FOLLOW THE RAIN

A significant insect to Australian heritage, and cultural staple, the rain moth poses traits unique to the insect world. A three-stage life cycle begins by feeding on native tree roots underground for 4-6 years. The larvae is commonly known as the Witjuti or Bardi Grub. As the pupae comes to the surface, it waits in anticipation for the rains before a short, but full 24 hours of adult life with a sole purpose to mate and reproduce. The female will lay her eggs in flight, dispersing thousands at a time directed at the base of trees. The rain pushes the eggs deeper into crevasse and provides new growth and soft roots for the young larvae to begin a new cycle of life. The rain moth relies on the rain to finish what it starts ultimately keeping the species alive and growing.

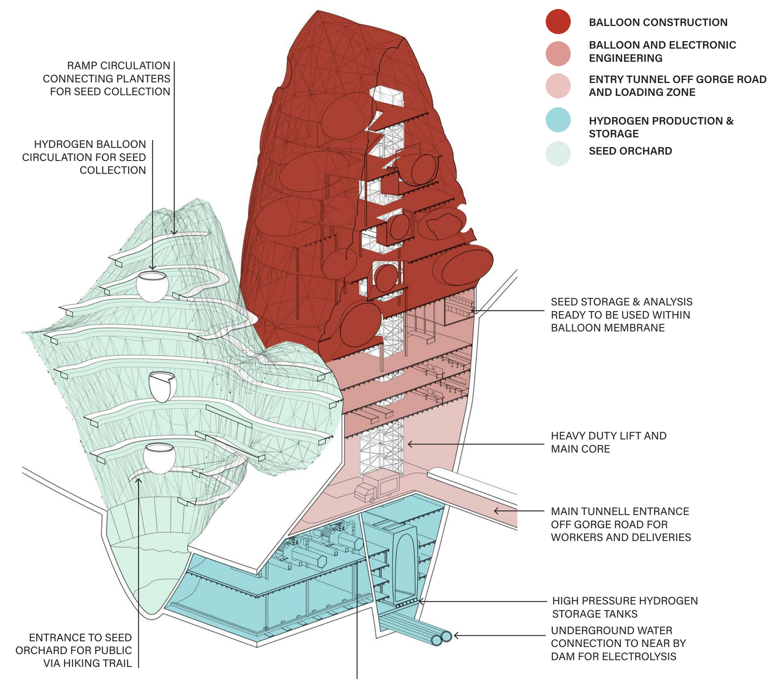
'Follow the Rain' takes the concept of this lifecycle and applies it to a gentle collaboration between machine and nature. Living together to rejuvenate what's been lost, relying on the rain to keep a species growing while creating an opportunity to be, and experience everything the rain is.

Sited at the east end of Karrawirra (Torrens River), Adelaide 'Follow the Rain' begins its life through an underground hydrogen facility, working to sustain a fuel source for a short, but sweet moment of life. A constant turn-around of material engineering and unmanned flight technology works to produce multiple bio-degradable, hydrogen balloons. A seed orchard located next to the facility provides Australian native seeds to be implanted within the balloon's membrane, allowing a future of growth. Hikers are encouraged to visit the seed orchard and assist in the collection while also provided the opportunity for spontaneous travel, when the rains arrive.

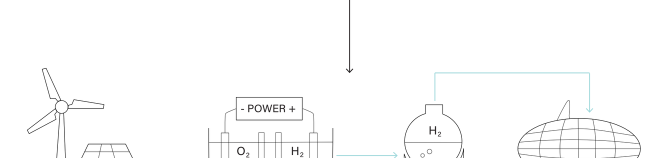
Working in anticipation and waiting for the rains, the completed and hydrogen filled, balloons leave the façade of the facility as the clouds roll in, following the rain path for 24 hours before landing in an open field. Two travelers jump onboard and are greeted with an experience of rain from the source itself. A time to be, to experience everything the rain offers, without a foot on the ground. The flying altitude defines the interior with the balloon membrane expanding and intruding, changing and adapting the flight creating a short moment of life.

As the rain clears the balloon falls, a gentle decent on a space to now inhabit. 'Follow the Rain' ends a life of flight here, but begins a new life of disintegrating with the conditions, and sprouting new growth. The passengers are left in a new space, a space to explore and experience, while taking the minimal flight facility pack home, to be returned to base and reused for another voyage. A short lived structure to extend the life of others.

