



Consultancy Services

Capability Statement

2007

Centre for Alternative Technology Consultancy Services

The Centre for Alternative Technology has been promoting the use of sustainable technologies for 30 years.

CAT has an unrivalled track-record in turning environmental inspiration into practical solutions.

CAT offers a unique range of consultancy services to both the public and private sector that enables organisations and individuals to turn their environmental aspirations into reality.

New and Renewable Energy Technologies

- Wind
- Photovoltaics
- Hydro-electric
- Biofuels
- Solar water heating
- Combined Heat and Power
- System control and optimisation
- Energy efficiency and demand reduction

We are registered consultants with Clear Skies and Action Energy

Environmental Interpretation

- Visitor centres
- Interactive displays
- Ecological parks and gardens
- Business development strategy for environmental visitor attractions

Buildings

- Low energy and passive solar building design
- Selection of environmentally benign building materials
- Timber frame and self-build construction
- Energy conservation
- Water conservation
- Healthy buildings

Sewage and Organic Waste Management

- Constructed wetlands
- Composting toilets
- Sludge composting

Water supply, treatment and conservation

- Water supply options
- Water conservation
- Filtration systems

How CAT's environmental experience can work for you

CAT can help you match your aspirations with practical environmental solutions:

- whether you are a private business, public sector organisation or a private individual.
- whether your aim is to save the planet or save your business money with environmental efficiency improvements.
- whether you can only consider modest steps or whether you want a top-to-bottom eco-plan.

CAT consultancy services offer:

- Site assessments
- Renewable energy resource surveys
- Energy consumption audits
- Feasibility studies
- Guidelines for environmental sewage systems
- Project briefs for environmental building design
- Environmental business planning
- Sourcing environmental products
- Policy formulation
- Technical training and corporate environmental training

Contact

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Client List

Local Authorities

Ashfield District Council
Ballymena Borough Council
Birmingham City Council
Conwy County Council
Dyfed County Council
Gwynedd County Council
Neath Port Talbot County Borough Council
Northumberland County Council
Wansbeck District Council
Wrexham Borough Council
Essex LEA
Powys LEA
Shropshire LEA
West Sussex LEA
Staffordshire LEA
Mid-Glamorgan & South Glamorgan LEA
Cheshire LEA
Clwyd LEA

Companies

Amoco Exploration (UK) Ltd
BBC
Body Shop International plc
Discover UK Ltd
EcoGen Ltd
Lion TV
Mid-Wales Homes
Pendlebury Bait Ltd
Wind Energy Group
UK Waste Management Ltd
Red-R Training
Nottingham Eco-Works
Body Shop plc
Network in Ireland for Ecology, Energy & Economics
Binny & Partners
Sonairte Irish Ecology Centre
BRESCU Building Research Establishment
Co-options Ltd Community Co-operative
Knightstone Housing Association

Government Departments/Agencies

British Rail
Devon & Cornwall Police
Energy Technology Support Unit
Environment Agency
Welsh Development Agency

Colleges

Pembrokeshire College
University of Wales, College of Cardiff
Goldsmith College
Stockport and High Peak TEC
The City University, London/Engineering Council
South Bank University
John Moores University
Bath University
Normal College, Bangor
University of Portsmouth
Charlotte Mason College, Ambleside
Department of Education, University of Aberystwyth
Carmarthen College
University of Central England
University of West of England
London Borough of Richmond
Eltham High School
The Science Museum, London
Learning through Landscapes
Bath University
Bridgend College

Charities, Trusts and Voluntary Organisations

Avalon Foundation
Bristol Zoo Gardens
Building and Social Housing Foundation
Centre for Sustainable Energy
Earth Centre
Ecoville
Energy Saving Trust
The Green Wood Trust
Groundwork, Merthyr
Highmead Project
Lower Lea Project
Mid Wales Energy Agency
Mihai Eminescu Trust
National Botanic Garden of Wales
National Canine Defence League
National Museums, Liverpool
National Trust
Newport Wastesavers
Primrose Earth Awareness Trust
RSPB
Sonairte, Ireland
Youth Hostel Association

Some Recent Projects

Environmental Building

Feasibility study for Housing Development in Ascot, Berkshire

Our client wished to build the UK's greenest housing development – consisting of a mixture of private flats, detached houses and social housing taking into account renewable energy options, energy efficiency, sustainable building materials and design and water efficiency solutions. CAT consultants produced a detailed report advising on low-impact, sustainable, energy efficient buildings including solar thermal systems and a biomass district heating scheme. Rainwater harvesting systems were also included and drought-resistant landscaping.

