



WASTE neutral

eden project

A Review of the Framework Programme 2003 - 2007





Acknowledgements

This report was prepared by Alison Vaughan, Pat Hudson, Dan Ryan and Sarah Woodruff.

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REVIEW OF THE EDEN PROJECT'S WASTE NEUTRAL FRAMEWORK PROGRAMME 2003 - 2007, FUNDED THROUGH THE LANDFILL TAX CREDIT SCHEME

I. OVERVIEW

The Waste Neutral concept is a blueprint for a way of life that has been adopted by the Eden Project as the philosophy with which to take on one of the biggest challenges of modern sustainability – waste. It also became the cornerstone of one of Eden's flagstone projects, the Waste Neutral Framework Programme.

The Waste Neutral Framework Programme has been remarkable in terms of its breadth, running awareness activities amongst the general public and within the commercial supply chain; conducting both research-based new technology trials and children's workshops; developing capital projects as varied as a new range of recycling bins and the WEEE Man exhibit; and leaving a legacy that ranges from a dedicated waste recycling centre to an innovative educational resource pack.

A. Programme delivery & structure

The Waste Neutral Framework Programme has above all been a practical programme of action, facilitation and discovery. There has been some exceptional scientific work carried out under the food waste technology pilot, and it is only on those pages that there are formal source references. The bulk of activity has been in an action-oriented form, and it is this mix of practical delivery and expert advice that has given the Waste Neutral programme its special voice.

Eden works in partnership whenever possible, and in many of the components covered within this review these are acknowledged, such as our relationship with Envirowise, EcOevents, Clean Cornwall and NISP SW. However, there are many others whose work has enriched this programme, including Cornwall County Council's waste education and awareness team, the local Environment Agency's waste specialist, our funders, contacts in our local supply chain and our Eden colleagues.

In this review, the programme will be broken down by its key areas of operation and significant component projects. Broadly speaking, the programme had 4 main areas of operation:

1. 'Stage 1' – refining the programme and the fundamental Waste Neutral concept.
2. Implementation of the Waste Neutral concept on site, including:
 - The WN Recycling Compound
 - Alchemy Visitor Centre
 - The Neter In-Vessel Composter Research Project
 - The Eden Range – the Ultimate Recycling Station
 - Waste Neutral Construction
 - Site procedures

3. The Waste Neutral Supply Chain Programme

- Assessing the Waste Neutral balance
- Working with Eden's resource use
- Working with the local supply chain - conferences & workshops
- Working with the local supply chain – partnerships & advice

4. The Waste Neutral Public Awareness Programme

- On-site – exhibits, exhibitions, messaging, educational resources & workshops
- Out & About - shows & exhibitions
- Media

Significant component projects were included within the main areas of operation, in particular the New Technology trial of on-site, in-vessel food waste composting.

B. Origin & history of Waste Neutral

Devised in 2002 by Chris Hines, the Waste Neutral concept is simple. It builds on the waste hierarchy of reduce, re-use and recycle but brings in a vital extra component: reinvest. This simply underlines the need to make better purchasing choices. Buy recycled, buy longer lasting - buy better!

It was recognised that this should become a central tenet of the way that The Eden Project would operate, and that it should be developed into a key programme within the Foundation. Waste Neutral is an unusual project for Eden as it is both a stand alone demonstration and research vehicle and an embedded element of Eden's way of being.

The Eden Trust became a registered Environmental Body under the Landfill Tax Regulations in 2001. A brief was drawn up and submitted to ENTRUST for approval, with the support of Viridor Credits, the programme's first and major funder, and the 'Eden Project Waste Neutral Framework' was registered in March 2003.

The formal description of the Framework Programme in ENTRUST's registration was:

'Research, education and public dissemination aimed at promoting the positive and preferential use of recyclates for product development, construction etc, as well as developing greater awareness of waste and options for positive re-use'.

There has therefore been a strong focus on waste as a resource throughout the programme, with 'Re-imagining waste as beautiful' used as a strap-line. Eden's underlying objective has still been to reduce the waste it creates. After this the aim is to re-use whenever possible, including more imaginative ways through other project teams in exhibit/design, landscaping and education. Following this, Eden aims to recycle as much as possible of the remaining waste. Approximately 40% of Eden's waste is organic so at peak times all of this is destined for the in-vessel composter. Eden's other big recycling streams are glass, paper, card, plastics and metals and aggregates from its construction works.

A crucial link in the Waste Neutral chain is Eden's purchasing policy. This defines what Eden buys and, therefore, the waste created. This enables Eden to plan for the waste it has to deal with, improving efficiency and, ultimately, overall sustainability.

C. Funding

None of the activities outlined in this review could have been realised without the generous support of the programme funders. The Waste Neutral Framework Programme has been largely funded through the original Landfill Tax Credit Scheme, with approximately one-third of the capital build budget for the recycling compound (including the in-vessel composter) coming from European structural funds (Objective One).

The first, and most significant, funder was Viridor Credits, whose funding was across the breadth range of the Framework Programme. Third party funding support from Cornwall County Council allowed the first tranche of Viridor funding to be drawn down and the programme to get underway, with subsequent third party support from Rio Tinto and Anglo American.

Another significant source of landfill tax funding came from the Sita Trust in 2005, which specifically funded a large section of the public awareness programme. Landfill tax funding also came from EEF, allocated to the recycling compound, composter and adjoining visitor centre. The Environment Agency funded a compost exhibit.

In 2004, the BOC Foundation approved a research grant to properly monitor and evaluate the potential benefits available through on-site disposal of food waste, focusing specifically on the impact on greenhouse gases. This specific project has recently been enhanced with a major grant from the Combined Universities of Cornwall's R & D funding scheme, using European structural funding (ESF) through Cornwall's Objective One office.