RENAE SCHULZ a1703673 THE UNIVERSITY OF ADELAIDE 2021



PROGRAM & CIRCULATION SECTION
1:500

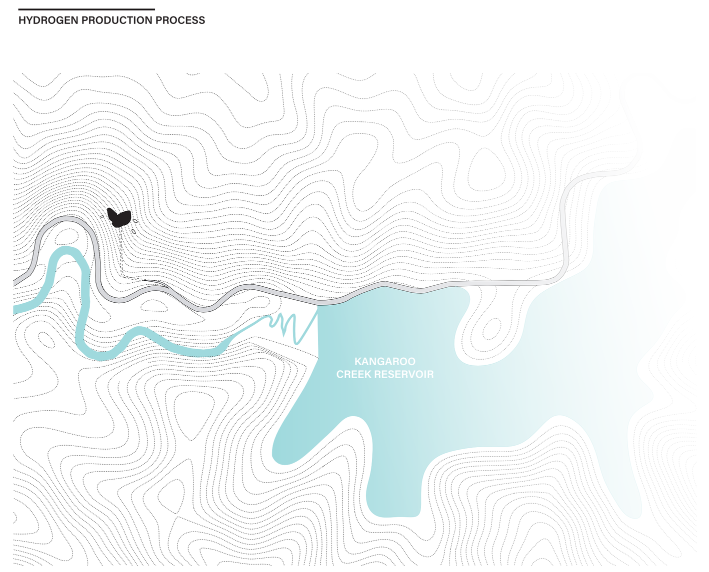


01. Renewable energy used to provide power for water splitting (oxygen and hydrogen) process through electrolysis. Results in hydrogen gas.

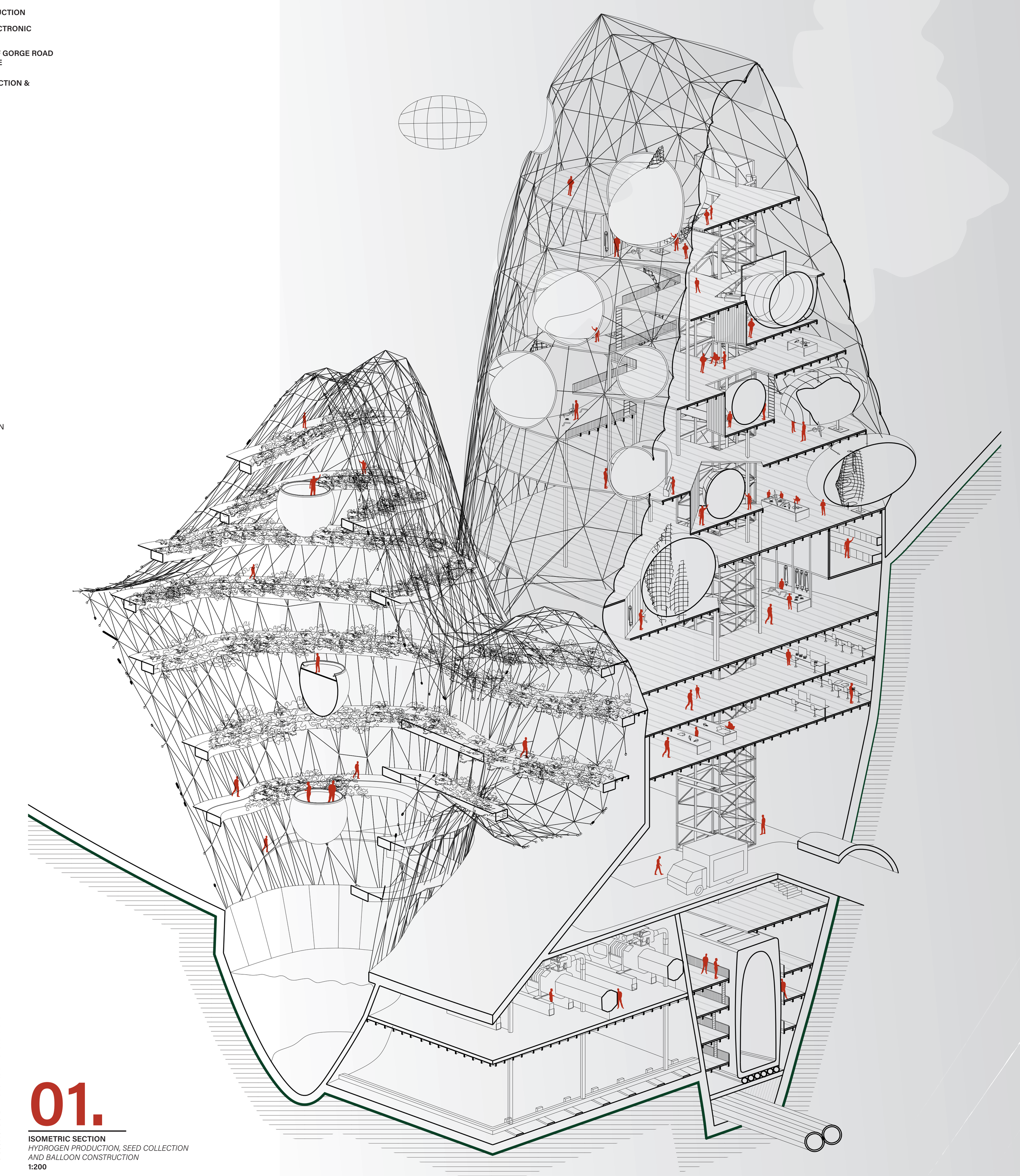
02. Hydrogen gas goes into safe, high pressure storage tank for use when required.

