

National Centre for Risk Analysis & Options Appraisal

Business Strategy

Final

August 1998



ENVIRONMENT AGENCY

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NORTH EAST REGION

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1. INTRODUCTION AND BACKGROUND

In September 1997, the Environment Agency published "*An Environmental Strategy for the Millennium and Beyond*". The Strategy outlines the approach that the Agency will take in achieving its primary aim of contributing to sustainable development. It sets out nine key themes which will provide the focus for the Agency's work over the next ten years and states that the Agency will :

"Maintain and develop our own national centres of excellence to provide scientific and technical expertise, support and advice to our staff and to others, including provision of tools and methodologies, and guidance for environmental monitoring and assessment techniques."

The National Centres are therefore important in the development of the tools and techniques which will enable the organisation both to deliver the *Environmental Strategy* and contribute to sustainable development.

The National Centre for Risk Analysis and Options Appraisal was established in May 1997, to provide expertise in risk assessment, economic appraisal, environmental forecasting, policy evaluation, and options appraisal. The overall objective of the National Centre is :

"To assess and quantify risks to the environment, and provide guidance on methods for their reduction, such that industry and society bear a justifiable level of cost and the Agency maximises its contribution to sustainable development."

The Centre has overall responsibility for the third of four Frameworks established to underpin the Environmental Strategy. These frameworks provide a logical approach to assessing the environment, the pressures placed upon it, and the action that the Agency may wish to take. The first ("Viewpoints") assesses the *state* of the environment, the second ("Stresses and Strains") considers the *pressures* that are affecting it, the third ("Risks and Values") looks at *options* for taking action, and the fourth allows the Agency to deliver the right *responses* through environmental management. The third Framework was approved by the Agency's Board in February 1998.

The key areas of work that the Centre will be involved with, in order of precedence, are:-

- Overall responsibility for the **third Framework**
- Supporting the **nine key environmental themes**
- Assessing the **impact of future developments** upon both the environment and the Agency - national and international
- Trialing its new techniques on **specific operational needs**, then handing over to Regions and Areas for routine implementation. The Centre will be involved in application of techniques on operational issues that have national or supra-Regional significance.

In particular, the Centre is the Agency's centre of expertise for:

- understanding and analysing risks of damage that both current and future pressures on the environment may pose;
- developing techniques to forecast the consequences of management decisions on the future state of the environment; and
- evaluating the options available in reducing the pressures and improving the environment, taking account of environmental, economic, social and technological developments.

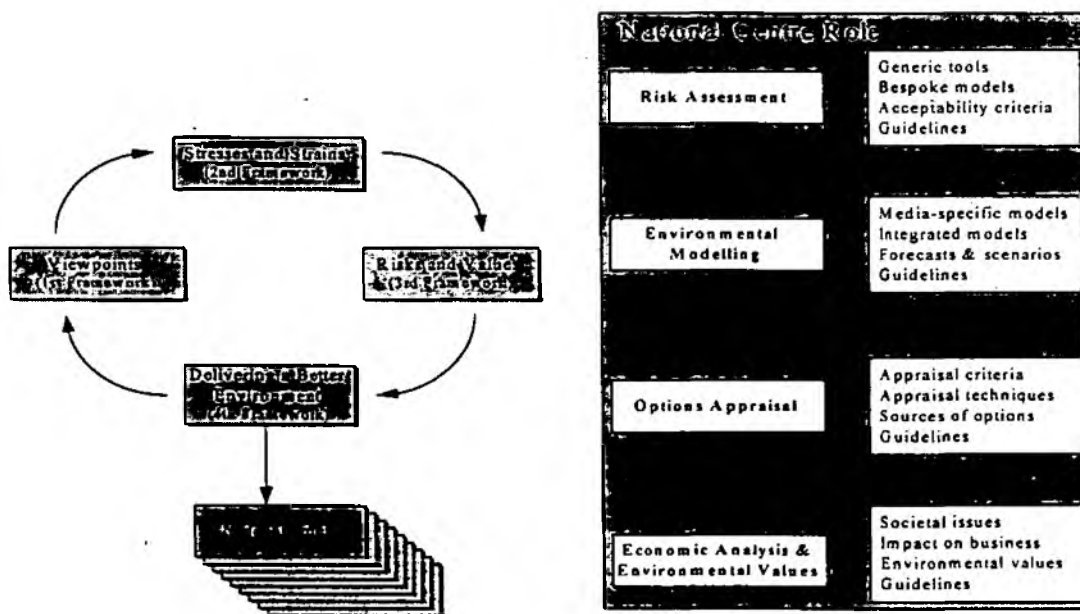
The Centre will deliver techniques to enable the Agency to take a considered, long term, holistic view in its strategic environmental decision making. The Centre will apply these techniques to major issues such as transport, energy production and consumption, and sustainable land use. In developing such techniques the Centre will build on best science.