D. The Waste Neutral Framework Team

The core funded programme team consisted of Alison Vaughan, Programme Manager; Pat Hudson, WN Supply Chain Coordinator; Dan Ryan, WN Public Awareness Coordinator (P/T) and Sarah Woodruff, Programme Administrator (P/T). The team was able to call on the resources of the Waste Neutral Recycling Team, on Eden's operational side, who deliver Eden's recycling and site waste management, including the operation of the food composter and waste food collection, with broader back-up from their colleagues in Technical Services (including maintenance). The project team also had input from Eden's formal education team, designers, retail and many others. The in-vessel composter trial was run through members of the green team; including curators, senior scientists, phytopathology and the laboratory manager.

II. IMPLEMENTING WASTE NEUTRAL ON-SITE

A. The Waste Neutral Recycling Compound

The most important element of the technical operations of Waste Neutral was the construction in 2003 of the Waste Neutral Recycling Compound. This complex was created in full view of nearly everyone that enters the Eden estate, with the aim of bringing waste to the forefront of the public psyche.



The site itself contains storing areas for recyclates, skips for collection, composter and the MBR filtration system. There is potential to expand and improve this development over time in response to future needs.

The site was developed through the existing partnership delivering Phase 4 of the Eden Project site build, McAlpine JV.

The compound, which contains the Neter in-vessel composter, along with the adjacent Alchemy visitor centre, has generated considerable interest. It receives a wide range of visitors, including:

Resource Recovery Forum delegates
Green Alliance seminar delegates
Wiltshire Wildlife Trust staff
Restormel BC Scrap Attack Awards visitors
Waste Strategy Launch for South West visitors
Sustainable Construction Summer School
Waste Minimisation Officer, Isles of Scilly
National Trust - St Michaels Mount
CIWM South West – New Generation Group
NHS National Performance Advisory Group
East Anglia Waste Education Group Recycling Officers
Environment Agency International Fellows from the National Environment Management Authority in Nairobi, Kenya; Uganda's Environment Protection Agency; and the Environment Protection Agency in China.
National Trust HQ staff
Environment Agency Waste Minimisation Team
WC Rowe staff
WRAP Compost Advisors (SW)
Head of ECSITE – UK
National Lobster Hatchery
NISP SW
Cornwall County Council (officers & councillors)
Ginster's staff
Truro College
Dartmoor Prison
Duchy College

B. The Alchemy Centre

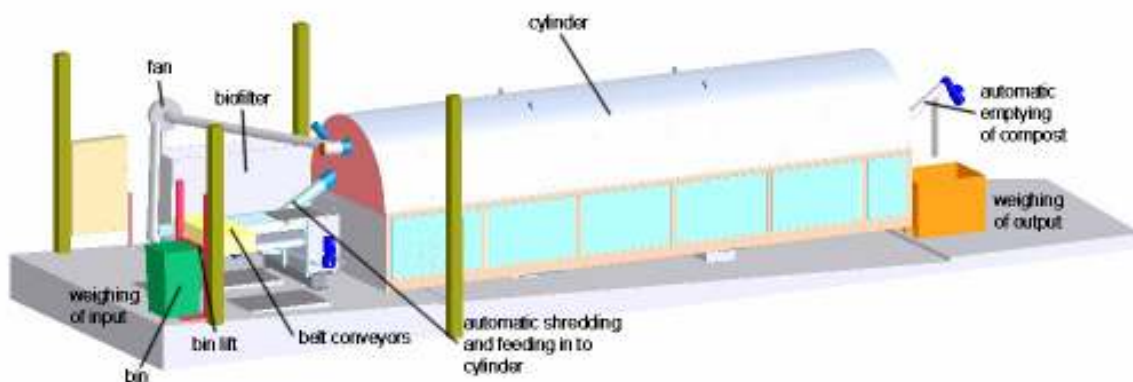
Waste Neutral has created a temporary exhibition space - opposite the compound - that is the public face of waste at Eden. Here members of the public and organised groups can come and discover more about waste at Eden, and beyond, through a series of exhibits, games and interpretation. There is a comprehensive range of message boards, and linked CCTV into the compound so that visitors can see how Eden's daily waste is dealt with.



More on the Alchemy Centre can be found under Section 3 'Waste Neutral Public Awareness Programme', including further pictures, information on exhibits and messaging, and the 'Shop Window' feature.

C. The Neter In-Vessel Composter

The composter is a recent addition (summer 2005) to Eden's armoury in the battle against waste. Capable of consuming over 500kg of organic waste a day, or approximately 40% of Eden's total waste per day, it was designed and built in Sweden, where composting is an accepted community response to burgeoning waste problems. The aerobic in-vessel system is a research tool to identify whether composting provides an effective solution for the disposal of organic waste and for reducing the environmental problems that result from landfill; such as emissions and leachates. The secondary purpose is reducing Eden's direct impact on Cornwall's waste problem.





The Neter was selected following a tender process

Full information on the food waste composting project can be found in the separate reports 'Food Waste Technology Trial' and 'Commercial, Industrial and Other Non-Domestic Food Waste Generated in Cornwall'.

D. The Eden Range – the Ultimate Recycling Station

Eden, local designers and bin experts, Plastic Omnium, have designed and developed the 'Eden Range' of recycling bins. These have appeared all around the site but they are designed for use in all public spaces. The range, manufactured by Plastic Omnium, uses the new Wrap colours and offers some new features to conventional recycling systems. For instance: there is a clear front panel designed to display the correct recyclates and hopefully minimise contamination. The bins are operated by hand or foot pedal and are accessible by a wide user group.

The bins have been well received by visitors and led to a drop in contamination of nearly 15%.



