CEFAS

The Centre for Environment, Fisheries & Aquaculture Science

Annual Report and Accounts 2004 – 2005

defra

Department for Environment
Food and Rural Affairs

Annual Report and Accounts 2004 – 2005

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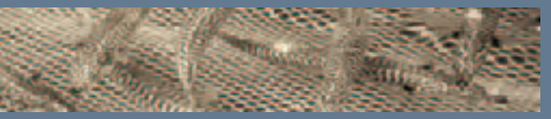


CEO's Statement

Strong Science

Financial Performance

CEO's Statement

I am pleased to report that this has been another successful year for CEFAS: one where all Ministerial targets were met and where science of the highest quality was consistently delivered. CEFAS has continued to conduct relevant research capable of meaningful application, ensuring that it is respected and valued by customers and scientific peers worldwide.

Our primary purpose remains the application of science in support of the UK government. In addition, we constantly seek to enhance our capabilities through the commercial development of our skills and intellectual property, building a wider base for our activities and offering increased value for money to our customers.

Public concern over marine environmental matters grew during the year. This inevitably increased the demand for our skills and science in both national and international arenas.

The Royal Commission on Environmental Pollution's report, *Turning the Tide*, stimulated considerable debate about marine protected areas (MPAs). CEFAS' ability to integrate diverse information about the marine environment into a single, cohesive assessment will be enormously valuable when deciding the relevant merits of, and any potential locations for, MPAs.

The publication of Defra's report *Charting Progress* – on the state of the seas around the UK – received considerable attention and provided a useful snapshot for both the public and policy-makers alike. CEFAS played a leading role in compiling research evidence and ensured that it was presented in a clear and cohesive series of documents, including four main marine sector reports.

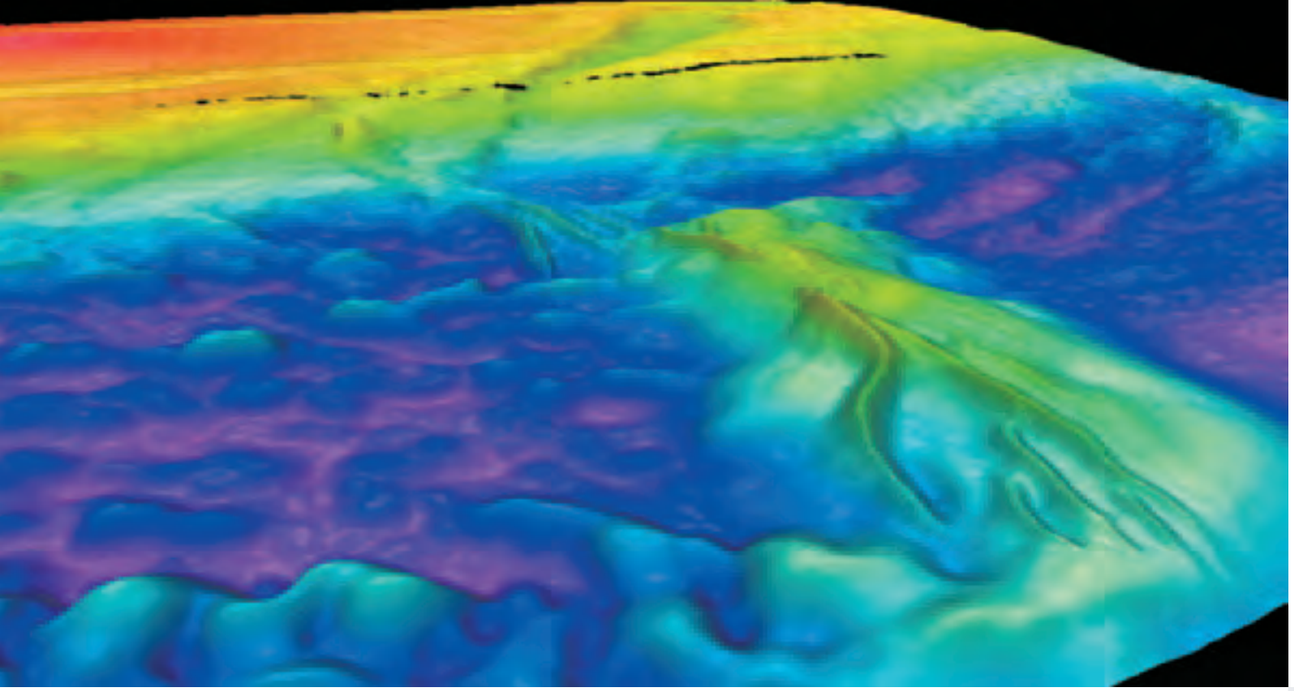
- Title page top: Beam trawl
- Title page below: Mark Farrar Chief Executive
- Above: Dogfish (*Scyliorhinus canicula*)
- Right: CTD rosette water sampler coming aboard RV *CEFAS Endeavour*

CEFAS teams have also been working closely with the fishing industry and the Department for Environment, Food and Rural Affairs (Defra) to provide reliable information about the state of fish stocks around the UK. This evidence provided vital support for negotiations at the European Council of Fisheries Ministers in December 2004.

Our research – generally accepted as leading in its field – often has particular resonance for society at large. For example, the link between our work on fish tumours and research into human cancer has enormous potential for positive, practical gains in disease detection and potential treatment. In addition, recent research into shark and ray activity around the UK, using our state-of-the-art telemetry systems, provided new insights and highlighted the vulnerability of these species.

Advanced technology often leads to increased data. Stewardship of and access to that data must develop accordingly. Over many years CEFAS has championed the need for effective dissemination of all data, and we will play a critical part in the recently launched Marine Data and Information Partnership (MDIP). In addition, CEFAS has embraced the new Freedom of Information regulations, making its data and documents more readily available to the general public.

The National Marine Monitoring Programme (NMMP) is to be redesigned to co-ordinate evidence gathering and improve the efficiency of its UK participants. CEFAS will update its monitoring work in line with this approach so as to play a significant role in this important programme development.



This year CEFAS was accredited to the scientific Joint Code of Practice for Research, launched by Defra – yet another indication of our commitment to science of the highest quality and integrity.

Looking now to the future: global agreements and changing European regulations will demand expert, impartial evidence in support of government policies. Our proven ability to apply science through evidence gathering, assessment and balanced advice will increasingly have to transcend traditional boundaries. It will also need to focus on the cumulative effects of combined activities by improved predictive capabilities and the capacity to evaluate management options.

We have developed a strategic view about the direction our science needs to take to support customers over the coming years.

Our Science Strategy will be launched in 2005. It sets out our plan to pursue research in three thematic areas to aid understanding of the interplay between humans and the wider environment: considering ecosystem interactions, organism health and resource management. We will develop and recruit key scientific staff to deliver the necessary skills and scientific expertise in these themed areas.

The Prime Minister's Strategy Unit report on the fishing industry, *Net Benefits: A sustainable and profitable future for UK fishing,* emphasised the need to bring the fishing industry and other stakeholders into a partnership with government and scientists.

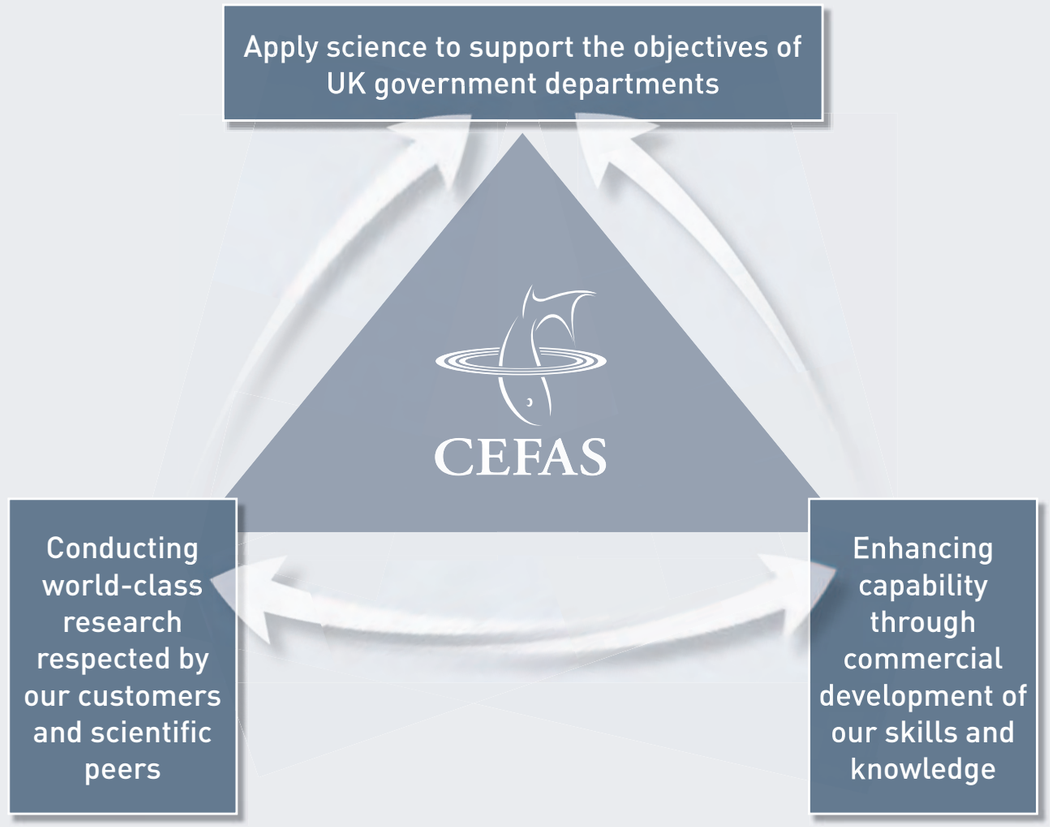
CEFAS is all too aware of the socio-economic dynamics described in this report. Our scientists have played a leading role in the Fisheries Science Partnership (FSP) – due to receive £1million each year over the next three years – forging strong links with the National Federation of Fishermen's Organisations (NFFO). Doubtless this work will continue to have implications for fisheries science. CEFAS will need to be responsive to any necessary changes and the final proposals coming out of this work.

Defra is currently undertaking a review of its science agencies, including CEFAS. The aim is to identify any additional freedoms, changes in organisation or other actions that would ensure the long-term sustainability of these agencies. CEFAS will also be subject to a quinquennial science audit later in 2005, the findings of which will inform the future direction of our scientific output. Similarly, the introduction of a Marine Bill and the possibility of a new marine agency will have a significant impact on the way that policy, delivery and advisory requirements are managed. Inevitably, we will need to remain flexible and responsive in our approach to ensure that we maintain a strong vision and strategy for consistent delivery.

In conclusion, CEFAS has arrived at an exciting and pivotal point in its history and is embarking on a period of change. Such change will affect the quality of our science, the management of our customer relationships, the effectiveness of our business processes and the working lives of our colleagues. However, given the passion and dedication of all our staff, this is perfectly within our grasp.

- Facing page above: Seabed image taken using the multi-beam system which is fitted to RV *CEFAS Endeavour*
- Facing page below: Dredging the Orwell Estuary

Our purpose



Investment in people

Fair and open recruitment

CEFAS' support for the Race Relations Act and award of the Positive About Disabled People symbol demonstrates the commitment to recruitment being based upon fair and open competition, with selection on merit alone.

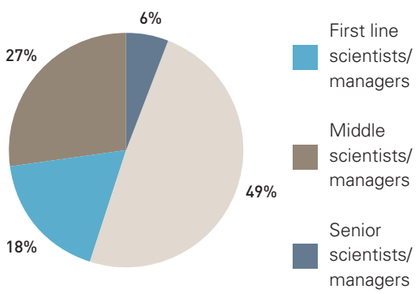
Enthusiastic compliance with these and other regulations helps to ensure a culture based on transparency, consultation and inclusiveness, and promotes equality of opportunity throughout the organisation.

The CEFAS charter

As part of its charter, CEFAS makes certain commitments to the public: for instance, during 2004-05 99% of letters were replied to within 15 working days, and 99.9% of visitors to CEFAS laboratories were seen within ten minutes.

We also track complaints received from the public. There are none to report this year.

Recruitment profile



Females represented 58% of recruits, and of the 67% who declared ethnicity, 10.4% were of ethnic minority origin.

INVESTOR IN PEOPLE

Our investment in people accreditation is now in its sixth year.

Edexcel accreditation

As part of our commitment to staff development, the first level of our management training to nationally recognised standards has been developed with the examining body Edexcel and other external assessors. This BTEC qualification consists of five modules and is equivalent to an NVQ Level 3 or an 'A'-level.

Health and safety

Health and safety performance is reviewed throughout the year with quarterly targets set for review in 2005 and 2006. Risk assessments were also revisited.

In the coming year further development of our systems will take account of environmental standard ISO14001 and interface with the health and safety standard OSHAS18001.

- Above left: Using a sample grab onboard RV *CEFAS Endeavour*
- Facing page left: One of the winning entries for the CEFAS painting competition held at the Lowestoft Fish Fayre 2004, later used as our Christmas card
- Facing page right: CEFAS' exhibition stand at Lowestoft Fish Fayre 2004

Raising our profile, explaining our science

Education links

The Science Masterclass provided a chance for students to see the real-life issues that face marine scientists: what happens to discarded fish, for instance, or to radioactive discharges? This day-long event, with lectures, practical lab experience and lively debate, gave a genuine opportunity for hands-on learning.

