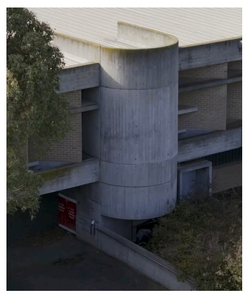
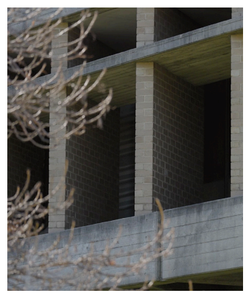
Breathe on the land.

In the contemporary world, there exists a clear boundary between human and nature. “Nature” is often referred to as plants or animals from which we exclude ourselves. This project aims to reintroduce the word “nature”, using the surrounding remnant grassland as an opportunity to reimagine the future life of living on grassland.





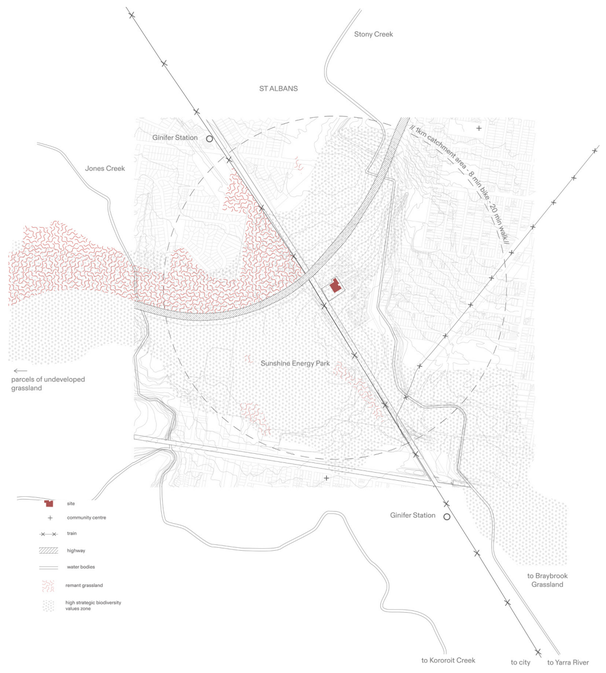
Existing Building

The main challenge of this project is to achieve a delicate balance between preserving the existing heritage while tackling and upgrading the environmental and functional performance for the next 50 years and more.

Remant Grassland & Demographics

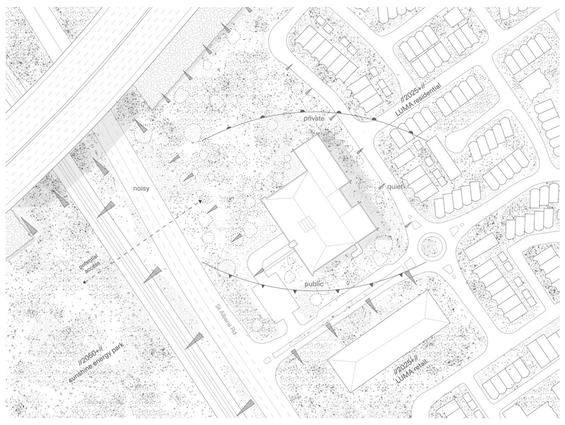
The site is located in the high-strategic-biodiversity-values zonem with a few pieces of connected remant grassland on the west. Stony Creek and Jones Creek flow through these areas. Grassland restoration has the potential to integrate the site into the ecological corridor.

Two major residential areas fall within the 1km catchment area around the community centre. To the west lies the future Sunshine Energy Park, expected to undergo a drastic transformation in terms of size and demographic composition after its anticipated completion in 2050.



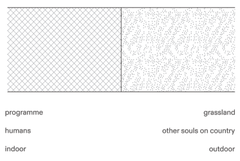
Site Analysis

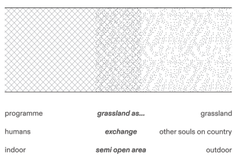
To the east of the site lies the future LUMA development area (from 2025 onwards), including the residential area in the northeast and retail in the southeast. On the west is St Albans Rd (main road), a train track, a highway, and the future Sunshine Energy Park (from 2050 onwards). The northeast edge of the site is more private and quiet, while the southwest is more public and noisy.



