

**SCOTTISH SUSTAINABLE CONSTRUCTION FORUM MEETING**

**Held on**

**FRIDAY 5 SEPTEMBER 2008**

**in**

**GREAT GLEN HOUSE, INVERNESS**

**Present**

As per attached List

**Apologies**

As per attached List

<b><u>ITEM</u></b>	<b><u>MINUTE</u></b>	<b><u>ACTION</u></b>
<b>1.0</b>	<b>INTRODUCTION</b>  Sheila Currie, Scottish Natural Heritage Greening Officer, welcomed members of the Forum to the meeting. Sheila stated that she was willing to give the members a Tour of Great Glen House once proceedings had ended.  Sheila stated that Joe Moore, Director of Corporate Services, was unable to welcome members to the Meeting due to a prior engagement but intimated that he would attend later to give an update on Great Glen House.	
<b>2.0</b>	<b>PRESENTATIONS</b>	
<b>2.1</b>	<b><u>Sheila Currie - Scottish Natural Heritage Presentation - Sustainability Aspects of the building design, construction waste, procurement, furniture etc., of Great Glen House Scottish Natural Heritage/Deer Commission Building</u></b>  Sheila Currie is Greening Officer for Scottish Natural Heritage, responsible for developing and managing the Environmental Management Programme which covers all of SNH's operations and offices - from Shetland to the Solway, from Lewis to the Borders.  Sheila originally trained as a Geologist and has worked in practical Nature Conservation, designing Training Programmes and managing Grants Programmes before joining SNH (a long time ago)  Particular personal interests are in finding sustainable, post-Carbon solutions at employer and community scales.  Sheila stated there were all types of opportunities and challenges in building Great Glen House and that her presentation would show the improvements since moving in 2 years ago. It would also show how they are performing against the design targets they set for the Architects.	

This was a design and build project. SNH were the client but not completely in charge of the project. At the time of building they did not know if they were to own the building or were to be tenants therefore the building was not to be an expensive building in case other tenants moved in.

They made very clear demands at the start of the project as to what the building should be. Transport was one criteria built into the spec due to the location of the building.

**Design Criteria** - This was output led - SNH defined results, not methods, and sustainability was a key part of outputs. High standards were set for Carbon, Energy, Water, Airflow, Light, Air-tightness, Materials (natural, and recycled). Open-ness, efficiency and flexibility were other design criteria, with the building achieving a BREEAM 'Excellent' rating. They had to have a building that was flexible and in which they could re-arrange the work space. The building had to be very efficient and open plan.

There was a previous building on the site and they used approximately 30% of materials from that building e.g., slates, wood, steel etc. A number of natural materials were also used such as wood, stone and paints.

Robertsons, the builders, operated an Environmental Management System on the site.

Most of the wood used came from a radius of approximately 40 miles.

**Energy Criteria** - It had to be a low carbon building and Keppie's, the Architects, achieved this.

Natural light and ventilation was critical although there is some air conditioning for IT Servers. Solar panels are situated on the roofs.

**Transport Criteria** - Within the planning conditions, Highland Council required the developers to allow for money to be put into the local bus company for a period of 3 years to fund a bus service which would run to Great Glen House car park. The bus company were more than happy with this initiative. Staff were surveyed, pre move, in regards to their travel requirements as people were worried on how they were going to get to work. This was seen as a critical element. The bus company were provided with the information to enable them to best suit the required arrangements. Instructions on how to get to Great Glen House are also available on SNH's website e.g., by rail, car, cycling.

New road junctions, paths etc., were also required as was a large bike shed with lockers and showers. Car sharing was a very important criteria.

In terms of waste, SNH have a contract with a local Waste Management Company who recycle 80% of solid waste which is removed. You do require enough space to recycle and store.

There are opportunities to change the corporate culture e.g., no bins at work stations but recycling containers situated nearby.

SNH had quite robust greening targets with a projection of what they wanted to do. All the contracts had sustainability criteria written in to them and all of the contractors had to deliver the best price over the whole life of the building.

Herman Miller chairs and furniture were used throughout the building and the Company take the chairs back at the end of their life for recycling. The chairs are more expensive to buy but after initial outlay the costs are very low.

Much of the trees surrounding the area were retained. There is also a rainwater harvesting system. Larch Cladding was used and this was sourced locally. The building has natural air circulation. Acoustic membranes were used to reduce echo.

The Atrium provides space for several purposes e.g., Exhibitions, public, community staff and visitor use.