The Eden Range of recycling bins

A key aim of the Waste Neutral programme was that Eden should become an exemplar among visitor attractions through our own actions on waste minimisation. Most of the waste output from visitor attractions comes from front of house areas; directly from the visitors themselves. The aim with the Eden Range was to produce a recycling station that not only enables the separation of this waste at source into

several streams, but was also designed in a way that both encourages visitors to use the bins and stimulates them to take the recycling message home.

The Eden Range has been designed and manufactured for use in a wide variety of public places such as parks, beaches and shopping centres. In order to be effective at all levels – to reduce the amount of un-separated waste destined for landfill, to raise awareness of waste issues and to be widely useable across the tourism sector – the outline requirements for design and pilot production were that the station should:

- Be able to accommodate multiple waste streams;
- Be flexible in signage for each separate stream, to allow for changing types of waste/recyclates;
- Use materials that reflect the principals of recycling i.e. they should be recycled or as a second choice - recyclable;
- Be beautiful, fun, attractive and make people want to recycle;
- Relay key information to the public about their role in contributing to re-use, recovery and recycling of packaging and packaging waste;
- Stay in position in windy locations but be movable without cranes;
- Be suitable for use by children, disabled people and others with access issues;
- Use icons and Braille as well as/or instead of words;
- Allow for issues of heavy weight of bags containing the waste/recyclates, e.g. glass;
- Be easy to clean to avoid attracting wasps and other vermin;
- Be able to be mass-produced at a competitive and affordable cost;
- Be robust, tough and safe – it's for the public!

These bins have fulfilled their brief, and can be sourced via Plastic Omnium.

E. Waste Neutral Construction Programme

Eden is renowned world-wide for inspirational buildings and landscaping, so it is natural that this sector is an important part of the programme. Working with Eden's Sustainable Construction adviser (Caron Thompson), the Waste Neutral concept has been adopted by Eden's build partnership, led by the McAlpine Joint Venture. This has involved the separation of waste for recycling, using our waste compound, as well as waste reduction through design and building practices, the use of recyclates and recyclable material in the build, site waste management plans, and the training of subcontractors. This work has already been recognised in a number of national award categories.

WN Construction Conference

This was one of our first conferences, held in partnership with Cornwall County Council at County Hall.

F. Site Processes

As well as delivering Waste Neutral as best practice through Eden's operational site waste management, Waste Neutral principles have been incorporated into Eden's procedures such as the WN Purchasing Forum and Waste Neutral Champions.

The **WN Purchasing Forum** was set up to look at how we could improve the reduction of site waste and maximise the take-up of recyclates through purchasing. One of the key barriers faced was the decentralisation of Eden's purchasing processes, with individual sections doing their own purchasing direct with suppliers. Despite this, Eden has achieved a Waste Neutral balance for the last couple of years. As Eden's purchasing processes evolve, it will be easier to formally incorporate Waste Neutral principles and monitor results.

A network of **Waste Neutral Team Champions** was also set up, both to take the Waste Neutral message out to staff and to get feedback on problems encountered. This proved valuable in early days, but has proved difficult to implement on a regular basis due to operational requirements and tight staffing on site. Teams where the line management were enthusiastic kept sure that they were represented, but this was not the case across the board.

III. THE WASTE NEUTRAL SUPPLY CHAIN PROGRAMME

The supply chain programme has many facets but the overall goal has been to turn the Waste Neutral concept into a working reality and to encourage and help others to become Waste Neutral through conferences, seminars, workshops and direct action in the supply chain.

A. Achieving Waste Neutral - the Waste Neutral Balance

The Waste Neutral philosophy builds on the traditional hierarchy of reduce, re-use and recycle, with a crucial extra component – reinvest. After focussing on the need to reduce and re-use, it acknowledges that at end of life products need to go for recycling. To close the loop there has to be a reinvestment by buying back products that have recycled content: becoming Waste Neutral.

Being able to measure waste accurately is fundamental to becoming waste neutral. A daunting task from the outset, care must be taken not to over-analyse and thus spend more time and resources achieving the perfect answer than the benefits this knowledge is likely to deliver.

To achieve this aim, a simple equation can be used to analyse how well the operation is doing: 'to be Waste Neutral the weight of products bought in from recycled materials must be greater than or equal to that sent off for recycling and disposal.' Because the target is in straight tonnage rather than percentage terms there is emphasis on reduction - as this can have a dramatic effect. Similarly the purchase of recycled materials is rewarded, which will help stimulate the market for these products.

Ascertaining these figures was easier said than done: Eden has over 3,500 suppliers - with around 1,000 of them in regular use - many supplying hundreds of products. Products are bought in for areas as diverse as horticulture, design, catering, retail, and IT. Many of these items have a broad mix of components, which further complicates the calculations. In addition Eden does not have a centralised purchasing department or overall stock control system, which would simplify the process.

The first attempt to measure waste neutrality balanced exit tonnage - recycling and landfill - against items bought that contained recycled materials. At the time this consisted mainly of waste organics bought in as mulch, recycled lorry roll and a few products sold through the shop. This gave a crude Waste Neutral balance which at that time was positive because of the sheer scale of mulch that Eden consumed.

This was refined by looking at material streams to show how we were faring with each particular resource and how we should tackle any sticking points. For example there is a ready market for many metals, such as copper, tin and aluminium. The priority here is to ensure that discarded products made from these materials go back into the recycling stream, rather than being lost to landfill. However, the market for recycled plastic is not as strong. Our project work in developing recycled plastic products, such as bins and chairs, has helped address this issue.

As part of the process, the Purchasing forum was set up to see where changes could be made through the various buying habits. At first a sheet was sent to all suppliers to gather details of all products, but the sheer scale of this exercise, and suppliers' own time constraints precluded this from working effectively. Instead Eden worked with the key suppliers of the main products. In addition specific time was spent going through stock items held by the main operational departments on site: namely horticulture, catering and retail.