Interwoven boundaries on grassland

The existing building consisted of a hard boundary between programs and greenery, humans and other beings on the land, and indoor and outdoor spaces. A new semi-open area is proposed around the periphery to reintertwine the relationship between humans and other beings through expanding our everyday life on the grassland.

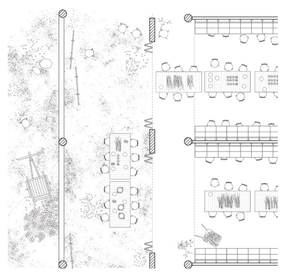


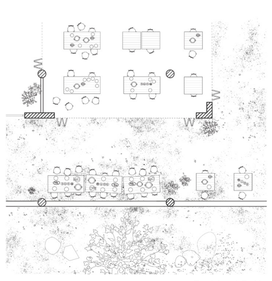


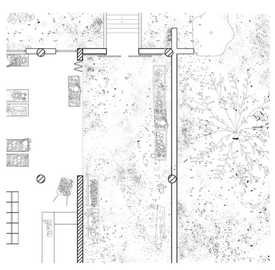
Open-air corridor

This semi open area is created by offsetting an inner skin around the periphery. It creates a new buffer zone where indoor programmes can expand its capacity and merge with grassland.

Grassland plays a different role to when it interact with different programmes. (e.g. grassland x makerspace, grassland x cafe, grassland x farmers' market - grassland acted as exhibition, workshop, cafe, farmland, market and more).







0 1 3 5m

Bushfood Makerspace

Bushfood Café

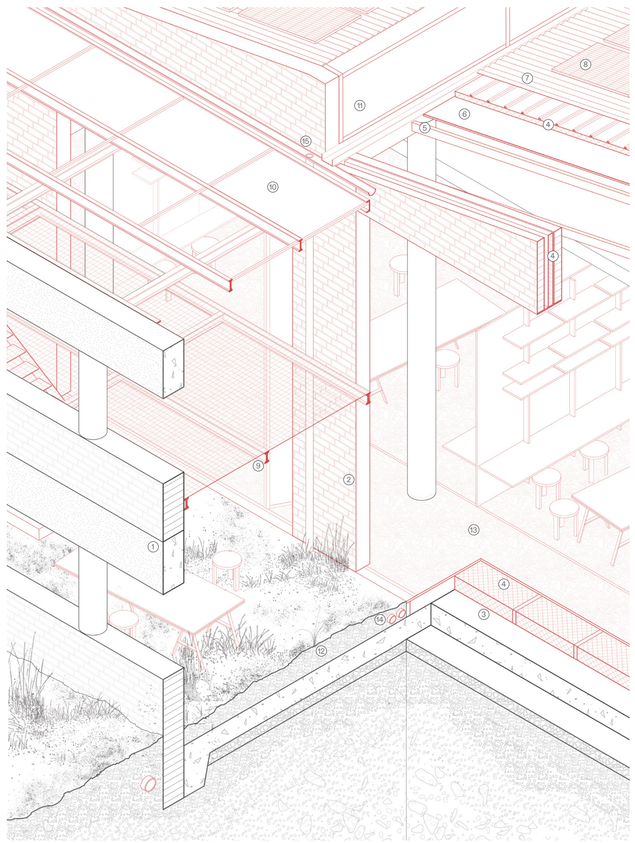
Bushfood Farmers' Market

Structures and Material Selection

Existing structures are largely retained, including all areas of historical significance such as walls, columns, and most of the floor plate except for those along the edges.

The addition of a new facade enables the easier implementation of environmental strategies without compromising the existing heritage. For example, the addition of insulation and the rearrangement of glazing can be accomplished without covering or penetrating the existing walls.

The materials selection strategy aims to choose materials with a long-lasting, robust quality that requires minimal maintenance and replacement. For instance, corten steel is selected for outdoor structures due to its increased resistance to atmospheric corrosion over time, while interiors utilise carbon-sequestering materials like timber products. Concrete flooring is proposed for its high thermal mass and durability.



