

MArch
SUSTAINABLE ARCHITECTURE
THE YEARBOOK
2019



Centre for Alternative Technology
Canolfan y Dechnoleg Amgen



GRADUATE SCHOOL OF THE ENVIRONMENT

Centre for Alternative Technology
Machynlleth, Powys, Wales
SY20 9AZ

www.cat.org.uk
study@cat.org.uk
01654 705950

Centre for Alternative Technology Charity Ltd -
Registered charity no. 265239

CONTENTS

INTRODUCTION	4
DOING ARCHITECTURE DIFFERENTLY	6
PARTHIAN SHOTS	8
LIVE PROJECTS	10
STUDENT PROJECTS	24
OUR THANKS	56

INTRODUCTION

John Carter
MArch Course Leader
June 2019

The students whose work is illustrated in this yearbook all joined CAT's Masters in Sustainable Architecture (MArch) course in September 2017.

They have been the pioneers of our new MArch course, and what pioneers they have been!

They have worked so hard to make the course a success, embracing each and every opportunity that has been offered to them; and in so doing, they have demonstrated that sustainable architecture is far from the 'hair-shirt' way of making architecture that some deem it to be. They have shown, through their work, that CAT's way of "doing architecture differently" leads to planet-respecting and life-enhancing designs.

These students have worked together, played together, laughed together and cried together; all as members of what we affectionately refer to as the 'CAT family'. It congregates at its spiritual

home, CAT, for one week, every month; but its members are never really apart from each other. It is a family based on shared learning, mutual support and encouragement and, above all, a commitment to sustainable architecture – not sustainability as a 'bolt on', but sustainability as the very foundation stone of the designing and making of buildings and places that respect planet Earth and its ecosystems and which will stand the test of time.

I have seen these students grow as the weeks and months have passed. Many had joined us because they were seeking something different, be it alternatives to 'everyday' architectural practice; or a collaborative, rather than competitive place of learning; or hands-on designing and making. They have all given as much, if not more, than they have taken. They declared a 'Climate Emergency' from day one of their time with us; and I feel sure that they will change our world for the better.

They may be leaving CAT, but their voices will echo in and around Llywngwern Quarry for many years to come.



DOING ARCHITECTURE DIFFERENTLY

Architecture matters. How we build and retrofit our homes, businesses and public spaces has a huge environmental impact. Currently approximately 50% of energy consumed in the UK is used in buildings. To avoid catastrophic climate breakdown, we need to reach net zero greenhouse gas emissions globally by 2050 at the latest – and to achieve this target we need to start today. The materials we use, the energy that goes into construction, how we interact with habitats and wild species, how energy-efficient our buildings are – all of this and more gives architecture the potential have a strong positive environmental influence.

The Centre for Alternative Technology (CAT) is an environmental education centre dedicated to researching and communicating positive

solutions for environmental change.

As part of this, CAT provides Masters-level education in a wide range of topics related to sustainability, including a Masters (Part II) in Sustainable Architecture for students training to be architects.

Nestled in the rain-forested foothills of Snowdonia, CAT offers the only rural-based and sustainability-focused architecture course in the UK. CAT breaks the mould of traditional architectural education, with a number of key themes at the heart of how we teach.

We are a **community of learners** with student, tutor and professor learning from each other. The competitive nature of studio and unit-based teaching is rejected by our students and staff, with everyone benefitting from a rich cross-fertilisation of ideas. We provide an **aesthetic education**, but one that rejects the anesthesia that has crept into our profession. Materials, making and craft sit at the heart of what we do. Building, modelling and exploring from the materials that the earth provides, we immerse ourselves in local and regional society, exploring their cultural

histories through text, image and theatre, both archived and live.

We define **sustainable architecture** through fully acknowledging the impact of humanity on our planet and the need to act now to restore it to balance. We provide the tools for our students to create architecture that is appropriate for a world where ecocentric values are held as equal to anthropocentric ones. Their projects address the shortfall to our social foundations and seek to reduce our impact within our limited ecological ceiling.

If you are interested to know more about our course or would like to attend an open day visit the website and get in touch.



PARTHIAN SHOTS

Graduating students reflect on their time at CAT June 2019

"Initially I was drawn to CAT because of their determination to embed sustainability into every single aspect, as well as the beauty of the site and the freedom to work whilst studying that the intense study week and three weeks away offered. I leave being grateful for the fact that it was so much more - becoming one big family which opens its arms to everyone. The intimate and focused setting allows for proactive learning with like-minded people and helps transform ways of thinking, and the tutoring has been exceptional and personalised even when away from site. I can't recommend CAT enough and I hope more people can be made aware of this life-changing gem nestled in the Welsh countryside."

Matt Riley

"I am immensely proud to be part of such a caring, knowledgeable, thought-provoking, welcoming, challenging and inspiring community. My experience of the Sustainability MArch has been so overwhelmingly positive and supportive, making the step into the real world a touch daunting. However, this bond that has been curated amongst peers, tutors and the wider CAT community mimics traits of a large extended family, where support stretches further than the graduation date. Being based in Wales seems significant for me, ensuring for the first time, despite being Welsh, a feeling of home, hospitality and connection. I feel so fortunate to have been able to learn, grow and change for the better at CAT."

Sophie Zara James

"I came to CAT seeking alternatives, open to personal development and expecting to find answers. I can say at the end of my time here that I have learnt many things, and the spiritual journey I had begun has been nurtured and continued to flourish. It is clear to me now that the most important lessons I have learnt are beyond architecture, beyond the search for alternatives, they are lessons in humanity."