Balance sheets drawn up since have shown that Eden has continued to demonstrate waste neutrality, even when large amounts of mulch are not being taken into account.

Working documents have since been prepared on the following materials:

- Wood and paper
- Glass
- Plastic
- Compostable packaging
- Metals
- Ceramics
- Miscellaneous

These tie in with the segregating of the Waste Neutral balance to look at specific material streams.

B. Working with Eden's resource use

A considerable amount of time was spent at the outset of the programme researching sources of available information on Eden's incoming and outgoing resources, and in trialling ways of getting the data we needed from both external suppliers and internal teams.

The Waste Neutral Purchasing Forum looks at how Eden purchases items, working with suppliers to reduce resource buy-in, maximise resource re-use on-site, increase the purchasing of items with recycled material content and ensure that items are recycled at the end of their life. One clear result of this work has been a marked reduction of packaging received by the catering teams.

Eden tries to reduce and re-use food packaging, but when it's not possible we try to ensure the packaging used, such as glass and plastic, is recycled. We are now assessing the use of **compostable packaging**, most notably in sandwich wrapping, which could go through our food composter. If successful this will not only reduce the waste being sent to landfill, but will result in extra compost for the plant collection. Considerable work has been undertaken, looking at different aspects such as feedstock and associated biodiversity, material selection and compostability. The resulting policy was given to the Eden Project board and distributed at an ASPWG at Westminster. From this an article was written for Eden's Friends' magazine and input provided into the composted packaging industry guidelines issued by the Green Alliance think tank.

Reinvest through Retail! – stimulating the market for recycled products

Reinvesting is fundamental to the approach. If people do not reinvest by buying recycled products then all the recycling effort will have gone to waste. Stimulating the market for recycled products has been a key part of the Waste Neutral strategy, and utilising the Eden site for this has played a significant part. To get the message to over 1 million consumers a year (our visitors), a 're-invest' stand was designed and installed in the Eden Shop.

The display itself used some of Smile Plastics' great materials: panels made from recycled mobile phone cases and old welly boots (ex-charity shop), as well as panels produced using Eden's plastic cups (see 'Leaf Chairs' below). The stand displays a range of products that fit into the Waste Neutral philosophy, including pens made from vending cups, recycled glassware, clipboards from circuit boards and top of the range Finisterre jackets made from recycled plastic bottles. Other products reduce their consumption compared to traditional alternatives (i.e. solar powered clocks, wind-up torches) or encourage re-use (labels for re-using envelopes).

This equates to around 5 tonnes of recycled material each year but, perhaps more importantly, the reinvest message is taken away by Eden's many visitors. In the future this will act as a platform to sell more recycled and sustainable items via our website.



In developing this market, the Waste Neutral programme went a stage further by commissioning products made from recycled material. The range of bins developed in conjunction with Plastic Omnium using recycled plastic has already been mentioned.

A second product that Waste Neutral commissioned was the '**Leaf People**' chair. Made in conjunction with Aaron Moore, Pli Design and Smile Plastics, these chairs were made using waste cups from Eden's retail units. Fifty of these chairs are now used in 'Jo's café' and were made from 5000 cups. These chairs have since been exhibited at the Inspired design show in London.

Although the overall weight of recycled material used in the Leaf People chair project was small, it provided the catalyst for the **Reee Chair**, which is now on the market. At the Waste Neutral conference 2005, a keynote speaker from Sony asked for a solution to recycle old Playstations, and luckily the Leaf chair's manufacturer, Pli Design, was in the audience. We have followed and aided this project from its inception, providing access to funding partners which has resulted in the project been given the full go ahead. What is remarkable about this project is that in most cases recycled plastic products need to contain additives and/or virgin content to make a durable and quality product, whereas the waste plastic for this chair is solely from redundant games consoles. The chair is set to carry a Waste Neutral 'hallmark' with supporting information which will detail the need to buy recycled products. It is intended that this hallmark could be applied to other products in the future, explaining how many kg each products diverts from landfill.

Eden is also working with Smile Plastics and A Shortwalk tide clocks on a trial to see if viable products can be made from post-consumer yogurt pots, especially as the inability to recycle certain common domestic plastic items, such as yogurt pots, tends to infuriate the public.

Ecoboard – The brainchild of two Waste Neutral staff - Pat Hudson and Chris Hines - the ecoboard project is pushing the boundaries of the surfing industry by looking to make the most sustainable surfboards. The original board, made in conjunction with three Cornish businesses was made using balsa from Eden's tropical biome, hemp cloth and plant based resin and at the end of its life can simply be chopped up and used as mulch. There are currently 750,000 surfboards made annually worldwide, almost none of which have an end-of-life solution (save a wall of a students bedroom). This board, which performs well, is a little heavier and more expensive to produce than standard polyurethane boards. We are now developing a more mainstream product with approximately 55% vegetable content and looking to source recycled materials for the remainder. It is hoped that this iconic product could act as a catalyst for change in the wider marine industry.



The original ecoboard

C. Working with Eden's supply chain - Waste Neutral Suppliers Conference Programme

As part of our programme of working with local business there has been a series of major conferences. We have had a range of speakers and themes, from international companies and national government to successful local case studies. Lots of positive feedback has been received. These conferences have been an effective method of bringing suppliers to Eden, delivering waste information to them and acting as a catalyst between organisations, which has brought tangible benefits, such as the Sony Playstation Chair. Four conferences were delivered to a total of around 400 delegates over the course of the funded programme.

