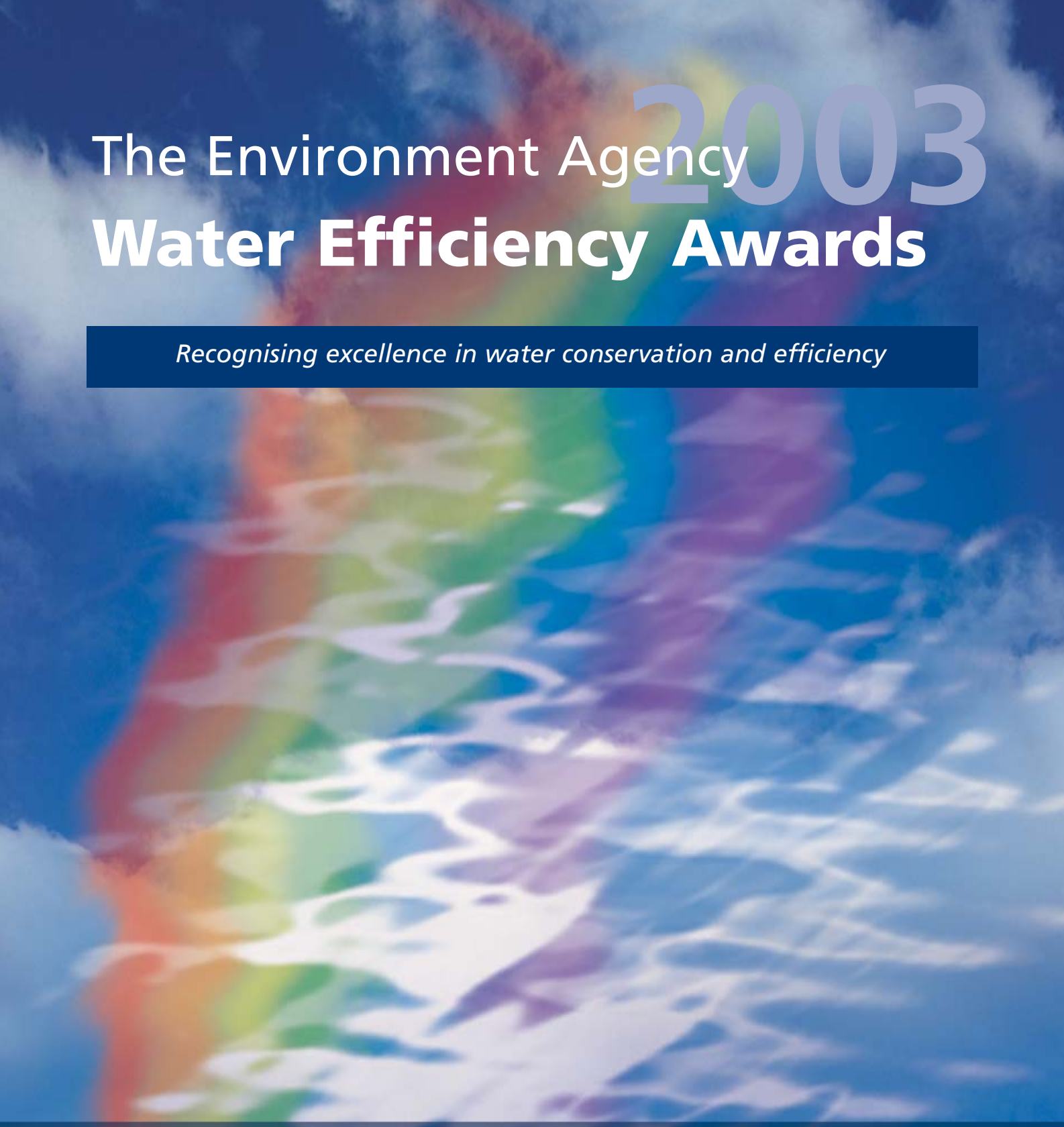
The Environment Agency 2003
Water Efficiency Awards

Recognising excellence in water conservation and efficiency



Inspirational Case Studies demonstrating good practice across all sectors

ENVIRONMENT AGENCY

Foreword

I am pleased to provide the foreword for this booklet marking the Environment Agency's Water Efficiency Awards 2003.

It is heartening that the Awards have again attracted a large number of entries and revealed such a high standard among those short listed for prizes. All of those organisations should be praised for their innovation and commitment to furthering sustainable water use. I also welcome the continued involvement and support of Envirowise, NFU and Ofwat in the Awards, and for the first time this year that of CIRIA and IDeA.

The Awards recognise that excellence in water efficiency is being pursued and achieved by different means across a range of sectors. In addition to the previous awards, this year sees the introduction of new categories for Building & Renovation and Leisure & Tourism in recognition of what is being, and can be, achieved in those sectors. More widely, against the background of climate and societal changes, the Awards promote the importance of efficient use of water by all users.

It is good to celebrate the environmental achievements of organisations, but perhaps more important that these are publicised to a wide audience. The Awards fulfil both roles, rewarding success and highlighting what can be achieved and the benefits in doing so. It is commendable that several awards, including the overall award, place a specific emphasis on the transferability of measures and lessons learnt. The greatest achievement of this Awards event, and possibly the greatest challenge, will be in encouraging others to follow the lead of these organisations in furthering water efficiency. The organisations featured in this booklet have shown the way. I hope that many others will follow.

Defra Minister for Water.

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Introduction

The Environment Agency **Water Efficiency Awards 2003** recognise, highlight and celebrate good practice in the efficient use of water within agriculture, industry, business, our community and the public sector.

This publication showcases the good work being done by all the Award finalists who were selected from over a hundred entries. From this benchmark of excellence across a range of organisations, the judging panel highlighted the outstanding applications with a Commendation and where appropriate selected a category Winner.

Each and every one of the case studies in this publication demonstrates a commitment to the wider environment while saving water and money. These awards play a crucial role in developing understanding of what can be achieved by highlighting the practical steps that can be taken. It is intended that this catalogue of good practice examples will provide organisations of all sizes the inspiration and motivation to take a closer look at their own water use and implement water efficiency measures wherever possible.

Partnerships, sharing information and expertise play an important role in achieving and promoting sustainable water management. The Environment Agency is delighted to have the valued support of Envirowise, the National Farmers' Union, Ofwat and Idea throughout the Award process.

This year's judging panel, chaired by Jonathan Selwyn, Executive Director of UK CEED, comprised:

Stuart Ballinger –
Project Manager for Water, Envirowise

Ian Barker –
Head of Water Resources, Environment Agency

Tim Broyd –
Director General, CIRIA

George Day –
Head of Water Resources Economics, Ofwat

Valerie Hastie –
Principal Consultant, IDEA

Rob Jarman –
Head of Sustainability & Environmental Practice, National Trust

Sue Nowak –
Policy Co-ordinator, Water UK

Michael Paske –
Vice President, NFU

Due to the breadth of entries from many different types of organisation, the judges faced a challenging task in identifying winning projects. This year's winners have all met the general judging criteria of water and financial savings achieved, consideration of the wider environmental impact, innovative or creative approaches to traditional problems and consideration of customer issues where appropriate, as well as the criteria specific to their entry category.

The Environment Agency would like to thank all those who took the time to enter projects this year and look forward to welcoming further examples of good practice in the future.

Education, Communication & Engagement

This category seeks to reward education, engagement or communications projects which have successfully raised awareness of water efficiency issues. The judges were looking for clear evidence of the success of the project in reaching its target audience, its impact in terms of behavioural change and how the project had been evaluated.

Southern Water

Winner

H20K Loo Campaign and Are you a Drip? school play tour

Southern Water delivers around 600 million litres of water to around one million households in the South East of England every day. They also treat and recycle dirty water from nearly two million households.

The company's water efficiency communications strategy focused on simple messages which were repeated regularly. Its programme for 2001-2002 focused on two key projects – 'Are you a drip?' schools play and the H2OK Loo campaign.

Southern Water believes that the most effective way of reducing water demand is through encouraging householders to modify their water consumption patterns. Throughout its campaigns, the company endeavours to make this clear by emphasising the volumes of water that can be saved by simple actions at home. By educating young children they hope to instill good habits that will carry into adulthood.

The focus of the H2OK water efficiency campaign was toilet flushing which accounts for around 30% of household water consumption. The aim was to assess how many households in their target area of North West Sussex had already fitted a Hog bag, and to persuade as many others as possible to do so.

Displays for the H20K Loo Campaign were set up in Tesco and B&Q across target areas of North West Sussex and Hastings, with a lifesize cutout of Duncan Goodhew to attract attention. These dispensed information packs containing a Hog bag, a letter from Duncan Goodhew, a Taps'n'Tips booklet, and a Loo Questionnaire designed to 'flush out' some WC secrets. Customers were given the incentive of a chance to win a holiday in return for completing the questionnaire.

To support the loo focus, an Are You a Drip? school play was developed to take the water efficiency message to primary schools throughout East and West Sussex. This emphasised the loo message and proved particularly popular with children. The play was designed to inspire children to mimic the water efficiency actions they saw in the play, and to take the message home to their parents. A supporting pack was produced including bookmarks with loo jokes for children and an invitation to enter a competition to sum up 'What water means to me?', to win one of two gaming consoles. An adapted version of the pack was also produced for children to take home to their parents. Southern Water undertook a programme of monitoring to evaluate the success of the educational campaigns. The programme achieved the following results:

- 104,550 packs were distributed and 5,820 loo questionnaires returned, a better than average response of 5.6%.
- 11,284 additional Hog bags were issued free to customers (bringing the total to 115,834 including those provided for commercial customers).
- 43 schools hosted the Drip play which was seen by almost 6,000 children between the ages of 7 and 11.
- 7,000 take-home packs were given out to carry the messages home to parents. From these, 177 entries were received to the 'What water means to me' competition, 459 loo questionnaires returned (7% response rate), with 141 requests generated for 245 Hog bags (31% response).

Statistics gathered from the research were used in a regional PR campaign fronted by Duncan Goodhew, and an innovative mini-book designed to read on the loo 'Secrets from the Smallest Room' was produced and has since won an Award of Excellence in the 2002 Communicators in Business Awards.

At a glance:

- *Southern Water's 'H20K Loo Campaign' was designed to encourage householders in Sussex to fit a Hog Displacement device in their toilet cisterns.*
- *This was complemented by an 'Are you a Drip?' school play tour to raise awareness of water efficiency issues amongst 43 schools in the area.*
- *The 6000 children who saw the play were each given a take-home pack that included a 'Hog bag'.*
- *The initiatives have contributed to an estimated 1,180,000 litres of water per day being saved.*

"This project engaged a wide audience in imaginative ways - a very well rounded entry."
Judges' Panel

Three Valleys Water

School Water Audit Project

Commended

Three Valleys Water is the UK's largest water supply only company and has been supplying water to the local community for more than 130 years. The company provides over 800 million litres of water each day to three million customers.