03. Hydrogen gets pumped into the balloon membrane providing lift for rain voyage.

HYDROGEN PRODUCTION PROCESS

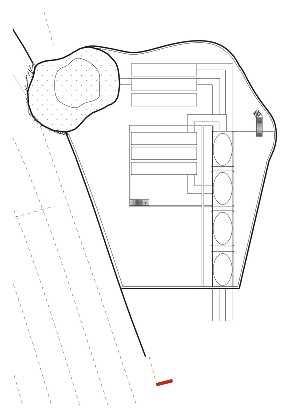


LOCATION PLAN
GORGE ROAD, WEST OF KANGAROO CREEK RESERVIOR
1:5000

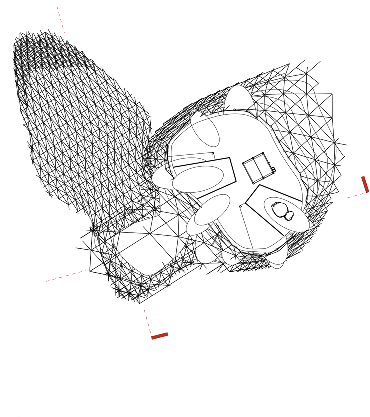


01.

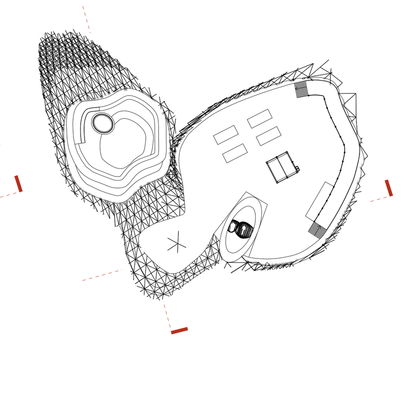
ISOMETRIC SECTION
HYDROGEN PRODUCTION, SEED COLLECTION AND BALLOON CONSTRUCTION
1:200



