, BURNT ORANGE - SMALL DETAILING
- 9 MATT PAINT, DARK GREY - GROUND FLOOR WALLS
- 10 MATT PAINT, OFF WHITE - DOORS
- 11 PLYWOOD - TABLE LEGS/ TOP
- 12 RECLAIMED STONE CONCRETE - FLOORING

## ENVIRONMENTAL SUSTAINABILITY

Longevity of materials is key when supporting old architecture. Prosthetics can look fragile yet they can be even stronger than our biological makeup. The prosthetics are there to support, replace and restore limbs which are lost, this also implies to fragile architecture. Perran Foundry according to Historic England needs to be restored prior to any alterations and an effort for conservation is to be the key factor when designing. Materiality is to be durable so that the ruin can be restored.

Natural systems are to be made advantage of and utilised within the restoration and running of this project. Sunlight engulfs the space, enabling little need for artificial lighting throughout the space. The woodland surrounding the site will provide shading in the summer months and allow full sunlight in the winter months.

The river Kennall flows along the site and was once a functioning part of the running of the Foundry. Although this is no longer in use, the water course is reintroduced to provide chemical free water for the rehabilitation pool.



## SOCIAL SUSTAINABILITY

As designers we have the possibility to make positive changes to the way we design for society in the world today. Troop is designed to reform the brotherhood many form on the front line creating “bonds that never break” and put the health and well-being of veterans at the forefront of the space.

Levels of loneliness, depression and anxiety exceeds in those who have been within the military with approximately 40 incidents per 1,000 personnel (Thompsons, 2020). However the numbers continue to rise as combat across the world pursues.

Through uniting like minded veterans levels of mental health injuries can be decreased and managed. The physical health of these can also be sustained through one to one support and rehabilitation.