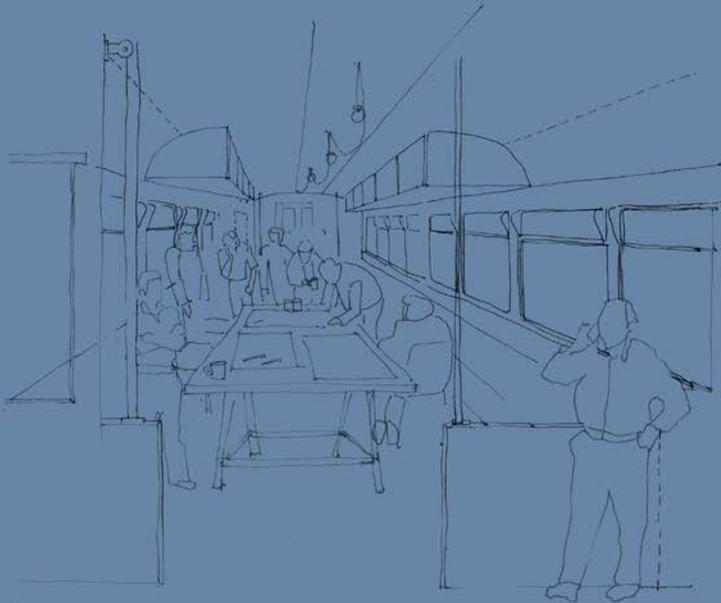
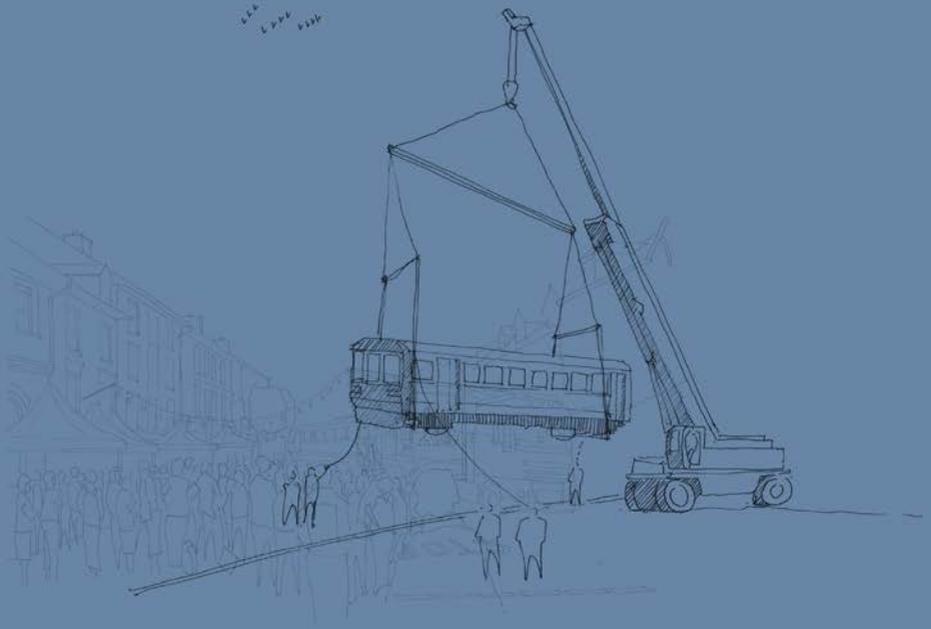
Freddy Thomas

"CAT has been my home, my full time dedication and my family for the past two years. CAT has dramatically changed my ability to assess situations and understand the social context we live in. CAT has been an incredible experience which I would recommend to anyone!"

Tiziana Di Ronco

"It is difficult to summarise the CAT course and what it has given me in a short testimonial, due to the profound effect CAT has had on my personal and professional life. The relationships forged with fellow students and the tutors have instilled within me the importance of respect, responsibility and integrity. Words cannot express the excellence of the tutoring staff who learn and explore with you through the world of sustainable architecture. With the support of the tutors, studying at CAT has given me the confidence, knowledge and capability to not only work within the industry but to challenge it and forge my own way. If you are looking for a course that is embedded in sustainability which not only develops your architectural skills but also nurtures your confidence and challenges the current profession – you can't do better than CAT. "

Josie Turner





LIVE PROJECTS





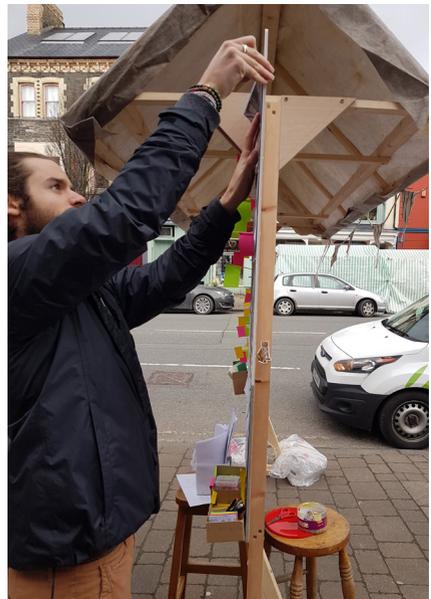


SCOTLAND STUDY TRIP

February 2018

In February 2018, rather than make the monthly journey to CAT, we headed to Glasgow for a week-long Scotland study trip. Highlights included a tour of Richard Murphy's house in Edinburgh, a lecture by Mary Arnold-Forster at her house in Dunkeld and visit to the OMA designed Gartnavel Maggie's Centre. Developing a critical approach in order to learn from existing buildings is central to the teaching at CAT, and this was an opportunity to see first-hand how people were actually inhabiting a range of what are considered to be architecturally significant historic and contemporary buildings.







COMMUNITY CONSULTATION IN MACHYNLLETH

March 2018

This project, part of the second Integrated Design Project, involved us developing a masterplan and various interventions for the sustainable development of Machynlleth. Instead of developing our designs independently we engaged with the community in order to understand and learn from them, to find out what was important to them and to take this information forward informing our design projects. We split into groups and looked at the key areas of:

- Climate and natural systems
- Energy generation
- Food production and agriculture
- Built environment
- Movement
- Economy and quality of Life

We developed various methods of engagement, supported by some leading experts in community engagement, and took our place amongst the market stalls on market day. It was a fantastic opportunity and a real life experience which allowed us to engage with the end user, and we believe this experience came through in our design proposals.





MATERIALS WEEK

May 2018

Materials week was an opportunity to create and play in a different way. This hands-on module week was full of practical workshops in five key areas run by tutors and visiting industry professionals:

- Straw bale (John Butler)
- Hemp and lime (Francis Hill)
- Timber (John Carter and Tim Coleridge)
- Building with waste (Lizzie Winn)
- Rammed earth (Louise Halestrap and Rowland Keable)

It was an immense amount of fun and a hugely valuable learning experience bringing together both architecture students and those on the wider CAT postgraduate courses.