Report on renovation of an old school into police station and community centre for Devon & Cornwall Police

CAT consultants carried out a site visit and then produced recommendations on design aspects, including energy efficiency and insulation advice, the use of reclaimed and low embodied energy materials, water conservation techniques and renewable energy systems for heating and electricity supply.

Feasibility Study for Eco-Housing For Gwynedd Council, Snowdonia Housing Association

To investigate the feasibility of introducing eco-housing concepts into this rural area of north Wales. Areas covered include passive solar design, use of environmentally-friendly locally sourced materials, training requirements, housing needs and costs. These will be applied to both new build and renovations.

Autonomous Environmental Information Centre For CAT's own visitor centre, Machynlleth, Wales

Our building, engineering, and biology departments worked with future users of the building to create one of the 'greenest' public buildings in the UK. Its materials have extremely low embedded energy and its use of water and energy will be remarkably small. The building itself contains no cement (we used lime instead), is virtually PVC free and has a number of innovative features including rammed earth supporting columns, 120m² of solar water heating collectors, connected to the rest of the site via a heat main, local welsh wool insulation, natural finishes and the most ecological public toilets in Britain. The result is a £600,000 building that demonstrates the potential of environmentally friendly building materials and techniques - and provides a better service to our visitors!

Construction of new field study centre classroom For Youth Hostel Association, Borth, mid-Wales

CAT project managed the entire building project, from the design stage to completion, incorporating passive solar design and environmental building materials and techniques (using many reclaimed materials from the old classroom), along with specification of energy efficient services and heating controls.

Feasibility Study for wool as an insulation material For CYMAD and the Welsh Development Agency

In association with Newidiem, CAT undertook a research project to provide an alternative outlet for this local material, currently of low value. It also aimed to develop a UK product, as wool insulation has only been available from Austria and New Zealand. CAT offered technical input - both paper-based research and commissioning tests on wool samples. Production processes from other parts of the world were also analysed. Proposals are now afoot to build a production facility in the area.

Construction of private house Taiffordd Fawr, For private client

A wonderful example of eco-housing, combining traditional and recycled materials with the latest technical advances in energy efficiency and conservation. CAT project managed the construction of a new timber-frame house using recycled Welsh roofing slate, local wool insulation in the 200mm thick walls and a range of natural floor finishes. The window frames will be laminated local oak and the glazing is double glazed, low-emissivity, argon filled. The foundations, floor slab, render and mortars are all lime based and cement free. PVC products have been avoided wherever possible. The heating is a low temperature underfloor system fuelled by a wood pellet boiler. Solar water heating panels and solar electric panels are incorporated into the roof. Passive solar design has featured strongly, with a double height, fully glazed sun space to the South.

Renewable energy and energy management

Phoenix Centre run by Rhondda Community Business Initiatives Ltd. Home of the Rhondda Community Regeneration Grid and the Phoenix Community Cinema Theatre

In November 2006 CAT energy consultants were asked to carry out a pre-feasibility study for a micro hydro scheme to power some of the electricity requirements of the community centre. They carried out a site visit to look at two potential sites and reported on potential generating capacity, capital investments, abstraction licence requirements and payback periods for the scheme as well as potential for sale of electricity back to the grid.

Energy Assessment for Great Orme Visitor Centre, Nr Llandudno on behalf of Conwy Borough Council.

CAT was asked by the council to carry out an energy review of the visitor centre to look at energy efficiency, heating and electricity systems with a view to interpreting any changes made for the public as an educational exercise. We carried out a site visit and submitted a report recommending replacement of appliances, some insulation work and costings for a wind turbine, possible solar thermal system and pellet space heater. The report outlined payback periods, grants and accompanying CO2 savings.

District heating system For CAT's own site

In 2000 CAT's new Information Centre and Shop opened its doors to provide a 7 day a week service to visitors. The 500m² building also houses offices, a meeting room and is home to CAT's Buy Green By Mail mail order business. The building is designed to export energy to the rest of CAT's buildings, and has a 112m² solar water heating system on the south facing room - at time of construction it was the largest solar thermal array in the UK. The system feeds into a 4.5 cubic meter accumulator tank which stores the heat for use on cloudy days. This solar water heating system provides hot water during the summer, and in the spring and autumn feeds into the building's underfloor heating system. It is connected to other buildings around the site (such as accommodation and the restaurant) by a super-insulated pipe which runs 270 meters through a service duct. At the other end of this heat main, a 50kW woodchip boiler, installed in 1996, runs on local forestry waste to provide space heating and hot water during the winter months.

CAT specified and project managed the system, and carried out much of the work in house. Our experience of installation, maintenance and of living and working with such a system has given us a valuable insight into the practicalities of wood fuelled heating schemes.

Proposals for Photovoltaics in Remote Locations For the Environment Agency

A survey of the Environment Agency's remote flood monitoring systems to determine their suitability for powering with photovoltaics. 171 sites in the south east of England were assessed. A database of the results has been produced on CD-ROM. A design has been prepared, including modifications to allow for remote telemetry at a selection of locations.

Energy Audit - Maria Assumpta Pastoral and Educational Centre

We were asked to assess the energy and water use of this convent. The Report included an analysis of the existing energy consumption of buildings, looking at the fuels used for space and water heating, and the types of boilers and heating controls in place. Recommendations were made to improve energy conservation, such as installation of more efficient equipment and control systems, zoning the heating systems, and suitable insulation and glazing. Electricity consumption was analysed, and measures relating to the use of appliances, lighting and computers were recommended. The report also detailed appropriate uses of renewable energy sources at the centre, such as solar water heating or solar photovoltaics, and recommended sources of funding. A presentation was also given to users of the building to report back on findings and recommendations.

Feasibility of installation of a wind turbine For Harlington Community School

Harlington Community School was interested in installing a wind turbine as an educational resource, and asked CAT to advise on possible turbines, issues regarding grid-connection and indications as to cost. Using available computer programmes and data, coupled with an inspection of the particular features of the site to assess the wind resource, CAT was able to investigate how the turbine would interact with the school and advise on the next stages required to progress the project.

Feasibility study of biomass heating system for a rural housing project For Powys Energy Agency

The Dol Llys Community needed to replace their ageing and inefficient space and hot water heating system. CAT carried out a study to analyse the heating requirement of the building, looking at usage patterns and heat losses from the building. From this CAT was able to advise on the most suitable size and type of boiler - in this case a pellet boiler with an output of 100kW - and on likely fuel consumption over an average heating season. Because of low summer heating requirements, a solar water heating system was recommended to meet the summer hot water demand.

Advice on alternative energy demonstration project For Lower Lea Project, London

The Alternative Energy Demonstration Project wanted to provide working examples, with interpretation panels, of renewable energy systems in public spaces. CAT looked at ways of demonstrating renewable energy technologies along a public tow path. Our study included utilising water (tidal and non-tidal), solar electricity and water heating, wind power and biomass, with both technical information and recommendations for installation and interpretation. Following CAT's recommendations, a wood chip boiler has been installed in a local industrial workshop, using waste wood from a film set scenery-maker. Lighting systems using wind and hydro have also been installed, and there are plans to put three further systems in place. A Energy Walk Leaflet is to be produced in the near future.

Feasibility study for hydro installation, Carmarthenshire For Greenheat / Powys Energy Agency

CAT was commissioned to assess the feasibility of hydroelectric generation at a farm in Carmarthenshire. The resulting study of available head and flow indicated that the installation would have economic and environmental benefits, and accordingly CAT has been asked to carry out full design work for the scheme.

13kW integrated photovoltaic roof For CAT's own site

In 1993, CAT had collaborated with the Energy Equipment Testing Service at the University of Wales to develop a system that would allow photovoltaic panels themselves to be used as the waterproof layer of a pitched roof. This resulted in the construction of four roof-integrated solar roofs in the UK. We wanted to install a solar roof at CAT so that we could test the system in use and monitor its performance over time, and reduce our use of a diesel generator during the summer. By incorporating ventilation ducts, it was possible to install the photovoltaic panels as the roof covering of our main office building. We designed and installed a grid connected 112m² array, consisting of 180 monocrystalline photovoltaic modules which we are continuing to monitor in accordance with the European Union's THERMIE programme.

Clwydian Eco-Farm Energy Audit and Action Plan, for Cadwyn Clwyd, Flintshire

CAT was asked to undertake a study looking at energy efficiency and renewable energy options for the villages of Treuddyn, Nercwys and Llanfynnydd in Flintshire. The study looked at a range of renewable energy technologies, with more detailed studies of an anaerobic digestion scheme for a farm, wood fuels for a school, a hydro scheme, windpower and solar water heating. Potential for energy efficiency measures for organisations and individuals was also identified.

Outline of renewable energy and energy efficiency options at Ystradlyn for CCW North west Area

CAT carried out an assessment of current energy use and the potential for energy efficiency measures and renewable energy for this small education centre at the foot of Cadair Idris. A short written report outlined current fuel use for heating and lighting, and looked at the potential for reducing this through improved lighting and insulation. We also undertook preliminary investigations into the potential for electricity generation from wind, hydro and photovoltaics, and for heating through a heat pump.

