Sunlit Stone:

Rebuilding Red Hill with Kentish Ragstone

The Kent Surrey Sussex Air Ambulance's base of operations is situated in the Redhill Aerodrome and houses the air ambulance crew, admin staff and pilots. With emergency operations taking place 24/7, the building should provide a comfortable space for the crew to decompress, but unfortunately this is not the case. This project aims to unpack the ways the current base is failing and via a natural material perspective, look to improve the enviroment these heroes must work in.

This project is a result of interdisciplinary collaboration across a four month period involving multiple groups and working at different scales. From colleague collaboration in the studio to client input from the air ambulance crew and specialist expertise from the Quarry's masonry workshop, the decisions made throughout my individual design process were unattainable without the information learned through collaboration.

The design process involves programme analysis, informed by a guided site tour led by the air ambulance crew themselves. Understanding of the existing structure comes from the studio collaborated 2x3m 1:20 site model, and a natural material palette stems from research collaboration in the form of a physical japanese-bound material booklet. Experimentation, derived from knowledge and Kentish Ragstone samples provided by Gallagher-Group Quarry staff, resulted in the final design being grounded in a sustainable and material rich framework.

Neve Fairholme

& L6 Interior Architecture, Gallagher Group Hermitage Quarry and Kent Sussex Surrey Air Ambulance Crew

IA676: Design 6 Experience & Systems





Key sequences [crew described]





Back from Call-out







Programme Analysis [crew described]



Spatial Layout [ground floor]

Walking through the building alongside the Air Ambulance crew, we were informed of which room was which, how the room was designed to be used versus how the room was actually used and areas in which they wished for some development.

Overall a lot of valuable information was obtained during the visit, little offhand comments about how the crew loved the outdoors and connected via the gym really aided in assessing what programmatic needs I can design for.

Original Site Recordings











Kent Surrey Sussex Air Ambulance Crew



We were incredibley privledged to be invited to the Red Hill Air Ambulance for a site visit/guided tour. Comments made by the crew shaped the programmatic needs, painted a vivid image of the space they desired and highlighted current site circulation issues.

This valuable information was then processed into outlining major spaces to focus development, assessing key sequences to prevent major programme disruption and studying the existing building's circulation efficieny.

Crew Led Tour Findings[ethnography]



Operations Base Timeline



L6 Interior Architecture Studio

Whilst we awaited our site visit however, a structural understanding and layout of the building was to be investigated. This was done through two large scale models: a 1:50 of the entire floor and a 1:20 of the area surrounding the operations room. Both models were constructed by all 13 students a part of the project and both models spanned over 2m. This allowed for us to clearly understand the load bearing elements but provided opportunities to create intervention concept models for our design process.

Group Model - Operations Room [1:20]







Individual Intervention Model [1:20]





Our studio featured a guest tutor for this project, Architectural designer Daniel Yoel, who specialises in using natural materials in construction.

As a course with circular economy and sustainability embedded into its learning outcomes, a natural material palette is a good way to ensure low embodied carbon.

Consequentialy, we were each assigned a material to research as a part of a larger studio collaboration aiming to produce a well-researched and organised material booklet. A catalougue of the potential materials for us to use in this project project.

The Booklet was displayed in one of the course's exhibitions for visitors to see. The picture to the right shows Daniel Yoel reviewing our work.

To view the full material booklet, use this link here: https://acrobat.adobe.com/id/urn:aaid:sc:EU:07419053-2c28-4531-8a34-8cb5904926ef

MATERIAL BOOKLET



IA676 DESIGN 6 **EXPERIENCE & SYSTEMS** AIR AMBULANCE CREV



Joan John



Material Booklet



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Lucy Curtis



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Kentish Ragstone Page

The material I was assigned was Stone, which I then further specified to Kentish Ragstone due to its locality to the site. The pages provide an overall briefing on the material [where, how its used, manufaction, lifecycle, etc] as well as a case study that uses the material and an annotated section displaying the material's application in construction.

The design brief looks through the lense of using natural materials as a pivot point for our proposal designs so kentish ragstone became a huge propellant in my design process. I later explored the stone at different scales with different uses such as: trombe walls, furniture and partition walls.





Photos taken from the masonry workshop featuring [left to right]: polished table slab, Large fragmented blocks, Large blocks, Unfished slabs, Custom cut via machine stone and ashlar finished blocks.



Depending on order stones may

Six Saws, Three Primary.

pass through secondary saw and nen hand cut by stone masons



This saw uses computer software to ute specific identical shapes.



The stone passes through the barrel, gets crushed and impacted by vibrating plates in the siv and along he conveyor to produce the company's main export: aggregate.



Many photos were taken to study the rocks under different lighting.

The stones colour changes depending on the finish or depth of impurities.

A rubble finish under overhead lighting makes the texture of these stones pop. Something to achieve in my design?

Gallagher-Group Hermitage Quarry

I was granted access to the only distributor of Kentish Ragstone's quarry: Gallagher Hermitage Quarry site.

The quarry is located in Maidstone, about a 46 minute drive from the Red Hill site, and prioritises sustainability in its approach to quarrying which I had previously researched in my material booklet. The Quarry visit involved a guided tour around the site and was very informative as to how the stone was gathered, the kinds of stone finishes achievable and the methods used for extracting. We were able to meet the masonry team and spoke about the potentials of Kentish Ragstone uses. I was also able to acquire some samples of the stone to bring back for experimentation.

To avoid a blocky and conventional design I looked into using stone's unique capability to be carved. I explored these ideas in section sketches and quick collage compositions to envision how the air ambulance crew could be provided a luxurious rest area. I also looked into establishing the more modular aspects of my design such as different types of walls.

Map of Hermitage Quarry



Location of the main office. Built upon restored quarry terrain, demonstrating Gallagher's ustainability pledge.

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The company trialed pellet of ash and stored in this



Stone masonry workshop. All orders non aggregate elated are produced here. • • • • • • • • • • • • • • • • • •



Conveyor Belts for aggregate production

/here they grade the waste from quarrying so everything can be used.



Blasting zone where they explode the rock face every couple days [depending on demand]

Ragstone Exploration



Quick sketchbook section drawing

Final Personal Design Outcome

Proposed Operations Room + lounge

materials from local sources,

carbon a material holds.

choosing materials that can be sustainabley reused and assessing the embodied

As demonstrated by this portfolio, my work has been informed by multiple groups of different disciplines in collaboration. My final design responds to the air ambulance crew inputs, uses the studio work to further undestand the potential physical makeup of the space and centres the final design development around material investiagtion supported by the Gallagher-Group Hermitage Quarry staff.

-Market 10 R SG SG D P **Material Palette Kentish Ragstone** With the design concept developed with some natural **Timber [Reclaimed]** Concrete materials in mind, it is **WPB Plywood** important to fully realise the material palette and maintain a sustainable and circular economy approach. **Block** [Site Reclaimed] This involves: sourcing **CLT** [Reclaimed]

Glulam [Reclaimed]

Zinc [Pre-patinated

The result is a complete spatial tranformation, compiled of masonry trombe walls, warm timber structural support and recycled zinc roof cladding. The building's circulation slowly diffuses into each programme rather than the previous high amount of programme contrast. The crew is also well equipped with resting areas, gym space and a larger surface area exposed to natural light and ventilation.

Revisiting the Air Ambulance Crew











Full Section A-A [Not to Scale]

Trombe Wall Diagram







- Lime Plaster [Dyed]
- **Woodfibre Insulation**