SUMMER BUILD 1

July 2018

Bike Shelter

Concept designers:

Martin Johnson, John Thompson and Freddy Thomas

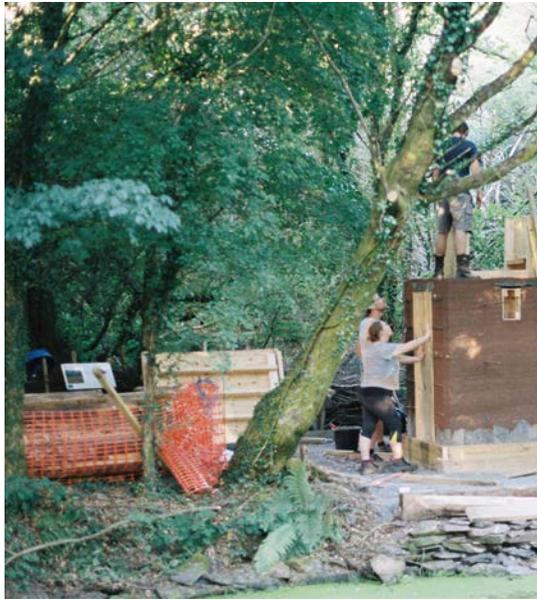
Design and build team:

Martin Johnson, John Thompson, Eloise Verdon, Sophie James, Freddy Thomas

Carpenters: Toby Slapp

Located in a prominent position at the main entrance to the Centre for Alternative Technology, this collaboration responded to the need for a new bicycle shelter, promoting environmental awareness and providing a distinct and memorable piece of architecture for arriving visitors.

Existing dilapidated steel structures were restored and repositioned vertically and horizontally on site, and clad with locally sourced western red cedar timber to create a series of enclosures for visitors to safely store their bikes. A washing and changing facility is provided in the vertical tower element while the addition of a timber sail structure and rammed earth benches to the front elevation provide shelter from the extremes of the Welsh climate. A method of steam bending timber was developed to provide a decorative fringe to the shelter, softening the visual impact of the pavilion and reflecting its organic context.





SUMMER BUILD 2

July 2018

Rammed Earth Tower

Concept designer:

Jacob Long

Design and build team:

Rinus de Crom, Shane Bradley, Adele Heulin,
Maria Moise, Josie Turner and Jacob Long

Carpenters: Axi Butterworth

Set back from the visitor circuit and on the edge of the pond, the brief asked for a space for contemplation. The proposal engaged with the dense tree canopy above in the form of a rammed earth tower through which the foliage would be framed.



The earth walls sit on a paving slab and earth-lime plinth to elevate it above the wet ground. To protect the earth from the worst of the prevailing wind-driven rain, the south and west elevations were to be clad in reclaimed timber screens. Horizontal courses of roofing slate were embedded in the remaining two elevations - the intention being to record how they delay (or indeed expedite) the process of weathering. The two openings in the vertical earth walls were a doorway and a small window that faced the pond, both formed with a slate lintel.

As a team, we overcame challenges with achieving a structural earth mix and worked into the night to finish complex collapsible formwork. The build gave us a real respect for the intensely physical process of earth building.





SUMMER BUILD 3

July 2018

Sk-Eye

Concept designers:

Gina Windley (structure) and Tiziana DiRonco (installation)

Design and build team:

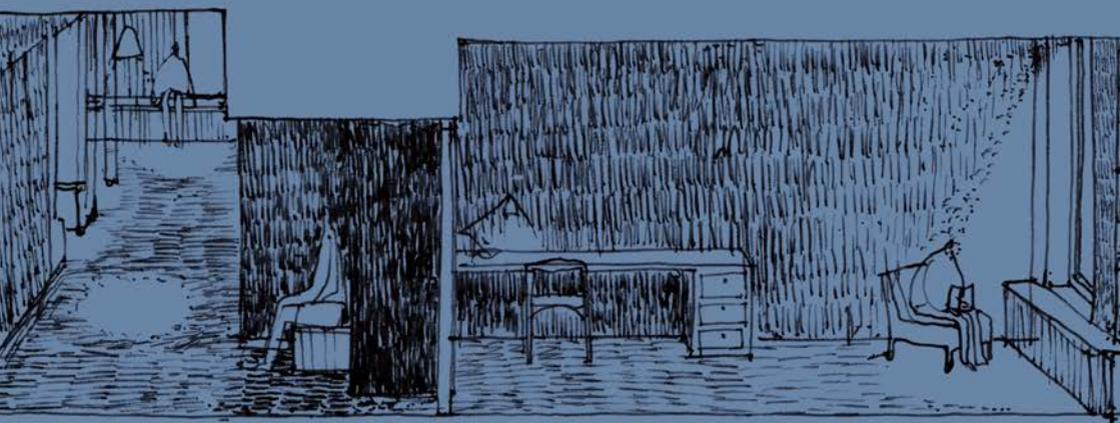
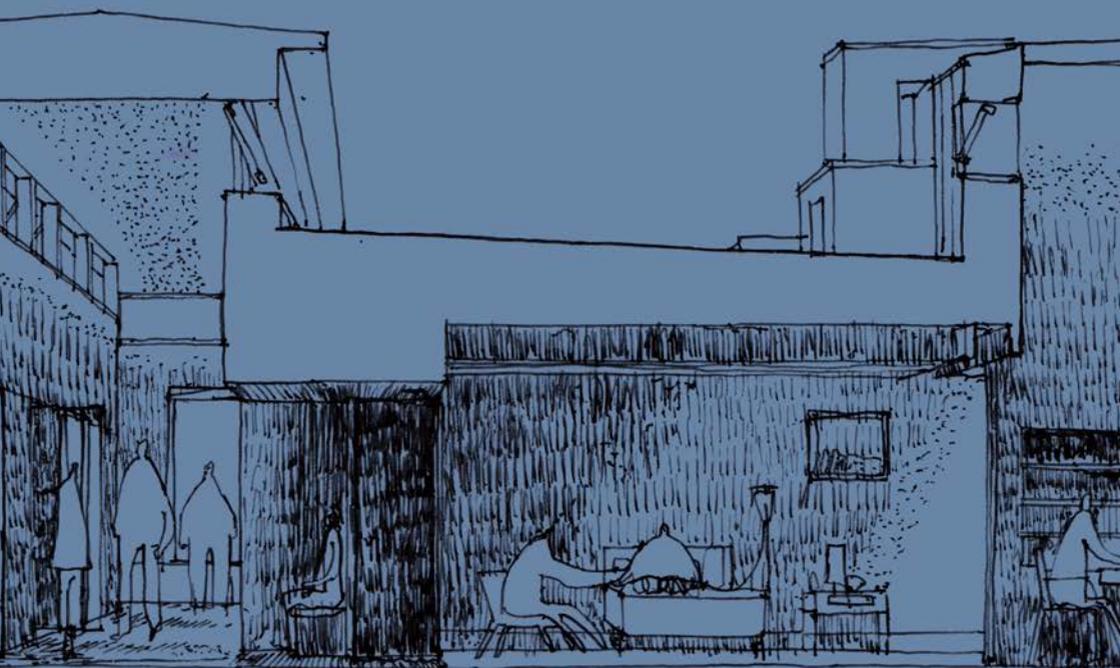
Gina Windley, Tiziana DiRonco, Matt Riley, Roxy Edwards, Nathan Froud

Carpenters: Josh Coldwell

In response to the open nature of the site and brief, we designed an outdoor classroom with the aim of encouraging students to converse, observe, learn and reflect on nature and sustainability.