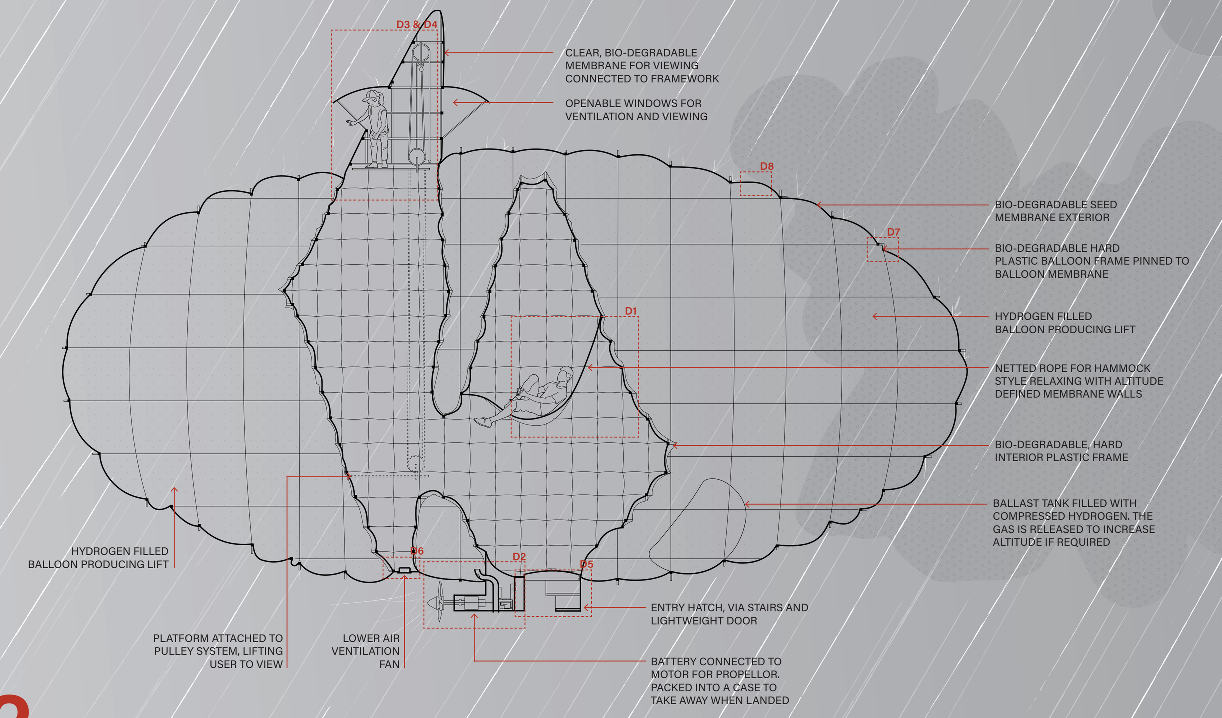
HYDROGEN PRODUCTION PLAN
1:750



MEMBRANE ENGINEERING & SEED STORAGE PLAN
1:750

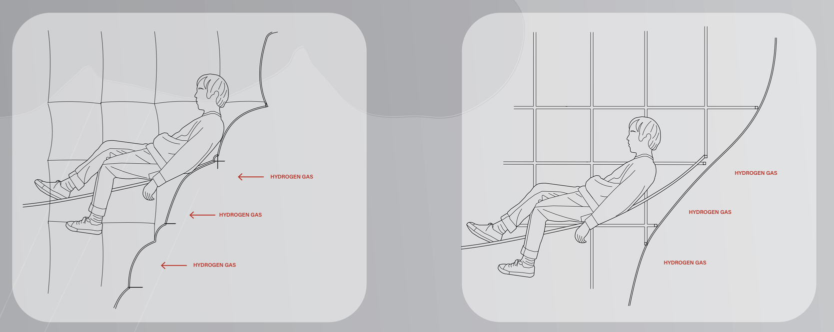


BALLOON CONSTRUCTION PLAN
1:750

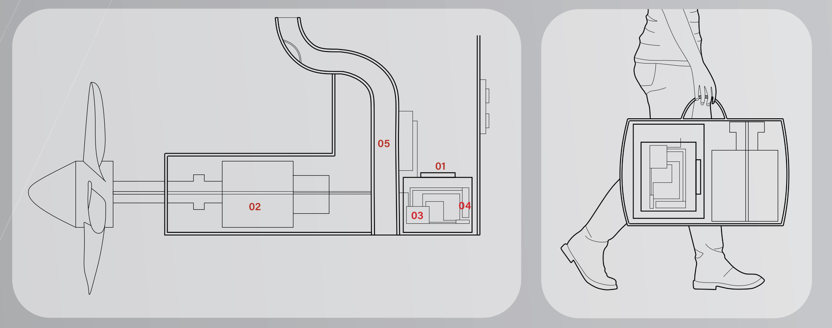


02.

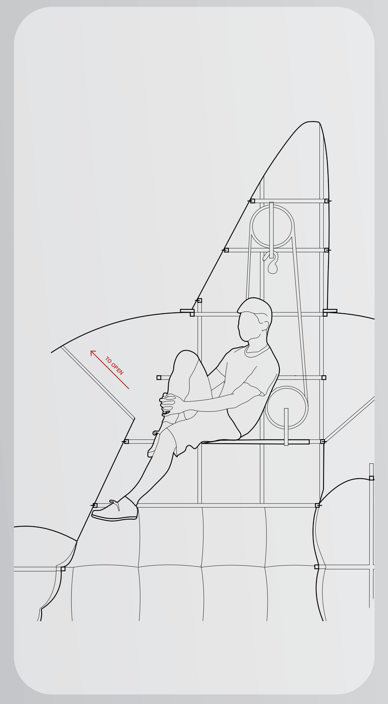
BALLOON SECTION
FLYING WITH THE RAIN
1:50



D1 INTERIOR QUALITY SECTION DETAIL 1:20
When an increase of altitude occurs, the hydrogen balloon expands, indruding the interior space through the frame.

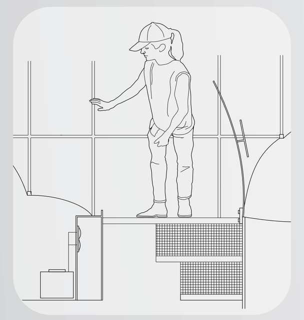


D2 THE FLIGHT FACILITY TAKE HOME PACK 1:10
The non-degradable components of the balloon. These parts are to be taken home or ideally, returned to base to be reused for another voyage.
01. 24V Battery Pack **02.** Motor **03.** Meterology GPS **04.** Altitude Sensor **05.** Hydrogen Solenoide connected to Altitude Sensor

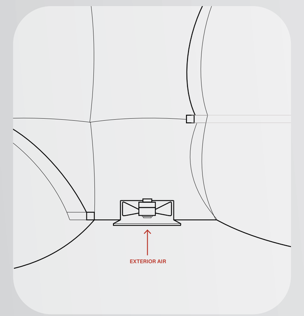


D3 PULLEY SYSTEM VIEWING 1:20
A fully bio-degradable pulley system attached to the highest peak of the interior space. Allowing users to hoist themselves to the top for an ultimate viewing experience.