The formal remit of the Centre is set out in its Business Case and has been agreed by the Directors and the Chief Executive. This *Business Strategy* will be used to focus the contents of the annual work programme in such a way that the outputs produced make a real difference to the environment of England and Wales.

2. THE THIRD FRAMEWORK - RISKS AND VALUES

This Framework is important both in the context of contributing to sustainable development, and the DETR's expectation that its guidance on issues such as risk assessment, policy appraisal and environmental appraisal will be implemented within the Agency. The broad contents of this Framework and its relation to the others and the nine themes are indicated in Figure 1.

Figure 1. National Centre's Role in the four Frameworks



As stated above, the Centre has overall responsibility for this Framework. As a consequence, the majority of its activities over the next three to five years will be in support of this Framework, and more specifically in the following areas:

Establishing the third Framework within which the following Agency activities will be undertaken:

- Risk assessment
- Environmental modelling
- Options appraisal
- Economic analysis

Setting the principles with which Agency activities in the third Framework areas above must conform.

Developing new and improved tools and techniques in areas such as:

- Assessment of chemical, flood, ecological and corporate risk
- Air, water, soil and ecological modelling
- Environmental assessment, economic analysis, societal impact assessment, technology assessment, and sustainability analysis
- Policy analysis

Establishing the acceptability of environmental risk based on the following criteria:

- Sound scientific principles
- Ethical values
- Societal values
- Economic principles

Establishing and subsequently implementing a framework and programme for forecasting the future state of the environment in England and Wales.

The ability to be able to forecast the future state of the environment in the knowledge of both current and future risks will enable the Agency to be both better informed, and more proactive in its protection and management of the environment.

Providing guidance on all areas of its work to ensure the Agency implements best practice.

3. SUPPORT TO THE NINE ENVIRONMENTAL THEMES

The Environmental Strategy sets out the nine key environmental themes which provides the focus for the Agency's work over the next ten years within the context of sustainable development. The Agency's guidance on its contribution to sustainable development states that it must:

"take into account long term implications and effects, particularly:

- *those which appear to be irreversible*
- *those which are only reversible at high cost over a long timescale*
- *those which raise issues of inter-generational equity."*

The Centre will take a long term view of these strategic issues on behalf of the Agency, and has a key role in supporting the overarching aims of the *Environmental Strategy*. The Centre will provide advice to the Agency, and will refine and develop new techniques to address the nine environmental themes.

3.1 Baseline Forecasts

In order to predict likely risks to the environment, modelling techniques typically use information on *current* trends and activities - baseline information. This provides the Agency with baseline forecasts and these are used to assess management options to reduce predicted impacts. The Centre has a key role in the development of models that will permit baseline forecasting and will provide baseline forecasts for each of the nine themes.