The elements - sky, earth, wind, water, fire and soil are tangible. Sk-Eye connects the visitor with the sky and rain and the salvaged timber that draped around the structure treated using the ancient Japanese method for charring timber: Shou Sugi Ban. The form of the locally sourced untreated larch structure is influenced by the circular form of the Welsh roundhouse and is modernised into a timber hexagonal volume that tapers to create an oculus. Two doors welcome visitors off the trail and into the structure. Within, the installation documents the memories of people visiting and living at CAT. Cast in resin and wax, these are positioned as a chandelier capturing sunlight and rainwater.

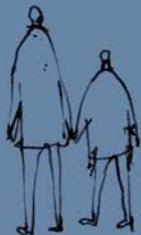




2019

STUDENT PROJECTS

5th Year MArch
Final Design Projects





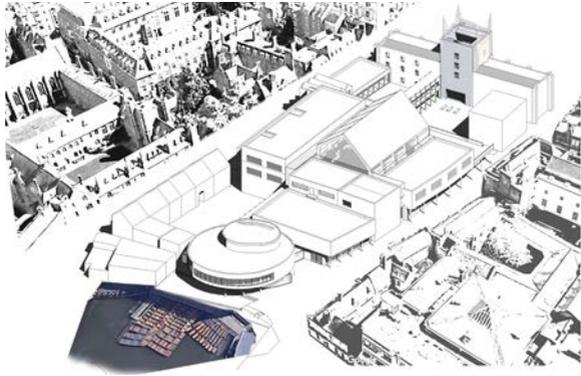
ELOISE VERDON
verdon.eloise@gmail.com

BUILDING UNITED

In reaction to the fragmented social classes within Cambridge, to the fragmentation of the construction industry countrywide, and to the global environmental crisis, my project unifies the construction industry under the umbrella of sustainability and unifies the population of Cambridge.

Building United is a school of sustainable building which reunites the training of architects, engineers, construction managers and building tradesmen on one site and which provides ample public space for people of all backgrounds to mix.

In a town where exclusivity and difference has existed since the 13th century, in a country where the building industry is divided, and in a world where sustainability should be at the forefront, Building United reunites people of all backgrounds to build a better future.





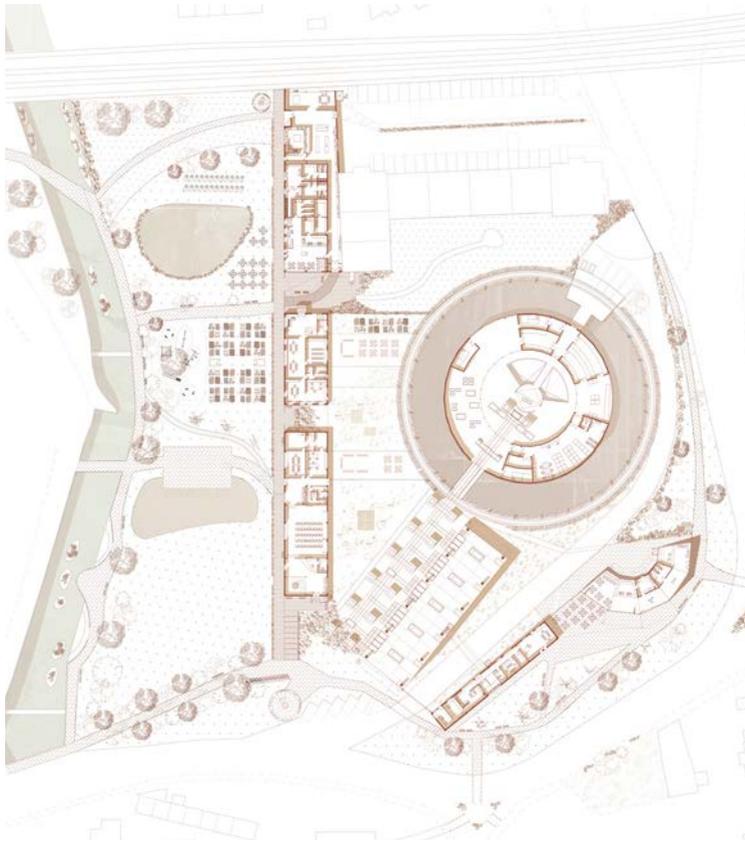
TIZIANA DI RONCO
tiziana.dironco@gmail.com

TALKING RUBBISH

Rubbish, rubbish, rubbish. The world is full of rubbish. 59% of total UK Waste is produced by the construction industry.

Talking Rubbish is the beacon of behavioural change towards construction waste reduction. Talking Rubbish is the hub of progressive, inventive, creative reuse and repurpose of construction goods frequently classified as waste. Talking Rubbish is a collection, storing, inspirational, creative and nature filled site, located in one of the most wasteful regions within the UK, London. Individuals, groups and trades can all benefit from the centre's array of activities, whilst nature can prosper in a regenerated and safe urban pocket.

“There is not such a thing as waste, just materials in the wrong place, at the wrong time.”





SOPHIE ZARA JAMES

zara1992@hotmail.co.uk

PENTREMEURIG PROJECT

This project was born out of the hope of delving into Carmarthen's history to reveal lost practices that could be beneficial to a sustainable way of life in the present day. This proposal hopes to provide and encourage alternative agricultures, a marginal and central sanctuary, community curation and convivial exchange. It looks at re-characterising Carmarthen as a green town striving for self-sufficiency through whole-community involvement and engagement. Carmarthen has the advantage of being rural, with access to farms and agriculture in every direction. Carmarthen is steeped in agricultural history. Similar to much of Wales the focus is on animal husbandry. Until recently Carmarthen has had a thriving cattle market that had been encouraged by the drover roads, dating back to the Romans. The cattle market was demolished about 20 years ago. It was considered the heart of the town and is still fondly remembered. This re-characterisation is to provide Carmarthen with a thriving and unique identity promoting its many assets, while becoming an exemplar green and growing town for others across the UK and the world.