SNH were the main client. The Deer Commission for Scotland moved in early as tenants but will be merging with SNH. The University of the Highlands & Islands (UHI) and Paths to Health also have staff working in Great Glen House.

Sheila stated that the Chairman, Directors etc., do not have a dedicated office. The offices are all open plan with Managers' located at the far end of the building to reduce the impact of "passing trade".

There is a Resource Room per floor with no photocopiers, faxes etc in the office area. Recycling containers are situated throughout the main office in which confidential papers can be disposed of. Recycling bins are also situated in the Canteen.

They have learnt that sustainability does bring business benefits and involving the staff makes it work - lower absence, performance improvement.

Sheila stated it is a once in a lifetime opportunity to design such a building and having an Environmental Management System in hand was extremely helpful.

The Carbon Trust has carried out a low carbon case study. The BREEAM post-occupancy study is still ongoing. We expect we'll drop a couple of points because of some problems with commissioning.

As there was inadequate post occupancy support there has been a steep learning curve. For the first 12 months there wasn't sufficient data to determine how systems were operating.

Initially, problems were encountered with the RW system but through working with the designers and suppliers these have been resolved.

Onsite composting has been a bit problematic due to various animals within the area. The biodiversity of the site has been improving all the time and a biodiversity group has been set up within the staff.

Open working and feasibility operates very well. Staff were concerned at the beginning but now appreciate this. You require to organise how staff are placed within the organisation. This has led to more walking about and speaking by staff than sending e-mails. There is a greater understanding of what the organisation is doing.

Rob thanked Sheila for her presentation and asked for questions.

**Q1**      **Question**

What is the finish on the main roofs ?

**A1**      **Answer**

It is a zinc finish.

**Q2**      **Question**

In regards to the heating problem encountered, did you look at the other end where you could close the heating down ?

**A2**      **Answer**

Yes we did.

**Q3**      **Question**

Do you have any Energy Saving figures comparing Great Glen House to other buildings of similar size ?

**A3**      **Answer**

BREEAM scores and figures in the Regional Report do not include the server rooms.

- All energy is less than 200, 186 including the server rooms.
- CO<sup>2</sup> emissions    39
- water use            6.4

We expect these figures to improve over the years.

**Q4**      **Question**

How sustainable are you in your finishes ?

**A4**      **Answer**

Sustainable finishes include chairs; carpets (which have recycled backing); linseed oil paint used; no treatment on the wood. Desks were of a similar spec as the seating i.e., made from components that are recyclable and sustainable.

**2.2**      **John Easton - Sustainability Consultant, SMC Parr Sustainable Futures Presentation: Carbon Management of the Glasgow 2014 Commonwealth Games**

John is an Architect and Sustainability Consultant. He joined SMC Parr as a project Architect in 1990, and now leads their Sustainable Futures venture.

SMC Parr Sustainable Futures is a research, development, and advice service provided by SMC Parr Architects. The service delivers guidance from dedicated specialists with the knowledge and experience needed to provide practical support for the definition and achievement of our sustainable futures.

John is accredited by the Carbon Trust to provide Low Carbon Building Design Advice to public and private sector clients. In that capacity he has recently been appointed by the Glasgow Commonwealth Games Committee to provide Carbon Management advice for the delivery and legacy phases of the 2014 games and is assisting in developing the Brief for the Village.

John stated that he is an Architect by profession with an interest in sustainability which goes back to his days at College during the 1970's.

Glasgow City Council have been his main contact for the Village through their request for assistance from the Carbon Trust in regards to Carbon Management.

The Brief for same is as follows:

- Set out clear carbon requirements for the technical specification of the permanent buildings, which will be issued as part of the project brief for the Athlete's Village.
- Provide a clear methodology for evaluating the resulting tender submissions once they have been submitted to the Council for evaluation in early 2009.
- Suggest a programme for monitoring the delivery of each carbon requirement at key stages within the design, construction and legacy process (using RIBA stages).

The village is for the residential accommodation for the competitors and organisers, along with tented facilities which are a required part of same. An energy network also requires to be constructed.

John intimated that SMC Parr's involvement does not include for the Games venues at the moment.

One of the key stakeholders is the Scottish Government.

There were various process stages and a number of workshops were held with a Carbon Management Process Man being produced.

One of the legacy objectives for the Olympics is that the lessons learned from that event should be passed on to other events. A number of the Olympic buildings were built as temporary buildings.

The first thing you require to do is to deliver a programme. In the case of the Games the houses built within the Village will be reconfigured, with a further 500 dwellings built, and these will be given over to Glasgow residents once the Games have been held.