The Science Student Partnership, begun in September, offers final year sixth-form students the opportunity of working alongside CEFAS scientists.

'Their involvement over a full academic year [means they can] make their own contributions…. They are helping us to view our data with fresh eyes … a very fruitful partnership.'

Dr David Righton
CEFAS marine biologist

Schools links culminated in the 'Water, Water Everywhere' exhibition at the Norwich Research Park, part of National Science Week. This five-day event in March attracted over 3,000 pupils and some 200 adults.

Exhibits included identifying plankton and live demonstrations of the CEFAS WaveNet link (**www.cefas.co.uk/wavenet**). A life-size model of a basking shark's jaws introduced CEFAS' Pop-up Archival Transmitting (PAT) tagging programme (**www.cefas.co.uk/sharks**), which is helping scientists to learn more about these creatures.

Public events and lectures

CEFAS sponsored the Lowestoft Fish Fayre, which raised over £9,000 for the Royal National Mission to Deep Sea Fishermen (RNMDSF). Our exhibition stand included live fish, displays about work at the Lowestoft laboratory, and a chance to learn about thresher sharks – recent visitors to local waters.

Low Tide Day, a local community event at Burnham, displayed information about our work and gave CEFAS scientists the chance to show off some typical estuary creatures.

Presentations to local groups – Chambers of Commerce, Women's Institutes, etc – were also given throughout the year.

CEFAS in the media

National media interest increased this year, prompted partly by CEFAS' more proactive media approach. Stories and staff appeared on BBC Radio 4, Anglia Television, the BBC World Service, and in the *Guardian*, *The Times*, the *Daily Mail* and the online edition of the *Telegraph*.

Regional papers such as the *Eastern Daily Press*, the *Dorset Echo*, and the *Western Morning News* also ran stories, while articles in specialist publications like *Fishing News, Angler's Mail* and *Marine Scientist* reached more targeted audiences.

Improving communication skills

Practical media training for core staff, and advice on handling media interviews and communicating via electronic channels were made available to all staff this year.

Strong Science

The success of CEFAS' advice to government lies in the excellence of the science underpinning it. Our strength is the ability to grasp 'blue skies' theoretical work and apply it to real social and economic situations. The ecosystem approach to management increasingly requires that we forge links with:

- International committees debating and introducing policy
- Universities and research institutes, in the UK and across Europe
- Engineers and social and economic scientists
- Stakeholders and the public

to help formulate advice in a relevant social and economic context.

Global influence

CEFAS scientists contribute to many international bodies that have considerable influence on policy-making across Europe and around the world. The list of organisations is far too lengthy to show in full, but include chairing the International Council for the Exploration of the Sea's (ICES) Advisory Committee for the Ecosystem, and supplying UK members to its other committees and working groups. Our scientists are also involved in work at the Oslo and Paris (OSPAR) Commission for the Protection of the Marine Environment of the North-East Atlantic on its Assessment and Monitoring and Eutrophication committees. We also play an important part in the European Marine Strategy participating in the European Marine Monitoring and Assessment working group, amongst others.

University partnerships

CEFAS collaborates with more than 150 universities around the world. These links range from testing and sharing ideas with individual scientists through to multi-million euro projects with EU colleagues.

We sponsor PhD programmes within specific universities and currently support 34 students working on in-house CEFAS programmes. We also have agreements to host MSc and 'sandwich' students from various university partners.

Exciting research opportunities

Science is changing quickly: a nanotechnology project in a university laboratory today is likely to be a key tool in CEFAS science delivery tomorrow. New technologies such as genomics and proteomics are already being used in CEFAS monitoring programmes. Effective modelling techniques, used at sub-cellular and up to a global level, are being developed in our joint-EU consortium projects. And remote sensing and unassisted sampling of our coastal waters are now the norm, partly due to the efforts of our own scientists and developers. Thus the world of research offers exciting techniques and challenges, which CEFAS is well poised to exploit.

- Title page top: Electroscanning microscope
- Title page below: Sampling juvenile salmon (*Salmo salar*)

Delivering excellence

Our partnerships with research institutes and private-sector companies mean that CEFAS' research and development programmes support the formulation of relevant, practical advice.

We test our assumptions and monitor success using a range of techniques, from oceanographic measurements, to testing the chemical quality of the marine environment, the state of fish stocks and the viability of habitats.

Such assessments are increasingly integrated through various management groups. CEFAS is a key player in bringing together all of the institutes that make observations through Defra's Marine Management Co-ordination Group.

Demonstrating quality

CEFAS is committed to continually improving the quality of the science it undertakes, constantly working towards international quality standards.

Improving environmental performance is particularly important, and accreditation to the environmental management system ISO14001 is in hand. We have maintained our ISO17025 accreditation (for the competence of calibration and testing laboratories) and are seeking to expand accreditation to include our fish health, chemistry and phytoplankton services. We also comply with the Joint Code of Practice for Research.

Improving processes

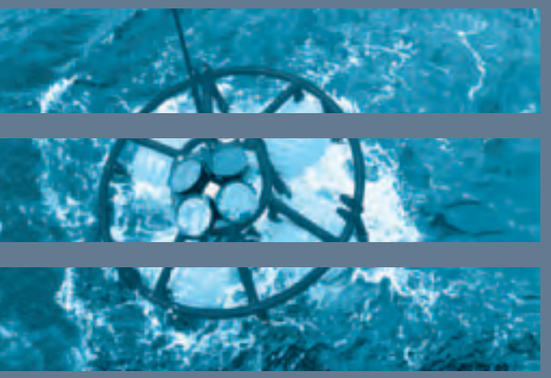
CEFAS has created a new technology unit, recognising the natural synergy between its IT and electronics departments. The unit provides seamless technical advice and solutions both internally and externally, enabling CEFAS to harness its considerable expertise to deliver 'fit for purpose' tools.

An effective and reliable IT infrastructure is vital to CEFAS. Recent improvements include data storage capabilities, self-management by staff of spam-blocking software, and better management tools for website access.

Outreach

Communicating science to other scientists via peer-reviewed journals has always been the 'gold standard' in measuring the quality of CEFAS' science. This year our scientists produced 145 papers in high-quality scientific journals. Presentations to conferences and scientific posters also featured heavily. Our output per research scientist outshines many university departments.

CEFAS also hosts workshops and conferences for the scientific community and other stakeholders. The Fisheries Science Partnership (FSP) is a good example of how we work with stakeholders. The FSP enables fishermen and scientists to work in tandem to collect new data, an activity vital to the sustainable management of fish stocks.



Discovering how ecosystems interact

Our demands on the sea increase year by year, yet the oceans remain one of the least understood environments on earth. Studying any marine element in isolation is folly. The key to understanding aquatic systems lies in an ecosystem approach where the interaction of all elements is studied as part of a co-dependent whole.

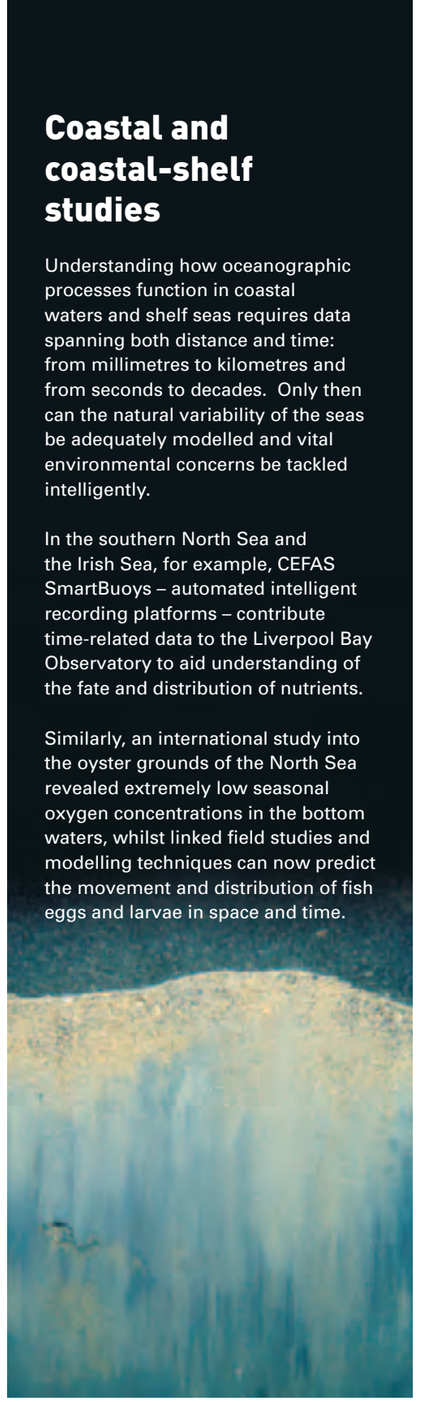
Our work is now truly multidisciplinary, harnessing physical, chemical and biological science to provide an insight into the dynamics and structures that form the marine environment.

Coastal and coastal-shelf studies

Understanding how oceanographic processes function in coastal waters and shelf seas requires data spanning both distance and time: from millimetres to kilometres and from seconds to decades. Only then can the natural variability of the seas be adequately modelled and vital environmental concerns be tackled intelligently.

In the southern North Sea and the Irish Sea, for example, CEFAS SmartBuoys – automated intelligent recording platforms – contribute time-related data to the Liverpool Bay Observatory to aid understanding of the fate and distribution of nutrients.

Similarly, an international study into the oyster grounds of the North Sea revealed extremely low seasonal oxygen concentrations in the bottom waters, whilst linked field studies and modelling techniques can now predict the movement and distribution of fish eggs and larvae in space and time.



- Title page top: Acoustic Doppler current meter
- Title page below: Deployment of Sediment Profiling Imagery (SPI) off the north-east coast of England
- Above: SPI imagery from norh-east coast showing section through the seabed
- Top right: SmartBuoys
- Below right: Iceberg off the Greenland coast

Autonomous observation platforms

Understanding any marine process requires data, and CEFAS leads the world in its collection – acting as a central hub for many research programmes.

SmartBuoys provide long-term observations of nutrients, and highlight circumstances that may lead to eutrophication – nutrient over-enrichment.

The purely physical aspects of the marine environment are also studied. Seabed landers are routinely deployed to measure the response of sediments to waves and tides. In addition, WaveNet (www.cefas.co.uk/wavenet) by using wave buoys, provides data in support of flood modelling and the predicted performance of coastal defence techniques.

To further increase this capability, specialist seabed landers are being developed by 12 institutes, including CEFAS, in seven countries. Funded by the EU's programme, Towards a Coastal Ocean Observatory, this will greatly enhance our ability to observe both the seabed and the animals that live there.

An international polar year

An international polar year has been designated for 2007 and CEFAS staff will play a key role in co-ordinating the efforts of UK, EU and US scientists in their plans for enhanced study. This includes contributing to the European Global Oceans Observing System (EuroGOOS) and chairing the International Science Steering Group of Arctic Sub-arctic Ocean Fluxes (ASOF), the largest ocean observation project on the planet.

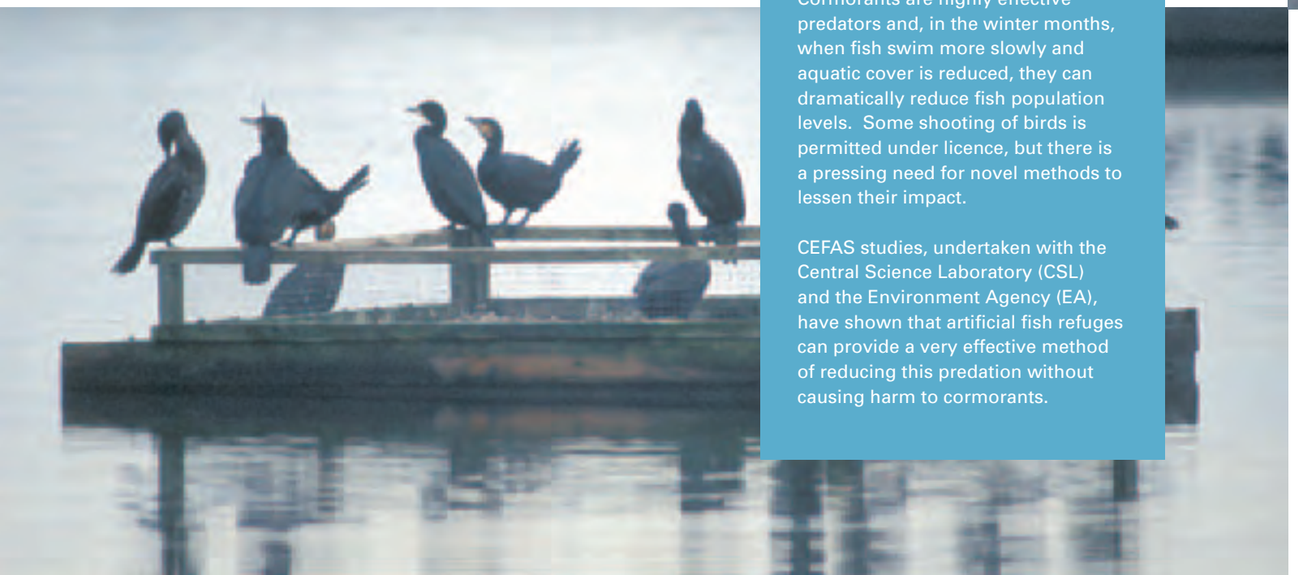
To observe the freshening outflows from the Arctic and Nordic Seas CEFAS has been deploying instruments in the Denmark Strait between Greenland and Iceland since 1988. These instruments contribute greatly to the international understanding of how such flows affect our global climate. This long-term programme will now be extended using new technology that measures salinity variations along with temperature and current speed.