Baseline forecasting work undertaken by the Centre includes:

- Assessing the impact of national policies and UN ECE protocols on acidification in UK
- Air quality

3.2 Future - ('What If?') Scenarios

The Centre aims to improve the Agency's forecasting techniques by developing models that take into account a number of 'what if?' scenarios i.e. *possible* trends and activities. For example what if the population increases by more than expected, what if society is not prepared to pay for environmental improvement, what if sea level rises by double that expected. The Centre will therefore provide a range of scenarios for each of the nine themes based on the baseline forecasts.

Future forecasting work undertaken by the Centre includes:

- Inputting into the Foresight Initiative to ensure that the scenarios used to predict the rate and scale of environmental damage/risk are consistent.
- Linking habitats directive with IPC processes

The state of the art tools and techniques developed by the Centre will permit the Agency to undertake forecasting over timescales that span orders of magnitude. For example, water resources planning currently has a 3-5 year time horizon. Through baseline forecasts and scenarios, the Centre will provide longer term views (over 10-50 years) to assist this planning. Climate change scenarios are required over decades to centuries, and the environmental effects of radioactive waste disposal need to be predicted over thousands of years.

Using the techniques above, the Centre will undertake initial 'rough-cut' assessments of risks which will forecast the likely environmental impacts. These assessments will be followed by more detailed work which will propose comprehensive management options, permitting the Agency to focus its efforts on maximising environmental improvements.

The role set out in this *Business Strategy* is translated on an annual basis in to the Centre's *Business Plan* which provides more details on the outputs being produced in any given area.

4. ASSESSING THE IMPACT OF FUTURE DEVELOPMENTS

The Centre is responsible for identifying the potential future impact of initiatives from international sources as well as those within the UK. Through determining the level of risk to the environment, the effect that the proposals may have upon it, and the implications of the options being considered, the Agency will be well positioned to take a proactive and informed stance.

The Centre will provide future forecasting and risk assessments that can be applied to numerous national and international initiatives. Examples of areas in which the Centre will be involved across a variety of timescales are indicated below:

4.1 International

Short-term

- **Water Framework Directive** - environmental modelling, risk based prioritisation.
- **Air Framework Directive** - advice on thresholds and model development.
- **IPPC Directive** - link between risk analysis and environmental impact assessment.
- **Common Agricultural Policy Reform** - land use model development and economic appraisal.
- **Eco-management and Audit Scheme** - risk screening as a precursor to certification application.

Medium-term

- **Acidification** - assessing impact of national policies and international protocols on acidification in the UK.

- **Strategic Environmental Impact Assessment** - advice to DETR/Government on proposals and development of practical principles.
- **European Environment Agency** - influence developments in environmental assessment methods, risk guidance and environmental forecasts.
- **EC Biodiversity Strategy** - modelling, risk assessment of vulnerable habitats, economic issues associated with implementing Action Plans.
- **Genetically Modified Organisms** - assessing environmental risks.
- **European Structural Funds** - advice on prioritising resources for environmental projects.
- **Waste** - tools for the prioritisation of high risk sites.

Long-term

- **Climate Change** - risk assessment of stress placed on environment by climate change and options for achieving agreed targets.
- **Montreal protocol for ozone depleting substances** - costs of achieving the protocol.
- **Health and the Environment** - linking environmental risk to health risk.
- **European Spatial Development Perspective** - sustainability assessment of planning options.

The Centre will also keep a watching brief on the technical aspects of issues emerging from DGXI and DGXII, including:-

- Environment and health
- Sustainable development of rural and other relevant areas
- Socio-economic aspects of life sciences - linkages between science and policy in the field of environment, in the perspective of consensus-building
- Sustainable mobility and intermodality - relationship between transport, land use, pollution environment and health
- Technologies for monitoring the quality and level of ground and surface waters - updated water quality criteria and indicators for water policy
- Surveillance, early warning and communications systems for floods and drought assessment
- Global change, climate and biodiversity - European Biodiversity Strategy
- Sustainable marine ecosystems
- City of Tomorrow - new models for the sustainable development of European cities and city regions - town planning
- Major natural and technological hazards - level of natural risks
- Cleaner Energy systems
- Socio-economic aspects of development of energy - reduced emissions and improvement of health and safety