You require to agree the physical scope and identify cross cutting issues e.g., climate change, waste, biodiversity, health etc.,

Emission boundaries require to be agreed - how far do you go in regards to footprinting. You also require to agree reporting and verification standards.

Commitment in regards to quantities of recycled materials is also required.

It was noted that 2 new Building Regulations will be introduced between now and 2014 and therefore setting standards and finding benchmarks is a real challenge.

There is a need to identify modelling tools etc., which will produce the benefits looked for. John stated the WRAP Toolkit was a very good piece of equipment for assisting in the early development of the Plan.

The Commonwealth Games project has previously gone through a footprinting exercise and after the Bid programme this will be examined again.

When SMC Parr liaise with GCC in regards to design there is a Carbon Trust representative in attendance also.

There are 2 Modes i.e., Games Mode and Legacy Mode. In the Games Mode Garages in the houses will become an additional bedroom and then transferred back to a garage in the Legacy Mode.

Natural Gas was chosen as the primary energy due to predictability and continuity of supply.

An emissions target overall will be set.

Emissions Boundaries :

**Scope 1** - Fossil fuel combustion from an associated distributed energy network - excluding biomass fuel (if selected, which is regarded as zero carbon), but including natural gas, and energy from municipal waste (if selected), although these may ultimately be excluded as double counted upstream-emissions.

**Scope 1** - Fossil fuel combustion from domestic heating (where domestic solid or multi-fuel stoves are employed as a secondary heat source or for cooking).

**Scope 1/2** - Electricity requirements for the Village, which might be split between locally generated and grid electricity. These may be classified wholly as Scope 2 emissions or the locally generated electricity may be classified as Scope 1 (as defined by the Greenhouse Gas (GHG) Protocol).

**Scope 3** - Fugitive emissions from refrigerants - agreement will be need on how / whether to treat domestic refrigeration.

For their benchmarking Targets they looked at Sullivan. It is envisaged to save 60% more than the 2007 standards.

SMC Parr's were asked to look at EcoHomes for benchmarking. It is hoped to achieve a 70% reduction in carbon emissions compared to the average UK building of its type. The 70% reduction was used in respect to historic built buildings. 60% is the true target.

Other methods were looked at e.g.:

- Energy Use (Designed) - Product
- Energy Use - Construction Process
- Commercial Vehicle Movements - Construction Process

**Novel Requirements :**

**Marginal Fugitive Emissions** - We wanted to determine the gases omitted from materials to be used e.g., Paints, Plastics, Sealants, Adhesives, Preservatives Retardants, and blowing-agents for foamed insulants containing VOCs.

**Embodied Energy Benchmarking** - Bath University's Inventory of Energy and Carbon Materials database Empty Homes Agency benchmark study

**Carbon Sequestration** - Forestry Commission data used to quantify carbon capture and storage

A study has been carried out by the Forestry Commission in regards to carbon locked in the different types of timber.

Affordability is a key issue in regards to the design of houses. You require to look at the Householder Cost Benefits e.g.:

- Illustrate the cost / benefit to residents of the energy efficiency / low carbon solutions that are proposed.
- In particular, illustrate the Capex and the resulting mortgage / rental costs that would arise from specific features, alongside the benefit from the energy cost savings that these would produce on a monthly basis (illustrations to be in Legacy mode and based on a comparison with prevailing retail gas and electricity prices and emissions factors).
- Prepare cost / benefit illustrations for each dwelling type and for each different form of tenure as appropriate.
- Include the resulting cost-benefit analysis in a simplified form with sales / promotional materials and with the Home User's pack

John reported that GCC are currently going through the second stage of the Tender process.

Rob thanked John for his presentation and asked for questions.

**Q1**     **Question**

Are to trying to simplify or unify the issues of benchmarks etc ?

**A1**     **Answer**

Yes. This has been discredited, taken over other Nations. You have to break this down to a Local Authority level. You should also be setting carbon budgets. The relevant benchmarks relate to the 2007 Regulations but in fact going back to the 1900's.

**GREAT GLEN HOUSE**

**Update from Joe Moore, Director of Corporate Services, SNH**

Rob introduced Joe Moore, Director of Corporate Services, SNH, who was unable to join us at the beginning of the meeting but wished to give an update on the Great Glen House building.

Joe suggested we don't underestimate the impact of moving from traditional to open plan offices.

This was a cultural move for the 55 staff who relocated. The Edinburgh building from which they moved was an old building - small rooms etc..