The School Water Audit Programme took a 'whole school' approach to water efficiency by providing relevant information to pupils, parents, teachers and non-teaching staff. It provided a flexible learning package for schools where they could choose their level of engagement from assemblies focused on water issues through prepared learning materials to a full day of water audit activities.

The School Water Audit Programme consists of a day of water audit activities based in the school and carried out by the pupils. They identify all water using appliances and pay special attention to those currently wasting water. Pupils quantify how much water is wasted and calculate what this costs, to give a financial perspective. They then carry out a range of maths and science-based activities using all the data they have collected. Suggestions to help improve water efficiency of each school are highlighted during the day. The afternoon programme can then either continue with the audit theme or address other water-related topics required in the national curriculum, such as clean and dirty water.

One of the key aims of this project is to show all members of the school that they can play a role in using water wisely. The programme concentrates on delivering simple messages, such as turning taps off and reporting leaks.

A feedback report is sent to the school's head teacher and governors following the audit, providing water efficiency advice. This report includes tailored advice based on the specific issues identified at the school, together with generic information that has been found to be of use to other schools.

The benefits of this project are:

- Provision of awareness-raising material linked to the national curriculum.
- Encouragement of whole school approach to activities.
- Transfer of specialist water management expertise from Thames Valley Water.
- Measured reductions in water consumption.
- Shared cost savings with the water company.
- Ongoing support from Thames Valley Water with regular updates

The company plans to build on its work by expanding the project into areas of potential water stress, for example North Essex. They also intend to run a joint project with other companies and the Environment Agency during the next AMP period if funding is secured.

At a glance:

- *The project seeks to reduce the amount of water wasted in schools through a comprehensive programme of teaching materials and water audits.*
- *The company supports a day of water audit activities based in the schools primarily carried out by the pupils and also involving teachers and parents.*
- *Fifteen schools participated in a pilot programme during spring/summer of 2001, whilst in the following year more than 50 schools were audited.*

"An excellent educational project, which is endorsed by the teachers themselves through word of mouth."
Judges' Panel

Crystal Presentations

Water in the School Website

Finalist

A partnership of 14 water companies commissioned Crystal Presentations to develop a website that would provide everything a school would need to set up and run an effective water conservation project.

The site encourages staff and pupils to measure how much water is used in their school and find out where it is going. Using this information, they would be encouraged to analyse their data and draw up a plan of action to reduce consumption.

The main objectives of the project were to:

- Foster responsible attitudes to water usage by pupils and staff.
- Encourage the pupils to apply their knowledge and understanding to global water and environmental issues.
- Use techniques of monitoring and evaluation to encourage continuous improvement in water efficiency.

To ensure that schools were aware of the website, 25,000 flyers were sent to all UK schools – regardless of whether or not they are in the areas of the companies which have joined the project.

At a glance:

- *A web based guide for schools on water conservation.*
- *Fourteen water companies working together and pooling resources.*

"The 'Water in the School' website shows that it is possible for water companies to work collaboratively to produce quality generic resources for schools".
Judges' Panel

Dorset County Council

Finalist

Christchurch Junior Replacement School – a practical learning aid

Dorset County Council incorporated a number of water efficiency measures in the purpose built Christchurch Junior School. It was seen as an opportunity the council to engage in a whole school education project on water efficiency.

The project encourages pupils and staff to learn about water issues, use the new water efficiency measures that have been made available and participate in the monitoring and evaluating of the school's water efficiency performance.

The educational objectives of the project were:

- To provide knowledge, information and a monitoring opportunity to the school pupils with regard to the rainwater recycling system and encourage pupil participation in managing their surroundings.
- To use the new innovative approach to water efficiency adopted in the school building as a practical case study of water efficiency good practice.

A display was introduced into the schools main corridor incorporating eye-catching explanatory diagrams of the school's rainwater harvesting system and a life size 'Molly Monsoon' to attract the attention of pupils. The diagrams explain in straightforward terms how the school rainwater harvesting system works and highlights the key benefits achieved from the installation of the system.

An education pack comes complete with rainwater monitoring forms, monitor badges, pens, promotional stickers and a folder. To encourage active involvement from the pupils, rainwater monitors are selected each week from Year 6 children within the school with each child receiving a badge. Each day the group is responsible for monitoring water usage by taking water meter readings from the rainwater monitoring panel. The readings are then forwarded to the Dorset County Council Energy Team for monitoring purposes.

As a direct result of the successful installation of the rainwater recycling system at the school, four further buildings have been equipped with a rainwater collection system by the Council.

At a glance:

- *Dorset County Council used the commissioning of a new school to teach its 480 pupils aged 7-11 about the importance of water efficiency.*
- *Pupils monitored and evaluated the effectiveness of the water efficient measures incorporated in the new building.*

"A great example of creative education - where the pupils can actually see how much water is being collected and used."
Judges' Panel

Imperial College London

Finalist

WATERSAVE Network – A network for water conservation and recycling

Imperial College London's WATERSAVE Network is organised by the Urban Water Research Group in the Department of Civil and Environmental Engineering. It seeks to facilitate dissemination and promote good practice in water efficient technologies. The areas covered by the network include:

- Factors affecting water consumption.
- Greywater / rainwater reuse quality standards / health impacts.
- Regulations / standards.
- Public perception / acceptance of water conservation and recycling technologies.
- Technology performance and life cycle assessment.
- Capital and operational costs for demand management options.

The network runs free six-monthly events and encourages participation from the academic community by subsidising their travel costs. It is -supported by a dedicated website on water conservation and recycling issues (www.watersave.uk.net). The website incorporates databases, research reports, updates on international developments, links to several organisations, and educational material for higher education institutes, secondary and primary schools.

An email discussion list on water conservation and recycling is also managed by the network (water-recycling-uk@jiscmail.ac.uk) with a current membership of about one hundred. This electronic network ensures that members using the database can effectively communicate with each other to discuss issues of mutual concern.

The network also attempts to encourage decision makers and consumer groups to reduce excessive use of freshwater resources and promote waste minimisation measures through the adoption of water efficient appliances and changing consumers' lifestyle.

At a glance:

- *The WATERSAVE network provides a national platform for active discussion and technical information exchange on various aspects of water conservation and recycling.*

"The network has influenced all stakeholders to view water efficiency as an important part of integrated sustainable water management".
Judges' Panel

Envirowise Industry & Business Category

Supported by Envirowise, this category seeks to identify water efficiency good practice in business and industry. Judges were looking in particular for innovation, creative solutions to traditional problems, clear evidence of process methodology and how the project has been communicated within the organisation.

Woodnook Bleaching & Dyeing Co

Winner

'Right First Time' - Effective Management Systems and Process Control

Woodnook Bleaching and Dyeing Co is a family owned textile treatment operation employing 120 people. It produces and processes 300,000 metres of fabric per week, around 50% of which is its own in-house woven materials and 50% is from other textilers. The textile sector is extremely competitive and now has to compete in a global market, particularly with countries in the Middle and Far East and those now entering the EU. The company's strategy is to compete by using its experience, innovation, and commitment to continuing improvement in the manufacturing process to reduce cost and environmental impact.

To improve its environmental performance, the company introduced the 'Right First Time' approach in conjunction with its development of an ISO 14001-based system. This approach focused on the development of a state of the art, bespoke colour match technology that enabled every stage of the production process to be assessed, reviewed and guaranteed.

Its programme of environmental improvements centred around creative cost effective solutions to minimise water, chemical and energy usage. All chemicals are now automatically batch fed to all the processes by computer-controlled systems.

The introduction of jet dyeing equipment to replace jig equipment has made the most significant contribution to water savings. Jets provide the precise amount of liquors necessary to do the job, whereas Jigs were open baths and generally had the problems of excessive overflows and water spillage. As a result, the dye house is now much drier. Issues such as the excessive use of hoses were also resolved in the early stages of the project. The technology improvements have also made a significant contribution to an overall reduction of £150,000 in the company's chemical costs supported by better product selection and prices. As part of the ISO 14001 process, there has also been significant progress on the analysis of the effluent and water quality to a level far in excess of the demands of the local water company (United Utilities). As a result of the controls and dye rationalisation there has also been significant reductions in sulphate and pH levels.

A number of specific benefits have arisen from the initiatives:

- Borehole water abstraction reduced by 89,740 m^3 per year – a 27% reduction.
- Town's water abstraction reduced by 61,995 m^3 per year – a 65% reduction.
- Effluent reduced by 5,240 m^3 per year.
- Energy reduced hot water by enough to heat to the equivalent of 1,720,000 KWh.
- Specific water consumption reduced from approximately 40 litres/metre of cloth produced to 20 litres/metre, a 36% reduction – this is excellent in comparison to known benchmarks.

These improvements have been achieved during a four-year £1 million investment programme (1998-2002) and this programme in ongoing and expanding. The company estimates that pay back from the initial programme will be achieved in 4-5 years.

At a glance:

- *Introduction of jet dyeing technology, more effective process control and 'Right First Time' concept.*
- *The new approach has led to a reduction in water use of 50% and contributed to a reduction in chemical use.*
- *Associated financial savings of £61,000 per year.*

"This entry illustrates brilliantly how water efficiency adds value to businesses"
Judges' Panel

Marley Building Materials (MBM)

Commended

Beenham Roof Tile Factory Silt De-watering Project

Marley Building Materials, one of the leading Manufacturer of Concrete Building materials in the UK, has eight manufacturing sites throughout the UK and employs approximately 1,300 people.

The MBM factory at Beenham produces a range of concrete roof tiles and roofing fittings using sand and gravel from its own quarry, situated at Midgham, Berkshire. The Factory has a sand processing plant on site, which crushes and washes the sand and gravel.

Historically, wastewater and silt from the sand plant was pumped to large settlement lagoons on site. Some of this water was reused through the sand plant and surplus overflowed into a stream, covered by a Water Resource Act consent. Due to the sale of some of the land on site, notice was given to the company that they would no longer have the use of the settlement lagoons from the middle of 2001.

In response, a project was started in mid 2000 to create concrete storage lagoons to replace the settlement lagoons and to establish a de-watering scheme. The central objectives of the project were to:

- Recycle more water, for use in the sand treatment process and reduce use of borehole water.
- Identify a system that would reduce the volume of waste silt for off-site disposal.
- Ensure that waste arising from the process could be disposed of at the Midgham Quarry as "solid" waste instead of "slurry".
- Use a system that would have low energy requirements.
- Identify a de-watering system that would not involve excessive use of labour.

This new facility was completed at the end of 2000 and water from this facility was recycled through the sand plant in place of some of the borehole water. Phase two of the project commenced early in 2001 to develop a de-watering scheme and enable the silt from this facility to be treated and disposed of as "solid" waste instead of slurry and additionally, to save more water for use in the sand treatment process.

In 2000 water consumption levels were 25,285m^3 - this was reduced dramatically over a two year period and in 2002 water consumption was at an all time low of 9,743 m^3. The total estimated cost of the project was £445k and it has generated savings of £133k per annum.