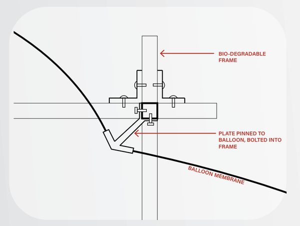
D4 OPENABLE WINDOWS 1:20
Openable windows at peak of balloon, allowing passanger to open and breathe fresh air / reach out to feel and smell the rain.



D5 ENTRY HATCH 1:20
A lightweight hatch door to allow users to climb in and once landed out.



D6 AIR VENTILATION FAN 1:10
When an increase of altitude occurs, the hydrogen balloon expands, indruding the interior space through the frame.



D7 FRAME TO BALLOON DETAIL 1:10
Bio-degradable frame attached to balloon membrane via a plate, and pinned to the frame.

D8 BIO-DEGRADABLE SEED MEMBRANE 10:1
A fully, bio-degradable balloon membrane, with seeds implanted in it provides new growth when decomposing. (Seeds and plant matter collected from seed orchard at base).

03.

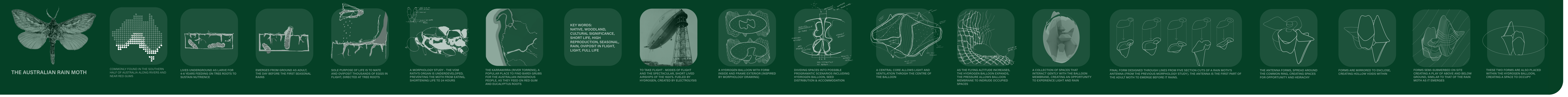
BALLOON SECTION
LANDED AFTER 24 HOURS OF FLIGHT
1:100

04.

BALLOON SECTION
DEGRADING ON LANDING SITE
1:100

05.

BALLOON SECTION
FULLY DEGRADED AND NEW SPROUTS
1:100



THE AUSTRALIAN RAIN MOTH

COMMONLY FOUND IN THE SOUTHERN HALF OF AUSTRALIA ALONG RIVERS AND NEAR RED GUMS

LIVES UNDERGROUND AS LARVE FOR 4-6 YEARS FEEDING ON TREE ROOTS TO SUSTAIN NUTRIENCE

EMERGES FROM GROUND AS ADULT, THE DAY BEFORE THE FIRST SEASONAL RAINS

SOLE PURPOSE OF LIFE IS TO MATE AND OVIPOSIT THOUSANDS OF EGGS IN FLIGHT, DIRECTED AT TREE ROOTS

A MORPHOLOGY STUDY - THE VOM RATH'S ORGAN IS UNDERDEVELOPED, PREVENTING THE MOTH FROM EATING, SHORTENING LIFE TO 24 HOURS

THE KARRAWIRRA (RIVER TORRENS), A POPULAR PLACE TO FIND BARDI GRUBS FOR THE AUSTRALIAN INDIGENOUS PEOPLE, AS THEY FEED ON RED GUM AND EUCALYPTUS ROOTS

KEY WORDS: NATIVE, WOODLAND, CULTURAL SIGNIFICANCE, SHORT LIFE, HIGH REPRODUCTION, SEASONAL, RAIN, OVIPOSIT IN FLIGHT, LIGHT, FULL LIFE

TO TAKE FLIGHT - MODES OF FLIGHT AND THE SPECTACULAR, SHORT LIVED AIRSHIPS OF THE 1920'S. FUELED BY HYDROGEN, CREATED BY ELECTROLYSIS

A HYDROGEN BALLOON WITH FORM INSIDE AND FRAME EXTERIOR (INSPIRED BY MORPHOLOGY DRAWING)

DIVIDING SPACES INTO POSSIBLE PROGRAMATIC SCENARIOS INCLUDING HYDROGEN BALLOON, SEED DISTRIBUTION & ACCOMMODATION

A CENTRAL CORE ALLOWS LIGHT AND VENTILATION THROGH THE CENTRE OF THE BALLOON

AS THE FLYING ALTITUDE INCREASES, THE HYDROGEN BALLOON EXPANDS, THE PRESSURE ALLOWS BALLOON MEMBRANE TO INDRUDE OCCUPIED SPACES