The new offices are all open plan - even for the Chief Executive and Directors.

The Inverness Offices were two old Mansion Houses which had been converted into a number of small/medium offices.

The 100 staff had come from totally different office backgrounds with some considerable fears. A working group was established with the staff to look at space management, meetings etc. Through this there was generally a slight relaxation but not total.

Two years on, a small number of staff still have some issues e.g., background noise, although by using the building facilities more e.g., library, meeting rooms, such concerns are much diminished.

The building offers options - it is your office, not your desk. Staff have a library, canteen etc., therefore they should use the space available. Some of the break-out spaces have grown and are being utilised quite a bit - mostly for informal meetings. The demand for official meeting areas is therefore lessened.

The space planners advised that to achieve a real open plan culture you require 5 areas to achieve this. On the whole people like working here.

There are some issues in regards to technical aspects e.g., heating control. The problem is more difficult for the staff based on the top of the building in the atrium. Blinds were not installed in this area due to the air circulation system. Joe stated they are now experimenting with vertical blinds. It is hoped these will improve the situation.

They have a new Building Management System which takes all the readings temperature and CO2)and operates the opening/shutting of windows.

The technology is quite low key.

The building cost approximately 10-15% more than a conventional building but makes a return on this from the energy profile. Lease back cost was £1.1M per year as opposed to circa £15M to purchase (both including fixtures and fittings).

It was noted there are some constraints in the commercial market of these types of buildings. There are genuine issues though between purchase and lease. You are not going to build a building like this for a landlord looking to deliver short-term leasing offerings or where return on investment criteria are short. The appeal of sustainable buildings is far greater where organisations accept longer returns on investment and where the environmental gains align with their business strategy, delivering reputational gain.

A lot has been learned from the building and the lessons are now being applied to another building in Golspie where 5 agencies will come together. In this case the plans from another sustainable building (Forestry Commission) have been used as the basis for this project.

RP thanked Joe for his update and asked for questions.

**Q1**     **Question**

Do you use white noise ?

**A1**     **Answer**

No. Personal experience of such systems in another organisation increased absence levels e.g., headaches.

**Q2**     **Question**

Has your sickness level improved ?

**A2**     **Answer**

Previous background monitoring of absence related to an archaic system. There are new systems in place now showing about 4% across the organisation, 50-50 long term/short term. It would be rash to project what existed in the previous offices.

The chairs in the building cost approximately £300 each and absence through back pain has diminished significantly compared to that encountered in other offices. SNH are now looking at installing these chairs in their other offices. The chairs are now reaching 2½ years old and are in continual use. They are easy to clean etc.

**2.3**     **George Hay - Architect, East Lothian Council**  
**Presentation : Windygoul Primary School, Tranent**  
**Low Carbon Building**

George is an Architect, employed by East Lothian Council since 2000. He was previously in private practice in UK and Germany.

George is currently working on new build primary and nursery schools. He is a member of the in-house design team responsible for Windygoul Primary School in Tranent, which was winner of Carbon Trust in Scotland's 'Low-Carbon Building of the Year' Award 2008.

George reported that he is a member of the Project Team at the East Lothian Council who have kept primary school work in-house and traditionally procured. ELC had a secondary school PPP project which encountered difficulties due to the Contractors' going into liquidation.

Tranent is a former Mining town but is now more of a dormitory town for Edinburgh.

George stated that the site took into consideration the new roads etc., which had to be built. The site is approximately 4 hectares in size. There was a Client brief which

included sustainability.

There is a cycle and walkway linking the old part of the town to the new school. It is a 2-stream school. The South side is to be kept free for future extension.

A Nursery is included to allow for the growing housing areas around the School.

The School is largely constructed from pre-fabricated timber cassette panels. The Games Hall has a steel frame and the Dining Hall has steel columns with Glulam beams. Natural ventilation is used and, where possible, natural materials which are recyclable and renewable have been used.

Robust, low maintenance materials and finishes have been specified. The classrooms face East or West and break-out spaces are available from the classrooms; cross ventilation is achieved; part of the building is used for community use and there are community changing rooms for the football pitch. Sprinklers have been installed in the school, which is now standard for new builds in East Lothian. Pre-fabricated timber panels, filled with Warmcell insulation were used.

The Council have purchased a Thermal Imaging camera and will use this on the building. No airtight testing has been carried out on the building but they propose writing this into future specs.

**Thermal Modelling** - External Consultants were used in this instance. They have achieved the CIBSE best practice target but not the simulation prediction. On some days the Dining Hall was quite warm, especially during the Summer period but children are not in School at this time.