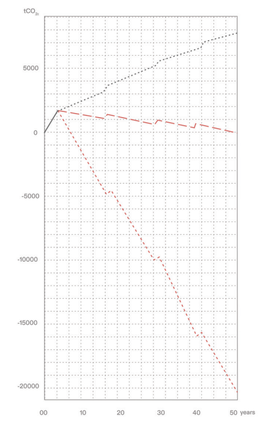
1. existing concrete and brick wall
2. proposed compressed earth block
3. existing concrete slab
4. insulation
5. glulam
6. CLT panel
7. corrugated steel roof
8. solar panels
9. corten steel beam
10. operable glass roof
11. sawtooth roof
12. substrate
13. recycled concrete screed
14. stormwater collection
15. rainwater collection (roof to gutter to filtration system)

(black indicates existing, red indicates proposing)

Embodied Carbon	
added initial embodied carbon	2115 tCO_2
added recurrent embodied carbon over 50 years	880 tCO_2
total added embodied carbon	2995 tCO_2
total added embodied carbon per m²	*0.8 tCO_2*

Operational Carbon	
proposed energy use (Passivehaus)	97 MWh/a
on site energy generation	157 MWh/a
on site energy generation percentage	162%
net operational energy use	-61 MWh/a
total operational GHGE over 50 years	-3253 tCO_2
total operational GHGE over 50 years per m²	*-0.9 tCO_2*
net operational energy use per m²	*-17 MWh/a*
reference 50 year operational carbon (4 NABERS)*	*20309 tCO_2*

Thermal Comfort & Performance	
treated floor area	3368m²
insulated surface area	5651m²
form factor	1.68
treated floor area	3368m²
north-facing glazing	93.3m²
east-facing glazing	119.2m²
south-facing	318.9m²
west-facing	131.1m²
annual heating demand	*3.2 kWh/m²a*
annual cooling demand	*6.3 kWh/m²a*



grassland as...
childcare

grassland as...
co-working

The proposed key changes, mainly the new facade and sawtooth roof, not only preserve the view and heritage but also add more value. This is achieved by revealing hidden structures, such as concrete beams and ceiling profiles, to draw occupants' attention to these details

Edge Conditions

The open-air corridor gives back a level of control to other souls on country. Here, grassland starts to seep in and erode the boundary, visually blurring the edge. Wind, other grassland animals, and our circulation determine the changing landscape over time.

material palette at open-air corridor

Flexibility

A large amount of space is dedicated to universal workspace. It challenges the initially separated programmes of training, education, and co-working.

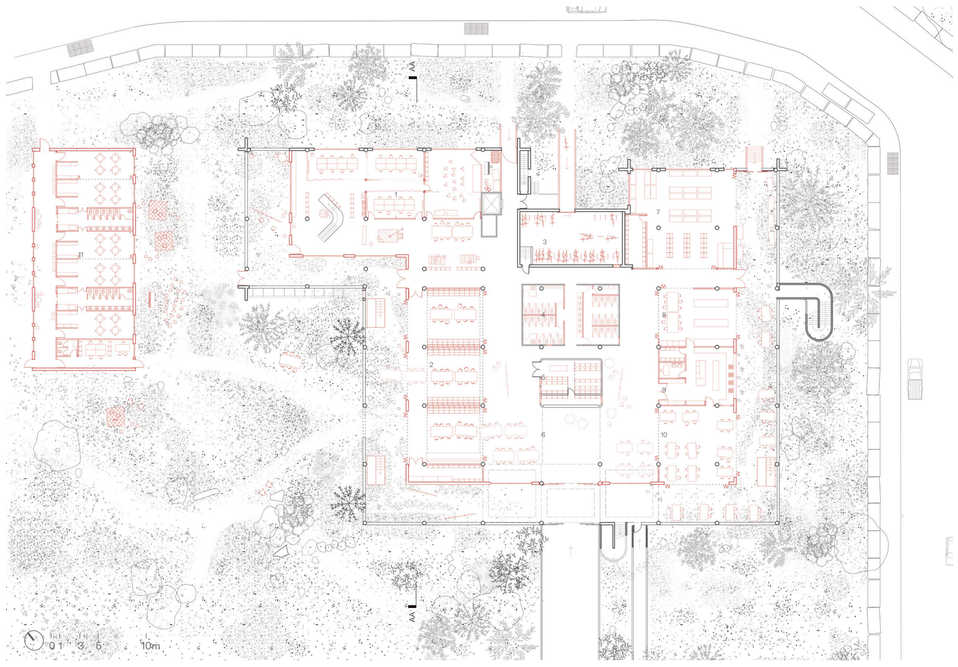
Furniture and various sliding devices are proposed to help define space in this area, allowing for a more versatile use to meet changing demands over time.