A COLLECTION OF SPACES THAT INTERACT GENTLY WITH THE BALLOON MEMBRANE, CREATING AN OPPORTUNITY TO EXPERIENCE LIGHT AND RAIN

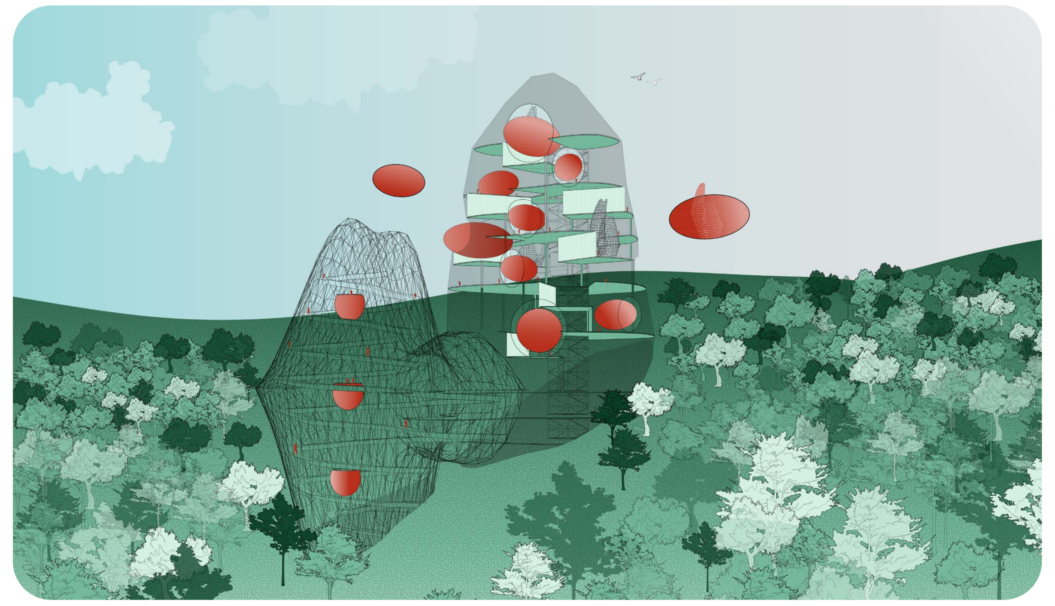
FINAL FORM DESIGNED THROUGH LINES FROM FIVE SECTION CUTS OF A RAIN MOTH'S ANTENNA (FROM THE PREVIOUS MORPHOLOGY STUDY). THE ANTENNA IS THE FIRST PART OF THE ADULT MOTH TO EMERGE BEFORE IT RAINS.