GINA WINDLEY
gina.windley@gmail.com

MANUFACTORY

The project is the sensitive sustainable regeneration of an uninhabited brownfield site, Pomona Island on the outskirts of Manchester. The area is in need of regeneration and this proposal tackles it sustainably, providing employment and preserving much sought after green space. The site will be brought back into use and will house a manufacturing facility, training college and model village. The long term goal is to tackle homelessness at the source by providing employment and training on site in manufacturing prefabricated self build timber 'kit' homes as a solution to the current housing crisis.



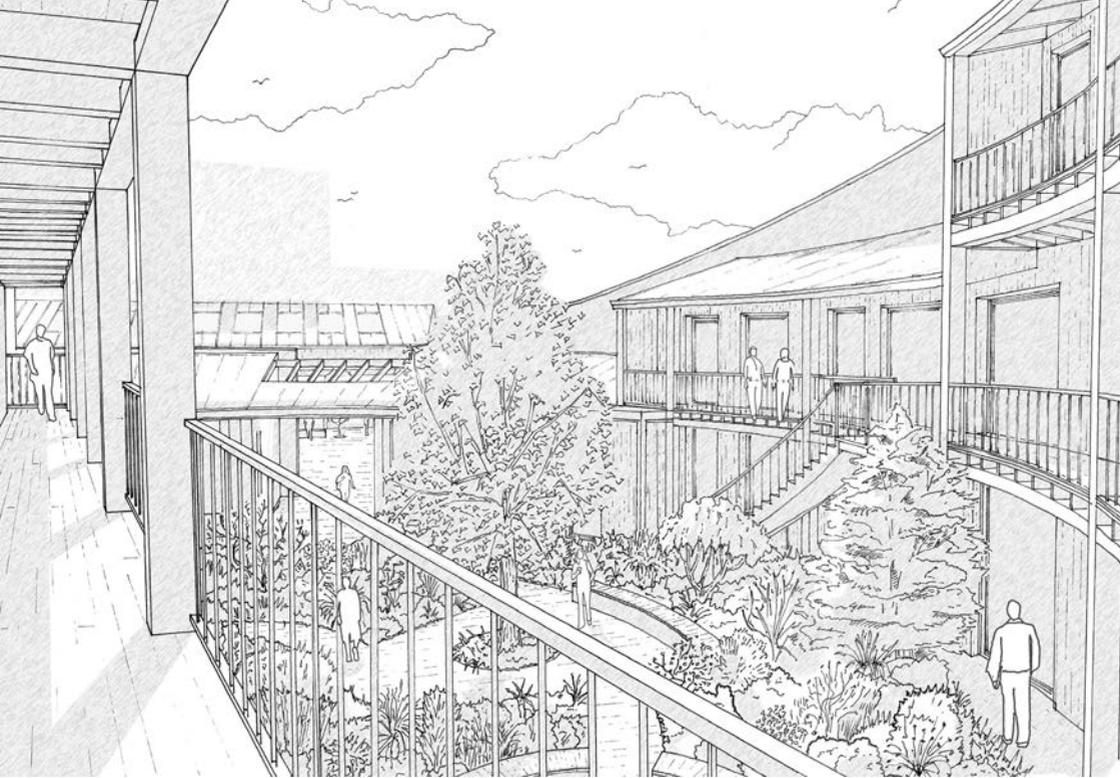


FREDDY THOMAS
freddyvthomas@gmail.com

MAKING SENSE OF HOMELESSNESS

In Brighton and Hove, a city where 1 in 69 people are without a stable home, a radical change is needed in the way we provide housing. This project aims to be a catalyst in replacing parking spaces within the city centre with a new model of self-build social housing.

Located on the site of a former multi-storey car park, a variety of services and accommodation types are provided in order to help those most vulnerable. Public interaction is encouraged in order to provide engagement with an issue that is typically swept out of sight.





MATT RILEY
890riley@gmail.com

THE HULL SCHOOL OF GUILD & CRAFT

This project envisages two derelict retail buildings in the centre of Hull as a new home for the city's displaced craft guilds who thrived during the once unstoppable maritime industry and suffered as this industry fell in the wake of the industrial revolution.

The re-imagined layout unifies the two buildings, adding new purpose-built spaces to offer a reformed way of buying goods in which the theatrical process of craft becomes as important as the product, in an attempt to compete with internet shopping during the ever-increasing shift towards automated manufacturing. This not only saves two locally treasured buildings from demolition but also draws upon the skills of the craftspeople they house to help educate the city's apprentices, ensuring old skills are passed down, and modern techniques reciprocated.

By combining public spaces with education and craft workshops the program ensures maximum exposure for the guilds and ultimately creates a community hub which unites the city through the common process of making.





ADELE HUELIN

adele_huelin@hotmail.co.uk

YOUTH WELLNESS CENTRE

This project seeks to create a place which can aid the well-being of young people in the island of Jersey. Through fun, relaxing and nurturing environments, this proposal aims to create a 'safe haven' for young people, to help them gain a sense of pride and ownership over their futures, whilst connecting them to other areas of the community.

The design is situated within a Napoleonic fort which was used by the army until the 1950s and then converted into a leisure centre in 1970. This design proposal looks to restore the original fort whilst creating a new 'townscape' within the original fort walls.

Each entrance is connected through a series of alternating streets and courtyards to a central amphitheatre/piazza space, which is encompassed by highly active and varying functions such as performing arts rehearsals, an outdoor games area which breaks out from the sports hall where youth centres can have competitions, a south-facing café open to the public and a large open air skate bowl. This proposal will provide a much needed 'safe-haven' for vulnerable young islanders and will create a place where all areas of the community can come together to celebrate young people's talents.