Green seaweed growth and estuary management

Of all marine environments, estuaries are perhaps the most dynamic. In some locations the response to increased nutrients is excessive, resulting in damaging green weed growth, yet in others there is no response at all.

By developing new and sophisticated modelling techniques CEFAS is able to assess the numerous variables feeding into this ecology, taking into account light and nutrient supply and the stimulant effects of drying and wetting cycles. This model is now invaluable for predicting growth patterns and, where necessary, informing strategies for its reversal.

- Above: Excessive seaweed (*Enteromorpha* and *Ulva* sp) growth due to nutrient run-off from the land
- Below: Cormorants (*Phalacrocorax carbo*) on fish refuge ©CSL
- Right inset: Emptying net on deck
- Facing page top: Salmon (*Salmo salar*) leaping up a weir on their journey upstream to spawn
- Facing page below: Cod (*Gadus morhua*)



A baseline for exploited stocks

The exploitation of fish stocks began long before any records were kept. Yet knowledge of levels in pre-fishery times is vital if the impact of current activities on the ecosystem is to be judged.

By applying macro-ecological theory CEFAS has developed a method of estimating fish abundance as though fishing were absent. In the North Sea it appears that the biomass of fish in excess of four kilos is now only 2.5% of pre-fishing levels and, even when all fish are considered, only 40% of the biomass remains. Further use of this theory should form a reliable basis for comparing the impact of fishing across different ecosystems and fish communities.

Cormorant protection

Cormorants are highly effective predators and, in the winter months, when fish swim more slowly and aquatic cover is reduced, they can dramatically reduce fish population levels. Some shooting of birds is permitted under licence, but there is a pressing need for novel methods to lessen their impact.

CEFAS studies, undertaken with the Central Science Laboratory (CSL) and the Environment Agency (EA), have shown that artificial fish refuges can provide a very effective method of reducing this predation without causing harm to cormorants.

Modelling predator–prey relationships

Determining how a predator interacts with its prey is difficult, and in a marine environment that difficulty is multiplied.

By using electronic tagging and satellite tracking CEFAS has been able to gain unique and important insights into the changeable behaviour of cod. Furthermore, it took the innovative application of acoustics on the western Dogger Bank to determine the dynamics of sandeel populations – an important prey species – over both space and time.

The next phase in this continuing study will model ecological relationships in detail and predict the effect of industrial fishing on sandeels and the fish species that prey on them.

Climate change and freshwater fish

The UK Climate Impacts Programme (UKCIP) has predicted major variations in annual temperature, rainfall and the occurrence of extreme events such as floods and droughts.

CEFAS studies of how such changes will affect fish species, particularly salmon and sea trout, have shown there may be serious implications for reproduction, growth and survival. For example, decreased rainfall and increased abstraction inevitably raises contaminant concentrations and exacerbates their effects on fish populations.

Mapping fish migration

To have value, the extensive pollution monitoring studies undertaken by CEFAS require a detailed knowledge of fish movements. For example, is a dab caught in the Irish Sea related to one found in the English Channel or are the populations entirely discrete?

Using a specially developed form of genetic fingerprinting CEFAS is now able to determine the relationship between different populations in various locations. For the first time it may be possible to determine why some populations appear healthier than others, and to identify and encourage the more resistant strains.

Climate change and the management of cod

It is still unclear why and how our climate may change. What is clear is that any change could have a far-reaching effect on fish stocks and the fishing industry.

In response to a request for long- and short-term predictions, CEFAS has used a computer model that takes any predicted climate change and projects its impact on the current cod population. In the short-term, the results suggest that climate change is not as critical as reducing fishing and allowing stocks to rise to safe levels. In the long-term, with the precise nature of a possible climate change unclear, an outcome is harder to predict.

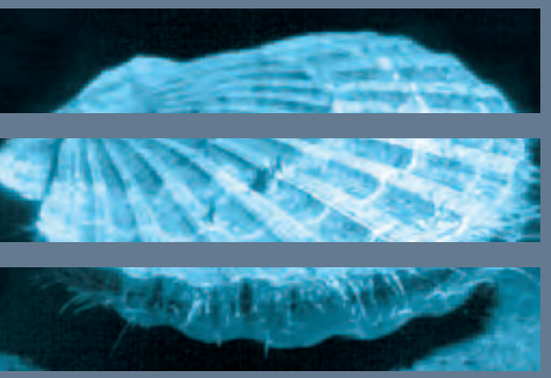
It is certain, though, that the survival of juvenile fish into maturity will be vital for the health of the species – and for the fishing industry.

Predicting juvenile cod distribution

Fish stock distribution is largely due to population size and environment. At low densities only favourable locations are occupied; at higher densities the population is more widespread.

By combining these known responses, a model created by CEFAS predicts the distribution of juvenile cod in the event of such variables as climate change. When combined with information about why and where fish are in a particular region, this can inform the siting of closed fishing areas.

By applying known historical levels of abundance and spatial maps of North Sea temperature to the model, it was found that the results were consistent with past field data.



The health of the sea

The health of the sea, and of the animals and plants that live in it, depends on our activities and how we care for our environment. The final destination of chemicals, pollutants and pharmaceuticals is often the ocean and it is vital to know how these compounds interact with aquatic organisms. Potentially, this interaction could have an impact on consumers of fish and shellfish.

CEFAS scientists are involved nationally and internationally in animal and human health protection. We conduct a wide variety of work to examine the fate of chemicals and the way they impact vital processes such as growth and reproduction. We monitor disease spread and ensure that procedures to protect health are in place.

Hormone pollution

Male cod caught in the open waters of the North Sea have shown elevated concentrations of an egg-yolk protein normally found only in female fish. This seemingly worrying phenomenon was not present when fish caught in the Irish Sea and off the coast of Norway where examined.

Further investigation by CEFAS scientists has shown that the key point was the weight of the fish, not their location. The change appears to take place precisely at the weight at which cod change from hunting in the water column to becoming bottom feeders. The evidence suggests that the compounds that cause such changes are picked up through the food chain and by fish consuming only bottom-living organisms.

- Title page top: Scallop (*Pecten maximus*)
- Title page below: Modern sewage treatment works
- Above: Fish sampling onboard our research vessel
- Right: Urine testing for the polonium-210 investigation

Pharmaceuticals in the marine environment

Many of the more common pharmaceuticals, such as antibiotics, are used in quantities comparable to agrochemicals, yet none are required to undergo the same level of testing for environmental effects. Furthermore, these compounds are commonly designed to be persistent, are rarely removed in the treatment of sewage, and so can be discharged into rivers and seas.

Through work carried out by CEFAS it is now possible to detect a wide range of pharmaceutical chemicals and residues in the marine environment. For the chemicals studied so far, the risk posed to the environment is in most cases low. The long-term effects can now be better predicted and management strategies determined because of CEFAS' improved analytical techniques.

Radiation and the UK environment

Radiation exposure and how it might harm the UK environment remains a major concern to the Environment Agency (EA). The lack of sound experimental work makes it difficult to assess the effects of environmental radiation upon aquatic organisms.

CEFAS' radiation facility is one of only a few in the world where such experiments can be undertaken. By irradiating seaweeds a distinct effect on their reproductive history was found, and at levels well below those predicted for major incidents. The results of these novel experiments indicate opportunities to develop macro-algae as valuable biological indicators of radiation effects.

Expanding this work to radiation effects on other marine species, known to contain relatively high levels of radionuclides in the Irish Sea, will allow the EA to establish the adequacy of its current regulatory controls.

Polonium-210 and food safety

Human exposure to radioactivity in the sea is largely due to polonium-210. This radionuclide is naturally present, but higher levels are found on the coast near Whitehaven in Cumbria – a legacy of discharges from an old chemical works.

CEFAS regularly monitors the local environment on behalf of the Food Standards Agency (FSA) and the Department of Health (DoH), which sponsor experiments to clarify how polonium-210 behaves in the human gut.

After eating food that contains natural levels of polonium-210, volunteers' excreta is examined to see how much radioactivity has been retained, allowing a re-assessment of the risk of consuming seafood from the Whitehaven area, and determining if controls on consumption are necessary.

CODEX and shellfish in the Irish Sea

A United Nations body responsible for promoting food safety, the CODEX Alimentarius Commission, has recently proposed new guidelines for the safe trade in food containing radioactivity.

CEFAS studies show these guidelines could cost the UK shellfish harvesting industry £10 million every year. Studies also show that the CODEX approach may well be overly pessimistic and that the risks to human health from consuming such shellfish are very low.

CEFAS will therefore continue to promote and substantiate the view that the trade in shellfish from the Irish Sea is safe and should continue without interruption.

Bacteria and viruses in shellfish: reducing the risk

Pollution of bivalve shellfish with domestic sewage continues to be a major problem for seafood, with infectious disease outbreaks continuing to occur. Acting as both the European Community Reference Laboratory and the UK National Reference Laboratory for shellfish hygiene, CEFAS plays a pivotal role in making the consumption of seafood safer.

CEFAS works closely with the FSA and local authorities to ensure that coastal monitoring programmes provide effective protection for UK shellfish consumers. A harvesting area classification review and consideration of adoption of a longer-term view have featured this year. This will provide much-needed stability for producers without jeopardising consumer health protection.

Toxins in shellfish: a new approach

Many marine micro-algae naturally produce toxins. When these toxins accumulate in shellfish, and these in turn are eaten by consumers, a clear health risk exists. There is international concern about this.

CEFAS is one of the organisations developing new health protection measures to counter this threat in the UK. The emphasis is on an approach using analytical chemistry (which avoids invasive testing on animals) allied to the study and prediction of plankton bloom dynamics. This is one reason why CEFAS was recently awarded a biotoxins surveillance contract by the FSA.

- Facing page above: Mussel (*Mytilus edulis*) cultivation
- Facing page below: Mussel dredge
- Above: Shellfish prepared for consumption
- Below: Modern European fishmeal processing plant

Fish waste disposal: a European approach

The disposal of animal by-products is not without risk, and a new regulation introduced by the EU seeks to further reduce that danger.

The regulation allows fish waste to be disposed of either by composting or by ‘ensiling’ – pickling in formic acid. As yet, no data exist on the effectiveness of these methods in destroying fish pathogens.

CEFAS and the Fisheries Research Services (FRS) have therefore been commissioned by Defra and the Scottish Executive Environment and Rural Affairs Department (SEERAD) to undertake a research programme to determine the best and most effective course of action.

Both laboratory and field test programmes are already underway with the results due to be submitted to the EU detailing the UK’s preferred method of fish waste disposal.

The Fish Health Inspectorate

The Fish Health Inspectorate (FHI), located at our Weymouth laboratory, implements regulations for the English and Welsh aquaculture industry and live fish trade. It is a role that is both wide-ranging and sensitive, which requires an exceptional understanding of the industry as well as the science involved.

The inspection role

Through the European Fish Health Regime the FHI implements a comprehensive monitoring programme, including aquaculture register maintenance and the annual inspection of dealer sites in England and Wales.

Further inspection duties are also planned in keeping with Defra's delivery policy – undertaking checks on non-native fish, providing advice to the FSA and sampling for veterinary medicine residues on behalf of the Veterinary Medicine Directorate (VMD).

In addition, plans have now been finalised to implement fish farm monitoring for bacterial kidney disease (BKD) and spring viraemia of carp (SVC). The EU has granted the UK special surveillance status on the basis that these diseases will eventually be eradicated.

Improved communications

Inspection activities are only one half of an integrated approach to sustaining healthy marine stocks. It is vital that all stakeholders also agree that such inspections are in their interests.

As a result an education programme is underway: establishing firm links with many bodies through planned correspondence, the eFishBusiness website (www.efishbusiness.com), regular meetings with trade bodies, and articles placed in the angling press.

New alliances

Improved communication has led to new co-operative ventures, such as that with the English Carp Heritage Organisation (ECHO). Work to prevent the illegal import of live fish is well advanced, alongside research into screening for the koi herpes virus (KHV).

Working with the Environment Agency

In 2004, two sites run by the EA for the re-stocking of rivers with native cyprinid fish such as carp, rudd and roach experienced an outbreak of a virus (rhabdovirus) first isolated in tench.

This potentially serious situation required a rapid response. CEFAS was able to draw on its expertise to quickly develop a set of screening tools able to determine the extent of the outbreak.

Since then further work has been carried out at individual farms, leading to a planned eradication of the disease. A strategy to prevent re-occurrence and the tightening of biosecurity measures has also been put in place.