THE ANTENNA FORMS, SPREAD AROUND THE COMMON RING, CREATING SPACES FOR OPPORTUNITY AND HEIRACHY

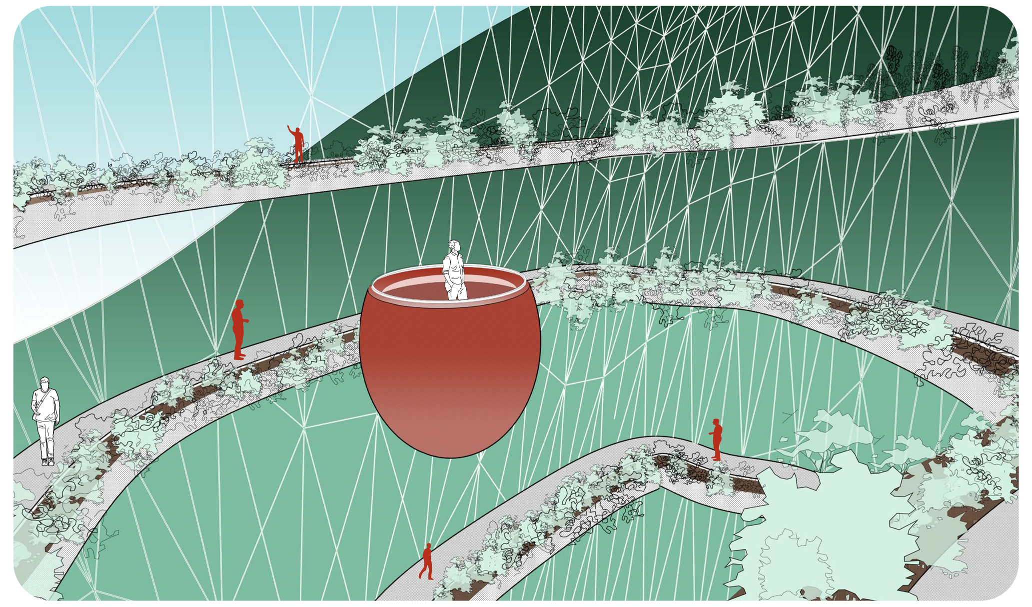
FORMS ARE MIRRORED TO ENCLOSE, CREATING HOLLOW VOIDS WITHIN

FORMS SEMI-SUBMERBED ON SITE CREATING A PLAY OF ABOVE AND BELOW GROUND, SIMILAR TO THAT OF THE RAIN MOTH AS IT EMERGES

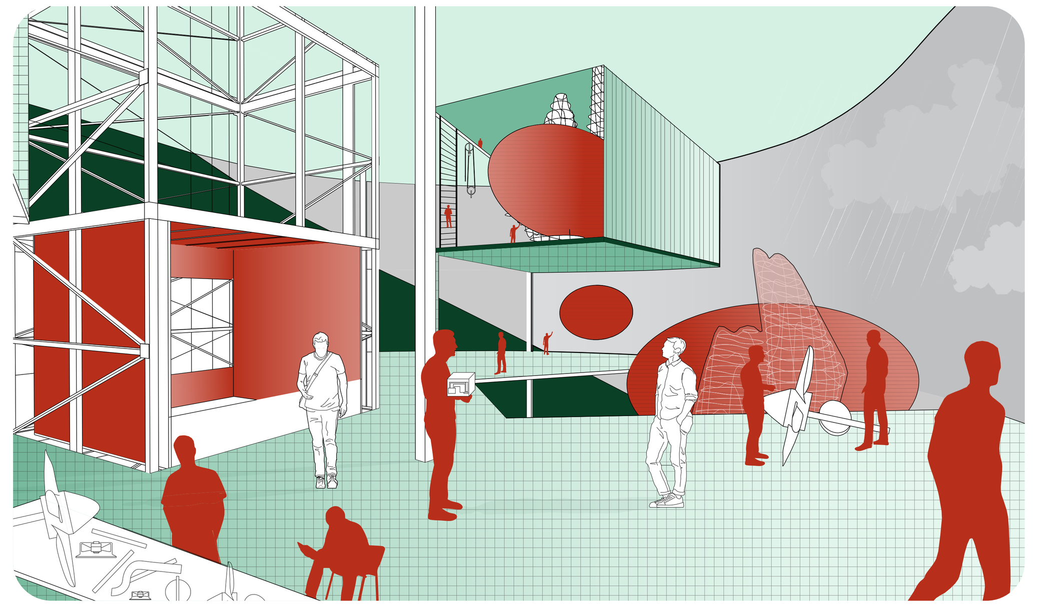
THESE TWO FORMS ARE ALSO PLACED WITHIN THE HYDROGEN BALLOON, CREATING A SPACE TO OCCUPY