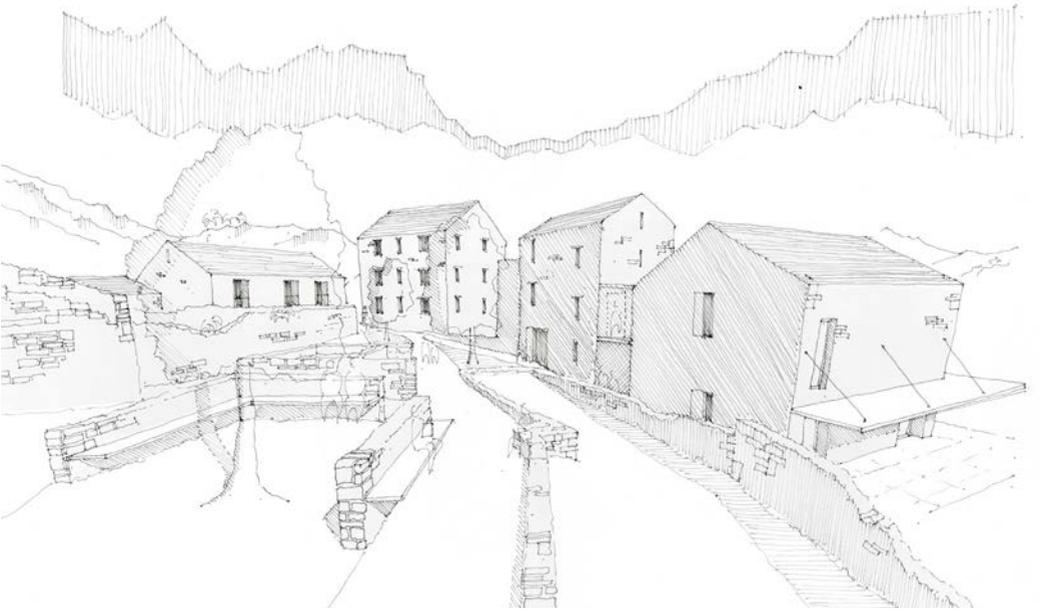


MARTIN JOHNSON
johnsonworld@gmail.com

RE.IMAGINING THE LOST LANDSCAPE THE SPANISH PYRENEES

Rural to urban migration has left hundreds of abandoned villages in the Spanish Pyrenees and threatens the existence of many more throughout Spain. These villages represent a culture and heritage based on a self sufficient and a low impact lifestyle.

This project is a journey into this lost landscape, it aims to record and document the built form but also to learn from this past way of life. The project, an archive in its infancy, is a platform to assist in the re-population of this landscape and to facilitate those already pioneering a reversal of the rural to urban migration in search of a more sustainable way of life.





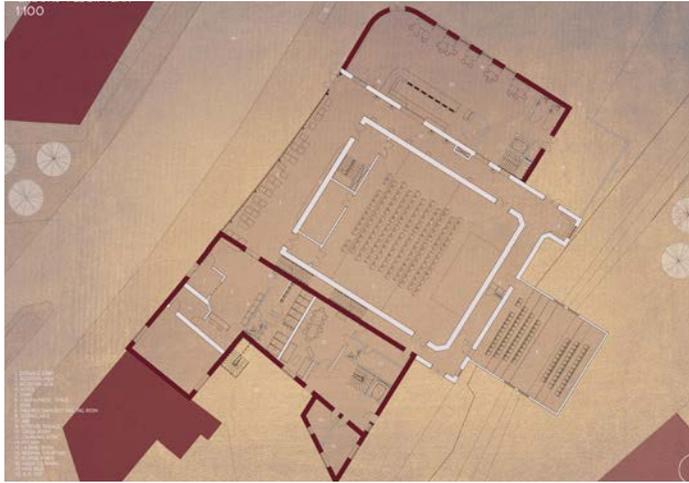
MARIA MOISE
moise.maria1@gmail.com

REIMAGINING ABBEYDALE PICTURE HOUSE

Few buildings in their lifetime go through multiple uses and survive to tell the story. Abbeydale Picture House in Sheffield was built in 1920, as a suburban cinema. 70 years later, after going through various uses and alterations, the building was listed. Ever since it has been dying a slow death.

The issue of 'ruin or revival' is challenged in this project, by looking at the possibility of prioritising a sustainability agenda over restoration or conservation, which is the typical route for this building typology.

The strategy is to insert a new built structure to replace the main hall of the existing building, while also breaking down the unwelcoming facade and opening the building to the street. The project proposes a social, urban place for cinema, live music and theatre, as well as co-working spaces and artist studios.





NATHAN FROUD
nathanael.froud@yahoo.com

REIMAGINING SHINFIELD

The project is a reinterpretation of the 1500 homes development surrounding the existing settlement of Shinfield. The project proposes a completely different approach to suburbs with variation of housing and building typologies to encourage vibrant diverse streets. The project also builds from my dissertation, challenging the dominance of the car within suburbs.

The building proposal is for a new town hall, which would provide the digital training, equipment and a much-needed physical place for people to meet to encourage community and business creation. The architecture of the building primarily uses timber, clay and earth found locally to test the theory of a biodegradable building using passivhaus energy principles.





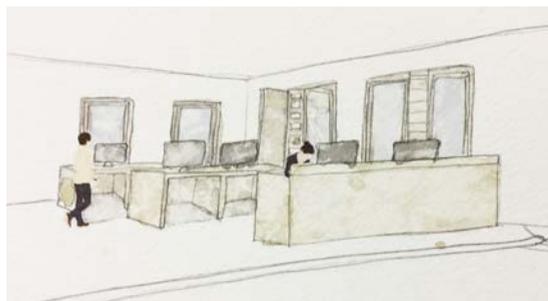
ROXY EDWARDS
edwardsroxy@gmail.com

REMODELLING FILTON AIRFIELD COMMUNITY CONNECTION THROUGH WELLNESS

Filton airfield is a 380-acre disused site located to the north of Bristol. With the airfield currently unoccupied, abandoned grade II listed aircraft hangers, and the linear runway are all that ties the site with its strong historic aviation roots.

With my own personal connection with the airfield through my Grandad who helped design the Concorde Engine, the aim of the project is to celebrate its history and establish a public space where the surrounding communities can come together.

The core belief behind the project is the quote that 'Every trip begins and finishes with walking, there is no health without mental health'. Through design and place-making, the airfield will become a new pedestrian dominant development focused around a health and wellbeing centre. The site includes community facilities such as a library and café, and a new doctor's surgery that will be linked with a swimming pool, lido and woodland walks, changing the way we treat and accept certain illnesses.