A particular benefit of working in partnership with initiatives such as Envirowise and EnVision is that it gives delegates the opportunity of further advice and support. One local company was able to come back to make a presentation at a later conference to show the impressive financial savings they had subsequently made. We have also put on a well attended eco-design workshop and hosted the introduction of the National Industrial Symbiosis Programme to the SW.

One of our first high profile conferences, '*Waste Neutral Construction*', covering the opportunities for waste minimisation and using Waste Neutral principles within the construction industry, was run in partnership with Cornwall County Council. Approximately 170 delegates have also benefited from on-site workshops, run in partnership with Envirowise.

The themes of the conferences were as follows:

WN Suppliers Conference March 2004

This conference introduced the Waste Neutral Programme to Eden's suppliers, and outlined how it would aim to actively encourage and support environmentally responsible working. Featuring an impressive line-up of speakers, presentations and case studies were given about their organisational experience of the economic gains and barriers encountered when implementing waste minimisation practices and increasing the use of recycled materials. These included B & Q, Yeo Valley Organics, Remarkable Ltd and a local company TJ International. There was also an opportunity for participants to join a specially tailored programme delivered through Envirowise and EnVision to implement Waste Neutral practices within their own organisations.

WN Suppliers Conference October 2005: 'Implementation of waste minimisation programmes and best environmental practice'

At this conference there was information and advice from Envirowise and EnVision, talks from national speakers and case studies from local companies who had already discovered the savings, benefits and opportunities that improved environmental performance offers. The speakers included BT, Burt's Crisps and most crucially Sony (the day the Playstation Chair was born). There was plenty of opportunity for participants to meet Eden's buyers, the Waste Neutral team and local environmental advisors to discuss any individual issues.

WN Suppliers Conference February 2007: 'Resource Efficiency in the Supply Chain'

The focus of this conference was resource efficiency, and in particular packaging, with examples from a leading player in the field, IKEA, whose plastic bag initiative had just made national headlines. Other issues covered ranged from best practice for SMEs, cross-sector cooperation, developments in compostable packaging and the use of biodegradable and degradable plastics. Key speakers included Anthony Browne, Environment Manager for IKEA, Tina Perfrement, Marketing Director for London Remade and Liz Morrish, SME recycling manager for WRAP.

As before there was liaison with Envirowise, and a supplier workshop programme was set up to follow on.

WN Suppliers Conference October 2007: 'Waste Neutral – A Celebratory Conference'

This was a double look at the Waste Neutral programme. On one hand looking back at the journey of Waste Neutral; lessons learned and hurdles overcome and on the other looking to the future. What the next questions in the waste debate would be, how they could be tackled, and pointers to where new solutions may lie.

It took the form of a 2 day conference. The first day centred on the national picture with a top-class line up of speakers: Daniel Instone, Head of Waste Strategy, Defra; Per Anders Hjort, CEO of Sita UK and Chairman of the Environmental Services Association; Alasdair Browne, Waste Manager, SWRDA; Alison Austin, Head of Brand Policy and Sustainability at Sainsbury's; Tara Garnett from the Food Climate Research Network; Jane Bickerstaffe, Director of INCPEN (The Industry Council for Packaging and the Environment); Mark Barthel, Director of Waste Minimisation at WRAP; Michael Gifford, Business Development Director, In-Source Energy, Carbon Trust Enterprises and Julie Hill, from Green Alliance and co-author of 'A Zero Waste UK' (and an Eden Project non-executive director). The day was ably orchestrated by Peter Jones of Biffa.

The day was rounded off with a slow-food evening event and talk by Julia Hailes, author of the 'New Green Consumer Guide' (and co-author of the original guide). The second day had a more local flavour exploring the work of the Framework Programme, with talks on different aspects of Waste Neutral including the food composting pilot, education and packaging design.

D. Working with Eden's supply chain: advice, workshops and partnerships

Reducing waste on site in itself involves close cooperation with our suppliers. Waste Neutral has had an active programme of support for its own and other local suppliers, including site visits and advice as well as seminars and workshops. Over 25 local companies have received on-site advisory visits and many more have received telephone advice.

A recent success has been linking Netpak (a distribution company) in Penzance and the Cheese Shop in Truro. The Cheese Shop was looking to start mail order distribution, but needed to be able to protect their cheese in transit. Netpak use a machine to process waste cardboard into an expandable protective wrap (which is used by Cornish Oasis for plant distribution).

We have also been working via NISP SW with Toshiba in Plymouth, Rainbow Bags of Wadebridge, Cornwall and Dartmoor Prison who hope to turn industrial waste brown paper from Toshiba into carrier bags which could be used in Eden's shop.

Glass re-use is another area that has been investigated. Eden suppliers Just Water and Cornish Orchards have examined the potential for washing glass bottles for re-use. Within the Eden there is potential for 100,000 bottles – 25 tonnes a year – but there is even more potential if rolled through the local supply chain and out to other local drink manufacturers.

Relationship with Envirowise: Over the course of the funded programme a close working relationship has built up with Envirowise. This began with their involvement in our 2004 Conference, with further involvement in the next two conferences. Following on from this, Waste Neutral and Envirowise set up a series of dedicated workshops for local suppliers.

A **programme of supplier workshops** has now been jointly delivered to around 200 organisations. These have been on the subjects of waste and water minimisation, eco-design and packaging, energy management and environmental management Systems (EMS). To take this work further we instigated a series of free **supplier audits**. A pre-visit questionnaire was devised which was a mixture of the existing questionnaire that Envirowise use for their fast-track visits, combined with a series of questions based around Eden's Waste Neutral and Sustainability programmes. Only recently introduced, three companies have so far gone through this process (TEE Electrical, Callestick Farm Ice Cream and the Monkey Sanctuary) with more to follow in 2008.