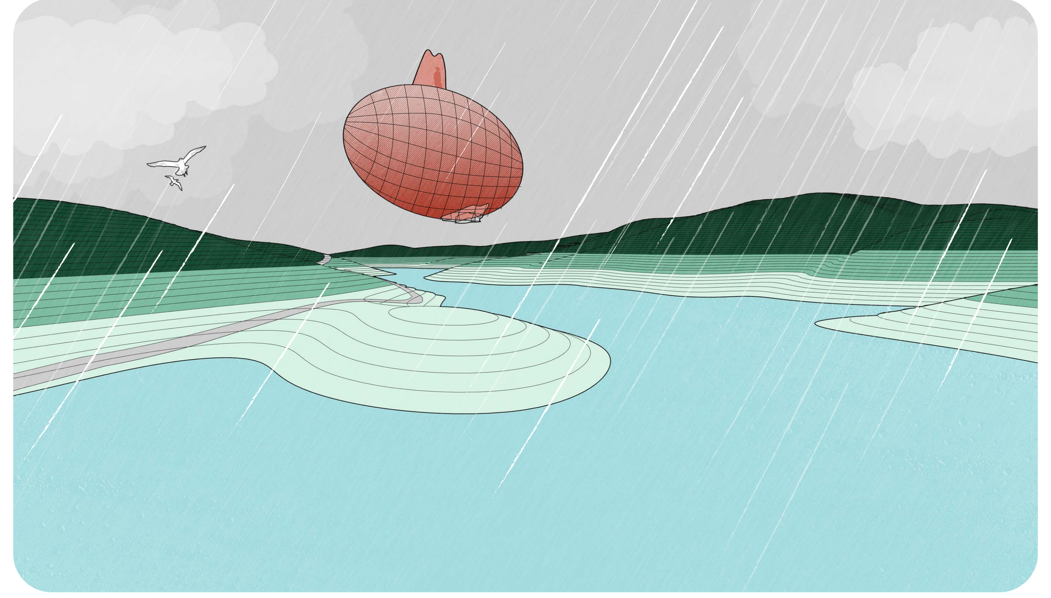
EXTERIOR PERSPECTIVE



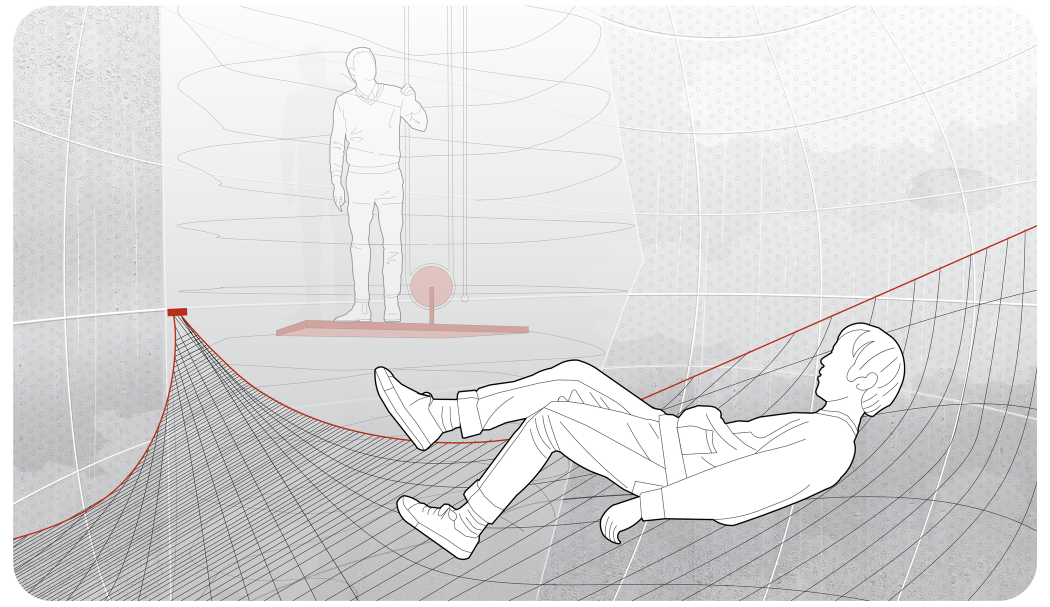
SEED ORCHARD INTERIOR PERSPECTIVE



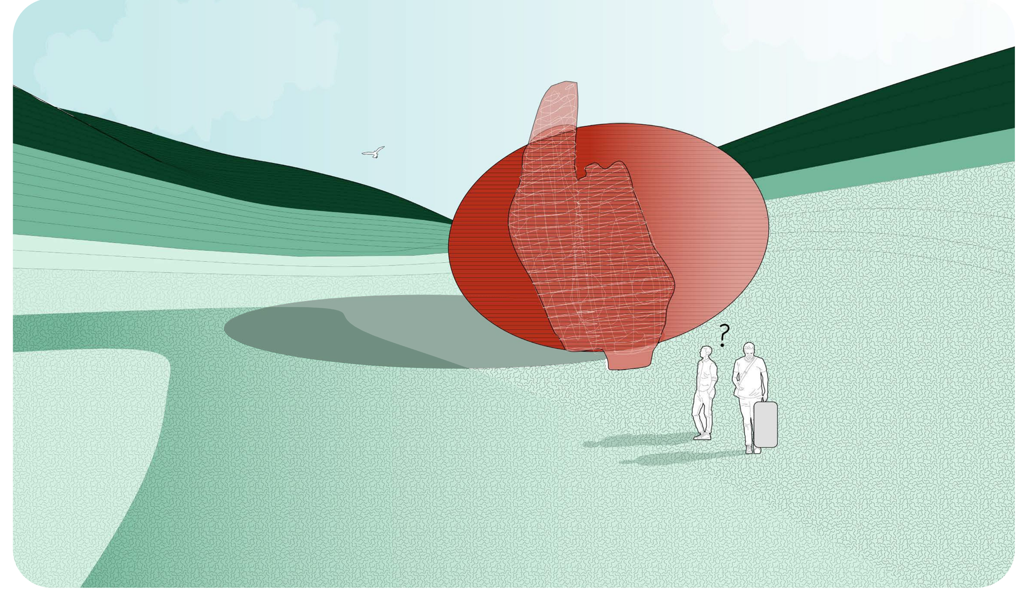
BALLOON MANUFACTURING & LAUNCH INTERIOR PERSPECTIVE



FOLLOWING THE RAIN PERSPECTIVE



INSIDE THE BALLOON PERSPECTIVE



BALLOON LANDING AND DROP OFF PERSPECTIVE