At a glance:

- *Storage lagoons developed with water recycled through the sand plant.*
- *De-watering scheme developed to remove excess water from silt produced in the manufacturing process.*
- *Water consumption reduced by 15,542 m^3 (37%) between 2000 and 2002 with a payback period of 3.34 years.*

"An excellent example for others in the precast concrete sector to follow."
Judges' Panel

United Milk Plc

Commended

Zero Water use in the manufacture of milk based products in the dairy industry

Following the formation of United Milk Plc in December 1999, a state-of-the-art facility for processing 850 million litres of milk per year was designed and constructed in Westbury, Wiltshire.

One of the key objectives in the design of the facility was to enable extraction and utilisation of the water content in the milk feed to make the site self-sufficient in water use.

Hot recovered condensate is treated through a reverse osmosis (RO) membrane plant producing 1.8 million litres of permeate per day. The permeate is treated using chlorine dioxide to ensure the quality of the water recovered. The heat from the water is exchanged with the incoming cold feed milk, to produce a stream of cold recovered water. This water is used for a range if processes including clean-in-place systems (CIP).

As a result of the water recovery process, the site does not require any external supply of water and effluent discharge is also eliminated. The water re-use and heat recovery system is integral to the operation of the process and is essential for the plant to operate. The system was monitored as part of the overall process during the commissioning of the production plant in June 2002.

The company estimate that the 1.8 million litres per day recovered through the system equates to savings of £1,800 per day based on mains water costs.

At a glance:

- *The facility uses a unique process to recover 1.8 million litres of water per day from the milk it processes.*
- *The recovered water enables the site to be self-sufficient in water, requiring no supply from mains water and reducing water costs by £1,800 per day.*
- *Future plans include supplying the water requirements of other users in the area.*

"An inspirational example showing how far a company can go in becoming self-sufficient in water use."
Judges' Panel

GR Advanced Materials

Finalist

ISO 14001 – Water Reduction

GR Advanced Materials is a manufacturer of inks and masters for use with digital duplicators and has approximately 85 employees. In common with many businesses, they had never really given any thought to the how, where and why's of water consumption. The utility bills were paid with few if any questions being asked. The assumption was very much that of, "There has been a factory on the site for 29 years so surely everything is okay and under control"

But as part of the company's wider commitment to the environment and the ISO 14001 accreditation highlighting the poor water management, it was decided that an investigation into its water usage should be undertaken. The results of the monitoring shattered many long held assumptions as to where and how water was used. It also helped to highlight areas that required attention.

In response the company introduced a series of water saving measures to target these specific areas including:

- Introduction of a series of closed loop systems for the chillers to enable water recycling.
- Reduced flush frequency and introduction of presence sensors for urinals.
- Reduced flush volume of toilets.
- Instigation of leak repair programme.

These actions have resulted in significant water savings. The company's consumption of 37,668m^3 of water in 2001 was reduced to 10,043m^3 the following year, representing a saving of 73%.

General employee awareness was also an important part of the overall project and has been raised in several ways, including Environmental Awareness Training and direct involvement with water reduction projects.

At a glance:

- *A detailed investigation into water use patterns through water mass balance analysis.*
- *Resulting savings of 27,625 m^3 per annum (73%).*
- *Staff involvement and education an integral part of the process.*

"By encouraging involvement of staff, and by challenging long-held perceptions on water use, the company has delivered impressive improvements."
Judges' Panel

ICORE International Ltd

Finalist

Autoconvoluting Water Recycling Project

Icore International Ltd (Part of the Smiths Ind. Group) is a progressive manufacturing organisation based in Slough. The organisation employs 130 people and operates in the aerospace and global industrial markets. As part of their ISO 14001 accreditation, Icore wanted to introduce a project that would benefit both the company and the environment and as such decided to concentrate on their water efficiency.

The central aims of the project team were to carry out a detailed evaluation of the organisation's water usage and identify opportunities for reductions in consumption.

The team carried out a mass water balance for the site, which identified an opportunity to significantly reduce water consumption in the organisation's autoconvoluting area. Autoconvoluting is a manufacturing process, comprising a series of machines that produce convoluted hose from PTFE material.

The team set out to specifically measure water usage in this particular sector of the process. It found that one machine discharged a litre of water every four seconds. There were four machines running 24 hours a day, five days a week. This resulted in weekly water loss of 432,000 litres. The project team decided that a fully enclosed water re-circulation system would significantly reduce this water loss and were able to identify a simple and cost effective solution using standard domestic heating system parts.

One machine was modified and further tests carried out to ensure productivity and quality of product were not affected. The team found the system worked well and made significant water savings. The remaining three machines were then modified.

One of the key objectives of the project was also to raise employee environmental awareness and encourage positive actions both at work and at home. This is why the project team was selected from a cross section of employees.

At a glance:

- *Simple adaptation of domestic heating components in the company's autoconvoluting area and other measures resulted in a reduction in water consumption of 20.9 million litres a year.*
- *Estimated project pay back of 2 months.*
- *Staff awareness raising formed a key part of the project.*

"The company's thorough and practical approach to water efficiency has gained some impressive results."
Judges' Panel

Leisure and Tourism Category

In a new category for 2003, the leisure and tourism sector was invited to promote innovative approaches to water conservation. The category was open to hotels, guesthouses, leisure centres, health clubs, pubs and restaurants. The judges were looking for new, cost effective and transferable ways of addressing water efficiency in the sector.

Royal Horticultural Society

Commended

The Dry Garden

The Royal Horticultural Society's Dry Garden is located at Hyde Hall, Essex, one of the driest areas of the British Isles, with an average annual rainfall of just 600mm (24 inches). The Garden was designed to provide visitors with an enjoyable day out but also to encourage and demonstrate sustainable horticulture techniques and practically illustrate how a garden can be created without the need for artificial irrigation.

Specifically, its objectives are to:

- Demonstrate a wide range of garden worthy plants that require no artificial irrigation.
- Provide practical demonstrations, associated information and interpretation to encourage visitors to the garden to adopt similar gardening practices at home.
- Work with Essex & Suffolk Water to promote 'Water Wise Gardening'.
- Demonstrate techniques for ameliorating problems with clay soils to aid stability, improve drainage and reduce the demand for irrigation.

The summer gardening season is usually associated with a marked increase in demand for water, largely for use in garden irrigation. The Royal Horticultural Society estimates that a typical garden of 1,500 square metres requires 105m^3 of irrigation per annum to remain in good health. In contrast, the Dry Garden at Hyde Hall needs no water for irrigation.

The plants at the Dry Garden have been carefully selected to combine the essential characteristics required for the site – tolerance to drought, exposure and high light levels – along with garden worthiness. As well as being irrigation free, the Dry Garden is managed organically and uses low intervention techniques.

The Garden has resulted in a direct saving of around 15,000 litres of water per month during the growing season and has been recognised by horticultural writers as one of the leading gardens of its type. It has generated widespread press and media coverage, including seven appearances on national TV, all of which have highlighted the wise use of water message and encouraged adoption of irrigation-free garden techniques. It has also provided a focus for a wide range of related events and educational activities, including Chelmsford Cathedral Festival 2003 with its theme of 'Precious Water'.

Illustrating its commitment to the Dry Garden the Royal Horticultural Society (RHS) intends to maintain and develop the existing feature and to create an extension of around 500 square metres that will be planted as an arid meadow. The Dry Garden will continue to be at the forefront of the Society's sustainability programme, promoting water wise gardening. In addition, and as part of the RHS's relationship with Essex & Suffolk Water, a 'mini' Dry Garden at Writtle College (a land based industries college in Essex) has been created to provide further educational opportunities.

At a glance:

- *The Royal Horticultural have developed a dry garden to act as a focal point for promoting the wise use of water message.*
- *The Dry Garden occupies an area of 1,500 square metres and consists of 5,500 plants in total, all of which can be grown in the UK without recourse to artificial irrigation.*
- *Over 500,000 visitors have been encouraged to adopt dry garden principles at home.*

"This high profile, well thought out attraction is to be commended in its promotion of water efficient plants. While we would not encourage the landscaping to be emulated by members of the public for their own homes, the variety and quality of the flora on show should be an inspiration to the water efficient gardener."
Judges' Panel

EPM (Kirklees Metropolitan Council)

Finalist

Alfred McAlpine Stadium North End Development

EPM are in house consultants for Kirklees Metropolitan Council employing over 100 professional engineers, architects and other specialist staff.

The McAlpine Stadium was to be completed by constructing a final stand, which would provide an additional 4,886 seats. In addition to the stand, a Leisure Centre complete with pool and fitness centre, a dance studio, offices, a business centre and hotel were all incorporated. During the drought in 1995, Yorkshire Water issued a drought order to the Stadium requiring the watering of sports grounds to cease! Prompted by this, a project to make the Stadium more self-sufficient was undertaken. It was identified that pitch irrigation was one of the major water requirements at the site - as it needed over 3000m³ p.a. to keep it in top condition. In response to this the central aspect of the drive for self-sufficiency was the development of a rainwater harvesting system for use in pitch irrigation.

The rainwater harvesting system collects water from the substantial roof area on the north stand and sports/office complex. Also a small amount is collected from hard surfaces not used by vehicles. There are two main rainwater systems, one at the front and one at the back of the building. The water cleaned by pumping it through primary and secondary filters and then passed through a UV steriliser. It is then supplied to a number of tanks for use throughout the stadium.

At a glance:

- *The Alfred McAlpine sports stadium in Huddersfield is notable for its use of a rainwater harvesting system, primarily used for pitch irrigation.*
- *Other water efficiency measures incorporated include vacuum drainage with greywater recovery, pool water backwash recovery of water and heat, timed flow shower controls and water efficient urinals.*
- *3,119m³ of water per annum is recycled via the harvesting system.*

"It is rare for a sports stadium to integrate water efficiency measures in its design and this high profile building will hopefully create interest and encourage others"
Judges' Panel

Pool House Hotel

Finalist

Green Business Tourism Scheme

Pool House is a former Victorian fishing and hunting lodge employing six full time staff and two part timers.

It is their aim to prove that it is possible to be environmentally sustainable at the luxury end of the market and to alter people's perception that "green" accommodation is basic or less comfortable. Water efficiency is an integral part of an overall campaign in environmental conservation to ensure that business operations do not have a negative impact on the hotels greatest asset - its exceptional setting next to the sea and alongside a salmon river.

A number of specific water saving measures have been voluntarily introduced by the hotel owners:

- Hippo's have been placed in the toilet cisterns.
- Hose release mechanisms are fitted to prevent water loss.
- A water butt collects rainwater for watering the plants.
- Waterless urinals and "tap misers" have been installed.
- Each room has literature aimed at educating people such as the "little earth book" which details many fascinating and "frightening" facts about the current and future state of water use and consumption.
- With the agreement of guests, damp towels are dried and returned rather than replaced, greatly reducing the amount of laundry.

Since initiation of these water efficiency measures in January 2000 annual water consumption of the hotel has reduced from 1,409 m³ to 481 m³ a saving of almost two thirds.