Part of the philosophy of Waste Neutral is that it should be applicable to any organisation, and the programme has included presentations to external conferences and organisations, as well as welcoming visits to the Eden Project. We have been asked to give an insight to our supply chain work through major presentations, including national conferences for BGEN (Botanical Gardens Education Network) at the National Botanical Garden of Wales, and for Bourne Leisure/Haven Holidays. In addition we formed a good link with London Remade and we were the first organisation outside London to sign up to the Mayors green procurement code. Many organisations have also come on to site to learn about Waste Neutral and how it can work for them. These visits have taken the form of talks, tours of the facilities and guided discussions.

Working in partnership: In addition to Envirowise, the Waste Neutral Framework Programme has worked closely with national organisations, such as Green Alliance, NISP, RRF and WRAP, while developing a green event/conference advisory service, EcOevent, in partnership with the national Oxygen Events company.

Waste Neutral is also an active partner locally with initiatives such as the Bodmin Waste Cooperative, and was an originator in the development of the Cornwall Litter Partnership, now known as Clean Cornwall.

IV. WASTE NEUTRAL PUBLIC AWARENESS PROGRAMME

A fundamental objective of the WN programme is to inspire and encourage individuals, communities and organisations to take responsibility and implement their own Waste Neutral practices. Education is core to the Eden Project mission and the mixed media approach to learning used by Eden has been adopted through this part of the Framework Programme, primarily funded by the Sita Trust. Examples of this approach range from live interpretation, static exhibitions and exhibits, publications and media work, to educational resources and activities. It has taken place both on and off site.

A. On-site

Through a series of landmark exhibits and static interpretation the Programme will be remembered at Eden for many years to come. Around four million visitors will already have experienced Waste Neutral messaging: from the practical, ranging from the compound, recycling stations and café food trays to the more dramatic such as WEEE Man, kNOw trash or the giant recycling puppet, Willy Waste-Not.

1. Exhibits

The project has commissioned many exhibits from the very small to the very large. This has already resulted in an exhibit trail, a comprehensive range of Waste Neutral exhibits and interpretation from the car parks to the biomes. More are planned for the coming year. From the focussed content of Alchemy and the Copper Wall there are examples of more abstract waste education through Eden's performers and guides. Often the scale belies the effectiveness of the exhibit and it was one of the smallest, the Giant Lettuce, made for food week in 2006 that eloquently told the story of food wastage, which was most effective.

Alchemy: The central point for most exhibits is the **Alchemy Centre**. This building is filled with popular exhibits including the Talking Bin, Giant Snakes and Ladders, Weigh Your Waste, CCTV linking to the waste recycling compound, a rotating Shop Window and elegant messaging panels. The construction of the building used recycled materials in its design, construction and interior so these became part of the exhibition itself.

After being developed for the Royal Cornwall Show in 2005, the Compost Wall was moved onto the main Eden site for a few months before finally resting outside Alchemy.

The **Shop Window** is one of the most interesting concepts. Products, made from recycled materials, convey the concept that recycled or sustainable things can be attractive and desirable, rather than just worthy. Local and national designers have been exhibited here.

Alchemy has also provided a focus for group visits. Over 50 visiting professional groups and over 25 schools or colleges have visited. These visits would be combined with a tour of the technical operations. It has also provided a focus for public workshops. For instance a Compost Clinic attracted over 70 members of the public to learn more about home composting. This was delivered in conjunction with Wrap.



The Alchemy Centre

Retail Exhibit

In the busy retail area an exhibit was commissioned that would both act as an educational tool and a stand to sell recycled products from. Recycled goods in the shop are very popular so this development allowed them to be grouped together. The stand itself was almost entirely made from recycled materials.

WEEE Man

The landmark exhibit for the project was WEEE Man, which returned in late 2006.



WEEE Man on site

WEEE Man has been a celebrated addition to Eden. He sits proudly in the centre of the pit and has recently had a new perimeter placed around him, with purpose built signage.

WASTE
neutral

What's WEEE Man made of?

Can you spot?

						
TVs	Mobile phones	Computer mice	Keyboards	Microwaves	Vacuum cleaners	Washing machines