Sustainable Treatment Technologies and Renewable Energy for Small Waste Water Treatment Works, with the Water Research Company.

This collaborative project looked at the potential for using renewable energy systems along side sustainable sewage treatment at small waste water treatment works. The project involved several large water companies, interested in using sustainable technologies to enable them to meet impending discharge regulations.

Environmental Advice for Alyn Waters Environmental Centre, for Wrexham Council Countryside Service.

CAT was asked to assist in drawing up an environmental policy for the development of the Centre. CAT also provided more specific advice to the project team on energy efficiency and renewable energy, water and waste treatment and environmental building techniques and materials.

Water and waste treatment

Sanitation System for Viscri Village, Romania For Mihai Eminescu Trust

Using environmental technologies to rehabilitate this ancient Saxon village and so bring employment and prosperity to this very depressed area of Romania. By sensitively upgrading the sanitation facilities and renovating existing buildings using local labour and traditional materials, the village will provide training and employment and welcome 'Western' tourists without placing an additional burden on natural resources. The compost toilets throughout the village are now being upgraded and there are plans to install a reed bed system for the entire village to cope with grey water discharge.

Sanitation advice For a residential outdoor activity centre

Avon Tyrrell, an educational charity, needed help to upgrade the sewage treatment system for their 200-bed activity centre. They were required to achieve best practice as part of their Heritage lottery funding bid. We helped them assess their current water use, gave advice on potential water savings, potential for rainwater harvesting systems, made recommendations for an high spec, low tech sewage treatment plant and advised on how to use these systems as educational tools.

Water supply and sewage treatment advice For Lion TV's "Castaway 2000" programme

The programme filmed 36 volunteers trying to live as a community on the uninhabited Scottish island of Taransay. CAT was specialist consultant for provision of a water supply and sewage treatment system including compost toilets, for the selection of accommodation and shelter on the island, and for assessment of the feasibility of installing renewable energy systems. CAT also provided the venue for part of the selection procedure for the 'castaways', who were able to experience first-hand the independent renewable energy and sewage treatment systems at CAT's Eco-cabins.

Sewage system For single house in the far north of Scotland

CAT prepared design guidelines for a small 4-person sewage system in a remote location near Thurso. This sewage system was designed to use no energy or chemicals and incorporated the Aquatron™ separator, a composting system and a small reedbed. This system was designed to be robust and user friendly, whilst adhering to our client's best practice requirements - and all done without a site visit!

A Sewage treatment system for human and dog faeces For The National Canine Defence League, Ballymena

When CAT was asked to help, the staff were disposing of the dog poo into plastic bags which sat in a skip for a week before they were taken away. We provided guidelines for the installation and use of a sewage treatment system with reed beds that would be able to cope both with dog and human waste, and have also provided ongoing support and advice as the project progresses. The sewage treatment system is nearing completion and we are currently involved in a similar system for another of the League's dog homes in Wales.

Environmental Centres

Environment centre/Sustainability display at Gnoll Country Park Visitor Centre, Neath For Neath Port Talbot County Borough Council

CAT consultancy department were asked to tender for the work to carry out the design work for a series of displays at the Gnoll Country Park Visitor Centre. We were commissioned by the council Environmental Forum in conjunction with Countryside Commission for Wales who part-funded the project. We designed and helped to install displays covering the following subject areas: Biodiversity; Transport; Energy Efficiency and Waste and Recycling. The displays were launched in January 2007 and are now open to the public.

ECOS Environmental Centre, Northern Ireland For WR Taggart & Ballymena Borough Council,

Ballymena Borough Council developed ambitious plans for a town park on derelict land including a national centre for environmental advice, research and education. CAT advised on the nature of both the building itself and the exhibitions it should house on renewable energy technologies and sustainable development issues. Our design proposals won funding from the Millennium Commission. It is now open to the public.

Feasibility Study for Eco-Centre in Fermanagh For WREAN, Northern Ireland

A local group, including the local authority, an innovative local landowner, and the Western Renewable Energy Agency & Network required an feasibility assessment to progress their ambitious and imaginative plans for an eco-visitor centre that will demonstrate environmental principles and best practice. CAT worked with the group to develop their ideas and to test the feasibility of the concepts in practical and financial terms. The final report included capital and running cost estimates, analysis of the regional situation to predict achievable visitor numbers, descriptions of potential activities and displays at the centre, a zoning scheme for the centre to fulfil the different functions in an environmentally-friendly manner, comparative information from ecocentres around the world, and artist's impressions of a potential building to form the hub of the centre.