Ground Floor Plan

1. universal workspace (co-working/education/training)
2. bushfood makerspace
3. bike storage
4. toilets
5. seedbank
6. atrium
7. bushfood farmers' market
8. shared kitchen
9. cafe kitchen
10. cafe
11. childcare

The open-air corridor transforms the existing inward-looking plan into an outward-looking plan, breaking the point-to-point circulation and promoting movement along the periphery with new porous access to the grassland and other entry points.

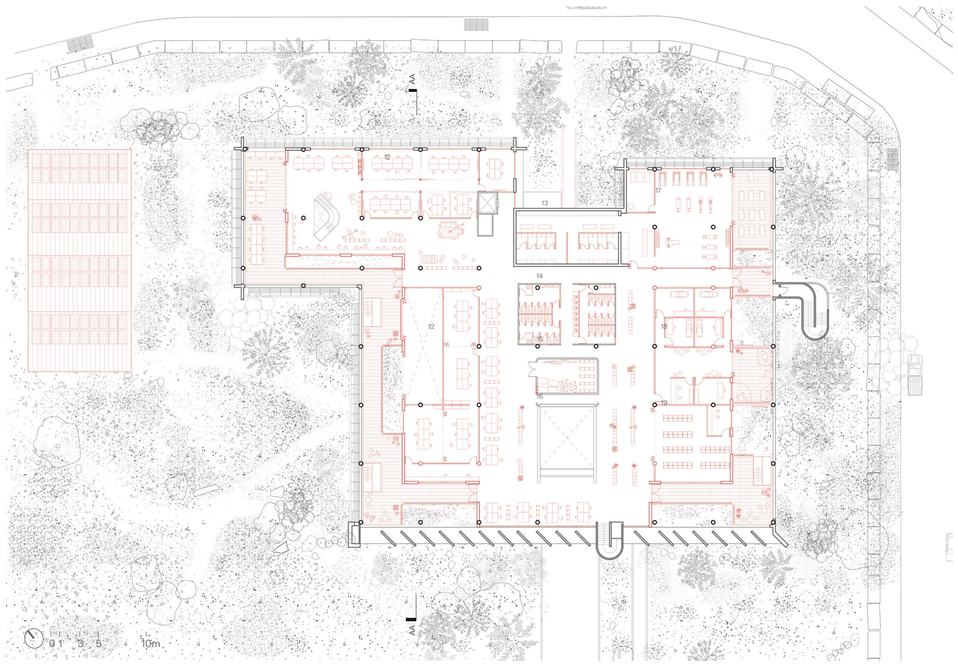
A new standalone building is proposed on the west for childcare, addressing safety concerns and creating a more immersive teaching environment on grassland.



First Floor Plan

12. universal workspace (co-working/education/training)
13. showers
14. toilets
15. storage
16. atrium
17. gym
18. allied health
19. pharmacy

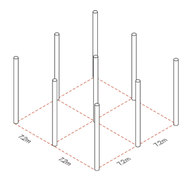
(black indicates existing, red indicates proposing)



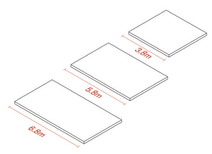
Adaptability

There are three standard size of timber internal partitions in this project. It is designed considering the dimension of the existing structural 7.2m grid layout. These timber partitions are connected with structural joints to prevent the use of adhesives, likelihood of disposal at end of life, and allow easy disassembly to adapt to changing needs over decades.

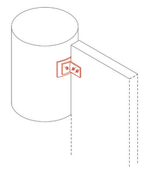
The 2 scenarios below shows how the same wall can easily rearrange to adapt to the changing roles of community centre in 25 years.