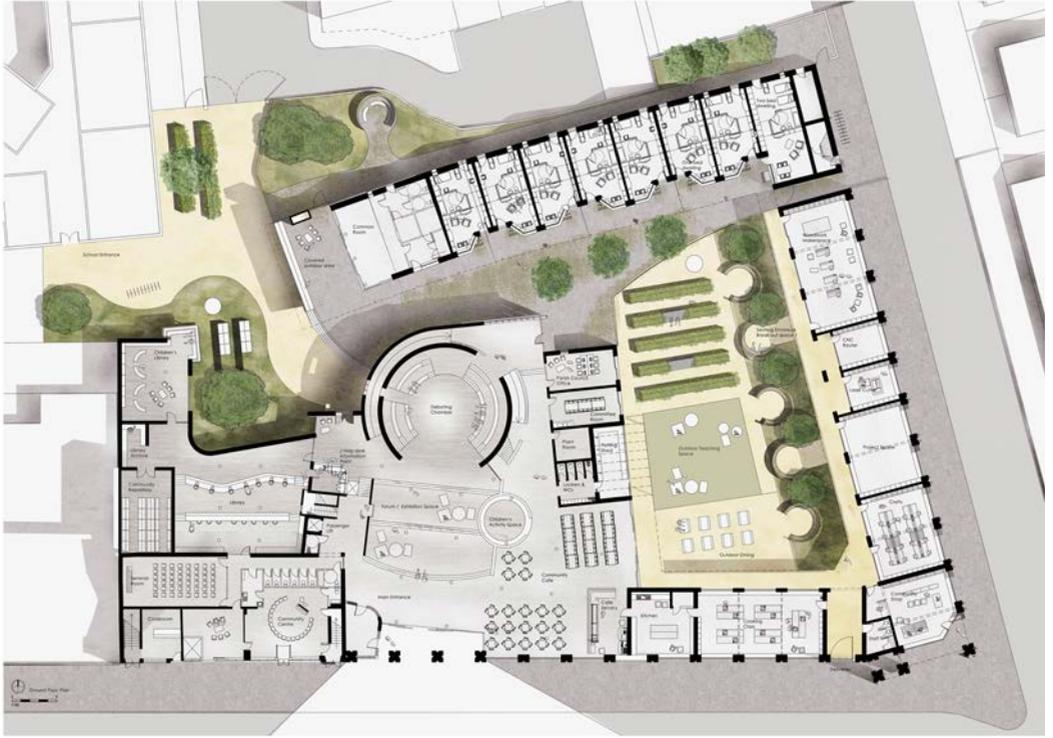
JOHN THOMPSON

john.thompson@
hughmasseyarchitects.co.uk

PLATFORM 2 BEDLINGTON, NORTHUMBERLAND

Platform2 (Sustainable Communities) brings together the community of Bedlington Station with a local forum situated at the centre of the town, complete with community meeting spaces, debating chamber, café, library and maker spaces, as well as residential accommodation for elderly people.

Empowering the community to participate in local politics and decision making, the project seeks to foster a vision of shared guardianship of resources whilst also democratising knowledge, skills and making – ending consumer reliance and helping to close the loop in creating a circular economy.





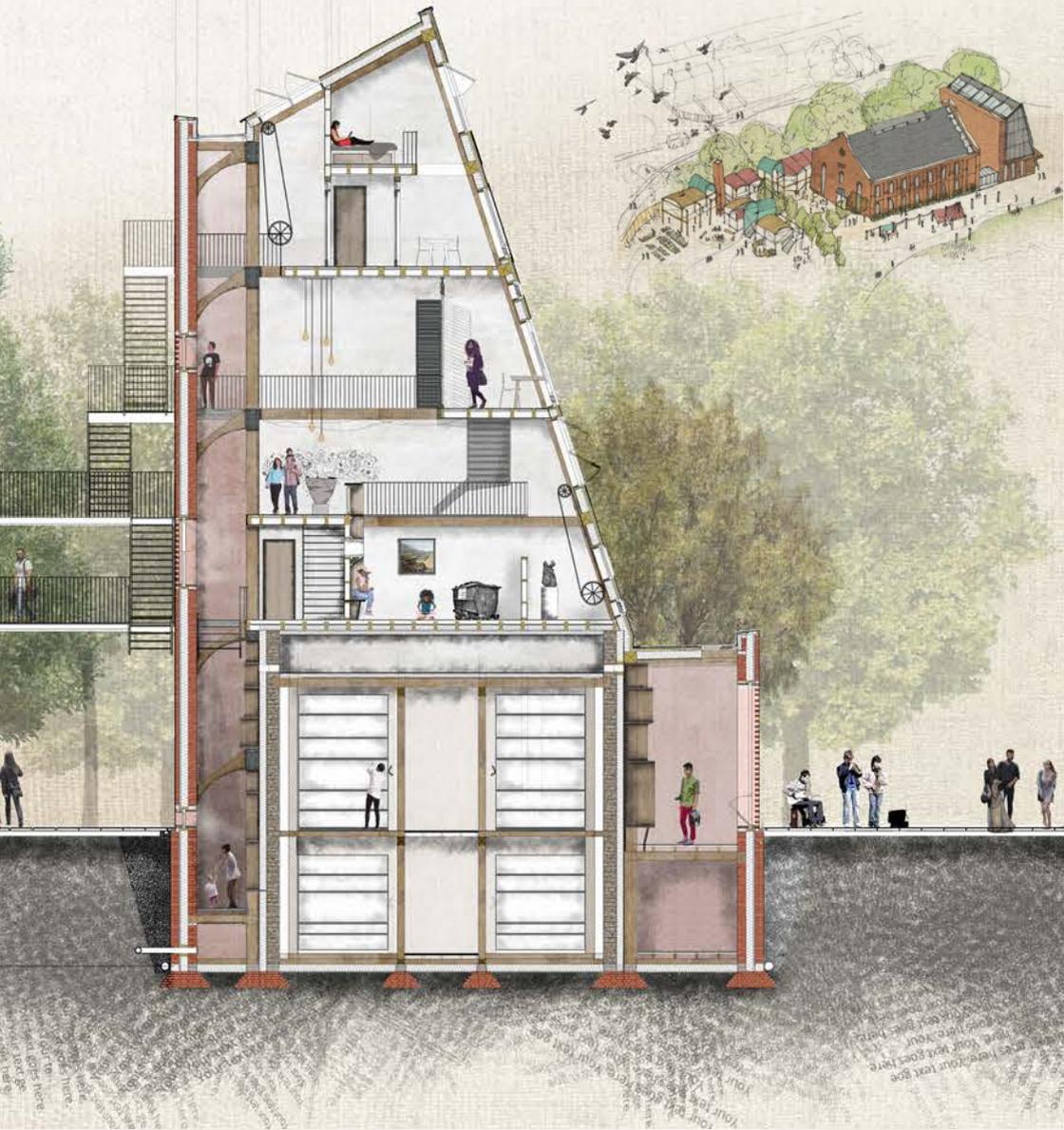
JOSIE TURNER

turner.josie@outlook.com

FROM RUIN TO REGENERATION: (RE)CLAIMING THE LLWYNYPPIA POWERHOUSE

The history of the Rhondda Valley and Llwynypia community is varied and complex, with industrialisation and extraction causing deep scars, not only within the landscape but within the communities themselves. With the fall of the coal industry, the manifestation of the community's identity has been washing away, along with the documentation that could remind the community of their legacy locked away in academic institutions in Cardiff and Swansea. By reconnecting the community with their heritage of self-belief and improvement the project aims to provide the community with a new locational centre for them to hang their identity on.