Sensors are located throughout the school for monitoring the temperature. It was noticed that there were two rooms registering low temperatures. These were the community changing rooms where children were opening the electrically operated rooflights. These have now been provided with key operated switches.

Energy consumption can be monitored and shows peak consumption at lunchtime from Monday to Thursday which reduces on Friday - presumably due to cooked lunches not being prepared on this day.

The School has a sedum roof, which was specified in part, to control rainwater run-off and reduce surface water discharge from the site.

**Internal Finishes** - gypsum fibre board, linoleum, 100% recyclable carpet, natural timber and breathable non-allergenic mineral paints. Experienced some problems with eco paint when it came to re-touching some area.

**External Timber Cladding of building** - Siberian Larch used.

**Aims of the design were :-**

Landscaping - Trees planted, but would have benefited from a more comprehensive soft landscaping scheme, particularly in the courtyard. Subsequent projects have addressed this issue.

Acoustic Panels in the Games Hall.

Dining Hall has integrated photovoltaics which provide approximately 14% of the schools' annual electricity consumption. Display panels have been installed in the Dining Hall to allow children to see the savings made.

**External Environment :**

- Courtyard providing a quiet area for learning and safe exploration of water. To be developed by school.
- Outdoor 'classrooms' engaging the environment in the curriculum.
- Areas for play and exploration; woodland, wildflower, and habitat areas, as well as playing field for use by school and community.

RP thanked George for his update and asked for questions.

**Q1**     **Question**

Were the structural frame panels assembled on site ?

**A1**     **Answer**

They are factory assembled and bolted together on site. They come with all the door and window openings cut out.

**Q2**     **Question**

How are they made up ?

**A2**     **Answer**

Engineered timber beams with Panelvent and Paneline sheathing, factory filled with cellulose insulation.

**Q3**     **Question**

Do you irrigate the Sedum roof ?

**A3**     **Answer**

No, you do not have to irrigate this, however there is an irrigation pipe at the top of the roof slope, should irrigation be required.

**Q4**     **Question**

Is the timber cladding insurable ?

**A4**     **Answer**

The building is insured. The cladding has been treated with fire retardant material.

**Q5**     **Question**

Do you perforate the panels ?

**A5**     **Answer**

The panels also come pre-assembled so we avoid perforating these as far as possible. External walls are battened internally to provide a cable void. Most services run in ceiling voids.

**3.0     MINUTES OF MEETING HELD ON 6 JUNE 2008**

The minute of the previous meeting held on 6 June 2008 was accepted subject to alteration to Item under 2.0 PRESENTATIONS - 2.4 Alan Tough - paragraph 8 (as issued by e-mail on 18 July 2008).

#### 4.0 MATTERS ARISING

##### 4.1 Membership Update

It was noted membership has risen by 4 since June 2008

##### 4.2 Funding

Rob reported that, from feedback received, there is a strong desire to keep the Forum going. It may be necessary for members to contribute towards this. Alison McInnes, SMP, has taken on board to bring this to the attention of John Swinney to determine if any funding can be forthcoming. Rob intimated that we are also trying to look at other funding strands whereby it is hoped the Forum can remain free to members.

##### 4.3 Website Update

This continues to be updated.

#### 5.0 ANY OTHER BUSINESS

##### 5.1 Eco House

Rob reported the Demonstration House is now complete but are awaiting finalised monitoring equipment. Tours are available to the House and if anyone is interested in same they should contact Sharon Thomson at :  
[dundee@solarcityscotland.org.uk](mailto:dundee@solarcityscotland.org.uk)

It was noted that John Porter attended the pre-opening meeting last week.

#### 6.0 FUTURE PRESENTATIONS/SPEAKERS

There is one Speaker available at present for the next meeting in February 2009 but we are looking two or three further speakers. If anyone is willing to, or knows someone who would wish to speak at the next Forum, please contact Rob/Yvonne in regards to same..