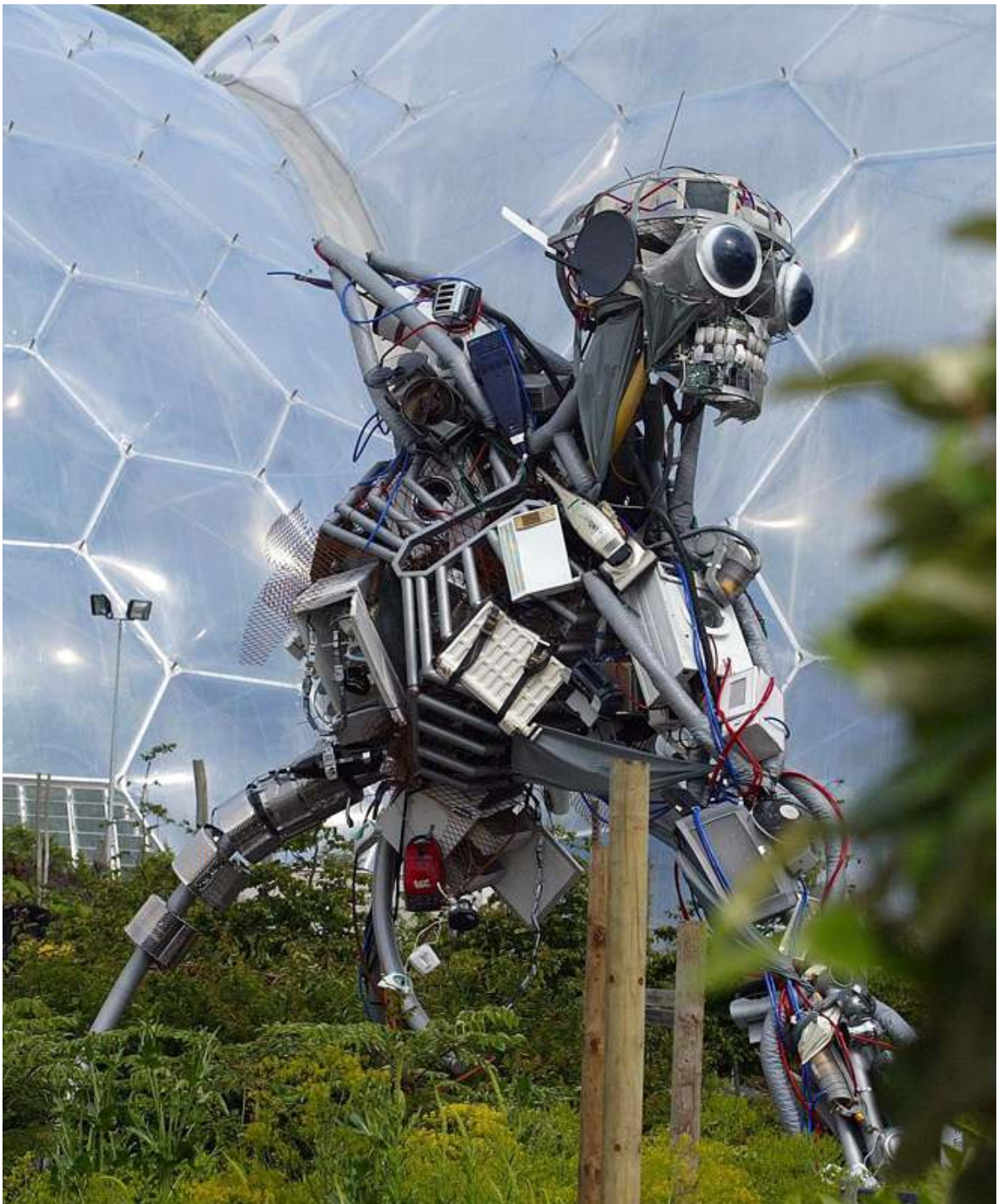
What else can you see?

WEEE Man is made from the 3.3 tonnes of WEEE (Waste Electrical and Electronic Equipment) an average person living in the UK will throw away in their lifetime.



eden project

An example of the new signage



WEEE Man at the heart of Eden

2. Exhibitions

The most noteworthy of these was kNOw trash, which ran from May to September 2007 and attracted nearly 200,000 visitors.

kNOwtrash

was a collaborative effort. It centred on a collection of artefacts, which was brought to life by Eden using exhibits, messaging and workshops. The foundations of the collection are recycled or re-used things from around the world. Typically the artefacts were created in poor communities as a means to drag people out of poverty. However, it was important to place some of these items in context of the Eden audience so pieces by local makers and artists were also included. These included a dress made from waste materials (originally commissioned by Wrap) and Giles Miller cardboard furniture.





kNOw trash exhibition in the Core



WRAP's 'recycled dress'



Inviting visitors to change



The exhibition was held in the Core education building

During the period of the kNOw trash exhibition Eden welcomed 513,314 visitors (excluding sessions and other event visitors).

Just over 60% of these visitors (312,506) visited the Core.

We did three observational flow counts where on average 58% of people went into the exhibition area, which when extrapolated means that 187,873 visitors visited.

The evaluation

Insight was gained through the completion of a structured qualitative feedback form. 120 groups of visitors (representing 384 visitors) gave feedback on their thoughts and feelings relating to the exhibition.

We gained information from five areas and feedback showed that:

- Visitors were struck by the vibrancy, colour, variety, detail and range of material used
- They were surprised by how creative you can be and by the range and diversity of products
- They all said they learned something - most learned about the endless possibilities and value of rubbish, 'so many possibilities'
- They all said they'd tell their friends about the exhibition - and would encourage them see the exhibition

3. Messaging

The Eden-site messaging has been greatly enhanced during the life of the project. Key messaging has been introduced into the restaurants, retail, surrounding the bins and in the landscape. Waste is a common denominator for all departments at Eden, and indeed all aspects of life. So it was important to thread the waste messaging through these differing elements rather than talk about waste alone.

During this period the overall recycling rate has risen from approximately 30% to 50%. Of course, infrastructure and availability of services have been crucial in this rise but the impact of the messaging must not be underestimated.

Waste Neutral messaging can be found on all the trays in the restaurants, and there is a purpose built recycling station in the centre of the Zzub Zzub cafe. In addition to this, a presentation ran continually that described to the customers the reasoning behind a switch from disposable to washable cutlery and crockery. Table top signs can be found in the Apple Café, and there are dedicated interpretative boards with the main sets of recycling stations.



Waste Neutral signage in Zzub Zzub



Waste Neutral trays

Some of the most significant developments were the panels that were added to the sets of recycling bins. As soon as these new bins and messaging were in place the recycling rates rose and contamination was reduced.



It is important to have a presence wherever there are heavy levels of waste being produced, so obviously this focuses on the food outlets. Examples of this signage can be found in the following photographs.



4. Workshops

The Waste Neutral message is also being delivered through **public workshops** at busy times of the year, as well as being featured through workshops in Eden's highly successful schools programme.



Half term workshops



Treasure from trash

Workshops have formed an important part of the Waste Neutral educational experience for both visitors to the main Eden site and in the wider community. The activities are focussed on children, but a very important element throughout has been the stress on family engagement and involvement.

It is hard to judge exactly how many people have participated in the workshops over the three years of activity, because of the drop-in nature of the activities and the very mixed numbers in the participating family and groups. But rough figures have been calculated and are broken down below.