4.2 National

Short-term

- **COMAH Directive** - risk assessment techniques
- **Revision of DETR Risk Assessment Guide** - major input to revision of Guide
- **Revision to Planning Guidance** - sustainability appraisal
- **Transport Review** - provide opinion to Government on integrated transport issues and the impacts of roads
- **UK Chemicals Strategy** - risk assessment advice

Medium-term

- **Contaminated Land Regulations** - risk-based tools
- **Royal Commission on Environmental Pollution's Review of Standards** - response to recommendation
- **National Waste Strategy** - risk assessment of the stress future waste production will place on the environment
- **Valuing the Environment** - developing tools to integrate environmental economics in the decision-making process.

Long-term

- **Asset Management Planning** - national models to permit Agency Regions to advise planning process and increase planning horizons
- **House of Lords enquiry into the Management of Nuclear Waste** - advice to support Agency response to green paper
- **Sustainable Development** - watching brief on issues such as tourism, chemicals, construction, business, and waste management

5. OPERATIONAL NEEDS - WORKING WITH REGIONS AND AREAS TO DELIVER THE ENVIRONMENTAL THEMES

The Centre will be involved in a number of Regional- and Area-based projects that support the nine key environmental themes. These projects will be undertaken on the basis that they are non-routine and will provide ideal, real life, situations for trialing the new tools and techniques developed by the Centre.

The Centre's may also be involved in application of its techniques in operational projects that have national or supra-Regional significance, and where the Centre's expertise may be required.

Examples of such work are given below:-

5.1 Addressing Climate Change

Projects include:

- Risks associated with flooding due to climate change.

In addressing these climate change issues the Centre will work closely with other Agency functions, notably Sustainable Development, Water Resources and Flood Defence, and the National Centre for Environmental Data and Surveillance. Relevant external bodies include DETR, English Nature and the Countryside Commission.

5.2 Improving Air Quality

Projects include:

- Air dispersion and deposition modelling.
- Provision of stack dispersion workbook.

The Centre will work closely with the Sustainable Development, Environmental Monitoring and Assessment, and PIR functions. The Centre will work with DETR, Local Authorities and Industry Sector Groups to achieve sustained improvements in air quality.

5.3 Managing Our Water Resources

Projects include:

- Environmental impact assessment of reservoirs.

The Centre will work closely with the Water Resources Function and will provide advice, new techniques and support. Externally, the Water Service plcs and major abstractors (e.g. the power industry), and OFWAT will play a major role in this area.

5.4 Enhancing Biodiversity

Projects include:

- Environmental valuation of land use diversification options.

The Centre will work closely with the Sustainable Development and Conservation Functions. The Centre will also work with English Nature, the Institute for Terrestrial Ecology, RSPB and other NGOs.

5.5 Managing Our Freshwater Fisheries

Projects include:

- Risk-based biological monitoring programmes.

The Centre will, where appropriate, work alongside the Fisheries Function in assessing risks and uncertainties associated with different river management techniques, and will consider the effects on Fisheries as it assesses the implications of other major problems such as climate change, land use change, and population growth. The Centre will work with the Fisheries National Centres and technical sub-groups, and externally with MAFF, CEFAS, IFE and lobbyists, where appropriate.

5.6 Delivering Integrated River-Basin Management

Projects include:

- Acid waters strategy for Wales.

The Centre will take a multi-functional approach, considering links to land and air, and will work in partnership with Areas and Regions to pilot techniques. It will work alongside Local Government Liaison Function and the Water Management Directorate, and with external stakeholders.

5.7 Conserving the Land

Projects include:

- Risk assessment of groundwater contamination from petrol filling station.