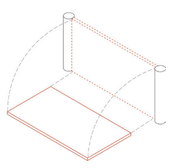
follow existing structural grid layout



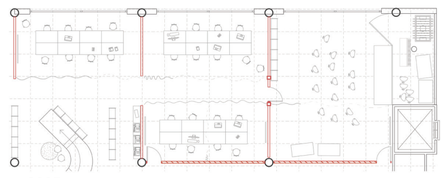
form by three standardsized internal partitions



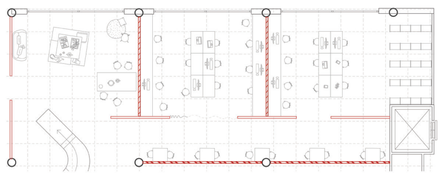
connect with structural joints



ease of disassembly



2025
universal workspace



2050
Sunshine Energy Park Office

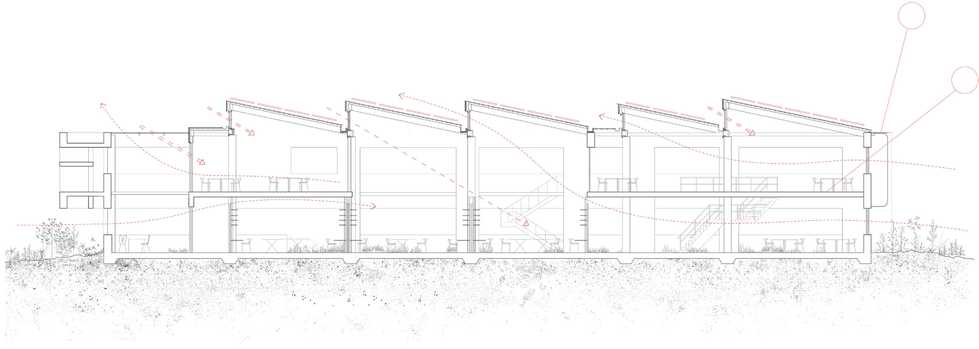
Environmental Strategy

Passive cooling strategy

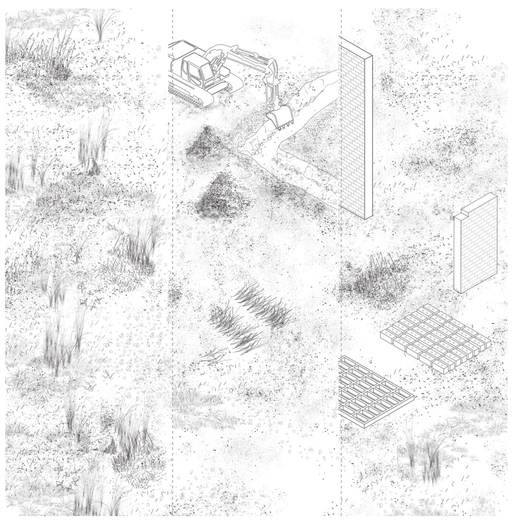
1. Offsetting a new façade towards the interior reduces floor depth, creating more effective natural ventilation by the ratio of floor depth to ceiling height.
2. Sawtooth roof and double height space to create stack ventilation .
3. Concrete screed work with natural ventilation to allow for night flush.

Daylighting

1. sawtooth roof to harvest south diffuse daylight.
2. Shortening floor depth allows more daylights to penetrate.

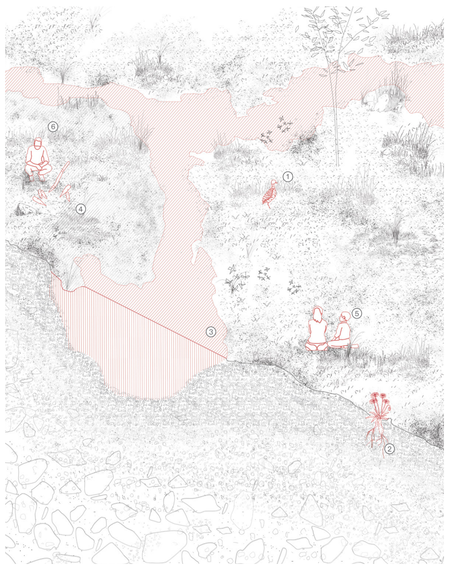


Mine on the site - Compressed Earth Block



Grassland & LBC Petals

1. Grassland Habitat Restoration
2. Root Stored Carbon Sink
3. Constructed Wetland & rainfed harvesting model
4. Bushfood Harvest
5. Education
6. First Nations Community Engagement



before construction stage
grassland Restoration

during construction stage
reclaim unwanted earth & grass harvesting

during construction stage
compressed earth block casted on site