Evoking the legacy of the Miners' Institutes, the design is a community take-over of an industrial relic, giving the community back control over their own environment. The proposal includes an archive to re-engage the community with their past, social and civic spaces, integrating divided cultures, and a structural framework for the community to build into over-time, creating a space that adapts to the community's needs today and in the future.





RINUS DE CROM
rinusdecrom@gmail.com

RETHINKING THE DUTCH DAIRY FARM

The industrialisation of dairy farming has resulted in more intensified land use, and a disconnection with the public and surrounding nature.

For this project, an intensive Dutch dairy farm is redeveloped into a more diversified farm that processes milk into cheese, and handles its own waste on site. The manure from the cows and the whey from cheesemaking are turned into energy by a biodigester, whereas the digestate from the fermentation is processed into construction bricks. These so-called 'ShitBricks' are the main construction material of the project.

The redeveloped farm focuses on reconnecting with the public and the surrounding nature. A public courtyard connects a farm shop, café, exhibition space, and a farm display as well as a route around the farm facilities. Day care for elderly people and children is provided and connected to a semi-private courtyard where both groups can interact. Altogether, the redevelopment of this dairy farm will provide an example of how diversifying, instead of the current farming industrialisation, can increase efficiency and stimulate sustainable farming.



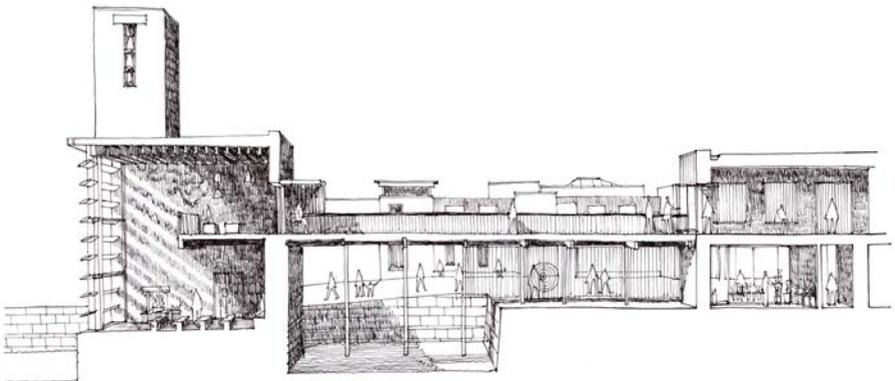
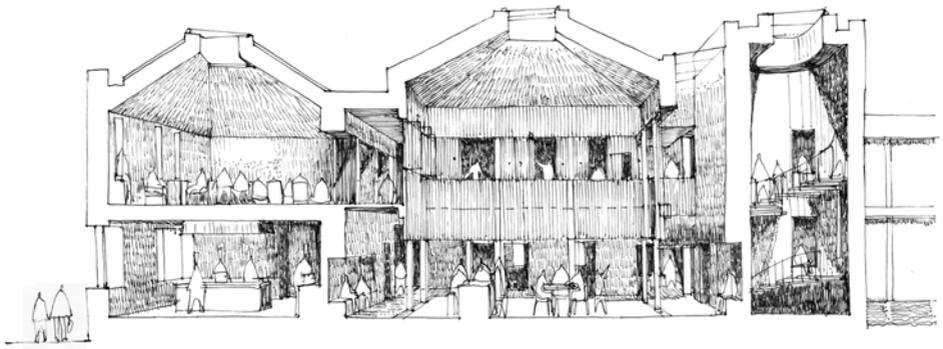


JACOB LONG

jacob.oliver.long@gmail.com

AN URBAN HOSPICE

Owing to the continued advancements of Western medicine, death is more likely to occur an older age and after a period of incurable illness. As a result, the hospital has surpassed the home as the location of this important life event - 46% of UK deaths in 2018 occurred in a clinical environment. If the hospital is set up to deliver restorative medical services, then the hospice provides both long-term care and support for those with life limiting illnesses, as well as an alternative place for people to spend their final days. These organisations do a huge amount of work in their local communities to challenge and change the negative cultural attitudes surrounding death, but their physical facilities are often removed or hidden from the communities they serve: compartmentalising death from life. Therefore, the brief for my final project was an urban hospice on the edge of Bristol harbour. The proposal comprised an inpatient unit and day hospice, with additional hydrotherapy, educational, sanctuary and outpatient facilities. A main consideration was the way in which the public realm at the harbours' edge could be improved by the intervention, and how the conflicting aspects of privacy and the opportunity to engage with surrounding activity could be reconciled for both patients and their visitors.



TO THE MARCH TUTORING TEAM:

We're immensely grateful for the huge amount of time and effort you all have put into the course - it is testament to your dedication, expertise and enthusiasm that our experiences as students have been so overwhelmingly positive.

THANK YOU!

[As our student feedback over the last two years has been taken so seriously by you, one last comment: perhaps next year you could all be in the same place at the same time to get a more cohesive group photo? - Ed.]





**TRISH
ANDREWS**

**JOHN
CARTER**

**AND THOSE
NOT IN THIS
PHOTO:**

ZOE QUICK

DAVID LEA

PAOLA SASSI

OUR THANKS ALSO GOES OUT TO:

Alan Jones
Aled Davies
Alex Whitcroft
Anne Nisbet
Axi Butterworth
Bill Gething
Carwyn Lloyd Jones
Chris Loyn
Chris Stewart
Dave Wilkinson
Daisy Froud
David Gale
David Roberts
Duncan Baker Brown
Elinor Gray-Williams
Francis Hill
Gregor Neeve
Ivor Davies
Jan Kattein
Jess Read
John Butler
John Challen
Jon Shanks
Josh Coldwell
Judith Thornton
Kelly Bednarczyk

Kirsty Maguire
Lizzie Winn
Louise Halestrap
Mark Drane
Martin Hall
Mary Arnold-Forster
Matt Williams
Neil Sutherland
Nial Maxwell
Nick Cramp
Oliver Goddard
Paul Allen
Paul Harries
Paul Williams
Phil Hampshire
Richard Heath
Richard Murphy
Richard Parnaby
Robert Sakula
Rowland Keable
Sam Burkhill
Sophia Ceneda
Tim Coleridge
Toby Slapp
Tom Woolley
Tomas Millar

Technical Brief :