Exhibition for Liverpool Museum For National Museums and Galleries, Merseyside

This temporary exhibition covers "Environment" in its broadest sense. The target audience is families with young children. The exhibition consists of a sequence of "Zones" investigating the metabolism of our bodies, houses, cities and the Earth as a whole. A final zone has two interactive computers running a CD-ROM with information on many environmental themes, including contact details for relevant local organisations. The exhibition has proved extremely popular, and has also been hired by the Bethnal Green Museum of Childhood.

Sustainable infrastructure & buildings For Bristol Zoo Gardens, Hollywood Ecopark

CAT was commissioned to outline the key considerations for development of an ecopark visitor attraction that is intended to be as environmentally sustainable as possible within practicable limits. CAT advised on energy production and use, including appropriate renewable energy systems, use of wood waste, environmental transport systems and green architecture. CAT also advised on the design of exhibits to interest visitors.

Welsh Harp Ecopark – Feasibility Study into setting up an ecocentre centred around the Brent Reservoir

CAT was commissioned by the Welsh Harp Environmental Action Group to carry out a detailed study into the possibility of setting up an ecocentre on 170 hectares of diverse open land surrounded by dense urban hinterland. The study looked into all aspects of setting up such a centre, ranging from transport systems, eco-buildings, energy usage marketing, and environmental impact. It was supported by English Nature, the Metropolitan Housing Association and the London Devpt Agency and the Mayor of London's office.

Talks and Workshops

CAT consultants have carried out lectures, talks and seminars for the following organisations over the last year:

Schumacher Society
Society of Garden Designers
Groundwork Leicester & Loughborough
Soil Association
Sustainable Futures
Gaia Cooperative
WRAP – Government's Waste & Resource Action Programme
British Council – in Ukraine, Slovenia and Iceland

Some other CAT projects

Amoco Exploration (UK) Ltd Design of renewable energy systems for remote installations

Amoco Oil Company Design and full specification of aquatic plant system for treatment of sewage from construction workers

Association Eco Villages France Feasibility study for an eco-village development looking at all the needs of a large population and how they can be met in a sustainable way. including housing, community facilities, energy and water services.

Avalon Foundation Leading workshops relating to the introduction of demonstration Centres in Central and Eastern Europe

Billy Foyle A feasibility study for a proposed visitor attraction

Birmingham City Council Design brief for a proposed energy centre

Body Shop International (BSI) Feasibility of installing Renewable Energy Systems at their headquarters and elsewhere

British Rail Design of a prototype renewable energy system for lighting isolated stations

Earth Centre Energy study for a Millennium funded environmental attraction

EcoGen Proposal for development of grid-connected wood-fired power stations

Energy Equipment Testing Service Installation of two photovoltaic roofs

Energy Saving Trust Construction of energy-generating display bikes

Green Wood Trust Design of aquatic plant sewage treatment system

Highmead Project Feasibility Study into the use of Alternative Technology

Mid-Wales Homes Ltd Design and full specification of a reed bed system

National Trust Feasibility study of sewage treatment using reed beds at a remote visitor centre.

National Trust (Yorkshire Region) Feasibility Study into the provision of energy resources, water supply and sewage treatment at Gibson Mill

Neath Borough Council Feasibility Study for a Sustainability Centre

Soniarte Environment Centre Development of a renewable energy display

Wind Energy Group Site development of a 600kW wind turbine

Consultancy Staff

Engineering

David Hood

David has recently joined CAT's consultancy department to provide information on Renewable Energy systems. As well as working with the Engineering department installing and maintaining the on-site energy systems he lectures on various courses including the MSc in Advanced Environmental and Energy Studies.

Prior to joining the CAT team David worked at Sunseed Desert Technology in Spain, as the Appropriate Technology Coordinator. Here he operated and maintained the electrical systems for the site, powered entirely through renewable technologies, as well as training engineering students in Field Engineering and low-technology installation techniques. David also worked closely with the village water systems, including Hydraulic Ram Pumps and traditional irrigation systems, and provided consultancies and technical advice to visitors and clients. He has also worked in Nepal on rural electrification and micro-enterprise schemes with the Himalayan Light Foundation. He has a degree in Environmental Geotechnology, and has recently been training as a kacheloven builder.

Katie Brown MSc

Katie has joined CAT's engineering team to provide support both in the operation and maintenance of CAT's energy systems and to the consultancy team.

Having gained a Masters with distinction in Mechanical Engineering at Strathclyde University, Katie went on to work within the energy industry including two years with Arup and a secondment to Gilbert, Gilkes and Gordon, looking at improvements to component design.

