Capability Statement

Centre for Alternative Technology Consultancy Services

The Centre for Alternative Technology has been promoting the use of sustainable technologies for more than 25 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

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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Corporate Client List

Local Authorities
Ashfield District Council
Ballymena Borough Council
Birmingham City Council
Dyfed County Council
Gwynedd County Council
Neath Borough Council
Northumberland County Council
Wansbeck District Council

Companies
Amoco Exploration (UK) Ltd
Body Shop International plc
Discover UK Ltd
EcoGen Ltd
Lion TV
Mid-Wales Homes
Pendlebury Bait Ltd
Wind Energy Group
U.K. Waste Management Ltd

Colleges
Pembrokeshire College
University of Wales, College of Cardiff

Government Departments/Agencies
British Rail
Energy Technology Support Unit
Environment Agency
Welsh Development Agency

Charities, Trusts and Voluntary Organisations
Avalon Foundation
Bristol Zoo Gardens
Earth Centre
Ecoville
Energy Saving Trust
The Green Wood Trust
Groundwork, Merthyr
Highmead Project
Lower Lea Project
Mihai Eminescu Trust
National Botanic Garden of Wales
National Canine Defence League
National Museums, Liverpool
National Trust
R.S.P.B.
Sonairte, Ireland
Youth Hostel Association

Some Recent Projects

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.

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.

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.

Feasibility study for hydro installation, Merthyr Tydfil
For Groundwork, Merthyr & Rhondda Cynon Taff

To produce a feasibility study of the potential for a micro-hydro grid-connected system. Our report assessed the economic and technical viability of three possible options, chosen for land ownership reasons and for technical limitations. Groundwork Merthyr hopes to go ahead with the installation of a micro-hydro scheme in the near future.

ECOS Environmental Centre, Northern Ireland
For W.R. & R.T. 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 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.

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.

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, 120m_ 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!

Sustainable building and renewable energy advice
For Solheimar Community, Iceland

On-site advice and training in Iceland plus engineering and architectural advice at CAT to guide development plans for the Solheimar community, including building of a new conference centre.

Sustainable agricultural development
For Science Promotion Group, Biratnagar, Nepal

Tailored course for the Nepalese Science Promotion Group following fact-finding visit by CAT to farming communities in Nepal. The aim is to consolidate and encourage existing organic farming methods over and against introduction of chemical-intensive environmentally devastating agricultural methods.

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.

Advice on proposed environmental visitor centre
For Rother Environmental Group, Rye, East Sussex

CAT provided an overview of the issues that the group would need to resolve in order to take their ideas further, based on our own experience of running a successful visitor centre for over 25 years, plus our involvement with other environmental centres around the world. At this early stage in the project, CAT's guidance was to help develop a strategy for bringing the group's ideas to fruition, rather than looking at technological details of the project. The group is now seeking funding for the project.

Construction of private house to high ecological spec.
Taiffordd Fawr, Furnace, Machynlleth
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 LPG. 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.

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.

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.

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!

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.

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.

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.

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 as 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 112m_ array, consisting of 180 monocrystalline photovoltaic modules which we are continuing to monitor in accordance with the European Union's THERMIE programme.

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 Millenium 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

Rob Gwillim
Rob specialises in the design of renewable energy systems.

Rob is 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 is 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.

Clive Newman
Clive has worked with CAT since 1986, ranging from design, construction and maintenance of the Centre's displays, to maintenance of the renewable energy systems, project management, and lecturing to university and college students. His wide range of experience has contributed to a number of projects which require an inter-disciplinary approach.

Prior to his work at CAT, Clive worked for eight years as a Housing Advice Worker for Birmingham City Council, before which he spent six years as a technician for Birmingham Education Department. Prior to that he was a production engineer at Joseph Lucas Ltd for fifteen years, following an apprenticeship with that company.

Building

Cindy Harris BA
Cindy joined the Centre for Alternative Technology in 1986 and has worked on all CAT's major timber frame buildings. In 1991 she ran the team which built the Top Station building for CAT's water balanced cliff railway, a £180,000 project built entirely out of locally grown and re-used untreated timber. Since then she has project managed several other trail-blazing ecological buildings, including CAT's new £600,000 Autonomous Environmental Information Centre (AtEIC) and external projects including the YHA class room at Borth and an eco-house at Taiffordd. In 2001 she was awarded Honorary Membership of The Royal Society of Architects in Wales.

Cindy teaches CAT's Self Build course and other courses as well as lecturing to university and specialist groups. She is an expert on environmental building materials.

Cindy has written two books with co-author Pat Borer: Out of the Woods and The Whole House Book. During 1997 she spent six months in Australia, teaching a course on Energy Efficient Building Design.

Prior to her work with CAT Cindy worked for six years for a Birmingham Residents' Association, advising on and carrying out home improvements. As well as her City & Guilds certificate in Carpentry and Joinery she has a degree in sociology and worked as a teacher and counsellor in between having two children.

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.

Biology and Sewage Systems

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

Louise Halestrap BSc MPhil
Louise has over ten years of experience in the organic waste management sector. She leads CAT's consultancy services on water treatment, conservation and recycling, and solid waste management. In addition she is responsible for managing the Centre's independent water supply and various ecological sewage treatment systems including constructed wetlands, compost toilets and hybrid systems.

Louise runs CAT's courses on sewage solutions, including managed wetland systems and waterless toilets, and she lectures to a wide range of students. She is co-author with CAT's Peter Harper of the definitive book on ecological toilets *Lifting the Lid*.

Prior to her work with CAT Louise was Director of Research for a London-based organic waste management company. She has an MPhil in the microbial ecology of composting systems and a BSc. in Environmental Biology.

Judith Thornton MA DPhil

Judith lectures on the Centre's sanitation courses and is a seminar leader for CAT's MSc course. Judith gives consultancy advice on a range of sanitation solutions and has in-depth experience of all the types of water and sewerage systems operated by CAT..

She currently writing *The Water Book* with Louise Halestrap.

She has a DPhil in Physiological Sciences from Oxford University, and practical qualifications in environmental conservation.

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.

Consultancy Co-ordinator

Dr Ian Taylor BA PhD
Ian joined the Centre for Alternative Technology in 2001. He is responsible for business development and day-to-day running of CAT's consultancy services, deploying CAT's expertise on environmental techniques and technologies to the public and private sectors. He also undertakes policy work for CAT on renewable energy and other environmental issues.

Prior to coming to CAT Ian worked for 4 years with Greenpeace UK as Scientific Political Adviser. He was responsible for development and propagation of policy regarding the interactions of science and the environment, spanning such issues as energy, chemical industries, agriculture, and waste. For his last two years he was internally seconded full time to work on renewable energy policy as renewable energy campaigner.

Before that Ian worked for 6 years for Oxfam as a campaigner, running fundraising and campaigning projects on issues of international development.
Prior to that he was an exploration geologist with Shell, doing prospect identification and evaluation and technical advice to operational projects. He has a PhD in Sedimentary Geology, and a BA in Natural Sciences.

Support Staff

Phil Horton BEng MSc CEng MIEE
Phil's expertise includes engineering project management and IT system design.

Phil is CAT's Technical Information 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 facility for environmental teaching, research and eco-business innovation.

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.

John Urry BA
Since joining CAT in 1982 John has been responsible for graphic design of all the site displays and the design of a wide number of CAT's publications and its quarterly journal *Clean Slate*.

John is also an accomplished illustrator and model-maker. He studied Graphic Design at Wrexham College of Art and Design and also has a degree in Politics.

Charlotte Cosserat BA
Charlotte joined CAT's Information department in 1996. She coordinates CAT's information service is particularly involved in giving practical advice on all aspects of CAT's work to the public and keeping up to date with environmental developments.

For CAT consultancy she has been involved in putting together a large feasibility study for a proposed French Ecovillage, as well as many smaller consultancies for which her input has included research and report writing.

Charlotte graduated in English and Philosophy and has worked for various environmental organisations.

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.

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 Norwood 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 been Education Officer at CAT since 1982 and has been jointly responsible for developing the educational facilities during that time. She co-ordinates all adult and corporate training.

Before working at CAT, Joan taught History & Sociology in the West Midlands and has spent one year as a research assistant at the University of Accra,. She has also been an examiner for the Associated Examining Board.

Ann McGarry BA PGCE CCCA
Ann is responsible for developing tuition for day visit groups and for writing and updating CAT's educational publications, as well lecturing and providing workshops throughout the UK. She is currently on the Council for Environmental Education's Executive Committee.

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 in 1989.

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.