By far and away the biggest participation *per diem* occurred at the Royal Cornwall Show.

RCS 2005

600 children and their family groups

RCS 2006

500 children and their family groups

RCS 2007

1000 children and their family groups

Christmas 2006

800 children and their family groups

Feb half term fortnight 2007

2000 children and their family groups (a representation of which can be seen in the following photo, where each flower equates to one child or group)



Global climate map produced by participants in half term workshops in 2007.

Easter Holidays 2007

2000 children and their family groups (slightly modified version of the half term flower making exercise)

kNOw trash July 2007

4000 children and their family groups (very hard to estimate this figure as the area was so busy and the dwell time on the activity quite short)

Compost Clinic May 2006

75 individuals or groups

As well as these organised longer duration events there have been many occasions where WN delivered workshops as part of a wider event. A good example of this is World Environment Day in 2005 where a combination of participation in drumming workshops and talk-shops surrounding waste issues were well attended. Other examples include the waste driven workshops in Jungle Season 2005. Of course, it has now become common practice at Eden that all workshops make good use of waste materials and all background messaging to these workshops is now Waste Neutral driven. So the long term impact has been very strong.

5. Educational resources – ‘Discover Packaging’

Waste Neutral has been working with the Sensory Trust to develop a framework for a hands-on, involving style of waste educational resource. The aim is to produce something that can be used by educators for different ages and abilities, which is open, flexible and ‘non-preachy’, and delivers its educational message through fun and involvement. The first pilot is on packaging, and a sample resource pack has been produced. Reaction has been very positive, and we are now discussing development with INCPEN, the packaging industry council, among others.



Samples of packaging and recycling



Playing card box activity



Information

B. Out and About

A start was made on taking the Waste Neutral message beyond the Eden site by a high profile presence at our county show, including children’s activities, performers, exhibits and recycled retail. All Waste Neutral’s exhibitions and shows have been purpose-built around a distinct theme and brought to life through exhibits, messaging, retail, interactive workshops and theatre. Over 120,000 people visit the **Royal Cornwall Show** annually so this has been a superb opportunity to expose the project, its ideas and the human face of waste issues. For two years running, Waste Neutral has been awarded 2nd in show for large trade stands.

This annual three day event has given Waste Neutral and Eden the opportunity to communicate with a very broad range of people. A visitor to Royal Cornwall does not expect environmental education and awareness to be part of their day out. This is in stark contrast to the typical Eden visitor.

The first exhibition at Royal Cornwall, in **2005**, was themed around sustainability in the home and garden and Cornwall Scrapstore helped bring the exhibition to life. The centrepiece of this display was the Compost Wall. This glorious exhibit was primarily made from waste copper sheeting leftover from building the Core.

In **2006** we told the story of waste in the local, particularly beach, environment and drew in partner organisations such as Surfers Against Sewage to help. The mix of powerful visuals and activities meant this was a very engaging exhibition.



Royal Cornwall 2006



Recycled product display

This show also saw the debut of our giant recycling puppet, **Willy Waste-Not**, which is a huge stilt-framed puppet operated by trained puppeteers. He has delighted crowds wherever he's gone and helped bring the fun back to recycling. Willy was a huge star of the show and thousands of people took part in our workshops, experienced the exhibition and were delighted by the performances. Waste Neutral

has also appeared at other public events such as Penzance's Mazey Day, and at trade conferences such as CIWM.



Willy Waste-Not meeting the public



Willy Waste-Not at Royal Cornwall Show

The third event in **2007** told the story of global resources and the inextricable links between our actions in the UK and habitats around the world. Of course the primary messages related to waste and the impact of recycling on certain habitats. For

example we commissioned a 3m polar bear made from plastic bags. The connections between oil consumption, climate change and threats to habitat (from both oil exploration and climate change) were condensed through this one powerful exhibit. The polar bear was floating on an ice berg down a tropical river glistening with aluminium trees. This part of the story communicated the relationships between mineral extraction and impacts on tropical forests. The clear underlying messages being; if we are more efficient with materials and products and ultimately recycle more then less wild places will be impacted on. The family workshops at this event were particularly successful and related to the kNOw trash exhibition that was open at Eden.



Royal Cornwall Show – Waste & Climate Change (polar bear exhibit demonstrated reducing and re-using oil-based plastics, and the aluminium trees demonstrated how recycling aluminium can save rainforest areas from bauxite mining)





Children's workshops at RCS

The benefit of events such as Royal Cornwall is they allow a significant expansion of the messages we could deliver, as there were not the usual constraints of the Eden site. Each exhibition had between 3,000 and 10,000 visitors with between 300 and 1,000 children and their families taking part in the workshops over the three days.

C. Media

Waste Neutral also produces **Bin Juice**, a dedicated newsletter covering Waste Neutral activities. Basic pages on the programme can be found on Eden's website, and more extensive information is underway.

Six Bin Juice newsletters have been published during the project period using the Sita Trust funding. These have been successful in updating the Eden staff about the project by providing interesting news from the world of waste inside and outside Eden.



Bin Juice cover

Many articles have been published about the project in publications such as MRW (Materials Recycling Week), Eden's own magazine and in books such as 'The Sustainable Enterprise', edited by Jonathon Reuvid.

The project, and its components, has appeared on local and national radio on numerous occasions from Pirate FM (Cornish local station) through to Radio 4. It has also been on local and international television, including BBC's primetime 'It's Not Easy Being Green' and on the main South African current affairs programme 'Top Billing'. The most recent appearance on local television coincided with the return of WEEE Man.

The Waste Neutral programme was also featured as a case study on the Waste Buster (www.wastebuster.co.uk) multi media project, which will have a huge circulation around UK schools.