Recent projects include a feasibility study for a micro-hydro scheme in Nepal and a study of renewable energy systems appropriate for an educational resource centre in Chester. She has also carried out preliminary studies for low and high head hydro installations and for biomass heating systems.

Rob Gwillim

Rob specialises in the design of renewable energy systems and is a lecturer for CAT's public courses on Wind Power; Hydro; Solar Water Heating; Small Scale Renewables; and Building Services. He teaches on CAT's MSc in Advanced Environmental and Energy Studies run jointly with the University of East London. He ran the renewable energy course at Brisbane University for 6 months whilst on secondment from CAT.

Rob was responsible for operation and maintenance of the energy systems at CAT including CAT's 15kW Polenko and 600kW MS4 wind turbines.

Rob project managed the construction of CAT's water balanced Cliff Railway. As well as extensive advice to clients, Rob has overseen numerous renewable energy projects for CAT including: installation of the 3&4 kW micro-hydro schemes; design of heating control systems including the installation of the 50kW woodchip boiler; installation of 13.5kW photovoltaic roof including negotiating with Manweb for a single-phase grid linked inverter connection; design of an integrated district heating system at CAT incorporating solar water heating, the woodchip boiler, heat storage and control systems.

Prior to his work at CAT, Rob worked as production manager for the Bradford Alhambra and prior to that as theatrical electrician for Reading Hexagon. He trained in naval architecture.

Rob is now an associate of CAT and works for the National Energy Foundation

Jacinta MacDermot

Jacinta MacDermot specialises in energy efficiency and renewable energy, particularly wood fuels, and has over 10 years experience in sustainable technologies. She was until recently the Head of Community Energy at Mid Wales Energy Agency, managing projects that included promotion of Wood Fuels in Powys, the installation of Photovoltaics on a school building, providing information and advice, awareness raising through events and presentations, feasibility studies, sourcing funding and liaison between clients, legislative bodies, funders and installers. She also carried out consultancy work and feasibility studies for a range of clients including the Forestry Commission, the Welsh Assembly Government and Powys County Council as well as community groups, businesses and individuals. Before joining Mid Wales Energy Agency Jacinta worked at the Centre for Alternative Technology, first as Information Officer and then as Consultancy Coordinator, covering the whole range of sustainable technologies that CAT promotes. She is now working as a freelance consultant

Eco-Centre Design

Peter Harper BSc

Peter is Head of Research and Innovation at CAT, and he has lectured extensively on organic gardening, recycling of biological wastes and alternative technology to the public and to university students. He runs a Natural Gardening course at CAT and lectures on the various courses on alternative sewage systems and water treatment.

Peter is responsible for CAT's display strategy and he leads CAT's consultancy advice on feasibility and design of new eco-centres and ecological landscaping. He has written articles and presented papers on a vast range of subjects including ecological design, green dilemmas for public gardens, technological risk and water efficiency. He is author of several books including *The Natural Garden Book*, *Radical Technology* and *Crazy Idealists?*

Peter has been a prominent figure in shaping the ideology of the emerging alternative technology movement in Britain. He has been consultant to UNESCO on alternative technology and has spent many years as a self-employed writer and lecturer. He has a degree in Zoology.

Biology and Sewage Systems

The Biology Department specialises in small to medium scale sustainable, low-energy wastewater treatment systems. These range from single households to small villages.

Marcus Zipperlen BSc MSc

Marcus is head of the Biology Department and has worked at CAT for three years. He advises on low energy robust treatment technologies for small-scale sewage treatment, water conservation, and small scale composting. He manages and develops the Centre's water and wastewater systems, as well as composting and biological research activities. Marcus also runs CAT's public courses on water and sewage treatment, and lectures externally on CPD and Masters courses.

Marcus holds an MSc in Water and Environmental Engineering from the University of Surrey, and a BSc in Environmental Science. He has extensive theoretical and practical experience in water and sanitation systems, research, and environmental management. He is particularly obsessed with composting (anything organic considered).

Judith Thornton MA DPhil

Judith worked in the Biology Department at the Centre for five years, and is now an associate of CAT and freelance consultant. She lectures on the Centre's sanitation courses and is a tutor on CAT's MSc course. Judith gives advice on a range of sanitation solutions and has particular expertise in the finding, cleaning and storing of water for drinking. She is author of 'The Water Book' for CAT.

Judith has a DPhil in Physiological Sciences from Oxford University, holds a range of practical qualifications in environmental conservation, the design of sustainable urban drainage systems (SUDS), and is a world champion at mountain bike bog snorkelling.

Building

Trish Andrews BSc (hons), Post Grad Dip, MSc

Trish has had a long affiliation with the Centre for Alternative Technology. She worked as Architectural Assistant on the building of the Top Station for CAT's water balanced cliff railway, a £180,000 project built entirely out of locally grown and re-used untreated timber. Trish has now joined CAT in the capacity of Environmental Building Consultant.

Prior to her work at CAT, she worked as an Architect specialising in community and environmental building, design and application. She also has experience in renovation of listed buildings and is currently chairperson of a local regeneration committee who are forming a Land Trust piloting rural communities to build sustainable low cost housing.

Trish holds a BSc (hons) in Architectural Studies from Strathclyde University, a Post Grad Dip in Professional Practice and MSc in computer Aided Building Design. She is a member of the Association of Environmentally Conscious Builders.

Blanche Cameron BA DipArch

Blanche specialises in environmental architecture, and works for CAT alongside her own environmental architecture business, advising on effective sustainable building design, renewable materials and their optimum use. She lectures for the University of East London on their MSc Architecture: Advanced Environmental and Energy Studies, which is run jointly with CAT at the Centre.

She is also a builder, and worked on CAT's new Autonomous Environmental Information Centre, undertaking groundworks, carpentry, structural rammed earth walling, roofing, and final fixing. She teaches on CAT's self-build course.

Prior to her work at CAT, Blanche worked with Fuhlbrugge Doyle Architects, Berlin, with responsibility for design work in sustainable housing and office projects across Berlin. She has also worked as an urban designer in Paris and on social housing in London, as well as doing work to tackle youth homelessness.

Blanche is qualified in architecture to RIBA Part 2, in Glasgow and Paris.

Support Staff

Phil Horton BEng MSc CEng MIEE

Phil's expertise includes engineering project management and IT system design.

Phil is CAT's Special Projects Officer and provides technical support to the Consultancy department. He is involved with running the Information department, and has developed a computerised public information system for CAT's Autonomous Environmental Information Centre, which opened in September 2000. He is presently project managing a major new development for CAT, a £5 million facility for environmental teaching, research and eco-business innovation – Welsh Institute for Sustainable Education.

After graduating in Engineering, Phil worked for the BBC for five years, project managing broadcast systems installations. He then worked part-time whilst doing voluntary work and studying for his MSc in Environment and Development.

Paul Allen B.Eng (Hons) RSA

Paul arrived at the Centre for Alternative Technology in 1988 as a renewable energy engineer. He worked from 1990 to 94 in one of CAT's spin-out companies Dulas Engineering, where he developed and manufactured a wide range of renewable energy systems including solar powered medical systems for use in Bosnia, Eritrea and many other parts of the world.

Paul returned to CAT in 1994 in the capacity of Media Officer and took the role of Development Director in 1998. An electrical engineer by training, Paul is author of the independent energy book 'Off the Grid'. His current interests include; how local and global economies interact, exploring how Gaia Theory can help prioritise and target environmental solutions and developing techniques for engaging the youth. Paul has lived and worked in sustainable co-operatives for many years, and is also a founding director of the community development organisation the Eco-Dyfi (winner of the 2002 Campaign for Take-Off Award for 100 communities for 100% renewable energy)

Nicole Solomons BA (Hons)

Nicole is responsible for the business development and day-to-day running of CAT's consultancy services, deploying CAT's expertise on environmental technologies for the public and private sectors. She is the first point of contact for those requiring consultancy services, and co-ordinates and manages projects using both CAT and associated consultants.

She has a degree in Political Economy from Greenwich University specialising in the economics of developing countries. Previous positions include time spent working at the House of Commons, research and speech writing for the Amalgamated Engineering Union and Programmes Coordinator for Earth Action Network. She also spent many years working as a Production Assistant in the events industry.

Education

Our Education Department has been involved in a wide range of projects for various bodies.

These have included:

- Writing educational materials
- Jointly producing publications
- Providing training sessions for teachers and teacher training students
- Outreach work with schools
- Contributing to feasibility reports for potential education centres
- Providing teacher training and writing support material for exam boards
- Delivering workshops at conferences for:

Association for Science Education

Learning through landscapes

Design and Technology Association

Education Business Partnerships

Science Museum, London

Geographical Association

Our expertise includes provision of practical and theoretical workshops on wind, water and solar power and exploring what sustainability really means and how it relates to the lives of young people. We have experience of exploring subjects through the medium of theatre, which includes devising appropriate dramas and role play activities with students and teachers.

We relate the potential activities to their place in the curriculum in the appropriate subjects and levels. At CAT our experience covers all ages, from infants to teachers, and includes all types of special needs education.