At a glance:

- *Poole House Hotel uses a comprehensive approach to water efficiency as part of its programme of environmental good practice.*
- *Water efficiency measures, including tap misers, waterless urinals, 'hippos' in all cisterns, water butts to harvest rainwater and cut-off valves on all hoses, have reduced water consumption by 1,000m³ per annum.*
- *Awareness of environmental issues is promoted through provision of a 'green file' in all rooms and projects involving the local village school.*

"An excellent example to the UK hotel industry."
Judges' Panel

OFWAT Economic Research Category

This category was open to water companies and operators only and is supported by Ofwat. Its focus is on new research projects that have significantly improved the understanding of the economics of household water efficiency initiatives. This Award was judged on the quality of the research and analysis, not on the amount of water that was saved.

Southern Water

Commended

Tapmagic study – water savings and user perceptions

Southern Water is a water and sewerage company serving the South East of England. The company delivers around 600 million litres of water to around one million households in the South East of England every day. It also treats and recycles dirty water from nearly two million households.

Domestic customers in Southern Water's region consume approximately 12.8 litres of water per person per day with the use of hand basins constituting approximately 8% of domestic water consumption. Therefore, use of retrofit devices to restrict the flow of water to hand basins has the potential to contribute significant water efficiency savings.

'Tapmagic' is one such retrofit device which Southern Water had considered promoting to its customers. However, before doing so, the company was keen to ascertain the effectiveness of the device as a water efficiency measure by way of field trials. Tapmagic is a tap insert capable of changing the flow pattern to spray at low flows, with the option of full flow when the tap is fully turned on, thus giving the flexibility that a typical spray insert cannot provide.

The study was carried out in two phases. The first phase involved a trial of the technology in a controlled environment whilst the second phase involved testing the product in a real world setting with Southern Water consumers. The main objectives of the study were to:

- Quantify the volume of water saved through fitting the Tapmagic device.
- Establish the cost-effectiveness of the device;
- Find out how easy it is to fit via the DIY route;
- Establish the acceptability of the device to users;
- Ascertain whether Tapmagic could be considered as part of Southern Water's future water efficiency strategy.

In the first phase, water meters with high resolution pulsers were fitted to each of the three cold and three hot water supply pipes in Southern Water's office washrooms in Worthing. Every water use event was recorded and data was downloaded regularly for analysis. Flow data was collected from each tap in the three sinks in the washroom.

The data was collected over eight two-week periods, with Tapmagic installed for four of the eight periods in each sink. The Tapmagic installation was rotated across each sink, with installation in two out of the three sinks during each period, to try and ensure uniform use over the monitoring period. Background data was also collected. Analysis of the stored data was carried out using bespoke software.

The average saving per hand wash was calculated to be some 52%. The costs-benefit analysis indicated payback time of seven months in a commercial application. This was based on a washroom with a light average use. With heavier use this figure would be reduced further. In a four-person household (where metered) the payback was calculated to be less than 6 months. Water savings of approximately 6 litres per person per day would be theoretically possible – 3.75% of the average domestic consumption, which is comparable to the savings obtained through the use of Hog bags.

Following the measuring trial, Phase 2 of the project involved the offer of free devices to customers with follow-up analysis of water savings and customer satisfaction. All three types of devices were offered free to Southern Water staff and customers through a variety of promotions with request details logged in a database.

Each device was sent out with a freepost questionnaire to collect feedback on ease of installation, clarity of instructions, satisfaction with the flow and so on. 460 devices were requested, representing a 21% response rate, and the data was analysed by type of the device. The feedback indicated that users encountered problems with aspects of the DIY installation and with the resulting flow. One of the main causes of problems was found to be the provision of insufficient information to enable customers to choose the right version of the device for their tap fitting.

Overall feedback from phase 2 suggested that, although the device may technically be a useful demand reducing tool, in a real life situation it would not provide the savings indicated by the trial. The research concluded that more work was required on the development of Tapmagic before the device could be made commercially attractive. The product promoters have now gained a development grant from the DTI to improve the design of the product.

The research illustrates the importance of testing new technologies in a real life setting before their widespread introduction. In particular, it prevented Southern Water from introducing a technology that, whilst on paper would have produced significant efficiency gains, would have caused customer relations problems and not produced the projected gains.

At a glance:

- *The 'Tapmagic' device is a tap insert capable of changing the flow pattern of taps and potentially reducing water consumption by over 50%.*
- *A field trial was undertaken by Southern water with 460 by customers to assess the efficacy of the device.*
- *The research confirmed the device's potential but also suggested further design work was needed to aid DIY installation before widespread introduction of the technology.*

"The thoroughness of the company's research, involving both controlled testing and DIY testing by customers, is a commendable example to others and helped identify the need for further development of the new technology."
Judges' Panel

Essex & Suffolk Water

Finalist

Cost Benefit Analysis of Self Home Water Efficiency Audits

During 2002, Essex & Suffolk Water instigated a programme of self-home water audits in the Southend region. The central objectives of the programme were to encourage customer participation in audits and to subsequently develop a cost benefit analysis of the programme to compare the overall costs of the initiative with the amount of water saved.

Letters were sent to 30,880 households inviting participation in the scheme. They were also sent washing machine magnets with the message "Don't start me till I'm full" to encourage interest. Following this initial invitation, surveyors visited customers door to door to explain the project further and to provide a home water survey pack. Almost 50% of the households visited (14,850) accepted the pack.

The pack contained information on how to carry out a home water audit and messages about water efficiency as well as providing participants with practical measures for achieving water savings in the household.

Essex & Suffolk received over 9,500 completed survey forms in response to the campaign (64% of audit packs distributed). Initial assessment of the completed audit forms suggested that water savings of over 94,000 litres per day have been achieved (0.1 Ml/d).

The audit forms suggested that 22,701 water saving components held in the audit packs were installed or used. This included the following:

- Over 6,500 save-a-flush displacement bags.
- Almost 7,000 hose guns.
- 4,500 shower timers.
- 148 dripping taps were repaired.

At a glance:

- *Over 30,000 households were invited to participate in the self-audit scheme.*
- *14,850 customers accepted the water audit pack,*
- *9,500 of these customers completed a self-audit and returned the results to Essex & Suffolk Water.*
- *Initial calculations show that the project resulted in water savings of over 94,000 litres per day - an average of 9.91 litres per household.*

'The company achieved an impressive depth of coverage and response rate in its customer surveys'
Judges' Panel

Southern Water & The Environment Agency

Finalist

Micro component Analysis and Peak Demands

Southern Water & the Environment Agency wanted to understand the reasons why household consumption increased so greatly in the summer so that demand management options and water efficiency messages could be better identified and targeted.

It was felt that the measurement of 'micro components' (washing machines, dishwashers, personal washing by bath or shower, toilet use and the use of internal and external taps) would be an excellent way of providing reliable information on the way in which domestic customers use water in the home.

Two water resource zones were identified - Sussex North & Sussex Hastings. These areas were chosen as the balance between supply and demand in both areas is very 'tight'. Twenty households within the zones were monitored by a technique knows as Identiflow, to analyse their micro component use at different times of the year. One monitoring period was in a 'normal' demand period (April/May), the other was in a 'peak' demand period (July/August).

The project resulted in a number of conclusions:

- It was shown that peak demands were driven by a small number of properties using considerably more water rather than many properties using slightly more water.
- Significant increase in total household water use between normal demand (April/May) and peak demand periods (July/August).
- Water consumption in the Hastings area was strongly influenced by weather, measured by maximum temperature, rainfall and hours of sunshine.
- The extra water use was mostly through outside taps. It occurred throughout the day, with some tendency for evening use. There was some evidence of increased shower use in Hastings.
- There was a consistent difference between weekdays and weekends.

The results from the project have improved understanding of peak water use, and thus the drivers of investment in water resources planning.

At a glance:

- *Micro component use (mostly appliances and toilets) was monitored in 20 households with a technique known as Identiflow,*
- *Comparisons were made between use in 'peak' periods and 'normal' periods.*
- *The project improved the focussing of water efficiency messages.*

"This is a good example of a project designed to understand more fully how consumers use water and therefore how the water efficiency message may be focussed in the future."
Judges' Panel

Building and Renovation Category

Supported by CIRIA, this new category seeks to recognise good practice in the house building and renovation sector.

Judges were looking for new, cost effective and transferable ways of addressing water efficiency in this sector.

Category and O

Gusto Homes

Rainwater harvesting and integrated SUDS

Gusto Homes, a small, privately owned house building company, is committed to incorporating environmental good practice and sustainable development objectives into its housing. This has led the company to design and implement a number of water efficiency measures in each new home. Each new measure forms part of a continuous development process in terms of design and construction and is fully evaluated before being adopted in the company's ongoing developments.

For the company's Millennium Green project near Newark in Nottinghamshire, 24 homes and the company's own office were fitted with 'Freerain', an advanced rainwater harvesting system developed by Gusto. Two of the houses were also fitted with equipment providing monitoring data direct to Severn Trent Water. The aims of the project were twofold: firstly for the developers themselves to learn about the efficacy of such systems and to develop their understanding of them; secondly to raise awareness of the technologies through practical demonstration and dissemination.

The rainwater system uses underground storage tanks big enough to provide non-potable water to the home for 18 days. If the supply of rainwater becomes low, the tank is automatically topped up by mains supply. Homeowners are able to observe whether their tank is being supplied through the mains by a light in the control box. The harvested water is used in the homes for toilet flushing, washing machines and for gardening purposes. The use of rainwater in washing machines has the added advantage of reducing the amount of detergent required, as it is softer than mains water.

Various water efficient appliances, including dual flush toilets, aerated taps and shower units complement the rainwater harvesting system. Other environmental design features were incorporated into the houses including solar water heaters, passive solar heating and an advanced air management system.

Detailed analysis of the water use in two homes fitted with remote monitoring equipment was carried out by Gusto in conjunction with Severn Trent Water and

verall Winner

the Environment Agency. This showed that the harvested rainwater accounted for 50% of water consumption in the houses, whilst the combination of the rainwater system and water efficient appliances reduced total household consumption by 50m^3 per annum. Gusto was also able to make demonstrable savings through a reduction in the size of water infrastructure, such as storm drains and soakaways, needed for the development.

More recently, the company has developed a system integrating rainwater harvesting with a sustainable urban drainage approach and this has been fitted on a trial basis to one of the company's new homes in Lincoln. This is designed to allow overflow from the rainwater tank to feed into a water attenuation tank instead of soakaways. From this tank the water can be released at a controlled rate either through a permeable membrane to land, where this is practicable, or into the storm water drain where land drainage is a problem.

To increase awareness of the success of its various water efficiency projects, Gusto has exhibited at a number of homebuilder shows and hosts several visits a week to the site by planners, house builders, schools and the general public. The house owners themselves are given a detailed pack of information on the home's environmental features on moving in to the properties.