Farmed fish and disease spread

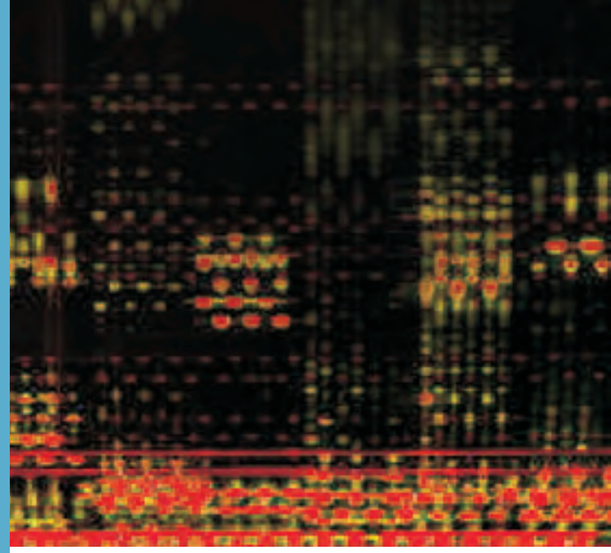
The potential for diseases prevalent in farmed fish to spread to the wild, and vice versa, is well known – and yet it remains a controversial and emotive subject.

As a partner in a project funded by the EU to study the problem more fully, CEFAS aims to resolve some of these issues by producing definitive reviews of published information and by identifying priorities for future research.

Reducing fish disease

Harnessing the natural ability of fish to resist disease would reduce the current reliance on stringent hygiene regimes and pharmaceuticals. Such an approach through selective breeding is common in land-based husbandry so why not apply it to the marine environment?

A major factor in disease resistance is known to be genetic make-up, but without a reliable method of establishing this it is impractical to isolate the most resistant strains and species of fish. CEFAS is working to identify those genetic markers that indicate disease resistance and to develop marker-assisted selection (MAS) processes so breeding programmes may favour the most naturally resistant.



Advice for the aquaculture industry

CEFAS is uniquely placed to assist and advise the commercial sector. It has an internationally renowned team of aquaculture health professionals: experts in fish cultivation, and specialists in bacteriology, virology, genetics, epidemiology, pathology, physiology and parasitology.

Last year's emphasis on vaccinology has moved on to a scientific approach to product evaluations. In particular, CEFAS is investigating the efficacy of the feed and feed additives essential to sustained fish farming in the British Isles.

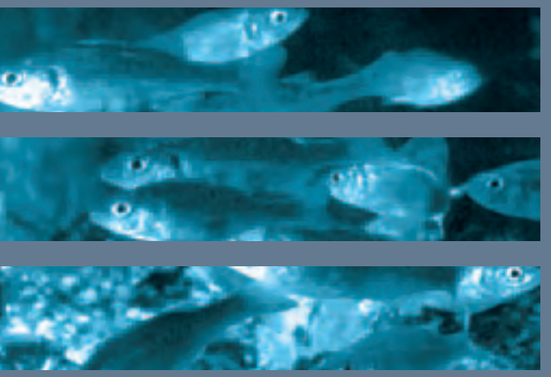
An investigation into ways to evaluate disinfectants designed to prevent the spread of viral, bacterial and fungal infections in fish farms is also planned and is currently under laboratory investigation.

- Facing page above left: Pond cleansing
- Facing page above right: Diseased carp (*Cyprinus carpio*)
- Facing page inset: Mirror carp (*Cyprinus carpio*)
- Top: Identification of genetic markers
- Above: Stripping a female trout of her eggs
- Right: Tumour on the liver of a dab (*Limanda limanda*)

Insights into human cancers

With a long and respected history of mapping the incidence of fish cancers in the seas surrounding the UK, CEFAS scientists are now turning their attention to those emerging technologies that allow the analysis of genes, proteins and metabolites.

This work, undertaken in conjunction with experts in the biological and medical sciences, will doubtless improve the understanding of marine cancer development. It may also give unique insights into human liver cancer.



Predictive science improved management

Making accurate predictions is key to providing reliable advice. As government demands increasingly sophisticated ways of assessing risk, the advice CEFAS provides on the management of fish stocks must be rooted in good science. Such advice covers a wide range of imponderables, from how the environment will behave through to the impact of wind farms on the coastal margins and fisheries.

Is there truly a threat of extinction?

The data available for the study of rare fish species are, by their nature, limited. To compensate, rapid assessment methods have often been adopted to label species either 'endangered' or 'threatened'.

The danger is that these 'threat criteria' may contradict more detailed assessments, such as those carried out by ICES.

The consequences of incorrectly describing a safe species as being 'under threat' are not difficult to see. A fishery could be closed, with wide-ranging economic, social or political costs.

CEFAS studies have shown that those populations sometimes described as 'threatened' or 'endangered' had been previously identified as being unsustainably exploited using conventional scientific methods.

In future, there should be no concern about the use of threat criteria since they complement current fisheries management advice.

- Title page top: Juvenile bass (*Dicentrarchus labrax*)
- Title page below: Tope (*Galeorhinus galeus*) ready for release after being tagged
- Above: Herring (*Clupea harengus*)
- Right: Beam trawl on a commercial vessel

Modelling fish movements to aid management

Determining the movement of species in an area as large as the southern North Sea requires specialist techniques. Using data collected from electronically tagged plaice, cod and rays CEFAS is able to build and populate the models that modern fisheries management requires.

Using these models, it is possible to evaluate alternative management options, such as closed areas, and to investigate the effect of climate change or other environmental variables on fish stocks.

Similarly, by analysing survey data from the outer Thames Estuary it is possible to see how this area functions as a nursery for thornback rays and sharks like smooth hounds and tope.

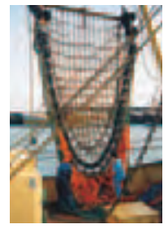
Data storage tags (DSTs) from thornback rays show they migrate widely into the North Sea, particularly between November and March. This knowledge allows the assessment of different closed area strategies and how they might assist the recovery of severely depleted ray populations.

The science of marine protected areas

In order to protect the marine environment and fisheries, various bodies have called for the establishment of marine protected areas (MPAs). These include European Commission fisheries managers, as well as the Royal Commission on Environmental Pollution's report *Turning the Tide*, Defra's *Review of Marine Nature Conservation*, and the Prime Minister's Strategy Unit's *Net Benefits*.

A CEFAS pilot study, carried out in the first half of 2005, seeks to give some indication of the value of MPAs, their potential effects on the mortality rates of cod, and the possible economic impact of displacing the fishing effort.

Extending our understanding of environmental data



An understanding of the marine environment, and the effect our activities have upon it, can be reached by using sophisticated computer modelling techniques. The movement of water, of sediments and contaminant reactions are complex subjects. Yet without hydrodynamic simulations it would be impossible to predict the result of wind farm construction or the transport of sediment at dredge disposal sites.

Now, through investment in advanced parallel-processing capability and 3-D modelling techniques, CEFAS can start to examine some of the most complex processes at work in our seas.

Because natural activities (tides and storms) and human activities (fishing and dredging) cannot be examined in isolation, CEFAS is currently quantifying the natural disturbances of the bed of the North Sea. This work will study how sediments, the chemistry of those sediments, and the lives of the organisms that live within them are affected. By comparing this with the impact of activities like fishing and marine aggregate extraction, a reliable picture of sustainable exploitation can be built up.

Measuring the impact of gravel extraction

The construction industry makes huge demands on the sea, extracting large amounts of sand and gravel each year. Just how the seabed recovers from such activities is not widely understood, so CEFAS has undertaken research in four commercial extraction sites on the eastern and southern coasts of England.

As a result, a better picture of the damage caused by such activities has been built up. For the first time it has become clear that the speed and completeness of recovery depends largely on local factors and the intensity of dredging. With such new knowledge better management policies can be introduced, helping speed the re-establishment of habitats and promoting the return of biodiversity.

Oil and gas

Over one-third of Britain's electricity is provided by gas-fired power stations, making offshore oil and gas important resources and of great strategic importance.

OSPAR is currently undertaking a review of how toxicological data is interpreted by regulators in countries bordering the North Sea and the north-east Atlantic. CEFAS is assisting the Department of Trade and Industry (DTI) in conducting this review.

The data forms a key part of the Harmonised Mandatory Control System for Offshore Chemicals, which co-ordinates the testing of chemicals used in oil and gas production. It also affects the risk assessment of individual chemicals across the entire north-eastern Atlantic.

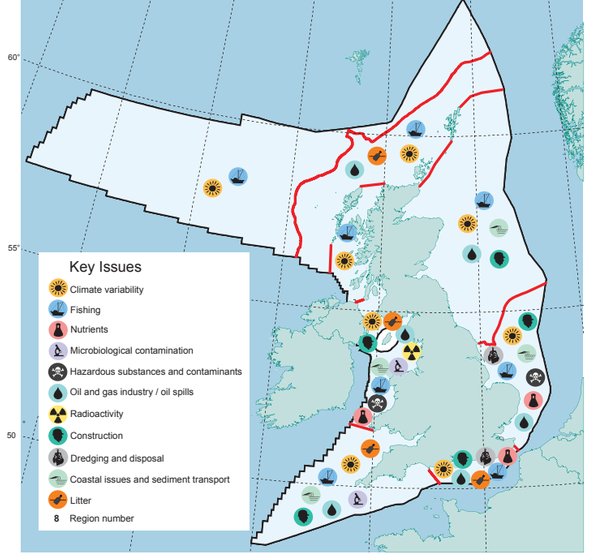
CEFAS has been responsible for the DTI's offshore chemical notification scheme since 1979: assessing offshore exploration, examining environmental statements from industry and undertaking risk assessments in all areas south of Scotland.

New bio-analytical methods have recently been introduced specifically to monitor the water around platforms for endocrine-disrupting substances (so called 'gender bending' chemicals). Whilst some dioxin-like chemicals have been detected at levels high enough to give concern, their precise source has not been identified.

The legacy of TBT anti-fouling

The use of the anti-fouling tributyltin (TBT) – to minimise growths on the hulls of ships – was banned in the EU in 2003 yet its legacy remains, largely in the form of contaminated sediment from dredged channels, ports and estuaries. The disposal of such matter can sometimes present a real problem for UK harbours.

To alleviate this a number of solutions are being investigated. CEFAS is currently monitoring a trial disposal where the contaminated mud is capped with a layer of coarse material. It is expected that this technique will prevent contamination leaching into seawater until the toxic TBT has degraded into harmless compounds of tin. This should provide harbour authorities with an acceptable economic alternative to disposal on land.



The stickleback's role in risk assessment

In order to regulate chemicals it is essential that robust tests are available to assess potential risk. Such tests are currently being developed by CEFAS using sticklebacks and observing their reaction to reproductive endocrine-disrupting chemicals (EDCs). Methods to measure the biomarkers that indicate gender have already been identified and these form part of the 'stickleback toolkit'.

The stickleback toolkit

Sticklebacks are an invaluable indicator of endocrine-disrupting substances. CEFAS has refined a DNA-based method to determine their genetic sex, created protein maps of their liver and brain, and begun the study of behavioural changes after exposure to EDCs. In time, this will allow the creation of simple, robust and precise methods of assessing the presence of EDC compounds.

So successful has this work been that discussions are taking place with the Organisation for Economic Co-operation and Development (OECD) to include the stickleback as a model species.

Reviewing the state of UK seas

Periodically it is necessary to undertake a review of our seas. Without such a baseline the drive for improved stewardship takes place in a vacuum.

Employing data from activities such as the National Marine Monitoring Programme (NMMP), Defra's study *Charting Progress: An integrated assessment of the state of the seas* cuts across many sectors including fisheries, pollution, marine climate and conservation.

There are encouraging signs that the concentration of many contaminants has reduced in recent years because of lowered pollution levels from industry and wastewater treatment. The seas are getting cleaner and, generally, the open seas are not affected by pollution.

Still of concern, and topics for future study, are EDCs, the impact of offshore wind farms on biodiversity and climate change.

This 'health check', co-ordinated by Defra, with significant input from CEFAS collaborating with 60 other institutions, has once again highlighted the need for integrated monitoring data and a co-ordinated approach. If the state of ecosystems is to be fully understood, and realistic policies are to be applied, such an approach is pressing. Indeed, it may become vital as the true effects of climate change are felt.

New 'state of change' indicators

To support the development of Ecological Quality Objectives (EcoQOs) covering commercial fish species, CEFAS has recently undertaken valuable work into eutrophication – the presence of excess nutrients that can lead to disproportionate algae growth.

A range of indicators has now been developed and these are being routinely applied as part of mandatory monitoring and assessment programmes. By integrating observable biological effects with chemical data, a mathematical measure of marine environment quality is now possible.

- Facing page above: Suction dredge at work
- Facing page below: Exposed hulls at a typical south coast harbour
- Above left: Key environmental issues for regional areas around the UK, from *Charting Progress*
- Left: Stickleback (*Gasterosteus aculeatus*)

Consultancy, partnership and raising standards

As a forward-looking and progressive organisation CEFAS constantly examines both its working practices and relationships with its commercial partners.

Whereas the delivery of marine science to government will always be at the heart of its business, this is supported by an integrated, customer-focused management strategy that is able to drive business growth.

Developing the business

Our policy of targeting key international markets continues to be a successful one. Relationships with the European Commission are very positive, both through openly competed contracts and via the Framework Programme in the areas of fisheries and environmental research, management and policy development.

In other open commercial competitions we have been equally successful, with contracts won in the UK, Europe, the Russian Federation, Asia, Africa, the Middle East and the US.

It is an indication of just how highly regarded our expertise is that these opportunities and relationships are set to grow, prosper and add revenue in the years to come.

- Above left: Necrotic gill showing KHV in koi (*Cyprinus carpio*)
- Above: Lead mine in Zambia
- Facing page above: Wind farm on Scroby Sands, off the Norfolk coast ©M J Page
- Facing page below: Telephone tag used in the basking shark tagging programme

Marine Consents Management System

The Marine Consents Management System is one of the few truly multi-departmental shared computer systems used by government. Developed by CEFAS and managed and hosted at its Lowestoft laboratory, it is extensively used by both Defra and the DTI to process work in marine environments.

After operating successfully for a number of years it has been extended to allow the DTI to process and manage applications for the construction of offshore wind farms.

Fund management and distribution: a new venture

CEFAS' considerable knowledge of marine affairs is now being put to use in a three-year contract to administer part of the Aggregate Levy Sustainability Fund (ALSF).

The ALSF is an environmental levy on aggregate extraction, where the funds raised go directly to research the environmental impact of that extraction. As a fund administrator CEFAS has formed an independent panel to evaluate and select appropriate projects from suitable contractors able to deliver these specialised research and development projects.

Reaching out

Developing new business contacts is important to CEFAS. To this end the organisation attended a number of trade shows and scientific events such as the Institute of Civil Engineers' Maintenance Dredging Conference, Defra's Flood and Coastal Management Conference and the UK-China High Technology Forum in Beijing.

Online services

Giving our customers the ability to access CEFAS services online not only improves the way they perceive the organisation but also minimises our own administrative costs.

Two schemes are now available: an ordering service for the recently developed KHV test and a self-funded quality assurance scheme, Biological Effects Quality Assurance in Monitoring Programmes (BEQUALM). Both services are fully operational and can be accessed through the CEFAS Technology Limited (CTL) website (www.cefastechnology.co.uk).

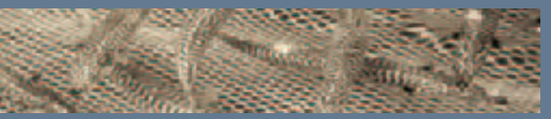
The UK Fisheries Information Systems Strategy

This new strategy, developed jointly by UK government fisheries departments – Defra, SEERAD and the Department of Agriculture & Rural Development (DARD) – relies on the development of a new IT system to handle sea fisheries management.

The first phase, a synchronised method of compiling catch data, has already been completed. CEFAS will continue to draw heavily on the skills of its specialist developers to provide software components and solutions to support the strategy.

Remote data capture

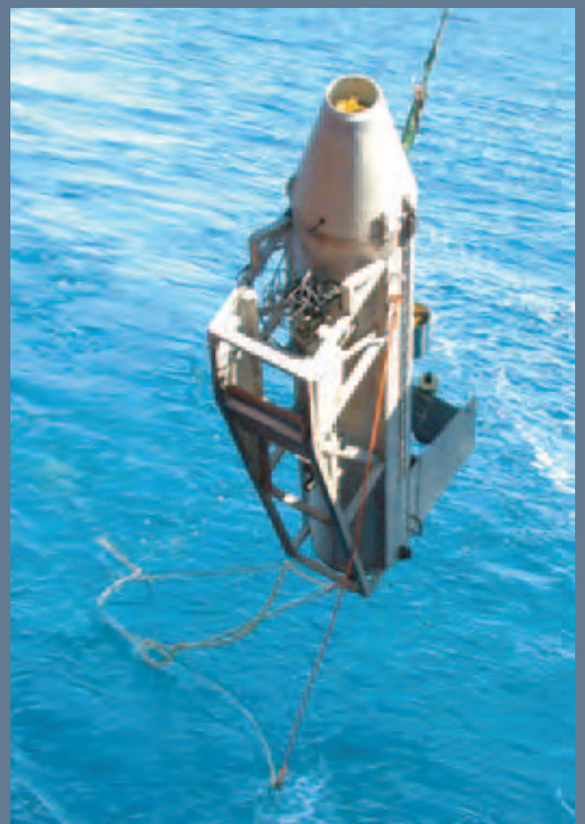
Acquiring data is at the core of CEFAS' activities, and the technology used is constantly under development. By building on the success of DSTs and SmartBuoy products, and integrating GSM, GPRS and satellite technologies, our capabilities will be considerably increased and the data delivery enhanced.



Financial Performance

CEFAS has met the key Ministerial targets it was set for financial performance and efficiency for the year ended 31 March 2005. As an agency under the Net Accounting regime, CEFAS has an ongoing requirement to recover the full economic cost of the services the agency provides.

The overall net surplus of £60,000 (2003-04: loss of £661,000) generated a total cost recovery position of 100%, falling within the tolerances allowed.



Turnover for the year was £37,394,000 which was a 6% increase on 2003-04. Income from Defra of £30,263,000 (2003-04: £29,037,000) accounted for 81% of turnover (2003-04: 82%), with a further 10% of income (2003-04: 12%) coming from other UK government departments and agencies.

Controls on expenditure remained tight during the year, with many new initiatives resulting in gains for CEFAS. This has included support staff, where the average number of staff has fallen from 135 in 2003-04 to 131 in 2004-05, a 3% reduction, whilst turnover has risen by 5%.

Further efficiency gains arose as CEFAS transferred its older research vessel *Corystes* to the Department of Agriculture and Rural Development (DARD) in Northern Ireland during the year.

A voluntary Early Retirement Scheme took place at the end of 2004-05 – the main financial benefits of this will be realised in 2005-06.

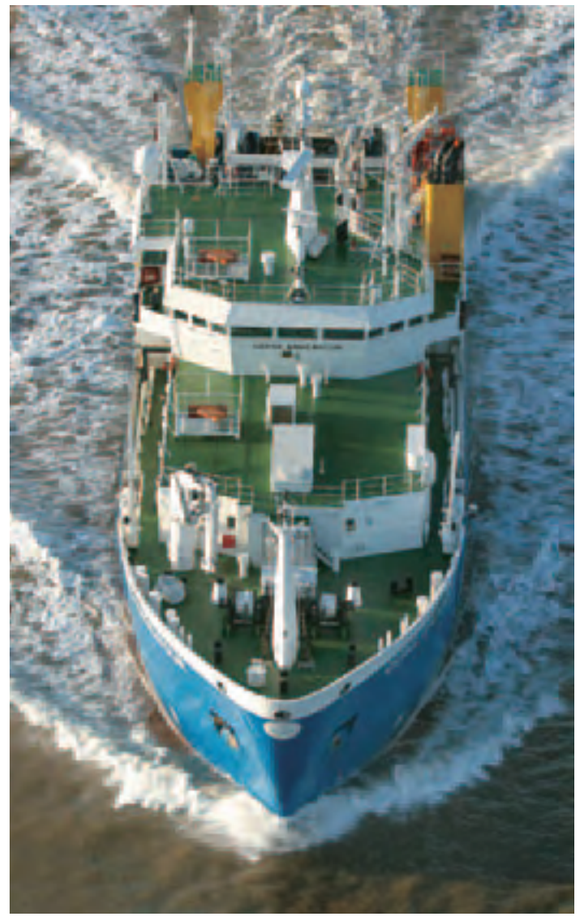
- Title page top: Mackerel (*Scomber scombrus*)
- Title page bottom: Recovering a tin-tow net
- Above: Analysing water samples onboard our research vessel
- Right: RV *CEFAS Endeavour* ©M J Page

Capital charges relating to land and buildings rose by £168,000 (7%) during the year. The land and buildings have been revalued by the Valuation Office Agency as at 1 April 2005. This valuation has been incorporated in these accounts (see Note 7), the last valuation having taken place on 30 June 2000.

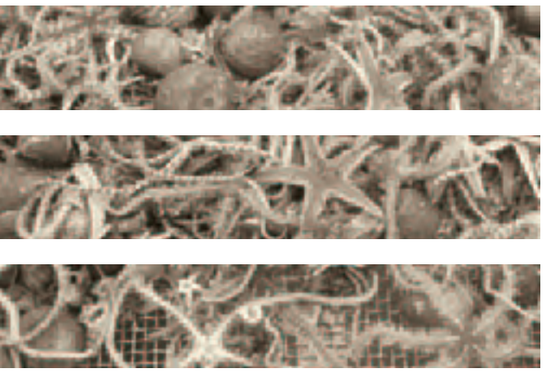
Capital charges remain notional, which assists CEFAS in being cash positive. Defra, having reviewed the cash requirements of CEFAS, requested payment of £5,182,000 (2003-04: £8,410,000), which has been reflected in the accounts (see Note 14).

The overall capital spend of £1,580,000 (2003-04: £1,823,000) was principally spent on scientific equipment, information technology developments and improvements to laboratory facilities. An extension at the Burnham laboratory has been approved in principle and is scheduled to be completed during 2005-06.

The prompt payment of suppliers is subject to a government target requiring CEFAS to make settlement within 30 days of the receipt of goods and services. During the year 71% (2003-04: 98%) of supplier invoices were paid within the stipulated timeframe. Achievement against target was over 90% at the start of the year and ended the year at nearly 90%. The low average performance was due to temporary issues following a system change during the year.



Performance against key Ministerial targets



CEFAS' strategic aims have been developed and refined over many years to keep pace with the business demands placed upon the agency. Targets are set by the Minister and progress against our aims duly measured.

In 2004, CEFAS' Ministerial targets were revised in order to align better with the strategic aims of:

Delivery of Outputs
Customer Focus
Strong Science
Financial
Efficient, Cost-effective Operation
Investment in People

In detail, revision meant that it was necessary to introduce two new targets: Delivery of Outputs (to indicate the importance placed upon science output) and Investment in People (to reflect staff opinion and morale).

The Effective Management target of previous years was absorbed into the new range of targets. In addition, the old Throughput target was absorbed into the new target, Delivery of Outputs and the original target of Customer Focus.

Defra audits performance using evidence gathered by CEFAS from customers and staff. In summary, we have met our Ministerial targets and the individual results are set out on the facing page.

- Above left: Brittlestar (*Ophiothrix* spp)
- Below: Tagged cod (*Gadus morhua*) being released

1. Delivery of Outputs
(New target 2004-05)

2004-05

To fulfil commitments on time, within budget and to agreed standards of quality

Target: Overall delivery of milestones to exceed 90%. R&D milestones are reported on as a proportion of agreed outputs weighted by value of contracts.

Outturn: Target achieved

2. Customer Focus

2002-03
2003-04
2004-05

To provide a high standard of services to the satisfaction of customers

Target achieved
Target achieved
Target: To increase the Customer Satisfaction Survey overall score to 82%

Outturn: Target achieved
The weighted average score is based on seven aspects of service quality.

3. Strong Science

2002-03
2003-04
2004-05

To enhance scientific capability and reputation

Target achieved
Target achieved
Target: To achieve a high standard of excellence based on indicators of scientific and technical quality

Outturn: Target achieved

4. Financial

2002-03
2003-04
2004-05

To recover the full cost of services and invest for the future

Target fully achieved
Target partially achieved
Target: To achieve 100% cost recovery. Fully achieved if cost recovery is 100% or greater, and partially achieved for recovery between 98% and 100%.

Outturn: Target fully achieved

5. Efficient, Cost-effective Operation

2002-03
2003-04
2004-05

To operate with simple, reliable and effective processes

Target achieved
Target achieved
Target: Income growth to be at least 2% higher than support cost growth

Outturn: Target achieved

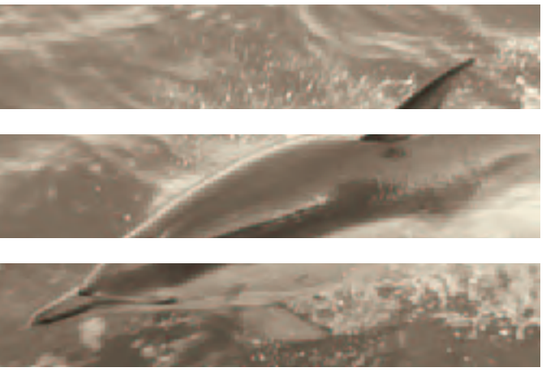
6. Investment in People
(New target 2004-05)

2004-05

To respect and help the agency's people to develop

Target: To increase the annual staff survey satisfaction score to 64%. Measured by an annual questionnaire to staff.

Outturn: Target achieved



Accounts

Foreword to the Accounts for the Year Ended 31 March 2005

Background

CEFAS was established on 1 April 1997 as an Executive Agency of MAFF (now Defra). It is fully accountable to Parliament through Ministers. CEFAS currently operates from three sites: Lowestoft, Weymouth and Burnham-on-Crouch, with bases for sampling officers in Whitehaven, Newlyn, Whitby and Scarborough.

CEFAS History and Statutory Background

CEFAS is an Executive Agency of the Department for Environment, Food and Rural Affairs (Defra) that was created on 1 April 1997 from the former Directorate of Fisheries Research (DFR) under the Next Steps programme. The status and legal framework is laid out in the CEFAS Framework Document. Its origins date from 1902 when a research station was established to investigate declining fish stocks as part of the UK contribution to the newly-created International Council for the Exploration of the Sea (ICES).

Strategic Aims

CEFAS' strategic aims are given on pages 4 to 7 of the Annual Report.

Principal Activities

The Agency's principal activities are to deliver an efficient service of specialist scientific and technical support, consultancy and advice in the fields of fisheries management, environment protection and aquaculture. The Chief Executive's Statement on pages 4 to 7 of the Annual Report, and the sections on delivering science on pages 10 to 27, contain further information on the business activities of CEFAS.

Pension Liabilities

Pension liabilities arising from early retirement or other enhancements are accrued in total in the year in which the liability arises.

Pension benefits are provided through the Civil Service Pension arrangements. From 1 October 2002, Civil Servants may be in one of three statutory based "final salary" defined benefit schemes (Classic, Premium and Classic Plus). New entrants after 1 October 2002 may choose between membership of Premium or joining a good quality "money purchase" stakeholder-based arrangement with a significant employer contribution (the Partnership Pension Account). Details are provided in Note 4 to the Accounts.

● Above: Dolphin photographed from RV *CEFAS Endeavour*

Accounts Direction

The Accounts have been prepared under a direction issued by HM Treasury in accordance with section 7(2) of the Government Resources and Accounts Act 2000.

Result for the year

The net surplus for the year is £60,000 (2003/04: deficit of £661,000).

Management

The Parliamentary Under-Secretary (Commons) Minister for Nature Conservation and Fisheries, with overall responsibility for CEFAS during the period of the report was the Right Honourable Ben Bradshaw MP. On 13 May 2005 Lord Bach of Lutterworth, the Parliamentary Secretary (Lords) Minister for Sustainable Farming and Food, assumed responsibility for the Agency.

The Acting Chief Executive of CEFAS is Mark Farrar. The composition of the CEFAS Management Board is shown on page 44 of the Accounts. The acting Chief Executive was appointed on 1 August 2004 by the Secretary of State for Defra on a temporary contract, now extended to March 2007. Members of the Management Board are appointed directly by the Chief Executive.

The salaries of the Management Board are determined by the CEFAS Performance Related Pay Scheme. The salary of the Acting Chief Executive is performance related and reviewed against the key Ministerial targets as agreed at the beginning of the year. Details of the remuneration are provided in Note 4 to the Accounts.

Governance

The Agency's governance involves a Defra Laboratory Strategy Committee, chaired by Lynton Barker, which was set up in response to the recommendations of the Review of Defra's Agencies in 2002. The Committee oversees the Veterinary Laboratories Agency and the Central Science Laboratory, as well as CEFAS.

Employment of Disabled Persons

CEFAS follows the Civil Service Code of Practice on the Employment of Disabled People. The Agency's policy is to recruit, train and provide career development facilities for disabled persons on the same basis as for other staff and to make every effort to retrain and assist any individuals disabled in the course of their employment.

Equal Opportunities and Employee Involvement

CEFAS follows an equal opportunities policy for fair and open recruitment of permanent staff. Regular exchanges of information with staff take place through formal and informal consultative arrangements at Agency and local level. Such exchanges include Agency objectives, plans, progress and matters relating to the interests of staff.

Payment of Suppliers

CEFAS' prompt payment policy is described in Note 25 to the Accounts.

Auditors

Comptroller and Auditor General, National Audit Office
157 - 197 Buckingham Palace Road, Victoria, London SW1W 9SP

The cost of work performed by the auditors is shown in Note 5 to the Accounts.

Signed:

Mark Farrar
Acting Chief Executive

Date: 7 June 2005

Statement of Accounting Officer's Responsibilities

1. Under the Government Resources and Accounts Act 2000 the Agency is required to prepare resource accounts for each financial year, in conformity with a Treasury direction, detailing the resources acquired, held or disposed of during the year, and the use of resources by the Agency during the year.

2. The resource accounts are prepared on an accruals basis and must give a true and fair view of the state of affairs of the Agency, the net resource outturn, resources applied to objectives, recognised gains and losses and cash flows for the financial year.

3. The Department for Environment, Food and Rural Affairs (Defra) has appointed the Head of the Agency as Accounting Officer of the Agency with overall responsibility for preparing the Agency's accounts and for transmitting them to the Comptroller and Auditor General.

4. In preparing the accounts the principal Accounting Officer is required to comply with the Resource Accounting Manual prepared by HM Treasury, and in particular to:

- observe the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates on a reasonable basis;
- state whether applicable accounting standards, as set out in the Resource Accounting Manual, have been followed and disclose and explain any material departures in the accounts; and
- prepare the accounts on a going concern basis.

5. The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which an Accounting Officer is answerable, for keeping proper accounting records and for safeguarding the Agency's assets, are set out in the Accounting Officers' Memorandum issued by HM Treasury and published in Government Accounting.

6. The maintenance and integrity of the CEFAS website is the responsibility of the Accounting Officer.

CEFAS Statement on Internal Control

Scope of responsibility

As Accounting Officer, I have responsibility for maintaining a sound system of internal control which supports the achievement of CEFAS' policies, aims and objectives, set by the department's Ministers, whilst safeguarding the public funds and departmental assets for which I am personally responsible, in accordance with the responsibilities assigned to me in Government Accounting.

I ensure that the Defra Permanent Secretary, the principal Accounting Officer for the Department, is aware of the main risks managed by the Agency through regular reporting of the top risks. Additionally:

- I ensure that the Agency's business plans that are submitted to, and approved by, Ministers include sections on risk; and
- I am accountable to the Department's principal Accounting Officer to ensure that the Agency, as part of Defra, has adequate financial systems and procedures in place.

The purpose of the system of internal control

The system of internal control is designed to manage risk to a reasonable level rather than to eliminate all risk of failure to achieve policies, aims and objectives; it can therefore only provide reasonable and not absolute assurance of effectiveness. The system of internal control is based on an ongoing process designed to identify and prioritise the risks to the achievement of departmental policies, aims and objectives, to evaluate the likelihood of those risks being realised and the impact should they be realised and to manage them efficiently, effectively and economically. The system of internal control has been in place for the year ended 31 March 2005 and up to the date of approval of the Annual Report and Accounts and accords with HM Treasury guidance.

Capacity to handle risk

The CEFAS Management Board oversees the Agency's level of preparedness to deal with operational risks. Individual CEFAS Management Board members lead on each of six strategic aims and own the associated risks. These aims are cascaded through the organisation in action plans, so that Science Area Heads and Heads of Support Units carry responsibility for more specific activities within their areas of operation. The Audit and Risk Committee is a sub-committee of the CEFAS Management Board, constituted to give advice on the adequacy of internal and external audit arrangements, and on the implications of the assurances provided in respect of internal control and risk management.

Staff guidance is available in the CEFAS Risk Management Plan, provided on the local intranet. Risk assessment is a requirement of the standard contract tendering procedure to manage the risk inherent in this activity. Training for project managers includes advice on risk management. CEFAS staff take advantage of the training and sharing of best practice provided by the Defra Risk Forum and by local risk and project reviews.

The risk environment

In CEFAS the main processes we have in place for identifying, evaluating and managing risk are:

- Regular risk reviews undertaken by the Management Board to identify, evaluate and update the risks facing CEFAS. The Board sets the priorities for risk in key business areas by prioritising and delegating specific activity and requiring feedback as necessary before authorising consequent actions.
- A documented risk management plan containing the register of top CEFAS risks assigned to and managed by individual Management Board members together with summaries of risk management by Science Area and Support Unit Heads.
- Written statements from managers on the steps they are taking to manage risk in their areas of responsibility.
- Discussion at meetings in all levels of CEFAS management.
- A system of internal financial control based on a framework of regular management information, administrative procedures, management supervision and a system of delegation and accountability.
- Reviews of alliances and partnership ventures by a sub-committee of the Management Board when requisite.

CEFAS Statement on Internal Control

- Documented risk assessment procedures in support of tender activity for new business.
- Reporting CEFAS' top risks to Defra for inclusion in the Department's Risk Register.

Our management of risk is embedded in policymaking, planning and delivery by:

- An appointed risk co-ordinator who meets all members of senior management individually to discuss and embed risk management.
- Managers who promote risk management at team meetings.
- Corporate risk management documentation that is available to staff via an intranet site.
- Embedding risk management in mandatory business planning and tendering procedures.
- The induction course for new entrants that includes a section on risk management.

The top risk priorities currently identified in the CEFAS Risk Register concern income, maintaining reputation, high fixed costs, improving management systems, developing culture and; maintaining Defra's commitment to CEFAS as an Agency.

Review of effectiveness

As Accounting Officer, I also have responsibility for reviewing the effectiveness of the system of internal control. My review of the effectiveness of the system of internal control is informed by the work of the internal auditors and the executive managers within the Agency who have responsibility for the development and maintenance of the internal control framework, and by comments made by the external auditors in their management letter and other reports.

The Management Board meets bi-monthly to consider the plans and strategic direction of the Agency. The Management Board reviews the CEFAS Risk Register twice annually and corporate risks are delegated to Board members to manage.

The Audit and Risk Committee is a formally constituted committee of the Management Board. The committee is chaired by an external independent member and includes two further external independent members together with three members of the CEFAS executive management team. The purpose of the Audit and Risk Committee is to give advice on the adequacy of internal and external audit arrangements, and on the implications of the assurances provided in respect of internal control and risk management within CEFAS.

CEFAS receives regular reports by internal audit, to Government Audit Standards, which includes the Head of Internal Audit's independent opinion on the adequacy and effectiveness of the Agency's system of governance, internal control and the system for risk management, together with recommendations for improvement. The internal audit service has been provided by PricewaterhouseCoopers LLP. The work of internal audit is informed by an analysis of the risks to which CEFAS is exposed and annual audit plans are based on this analysis.

Significant internal control issues

Last year, we recorded the development of our Disaster Recovery Plan. Significant progress has been made and our system has now been reviewed against best practice in the private sector. Recommendations are in hand towards achieving these.

An internal audit of a laboratory information system implementation brought to light weakness in procurement and implementation of that system in previous years. The system exposed part of CEFAS to risks associated with customer confidence and inefficiency. The control weaknesses had been addressed some time ago, and now successfully delivered, were verified, but it remained necessary to take corrective action, to ensure recovery and minimise impact on the system users.

I have been advised on the implications of the result of my review of effectiveness of the system of internal control by the Board, the Audit and Risk Committee and a plan to ensure continuous improvement of the system is in place.

Signed:

Mark Farrar
Acting Chief Executive

Date: 7 June 2005

The Certificate and Report of the Comptroller and Auditor General to the House of Commons

I certify that I have audited the financial statements on pages 38 to 55 under the Government Resources and Accounts Act 2000. These financial statements have been prepared under the historical cost convention as modified by the revaluation of certain fixed assets and the accounting policies set out on pages 41 and 42.

Respective responsibilities of the Agency, the Chief Executive and Auditor

As described on page 34, the Agency and Chief Executive are responsible for the preparation of the financial statements in accordance with the Government Resources and Accounts Act 2000 and HM Treasury directions made thereunder and for ensuring the regularity of financial transactions. The Agency and Chief Executive are also responsible for the preparation of the other contents of the Annual Report. My responsibilities, as independent auditor, are established by statute and I have regard to the standards and guidance issued by the Auditing Practices Board and the ethical guidance applicable to the auditing profession.

I report my opinion as to whether the financial statements give a true and fair view and are properly prepared in accordance with the Government Resources and Accounts Act 2000 and HM Treasury directions made thereunder, and whether in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them. I also report if, in my opinion, the Foreword is not consistent with the financial statements, if the Agency has not kept proper accounting records, or if I have not received all the information and explanations I require for my audit.

I read the other information contained in the Annual Report and consider whether it is consistent with the audited financial statements. I consider the implications for my certificate if I become aware of any apparent misstatements or material inconsistencies with the financial statements.

I review whether the statement on pages 35 and 36 reflects the Agency's compliance with HM Treasury's guidance on the Statement on Internal Control. I report if it does not meet the requirements specified by HM Treasury, or if the statement is misleading or inconsistent with other information I am aware of from my audit of the financial statements. I am not required to consider, nor have I considered, whether the Accounting Officer's Statement on Internal Control covers all risks and controls. I am also not required to form an opinion on the effectiveness of the Agency's corporate governance procedures or its risk and control procedures.

Basis of audit opinion

I conducted my audit in accordance with United Kingdom Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts, disclosures and regularity of financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgements made by the Agency and Chief Executive in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Agency's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by error, or by fraud or other irregularity and that, in all material respects, the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them. In forming my opinion I have also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In my opinion:

- the financial statements give a true and fair view of the state of affairs of CEFAS at 31 March 2005 and of the surplus, recognised gains and losses and cash flows for the year then ended and have been properly prepared in accordance with the Government Resources and Accounts Act 2000 and directions made thereunder by HM Treasury; and
- in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

I have no observations to make on these financial statements.

John Bourn
Comptroller and Auditor General

National Audit Office
157-197 Buckingham Palace Road
Victoria, London SW1 9SP

Date: 13 June 2005

Income and Expenditure Account

For the year ended 31 March 2005

	Notes	2004/05 £'000	2003/04 £'000
Turnover	**2 & 3**	**37,394**	**35,365**
Cost of Sales	**4 & 5**	(35,706)	(33,989)
Operating Surplus		**1,688**	**1,376**
Profit/(Loss) on Disposal of Fixed Assets		376	(7)
Notional Interest Payable	**26**	(2,004)	(2,030)
Net Surplus/(Loss)	**14**	**60**	**(661)**
Percentage Total Cost Recovery		**100**	**98**

Statement of Recognised Gains and Losses

For the year ended 31 March 2005

	2004/05 £'000	2003/04 £'000
Surplus/(Loss) for the Year	60	(661)
Net Gain on Revaluation of Fixed Assets	2,650	4,651
Total Gains Recognised in Year	**2,710**	**3,990**

The notes on pages 41 to 55 form part of these accounts.

Balance Sheet

As at 31 March 2005

	Notes	2004/05 £'000	2004/05 £'000	2003/04 £'000
Fixed Assets				
Tangible Fixed Assets	**7**		58,271	58,470
Investments	**8**		150	150
Total Fixed Assets			**58,421**	**58,620**
Current Assets				
Work in Progress	**9**	719		801
Debtors	**10**	3,973		3,772
Cash at Bank and in Hand	**19**	4,784		9,209
Total Current Assets		**9,476**		**13,782**
Creditors:				
Amounts falling due within one year	**11**	(5,561)		(10,123)
Net Current Assets			**3,915**	**3,659**
Total Assets Less Current Liabilities			**62,336**	**62,279**
Creditors:				
Amounts falling due after one year	**11**		(173)	(241)
Provisions for Liabilities & Charges	**13**		**(1,044)**	**(977)**
TOTAL ASSETS LESS LIABILITIES			**61,119**	**61,061**
RESERVES				
General Fund	**14**		49,580	50,650
Revaluation Reserve	**14**		11,539	10,411
Total Reserves as at 31 March			**61,119**	**61,061**

The notes on pages 41 to 55 form part of these accounts.

Signed:

Mark Farrar
Acting Chief Executive and Agency Accounting Officer

Date: 7 June 2005

Cash Flow Statement

For the year ended 31 March 2005

	Notes	2004/05 £'000	2003/04 £'000
Net cash inflow from operating activities	**15**	6,923	5,826
Capital expenditure and financial investment	**16**	(766)	(2,533)
Financing	**17**	(10,582)	0
Net cash (outflow)/inflow		**(4,425)**	**3,293**

The notes on pages 41 to 55 form part of these accounts.

Notes To The Accounts

Note 1. Statement of Accounting Policies

1.1 Statement of Accounting Policies
These financial statements have been prepared in accordance with the Resource Accounting Manual issued by HM Treasury. The particular accounting policies adopted by CEFAS are described below. The accounting policies used in preparing the accounts are consistent with those used last year, subject to the exception that in the year ended 31 March 2005 CEFAS has accrued for pay award and legal claims, having previously included these within the provisions for liabilities and charges in the balance sheet and corresponding note. There is no effect on the previously reported deficit for 2003/04.

1.2 Accounting Convention
These accounts have been prepared under the historical cost convention, modified to include the revaluation of fixed assets at their value to CEFAS by reference to their current costs.

1.3 Tangible Fixed Assets
Asset values are modified annually by the use of indices for current cost accounting as supplied by the Office for National Statistics.

1.3.1 Land and Buildings
Land and buildings are professionally valued at intervals of no greater than 5 years. The lives given to the buildings fall in the range of 4 to 41 years.

The title to the freehold land and buildings occupied by CEFAS is held by Defra.

1.3.2 Other Fixed Assets
The capitalisation threshold for fixed assets is £3,000. Asset pools exist for items of IT equipment with individual values ranging from £500 to £3,000. As from September 2003, computers costing less than £3,000 have not been capitalised.

1.3.3 Depreciation of Tangible Fixed Assets
Depreciation is provided on all fixed assets, with the exception of land, at rates calculated to write off the valuation of each asset on a straight-line basis over its expected useful economic life.

Asset lives are as follows:

Buildings	**4 – 41 years**
Information Technology	**3 – 6 years**
Scientific and General Equipment	**5 – 10 years**
Vessels	**1 – 30 years**
Vehicles	**6 – 8 years**
Fixtures and Fittings	**1 – 30 years**

1.4 Investments
Investments are reported at market value or at cost where market value cannot be readily ascertained. In accordance with the Resource Accounting Manual, the fixed asset investment has not been consolidated as it is outside the Departmental boundary.

1.5 Work in Progress
Work in progress is valued at the lower of cost or net realisable value.

1.6 Research and Development
Expenditure on research and development (Seedcorn Projects) is treated as an operating cost in the year in which it is incurred and taken to the Income and Expenditure Account. Fixed assets, which are acquired for use in research and development, are depreciated over their useful economic life.

1.7 Government Grants
Grants are recognised in the same period as their related expenditure. Grants towards fixed asset purchases are treated as a deferred creditor and recognised as income over the useful life of the asset.

1.8 Operating Income
Operating income is shown net of Value Added Tax (VAT) and comprises fees and charges for services provided to core Defra, external customers, other government agencies and public sector repayment work receipts from the European Union.

Turnover is recognised over the term of the individual contract.

1.9 Capital Charge
A notional charge, reflecting the cost of capital used by CEFAS, is included in the Income and Expenditure Account. The charge is calculated at the Government standard rate on the average value of all assets excluding cash held at the Office of the Paymaster General, less liabilities and excluding donated assets.

1.10 Taxation
No taxation is payable on the surplus generated by CEFAS.

CEFAS is included under the VAT registration of Defra. Irrecoverable VAT, excluding that on capital purchases, is charged to the Income and Expenditure Account in the year in which it is incurred.

1.11 Foreign Exchange
Monetary assets and liabilities denominated in foreign currencies are translated using the rate of exchange at the balance sheet date. Transactions in foreign currencies are translated using the rate of exchange at the date of each transaction, all differences are charged/(credited) to the Income and Expenditure Account.

1.12 Notional Charges
In addition to the capital charge, the following notional costs borne on the Income and Expenditure Account are credited to the General Fund:

Defra Maintenance Charges
Defra Central Overhead Charges
Redundancy and Early Retirement
Interest

1.13 Insurance
CEFAS, in common with other Government bodies, does not insure the majority of its assets. Losses and compensations are charged to the Income and Expenditure Account.

1.14 Pensions
Pension benefits are provided through the Civil Service Pension arrangements. From 1 October 2002, Civil Servants may be in one of three statutory based "final salary" defined benefit schemes (Classic, Premium and Classic Plus). The schemes are unfunded with the cost of benefits met by monies voted by Parliament each year. Pensions payable under Classic, Premium, and Classic Plus are increased annually in line with changes in the Retail Prices Index. The provisions of the Principal Civil Service Pension Scheme (PCSPS) cover present and past employees, which is non-contributory and unfunded. Although the scheme is a defined benefit scheme, liability for payment of future benefits is a liability of the PCSPS. CEFAS meets the cost of pension cover provided for the staff they employ by payment of charges calculated on an accruing basis. There is a separate scheme statement for the PCSPS as a whole.

New entrants after 1 October 2002 may choose between membership of Premium or joining a good quality "money purchase" stakeholder arrangement with a significant employer contribution (the Partnership Pension Account).

1.15 Provisions
1.15.1 Early Departure Costs
CEFAS is required to meet the additional cost of benefits beyond the normal PCSPS benefits in respect of employees who retire early. CEFAS provides in full for this cost when the early retirement programme has been announced and is binding on CEFAS. CEFAS may, in certain circumstances, settle some or all of its liability in advance by making a payment to the Paymaster General's Account at the Bank of England for the credit of the Civil Superannuation Vote. The amount provided is shown net of any such payments and is discounted using the Government standard rate of 3.5%.

1.15.2 Bad Debt Provision
A general provision is held against the debtor balance. This is based on a proportion of the debts outstanding plus any specific amounts.

1.16 Leases
CEFAS holds no leases where substantially all the risks and rewards of the leased asset are borne by CEFAS. Other leases are regarded as operating leases and the rentals are charged to the Income and Expenditure Account on a straight-line basis over the terms of the lease.

1.17 Going Concern
These accounts have been prepared on the basis that CEFAS is a going concern.

Note 2. UK Government Income

	2004/05 £'000	2003/04 £'000
Defra	30,263	29,037
Defra Agencies	22	28
Other Government Departments	3,559	3,261
Total UK Government Income	**33,844**	**32,326**

Note 3. Non-UK Government Income

	2004/05 £'000	2003/04 £'000
UK Public Sector	300	183
UK Private Sector	1,057	730
European Union	1,627	1,351
Other	566	775
Total Non-UK Government Income	**3,550**	**3,039**

Note 4. Staff Related Expenditure

(a) Staff Costs

	Employed staff £'000	Others £'000	2004/05 Total £'000	2003/04 Total £'000
Wages and Salaries	13,415	207	13,622	12,945
Social Security Costs	1,016	0	1,016	1,009
Superannuation	1,694	0	1,694	1,666
Total Staff Expenditure	**16,125**	**207**	**16,332**	**15,620**

(b) The average number of persons employed by CEFAS during the year was:

	Employed staff No.	Others No.	2004/05 Total No.	2003/04 Total No.
Scientific Research & Development	394	3	397	401
Management/Administration	121	2	123	127
Marketing	8	0	8	8
Total	**523**	**5**	**528**	**536**

Staff related expenditure paid to "others" is attributable to agency and advisory staff. 2003/04 has been updated to include agency and advisory staff and was disclosed separately in the 2003/04 annual report and accounts. The comparative for note 4(b) has also been updated to include all agency and advisory staff in 2003/04.

Note 4. Staff Related Expenditure (continued)

(c) Board Remuneration -
The salary of the most senior managers of the Agency were as follows:

Management Board Member	2004/05 Salary banding £'000	2003/04 Salary banding £'000
Acting Chief Executive (from 1 August 2004) Finance and Resource Director (to 31 July 2004) **M Farrar**	65 - 70	55 - 60
Chief Executive **Dr P Greig-Smith** (to 31 July 2004)	35 - 40	80 - 85
Deputy to the Chief Executive **Dr J Horwood**	75 - 80	70 - 75
Science Director **Dr M Waldock**	50 - 55	50 - 55
Science Director **Dr S Malcolm**	45 - 50	45 - 50
Finance and Resource Director **J Dawe** (from 13 August 2004)	25 - 30	0
Commercial Director **B Robinson**	55 - 60	55 - 60
Director of Staff Development **D Carter**	35 - 40	30 - 35

Salaries include gross salaries, performance pay or bonuses, overtime, reserved rights to London weighting or London allowances, recruitment and retention allowances, private office allowances and any other allowance to the extent that it is subject to UK taxation. No board members were in receipt of any benefits in kind (2003/04: £NIL).

Non - Executive Directors	2004/05 Fee banding £'000	2003/04 Fee banding £'000
H Walker	5 - 10	0 - 5
A Tweedie	10 - 15	0 - 5
T Daly	0	0

T Daly is not in receipt of any fees as she is employed by Defra, who fund her position as a non-executive director.

Note 4. Staff Related Expenditure (continued)

(d) Board Remuneration -
The pension entitlements of the most senior managers of the Agency were as follows:

Management Board Member	Real increase in pension and related lump sum at age 60 £'000	Total accrued pension and related lump sum at age 60 £'000	CETV at 31/3/05 £'000	CETV at 31/3/04 £'000	Real increase in CETV £'000
Acting Chief Executive (from 1 August 2004) Finance and Resource Director (to 31 July 2004) **M Farrar**	0 - 2.5 plus 2.5 - 5 lump sum	0 - 5 plus 10 - 15 lump sum	49	31	15
Chief Executive **Dr P Greig-Smith** (to 31 July 2004)	0 - 2.5 plus 0 - 2.5 lump sum	20 - 25 plus 65 - 70 lump sum	347	332	7
Deputy to the Chief Executive **Dr J Horwood**	0 - 2.5 plus 0 - 2.5 lump sum	30 -35 plus 95 - 100 lump sum	511	477	10
Science Director **Dr M Waldock**	0 - 2.5 plus 0 - 2.5 lump sum	15 - 20 plus 50 - 55 lump sum	277	253	5
Science Director **Dr S Malcolm**	0 - 2.5 plus 0 - 2.5 lump sum	15 - 20 plus 45 - 50 lump sum	240	219	7
Finance and Resource Director **J Dawe** (from 13 August 2004)	0 - 2.5 plus 0 - 2.5 lump sum	0 - 2.5 plus 0 - 2.5 lump sum	2	0	1
Commercial Director **B Robinson**	0 - 2.5 plus 0 - 2.5 lump sum	20 - 25 plus 60 - 65 lump sum	336	310	7
Director of Staff Development **D Carter**	0 - 2.5 plus 0 - 2.5 lump sum	5 - 10 plus 25 - 30 lump sum	121	106	4

Note 4. Staff Related Expenditure (continued)

(e) Pension benefits

Pension benefits are provided through the Civil Service Pension (CSP) arrangements. From 1 October 2002, Civil Servants may be in one of three statutory based "final salary" defined benefit schemes (Classic, Premium and Classic Plus). The schemes are unfunded with the cost of benefits met by monies voted by Parliament each year. Pensions payable under Classic, Premium, and Classic Plus are increased annually in line with changes in the Retail Prices Index. New entrants after 1 October 2002 may choose between membership of Premium or joining a good quality "money purchase" stakeholder arrangement with a significant employer contribution (the Partnership Pension Account).

Employee contributions are set at the rate of 1.5% of pensionable earnings for Classic and 3.5% for Premium and Classic Plus. Benefits in Classic accrue at the rate of 1/80th of pensionable salary for each year of service. In addition, a lump sum equivalent to three years' pension is payable on retirement. For Premium, benefits accrue at the rate of 1/60th of final pensionable earnings for each year of service. Unlike Classic, there is no automatic lump sum (but members may give up (commute) some of their pension to provide a lump sum). Classic Plus is essentially a variation of Premium, but with benefits in respect of service before 1 October 2002 calculated broadly as per Classic.