Education Client list

INSET
Essex LEA
Powys LEA
Shropshire LEA
West Sussex LEA
Staffordshire LEA
London Examination Board
The City University, London/Engineering Council
Bristol Energy Centre
Mid-Glamorgan & South Glamorgan LEA
Cheshire LEA
Gateshead Norway Environmental Centre
South Bank University
Clwyd LEA
Goldsmith College
Stockport and High Peak TEC

Courses for teachers

Solar, Wind & Water Projects in the National Curriculum
Environmental Education
Design & Technology & Third World Projects
Renewable Energy for GCSE & A level
Energy, sustainability and the environment

Lectures and practical activities for teacher training

John Moores University
Bath University
Normal College, Bangor
University of Portsmouth
Charlotte Mason College, Ambleside
Department of Education, University of Aberystwyth
Carmarthen College
University of Central England
University of West of England
London Borough of Richmond
Eltham High School
The Science Museum, London
Learning through Landscapes

Consultancy

Birmingham Nature Centre
Bath University
Pembrokeshire College
Welsh Joint Education Committee
Intermediate Technology Development Group
Centre for Sustainable Energy

Education Staff Profiles

Joan Randle BA PGCE

Joan has worked in the field of education and courses at CAT since 1982, first in the role of schools Education Officer and for the last 10 years as head of our courses department. Joan co-developed our pioneering Eco-cabins project which provides first hand experiential learning about sustainability to educational groups.

Over the past 10 years Joan has developed our courses department with great vision to provide a wide range of environmental training courses for adults, corporate training, the hosting of national and international conferences, and our greatly successful on-site MSc Architecture: Advanced Environmental and Energy Studies run jointly with the University of East London.

International links have also been developed with, for example, Ritsumeikan University, Kyoto, Japan. CAT has a Memorandum of Co-operation for the exchange of staff and students. The Centre for Global Education and Research sends students annually for a 5 week residential course.

Before joining CAT, Joan was a researcher at the University of Accra, Ghana, taught Sociology and History in the West Midlands and was an external examiner for the Associated Examination Board

Ann MacGarry BA PGCE CCA

Ann has been at CAT since 1989 in the role of Education Officer. In this time she has been responsible for writing educational material, designing renewable energy educational kits, lecturing and providing workshops throughout the UK as well as teaching groups of all ages about sustainable energy and general sustainability issues at CAT.

Ann developed a range of educational activities which use and explain the Ecological Footprint to children and adults. She co-ordinated the educational run-up to the World Summit on Sustainable Development in Johannesburg and supported and educated young people whilst out there.

She is currently developing these footprinting activities further as well as running the Sustainable Design Award in Wales. This scheme, which is run in partnership with Practical Action (formally ITDG) provides resources and training for Design and Technology students and teachers.

Ann taught English in Kenya for two years before working as an Educational Welfare Officer in London for several years. During this time she was also involved in development education projects. She then taught Design & Technology in Inner London comprehensives for eight years before coming to CAT.

Christine McLennan BA PGCE

Christine joined CAT in 1993 and is now jointly responsible for running and tutoring residential courses at the Eco-Cabins. She has many years experience of teaching environmental subjects through the medium of drama.

Deirdre Raffan BSc PGCE

Deirdre joined CAT as an Education Officer in 1999, with joint responsibility for running and tutoring residential courses at the Eco-cabins.

Deirdre's wide range of practical experience includes working with children in out- of-school environments, from adventure playgrounds and out-of-school clubs to teaching in hospital and managing childcare facilities.

Deirdre was an Information Officer with Friends of the Earth on a large city recycling project before coming to CAT as a volunteer in 1987. She has had personal experience of living with renewable technologies for over six years and amongst other interests has studied organic agriculture.

CAT Corporate Training

CAT also runs a wide range of individual and corporate training in environmental techniques.

Our flexible approach allows us to prepare tailor-made courses for corporate bodies and other organisations and institutions to satisfy each company's particular needs.

CAT's Corporate Client List includes:-

Red-R Training
Nottingham Eco-Works
Body Shop plc
Network in Ireland for Ecology, Energy & Economics
Binny & Partners
Sonairte Irish Ecology Centre
BRESCU Building Research Establishment
Co-options Ltd Community Co-operative
Knightstone Housing Association

Training for individuals

Our short courses programme covers small-scale wind, water and solar energy; organic growing; alternative sewage systems and many other topics. The emphasis is on practical advice from those who have many years hands-on experience of the subject matter. Participants are a mixture of individuals with an interest in the subject, and professionals who require training for work reasons.