#### 7.0 DATE OF NEXT MEETING

The next meeting will be held on **FRIDAY 6 FEBRUARY 2009** in **David Livingston Centre for Sustainability, Strathclyde University, Glasgow.**

A venue is required for the June and September 2009 meetings. Anyone wishing to offer a venue for these meetings should contact Rob Pedersen, e-mail [rob.pedersen@dundeecity.gov.uk](mailto:rob.pedersen@dundeecity.gov.uk)

**Please Note :** Copies of the presentations will be available shortly on the SSCF Website (where possible). - [www.sscforum.org.uk](http://www.sscforum.org.uk)

Where it is not possible to place a Presentation on the website, due to the size, this can be made available on disc and anyone wishing a copy should contact Yvonne in the first instance at [yvonne.mchugh@dundeecity.gov.uk](mailto:yvonne.mchugh@dundeecity.gov.uk)

***It was requested that, if anyone wishes to use the presentations, they credit the source.***

RP thanked the Speakers once again for giving up their time to present their interesting and enlightening Presentations

He also wished to thank the following:

Yvonne for taking the Minutes.  
Joe Moore for his interesting update on Great Glen House.  
Scottish Construction Centre for part-sponsoring the event

**Rob thanked everyone for attending.**

**Distribution**

All Forum Members  
Director of Support Services  
Chief Executive  
A Anderson, ECPD  
Fergus Wilson  
Mike Galloway  
Anne Wilson

cc Councillor George Regan  
Councillor Fraser McPherson

**N.B. PLEASE FORWARD ANY AGENDA  
ITEMS FOR NEXT MEETING**

RP/YM  
15 September 2008

## SCOTTISH SUSTAINABLE CONSTRUCTION FORUM

FRIDAY 5 SEPTEMBER 2008

ATTENDANCE CONFIRMATION FOR MEETING  
and  
GREAT GLEN HOUSE TOUR

### LIST OF ATTENDEES

1	Rob Pedersen (Chairperson)	Dundee City Council (DCC)
2	Yvonne McHugh (Secretary)	DCC
3	Henry Laws	Dundee City Council
4	Mac Roberts	DCC
5	Alan Mackie	DCC
6	Andy Kydd	DCC
7	Bob Anderson	DCC
8	Craig Muir	DCC
9	Peter Davidson	DCC
10	Ron Mitcham	DCC
11	Alf Leslie	The Highland Council
12	Eddie Boyd	The Highland Council
13	Sean Dunbar	The Highland Council
14	Ed McIntosh	NHS Tayside
15	Ian Cameron	Perth and Kinross Council
16	Stephen Corry	The Highland Council
17	Gary Westwater	The Highland Council
18	George Macaskill	The Highland Council
19	Sharon Thomson	Solar Cities Scotland
20	Bill Browning	North Lanarkshire
21	Alistair Smillie	Moray Council
22	Hazel Carnegie	Aberdeen City Enviro Forum
23	Brian Norval	Aberdeenshire Council
24	Ian McDonald	The Highland Council
	<b><u>Speakers</u></b>	
	Sheila Currie	Scottish Natural Heritage Greening Officer
	George Hay	East Lothian Council
	John Easton	SMC Parr Sustainable Futures

## **PUBLIC SECTOR SUSTAINABLE CONSTRUCTION GROUP**

**MEETING ON 5 SEPTEMBER in**

**GREAT GLEN HOUSE - INVERNESS**

### **Apologies**

Catherine Lloyd	Tayside Biodiversity Partnership
Sheena Stone	Margaret Blackwood Housing Association
Graeme Burns	Dundee City Council
Lisa Tennant	McGill Electrical
Kevin Jamieson	IMU Unit, DCC
Heather McQuillan	IMU Unit, Housing
Lindsay Cowan	Mansell
Doug Duncan	Mansell
Gillian McCallum	Scottish Executive
Fraser Macpherson	DCC
David Moon	WRAP
Fergus Wilson	DCC
David Congreve	Angus Council
Alison wisely	SCARF
John Wilson	Scottish Government
Derek Taylor	North Lanarkshire
Mohamed ElHaram	Dundee University
Alan Sansom	West Lothian Council
Willie Mahoney	Perth & Kinross Council
Ken Laing	DCC
Hamish Campbell	East Renfrewshire
Iain Connelly	Fife Council
Sandy Dawson	Clackmannanshire Council
Wolfgang Kopp	DCC
Jean Morrison	SCARF
Mike Scott	Mike Scott (Aberdeen) Ltd
Ian Mathers	Torith
Vicky MacKenzie	East Dunbartonshire
Pete Goldie	DCC
Denis O'Kane	North Lanarkshire Council
Andy Leitch	Forestry Commission Scotland
Elaine Morrison	Energy Saving Scottish Advice Centre
Amanda Waugh	Glasgow City Council
Jane Murray	Tayside Fire Brigade
Brian Menzies	MD EnviroCentre
Doug McLaren	Tayside Foundation for the Conservation of Resources Ltd