As a result of the success of the Millennium Green project, the company has been increasingly asked to provide complete rainwater harvesting systems to other development companies and has experienced a rapid increase in demand over the last 6 months. Gusto has also been instrumental in the recent establishment of a new trade body, the Association of Rainwater Recycling Companies, to encourage high standards in the design and provision of such systems.

At a glance:

- *Gusto designed and developed 24 houses and an office incorporating various water efficiency and other environmental measures.*
- *All the buildings use an automated rainwater harvesting system which has reduced water use by 50% per annum.*
- *The system has proved so successful that it is now being sold by Gusto to other developers and is currently being adapted by the company for integration with a sustainable urban drainage system.*

"Not only has Gusto helped its householders save water, but it has also raised general awareness of the potential for building water efficiency measures into new homes and demonstrated the business case for so doing – an outstanding example to others."
Judges' Panel

Albion Water

Commended

'Greenwater' Recycling at BedZED

The Beddington Zero Energy Development (BedZED), is an environmentally focused, energy-efficient mix of housing and workspace in Beddington, Surrey. As an integral part of its development, Albion Water was invited to design and install an efficient water services package that would help contribute to the development's reduced environmental impact.

Albion Water's developed a treatment plant that treats waste water from residential and commercial properties to produce non-potable 'greenwater'. This is stored and blended with collected rainwater prior to recycling for toilet flushing and garden irrigation. In this way, potable water use is dramatically reduced thus providing the residents with more affordable water services provision and the development with better flood control.

In particular, the project sought to deliver the following:

- Evidence that water recycling is commercially viable as well as environmentally sound.
- A reduced burden on the environment by reducing potable water intake and effluent arisings.
- Meeting the environmental objectives of the local authority and the Environment Agency.

The main treatment plant, known as the Green Water Treatment Plant (GWTP) is housed in an elevated greenhouse and incorporates a "Living Machine" type system which combines the latest developments in ecological engineering with traditional waste water treatment. The system uses hydroponics, where plants are supported on the water surface with their root systems extending into the depth of the tank and contributing to nitrogen and phosphorous removal.

To counteract the possible failure of the treatment works, a dual infrastructure has been developed to deliver potable and non-potable supplies. At the same time, an emergency overflow to Thames Water's foul sewers was negotiated to avoid potential contamination of the local watercourse. To avoid cross connections with potable mains, all recycled water is dyed green and undergoes UV treatment.

The plant is complemented by a 2,500 m^3 water recycling system. Water from the roof water collecting system is used on-site or is 'trickled' to the local watercourse. Wastewater is also significantly reduced with less than 50% of the expected wastewater quantities going to the sewer. All residents have been issued with educational material detailing how to minimise their environmental impacts and how to maximise the efficiency of the recycling system.

Flexibility is built in to the GWTP to allow experimentation – it will act as a 'living' laboratory for research into the efficiency of small-scale sewage treatment works. Once sufficient life cycle analysis has been successfully carried out to verify the benefits of dual systems, Albion Water intends to identify other developments where the challenges of delivering significant social benefits and minimising environmental costs are at the top of the developers' agendas (particularly in areas of poor water resource).

The development is now complete and fully occupied and provides a showpiece for all those wishing to deliver social, economic and environmental agendas.

* The 'greenwater' name derives from the dye put in to differentiate it from mains water.

At a glance:

- *The Beddington Zero Energy (BedZED) integrates environmental, social and economic aspects of housing design.*
- *The development's water efficiency measures focus on a plant that treats wastewater from residential and commercial properties to produce non-potable 'greenwater'*.*
- *BedZED residents consume an average of 80 litres of water per household per day compared to the UK average of 150 litres.*

"An exciting project exploring how far you can build water efficiency measures into new homes and one that is being eagerly watched by policy makers and other property developers with an interest in developing more sustainable housing."
Judges' Panel

Building and Renovation Category

Paul Cooling

Finalist

Great Oaks – A New House

Paul Cooling and his wife designed and built a family home for four incorporating many features to minimise its environmental impact. One of the main water efficiency features is a rainwater harvesting system. This collects rainwater from the roof and directs it to two large underground storage tanks with a capacity of 4,500 litres each. The water is then pumped up to a separate water tank in the loft, from where it falls under gravity to provide water for the toilet cisterns, a tap in the basement utility room and 2 outside taps.

A reed bed has also been introduced to remove the waste elements before releasing the water into a wetland area. The wastewater from the household showers and baths is very effective in diluting the solids and the reed bed has coped very well, even though it is in its first year of establishment.
This project has been such a success that since moving into the house in November 2001, the storage tanks have never run dry despite requiring a substantial amount of water to establish a lawn from seed.

Future plans include installation of a small solar powered pump to aid the efficiency of the reed bed. It will take treated wastewater from the reed bed outlet and mix it with the untreated effluent at the entry point to the reed bed to reduce the pressure on the first few plants in the bed.

At a glance:

- *'Great Oaks' was designed by its owner to incorporate a number of water efficiency features, including a comprehensive rainwater harvesting system.*
- *Harvested rainwater is used for watering the garden; flushing toilets and washing cars, whilst wastewater is treated through a reed bed.*
- *The system saves approximately 100m³ of water per annum.*

"An excellent example of one individual taking personal responsibility for water efficiency in his own home."
Judges' Panel

Dorset County Council

Finalist

Christchurch Junior Replacement School

The aim of the Dorset County Council project was to replace the existing Junior School with a new building that would provide a high quality learning environment for 480 school children aged between 7-11 years.

The design team was keen to incorporate environment considerations into the school's specification. From a water efficiency perspective, the school was designed to:

- Incorporate a number of elements of good practice, including the use of new technology, into one project to determine exactly what level of water efficiency is currently achievable.
- Gain hands-on experience of installing and monitoring the performance of a rainwater recycling system, which could then be transferred to other projects.
- Assess the benefits of using a rainwater recycling system in a Junior School environment.

A 'Monsoon Rainwater Recycling System' was incorporated into the original design along with a raft of other best practice water efficiency measures, including:

- Single warm water percussion taps within the children's WC areas.
- The installation of drinking fountains.
- The installation of 6 litre WC cisterns.
- The installation of Urinal Flushing Devices.

The installed Monsoon system consists of a 25m³ underground rainwater storage tank collecting water from a roof area of 1,100m³. Rainwater is pumped to a 1.5m³ header tank situated within the school's roof space via a metered monitoring unit. Mains cold water backup is provided to the header tank, which is also metered via the monitoring unit. There are 27 toilets, 4 urinals and 2 external taps connected to the rainwater system.

Actual meter readings taken over the last year (2002), indicate that the water consumption in the school is currently 876 litres per person / per year, compared to 3,790 litres per person / per year for the old Christchurch Junior School.

As a direct result of the successful installation of the rainwater recycling system at the school, four further buildings have been equipped with a rainwater collection system by the Council.

At a glance:

- *Dorset County Council commissioned new school building incorporating a number of water efficiency measures.*
- *The measures have reduced the school's water consumption by 42% (576m³) compared to the old school building.*

"This project illustrates how little water could be used by a school if best practice was adopted."
Judges' Panel

NFU Agriculture & Horticulture Category

Supported by the National Farmers' Union, this category aims to recognise UK-based agriculture and horticulture projects that demonstrate water efficiency good practice. Judges were looking for clear demonstration of how efficient planning of water use on the farm or holding has led to long-term savings.

East Clyffe Farm

Water Preservation on the Farm

Joint Winner

East Clyffe Farm comprises 820 acres of land farmed by six people, with additional people employed in businesses associated with various converted farm buildings. The water efficiency project was designed by the farm owner to reduce water use and wastage and to return surplus rainwater back to the chalk rather than allowing it to go to waste in the drains. It was devised and undertaken by the owner based on his own observations of water flow and with the use of existing industrial machinery.

The benefits resulting from the project have been significant to the farm and have included:

- Reducing abstraction rates to below 10,000m^3 per annum, thus removing the need for an anticipated increase in abstraction licence quantities.
- Reduction in incidence of flooding of farm buildings, land and poultry houses.
- Reduction in soil movement in pig field.
- Reduction in erosion where sheep eat stubble turnips.

The whole project has been very cost effective, entailing minimal capital outlay and leading to a significant reduction in costs. A number of leaking underground water supply pipes were identified and replaced with temporary overground pipes. These were routed carefully so that water could be delivered to where it is actually needed rather than where the pipes existed. At the same time, tree planting, the provision of beetle banks and other conservation works have been undertaken to reduce water run off. Also, in the outdoor pig unit, the redesign of the pens and sub soiling has stopped water run off and soil movement.

The project was not without difficulty though, as heavy storms made it extremely difficult to observe where the rainwater was going and what effect it was having on soil movement. It was monitored by trial and error before it could be determined where permanent solutions needed to be put in place. The Farm's water consumption has decreased from over 11,000m^3 to under 10,000m^3 in three years at the same time as livestock numbers increased on the farm. This was achieved despite the occurrence of 3 major leaks over this period, which has now been eliminated.

One very successful initiative involved providing a simple 'sleeping policeman' to route water run off to a useful area instead of allowing it to go to waste. A neighbouring farm has now replicated its success and in doing so has ended a regular flooding problem in the local village.

The East Clyffe Farm project is continuing to develop as monitoring highlights opportunities for further improvements. This year's key project is to lessen the concentration of sheep effluent at drinking holes, and at the same time improve grassland management.

The farm owner's philosophy is that significant water savings can be achieved through the commitment of one or two individuals. Addressing seemingly small but potentially significant factors can produce a large saving of water. Attention to detail is important as is taking the time to observe current patterns of water use.

At a glance:

- *A water conservation scheme devised and implemented by a farmer adapting readily available equipment.*
- *Features several innovative measures to minimise consumption and optimise run-off, whilst incorporating wildlife enhancement features.*
- *The measures have enabled the farm to reduce water consumption despite an increase in livestock numbers.*

"An excellent example of how one committed individual can make a big difference without spending large amounts of money. By observation, experimentation and a large dose of common sense a great deal has been achieved at East Clyffe Farm for both water efficiency and wildlife enhancement."
Judges' Panel

Osberton Grange Farms

Joint Winner

Solid Set Sprinkler Irrigation

Osberton Grange Farms, based in Worksop in Nottinghamshire, is a 900-acre farm employing 2 people. It incorporates a nursery business with 50 acres of rhododendrons and azaleas employing 30 people. The farm has a long history of undertaking water efficiency measures and was commended in the 2001 Water Efficiency Awards for its work on efficient watering of pot-grown rhododendrons and azaleas.

For 2001-2002, the farm owners set out to develop a system to provide enhanced water and labour efficiency in the production of its potato crop It was decided that a system of solid set low volume sprinklers would be developed to replace its existing, conventional rain guns. . In theory, by providing low volume application of water on a more frequent basis the sprinklers have a number of advantages over conventional rain gun irrigation, including:

- High accuracy of water placement.
- Immunity from wind displacement.
- Significantly reduced run-off and leaching.

In 2001, 50 acres of potato crop were embedded with the solid set sprinkler system. The system is permanently placed within the crop at 8m and 16m intervals with each line of the system being 200m long. It remains within the crop throughout the growing season and is controlled by a programmable solenoid valve.

To assess the overall effectiveness of the system, water use was monitored by means of a water meter and compared with the equivalent use by a rain gun, whilst a gauge was used to monitor the pressure. The potato yields from the two systems were then compared.

From the field tests of the system, many of the anticipated advantages of the sprinkler system over the conventional method have been realised. The ability to irrigate more accurately, not to lose water resources due to wind conditions, and less loss through run-off has all contributed to significant savings. In addition, being able to water the crop on a daily rather than weekly basis, as with the conventional system, has meant that the farm can make much more effective use of natural rainfall and can adjust its irrigation levels as rainfall is experienced throughout the growing season.

The monitoring proved that the new system provided many practical and environmental benefits. Capital costs of the sprinkler system per acre is twice that of rain guns but it is anticipated that the life span of the sprinklers will be double that of the rain guns, the costs of the two system are therefore practically the same. In addition repair and maintenance costs of the sprinklers have proven to be considerably less, as there are no moving parts. Once laid out the sprinkler systems requires very little management or labour other than monitoring the water need of the crop and adjusting the programme – which is common to all irrigation methods.

Since the introduction of the new sprinkler system at a cost of £30,000 for a 50 acres site, 20% less water has been used to produce the same amount of yield resulting in significant water cost savings for the farm. The farm is now replacing all its existing rain guns as they wear out with the sprinkler system.

At a glance:

- *The project involved the development of a significantly more efficient water sprinkler system.*
- *Controlled irrigation ensures the maximum yield (both quality and quantity) from minimum water resources through precise delivery of water and nutrients.*
- *20% less water is used and water run- off has been significantly reduced.*

"This innovative approach to potato irrigation has produced impressive results which should be replicable in other potato farms and indeed for other crops."
Judges' Panel

Place UK

Commended

Recycling Water For Bean Sprout Production

Place UK was founded in 1954, and grows, processes and markets crops of high quality rhubarb, strawberries, raspberries, blackberries and bean sprouts on farm land. They employ 63 full time staff and approximately 600 fruit pickers during the season.

Place UK is located in Tunstead, near Norwich, one of the driest and most water stressed regions of England. To address this natural shortage of water in the area the company has been developing a water efficiency strategy since 1999. A core objective of this strategy is to achieve water savings for their total operation whilst at the same time maintaining a high level of yield quality and quantity.

Following a review of the whole operation and water use monitoring via on-site meters it was established that the greatest area of water use on the farm was in the production of the company's bean sprout crop.

Place UK approached a filtration and separation systems specialist and a consultant microbiologist to assist them in the development of a re-circulation system which would capture excess water in the irrigation process for re-use. The process resulted in excess water being collected, filtered and then recycled into the irrigation process.

The success of the system has not only resulted in impressive water savings but has also enabled the company to demonstrate its commitment to water efficiency and wider environmental issues to both staff and customers. The company is now also looking for other ways of achieving water efficiency.

Since its introduction in 2001 a 38% reduction in water requirement for bean sprout production has been achieved. In terms of financial savings the company has calculated that approximately £12,200 of water costs are saved annually, resulting in a payback period of just 3 years.

At a glance:

- *A water re-circulation unit was introduced to the company's bean sprout production process.*
- *Water consumption was reduced by 38% with payback period of 3 years.*
- *The company used the project to demonstrate to staff and customers their commitment to water efficiency and the wider environment.*

"The growers were able to overcome a number of challenges, particularly in the filtration systems, to produce excellent results which save both water and money without impacting on yield quality or quantity
Judges' Panel

Coolings Nurseries Ltd

Finalist

Rainwater Capture and Long Term Storage / Treatment

The whole site at Knockholt, nr Sevenoaks in Kent is owned and operated by the Cooling family (second and third generation). There is a team of between 55 - 60 full time members of staff who are recognised by the Directors as a dedicated and experienced team. Coolings is a retail nursery, producing on-site 65% of all plants sold, equating to over one million plants per year.

The management team made the decision to construct a rainwater capture system as a way of reducing reliance on mains water supply. A reservoir was built in 1999 to store harvested rainwater and, over the last 2 years, irrigation run off from the retail nursery beds and a large proportion of the Production Nursery has also been channelled into the reservoir.

Also, to ensure the highest water quality, two 10ft filtration tanks that, between them, hold 30 tonnes of specially selected sand and gravel layers have been installed, together with a 200ft long gravel reed bed containing Norfolk Reeds (phragmites australis).

The majority of watering is controlled by computer and is carried out at night to reduce evaporation. Drip irrigation is also in place, which ensures that exactly the right amount of water is put directly onto the plants.

As a result of the project there has been tremendous reduction in run off to surrounding properties, as well as the reduction of water flowing across the site which often caused flooding. Also there has been a significant reduction in water costs which is calculated in the region of £5,000 to £6,000 p.a. compared with over £8,000 p.a. pre-implementation.

At a glance:

- *A reservoir was built by the nursery to store 2.2 million litres of rainwater collected during the winter from the greenhouse, barn and coffee shop roofs.*
- *7,000m^3 of water is collected in the reservoir annually resulting in a reduction of mains water consumption from 10,000m^3 to 3,000m^3.*
- *The nursery is now approximately 75% self-sufficient.*

"The project shows how large amounts of water can be saved by close attention to water flow and subsequent investment in water capture and redistribution".
Judges' Panel

Denys E Head Ltd

Finalist

Garden Style Pond

Denys E Head Ltd developed from a horticultural background into the garden centre with the opening of Forest Lodge Garden Centre in 1981. The centre has continued to grow, with major developments in 1984, 1988 and 1994, and has held the coveted "Garden Centre of the Year Award".

In the autumn of 2000 Denys E Head set out to expand the irrigated plant area of the nursery of 0.55HA by a further 0.45HA. The new area was to be irrigated by overhead sprinklers and hoses, however the surplus irrigation water, together with rainwater from warehouse and glasshouse roofs and storm water from roads and yards simply ran to waste.

Denys E Head were aware that they were losing the opportunity to collect and make use of the water run off. As a result a pond was created in May 2001 to recover and recycle the irrigation water, or as much of it as was practical within the confines and contours of the site. Water is collected and then pumped up to two irrigation tanks to be used by the irrigation system as required.

Initially it was expected to use the recycled water for sprinkler irrigation, via the storage tank serving the new plant area only. A simple submersible pump and cartridge filter were installed and worked effectively. However, early observation of the system suggested that it should be able to serve the nursery as a whole.

The project began as a very low budget trial in 2001 at a cost of some £4,000. The water saving achieved (approximately 6,700m^3 on anticipated mains consumption) represented a saving in the first year of some £4,000 or £0.60 per m^3.

At a glance:

- *A pond was created at Garden Style Nursery to recover and store water for plant irrigation.*
- *Such was the success of the recycling that the pond now serves the Nursery as a whole.*
- *Water recycling provides 6,700m^3 of water per annum resulting in a saving of £3,500 each year.*

"A good example of how sensible water efficiency measures can achieve a quick financial payback."
Judges' Panel

Unigro

Finalist

Greengro

Unigro is a Private Limited Company that produces pesticide-free fresh fruit, vegetables and herbs for the UK market. In November 2000, it developed a sealed, climate controlled facility to make its operation more efficient. The combination of computer controlled environments and the latest horticultural techniques have aided the development of a unique farming/growing system for producing sustainable, high yield crops using minimum water inputs.

The process known as the Greengro Farming System (GFS) offers the following benefits:

- High Yields – a single dedicated acre can produce the equivalent to 120 acres using traditional farming practices
- Managed and efficient use of water resources
- Economical crop cultivation of class-A crops for 12 months of the year
- Significant economies of energy and labour
- Independence from climate restrictions
- Elimination of pesticide use
- Modular tunnel construction for ease of relocation

The completion of the prototype tunnel in August 2001 has enabled the company to grow a wide variety of crops proving the versatility of the controlled environment and its suitability to operate on a fully commercial basis. Throughout the eighteen-month trial period the environmental growing conditions have been recorded and evaluated on a database to establish a balanced cultivation protocol. The result is minimisation of water and energy input while maintaining the shortest growing periods and maximum harvestable yields.

The project has resulted in a number of specific water efficiency benefits:

- Economic use of water by precision irrigation in a closed water system.
- Lowest water use possible to maximise crop yield – 30% less than conventional growing.
- Future water efficient growing resulting from rainwater harvesting will result in a 50% reduction in mains water requirement. Water treatment costs associated with the control of irrigation water pH levels are reduced by blending mains water with the harvested rainwater.

These specific water savings reduce water use from 18,000m^3 per year to 9,000 m^3 per year with associated cost savings of £12,000 per annum.

In the next three months Unigro is preparing to commence construction of further growing tunnels and seeking to roll out the technology with independent farmers from early 2004.

At a glance:

- *The development of a unique growing system using controlled irrigation.*
- *The system ensures precise delivery and volumes of water and nutrients to the plants.*
- *Rainwater harvesting, along with a unique underground storage and structural support system, eliminates the need for holding lakes and reduces mains water use by 50%.*

"An extremely interesting new growing method with potentially large implications for water use and crop diversity – one to watch for the future."
Judges' Panel

Public Sector and NGO

This category recognises water efficiency good practice in public sector organisations and non-governmental organisations (NGO's). Judges were looking for innovation, practical and transferable measures and a commitment to continue water conservation measures in the future.

North Wales Police

Winner

Monitoring, Targeting and Awareness

The North Wales Police project sought to reduce water bills whilst at the same time raising general awareness of water issues throughout the force. The project was introduced as part of a wider environmental programme and focused on monitoring water use throughout the Force's 100 stations/buildings and then targeting hot spot areas.

Water meters were installed in over 90 buildings ensuring that all stations had effective monitoring activities. As well as metering individual buildings, specific aspects of water use in some buildings were also monitored - for example, a specific meter was placed on the ornamental pond at the headquarters.

Following the placement of meters and analysis of data, a series of specific water saving measures were implemented, including installation of water flow controls in 70 urinals, placement of dams in all WC systems and replacement and/or upgrade of taps. All old/damaged taps were replaced with percussions taps and all other taps of good order had spray heads fitted.

As part of the process a good housekeeping policy was also introduced to ensure water efficiency and other environmental issues were addressed appropriately. An email awareness campaign to support the new measures was introduced. As an added incentive, individual stations were allowed to spend water-related cost savings on their own choice of priorities. This helped to raise awareness of the financial benefits brought about by water efficiency measures. Examples of how the savings were spent included a station redecoration and purchase of new furniture for staff.

Through the use of meters and comparisons of before and after data following the implementation of measures, significant data on water use has been achieved. This has enabled problem areas to be identified and dealt with. The presence of the meters together with the awareness programme has improved the environmental awareness of staff.

Significant water and cost savings have been made from expenditure of approximately £10,000. A saving of £30,000 per annum has been achieved across the Force, resulting in an impressive pay back period of only 4 months. In addition, over the last 4 years, annual water consumption has dropped from approximately 28 million litres of water to 13 million litres.

The project is an ongoing initiative within the force. The future focus will be on further awareness training. A new member of staff has now been appointed to take forward environmental awareness rising within the force with water efficiency playing a significant role in this programme.

At a glance:

- *Water use monitored throughout the Force's 100 stations/buildings.*
- *A series of measures were implemented which achieved financial savings of £30,000 and a payback of only 4 months.*
- *Individual stations were allowed to spend water-related costs savings on their own priorities, decided within their own Division.*

"A simple but imaginative approach to water efficiency which has delivered impressive results. A particularly notable feature is the way in which staff have been able to choose how to spend the financial savings from the initiative – an excellent incentive
Judges' Panel

SERCO

Commended

Water Savings at the Barracks

Serco are agents for the Ministry of Defence and are responsible for servicing Allenby Barracks, in Bovington, Wareham.

The barracks has over 400 individual buildings, which serve over 1,500 troops. Three years ago it was noted that water and energy bills were high and it was decided that a proactive programme of environmental improvement and efficiency would be introduced throughout the site. In response a water and energy efficiency manager was recruited with the responsibility of introducing a water and energy efficiency strategy throughout the site. The main aspects of the water efficiency programme which have been introduced as part of this strategy include:

- Over 1,000 waterless urinals were introduced throughout the site.
- 5 pressure-releasing valves were installed to detect leaks.
- A system of alarmed meters was introduced which were all linked back to a central control panel.
- For each of the 400 buildings a manager has been identified to deal specifically with issues of water and energy management.
- All showers, taps and toilets have been fitted with water efficient devices.
- A rainwater harvesting system has been introduced at the Barracks stables to supply all water required for cleaning and maintaining the facility.
- Each month a water efficiency report is produced and if consumption increases unexpectedly an investigation begins.

The detection system has led to a large number of leaks being detected in the old water mains and these have been rectified. The programme overall has led to increased water efficiency awareness and knowledge amongst staff and troops.

The internally devised environment programme has cost approximately £45,000 and has resulted in impressive savings of £150,000 per year.

At a glance:

- *Over 1,000 waterless urinals were introduced throughout the Barracks.*
- *Rainwater harvesting system installed at the barrack stables.*
- *£150,000 saved per annum on water costs, equating to a 3-month payback, together with improved staff awareness and understanding.*

"A comprehensive water efficiency programme that has met with an excellent response form the staff and troops at the Barracks."
Judges' Panel

Aberdeenshire Council

Finalist

Water Resources: Setting a New Standard for Aberdeenshire

With a total of 8,338 employees [full time equivalent], Aberdeenshire Council caters for a large rural area of 6,289 square kilometres. The Council has an impressive range of water efficiency related work areas including:

- Innovative Technology: the design of more efficient public buildings within Aberdeenshire.
- School Energy Programme: the implementation of water efficiency measures into existing buildings as well as the raising of awareness levels through education and awareness campaigns.
- Review of Water Meters: the checking of current water meters in all public buildings for correct type and size.

As part of its wider education programme, energy efficiency information packs and an internal website section are also made available to all public buildings. One of the Council's main water efficiency project centres on Strathburn School and its rainwater recycling system. The presence of a large roof area, and relatively high occupancy, made the school suitable for this feature. The system comprises an external storage tank connected to the rainwater drainage system. Once the water collected is filtered, it is stored in the external tank. Depending on water demands, water is then pumped back to the main building where it is treated at a disinfection unit before being distributed to the various toilet cisterns for flushing purposes. A mains water connection is supplied to provide water in the event of dry periods.

Current use of greywater within the school amounts to approximately 3,075 litres per day. This relates to financial savings of £1,485.28 per annum for the school.

At a glance:

- *The project encompasses three main areas: Innovative technology; the School Energy Programme and a Review of Water Meters.*
- *Total financial savings to date are £277,513.*
- *A 26% reduction in water consumption within all targeted public buildings has been achieved.*

"It's great to see a local authority promoting water saving measures to the community in such a way that it becomes second nature to all".
Judges' Panel

Bailey Partnership on behalf of Plymouth College of Further Education — Finalist

Monitoring and Managing water use on a Campus

In 1999, Plymouth College began working with Bailey Partnership, a multi-disciplinary firm providing built environment consultancy services, to address its high water consumption. Historically, the site used around 12,000m³ of mains water per year or 550 litres per square meter of floor area costing, at current prices, £30,000.

To begin the process, an independent consultant carried out a survey of water use on the site, including the use of additional metering in various areas. One of the main recommendations was that the College should fit "waterless" urinals. Following a successful trial in one area, these were fitted throughout the site (and subsequently throughout the estate) in December 1999. As a result of this measure, annual consumption fell from almost 12,000m³ to less than 8,000m³, saving almost £10,000 per year. Water consumption now equates to 330 litres/m² per year.

In 2000, six water sub-meters were installed and a continuous programme of monitoring was introduced. Work at another college site identified a significant leak, the remediation of which reduced consumption from over 2,000m³ per annum to virtually nothing. As a result of this experience, all meters in the college estate are now read weekly, in order that excessive usage may be identified early.

Since the installation of the "waterless" urinals, the college site has been developed further, including the construction of the "Innovation Centre". This building incorporated the restaurant facilities previously accommodated elsewhere on the site as well as providing other facilities previously provided off site and increased the building area by about 10% to 24,300 square metres. It was designed with integrated rainwater harvesting, supplied from its 500m² flat roof. This supply is metered and the installation has harvested 138 m³ in the past year. To raise awareness of the College's water efficiency policies and the measures that were introduced, articles were produced for its weekly staff bulletin. Use is also made of posters and badges to promote the measures.

The College has now developed a new policy which aims to reduce energy and water consumption by a further 10% over the next 2 years.

At a glance:

- *An extensive programme of water efficiency measures and awareness-raising.*
- *The programme has resulted in a reduction of water consumption by 4,000m³ per annum with associated annual financial savings of £10,000.*

"This project is notable for the way in which water efficiency measures now form an integral part of the college's overall environmental management programme".
Judges' Panel

University of Derby — Finalist

Water Conservation Project

The University of Derby consists of 12 main sites and serves approximately 12,000 students. The project involved signing up to the government's Watermark project to assess if the University was eligible for help to reduce its water bills and improve its efficiency.

The main long-term project aims were to reduce water consumption on 12 of the main university sites by monitoring, installation of water reduction devices and improving awareness of usage amongst staff and students.

As a first stage in the project, five of the main tutorial sites were targeted and various water reduction devices were installed including:

- Urinal sensor controls.
- Water displacers.
- Induction shower heads.
- Tap restrictors.

As a result, there has been a large reduction of 50% in water consumption across the five sites. This amounts to a reduction in consumption of 72,804 m³ and equates to a financial saving of £80,320 per annum.

All University bills are now validated and monitored by the project team allowing the University to identify any rise in consumption quickly and act proactively to deal with the issues. There is also an improved awareness amongst staff and students regarding usage of water on site as a result of the project. As an additional incentive for introduction of efficiency measures, any money saved from this project is re-invested in other energy and water saving projects.

The University aims to continue reducing its consumption And, in the long term, incorporate water saving measures on all sites.

At a glance:

- *Through participation in the government's Watermark project, the University of Derby was able to enlist a consultant to identify potential water efficiency measures.*
- *At the same time it sought to improve awareness of water issues amongst staff and students.*
- *A 50% reduction in water consumption has been achieved across five sites.*

"Its good to see a large institution such as a university taking an active and effective approach to reducing its water consumption."
Judges' Panel

Special Commendation

The long-term commitment and outstanding achievements of Hampshire County Council over the last decade prompted the judges to award this Special Commendation for the first time.

This impressive strategy has saved millions of litres of water and many thousands of pounds every year for ten years and is a shining example of the wise use of a pressured resource.

Hampshire County Council

A 10 year programme of water conservation

The actions taken by Hampshire County Council during the past 10 years have led to considerable savings in both money and water.

The water savings over the last 10 years have been significant. Approximately 6.3 million cubic metres have been saved which is sufficient water to supply the county for the next 6.7 years at present consumption levels.

As the Education Department accounts for approximately 75% of the Council's total water usage, a lot of effort has been directed at lowering consumption in schools. Water Seminars for School Governors are run as part of the training programmes to help these school governors understand the importance of these issues in running their schools. The Property and Business web page has a section on energy and water to allow those with water issues to contact the Council.

This is to be developed further in due course with information on how to read meters, what action to take to save water etc. Also, water use is raised twice a year to all secondary schools and once a year to all primary schools at a formal meeting with the school heads and governors. This helps the school raise issues about their use of water. As a result of this about 100 schools a year are directly contacted about their water use. The Council has also worked with Southern Water, Bournemouth and Portsmouth Water Companies on providing water information booklets to all schools in the County and they are currently working with the Environment Agency on promoting their funding to schools for water saving investments. Between 1992 and 1995, Property Services Energy Section carried out a rolling programme of installing automatic passive infrared urinal controllers in County Schools.

This proved very successful and dramatically reduced water consumption and costs. Since then, urinal controls have continued to be fitted on an ad hoc basis as required, together with maintaining those originally installed. The Council is now giving serious consideration to installing waterless urinals.

In addition, to educate and raise awareness, water issues are raised in internal "house" newspapers, that are sent to all staff in the department (1,800) as well as those sent to schools (500). Staff members of the Council have spoken about the energy and water conservation programmes for local and world service radio and an article has been published in local newspapers on water savings made by the Authority and they have developed water action plans for the reduction of water use in Hampshire.

Another task carried out by the Authority is that of leakage control. The identification, location and repair of concealed leaks are of the utmost importance. This unglamorous, time consuming and expensive continuous task is essential to just maintaining existing levels of water consumption let alone reducing them. During the past decade, Property Services Energy Section have examined computer driven over-consumption reports, analysed concerns expressed by property users/managers and have tried, subject to resources being available, to investigate higher than average users.

Finally, the energy section of the Authority has one full time member of staff who deals with water issues in the property section of the Authority and represents the Authority on the Water Voice Business Customers Forum. This allows them to speak directly to Water Voice and the Water companies about water use in the Authority.

The monetary saving has been achieved by a number of means. For example, whenever a concealed leak is repaired on a metered supply it is possible, provided the property is connected to mains drainage, to claim back non-return to sewer allowances. Some Water Companies will also give a leakage allowance. Also, when it can be established that a property's bill is incorrect, e.g. faulty meter reading or

Special Commendation

there is some other anomaly, it is possible to obtain credits/refunds. Property Services spend a lot of time and effort in making/chasing such claims and in the last 10 years, £1,231,670 has been reclaimed for the above reasons. However, these individual credits/refunds fall into one of two categories:

- Category 1 can best be described as a one off payment given for a reason that has no effect on future bills.
- Category 2 can be described as a one off payment given for a reason that will reduce or eliminate all future bills e.g. the repair of an underground leak.

Therefore, the actual savings made by the County is not only the summation of all the one off payments but also, and more importantly, the accumulative effect of the future savings made by all those in Category 2, plus of course those savings resulting from any water conservation measures undertaken. It is these savings for which the Energy Section is justifiably proud – total savings of approximately £8.5 million achieved over the 10 years.

At a glance:

- *A 10 year commitment to water efficiency and conservation.*
- *Total savings of approximately £8.5 million achieved over the last 10 years.*
- *Main tasks carried out are: help, advice and education; urinal controls; leakage control; close working relationships and billing errors/anomalies.*

"Hampshire County Council should be justly proud of its achievements in water conservation and efficiency over the last 10 years. This marvellous example of long-term commitment to the protection of water resources sets a standard to which other local authorities should aspire."

Judges' Panel

Other Organisations Who Entered the 2003 Awards

The Environment Agency and its partners recognise all the good work being carried out by the following entrants. It is encouraging that all of these organisations are considering their approaches to effective resource management now and in the future.

A.N. Sanderson

Anglia Circuits Ltd

Anglian Water Services

Bellway Homes / Ipswich Borough Council

Blackwalls

British Potato Council

British Waterways

Cardiff University

Construction Resources

Council for Environmental Education

Crawley Borough Council

East Lindsey District Council

East Renfrewshire Council

Environment 4 Business

Essex & Suffolk Water

Euro Quality Coatings

Fluid Control (UK) Ltd

Gallion Homes

Glenmachrie Guest House

Heeley City Farm

High Peak Borough Council

Hillier Nurseries

HR Wallingford

Just So Gardens

K. Sarveswarn

Leicester City Council

Mandix

Millennium Chemicals

Nissan Motors

Northern Land Care

Portakabin Ltd

Rainharvesting Systems Ltd

Rolls Royce - Compressor Systems

RSPB

Shepherd Neame Ltd

Stewart Signs Ltd

Thames Water Utilities

The Scottish Nappy Group

Three Valleys Water

Thyme Consultants

UMIST

United Utilities

University of Cambridge

University of Sheffield

University of the West of England

Walsall Metropolitian Borough Council

Water Services NI

Whitehills Infant School

Wildlife Trusts (Berks, Oxon & Bucks),

Woking Borough Council

Water Efficiency Awards 2003 Supporters

The Environment Agency is delighted to welcome the continued support of Envirowise, the National Farmers' Union and Ofwat - the principle supporters of these years' Awards. It would also like to thank CIRIA and IDEA for supporting the 2003 Awards.

Envirowise helps UK companies reduce costs and increase competitiveness by minimising waste and promoting sound environmental practices. Its success is measured by the savings made by industry and commerce as a direct result of the Programme's work, and so far, Envirowise has helped industry save more than £145m per year. The programme works by promoting best practice to industry and commerce through free confidential advice and information. It also works closely with many organisations to promote the benefits of waste minimisation and cleaner technology.

Water minimisation is one of the key elements of Envirowise in which industry can make substantial savings through low cost or no cost actions. Companies who have telephoned the Environment and Energy help line (0800 585794) have saved between 20-50% on their water bills. The Environment Agency Water Efficiency Awards emphasises these important messages and rewards and celebrates good practice in water efficiency and conservation. Previous participants have demonstrated that substantial cost savings can be made through complimentary water saving measures and as such, Envirowise is please to offer the Industry & Business category its full support.

NFU is the leading democratic organisation representing the interest of Farmers and growers in England and Wales.

Its central objective is to promote the interests of those agricultural and horticultural businesses producing high quality food, drink and crop products for customers both at home and aboard.

Central to this objective is its encouragement of environmentally sustainable production farming practices, and a desire to ensure the long-term viability of rural communities.

Membership of the NFU is voluntary and currently runs to over 140,000 which includes around 75% of fulltime farmers and growers in England and Wales. There are over 63,000 Countryside members with an interest in rural land, but who do not depend on farming for a living.

The NFU, founded in 1908, does not receive support from public funds; neither does it support any one political party.
OFWAT (Office of Water Services) is responsible for ensuring that the water and sewerage companies in England and Wales provide a good quality efficient service at a fair price.

Ofwat is a non-ministerial government department which,

- Sets limits on what the water and sewerage companies can charge.
- Ensures companies carry out their responsibilities under the Water Industry Act 1991.
- Protects the standards of service to customers and promotes economy and efficiency.
- Helps to make sure that effective competition can develop.
- Compares the performance of companies, which helps the poor performers to rise to the standards of the best.

Ofwat enforces the companies' duty to promote the efficient use of water by their customers. Ofwat expects companies to assess the role of the efficient use of water within the framework of a long-term plan to valance supply and demand. Companies therefore need to ensure that their strategies focus on what works best. Ofwat continues to work with the industry to establish better information and improve understanding of the cost effectiveness of measures for the efficient use of water by customers. Ofwat is therefore supporting the Economic Research category in this Year's Water Efficiency Awards.

CIRIA plays a prominent role in the construction industry by aiming to improve the performance of all concerned with construction and the environment. CIRIA provides real industry solutions through its collaborative research programme, the results of which are published and are made openly available to industry. CIRIA also encourages the application and improvement of best practice through networks, facilitation, conferences, workshops and training. CIRIA is a not-for-profit, independent organisation, operating for the good of its members and the wider industry.

Typical CIRIA best practice guidance released for the water sector in recent years include publications such as SUDS — best practice manual for England, Scotland, Wales and Northern Ireland, Manual on scour at bridges, Rainwater and greywater use in buildings. CIRIA continues to make a valuable contribution to industry with on-going research projects such as Development and flood risk and Key performance indicators and benchmarking for water use in buildings.

For further information, visit www.ciria.org

The Improvement and Development Agency (IDeA) was established by and for local government in April 1999. Our mission is to support self-sustaining improvement from within local government.

As an advocate of the best in local government, the IDeA aims to:

- deliver practical solutions to improve local government performance.
- develop innovative approaches to ensure the transfer of knowledge within local government.
- act on behalf of local government as a whole, building new platforms for joined-up, locally delivered services.
- employ first rate staff to meet the needs and priorities of our customers.
- work with our customers in a way which respects diversity and promotes equality.

Overall the success of the IDeA will be judged by the extent to which local government improves - your success is our success.
We will measure this by:

- year on year improvement in performance indicators.
- the ability of local authorities to move up and through the Audit Commission classification of authorities.
- evidence of satisfaction amongst local communities with their councils and the services they provide.

The IDeA is a not for profit organisation. We plough our capital - both intellectual and financial - straight back into local government.

The **Environment Agency** for England and Wales is the statutory body with a duty to protect and improve the quality of air, land and water. The Agency's vision for the environment and a sustainable future is: A healthy, rich and diverse environment in England and Wales, for present and future generations.'

The Environment Agency recognises that regulation alone cannot change people's attitudes or behaviour and it is committed to working in partnership with business, public bodies and community organisations to encourage people to change.

Water Resources

A key role of the Environment Agency is to protect the long-term future of the water environment while encouraging sustainable development. In England and Wales, as in many parts of the world, the balance between water supply and water demand is becoming more fragile. Reconciling the needs of the environment with the demands of society is becoming an increasingly difficult challenge.

The Environment Agency's vision for water resources for the next 25 years is:

Abstraction of water that is environmentally sustainable, providing the right amount of water for people, agriculture, commerce and industry, and an improved water-related water environment.

Water Demand Management

Water Demand Management (WDM) is the focal point within the Environment Agency for the science and practice of water demand management. Its mission is:

To provide a focus for information and expertise to ensure acceptance of water conservation throughout society.

As a centre of expertise, WDM is at the forefront of matters relating to national and international water resources, demand management and water conservation. It provides technical and practical advice to both the Agency and external bodies. WDM's activities fall under four broad categories: advice; promotion; technical development and research.

Through WDM the Environment Agency publishes a range of free publications on water conservation and water efficiency. To order any of the following publications please contact WDM (details below):

- A scenario approach to water demand forecasting (August 2001).
- A study of domestic greywater recycling (April 2000).
- Conserving water in buildings (September 2001).
- Demand Management Bulletin (Bi-monthly external newsletter).
- Water Efficiency Awards 2001 (June 2001).
- Be Waterwise (March 2002).
- Waterwise on the Farm (October 2002).

Further information

For more information and free publications on issues relating to water conservation, water efficiency and demand management, please contact the WDM helpdesk vie e-mail: paula.wood@environment-agency.gov.uk or telephone: 01903 832073. Alternatively, please consult www.environment-agency.gov.uk/savewater.

As well as managing water resources, the Environment Agency has responsibility for water quality, flood defence, fisheries, navigation, and other ecological and recreational uses of water. For information on these activities, please telephone the Agency's general enquiry line on 0800 933 3111 or consult www.environment-agency.gov.uk .

UK CEED

The Environment Agency Water Efficiency Awards 2003 was managed by the UK Centre for Economic and Environmental Development (UK CEED), an independent, not-for-profit foundation

UK CEED was established in 1984 by a group of far-sighted leaders from the business, government and scientific communities. Responding to the recommendations of the UN World Conservation Strategy, the Centre was set up to support, co-ordinate and monitor implementation of the Conservation and Development Programme for the UK. In particular, UK CEED was to play an important role both in demonstrating how environmental protection and economic development priorities could be reconciled and also in promoting the central role of the business sector in environmental improvement.

Today, UK CEED continues to enjoy an excellent reputation for undertaking high quality and innovative environmental research, policy development, demonstration projects and educational and engagement activities. The Centre values its independence highly and works in partnership with a diverse range of organisations from the private, public and voluntary sectors. It attracts financial support from the European Commission and national, regional and local government; from business; from environmental organisations; and from charitable trusts. The Centre focuses on the following programme areas:

- Environmental industries and technologies.
- Energy.
- Waste.
- Information and communications technologies.
- Water, leisure and tourism.
- Public engagement, education and communication.

Water environmental issues have been a major focus of UK CEED's activities since its foundation in 1984. Current projects include:

- **Bag It and Bin It** - a national environmental education campaign seeking to encourage people to dispose of personal waste items in a responsible manner.
- **Navigate with Nature** - a national environmental education programme for leisure boat users currently focusing on the provision of improved environmental facilities at boatyards and marinas.
- **Online Discussion Forum** - UK CEED has recently completed an online discussion forum for DEFRA on a forthcoming strategy for the environmental quality of water in England.

UK CEED also undertakes a broad range of research and consultancy activities, which cut across the programme areas outlined above, including:

- Policy advice and guidance to the corporate and government sectors.
- Environmental management, reviewing and reporting.
- Economic analysis of environmental issues.
- Training and awareness-raising.
- Stakeholder engagement.
- Environmental education and communication.
- Public attitude surveys.
- Specialist publishing.

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www.environment-agency.gov.uk/savewater

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