The Partnership Pension Account is a stakeholder pension arrangement. The employer makes a basic contribution of between 3% and 12.5% (depending on the age of the member) into a stakeholder pension product chosen by the employee. The employee does not have to contribute but where they do make contributions, the employer will match these up to a limit of 3% of pensionable salary (in addition to the employer's basic contribution). Employers also contribute a further 0.8% of pensionable salary to cover the cost of centrally-provided risk benefit cover (death in service and ill health retirement).

Further details about the CSP arrangements can be found at the website www.civilservice-pensions.gov.uk

The cash equivalent transfer value (CETV) is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a particular point in time. The benefits are the member's accrued benefits and any contingent spouse's pension payable from the scheme. A CETV is a payment made by a pension scheme or arrangement to secure pension benefits in another pension scheme or arrangement when the member leaves a scheme and chooses to transfer the benefits accrued in their former scheme. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just their service in a senior capacity to which disclosure applies. The CETV figures include the value of any pension benefit in another scheme or arrangement which the individual has transferred to the CSP arrangements and for which the CS Vote has received a transfer payment commensurate to the additional pension liabilities being assumed. They also include any additional pension benefit accrued to the member as a result of their purchasing additional years of pension service in the scheme at their own cost.

The real increase in the value of the CETV reflects the increase in CETV effectively funded by the employer. It takes account of the increase in accrued pension due to inflation, contributions paid by the employee (including the value of any benefits transferred from another pension scheme arrangement) and uses common market valuation factors for the start and end of the period.

CETVs are calculated within the guidelines and framework prescribed by the Institute and Faculty of Actuaries.

(f) Early departure costs

Early departure costs in 2004/05 amounted to £600,000 (2003/04: £678,000), exclusive of employer's contributions to national insurance and superannuation, for lieu of notice and compensation for loss of pension.

Note 5. Other Expenditure

	2004/05 £'000	2003/04 £'000
Laboratory Consumables	4,858	4,539
Depreciation	3,856	3,565
Vessels & Charters	3,122	2,891
Accommodation	3,078	2,799
Rent & Rates	256	248
Vehicles	93	185
Audit	28	27
External Auditors Other Payments	0	1
Hospitality	28	31
Travel & Subsistence	939	911
Training	383	275
IT Costs	884	941
Lease Charges - IT	170	242
Lease Charges - Other	251	156
Insurance/Losses	32	29
Defra Management Overheads	124	246
Telecommunications	125	181
Bad Debt Provision	0	(42)
Exchange (Gains)/Losses	(4)	16
Early Departure Costs	600	678
Other Expenditure	551	450
Total Expenditure	**19,374**	**18,369**

Note 6. Segmental Report

	2004/05			2003/04		
	Governmental Bodies £'000	Other £'000	Total £'000	Governmental Bodies £'000	Other £'000	Total £'000
Turnover	33,844	3,550	37,394	32,326	3,039	35,365
Cost of Sales	(32,362)	(3,344)	(35,706)	(30,987)	(3,002)	(33,989)
Surplus for the Year	**1,482**	**206**	**1,688**	**1,339**	**37**	**1,376**
Return on capital employed	**3.0%**	**4.0%**	**3.1%**	**2.7%**	**0.8%**	**2.5%**

Note 7. Tangible Fixed Assets

Cost or Valuation	Land £'000	Buildings £'000	Fixtures and Fittings £'000	Vessels £'000	Information Technology £'000	Scientific Equipment £'000	General Equipment £'000	Vehicles £'000	Assets in Course of Construction £'000	Total £'000
At 1 April 2004	1,309	32,754	0	26,729	3,706	8,332	314	326	295	73,765
Indexation	119	2,181	0	1,912	35	219	3	2	0	4,471
Revaluation	(42)	(1,512)	0	0	0	0	0	0	0	(1,554)
Additions	0	45	0	7	316	814	0	28	370	1,580
Transfers	0	(304)	480	0	129	68	0	0	(373)	0
Disposals	0	0	0	(941)	(163)	(161)	0	(37)	0	(1,302)
At 31 March 2005	**1,386**	**33,164**	**480**	**27,707**	**4,023**	**9,272**	**317**	**319**	**292**	**76,960**
Depreciation										
At 1 April 2004	0	(5,852)	0	(1,171)	(2,528)	(5,246)	(251)	(247)	0	(15,295)
Indexation	0	(486)	0	(63)	(9)	(73)	(2)	(1)	0	(634)
Revaluation	0	367	0	0	0	0	0	0	0	367
Provided in Year	0	(1,721)	0	(1,036)	(341)	(707)	(31)	(20)	0	(3,856)
Transfers	0	230	(230)	0	0	0	0	0	0	0
Disposals	0	0	0	426	142	130	0	31	0	729
At 31 March 2005	**0**	**(7,462)**	**(230)**	**(1,844)**	**(2,736)**	**(5,896)**	**(284)**	**(237)**	**0**	**(18,689)**
Net Book Value										
At 31 March 2005	**1,386**	**25,702**	**250**	**25,863**	**1,287**	**3,376**	**33**	**82**	**292**	**58,271**
At 31 March 2004	**1,309**	**26,902**	**0**	**25,558**	**1,178**	**3,086**	**63**	**79**	**295**	**58,470**

Land and buildings were revalued with effect from 1 April 2005 by the Valuation Office Agency, 50 Frederick Street, Edinburgh. The assets were revalued on an existing use basis. This valuation has been used in preparing the accounts up to 31 March 2005.

Note 8. Fixed Asset Investments

	£'000
Cost	
At 1 April 2004	150
Additions	0
Disposals	0
At 31 March 2005	**150**
Provisions	
At 1 April 2004	0
Movement	0
At 31 March 2005	**0**
Net Book Value	
At 31 March 2005	**150**
At 31 March 2004	**150**

In 2001, CEFAS purchased the entire share capital of CEFAS Technology Limited for £150,000.

The Management Board has considered the value of the investment and has recorded the investment at cost. This will be reviewed on a regular basis and provision made for any impairment in value.

CEFAS' share of the net assets and results of the above investment are as follows:

	2004/05 £'000	2003/04 £'000
Net assets at 31 March	476	417
Turnover	442	423
Profit for the year	59	151

Note 9. Work In Progress

	2004/05 £'000	2003/04 £'000
United Kingdom	367	510
European Union	228	229
Other	124	62
Total Work In Progress	**719**	**801**

Note 10. Debtors

	2004/05 £'000	2003/04 £'000
Amounts falling due within one year:		
Trade Debtors	1,672	1,908
VAT	301	298
Defra	956	752
Prepayments and Accrued Income	1,038	803
Sundry Debtors	6	11
Total Debtors	**3,973**	**3,772**

Note 11. Creditors

	2004/05 £'000	2003/04 £'000
Amounts falling due within one year:		
Trade Creditors	1,520	1,042
Other Taxation and Social Security	475	494
Accruals	682	736
Defra	110	5,400
Other Creditors	371	150
Deferred Income	2,403	2,301
Total under one year creditors	**5,561**	**10,123**
Amounts falling due after more than one year:		
Grants not yet credited to income	2	7
Deferred Income	171	234
Total Creditors	**5,734**	**10,364**

Note 12. Intra-Government Balances

	Debtors: Amounts falling due within one year £'000	Debtors: Amounts falling due after more than one year £'000	Creditors: Amounts falling due within one year £'000	Creditors: Amounts falling due after more than one year £'000
Balances with other central government bodies	1,770	0	150	40
Balances with local authorities	0	0	0	0
Balances with NHS Trusts	0	0	0	0
Balances with public corporations and trading funds	0	0	0	0
Balances with bodies external to government	2,203	0	5,411	133
Balance at 31 March 2005	**3,973**	**0**	**5,561**	**173**
Balances with other central government bodies	1,282	0	5,406	6
Balances with local authorities	9	0	0	0
Balances with NHS Trusts	0	0	0	0
Balances with public corporations and trading funds	0	0	0	0
Balances with bodies external to government	2,481	0	4,717	235
Balance at 31 March 2004	**3,772**	**0**	**10,123**	**241**

Note 13. Provisions for Liabilities and Charges

	£'000
Balance at 1 April 2004	977
Provided in the year	506
Provisions not required written back	(16)
Utilised in the year	(355)
Revalued in year	(68)
Balance at 31 March 2005	**1,044**

The provision relates to early retirement and pension commitments, to provide for the cost of future pension payments to staff who have retired before their 60th birthday. The timing and amounts payable are reviewed annually by the Pay and Personnel Agency.

No reimbursement is expected in relation to any of the amounts provided for.

Note 14. Movement on Reserves

	General Fund £'000	Revaluation Reserve £'000	Total £'000
Balance at 1 April 2004	50,650	10,411	61,061
Notional Charges	152	0	152
Notional Interest	2,004	0	2,004
Revaluation	0	2,650	2,650
Realised Element of Revaluation Reserve	1,522	(1,522)	0
Income & Expenditure Account	60	0	60
Provision for Early Departure Costs	374	0	374
Excess Cash Funding Repayable to Defra	(5,182)	0	(5,182)
Balance at 31 March 2005	**49,580**	**11,539**	**61,119**

Note 15. Reconciliation of Net Operating Cost to Net Cash Flow from Operating Activities

	£'000	2004/05 £'000	£'000	2003/04 £'000
Net suplus/(deficit)		60		(661)
Adjustments for non-cash transactions				
Depreciation charges	3,856		3,565	
Notional charges	2,156		2,303	
(Profit)/Loss on disposal	(376)		7	
Provisions	586		864	
		6,222		6,739
Adjustments for movements in working capital other than cash				
Decrease in work in progress	82		155	
(Increase) in debtors	(201)		(1,018)	
Increase in creditors	905		1,110	
		786		247
Use of provisions		(145)		(499)
Net cash inflow from operating activities		**6,923**		**5,826**

Note 16. Capital Expenditure and Financial Investment

	2004/05 £'000	2003/04 £'000
Payments to acquire tangible fixed assets	(1,716)	(2,604)
Receipts from sale of tangible fixed assets	950	71
	(766)	**(2,533)**

Note 17. Financing

	2004/05 £'000	2003/04 £'000
Excess cash funding repaid to Defra	(10,582)	0
	(10,582)	**0**

Note 18. Analysis of Changes in Cash During the Year

	2004/05 £'000	2003/04 £'000
Balance at 1 April	9,209	5,916
Net Cash Flow	(4,425)	3,293
Balance at 31 March	**4,784**	**9,209**

Note 19. Cash at Bank and in Hand

	2004/05 £'000	2003/04 £'000
Commercial Banks	721	98
Office of Paymaster General	4,061	9,108
Cash in Hand	2	3
Total Cash at Bank and in Hand	**4,784**	**9,209**

The balance as at 31 March comprised amounts issued from the Consolidated Fund for supply but not spent at year end.

Note 20. Capital Commitments

CEFAS had at 31 March capital commitments totalling £42,000 (2003/04: £64,000).

Note 21. Post Balance Sheet Events

There are no post balance sheet events to report.

Note 22. Contingent Liabilities

There are no material contingent liabilities.

Note 23. Operating Leases

Rentals under operating leases are charged to the Income and Expenditure Account on a straight-line basis over the terms of the lease. At 31 March 2005, the Agency was committed to making the following payments during the next financial year in respect of operating leases:

	2004/05 £'000 Vehicles	2004/05 £'000 Land	2004/05 £'000 IT Equipment	2003/04 £'000 Vehicles	2003/04 £'000 Land	2003/04 £'000 IT Equipment
Operating Leases which expire:						
Within 1 Year	30	21	60	0	4	4
Between 2 to 5 Years	31	91	37	65	73	125
After 5 Years	0	10	0	0	15	0
Total	**61**	**122**	**97**	**65**	**92**	**129**

Note 24. Related Party Transactions

CEFAS has dealings with the Department for Environment, Food and Rural Affairs (Defra) and its sponsored bodies, notably the Veterinary Medicine Directorate and the Central Science Laboratory. One of CEFAS' non-executive directors is employed by Defra.

CEFAS Technology Limited is a fixed asset investment (see note 8). The shares are held by M Farrar as nominee of the trustee for CEFAS.

No Board Member, members of key management staff or other related parties have undertaken any material transactions with CEFAS, CEFAS Technology Limited or other related parties during the year.

Note 25. Prompt Payment Policy

CEFAS has a duty to meet the CBI 30 day payment policy. During the year, the percentage of invoices that met the policy is as below:

	2004/05 %	2003/04 %
Quarter 1	84	98
Quarter 2	52	98
Quarter 3	66	98
Quarter 4	82	99
Average percentage of invoices paid within 30 days	**71**	**98**

No interest was paid in respect of late payment of commercial debt (2003/04: £NIL).

Note 26. Notional Interest

	2004/05 £'000	2003/04 £'000
Fixed Assets	2,004	1,979
Working Capital	0	51
Total Notional Interest	**2,004**	**2,030**

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Further information about CEFAS, our activities and services, and news of recent developments can be found on our website: www.cefas.co.uk
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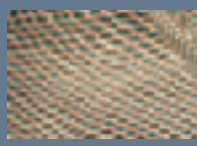

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