The Centre will work alongside the National Centre for Ground Water and Contaminated Land, the Land Quality and Sustainable Development Functions, and with other Agency groups such as the Rural Land Use Group. It will liaise with the DETR, MAFF and the Soil Survey and Land Research Centre.

5.8 Managing Waste

Projects include:

- Statistical advice for National Waste Survey.
- Risk assessment of site investigation and construction at landfill site.
- Assessment of safety of radioactive waste disposal.

The Centre will work closely with the Waste Management, Process Industry Regulation and Radioactive Substances Functions.

5.9 Regulating Major Industries

Projects include:

- Development of risk guide for industry.
- Risk screening of ICI.

The Centre will use risk assessment and cost benefit tools, and will take account of other relevant initiatives e.g. IPPC and COMAH. It will work alongside the Environmental Protection and Operations Directorates and with relevant industry sector groups and the insurance industry.

SUBMITTING WORK PROPOSALS TO THE NATIONAL CENTRE FOR RISK ANALYSIS AND OPTIONS APPRAISAL

This section provides a brief outline of the process by which proposals for the Centre to undertake work can be made.

1. The key areas of work that the Centre will be involved with, in order of precedence, are:-
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 - Assessing the **impact of future developments** upon both the environment and the Agency - national and international
 - Trialing its new techniques on **specific operational needs**, then handing over to Regions and Ares for routine implementation. The Centre will be involved in application of techniques on operational issues that have national or supra-Regional significance.
2. Submit a proposal by filling out the attached form, bearing in mind the key areas of work in which the Centre is involved.
3. Proposals requested by your Client Board contact for the Centre's annual planning round should be returned to your Client Board contact. This usually happens in September and proposals will be prioritised and planned into the Centre's work programme.
4. Outside of the Centre's annual planning, proposals can be sent direct to the Centre at any time during the year. Proposals that are received after the usual planning round are initially assessed by the Centre's management team. When competing priorities cannot be resolved by the team, advice from the Client Board will be sought.
5. The proposal form is available on internal e-mail. Simply type **NCRAOA** in the "To:" box and **Proposal** in the "Subject:" box. You then will receive an automatic mail-back.
6. If you require any advice on proposing work to the Centre, please do not hesitate to contact us.

| | | |
|-------------------------|------------------|---------------|
| Head of Centre | Gareth Llewellyn | 0171 664 6825 |
| Business Development | Nerina Holden | 0171 664 6887 |
| Environmental Forecasts | Jimi Irwin | 0171 664 6820 |
| Risk Analysis | Simon Pollard | 0171 664 6832 |
| Options Appraisal | Andrew Brookes | 0171 664 6818 |

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Ref Number:

**NATIONAL CENTRE FOR RISK ANALYSIS AND OPTIONS APPRAISAL
OUTLINE SPECIFICATION FOR WORK - PROPOSAL**

1. PROJECT DETAILS

Title:

Objective:

Start Date:

End Date:

Deliverables:

| |
|--|
| |
| |
| |

Deadline:

| |
|--|
| |
| |
| |

2. CONTACT DETAILS

Name:

Function:

Region/Head Office:

A/HO/M/NE/NW/S/SW/T/W

Area/Region/EPD/ESD/WM

Location:

Telephone Number:

Fax Number:

3. LINKS TO BUSINESS STRATEGY (tick as applicable)

Risks and Values Framework

Notes:

Support to the Nine Environmental Themes

Climate Change

River Basin Management

Air Quality

Land

Biodiversity

Waste

Water Resources

Regulating Major Industry

Freshwater Fisheries

Other Aspects of Strategy

Future Developments

(eg European Directives/ Proposals, emerging National Projects etc)

Notes:

Operational Need

Notes:

4. LINKS TO OTHER PROJECTS

Title:

Objective:

Start Date:

End Date:

5. FURTHER INFORMATION

Please use this to provide any further information you think may be helpful:

Completed By:

Date:

For NCRAOA Use Only

Date Received:

Assigned To:

Response Date to Customer: