

Managing the Nuclear Legacy

A strategy for action



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Department of Trade and Industry



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by Command of Her Majesty.
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AEAC

United Kingdom Atomic Energy Authority Constabulary.

AGR

Advanced Gas-Cooled Reactor - a term used for the second generation of British power reactors, now operated by British Energy (Dungeness B, Hartlepool, Heysham 1 and 2, Hinkley Point B, Hunterston B and Torness). The fuel is slightly enriched uranium oxide clad in stainless steel. The coolant is carbon dioxide and the moderator is graphite. **AGR** fuel is manufactured by **BNFL** at Springfields and reprocessed in **THORP**.

ALARA

(As low as reasonably achievable). The ALARA principle is contained in the Euratom Basic Safety Standards Directive 96/29, which is transposed into UK law. Essentially, it means that all reasonable steps should be taken to protect people. In making this judgement, factors such as the costs involved in taking protection measures are weighed against benefits obtained, including the reduction in risks to people.

AWE

Atomic Weapons Establishment. AWE is operated by a site licensee company (AWE plc) managed by a contractor, currently a consortium of **BNFL**, Serco and Lockheed Martin (AWE Management Ltd). The consortium was appointed by the **MoD** after a competitive tender.

Barrow-in-Furness (Cumbria)

Site of the harbour for the Pacific Nuclear Transport Limited (**PNTL**) ships.

BE

British Energy plc. A major customer of **BNFL**, for the supply of fuel, reprocessing services and storage of spent fuel.

Berkeley (Glos)

Site of a closed Magnox power station (two reactors) and of the Berkeley Centre. The facilities of the Centre include high active cells, active chemistry laboratories, radiological instrumentation cells, specialist materials and graphite and reactor coolant laboratories.

BNFL

British Nuclear Fuels plc.

BNFL Instruments

Subsidiary of **BNFL** that is one of the world's leading providers of instrumentation and services for the measurement and characterisation of radioactive materials.

BNFL UAM

Uranium Assets Management Co Ltd provides uranium contract management services including uranic procurement on behalf of **BNFL** Magnox Generation.

BPM

(Best Practicable Means). **BPM** is a term used by the **EA** and **SEPA** in authorisations issued under the Radioactive Substances Act. Essentially, it requires operators to take all reasonably practicable measures in the design and operational management of their facilities to minimise discharges and disposals of radioactive waste, so as to achieve a high standard of protection for the public and the environment. **BPM** is applied to such aspects as minimising waste creation, abating discharges, and monitoring plant, discharges and the environment. It takes account of such factors as the availability and cost of relevant measures, operator safety and the benefits of reduced discharges and disposals. If the operator is using **BPM**, radiation risks to the public and the environment will be **ALARA**.

Bradwell (Essex)

Site of a Magnox power station (two reactors) that operated from 1962 to May 2002.

Calder Hall (Cumbria)

A Magnox power station (four reactors) within the Sellafield site which has operated since 1956. It was the world's first fully commercial nuclear power plant and remains the UK's longest operating nuclear power plant. **BNFL** recently announced that it will close in March 2003.

Capenhurst (Cheshire)

BNFL site which originally housed a diffusion plant that ceased operating in 1982. The site now focuses on the decommissioning and storage of uranic materials. Capenhurst is also

home to the first commercial scale centrifuge plant for the enrichment of uranium. BNFL is a one-third owner of Urenco Ltd which markets enrichment services.

Chapelcross (Dumfriesshire)

Site of an operating Magnox power station (four reactors) that opened in 1959. BNFL recently announced that it will close in March 2005.

Clean up

The **decontamination** and **decommissioning** of a nuclear licensed site.

Culham (Oxfordshire)

The UK centre for research into nuclear fusion and home of JET, Europe's flagship fusion project. Since January 2000 JET has been operated by UKAEA on behalf of Euratom. The UK is responsible for decommissioning the site when JET closes. Also based at Culham are the **UKAEA Constabulary** and a number of external tenants. The site is not covered by a nuclear site licence.

Decommissioning

The process whereby a nuclear facility, at the end of its economic life, is taken permanently out of service and its site made available for other purposes.

Decontamination

Removal or reduction of radioactive contamination.

DEFRA

Department for Environment, Food and Rural Affairs.

DEVA

Subsidiary of BNFL that manufactures waste drums and associated equipment.

Disposal

In the context of solid waste, disposal is the emplacement of waste in a suitable facility without intent to retrieve it at a later date; retrieval may be possible but, if intended, the appropriate term is **storage**. **Disposal** may also refer to the release of airborne or liquid wastes to the environment (i.e. emissions and discharges).

Dounreay (Caithness)

Located on the far north coast of Scotland, the site was established on a former naval base as the centre for UK fast reactor research. It is now engaged on a major decommissioning and site restoration programme to deal with the legacy of past operations. Over half of UKAEA liabilities are located at Dounreay.

Drigg (Cumbria)

Site of the national low-level waste repository. The site is operated by BNFL.

DRS

Direct Rail Services Limited. A subsidiary of BNFL which provides rail transport services for nuclear materials in the UK.

DTI

Department of Trade and Industry.

DfT

Department for Transport.

Dungeness A (Kent)

Site of an operating Magnox power station (two reactors) that opened in 1965.

Environment Agency (EA)

The Agency's role is the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposals to air, water (surface water, groundwater) and land. In addition to authorisations issued under the Radioactive Substances Act 1993, the EA also regulates nuclear sites under the Pollution Prevention and Control Regulations and issues consents for non-radioactive discharges. The equivalent body in Scotland is the **Scottish Environment Protection Agency**.

Euratom

Within the European Union, nuclear matters are the subject of a separate Treaty dating from 1957. This established the European Atomic Energy Community (EAEC) or EURATOM, which was set up to encourage progress in the field of nuclear energy.

Fellside Heat and Power Ltd

BNFL holds 50% of the ordinary shares in the company which produces electricity through combined heat and power. It has a capacity of 170MW, of which 24-26MW goes to the **Sellafield** site and the remaining 142-146MW goes to the National Grid. It is situated just outside the licensed site at Sellafield.

Fuel/Nuclear Fuel

Material containing fissile nuclides which, in a reactor, produces the neutrons necessary to sustain a neutron chain reaction.

Harwell (Oxfordshire)

A former RAF base which was the UK's first centre for nuclear research and development. It now houses a number of redundant research facilities, including low energy reactors and materials testing reactors. Decommissioning is well advanced. Roughly half the land is subject to a nuclear licence. The remainder, separated by a security fence is unlicensed. UKAEA's headquarters are located at Harwell and the site is being progressively restored and transformed into a science and technology business park – *Harwell International Business Centre*.

Health and Safety Executive (HSE)

A statutory body whose role is the enforcement of work related health and safety law under the general direction of the Health and Safety Commission established by the Health and Safety at Work Act 1974. HSE is the licensing authority for nuclear installations. The Nuclear Safety Directorate of HSE exercises this delegated authority through the Nuclear Installations Inspectorate who are responsible for regulating the nuclear, radiological and industrial safety of nuclear installations UK wide.

High Level Waste (HLW)

HLW is heat-generating waste that has accumulated since the early 1950s at Sellafield and Dounreay, primarily from the reprocessing of spent nuclear fuel. The temperature in HLW may rise significantly, so this factor has to be taken into account in designing storage or disposal facilities.

Hinkley Point A (Somerset)

A closed Magnox power station (two reactors) that operated from 1965 to 2000.

Hunterston A (Ayrshire)

A closed Magnox power station (two reactors) that operated from 1964 to 1990.

Intermediate Level Waste (ILW)

Wastes with radioactivity levels exceeding the upper boundaries for **Low Level Waste**, but which do not need heating to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel, and from general operations and maintenance of radioactive plant. The major components of ILW are metals and organic materials, with smaller quantities of cement, graphite, glass and ceramics.

IAEA

International Atomic Energy Agency.

JET

The Joint European Torus fusion research project based at UKAEA's Culham site and operated by UKAEA on behalf of Euratom.

Liabilities

The costs involved in decommissioning; the processing, long term management, storage and final disposal of waste materials and spent fuel; and the environmental remediation of nuclear sites.

Low Level Waste (LLW)

Includes metals, soil, building rubble and organic materials, which arise principally as lightly contaminated miscellaneous scrap. Metals are mostly in the form of redundant equipment. Organic materials are mainly in the form of paper towels, clothing and laboratory equipment that have been used in areas where radioactive materials are used – such as hospitals, research establishments and industry.

LMU

Liabilities Management Unit. A unit set up within the DTI to strengthen its ability to drive forward work on the nuclear legacy and help to prepare the ground for the LMA.

Magnox

The magnesium alloy used as a cladding material in Magnox type reactors.

Magnox Reactor

A term for the first generation of British power reactors (at Berkeley, Bradwell, Calder Hall, Chapelcross, Dungeness A, Hinkley Point A, Hunterston A, Oldbury, Sizewell A, Trawsfynydd and Wylfa) from the use of "Magnox" as the cladding material.

MoD

Ministry of Defence.

MOX

Mixed Oxide fuel, made up of around 95% uranium and 5% plutonium.

NDPB

Non-Departmental Public Body. A body which has a role in the processes of national Government, but is not a government department or part of one, and which accordingly operates to a greater or lesser extent at arm's length from Ministers. More simply, this means a national or regional public body, operating independently of Ministers, but for which Ministers are ultimately responsible.

Neutrons

Produced by the splitting, or fissioning of certain atoms inside a nuclear reactor. Neutron radiation is very penetrating and water and concrete are therefore used as protection against it.

NIREX

The company established to manage long term disposal of ILW arising from nuclear waste management and decommissioning. Chapter 7 provides more information.

NLIP

Nuclear Liabilities Investment Portfolio. Investment assets in BNFL's balance sheet earmarked for the discharge of future nuclear liabilities.

OCPA

Office of the Commissioner for Public Appointments.

Office for Civil Nuclear Security (OCNS)

An autonomous DTI unit which regulates security arrangements in the civil nuclear industry, including security of nuclear material in transit, exercising statutory powers on behalf of the Secretary of State for Trade and Industry. This is primarily in order to protect against the threats of terrorism and nuclear proliferation.

Oldbury (Glos)

A Magnox power station (two reactors) that started operation in 1967.

OSPAR

The Oslo-Paris convention which established requirements on the level of nuclear and non-nuclear discharges to the marine environment of the North East Atlantic, the North Sea and the Irish Sea.

PNTL

Pacific Nuclear Transport Limited. A subsidiary of BNFL which operates a fleet of purpose built ships capable of carrying all categories of nuclear material.

POCO

Post Operational Clean Out. The first stage in preparing plant for care and maintenance after operations have ceased.

PPP

Public Private Partnership.

PWR

Pressurised Water Reactor - a reactor whose primary coolant is maintained under such a pressure that no bulk boiling occurs. The reactor uses water as a moderator or as coolant. In the UK, Sizewell B is one such reactor operated by British Energy.

Radioactive Half-Life

The time required for one half of the atoms of a particular radionuclide to disintegrate. Each radionuclide has a unique half-life.

Radioactive Waste

Any material contaminated by or incorporating radioactivity above thresholds defined in legislation is known as radioactive waste.

Reactor Core

That part of the reactor which contains the fuel elements.

Reactor Pressure Vessel

A reactor vessel designed to withstand a substantial operating pressure.

Reprocessing

The removal of the metal casing from around the fuel and dissolving the fuel in hot, concentrated nitric acid. The uranium, plutonium and waste which are dissolved in this way are then separated from each other using several chemical processes.

Risley (Cheshire)

Home to BNFL's Headquarters. A core team of UKAEA safety management and project planning staff is also based at Risley. The site was originally owned by UKAEA and set up as a centre for reactor engineering. It was sold to a development company in 1998.

Scottish Environment Protection Agency (SEPA)

Scottish equivalent of the EA.

Sealed Source

A 'sealed source' is a device in which a radioactive material has been contained within an outer casing. This outer casing makes an accidental release of the contents extremely unlikely. Sealed sources have an extensive range of medical, educational and industrial uses, notably in general diagnosis and cancer treatments, and in the oil and gas industries.

Sellafield (Cumbria)

Home to BNFL's reprocessing operations, as well as waste management and fuel recycling operations. The site was opened in 1947.

Sizewell A (Suffolk)

Site of a Magnox power station (two reactors) that has operated since 1966.

SMP

The Sellafield MOX Plant.

Spent Fuel

Spent nuclear fuel is fuel removed from a reactor after final use. The main commercial UK fuels are Magnox, AGR and PWR. Typically, spent fuel is made up of approximately 96% unreacted uranium, 1% plutonium, and 3% waste products. The precise composition depends largely on the type of reactor and the amount of power produced by the fuel.

Springfields (Lancs)

Home of BNFL's UK fuel manufacturing operations since 1946.

Storage

Is the emplacement of waste in a suitable facility with the intent to retrieve it at a later date.

THORP

BNFL's THERmal Oxide Reprocessing Plant.

Thurso (Caithness)

A small office housing UKAEA pensions administration staff is located in Thurso, a few miles east of Dounreay.

Trawsfynydd (Gwynedd)

Site of a Magnox power station (two reactors) that operated from 1965 to 1993. This station is the only one not built on the coast. Instead its water supplies were provided by a lake.

UKAEA

United Kingdom Atomic Energy Authority.

Urenco

A uranium enrichment business, based at Marlow in Buckinghamshire. BNFL holds a one third share of Urenco Ltd.

Very Low Level Waste (VLLW)

Covers wastes with very low concentrations of radioactivity. It arises from a variety of sources, including hospitals and the wider non-nuclear industry. Because VLLW contains little total radioactivity, it has been safely treated as it has arisen by various means, such as disposal with domestic refuse directly at landfill sites or indirectly after incineration.

Westinghouse

Part of BNFL, it provides fuel, services, technology, plant design and equipment to utility and industrial customers around the world.

Westlakes

A science park, partly supported by BNFL, that aims to stimulate the knowledge base in West Cumbria thereby contributing to its economic regeneration and sustainability.

Windscale (Cumbria)

A small enclave located within BNFL's Sellafield site and is the focus for two important nuclear decommissioning projects - the Windscale Piles and the prototype Advanced Gas-Cooled Reactor. The site is on long term lease to UKAEA which also holds the nuclear site licence. This is separate to the licence held by BNFL for the Sellafield site.

Winfrith (Dorset)

Created as a centre for prototype reactor development in the 1960s and is the youngest of UKAEA's sites. It houses a number of redundant prototype reactors, including the Steam Generating Heavy Water reactor. The site is on the fast-track for decommissioning and site restoration and, as *Winfrith Technology Centre*, is being developed as a focus for business development in Dorset.

Wylfa (Gwynedd)

Site of a Magnox power station (two reactors) that commenced operation in 1971. Wylfa is BNFL's largest power station.

Managing the Nuclear Legacy

CHAPTER 1

1.1 Last November¹ the Government announced its intention to make radical changes to current arrangements for nuclear clean up funded by the taxpayer. The announcement underlined the Government's commitment to improving the way in which clean up is managed.

1.2 This White Paper sets out the Government's approach and outlines how the new arrangements will operate in practice. It:

- reflects the scale of the technical and managerial challenges involved in nuclear clean up and the Government's intention, through competition, to ensure that the best available skills and experience, from the public and private sectors, are brought to bear on the task;
- makes it clear that the Government's priority is to ensure that clean up is carried out safely, securely, cost effectively and in ways which protect the environment for the benefit of current and future generations; and
- underlines the Government's commitment to ensuring that management arrangements are open, transparent and command public confidence.

1.3 Some of the proposals outlined, will impact on both reserved and devolved matters. In particular, policy on the management of radioactive waste, administered under the Radioactive Substances

Act 1993, is a devolved matter and is therefore the responsibility of the devolved administrations

in Scotland, Wales and Northern Ireland. The development and implementation of those proposals relating to devolved matters, will therefore be for each of the devolved administrations to consider. The devolved administrations have been fully involved in the preparation of the White Paper. References throughout the White Paper to "the Government" include the UK Government and the devolved administrations unless otherwise specified.

1.4 The Government would welcome views on the proposed new arrangements and on the

Comments should be sent by
18 October 2002 to:

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London SW1H 0ET
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e-mail: richard.griffin@dti.gsi.gov.uk

way in which they should be implemented. Views can be submitted in writing to the Department of Trade and Industry (see address above) or via the DTI website at <http://www.dti.gov.uk/> and should be received by 18 October. In line with the Government's commitment to openness and transparency, the DTI will also be talking extensively to stakeholders both about the issues addressed here and, in the period leading up to the creation of the Liabilities Management Authority, about the development of detailed plans for implementation.

¹Statement on 28 November by Patricia Hewitt on future management of public sector civil nuclear liabilities, Hansard Column 990

Defining the Legacy

1.5 The new arrangements will deal with the nuclear legacy represented by:

- those nuclear sites and facilities now operated by the United Kingdom Atomic Energy Authority (UKAEA) and British Nuclear Fuels plc (BNFL), which were developed in the 1940s, 50s and 60s to support the Government’s research programmes, and the wastes, materials and spent fuel produced by those programmes; and
- the Magnox fleet of nuclear power stations designed and built in the 1960s and 70s and

now operated on the Government’s behalf by BNFL, plant and facilities at Sellafield used for the reprocessing of Magnox fuel and all associated wastes and materials.

This legacy represents about 85% of total UK nuclear liabilities and is wholly the responsibility of Government.

1.6 Six of the eleven Magnox stations built are currently operational but by 2010 all of the stations will have been closed. UKAEA’s last operational fission reactor closed in 1994. The Joint European Torus (JET) which supports fusion research at UKAEA’s Culham site remains operational but will have to be decommissioned when it closes.

LEGACY SITES

BNFL	Sellafield	Operational and decommissioning – fuel reprocessing and storage and management of nuclear wastes and materials. Also includes the Calder Hall Magnox station
	Capenhurst Works	Decommissioning/waste management and storage
	Springfields Works	Operational – fuel manufacture and nuclear services
	Drigg Storage Site	Low Level Waste disposal
UKAEA²	Dounreay	Decommissioning
	Windscale	Decommissioning
	Harwell	Decommissioning
	Winfrith	Decommissioning
Magnox	Wylfa	Operational
	Oldbury	Operational
	Sizewell A	Operational
	Dungeness A	Operational
	Hinkley Point A	Defuelling and decommissioning
	Bradwell	Defuelling and decommissioning
	Hunterston A	Decommissioning
	Trawsfynydd	Decommissioning
	Berkeley	Decommissioning
	Chapelcross	Operational

²UKAEA liabilities also include the Joint European Torus at Culham operated on behalf of EURATOM. There are no other legacy liabilities at the Culham site.

1.7 BNFL operates a range of plants and facilities at its Sellafield site, in particular THORP and SMP, providing commercial services to private sector and overseas customers. These, and the wastes, materials and spent fuel at Sellafield owned by BNFL's commercial customers, are not part of the legacy. THORP and SMP were built with decommissioning in mind and do not present the problems associated with legacy plants. However, whilst commercial customers will retain ownership of their wastes, the integrated nature of the Sellafield site is such that, for regulatory and managerial reasons, legacy and commercial activities have to be treated as a single whole.

1.8 As Chapter 2 explains, many legacy facilities were built and used at a time when regulatory requirements and operational priorities were very different to those that apply today. Early operating records and waste inventories are often incomplete. The uncertainties that flow from this are fundamental to understanding the problems involved in legacy management and clean up. In some instances, the biggest challenge is not deciding how to tackle a particular task but working out what exactly has to be dealt with. Equally important, many facilities are one offs, built to test the feasibility of, or prove the commercial viability of, different technologies. There are no simple problems and few simple solutions.

1.9 The White Paper is not concerned directly with nuclear liabilities arising from defence programmes other than those arising from past use of facilities at UKAEA and BNFL sites. Financial responsibility for the clean up of these facilities is currently shared between UKAEA, BNFL and the Ministry of Defence. Liabilities associated with the nuclear warhead programme are managed by MoD's Defence Procurement Agency, either directly or via contractual agreements. Most of these liabilities are at the Atomic Weapons Establishment, which is managed and operated by a contractor. Liabilities associated with the

Frequently Asked Question 1:

Why isn't the Liabilities Management Authority being given responsibility for sealed sources/other radioactive wastes?

The consultation paper *Managing Radioactive Waste Safely (MRWS)*, published by the Department for Environment, Food and Rural Affairs (DEFRA) and the devolved administrations in September 2001, invited views on the management of sealed sources. Any possible future role for the Liabilities Management Authority in the management of spent sealed sources, and decisions on other issues relating to the long term management of radioactive wastes will be taken in the light of the consultation process.

naval nuclear propulsion programme are similarly managed primarily through contractors. There are no plans to change these arrangements, which reflect the operational status of the sites concerned.

Measuring up to the Challenge

1.10 Public discussion about nuclear matters has focused in recent years on the arguments for and against the building of new nuclear power stations and on arrangements for the long term management and disposal of spent fuel and radioactive wastes. The challenges involved in dealing with the legacy have received less public attention.

1.11 Last September, the UK Government and the devolved administrations in Scotland, Wales and Northern Ireland launched a major consultation process on radioactive waste management policy. There is an obvious direct and close connection between that and the Government's approach to nuclear clean up which is reflected in this White Paper, and will be built into the consultation process as it is taken forward. There is no direct connection between the White Paper and the Government's

Frequently Asked Question 2:

Is the creation of the Liabilities Management Authority a backdoor route to more nuclear power?

No. There is no direct link between the creation of the Liabilities Management Authority and any future proposals for new nuclear capacity. The LMA will focus on dealing with the consequences of the past. Nuclear power currently provides about a quarter of the UK's electricity and this is forecast to fall to about 7-8% by 2020 in the absence of any new build. The PIU report on energy policy, published in February, suggested that the option of new nuclear build should be kept open but the Government has made it clear that the initiative for bringing forward proposals lies with the market and the generating companies. The Government's Energy Policy Key Issues for Consultation Paper (see 1.11) has asked for views on a number of issues related to keeping open the nuclear option. Comments are requested by 13 September.

attitude towards new build. In the light of the report on energy policy published in February by the Performance and Innovation Unit, the Government has recently invited views on future options for energy policy³, including keeping open the nuclear option.

1.12 The focus here is squarely on the nuclear legacy. The plain fact is that whatever nuclear's future might be, we have to deal with the consequences of its past. Doing nothing is not an option. There is no short term threat to safety but the generations that have benefited from past programmes must ensure that their legacy is discharged safely and in ways that safeguard the environment for future generations. This White Paper is all about the Government's commitment to facing up to that task.

GOVERNMENT SUPPORT FOR WEST CUMBRIA

- **Regional Selective Assistance**
1525 jobs created and 588 safeguarded since 1997;
- **European Structural Funds**
For the 1997-1999 programme, Copeland & Allerdale secured £10.5 million of Structural Funds with 2654 jobs created or safeguarded. Under the current programme a further £22.65 million of Structural Funds has been secured to support a number of action plans in West Cumbria;
- **Single Regeneration Budget**
Some £2 million provided which has created or safeguarded some 640 jobs;
- **Neighbourhood Renewal Funding**
Over £1 million provided to date for projects in Allerdale. A further three-year programme expected to be secured.

Furness and West Cumbria is one of three priority areas in the North West Regional Strategy. The North West Development Agency has worked with local partners to develop a New Vision for the area. An Urban Regeneration Company (URC) - based on the successful models in Liverpool and East Manchester - will be formed to deliver the New Vision and to bring together existing funding streams.

³'Energy Policy Key Issues for Consultation' May 2002

ECONOMIC REGENERATION IN CAITHNESS POST DOUNREAY

The environmental restoration of Dounreay will involve the investment of £4.5 billion over the next 50-60 years.

Highlands and Islands Enterprise (HIE), the Scottish Executive's economic development agency for the Highlands of Scotland, has led the development of a strategy for securing economic benefits from the decommissioning of UKAEA Dounreay.

The Strategy shows that the economic success of the area will depend on close working relationships between all parties and requires a multi-faceted approach to generating business growth, developing skill base excellence, diversification of the local economy, strengthening the sustainability of a remote and fragile area and exploiting European and global opportunities.

In August 2001, the HIE Network Dounreay Decommissioning Strategic Response Task Force was established to lead the implementation of this strategy. The Task Force is part funded by the Highlands and Islands Programme Partnership.

1.13 Where radioactive materials are concerned there can be no compromise on safety, security and protection of the environment. But at the same time the Government wants to ensure that clean up is carried out efficiently and cost effectively.

1.14 Cost effectiveness in this context is not so much about minimising cost as ensuring that public money which has to be spent on cleaning up the legacy is used to best effect. The sums involved are very large - over £1 billion a year over the next 10 years and some £48 billion in total on current estimates – and likely to increase still further in the short term as the full extent of what needs to be done is identified. Small savings on such huge programmes represent large sums of public money that can be injected back into clean up or used for other purposes.

1.15 Solving the challenges of legacy management requires:

- scientific, technical and engineering skills of a high order;

- advances in basic science and technology;
- the adaptation of technologies proven in other areas to the nuclear environment; and
- the development of innovative solutions to complex engineering, organisational and logistical problems.

It also requires the broader strategic, project and operational management skills necessary to determine priorities and work out exactly what needs to be done and how best to tackle a job which, at some sites, will take over 100 years to complete.

1.16 The nuclear wheel has to be turned full circle. In the twenty years following the end of the Second World War, large numbers of engineers and skilled managers were mobilised to support development of the UK's nuclear programmes. A succession of major engineering projects were planned and delivered in rapid time bringing new employment and opportunities to different parts of the UK. Nuclear clean up requires the same

sense of commitment and purpose which drove the programme of nuclear build. It needs to be recognised for what it is - one of the most important and demanding managerial, technical and environmental challenges facing the UK over the next century and one offering major opportunities for those who are involved in it.

1.17 Getting to grips with the nuclear legacy also means dealing with regional, economic and social issues. Clean up will be a major source of employment for many years to come but the Government is committed to generating new growth and new opportunities in areas such as West Cumbria and Caithness where the nuclear industry is the largest single employer.

1.18 Since 1997, for example, the Government and European Structural Funds have provided over £41 million to support new investment in West Cumbria and created or helped to safeguard over 5400 jobs. The Government will continue to work with regional development bodies, local authorities and other partners to promote the continued economic and social regeneration of both regions.

The Liabilities Management Authority

1.19 UKAEA and BNFL have made steady progress in recent years in managing the legacy. The Government believes, however, that the scale and nature of the task require a much sharper and stronger strategic focus. It

therefore proposes to set up a new **Liabilities Management Authority (LMA)** responsible to Government with a specific remit to ensure the nuclear legacy is cleaned up safely, securely, cost effectively and in ways which protect the environment for the benefit of current and future generations.

1.20 Because it will be responsible for the nuclear legacy as a whole, the LMA will be able to set the right framework for systematic and progressive delivery of the clean up programme; promote and exploit synergies between different sites; encourage the development of best practice; and ensure that resources are deployed where they are most needed and can be used to best effect. It will also be in a position to take decisions that balance short, medium and long term considerations and reflect the fact that the clean up programme has to be sustained over a period of 100 years or more. **Chapters 3 and 4** deal in more detail with the role of the LMA and how it will operate in practice.

1.21 **Chapter 5** deals with the implications for BNFL and UKAEA and with the basis on which Magnox stations and commercial plant and facilities at Sellafield will be operated once they have been transferred to the LMA. Whilst they are operational, the Government will expect the LMA to ensure that they are operated as efficiently as possible. The Government's focus, however, will be squarely on the LMA's performance in delivering its clean up

THE LMA'S GUIDING PRINCIPLES

- Focus on getting the job done to high safety, security and environmental standards
- Best value for money consistent with safety, security and environmental performance
- Openness and transparency
- Competition – so as to make the best possible use of the best available skills.

objectives, not on short term financial returns. Equally, the Government is determined that the LMA should have access to the resources it needs to get the job done. **Chapter 6** deals with the funding of the LMA and outlines two options for new funding arrangements designed to enhance its effectiveness. The Government would particularly welcome views on these options.

1.22 The LMA will be publicly accountable for its performance and operate on an open and transparent basis. It will be judged not just on its operational performance and cost effectiveness but also on its ability to command public confidence.

1.23 Competition will be central to the LMA's approach. Developing competitive markets for clean up contracts will help to stimulate innovation and improvements in safety and operating standards and enable the LMA to make the best possible use of the best available skills. Whilst UKAEA and BNFL will have the opportunity to demonstrate that they should be suppliers of choice to the LMA, the management of clean up will be opened up to competition and there will be a greater emphasis on competitive procurement of decommissioning and support services. Managing this process will be one of the LMA's key tasks. Openness and transparency about its

LIABILITIES MANAGEMENT UNIT

The Liabilities Management Unit (LMU) is made up of a mix of private and public sector employees, the majority of whom are secondees from BNFL and UKAEA. The Director is on secondment from the private sector and is a Senior Civil Servant equivalent. There are currently 19 staff. The intention is to appoint a partner contractor to the LMU who would bring high quality, experienced project managers with a proven track record in nuclear liabilities management and civil engineering. The make up of the team will be kept under review but numbers are not expected to increase significantly.

In preparing the ground for the Liabilities Management Authority (LMA), the LMU will:

- acquire a detailed knowledge and understanding of BNFL and UKAEA liabilities and management arrangements for dealing with them which can be passed on to the LMA;
- work with the BNFL in developing and refining key performance indicators for BNFL liabilities management and monitoring performance against them;
- take action to promote competition for nuclear clean up work with a view to creating a viable long term supply chain for the LMA;
- develop baseline strategies for contracting and procurement etc and an organisational structure which the LMA can build on once it is operational;
- establish common methodologies for estimating the cost of legacy clean up; and
- establish close working arrangements with the nuclear regulators.

contracting strategy and the basis on which contractors will be incentivised will be essential. **Chapter 3** deals with the issue in more detail.

1.24 The setting up of the LMA will require primary legislation. A Bill for this purpose will be brought forward at the earliest opportunity. The Bill will also include provisions enabling the transfer of Magnox stations and other BNFL assets and liabilities to the LMA.

1.25 In the interim, the Government has taken steps to strengthen its ability to drive forward work on the nuclear legacy by establishing a new Liabilities Management Unit (LMU) in the Department of Trade and Industry. The LMU will work with BNFL, UKAEA and the nuclear regulators in helping to prepare the ground for the LMA. Membership of the LMU is drawn from the public and private sectors reflecting the Government's intention to ensure that the best available skills are brought to bear on legacy management. The plan to appoint a partner contractor to the LMU with international experience underlines this and the intention to explore the scope for applying lessons learned overseas to clean up in the UK.

■ Other Issues

1.26 The Government regards strong, robust and independent regulation as fundamental to public confidence in legacy management. It is essential that there is no weakening of that independence or the ability of the regulators to act as and when required. At the same time, the Government wants to see the regulators and the LMA working together in pursuit of their common interest in driving forward the clean up programme. The LMA's relationships with the nuclear regulators and the overall effectiveness of the regulatory framework will set the context within which the LMA has to operate and are critical to its success.

1.27 **Chapter 7** focuses on some of the key issues so far as safety and environmental regulation is concerned. **Chapter 8** deals with security issues and, in particular, the Government's plans to reconstitute the UKAEA Constabulary as an independent force. As with the LMA, the essential objective is to improve accountability and to make the operation of the force more transparent and more open to public scrutiny.

1.28 **Chapter 9** deals with the UK's efforts to improve nuclear safety and security worldwide, and particularly in the Former Soviet Union. It also reflects the scale of the global opportunities in nuclear clean up. Over the next 30 years the first generation of nuclear reactors will be coming to the end of their operational lives. Decommissioning and waste management will be a major growth market. Just as the UK led the world in the development of nuclear technology, we can use the skills developed for UK clean up to increase the competitiveness of UK firms in that market and lead the world in dealing with the legacy it has left behind.

2

Explaining the Background

CHAPTER 2

2.1 All industrial processes produce wastes in the form of used plant, equipment, clothing and packaging and residual and surplus materials. In the nuclear industry many of the wastes produced are radioactive or have been exposed to radiological or radiochemical contamination. All radioactivity decays over time but some types of radioactive waste remain hazardous for thousands

of years. In the interim, they have to be stored or disposed of in safe and secure conditions. Similarly, spent fuel from nuclear reactors and the uranium and plutonium produced from fuel reprocessing have to be stored safely and securely until they can be processed, utilised or disposed of.

CATEGORIES OF NUCLEAR WASTE

• Very Low Level Waste (VLLW)

Covers wastes with very low concentrations of radioactivity. It arises from a variety of sources, including hospitals and industry in general. Because VLLW contains little total radioactivity, it can be disposed of safely with domestic refuse either directly at landfill sites or indirectly after incineration.

• Low Level Waste (LLW)

Includes metals, soil, building rubble and organic materials which arise principally as lightly contaminated miscellaneous scrap. Metals are mostly in the form of redundant equipment. Organic materials are mainly in the form of paper towels, clothing and laboratory equipment that have been used in areas where radioactive materials are used – such as hospitals, research establishments and industry.

• Intermediate Level Waste (ILW)

This is waste with radioactivity levels exceeding the upper boundaries for LLW but which does not need heating to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel, and from general operations and maintenance of radioactive plant. The major components of ILW are metals and organic materials, with smaller quantities of cement, graphite, glass and ceramics.

• High Level Waste (HLW)

High level Waste (HLW) is heat-generating waste that has accumulated since the early 1950s at Sellafield and Dounreay, primarily from the reprocessing of spent nuclear fuel. The temperature in HLW may rise significantly, so this factor has to be taken into account in designing storage or disposal facilities. As with ILW, there is currently no final management strategy for HLW.

BASIC GUIDE TO RADIATION AND RADIOACTIVE DECAY

There are several types of ionising radiation:

- **X-rays and gamma rays**

Represent energy transmitted in a wave without the movement of material, just like heat and light from a fire. X-rays and gamma rays are virtually identical except that X-rays do not come from the atomic nucleus. Unlike light, they both have great penetrating power and can pass through the human body. Thick barriers of concrete, lead or water are used as protection from them.

- **Alpha particles**

Have a positive electrical charge and are emitted from naturally occurring heavy elements such as uranium and radium, as well as from some man-made elements. Because of their relatively large size, alpha particles collide readily with matter and lose their energy quickly. They therefore have little penetrating power. However, if they are taken into the body, for example by breathing or swallowing, alpha particles can affect the body's cells. Inside the body, because they give up their energy over a relatively short distance, alpha particles can inflict more biological damage than other radiations.

- **Beta particles**

Are fast-moving electrons ejected from the nuclei of atoms. These particles are much smaller than alpha particles and can penetrate up to 1 to 2 centimetres of water or human flesh. Beta particles are emitted from many radioactive elements. They can be stopped by a sheet of aluminium a few millimetres thick.

- **Neutrons**

Are produced by the splitting, or fissioning of certain atoms inside a nuclear reactor. Neutron radiation is very penetrating and water and concrete are therefore used as protection against it.

2.2 When they reach the end of their working lives, buildings and facilities at nuclear sites also need to be decontaminated and, over time, dismantled. This process is known as **decommissioning**. For safety reasons decommissioning cannot take place immediately after shutdown. Current plans cover a range of decommissioning timescales depending on the type of plant or facility and the different types of radioactivity involved. In some cases, work may be spread over 100 years or more. In others decommissioning can be carried out safely over much shorter periods. Decommissioning, of itself, may also require the construction of new buildings and facilities to treat, package and store the resulting wastes. Once they are no longer required, these buildings, in turn, will also have to be decommissioned.

All types of radioactivity decay over time in accordance with their half-life characteristics. The half-life is the time it takes for a given radioactive isotope to lose half of its radioactivity. After one half-life the level of radioactivity of a substance is halved, after two half-lives it is reduced to one quarter, after three half-lives to one-eighth and so on. The rate of decay of an isotope is inversely proportional to its half-life i.e. radioactivity lasts longer if it has a long half-life.

Risk reduction is the fundamental consideration in waste management and decommissioning activities. Therefore the strategy for decommissioning a typical first generation reactor is based on the knowledge that, over time the radioactivity within the reactor will decay naturally to a level that allows easier access; i.e. one where workers can enter wearing standard protective clothing and using simpler technology to demolish the structures.

However, in some circumstances, especially where alpha contamination is involved, delaying decommissioning can result in levels of radioactivity increasing. In such cases, the imperative to reduce risk requires earlier action.

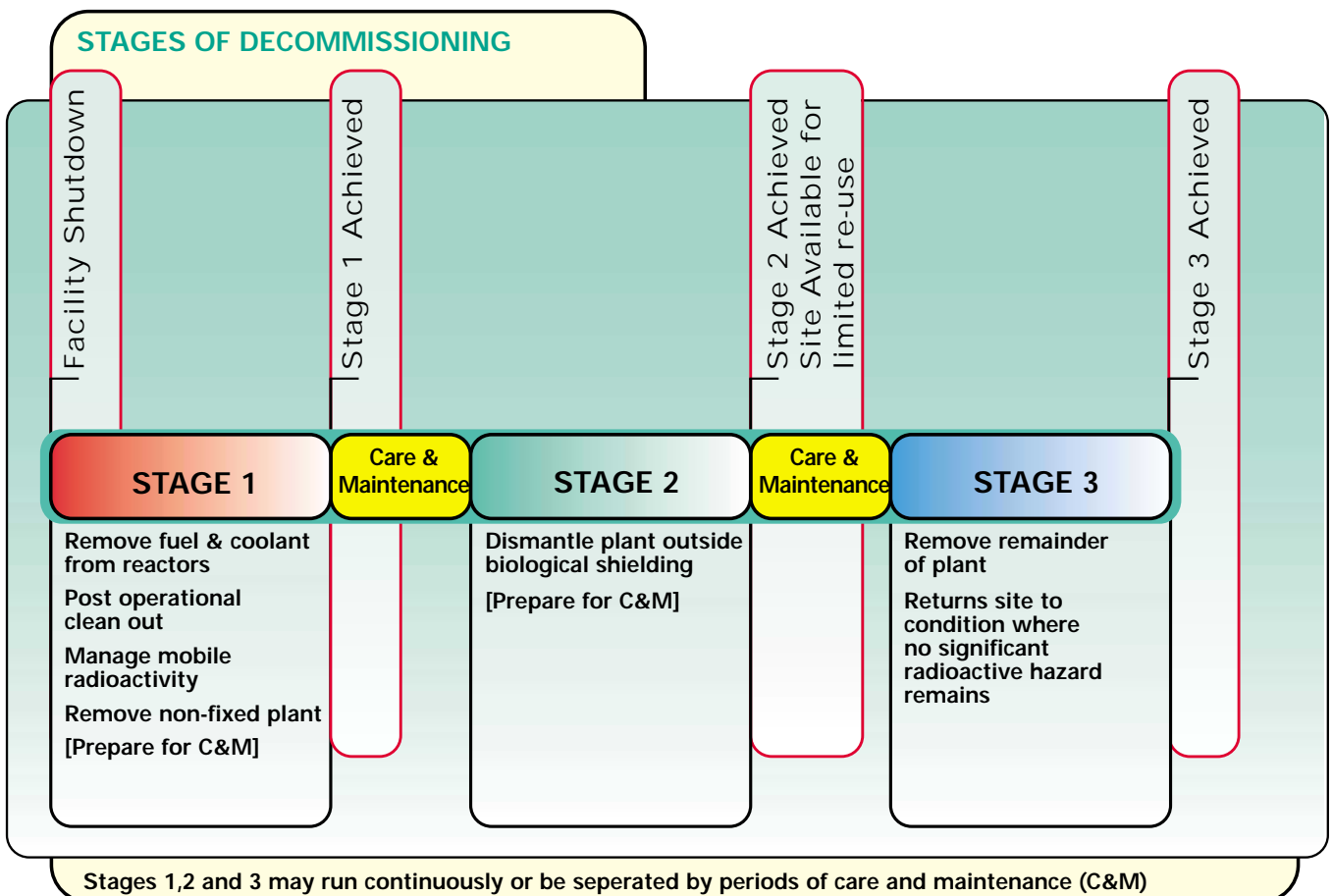
2.3 The costs involved in decommissioning; the processing, long term management, storage and final disposal of waste materials and spent fuel; and the environmental remediation of nuclear sites are generally known as **nuclear liabilities**. Carrying out all these activities safely, securely, efficiently, cost effectively and with due regard for the environment is what **nuclear liabilities management** is all about.

■ **The Public Sector Legacy**

2.4 The civil nuclear liabilities for which the taxpayer is responsible are the legacy of Government nuclear research and development programmes going back to the 1940s and the development, construction and commissioning in the 1950s, 1960s and 70s of the Magnox fleet of nuclear power stations and associated fuel

cycle plants. The liabilities are currently managed by the United Kingdom Atomic Energy Authority (UKAEA) and by British Nuclear Fuels plc (BNFL).

2.5 UKAEA was responsible for Government funded nuclear R&D through to the early 1990s (and continues to manage UK research into nuclear fusion and operate JET on behalf of Euratom). BNFL is a commercial nuclear products and services business, wholly owned by the UK Government. BNFL inherited not only operational plants but also large amounts of wastes and obsolescent plant and equipment when it was formed out of UKAEA's Production Group in 1971. Other liabilities, eg in relation to the THORP plant at Sellafield and plants for dealing with wastes produced by THORP, have been created since 1971 or will result from



The decommissioning of a redundant radioactive facility is undertaken in a structured way that systematically and progressively reduces the hazard at the facility. Different facilities present different hazards so timing varies. Safety, environmental and economic considerations normally require at least some work to be undertaken immediately after closure. Beyond this, the exact scope of work undertaken at each stage, and the length of time between stages, is determined on a case-by-case basis depending on the condition of the facility and the types of radiation involved.

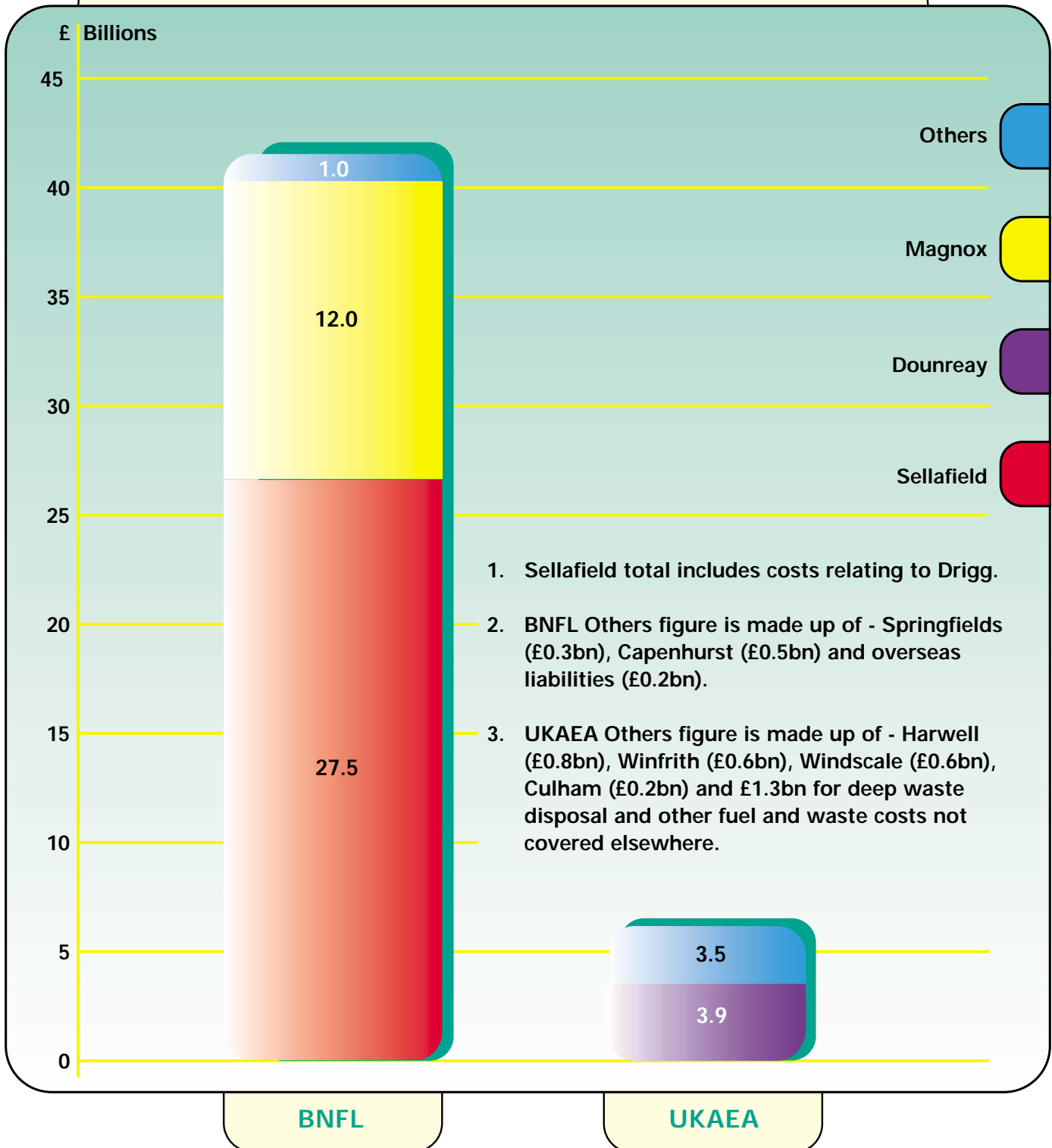
BNFL's ongoing commercial operations but these account for only a small proportion of the total. The Magnox stations were transferred to BNFL in 1998.

2.6 Figure 1 shows the estimated cost of dealing with these liabilities as at 31 March 2002. Sellafield accounts for over 65% of the

total and the eleven Magnox stations for nearly 25%. Dounreay accounts for most of the rest.

2.7 These figures represent best estimates based on current knowledge and the successful application of today's technology. In practice, however, there are uncertainties about what needs to be done in order to deal with particular

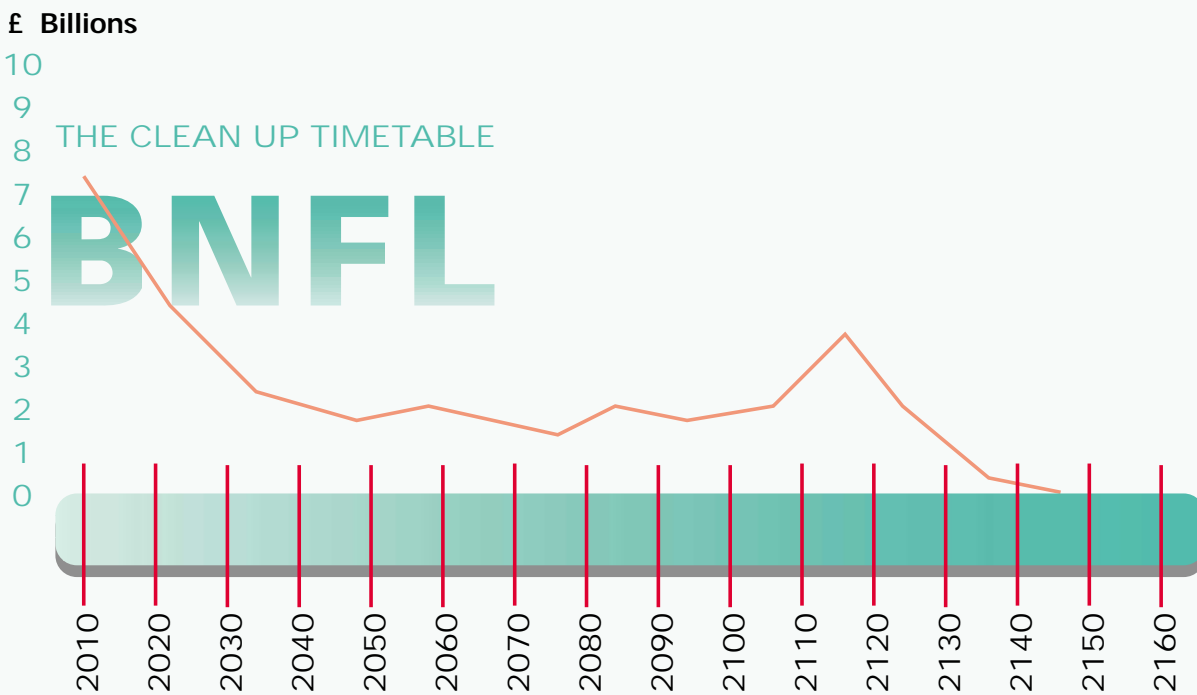
FIGURE 1. PUBLIC SECTOR CIVIL NUCLEAR LIABILITIES (UNDISCOUNTED) AS AT MARCH 2002



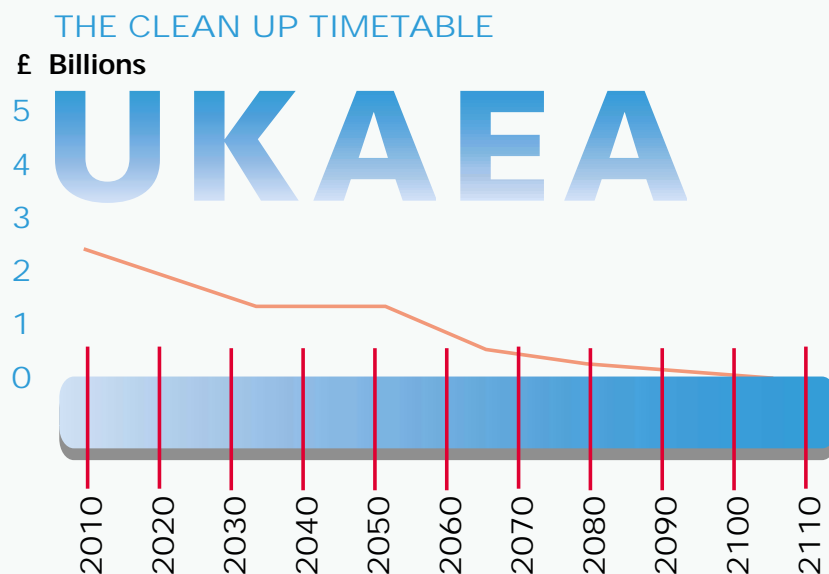
plants or wastes and advances in science and technological understanding may reduce costs. One of the LMA's immediate priorities will be to review current estimates and the assumptions behind them and to reduce uncertainty. By understanding the full extent of what has to be done, the LMA will provide itself with a solid

basis for developing clean up programmes and driving down overall costs. In the short run, however, better definition of the problem will almost certainly mean that liabilities estimates will rise.

FIGURE 2



Phasing



Phasing

2.8 Equally, the estimates make no provision for the potential cost of changes in regulatory and policy requirements or for other business risks outside BNFL's and UKAEA's control. Changes in regulatory and policy requirements have caused estimates to rise sharply in recent years. Future policy decisions could increase costs still further.

2.9 Figure 2 shows the timescales for discharging the liabilities based on current plans and decommissioning policies. Areas in which expenditure will continue beyond the turn of the next century are reactor decommissioning and ILW and HLW storage and disposal. Timescales are long principally to allow radioactivity to decay naturally so as to minimise risks to workers and the volume of radioactive waste which is produced. Figure 3 shows how costs break down as between decommissioning, waste management and on-going site management and maintenance costs.

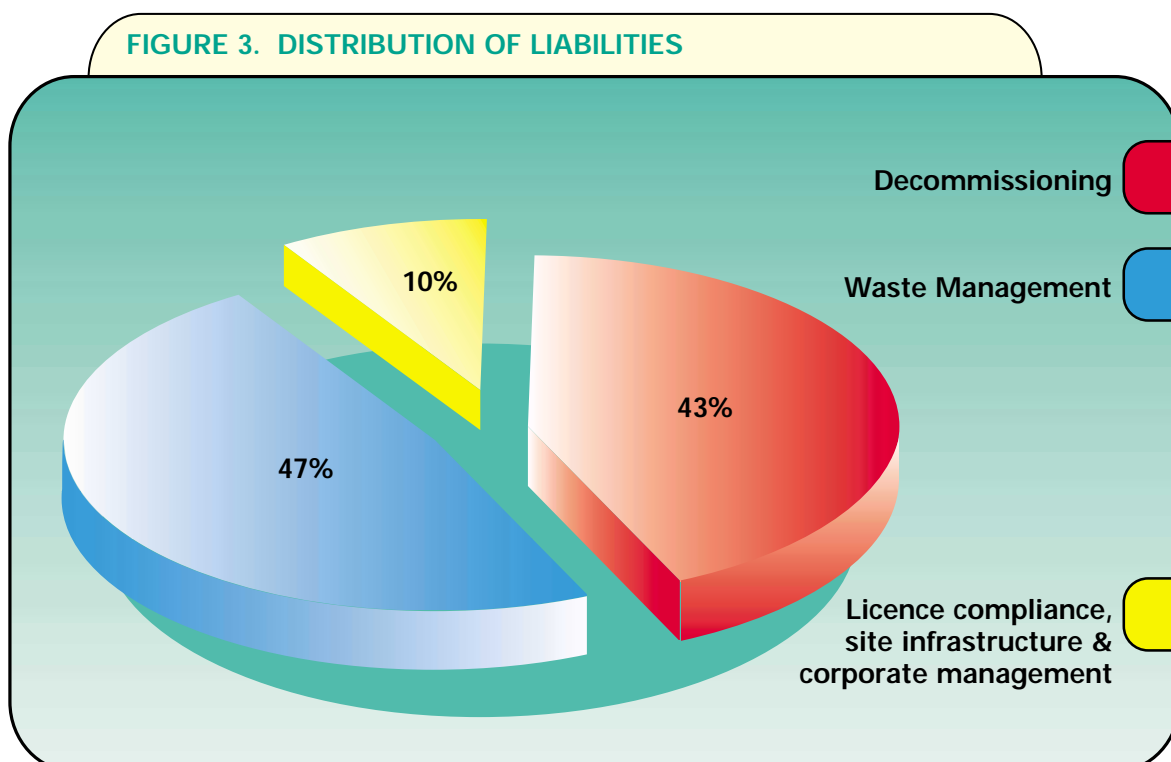
2.10 In 1986 the Government accepted full financial responsibility for liabilities arising

from past and current Government nuclear R&D programmes carried out by UKAEA.

This means that essentially all¹ of UKAEA's costs in managing the liabilities on its sites are met by the taxpayer, mostly through budgets managed by the Department of Trade and Industry (DTI) but also through the Ministry of Defence (MoD). Total funding for 2002/03 is budgeted at £276 million. Work is already well advanced, with some 20 significant legacy facilities already removed or reduced to minimum care and maintenance, and site restoration plans developed for all UKAEA sites.

2.11 Some 12% of the liabilities on BNFL's sites are covered by contracts with commercial customers in the UK and overseas under which customers contribute to decommissioning and waste management costs on a basis that reflects the scale and nature of the services provided to them. A further 20% is funded directly by the taxpayer via UKAEA and MoD which retained financial responsibility for certain liabilities at BNFL sites following BNFL's formation in 1971. The rest currently fall to BNFL or will be met by

FIGURE 3. DISTRIBUTION OF LIABILITIES



¹Amersham plc, Nirex plc and BNFL as former customers of UKAEA retain a very small financial responsibility for certain UKAEA liabilities. The total costs involved amount to less than £3 million undiscounted

²For more information on the Magnox Undertaking see paragraph 6.5

the Magnox Undertaking² under which the Government agreed in 1998 to accept financial responsibility for certain costs related to the operation and decommissioning of Magnox stations and the reprocessing of Magnox fuel. BNFL's total expenditure on liabilities management in 2002/03 will be £1.08 billion. Over the next 10 years, the company expects total expenditure on clean up to be in excess of £1 billion per annum.

2.12 The Government announced in November 2001 that it now intends to accept direct financial responsibility for all of the liabilities that BNFL manages except those covered by commercial contracts. **Chapter 5** of this White Paper explains what this will involve in terms of the related transfer of BNFL assets, including money set aside by BNFL for clean up and currently invested in the company's Nuclear Liabilities Investment Portfolio (NLIP). At 31

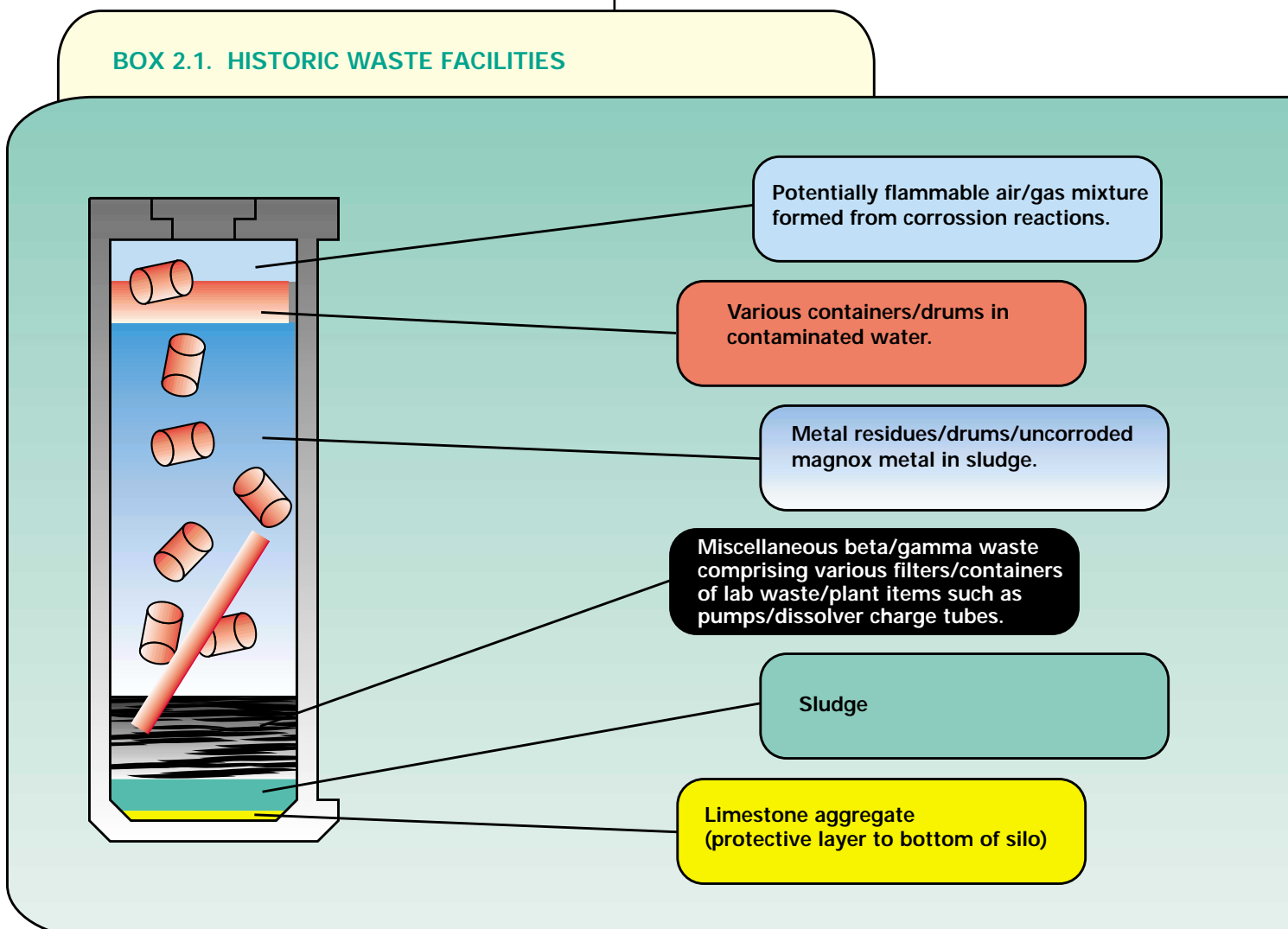
March 2002 the NLIP was worth over £4 billion. The benefit of the Magnox Undertaking will also transfer to the LMA. **Chapter 6** deals with these and other funding issues.

Challenges of Legacy Management

2.13 The nuclear industry operates within a rigorous, robust regulatory framework that insists on stringent health and safety, environmental and security standards. The same overall standards apply to decommissioning and clean up as apply to on-going plant operations. Wherever radioactive materials are involved, there can never be any compromise on meeting safety, security and environmental standards.

2.14 Dealing with the nuclear legacy, however, gives rise to special – in some cases, unique – problems which impact directly on costs. These

BOX 2.1. HISTORIC WASTE FACILITIES



reflect the nature of the legacy and the challenges involved in work that is often at the leading edge of technological innovation and requires top quality management skills.

2.15 Modern nuclear plant is designed and operated with decommissioning and waste minimisation in mind. Operational records are comprehensive. When the time comes for decommissioning, those responsible will know what they are dealing with and how to set about it.

2.16 Legacy liabilities were largely created in the 1940s, 50s and 60s when priorities were very different. The focus then – in the UK and worldwide – was on the development and application of nuclear technology for civil and weapons purposes rather than on the long term implications of operating practices which at that time were regarded as entirely acceptable.

The priorities were to explore new approaches, drive forward research and exploit the potential of nuclear power rather than maintaining detailed inventories of wastes stored and plant utilisation.

2.17 The result is that today we have limited information about the wastes stored in a number of facilities and, in the case of some plants and facilities, few reliable design drawings to guide the decommissioning process. In many instances the challenges in legacy clean up centre not only on the clean up process itself but also in characterising the nature of the wastes to be dealt with. Box 2.1 provides an illustration of exactly this sort of problem.

2.18 These problems are compounded by the wide range and variety of plants and facilities involved. The liabilities at UKAEA sites, for

There are a number of historic waste facilities at legacy sites. Retrieval and subsequent treatment and immobilisation of these wastes is a major priority for the clean up programme.

This diagram shows an illustrative cross section of such a facility showing the range of problems they can present. Clean up involves an array of challenges requiring:

- use of multiple tools and methods for identifying the precise contents
- remote inspection and assay techniques
- non destructive examination
- complex remote retrieval, sorting etc
- dewatering and drying technologies
- effluent treatment
- compaction and encapsulation processes

example, include over a dozen different reactor types, various fuel processing plants, laboratories and facilities for handling radioactive materials and wastes and irradiated materials of many different types. Many plants and facilities were one-offs built to test approaches that were subsequently abandoned. Box 2.2 provides a specific example of one such plant and the problems posed for decommissioning. Whilst they have many

common characteristics, each Magnox station also has its own particular design features and presents its own challenges for decommissioning purposes.

2.19 These uncertainties add enormously to the technical difficulties involved in dealing with legacy liabilities and put a premium on the strategic, project management, engineering and technological skills required to oversee the

BOX 2.2. PROJECT PROFILE: DOUNREAY PFR

The Prototype Fast Reactor at Dounreay operated from 1974 to 1994, generating 250MW of electricity for sustained periods. PFR poses a unique challenge in decommissioning because it contains 1500 tonnes of liquid sodium metal used to cool the reactor. Sodium is highly reactive to both air and water, producing substances that are either explosive or corrosive and will require the development of novel processes requiring careful control of the reaction conditions.

The main challenges involved in decommissioning are:

- **dealing with irradiated fuel.** All fuel has been removed from the plant. Most was reprocessed at Dounreay but, following the Government's decision to cease reprocessing at the site, the remainder is being stored in the original fuel pond. However, these arrangements cannot guarantee the integrity of its cladding much beyond about ten years. The options available are i) reprocessing (either at Sellafield or in France) or ii) preparation for long term interim storage;
- **removal of the liquid sodium.** A plant for converting the sodium to an inert form has been constructed and, subject to receiving approval to operate from the regulators, will process the bulk of the sodium over the next two years. The next step will be to remove residual sodium from surfaces and undrained pockets within the reactor. This poses significant challenges because of the hazard posed by sodium, the complex geometry of the reactor and its background radiation. The processes to tackle this are under development;
- **reactor dismantling.** The approach adopted will depend on the state of the plant following sodium residue removal. Remote dismantling techniques will have to be used because of neutron activation of the structure. Dismantling is estimated to be completed by 2035.

Recognising the uncertainties and challenges faced by this project, UKAEA has entered into technical exchange agreements with organisations faced with similar tasks in Europe and the USA. These pool expertise and share experience.

clean up programme. Tasks are highly complex; can be very difficult to characterise at the outset; and may require innovative solutions. The plan for dealing with each specific plant and facility has to be woven into the restoration plan for the site concerned as a whole. Priorities have to be established for each site, and the interdependencies between different operations and different sites identified and managed. And, where necessary, new techniques and major new facilities have to be designed and developed which satisfy regulatory requirements and enable priority tasks to be delivered within prescribed timescales.

KEY NOTE

2.20 *The UK nuclear programme was at the leading edge of technology when legacy plants and facilities were first built and operated. More than fifty years on the Government is determined that the UK should again lead the way in dealing with the challenges involved in clean up. The next chapter explains the role the LMA will play in driving forward that process and mobilising the skills and expertise required to ensure that the legacy is dealt with safely, securely, cost effectively and in ways which protect the environment for the benefit of current and future generations.*

3

The Role of the LMA

CHAPTER 3

3.1 This chapter explains what the LMA will do and how the Government proposes that it should set about its task of systematically and progressively driving forward clean up of the nuclear legacy in line with the guiding principles set out in Chapter 1. It also outlines how the LMA will operate openly and transparently and the basis on which it will seek to promote competition so as to ensure that the best available skills and practices are applied to the task.

3.2 As Chapter 2 explained, cleaning up the nuclear legacy is a long term process. Ensuring that the necessary skills, resources and facilities are in place and that the right jobs get done at the right time and at the right cost is a major undertaking. There is a clear need for strategic management and direction of legacy clean up as a whole exercised by a national body with the strategic skills and capability required to do the job. And an absolute requirement for public confidence in that body.

3.3 The LMA will fill that strategic role and provide the overall management and direction which is required. Working in partnership with licensees and with the nuclear regulators, it will develop a coherent strategy for clean up which makes best use of available skills and resources. Its focus on delivery of that strategy will also ensure that the job gets done in a manner which enhances safety and environmental performance whilst delivering best value for money. It will match the response to the scale of the task and the timescales involved and make the whole process more open and more transparent. It will enable the UK to meet the challenge which clean up represents.

■ What the LMA will do

3.4 The LMA's main task will be to put an overall strategy in place for dealing with the legacy safely, securely and in accordance with national and international environmental requirements. Its functions and duties will be set out in legislation.

3.5 In particular, this means:

- the LMA taking legal and financial responsibility for legacy sites and ensuring that the right arrangements are in place for driving forward the clean up programme;
- holding those responsible for site management to account for performance against objectives laid down by the LMA;
- putting in place comprehensive long term plans for the clean up of all of its sites and ensuring that short term priorities for each site over a 5-10 year period are clearly identified;
- ensuring that the skills and resources required for clean up are available and can be sustained over the medium and long term;
- in conjunction with site licensees and the nuclear regulators, managing the competing demands of different sites so as to ensure that the skills and resources available are used to best effect, both at individual sites and across the legacy clean up programme as a whole;
- working with licensees and the regulators to exploit synergies between sites and applying relevant lessons learned at one site to others; and

- drawing on best practice overseas and in other sectors to improve performance and delivery.

3.6 The LMA will keep management arrangements for its sites under review, making changes where there is scope for improving

THE LMA WILL:

- **be responsible to Government for developing and implementing an overall strategy for discharging the nuclear legacy within policy and other requirements set by Government;**
- **have financial responsibility for all public sector civil nuclear liabilities;**
- **in consultation with the regulators, determine arrangements for the management of individual sites; keep those arrangements under review and implement any changes which might be necessary;**
- **contract with site licensees to deliver, on an incentivised basis, the clean up programme for individual sites;**
- **promote synergies and co-operation between site licensees so as to ensure that common challenges and interdependencies between sites are managed to best effect;**
- **develop and maintain a viable, long term supply chain and skills and knowledge base;**
- **disseminate and develop best practice and ensure that it is applied consistently;**
- **provide advice to Government on policy issues relevant to nuclear liabilities management;**
- **promote, and where necessary fund, generic research relevant to nuclear clean up;**
- **through its actions, increase public confidence in arrangements for the management of the legacy.**

performance on the ground. It will seek to promote competition for site management and for implementation contracts. Competition has the potential to stimulate innovation and challenge and raise safety and environmental standards. It should also increase operational efficiency and value for money.

Frequently Asked Question 3:

Over what timescales will competition for site management contracts be introduced?

There is no prescribed timescale. The LMA will look at the position of each site on its merits. It will consult the nuclear regulators and local stakeholders before any decision is taken to change site management arrangements.

Frequently Asked Question 4:

Will foreign companies be able to bid for site management contracts?

Yes. In driving forward the clean up programme, the Government expects the LMA to make the best possible use of the best available skills. But in order to be successful, bidders will have to demonstrate that they have the management and other skills required to deliver the LMA's objectives for the site and to satisfy safety, environmental and other regulatory requirements.

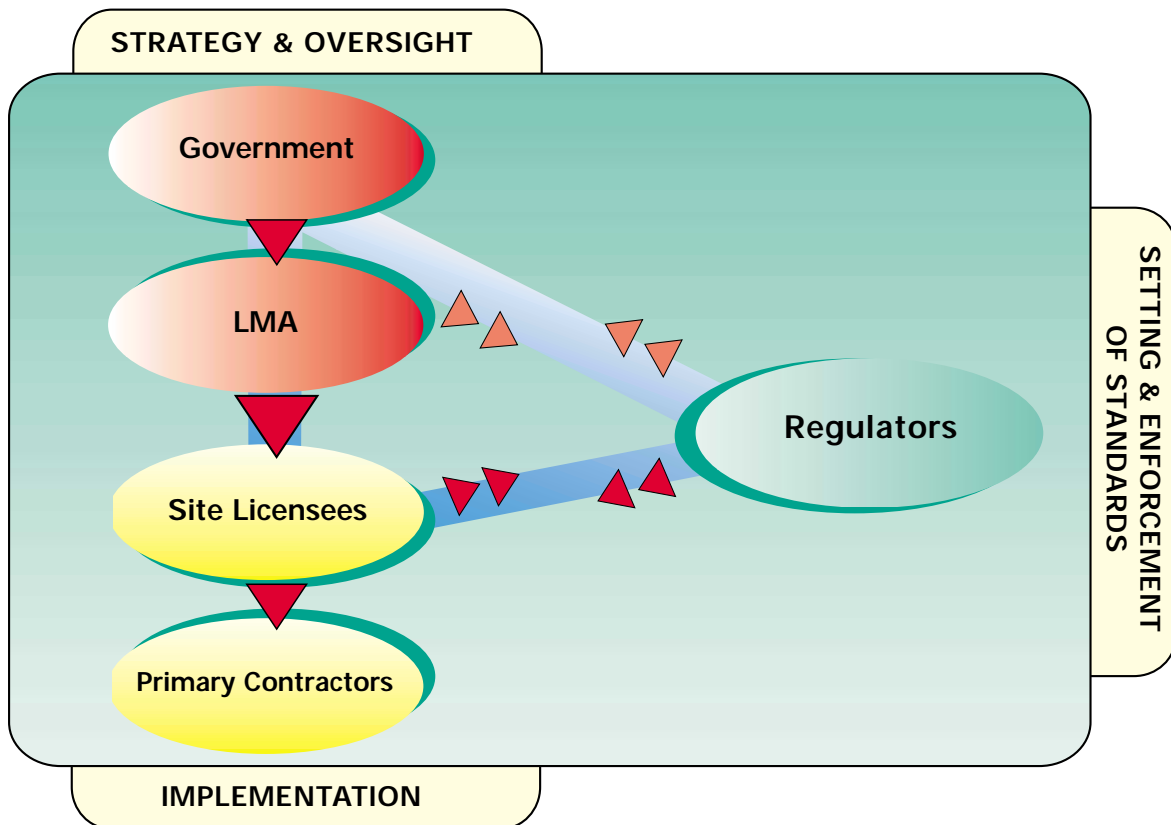
Frequently Asked Question 5:

How long will contracts last?

Probably between 5-10 years. But periods are likely to vary and will not necessarily be the same for each site.

3.7 The LMA will be a body which generates action. Its focus on clean up, however, will mean that it will also be in a position to offer focused and specific advice to Government on issues relevant to clean up.

The LMA Model



In particular, it will be able to provide information on the potential costs of different options thereby reinforcing the Government's efforts to improve the quality and transparency of decision making.

LMA and Site Licensees

3.8 The LMA will not directly manage the sites for which it is responsible. Instead, it will contract with site licensees who will be responsible for delivering, on an incentivised basis, the clean up programme for each site consistent with the regulatory requirements which apply to the operation of a nuclear licensed site. The separation of strategy and planning from implementation will enable the LMA to focus on its strategic role and to use the best of what the public and private sectors have to offer in driving clean up forward.

3.9 Site licensees will:

- be responsible for managing their sites in accordance with safety, security and environmental requirements;

- work closely with the LMA and the nuclear regulators to develop and regularly update comprehensive long term plans for clean up;
- prepare and implement short term work programmes for delivering the priorities identified in those plans;
- work with subcontractors to plan and carry out individual decommissioning and clean up projects; and
- be held to account by the LMA for performance against their contracts.

3.10 The LMA's contracts with licensees will clearly define their different roles and responsibilities and the relationship between them. They will also reflect the health and safety, environmental and security regulatory requirements bearing on licensees who are in day-to-day control of the processes and activities undertaken on the site. The overall regulatory framework and the basis of the statutory relationships between licensees and the regulators will not change.

3.11 Contracts will provide for the sharing of business risk, set key performance indicators and establish payment mechanisms within a framework aimed at incentivising licensees to deliver specific outcomes safely and at best value. In line with its commitment to openness and transparency, the LMA will publish information about the incentivisation structures written into its contracts. The key performance measures set for contractors, and information about performance against them, will also be published.

3.12 A key requirement will be the development and regular review of comprehensive long term plans for the clean up of each site. These will be living documents, mapping out the overall plan for environmental restoration to a defined end point, and setting the priorities for short term work programmes. They will evolve as circumstances, priorities and risks change and reflect the views of local communities and other stakeholders who will be consulted as part of the development process. They will be agreed with the LMA and the regulators and be published. Current plans, such as the Dounreay Site Restoration Plan recently developed by UKAEA, will provide a starting point.

REGULATORY BODIES

- **Health and Safety Executive (HSE)**

The statutory body responsible for the enforcement of work related health and safety law under the general direction of the Health and Safety Commission. HSE is the licensing authority for nuclear installations and, through its Nuclear Installations Inspectorate (NII), regulates the nuclear, radiological and industrial safety of nuclear installations on a UK basis.

- **Environment Agency (EA)**

Responsible in England and Wales for the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposals to air, water (surface water and groundwater) and land. In addition to authorisations issued under the Radioactive Substances Act 1993, the EA also regulates nuclear sites under the Pollution Prevention and Control Regulations and issues consents for non-radioactive discharges. The equivalent body in Scotland is the *Scottish Environment Protection Agency*.

- **Office for Civil Nuclear Security (OCNS)**

The DTI unit which regulates security arrangements in the civil nuclear industry, including security of nuclear material in transit, exercising statutory powers on behalf of the Secretary of State for Trade and Industry. This is primarily in order to protect against the threats of terrorism and nuclear proliferation.

- **Others**

Although the rest of this box covers the main "nuclear" regulators, there are a number of other regulators who impact on the industry. These include various local authorities under their statutory planning and environmental health functions and other central Government Departments (e.g. the Department for Transport which is responsible for the Health and Safety Commission and the Rail Regulator).

3.13 Contracts will identify specific tasks and targets which licensees will be expected to deliver in the period of the contract and require them annually to prepare detailed work programmes for that purpose. Decisions on how individual projects are carried out will be a matter for them, consistent with regulatory imperatives and the over-riding obligation to ensure that work will be carried out safely and in accordance with environmental requirements.

3.14 The Bill setting up the LMA will include provisions to facilitate competition for site management contracts. These will include provisions to enable the creation of licensee companies for specific sites or groups of sites with the skills, knowledge and practical experience required to act as a licensee on a nuclear site. These companies will operate under contract to the LMA, hold the licence and employ the workforce. A decision by the LMA to change one of its contractors would change the senior management of the company concerned, and potentially extend its range of skills and capabilities, but the workforce would remain in place. Appointments would be made on the basis of firms' ability to deliver the clean up priorities for the site, improve overall site management and develop the workforce as the skills and knowledge base essential to the operation of any nuclear site would remain in place. **Chapter 5** provides more information about the implications for current UKAEA and BNFL staff.

3.15 Licensee companies will be subject to the same statutory and other regulatory requirements as current nuclear site licensees. Where the LMA proposes to change one of its contractors, it will therefore be for the new management to satisfy the regulators that the company retains the overall capability to manage the site safely, securely and in accordance with environmental requirements. Management responsibilities will also have to be clearly identified. Licensee companies could remain permanently in the public sector with management seconded in from the private

sector or be owned by private sector contractors for the duration of the contract. In that event, there would be safeguards to ensure that the LMA would be able to assume ownership of any licensee company if there was a need for it to do so.

3.16 These arrangements will give the LMA the option of changing the management of licensee companies by competitive tender whilst leaving arrangements for site licences and environmental discharge authorisations unaltered. Experience at the Atomic Weapons Establishment and in the United States shows that such changes can be made without disrupting site operation and without compromising safety and environmental performance. The Government's intention is to build on that experience.

Frequently Asked Question 6:

How will the LMA ensure compliance with contract provisions relating to safety, security and environmental requirements?

The contracts will require site licensees to operate the sites in accordance with all relevant regulatory requirements. Although, primary responsibility for monitoring licensees' compliance will continue to be with the relevant regulator, the LMA will pay close attention to safety, security and environmental performance when awarding or extending contracts, with poor performance potentially resulting in early termination of a contract. For example, contracts could require contractors to meet safety objectives before they are eligible for performance bonuses or penalise them if safety objectives are not met.

Frequently Asked Question 7:

How will the LMA prevent misuse of funds and/or stop contractors making excessive profits?

The contracts will give the LMA the right to access the contractor's financial information to check that funds have been properly spent. This will include checking that the profits earned are consistent with the contracts. More generally, the current expectation is that the LMA will maintain a presence at all its major sites and will monitor contractors' performance on a regular basis.

■ LMA and Nuclear Regulators

3.17 The inter-relationships between the LMA, site licensees and the various nuclear regulators will be key to the delivery of the clean up programme.

3.18 Strong, effective, independent regulation is crucial to public confidence in arrangements for legacy management. There will be an essential commonality of interest between the regulators and the LMA. Each will want to see progressive reduction of hazard potential, improved environmental outcomes and safe, secure, effective and timely discharge of liabilities.

3.19 In order to maximise its own effectiveness, the LMA will seek to build on that commonality of interest. Without compromising the regulators' position or fettering their discretion, it will aim to develop open, constructive relationships which enable it to learn from the regulators' experience of individual sites and involve them in its decision making processes from the outset.

3.20 All the regulators have been closely involved in the development of the proposals for the LMA and are committed to building

relationships with it and site licensees which reflect their common interests and objectives. Box 3.1 shows how the relationship will work. The LMA will be looking for clear and precise agreement with site licensees and regulators on what has to be done, the relative priority which should be given to different projects, and the standards which have to be met in taking work forward. This will minimise uncertainty for site licensees and enable them to focus on getting the job done consistent with regulatory requirements and best value for money. Equally, if the regulators have concerns about the ability of a licensee to deliver, they will be able to raise them with the LMA. The focus will be on the development of practical approaches to the delivery of common goals to defined standards.

3.21 Similarly, the LMA will want the regulators to be actively involved in discussions about possible changes to the management of a site licensee company and how such changes might be implemented before any decisions are taken. This is important, not only for the safe, secure and efficient delivery of the forward work programme but also to ensure that any change does not undermine the ability of the existing management to operate the site safely and carry out the work required of them, and that there is clear accountability at all times for all aspects of site operations.

3.22 For these reasons, the Bill will place a statutory duty on the LMA to work with the regulators in developing and reviewing its clean up strategies. This will be underpinned by agreements between the LMA and the regulators setting out the basis of their relationship and how it will work in practice. These agreements will be complementary and recognise the need to maximise co-operation between different regulators and minimise duplication. They will be published so that the basis of the relationships and the way in which they operate can be subject to public scrutiny.

LMA and Stakeholders

3.23 The Government regards openness and transparency as fundamental to the successful operation of the LMA. This is an area where the Government will therefore set specific objectives for the LMA. These objectives, and reports on performance against them, will be published. The LMA, in turn, will apply similar requirements to site licensees.

3.24 The LMA will only command public confidence if it earns it by its actions. From the outset it will therefore be a champion of public information – visible, accessible, providing clear and comprehensive information about its activities consistent with security requirements and necessary commercial confidentiality, and

actively engaging with its stakeholders. This applies particularly to the interests of local stakeholders in decisions bearing on the clean up of individual sites. The Government will expect major decisions to be taken only in the light of full consultation with stakeholders.

3.25 The Bill will place specific duties on the LMA requiring it to consult widely about the way in which it intends to discharge its functions and to publish information about its strategies for clean up. It will also be subject to existing laws requiring openness and transparency, including the Freedom of Information Act 2000, the Environmental Information Regulations 1992 and any extension to those requirements pursuant to the Aarhus Convention⁵ when implemented.

**BOX 3.1
MAINTAINING A COMPREHENSIVE LONG TERM PLAN FOR SITE CLEAN UP**

	Iterations	Time	HMG - includes SE/NafW as necessary
A	Policy for waste management, decommissioning, regulation etc	100 years plus	Preparer
B	Site end-point definition	Up to c100 years	Reviews and endorses LMA decisions
C	Overall clean up plan	Up to c100 years	Reviews and endorses LMA decision ³
D	Clean up workstreams and linkages	Up to c100 years	[Subsumed by HMG role in relation to C]
E	Site operational targets/ milestones	Contract period ⁴	-
F	Site operational plan	Contract period	-

¹The LMA role as decision maker will be a hands-on role, ensuring that the site licensee is developing an optimum plan not just a compliant plan

²The detailed work may be performed by the contractor responsible for each site, under a specific contract with LMA (also for milestone cycle plan and remediation workstreams)

3.26 It will be for the LMA, once established, to develop policies and processes to give effect to these obligations consistent with security requirements and commercial confidentiality. However, the Government will expect its operating strategy to include detailed proposals for communications activities and stakeholder engagement reflecting lessons learned from stakeholder dialogues and other mechanisms for public involvement in decision-making. In the interim, the DTI will be commissioning a review of current practice in the UK, the United States and other countries with a view to informing the LMA's thinking.

3.27 The majority of UK nuclear installations have a Local (or Local Community) Liaison Committee (LLC) to represent the views of local stakeholders to the site licensee. By and large these are fully integrated into the local

community. As part of the review, however, Government will consider with stakeholders the scope for further improving the way in which they operate. The LMA will want to encourage LLCs relevant to its sites to operate in an open and transparent way and engender a collaborative rather than confrontational approach to local engagement.

3.28 Since the Secretary of State's announcement on 28 November 2001, the DTI has been consulting widely with stakeholder groups about the new arrangements for liabilities management and the basis on which the LMA should be established. It will continue to do so in the period leading to the creation of the LMA. This White Paper reflects initial inputs on how to ensure openness and transparency and on other matters, but the Government would welcome further views.

LMA	Licensee	Regulators (HSE, EA, SEPA, OCNS)	Other Stakeholders
Consultee	Consultee	Consultee	Consultee
Decision maker ¹	Preparer ²	Reviewer/ approver	Consultee
Decision maker	Preparer	Reviewer/ approver	Consultee
Decision maker	Preparer	Reviewer/ approver	Consultee
Approver (contractual)	Proposer and Preparer	Reviewer/ approver on regulatory issues	
Acts as intelligent customer/contract manager	Prepares & implements in accordance with D/E	Reviewer/ approver on regulatory issues	

Decommissioning arrangements & programmes consistent with safety and regulatory requirements

³Some key decisions, such as new contracts and plant closures will be reserved as Ministerial decisions based on advice from LMA and others

⁴As the contract period end approaches, there will need to be targets, milestones and operational plans developed for the initial period of the next contract to ensure continuity between contracts.

⁵European Convention on Access to Information, Public Participation in Decision Making and Access to justice in Environmental Matters

Competition and the Supply Chain

3.29 The development of competitive markets for clean up contracts will be a key strategic objective for the LMA. Competition is one of the means by which it will secure the supply chain and long term skills and knowledge base needed to deliver its programmes. It will also help to stimulate innovation and new ways of working. It could potentially benefit all aspects of site clean up, improving safety and environmental performance as well as outcomes, reducing timescales as well as costs.

3.30 The LMA will actively seek to develop a competitive market for the management of nuclear licensed sites. Its contracts with site licensees will include commitments and measures to encourage sub-contracting of large discrete projects or packages of work consistent with regulatory requirements and best value for money. The general presumption will be that work will be subject to competitive tender.

Frequently Asked Question 8:

What lessons have been learnt from the experience of contracting the management of nuclear sites in the UK and overseas?

In the United States, contractors have been used to manage nuclear sites for many years. In the UK, experience is more limited but the Atomic Weapons Establishment has been managed by two successive contractors since 1993.

Foreign and UK experience has shown that nuclear sites can be managed safely and effectively by contractors for long periods of time. In some cases, contractors, for example at Rocky Flats in Colorado¹, are delivering significantly accelerated clean up programmes and improved safety performance.

The regulatory framework in the UK is different to that in the United States and what works there may not necessarily be appropriate here. However, best practice in the US and experience at AWE have shown that successful contractor site management requires:

- simple, objective and output orientated goals and targets for contractors;
- output targets focused on key priorities.

¹For more information, www.rfets.gov

3.31 The LMA will build on existing partnerships and initiatives to develop local supply chains around major sites. The Government regards these initiatives as important in the context of local economic regeneration and will expect small firms with relevant skills and expertise to have every opportunity to compete for work.

3.32 Sub-contracting policy will also play a significant role in dealing with potential skills problems 10-15 years ahead. A policy which explicitly rewards contractors who commit to skill development targets may be one means by which the LMA could satisfy its own requirements and contribute more broadly to increasing the overall UK pool with science and engineering skills. In the short term, skills shortages in the nuclear sector reinforce the need for the redeployment of people from other sectors into clean up through competition for contracts.

3.33 The DTI with the active support of other departments, is leading a major project to identify the scale, nature and timing of potential shortages in the supply of nuclear and radiological skills and develop proposals for ensuring that demand can be satisfied. Box B on page 32 provides more information. A

targeted action plan will be submitted to Ministers shortly. The LMA will have a key role to play in that context, working nationally in conjunction with the industry, relevant departments and the nuclear regulators and locally with regional development organisations and local authorities.

3.34 The market for nuclear site management contracts will take time to mature. Competition cannot be introduced unless there are credible alternatives to the existing management arrangements. The LMU will therefore be exploring possibilities for competitive tendering of site management contracts as part of its role in preparing the ground for the LMA. Early candidates for competition might include decommissioning Magnox stations, Capenhurst and Drigg. The LMU will also be developing draft contracts, again drawing on US and wider

Box A.
LOCAL SUPPLY CHAIN INITIATIVES

UKAEA has a specific objective to develop the local supply chain at Dounreay. Some 40% of Dounreay's external expenditure is placed locally. UKAEA encourages local and regional contractors to develop their businesses so that they can compete successfully for work within the Dounreay Site Restoration Plan. Regular meetings are held with contractors' organisations and local enterprise companies. The focus is not just on meeting the needs of Dounreay but on using clean up of the site to attract new economic activity to the area over the long term.

BNFL is similarly committed to encouraging the development of a local supply chain in West Cumbria. Use of local suppliers and contractors has trebled in the last 10 years and now represents 40% - around £200 million a year - of Sellafield's external purchases

experience. The nuclear regulators will be directly involved in this work so as to ensure that contract terms are consistent with nuclear site licensing requirements.

3.35 The Government hopes that companies with relevant management and engineering skills will look closely at the opportunities which will be opened up by the new arrangements for legacy management set out in this White Paper. Arrangements for consultation are already in place and developing a dialogue with the market, including potential new entrants, about contracting strategies and possibilities is one of the LMU's core tasks. Once established, the LMA will build on these relationships as part of its strategy for developing and managing its supply chain over the medium and long term.

Research

3.36 BNFL and UKAEA commission research where necessary to improve safety and operational performance and develop solutions to specific clean up problems. This is a basic part of their role as site licensees and is carried out in close conjunction with the regulators. Contracts between the LMA and site licensees will reflect the need for, and importance of, this work. Licensees will identify in their work plans and agree the scope and scale of the work with the regulators as now and with the LMA as part of its overall management of the legacy clean up programme.

3.37 More generally, the LMA will have a direct interest in the improvement of the technology available for clean up and of the underpinning science. Given that they represent a significant proportion of total clean up costs, it will be particularly interested in techniques and processes for improving the immobilisation of waste and reducing waste volumes. New technology which reduces environmental impact or improves safety could reduce timescales as well as reducing costs. For example, improvements in vitrification and cementation technology could make the immobilisation of wastes easier, faster and cheaper. Some legacy wastes may also require novel, eg ceramic-based matrices, for long term stabilisation.

BOX B. NUCLEAR AND RADIOLOGICAL SKILLS INITIATIVE

The overall objective of this initiative is to identify the scale, nature and timing of potential skills shortages and, in the light of that, to stimulate action designed to ensure that future UK demand for people with nuclear skill sets can be satisfied. It reflects a general concern worldwide about the supply of people 10-15 years ahead with nuclear related skills. The UK position appears to be broadly consistent with that in other countries.

Work began last September and is being taken forward by a Nuclear Skills Group under the chairmanship of Professor John Chesshire, including representatives from DTI, MoD, HSE, the Department of Health, and the Department for Education and Skills.

For the purpose of the exercise, the 'nuclear industry' is defined as all UK companies and organisations requiring or applying nuclear and radiological skills. The principal users are power generation; nuclear clean up, waste management and environmental remediation; defence; and the health sector, primarily the NHS. However, the same skill sets are used by a wide cross section of industry.

Work to date has focused on:

- carrying out a skills audit to improve understanding of the current skills base and how it might change in future;
- a skills foresight exercise as a means of assessing future demand;
- reviewing the ability of the university sector to service future requirements for graduates and post graduates given the general contraction in nuclear related courses over the past decade;
- the relevance of vocational education initiatives, including Modern Apprenticeships to the industry's needs;
- ways of changing public perceptions about nuclear, particularly amongst school children and teachers, with a view to influencing skills and career choices.

A targeted action plan will be submitted to Ministers shortly as the basis for a stimulation phase to encourage new blood into the industry and to expand education and training programmes in schools, universities and industry to develop the skill sets required in the right numbers and within the right timescales. The action plan will be published.

3.38 Given its long term strategic role, the development of improved techniques and procedures will be a key objective for the LMA. It will therefore seek to encourage and stimulate relevant research by the science base, building on the alliances BNFL has put in place with universities in areas such as waste immobilisation and materials performance, and monitor advances in technical and scientific knowledge worldwide. Where promising new approaches are identified, it will also fund targeted programmes of applied research to explore how far they might be relevant for its purposes. In addition to the potential benefits to

the UK programme, these could have significant commercial value in relation to clean up programmes around the world. BNFL, for example, is currently exploring the application of novel plasma technology for clean up, which offers the potential for "dry" processing without the generation of any secondary wastes. Spin off applications could also exist with plasmas in other areas such as decontamination, waste destruction and waste conditioning.

3.39 It is important that any research funded by the LMA takes account of the nuclear safety research programme managed by HSE and

other relevant research funded by DEFRA, the environment agencies and the Research Councils. The LMA will therefore consult closely with HSE and other bodies and ensure that its research activities complement their programmes. In some instances, this could mean expanding the scope of those programmes with LMA support rather than the LMA commissioning work on its own behalf. The LMA will also make appropriate links with relevant European Union and other international programmes. The EU's Sixth Framework Programme for Research and Development which starts in January 2003, includes provision for 190m euros for research into nuclear fission. International collaboration⁶ will avoid duplication of effort, and help to share the costs involved in exploring new clean up processes, and ensure UK access to cutting edge solutions under development overseas.

3.40 The report of the Chief Scientific Adviser's (CSA's) energy research review group⁷ recommended that the key priority for publicly funded research in relation to nuclear fission should be to improve the methods by which nuclear waste and spent fuel can be safely and cost effectively handled and stored. The CSA is setting up an interdepartmental high-level group, reporting to the Minister for Science and the Minister for Energy, to take forward the review group's recommendations. The aim of the group will be to improve the coordination of UK energy research and ensure that there is sufficient support for key research areas such as the management and handling of nuclear waste. A particular objective will be to review the balance of effort across the innovation chain, looking especially at whether there is enough emphasis on basic research in support of clean up and wider energy policy objectives.

BNFL's UNIVERSITY ALLIANCES

BNFL is investing in a long term strategy to underpin the basic science needed for nuclear decommissioning and remediation technologies via the establishment of major alliances with leading UK universities.

To date four alliances have been established, each designed to build a skill base of 30-40 scientists together with the facilities and equipment needed for their work. All of the alliances contribute in some way towards the basic science directly underpinning decommissioning and remediation technologies.

The four alliances are:

- **Centre for Radiochemistry Research with Manchester University, established in 1999, which is generating know how on the chemical behaviour of actinides and fission products which should help to improve the safe handling and processing of radioactive wastes;**
- **Centre for Particle Science and Technology with Leeds University established in 2000 where work underpins the engineering aspects of the formation, handling, processing of particulate systems such as sludges, grouts, powders etc.**
- **Centre for Waste Immobilisation Technology with Sheffield University, established in 2001 which aims to increase scientific understanding underpinning the vitrification and immobilisation of wastes and the behaviour and performance of final engineered waste forms;**
- **Centre for Materials Performance with UMIST, established in 2002 which aims to improve understanding of the degradation processes of materials placed in a nuclear operating environment.**

⁶BNFL and UKAEA already have technical exchange agreements in place with organisations in the United States, Europe and Japan
⁷Recommendations to Inform the Performance and Innovation Unit's Energy Review.

4

The LMA's Corporate Profile and Relationship with Government

CHAPTER 4

4.1 This chapter describes the proposed form and structure of the LMA, its relationship with Government and how it is expected to operate in practice.

■ Form and Constitution

4.2 The LMA will be established by statute as a Non-Departmental Public Body (NDPB). This means it will be an organisation that is not directly part of Government but is responsible to Government. This will allow the LMA the management freedom and flexibilities it needs to deliver results whilst ensuring that there is a clear line of public accountability and direct Ministerial oversight.

4.3 The Secretary of State for Trade and Industry will be accountable to the UK Parliament for the LMA's activities and actions. Appropriate arrangements will be put in place for the involvement of Scottish Ministers and for reporting and accountability to the Scottish Parliament.

4.4 As Chapter 3 explained, the functions and duties of the LMA will be set out in legislation. This will include provisions on openness and transparency underlining the fundamental nature of the LMA as an organisation that will strive for high levels of public confidence in the management of nuclear liabilities. It follows from this that objectives, targets and performance measures which the Government sets for the LMA will be published.

4.5 The way in which the LMA will exercise its functions and its relationship with Government will be set out in detail in a Management Statement and a Financial Memorandum. This is standard practice for all NDPBs and will lay down the Government's requirements in

relation to corporate governance, approval of the LMA's strategies and annual work programmes and financial and progress reporting. The Management Statement and the Financial Memorandum will be published.

4.6 Like other NDPBs, the LMA's activities, annual accounts and accounting practices will be subject to scrutiny and audit by the National Audit Office. Publication of its Annual Report and Accounts will be one of the means by which the LMA can build public confidence in, and facilitate public understanding of, its objectives and operating strategies. The Comptroller and Auditor General (C&AG) will provide an opinion on the annual accounts which will be laid before the UK Parliament along with the Annual Report. Like other public bodies, all of the LMA's activities will also be open to scrutiny by the Public Accounts Committee and other relevant Select Committees of the UK Parliament. Similar arrangements will apply, where appropriate, for Scotland.

■ Corporate Structure

4.7 The LMA will be a corporate body directed by a Board. The Board will be responsible for the overall activities of the LMA but its primary role will be to provide strategic leadership; challenge the management to deliver; and ensure that it is focused and incentivised to produce positive results. It will be collectively accountable to Ministers for the preparation of the LMA's strategies and work programmes and for the achievement of annual performance targets. It will also have a duty to ensure that public funds are managed with proper regard to propriety, regularity and value for money. The Board's terms of reference will be set out in the Management Statement.

4.8 The implementing legislation will provide for a Board of between 7 and 15 members, including a non executive Chair. Appointments will be made by Ministers according to rules set out by the Office of the Commissioner for Public

THE LMA BOARD APPOINTMENT PROCESS

OCPA sets out seven basic principles by which appointments must be made. These are:

1. **Ministerial responsibility** – the ultimate responsibility for appointments is with Ministers. This enables Parliament to hold Ministers directly to account for the performance of public bodies.
2. **Merit** – selection is to be strictly based on merit. Individuals will be appointed because their abilities, experience and qualities match the needs of the public body.
3. **Independent scrutiny** – no appointment will be made without first being scrutinised by the independent panel or by a group including membership independent of the department filling the post.
4. **Equal opportunities** – departmental policy on equal opportunities should be applied.
5. **Probity** – Board members of public bodies must be committed to the principles and values of public service and perform their duties with integrity.
6. **Openness and transparency** – the principles of open Government must be applied, its working must be transparent and information provided about appointments made.
7. **Proportionality** – procedures should be appropriate for the nature of the post and the size and weight of its responsibilities.

Appointments (OCPA). Ministers will also have the power to dismiss board members on grounds of misbehaviour or on the basis of any condition set out in employment contracts.

4.9 The recruitment process will be governed by the need to instil public confidence in the LMA from its inception. It will be open and transparent at every stage. Job descriptions and selection criteria will be publicly available, posts will be advertised, members will be publicly announced and their interests will be formally and publicly registered. Once appointed the chair will be responsible for the overall management of the process.

4.10 The implementing legislation will not require specific skills or interests to be represented on the Board. The Government's view is that this is undesirable as it would limit flexibility and range of choice and run the risk that, as requirements change over time, the Board will not have the optimal mix of skills and experience it needs to carry out its role. The Government's intention, however, is that the Board should reflect the spread of the LMA's activities across England, Scotland and Wales and include people with:

- nuclear skills;
- knowledge of regulatory and environmental issues; and
- first hand business experience of building and maintaining strong safety cultures and managing large and complex programmes involving technical and regulatory risk.

The Chief Executive and some senior members of the executive management team will be members of the Board but the expectation is that the majority of members will not be full time LMA employees.

4.11 The Chief Executive will be responsible for the day-to-day management of the LMA and accountable to the Board. The senior management team will be incentivised collectively, and on an individual basis, to deliver results against specific objectives and continuously to improve performance. Performance will be measured against annual

targets which will be published. The Chief Executive will be formally responsible to the UK Parliament for expenditure by the LMA and the management of its resources.

Resources

- **4.12** The LMA will be a major undertaking spending over £1 billion a year on clean up and overseeing the operation of commercial assets inherited from BNFL with a similar annual turnover. **Chapters 5 and 6** deal respectively with the rationale for the LMA taking on responsibility for commercial assets and with funding arrangements for clean up.

This section describes the staffing of the LMA and the skills and operating culture it will need to carry out its responsibilities.

4.13 The make up of the LMA team is a matter for its management. However, given its role and responsibilities, it will need first class management, finance, procurement and communications skills. It will also need a nuclear, technical engineering and operational management capability sufficient to give it a full understanding of its portfolio and satisfy itself that its contracts with licensees and work programmes submitted to it for funding are consistent with its objectives. It is difficult at this stage to be precise about staffing needs but initial estimates suggest that it could involve around 200 people.

4.14 Some of these people are likely to be drawn from BNFL, UKAEA and the nuclear sector more generally. However, the LMA will have a different role and be a very different organisation, focused on the development and implementation of strategies for nuclear clean up and on commercial procurement and contract management. Whilst nuclear skills will be important, the main requirement will be for people with first class commercial and management skills drawn from other industries and from across the private sector. Recruitment from outside the nuclear sector will also help to ensure that the LMA is ready to explore ideas and apply lessons from other industries.

4.15 Some of the skills and experience the LMA needs may also be brought in through inward secondments from, or partnership arrangements with, the private sector. Such partners could focus on specific areas, for example procurement or contracting strategy, or support the in-house team on a broader basis, thereby bringing new vision and ideas into the organisation at all levels. Whilst partnering should produce benefits, it is essential, however, that the LMA has sufficient in-house capability to operate as a truly intelligent customer and can ensure management continuity.

4.16 The LMA's ability to attract people with the quality of skills it requires will depend on external perceptions of the organisation and its mission, the way in which staff are incentivised and managed, and its management's ability to create a can-do corporate culture focused on delivery of defined outcomes and doing things better. The challenge for management is to develop and foster this culture. The Government, for its part, is committed to giving the LMA the authority and operational freedom to deliver. Whilst the LMA will be accountable to Ministers and operate within a framework of strategic controls set out in the Management Statement, implementation of its plans once approved by Ministers will be a matter entirely for management.

4.17 It follows from this that decisions on the LMA's location and other operational issues will be a matter for the LMA. However, the current expectation is that the LMA will want to maintain a presence at all its major sites, as a basis for managing its contracts with licensees and relationships with local stakeholders, as well as establishing a corporate Head Office. The location of the Head Office will need to be consistent with its ability to deliver its mission, service the requirements of Ministers and Government departments and maintain active dialogue with regulators, the market and other stakeholder groups.

4.18 Assuming a team of 200 organised on this basis, initial estimates put the LMA's operating costs in the range of £25-30 million per annum. This is a substantial investment reflecting the UK Government's determination to get to grips with the nuclear legacy and ensure that clean up is given the management priority and attention it requires.

4.19 The cost of establishing and running the LMA needs to be set against the £1 billion plus annual spend on clean up and the cost reductions which are potentially achievable through incentivised contracts and competitive procurement. Assuming average annual expenditure on clean up of £1 billion, a 5% overall saving – well within the bounds of what has been achieved already by UKAEA through competitive procurement, and at the Atomic Weapons Establishment and US sites through contractorisation of site management – will generate savings of £50 million. Efficiency gains on this scale, and other savings from rationalisation of current arrangements, will not happen overnight. The Government believes however, that over the medium and longer term, the operational, financial and

social benefits produced by the LMA will substantially outweigh the costs involved.

Relationship with Government

■ **4.20** Whilst the LMA will have operational freedom, it will be accountable to Government and subject to appropriate strategic controls. The Government will set the policy framework within which the LMA is to operate and prescribe objectives and specific targets against which its performance will be measured.

4.21 The Department of Trade and Industry will act as lead department and channel for LMA reporting purposes. The Secretary of State for Trade and Industry will therefore formally approve the LMA's strategies and work programmes. However, a number of UK Government departments, the Scottish Executive, and the National Assembly for Wales will all have a direct interest in the work of the LMA and will be involved in the process of reviewing the LMA's plans and performance.

THE LMA AND PUBLIC SECTOR BODIES

Customer	Interest
DTI	Funding, sponsorship of BNFL and UKAEA, security regulation, decommissioning policy and accounting to Parliament for nuclear safety
MoD	Funding
DEFRA	Radioactive waste policy, environmental and planning regulation for England
Department for Transport	Transport of radioactive waste
Treasury	Public expenditure
Scottish Executive	Radioactive waste policy, environmental and planning regulation for Scotland
Regulators	HSE, (safety), EA & SEPA (environmental) and OCNS (security)
National Assembly for Wales	Clean up of Wylfa and Trawsfynydd and management of associated wastes

4.22 Strategic control will be exercised through an annual meeting at which Ministers will review the LMA's strategies and annual work programmes; take stock of its performance to date; and set new performance measures for the year ahead. Subject to its proposed work programmes being approved, the LMA will then have the authority to implement them within agreed financial limits. As noted in paragraph 4.4, Ministerial objectives for the LMA and the performance measures against which it will be accountable will be published. Annual meetings will be supplemented by regular meetings in year, to review progress against plan and take account of any changes which might be required.

4.23 The LMA will also develop bilateral relationships with its Government customers in the same way as it will develop links with relevant local authorities, environmental groups and other stakeholders. In particular, it will have regular dialogue with devolved administrations in relation to its activities at sites in Scotland and Wales.

5

Implications for BNFL
and UKAEA

CHAPTER 5

5.1 The creation of the LMA and the transfer of assets and liabilities announced by the Government on 28 November 2001 have major implications for BNFL and UKAEA. This chapter explains what will be involved and how the changes will be implemented.

■ BNFL and UKAEA Today

5.2 BNFL is an international business employing around 23,000 personnel in 16 countries. Its operations span most of the nuclear energy cycle. It manages nuclear wastes and materials on behalf of the UK and US governments and provides products and services to nuclear utilities worldwide.

The operating businesses are supported by a major research and development programme providing technical and safety support for current operations and developing technologies for future business opportunities.

5.3 UKAEA's current mission is to deal with the legacy created by its research programmes for Government and to restore the environment at the sites for which it is responsible. It focuses on strategic planning, procurement and site management. Clean up work is primarily carried out by contractors appointed on a competitive basis. UKAEA also acts as managing agent for the Secretary of State in respect of certain historic liabilities at Sellafield and Springfields for which it retained financial responsibility when BNFL was created in 1971, working with MoD (which shares financial responsibility for the liabilities concerned) to secure best value for money.

5.4 Managing nuclear decommissioning and environmental restoration is UKAEA's core activity, but it is also responsible for a range of

other activities including fusion research; the UKAEA Constabulary, which is responsible for implementing security requirements at certain civil nuclear sites, property management at each of its sites; and administration of the UKAEA Pensions Schemes (which serve employees and pensioners of UKAEA, BNFL and various other organisations). **Chapter 8** sets out the Government's proposals for separating the Constabulary from UKAEA and reconstituting it as an independent force.

■ Restructuring BNFL

5.5 The transfer of assets and liabilities to the LMA will trigger a fundamental restructuring of BNFL. The aim in restructuring is three-fold:

- to make the LMA responsible for all those activities and assets which are integral to, or may be required for, the on-going management of the liabilities it is taking on;
- to set the platform for competitive site management; and
- to create the right framework for the future development of BNFL's clean-up and other commercial businesses.

5.6 Table 1 shows how the businesses within the BNFL Group are currently organised and how things will change. The Government is in discussion with the European Commission about any possible state aid which restructuring might involve.

BNFL RESTRUCTURING SIMPLIFIED OVERVIEW

'NEW BNFL' MANAGEMENT STRUCTURE		LMA
Government Services Business Group	Operating contract to manage BNFL plc as Sellafield site licensee ¹	Sellafield site
		Westlakes
	Operating contract for generating and defuelling Magnox reactors. Decommissioning contracts for Berkeley, Trawsfynydd and Hunterston	Magnox reactors ²
	BNFL Environmental Services	Capenhurst site ²
	BNFL Instruments BNFL Instruments Inc	Fellside Heat and Power Shareholding (electricity generation company)
	DEVA (waste drum and equipment manufacture)	Drigg site ²
	Westinghouse Government Services Company shareholding (US Dept of Energy related work)	
	Westinghouse Government Environmental Services Company shareholding (US Dept of Energy related work)	
	BNFL Inc (US-based business)	
Nuclear Utilities Business Group	AWE Management Ltd Shareholding (work at Aldermaston on behalf of MoD)	
	Westinghouse Electric Company - Springfields Works (UK fuel manufacture and nuclear services)	
	BNFL Uranium Asset Management Company (uranium contract management)	
	Pacific Nuclear Transport (transport services)	
	Urenco shareholding (enriched Uranium supplier)	
Corporate	BNFL research and technology	Nirex shareholding

¹Subject to review by Government in 2004/05

²Contracts for the management of Drigg, Capenhurst and decommissioning Magnox stations could be placed either with 'new BNFL' or with third parties.

5.7 The key changes will involve:

- the LMA taking on legal and financial responsibility for:
 - the Sellafield site, all the assets and associated liabilities on the site, including THORP and SMP, and assets necessary for its safe management and operation;
 - the nuclear wastes and materials stored at Sellafield, except for those which are owned by BNFL's commercial customers;
 - the whole of the Magnox fleet of nuclear power stations, including those currently operational;
 - the Capenhurst site;
 - the Low Level Waste (LLW) disposal site at Drigg; and
 - any other assets and liabilities necessary for the future management of the nuclear legacy.
- the creation of a new company – 'New BNFL' – owned by the Secretary of State which will include a utility product and services business and a government contracting business, supported by a research and development organisation;
- the existing BNFL company – i.e. BNFL plc – and its subsidiary Magnox Electric plc continuing in being as nuclear site licensees operating the sites for which they are currently responsible with their workforces; and
- the Government acquiring the funds earmarked for legacy clean up in BNFL's Nuclear Liabilities Investment Portfolio (NLIP). **Chapter 6** invites views on possible new funding mechanisms for clean up which would utilise the money received from the NLIP.

Frequently Asked Question 9:

If I work for Magnox or at one of the BNFL sites transferring to the LMA, who will my employer be once the transfer takes place?

If you work at a BNFL site which transfers to the LMA, you will remain an employee of BNFL plc after transfer. If you work at a Magnox site which transfers to the LMA, you will remain an employee of Magnox Electric after transfer.

What happens next depends on future decisions about site management arrangements and the basis on which those decisions are implemented. It is likely that BNFL plc and Magnox Electric will continue in being as respectively the site licensee companies for Sellafield and at least some of the Magnox stations. But if contracts to manage other Magnox stations and/or other sites are let by competitive tender, new licensee companies will have to be created. In that event, the workforce would transfer to the new company. Paragraphs 5.43-5.53 outline the basis on which transfers would be made and the protections which would be put in place for employees.

Frequently Asked Question 10:

What about employees of UKAEA?

The Government does not intend to make any changes to the operating structure of UKAEA or the ownership of its sites unless and until there is a clear need to do so. When the LMA is set up, UKAEA will therefore continue to be responsible for the clean up of its sites operating under contract to the LMA. Employees will remain employees of UKAEA.

If, in the longer term, decisions are taken to change site management arrangements, implementation will almost certainly involve the creation of site licensee companies.

5.8 BNFL plc will be owned by New BNFL and operate under contract to the LMA until decisions have been taken on future arrangements for the management of Sellafield and the other sites concerned. Similarly, the LMA will place contracts for the management and operation of Magnox stations, either with Magnox Electric plc or with third parties.

5.9 The drafting of these contracts and the other steps required to prepare for restructuring will be important tasks for the LMU and BNFL in the run up to the creation of the LMA. As a first step, BNFL has recently put in place a new organisational structure involving an internal customer division contracting with internal suppliers for the provision of clean up and operational services. The LMU will be working closely with BNFL over the coming months on the development and refinement of these contracts and the performance measures which are key elements within them. Lessons learned will, in due course, be reflected in the LMA's initial contracts with site licensees.

5.10 The restructuring will be carried out using powers to make transfer schemes provided in the Bill setting up the LMA. The same powers could be used, over time, to split individual licensee companies on the lines described in Chapter 3 out of BNFL plc and Magnox Electric plc with the management of those companies then being appointed by competitive tender. In due course, contracts for the management of BNFL plc, as the site licensee company for Sellafield, and of Magnox Electric plc might also be competed.

5.11 As explained in Chapter 3, the LMA will be required to discuss the basis of any change to site management arrangements with the nuclear regulators and other stakeholders. The regulators will also need to be satisfied that new companies and management teams have the full range of skills and experience required to satisfy regulatory requirements. Ministers have given clear assurances on employment

terms and conditions and pension benefits. Paragraphs 5.43 to 5.53 below explain how the position of staff will be protected.

5.12 The creation of NEW BNFL will reflect the fact that the Government's interest in the businesses involved lies in management maximising returns to the taxpayer from the skills and knowledge invested in those businesses. New BNFL will also be directly responsible for the management and clean up of the Springfields site, where the Westinghouse business manufactures fuel, and will retain the £300 million of liabilities at the site and associated funding.

5.13 There are some assets and activities at Sellafield, however, which are not integral to legacy management but which cannot be separated from it. The prime example is THORP, which is dependent on other plants, facilities and site control systems and for regulatory and operational reasons can only be managed as part of a single integrated site. Legal and financial responsibility for these assets will therefore pass to the LMA as part of its overall responsibility for Sellafield. For the same reasons, the BNFL Technology Centre, associated research and development facilities and other assets used to support commercial activities at Sellafield will also pass to the LMA but could be leased back to New BNFL.

Principles Governing Operation of LMA Assets

5.14 The LMA's focus will be squarely on the systematic and progressive reduction of liabilities consistent with safety, security and environmental requirements. As a public body, however, it is essential that it takes steps to ensure that the assets it inherits from BNFL, while they are operational, are managed in the best interests of the UK and existing contractual obligations and customer requirements are satisfied.

5.15 The assets will be operated by the relevant nuclear site licensee under contract to the LMA. Under the terms of the contract, the site licensee will be incentivised to maximise returns to the taxpayer consistent with regulatory requirements and delivery of the agreed clean up programme for the site. If there is any conflict between the two – for example in use of shared operational facilities – it will be resolved by giving priority to clean up. Equally, whilst the operation of commercial assets may involve funding from government as well as internal revenues and payments in advance, there can be no question of funding for clean up subsidising commercial activities. Contracts and leases will reflect this approach. Contracts will therefore require clear separation of operational and clean up costs and, in accordance with normal accounting principles, the LMA will retain sufficient funds to cover the anticipated future costs of related clean up activities, including the treatment and storage of waste pending return to overseas customers.

customers. Discharges from THORP have a very low environmental impact.

5.17 Income from the reprocessing contracts being undertaken in the THORP plant is substantial and could make a contribution to clean up costs.

5.18 Existing THORP contracts will remain with BNFL plc as site licensee and operator of the plant and will be honoured. To do otherwise would break existing contractual commitments and Government Undertakings. It could also invoke compensation payments which would outweigh the costs involved in meeting those commitments. THORP will therefore continue to operate until existing contracts have been completed or the plant is no longer economic. Any changes or variations to those contracts will require the approval of the Secretary of State acting on advice from the LMA. Approval will not be given unless the basic principles outlined in paragraph 5.15 are satisfied

5.19 Any proposals for new contracts will similarly require approval by the Secretary of State. In the event that any such proposal was received, the Government would look in detail not just at the circumstances of the specific case but, in the light of the Bergen Declaration³, would also review the range of issues which would be involved in increasing the current volume of fuel to be reprocessed through THORP. Decisions would be taken in the best interests of the UK as a whole, in the light of advice from the LMA and on the basis that approval would only be given if the contract were:

- consistent with clean up plans for Sellafield and, in the LMA's view, would not cut across implementation of those plans;
- was expected to make a positive return to the taxpayer after allowing for operational costs, business risks and any other costs which might be incurred as a result of the contract, including any additional clean up costs; and

■ THORP and SMP

5.16 The Thermal Oxide Reprocessing Plant (THORP) at Sellafield undertakes reprocessing of fuel under contracts with commercial

Frequently Asked Question 11:

Why is it necessary to reprocess Magnox fuel?

Magnox fuel is not safe to store long term since both the cladding and metallic uranium fuel corrode over time. There is currently no technically proven alternative but to reprocess this fuel separating uranium and plutonium from the waste, all of which can be safely stored for many decades. All Magnox stations are scheduled to close by 2010 and all Magnox reprocessing should finish by around 2012.

³Ministerial declaration of the Fifth International Conference on the Protection of the North Sea 20-01 March 2002 which, inter alia, encourages relevant North Sea States to evaluate the options for spent fuel management after current reprocessing contracts come to an end,

- consistent with the UK's environmental objectives and international obligations.

The same principles will be applied in the interim period leading up to the establishment of the LMA.

5.20 The Sellafield MOX Plant (SMP) recycles plutonium separated during reprocessing into MOX fuel for use in reactors. The economic case for operation of SMP was carefully considered by the Government, informed by advice from independent expert consultants.

It was based on a prudent assessment of likely sales of MOX fuel to Japan, Germany, Switzerland and Sweden, using the plutonium arising from existing spent fuel reprocessing contracts. As was made clear in the 3 October 2001 decision by the Secretaries of State for Health and for the Environment, Food and Rural Affairs on the justification of MOX manufacture, the economic case was demonstrated to be strongly positive compared to the non-operation of the plant. SMP's operation does not generate substantial new issues in terms of decommissioning and waste management and produces insignificant discharges of radioactivity to the environment.

5.21 SMP has started operations and BNFL has several contracts in place. BNFL will continue to seek further contracts for the supply of MOX in line with the market expectations outlined in their economic case for the plant's operation. Proposals to conclude contracts beyond the scope of that economic case will require the approval of the Secretary of State as a shareholder. When the restructuring of BNFL takes place, existing contracts will remain with BNFL plc as site licensee and operator of the plants and will be honoured.

5.22 After restructuring, New BNFL, acting on an agency basis for BNFL plc, will be responsible for all dealings with THORP and SMP customers. It has well-established relationships with customers and will continue to deal with them for its own purposes. This arrangement will also enable the LMA to focus on its clean up responsibilities.

5.23 THORP and SMP will be operated by BNFL plc under incentivised contracts with the LMA. The performance targets set will reflect the LMA's overall priorities for clean up and the extent to which commercial work can be accommodated within the constraints imposed by regulatory requirements, the physical capacity of the downstream plants and delivery of agreed clean up programmes. There is no satisfactory way of leaving commercial risk with BNFL plc without exposing the LMA to potential claims for damages in the event that contractual obligations are not met. Those risks will therefore rest with the LMA and, if necessary, be funded through government. In line with this, the net financial benefits of operating the plants will flow back to the taxpayer through the LMA. Similarly, decisions on the future of THORP and SMP will be taken by the Secretary of State on the basis of advice from the LMA.

Frequently Asked Question 12:

How will the LMA assess the case for continued operation of THORP, SMP and the Magnox stations?

The case will be based on the following key elements:

- prospective income from future operation of the plant or station;
- prospective operational costs arising from continuing to operate it;
- any additional waste treatment or decommissioning costs associated with its continued operation;
- assessment of the potential costs arising from earlier than planned closure;
- appropriate contingencies to cater for the uncertainties in the prospective income or costs;
- potential effect on agreed clean up programmes

Paragraph 5.19 explains the basis on which the Government will consider any proposals for [new](#) THORP contracts.

5.24 The Government recognises that, while THORP and SMP are operational, the basis on which it provides information about their performance and associated materials handling arrangements will be critical to the credibility of the LMA as an open and transparent organisation. The LMA's annual report and accounts will therefore include specific information, consistent with the requirements of commercial confidentiality, on the financial and operational performance of THORP and SMP and the rationale for keeping the plants open. Consistent with security requirements and necessary commercial confidentiality, information on progress with return of materials and wastes arising from the reprocessing of fuel under contracts with overseas customers will also be provided.

■ Magnox

5.25 The operational Magnox stations are all scheduled to close by 2010. The rationale for continuing operation until then is economic: the forecast income produced exceeds forecast avoidable costs, including the costs of reprocessing spent fuel and dealing with all the materials and wastes resulting from it, and will therefore contribute to the eventual cost of decommissioning.

5.26 In practice, however, the operational performance of the stations cannot be guaranteed, and any requirement for significant new investment to maintain plant safety or performance could potentially lead to earlier than planned closure. BNFL therefore currently keeps the case for continued operations under close review. The LMA will do likewise.

5.27 The Government's intention is that, consistent with safety, security and environmental requirements, the stations should continue to operate until their planned shut-down dates with reprocessing of Magnox fuel being completed by around 2012. Like THORP and SMP, they will be operated under contract to the LMA and on a basis which

incentivises safety and operational efficiency. The benefit will flow back to the taxpayer through the LMA. Information about performance and the rationale for continued operation will be made available by the LMA on the same basis as for THORP and SMP.

5.28 Future management arrangements for the non-operational Magnox stations will be considered by BNFL and the LMU in consultation with the nuclear regulators. As things stand, Hinkley Point and Bradwell will remain with Magnox Electric as site licensee until defuelling is complete, and BNFL plc will continue to be responsible for the decommissioning of Berkeley, Hunterston A and Trawsfynydd. However, depending on the decisions taken, new site licensee companies could be created as a basis for putting decommissioning contracts out to competitive tender. Staff would transfer to the new companies as part of any such process.

■ Drigg

5.29 Drigg is a low-level waste disposal site owned and operated by BNFL, located a few miles south of Sellafield. It is expected to remain open until 2060. Although BNFL accounts for some 75% of waste arising, Drigg is used by many other organisations. BNFL charges them for compacting the waste and disposing of it.

5.30 The LMA will take on responsibility for Drigg as one of its sites and place a management contract either with New BNFL plc or with a third party. The contract will require the site to be operated as a national asset open, as now, to all waste producers with a need to use it. Prices and access conditions will be set on a consistent basis for all users and in accordance with the LMA's basic principles of openness and transparency.

■ Longer Term Future of BNFL

5.31 The plans for restructuring and the new arrangements for liabilities management outlined in this White Paper give BNFL the opportunity to refocus its activities and operating strategies and maximise returns to the taxpayer from the skills and knowledge of its staff. What is now important is that BNFL's management and staff have the opportunity to deliver on the good work already begun to improve the company's performance. They have responded positively to the challenges they have faced in recent years. But both management and staff recognise the need to do more and are determined to build on the progress which has been made.

5.32 The Government made it clear in November 2001 that it will next consider future management arrangements at Sellafield and the future of BNFL in 2004/05. In so doing, the government will take account of advice from the LMA on its assessment of BNFL's performance as a liabilities manager. By 2004/5 BNFL will have had three years since the November statement to improve the performance of both its liabilities management and its commercial business and demonstrate that it can continue to compete successfully in the global market place.

5.33 One option for Sellafield beyond 2004/05 would be on-going management by New BNFL under contract to the LMA. If, however, BNFL fails to deliver, the Government could decide to change the management arrangements for the site. Any decision to change site management arrangements would be based on the LMA's view of what it considered best for Sellafield and for liabilities discharge as a whole, the development of a competitive market in liabilities management and the availability of credible alternatives capable of carrying out the site management role more effectively. It would reflect prior consultation with regulators and local stakeholders as outlined in Chapter 3 and be subject to Government approval as part of

the process of approving the LMA's clean up strategy.

5.34 As regards the future of New BNFL, the company's own target is a move into the private sector via a public private partnership incorporating its commercial businesses and site management contracts with the LMA. The Government recognises that in the right circumstances this could bring benefits for BNFL's businesses and for the management of nuclear liabilities at Sellafield. It will take decisions in the best interests of the taxpayer and on the basis that its primary concern is with the most effective management of the nuclear legacy. The challenge for BNFL is to demonstrate in the course of the next three years that it can be, and should be, the supplier of choice to the LMA for the management of the site and to seize the opportunity for a PPP.

■ Future of UKAEA

5.35 When the LMA is created, it will take on financial responsibility for UKAEA's liabilities. Initially, however, the activities to discharge the liabilities will continue to be managed by UKAEA under performance-based contracts similar to those that the LMA will have with BNFL. The contracts will define the LMA's requirements and contain explicit incentives for UKAEA to further improve its performance.

5.36 In its November 2001 statement, the Government made it clear that, like BNFL, UKAEA should have the opportunity to demonstrate that it should be the supplier of choice to the LMA for the management of its current sites. UKAEA's future as a liabilities manager, therefore, depends on the extent to which it shows that it can deliver what the LMA requires. Any decision to change the arrangements for the management of UKAEA sites would reflect the considerations described in paragraph 5.33 above and would be taken on the same basis.

5.37 The Government does not intend to make any changes to the operating structure of UKAEA or the ownership of its sites unless and until there is a clear need to do so. When the LMA is set up, it will take on UKAEA's role in relation to historic liabilities at Sellafield and Springfields, but UKAEA will continue to be responsible for the clean up of its sites.

5.38 What happens in the longer term depends on UKAEA's performance. If it fails to deliver, the likely outcome is that licensee companies on the lines described in Chapter 3 will be created for UKAEA sites and contracts for their management awarded by competitive tender. If UKAEA does deliver and the LMA is able to develop a competitive market in nuclear site management, the LMA might want UKAEA's management to explore the scope for developing relationships with private sector companies to improve management of UK liabilities as a whole. Any such arrangement would enable its skills and experience to be combined with the broader management skills of private sector partner.

5.39 The Government does not consider that it would be appropriate for UKAEA as a public sector body to compete for additional site management contracts against firms from the private sector.

It recognizes, however, that there could be benefit in a partnership between UKAEA management and the private sector on the lines described above and would be ready to look at any such proposal on its merits. Its acceptability would also depend on the nuclear regulators being satisfied that any new entity had the full range of skills and capability required to operate as a nuclear site licensee.

■ Implementation

5.40 The Bill setting up the LMA will include provisions for the Secretary of State to make transfer schemes restructuring BNFL plc along the lines which have been outlined above.

If the LMA decides to change current arrangements for managing BNFL sites the same provisions could be used, in due course, to create site licensee companies for other sites.

5.41 The timing of the initial transfer of BNFL assets depends on the timing of the implementing legislation. Assuming a Bill in 2002/03, the earliest possible start up date for the LMA would be October 2003. The transfers would take place as soon as practicable thereafter.

5.42 If, at some point in the future, management arrangements for UKAEA sites were to change, the same transfer scheme provisions in the implementing legislation could be used to create site licensee companies for those sites.

5.43 The making of transfer schemes would involve the transfer of assets, liabilities and the staff working in the businesses or at the sites concerned. Staff transfers to a different employer could arise as a consequence of:

- the creation of New BNFL, where some staff will transfer from BNFL plc to the new organisation; and
- any restructuring of BNFL site management arrangements within the public sector, involving the creation of new site licensee companies and the transfer of staff to those companies.

5.44 Transfers to the private sector could occur through:

- a PPP of New BNFL involving the sale of more than 50% of its shares to the private sector and/or;
- contract to manage a site licensee company being awarded to a private sector contractor, with ownership of the company being transferred to the contractor for the duration of the contract.

5.45 The Government recognises the key role that current employees play in the the safe operation of nuclear sites and is concerned to avoid unnecessary changes to terms and conditions. Existing regulations (The Transfer of Undertakings (Protection of Employment) Regulations (the TUPE Regulations) currently provide for terms and conditions to be protected upon transfer as a matter of law. This will cover severance pay, early retirement following redundancy, and injury benefits. Similarly, the Government has made it clear that the pensions position of those employees transferred will be protected.

5.46 Most BNFL and UKAEA staff are members of one of three different schemes:

- the UKAEA Combined Pension Scheme an unfunded public service scheme administered through UKAEA;
- the electricity industry pension scheme (the Electricity Supply Pension Scheme (ESPS)) - a funded scheme open to employees in the public and private sectors; and
- the BNFL Group scheme - effectively a fully funded equivalent of the public sector UKAEA scheme.

5.47 Transfers will not affect pension arrangements for staff in the latter two schemes. Both schemes will continue and staff will remain members of them. Similarly, current pensioners of UKAEA schemes will not be affected in any way. However, certain measures will be required to protect the position of those staff who are active members of the UKAEA scheme and who either transfer to a different employer within the public sector or transfer to the private sector.

5.48 Firstly, membership of the UKAEA scheme is only open to employees of named organisations. Provision will therefore be made in the Bill setting up the LMA for membership to be extended to staff who transfer to a different employer, but who remain in the public sector. This means that for those employees transferring under these circumstances, pension benefits and arrangements will remain unchanged.

5.49 In the event of staff transfers to the private sector, active members of UKAEA schemes will no longer be eligible to continue as members, contributing and adding to their pension. This is because the UKAEA scheme is backed by public funds and in the event of a transfer to the private sector, Government policy is that employees cannot remain within the scheme. New pension arrangements will therefore be needed for these employees which, taken overall, will be no less favourable than those available from the UKAEA scheme as certified by the Government Actuary's Department⁴

5.50 There are a number of ways in which appropriate new pensions arrangements could be provided. One possibility might be to extend membership of the ESPS and the BNFL Group Scheme to include employees transferring from the UKAEA Scheme. Another would be for the LMA to facilitate the setting up either of a new scheme for those employees or, alternatively, a scheme open to both private and public sector employees at all its sites.

5.51 If a new scheme were to be set up for employees leaving the UKAEA scheme, those concerned would have the option of transferring their accrued pension (past service), or freezing their accrued pension within the existing scheme. Those who opted to transfer their accrued pension would be protected by way of a Bulk Transfer Agreement. This would be a

⁴This provides the standard of protection described in the January 2000 Cabinet Office Statement of Practice for Staff Transfers in the Public Sector Annex A: HM Treasury Guidance to Departments - a fair deal for Staff Pensions.

contractual condition for any potential site licensee company and would allow staff who chose to do so, to preserve the link between their final salary and their past service. Staff who opted to keep their accrued pension within the scheme would effectively freeze their benefits and these would then be linked to price inflation instead of earnings.

5.52 A scheme open to both private and public sector employees would remove uncertainty by ensuring that employees remained members of the same pension scheme regardless of the identity of their employer. It would also have the advantage of allowing staff who choose to move between site licensee operator companies to maintain their pension arrangements, therefore facilitating the transfer of skills and knowledge to where they might be needed. Alternatively, the same flexibility could be achieved through the establishment of reciprocal transfer arrangements between a scheme on the lines proposed in paragraph 5.50 and existing schemes.

KEY NOTE

5.53 *The Government recognises that the workforce at each of the legacy sites is central to delivery of the clean up programme. These skills, knowledge and expertise are core to the safe management and operation of the sites and to driving clean up work forward. The measures outlined above reflect this and the importance of the contribution they have to make in achieving the Government's objectives for clean up and the success of the LMA.*

6

Funding Arrangements

CHAPTER 6

6.1 This chapter deals with the basis on which the LMA should be funded. It invites views on two possible funding options, each of which would represent a radical departure from conventional arrangements for the funding of Government programmes.

■ Current Arrangements

6.2 As Chapter 2 explained, financial responsibility for the nuclear liabilities at BNFL's sites is currently split between BNFL itself, its customers and the taxpayer. Some 12% of the liabilities are covered by contracts with commercial customers. A further 20% is funded directly by UKAEA and the Ministry of Defence. The rest falls to the company itself or will be met in future from the Magnox Undertaking (see paragraph 6.5 right).

6.3 BNFL meets its share of clean up costs from its own funds. These include a portfolio of investments, known as the Nuclear Liabilities Investment Portfolio (NLIP). Payments by UKAEA and the Ministry of Defence are usually made annually in line with contract terms and progress made in carrying out agreed work programmes.

6.4 The NLIP was established by BNFL in 1996-97 and is disclosed on the company's balance sheet as a fixed asset. Following the transfer of Magnox Electric to BNFL, cash and investments from Magnox Electric totalling some £2.5 billion were added to the NLIP which, as at 31 March 2002, had a total value of £4 billion, held in cash, Government stocks and short term investments. BNFL currently targets a net annual return of 2.5% on the NLIP as a whole.

6.5 The Magnox Undertaking was put in place in 1998 as part of a reorganisation of the nuclear generating industry following the privatisation of British Energy and the transfer of Magnox Electric to BNFL. Under the terms of the Undertaking, the UK Government agreed to make a series of payments based on the profile of expected expenditure on Magnox liabilities. Payments start in 2008 and are due to be made annually to 2116 in accordance with a fixed schedule based on the expected profile of expenditure on Magnox decommissioning. Interest accrues at a real rate of 4.5% a year. The discounted value of the Undertaking at 31 March 2002 was £4.8 billion. Annual payments are currently expected to run at some £500 million.

6.6 UKAEA's clean up activities and its share of BNFL's costs are funded by grants and grant-in-aid from the DTI and the MoD. Budgets for these payments are determined every three years as part of the Government's spending review cycle. Payments are based on a forward plan submitted by UKAEA which takes account of the requirements of its principal regulators. Expenditure in the year to 31 March 2002 totalled £277 million. The budget for 2002/03 is £276 million.

■ Funding Objectives

6.7 Managing nuclear liabilities cost effectively requires financial flexibility and competent long term planning. There is some flexibility within the budgetary settlements agreed with funding departments as part of the Spending Review process, but three-year settlements are, almost always, shorter than the timescale for major decommissioning projects. In the past, nuclear clean up has also been seen as a low priority for funding purposes relative to other programmes.

Experience to date with UKAEA has therefore been that settlements have tended to be the minimum necessary to address safety and environmental needs and that limited funding has been available for other projects

6.8 It is essential that the LMA, when established, delivers best value for money and that funding for clean up is subject to appropriate budgetary and public expenditure controls. At the same time, the Government is determined that funding arrangements should:

- underline its commitment to clean up and help to build public confidence in the new management arrangements it is putting in place;
- give the LMA the greater flexibility required to drive forward the clean up process effectively; and
- encourage competition for clean up contracts by giving companies, and particularly potential new entrants to the market, confidence that funding will be available to support substantial work programmes over a period of years.

6.9 Nuclear skills are readily deployable to other sectors, and nuclear clean up contractors need to have a reasonable prospect of securing sufficient business to justify remaining in the market. Equally, if the LMA is to generate a more competitive market, other firms with management, engineering and technical skills relevant to clean up need to have sufficient incentive to commit those skills and resources on the scale necessary to be credible and competitive players for clean up work. It is important to build confidence in the size and continuity of the market – both amongst contractors themselves and their shareholders – and to offer opportunities and reward which justify the investment involved.

6.10 There is some scope for addressing these objectives within the Spending Review

framework. For example the LMA could be allowed to enter into long term contracts in the expectation of steady state funding beyond the current settlement or the impact of variations in annual liabilities spend on departments' budgets could be smoothed out in some way.

6.11 In addition to these options, the Government is considering two innovative approaches to financing nuclear clean up which could be used to underpin the LMA and enable it to deliver the benefits it is designed to achieve. The two options:

- a segregated fund; and
- what is best described as a statutory segregated account

are outlined below. The Government would welcome views on the two options and, more generally, on how its funding objectives for nuclear clean up might best be implemented.

■ Segregated Fund for Clean Up

6.12 A segregated fund for clean up would be akin to a pension fund which holds investments. Money paid into the fund would be invested and the accumulated assets used to meet future decommissioning and clean up costs.

6.13 The fund would be set up in statute and could operate under the control of either the LMA or a separate body corporate, effectively acting as trustee to the fund. The members of the body corporate would be appointed by Ministers. Like pension fund trustees, they would have clear powers and duties relating to payment of monies out of the fund, investment of assets and reporting of transactions. The fund could be managed either by private sector fund managers or, possibly, by the National Debt Office in the Treasury, which is responsible for the management of the National Insurance Fund Investment Account and other public sector investment funds.

6.14 The statute setting up the fund would define its scope and prevent monies in it being used for other purposes. In particular, the fund would cover the LMA's clean up programme and directly associated expenditure, for example research and skills programmes. It might also cover the LMA's own running costs, although these would be separately reported.

6.15 The administrators of the fund would report to Ministers annually on the fund's activities. Their reports, which would be published, would cover the nature and scale of funding sources, the running and performance of the fund and estimates for future expenditure as well as the adequacy of the funds to meet it. Their reports would be examined and reported on by the Comptroller and Auditor General and laid before Parliament.

How a Segregated Fund Would Operate

6.16 When BNFL is restructured, the assets in the NLIP will be transferred to the Government. These assets could be used to provide the initial endowment for the fund. Thereafter, it would be financed by a combination of:

- income from investments;
- annual payments by Government voted by Parliament, including payments currently made to UKAEA and BNFL and payments which would otherwise be made in future under the Magnox Undertaking; and
- surpluses from the continued operation of commercial assets.

6.17 The annual payments into the fund by Government, which would be approved by Parliament through the normal supply process, would be set at levels which ensured that the fund was maintained within defined limits reflecting the LMA's future spending projections. The LMA would, with appropriate budgeting arrangements, then be able to plan

its operations with the confidence that funding was available. Money would be drawn down to implement the work programmes agreed by Ministers. The operation of the commercial assets – THORP, SMP and the operational Magnox stations – inherited from BNFL would be funded separately. The fund would not underwrite their operation.

6.18 Further detailed work is required to determine the size of the fund and the basis on which its assets would be invested. The aim, however, would be to create a rolling fund capable of supporting LMA expenditure over several years so as to achieve the aims outlined in paragraph 6.8. Since liabilities expenditure will be incurred over several decades or longer and liabilities estimates will change with time, the Government does not believe that it would be cost-effective to provide for 100% of expenditure at the outset and this is not required to meet the Government's objectives.

Frequently Asked Question 13:

How would funding levels within the segregated fund be determined?

As paragraph 6.18 indicates this needs more work. But if a segregated fund were to be established, a possible approach would be to:

- estimate LMA expenditure over a period of time into the future (Years A to N);
- set upper and lower target levels for the fund based on X% of expenditure in Years A to C; Y% of expenditure in Years C-F; Z% of expenditure in Years G to H and so on;
- set the Government contribution as the difference between the total value of the fund and the sum required to meet the defined target levels;
- set annual contributions on a three yearly basis as part of the Government's overall Review of public expenditure

KEY CHARACTERISTICS OF A SEGREGATED FUND FOR CLEAN UP

- A fund, established by legislation with assets to meet future decommissioning and clean up liabilities.
- An initial endowment via BNFL's nuclear liabilities investment portfolio.
- Ongoing payments into the fund on an annual basis determined as part of the Government's spending review cycle.
- Cash surpluses from commercial operational plant might be paid into the fund but the fund would not cover losses.
- Kept within a defined target level.
- A well-defined mechanism for keeping the fund topped up to a defined level.
- Controlled by the LMA or by a statutory body corporate (akin to Trustees).
- A right to draw down on the funds to fund the work programme that the LMA has agreed with Ministers.
- Publication of annual reports and independent audit by the NAO.

The target levels within which the fund should operate and the basis on which these should be determined are two of the points, however, on which the Government would particularly welcome views.

Statutory Segregated Account for Clean Up

6.19 A statutory segregated account would be a "savings account", established in legislation and kept by the Secretary of State. It could only be used to fund the LMA's clean up programme and directly associated expenditure, for example research and skills programmes. An annual statement of account would record transactions on the account in the same way as a normal bank statement.

6.20 A statutory segregated account would be similar to a segregated fund, in that a "savings pot" of money would be identified by statute which could only be spent on clean up. However, rather than drawing money from a separate fund, the LMA would effectively be funded within the Consolidated Fund, the

Government's "current account" kept by the Treasury at the Bank of England, which funds almost all Government expenditure. The account would be debited for payments for liabilities discharge out of the Consolidated Fund. Authority for any payments out of the Consolidated Fund in respect of the LMA's clean up programme would be sought annually through Supply Estimates.

6.21 Like the segregated fund option, the statutory segregated account would be a "rolling" account. The Government would put credits into the account on an ongoing basis to replenish monies debited and ensure that the fund was maintained within defined limits reflecting the LMA's future spending projections.

6.22 The account would be credited with the initial transfer of the NLIP to the Consolidated Fund and, thereafter, with amounts reflecting payments into the Consolidated Fund from top up, commercial activities and interest. The balance of the account would be maintained within its defined limits from one year to the next.

6.23 Again, like a segregated fund, a statutory segregated account would prepare and publish annual reports and separate accounts which would record payments in and out. They would be examined and reported on by the Comptroller and Auditor General, and the reports would be laid before Parliament.

- both would ensure that the NLIP was earmarked specifically for nuclear clean up;
- both might be credited with surpluses from, but would not be used to fund the operation of, commercial assets;

KEY CHARACTERISTICS OF A STATUTORY SEGREGATED ACCOUNT

- A “savings account” backed by the Consolidated Fund to meet future decommissioning and clean up.
- Payment of BNFL’s nuclear liabilities investment portfolio into the Consolidated Fund and credit of that amount to the account.
- Ongoing credits to the account determined as part of the Government’s spending review cycle.
- Cash surpluses from commercial operational plant might be credited to the account but the account would not cover losses.
- Kept within a defined target level.
- Controlled by the Secretary of State, but financed by payments from the Consolidated Fund managed by the Treasury.
- A statutory requirement that amounts once credited to the account could not be diverted for other uses.
- Authority for payments to fund the LMA’s programme, which would be debited to the account, provided through the usual Parliamentary Supply Estimates process.
- Publication of annual reports and independent audit by the NAO.

Comparison of the Two Options

6.24 There are several similarities between the two proposed options:

- both would represent a significant long term commitment by Government to funding nuclear clean up;
- in both cases, funds identified for nuclear clean up would be backed by a statutory assurance that they could only be spent for that purpose;

- both would provide a “rolling reserve” to ensure sufficient funds were available for the LMA’s future work programme, but neither would seek fully to fund the liabilities;
- both could, with appropriate budgeting arrangements, give the LMA flexibility to bring forward or put back expenditure for operational or efficiency reasons;
- both would require ongoing annual payments by Government to keep the balance within defined limits; and

- in both cases full audited accounts would be published, allowing the public to scrutinise the programme.

6.25 There are also, however, significant differences:

- a segregated fund would be made up of cash investments, whereas a statutory segregated account would be backed by the Consolidated Fund;
- consequently, the assets in a segregated fund would be isolated and managed separately from wider Government funds. The sums of money making up the balance of a statutory segregated account, on the other hand, would be pooled with wider Government finances;
- the LMA would draw down monies from the segregated fund to fund the work programme it has agreed with Ministers. Authority to debit the statutory segregated account would be sought annually through Supply Estimates;
- a segregated fund would require Parliament to vote funds before they were needed, thereby reducing flexibility in the Government's management of wider public finances. A statutory segregated account, on the other hand, would operate within the normal principles of the Supply process; and
- the assets in a segregated fund would need to be invested, with resulting administrative costs, and might be subject to tax. This is not an issue for a statutory segregated account, which would therefore be a simpler and cheaper option to implement.

KEY NOTE

6.26 *As explained earlier, the Government is determined to establish funding arrangements which help to promote public confidence in nuclear clean up, build confidence in the size and continuity of the market and enable the LMA to deliver.*

6.27 *The Government's view is that a segregated fund would offer few advantages over a statutory segregated account, constitute an exception to normal Government Accounting rules and be more complex to operate. The Government's preference is therefore for a segregated account. However it would be interested in views on both options. Views should be received by 18 October 2002.*

The Regulatory Framework and Radioactive Waste Management

CHAPTER 7

7.1 This chapter explains the basis of the nuclear regulatory framework in the UK and the Government's plans for further improving its effectiveness. It sets the context within which the LMA will seek to develop its relationships with regulators and with UK Government departments and devolved administrations responsible for policy relevant to nuclear clean up. It also addresses a number of issues raised in the consultation paper Managing Radioactive Waste Safely which are directly relevant to the setting up of the LMA and legacy clean up.

7.2 Robust, efficient and independent regulation is vital for public confidence that the nuclear industry operates to high safety, security and environmental standards and that the risks associated with it are properly managed. As noted in Chapter 3, the relationship between the regulators and the LMA will be critical to the LMA's success and reflect their common interest in dealing with the legacy safely, securely and in ways which protect the environment.

7.3 The UK has one of the strongest and most effective nuclear regulatory regimes in the world. The Government is determined that should continue to be the case. There can be no question of diluting regulatory requirements for the benefit of the LMA or limiting the scope for regulatory action, where necessary, in relation to legacy clean up. The Government and the regulators are committed, however, to further improving the operation of the regulatory regime and to its operating within the principles of proportionality, transparency, consistency and accountability which underpin the Government's approach to regulation in general.

7.4 In particular, more needs to be done to ensure that there is:

- greater consistency in the treatment and management of risk and hazard;
- proportionate and cost effective delivery of public, worker and environmental protection; and
- an open and transparently applied regulatory system.

■ The International Dimension

7.5 The UK's nuclear regulatory system is set in an international context. In particular:

- EURATOM requirements set detailed controls on the exposure of workers and the general public to ionising radiation;
- under the OSPAR strategy for the protection of the marine environment agreed in 1998, the UK is committed to reducing radioactive discharges so that, by 2020, the additional concentrations in the marine environment above historic levels are close to zero;
- IAEA Safety Standards set the international baseline for good practice for nuclear safety;
- international Conventions place liability up to specified levels on operators of nuclear installations for damage suffered as a result of a nuclear accident and set minimum levels of insurance to cover such damage;
- the Conventions on Nuclear Safety place obligations on the UK and other signatories in relation to the safety of nuclear power plants;

- the Convention on Physical Protection of Nuclear Material and IAEA recommendations provide the basis for UK nuclear security regulation.

7.6 The UK is at the forefront of efforts to strengthen and modernise this international framework. For example, the UK took a leading role in the development of the Convention on Nuclear Safety, which promotes good practice through international peer review of regulatory systems for nuclear power station safety, and, more recently, in developing the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management which came into effect in June 2001. The Joint Convention acts through a similar process of international peer review relating to countries' policies and practices for

the management of spent fuel and radioactive waste. It has been ratified by over twenty five countries including the UK. The first UK national report for the Joint Convention will be produced by May 2003. The UK is also playing a leading role in the revision of the IAEA Safety Standards programme

7.7 The UK also takes a leading part in developing IAEA international guidelines on nuclear security and participates in IAEA programmes to advise on their implementation at national level. Nuclear security regulation in the UK, including improvements made in the last two years, is described in **Chapter 8**.

7.8 Improvements have recently been agreed to the Paris and Brussels Conventions governing third party liability in the event of nuclear

UK IMPLEMENTATION OF REVISIONS TO THE PARIS AND BRUSSELS CONVENTIONS ON THIRD PARTY LIABILITY IN THE FIELD OF NUCLEAR ENERGY WILL INVOLVE:

- Increased liability for operators in the event of an accident at a UK nuclear installation from £140 million to £430million per incident. In the event of an accident where damage is caused in excess of the operator's liability, further compensation will be available up to an amount of £930 million out of public funds.
- Obligations on Government to cover the liability if there is insufficient commercial insurance cover for any reason
- A wider definition of "nuclear damage" to include not only loss of life or personal injury and loss of or damage to property, but also environmental damage. The latter covers the cost of making good damage to the environment; loss of income deriving from such damage eg a reduction in fishermen's income through marine pollution from a nuclear accident, and the cost of measures to prevent an accident occurring again.
- An extension to the geographic scope of the Conventions to include the automatic right of compensation for victims in countries with no nuclear installations.
- An extended jurisdiction to enable victims to sue for compensation in their domestic courts where a nuclear accident occurs in the exclusive economic zones of their country.
- UK participation for the first time in a global compensation regime through ratification of the Joint Protocol providing for reciprocal benefits between the largely Western European parties to the Paris Convention and the parties to the Vienna Convention on nuclear liability, which include the FSU and Eastern European states.

accidents. The new arrangements both extend the scope of the requirements and substantially increase the limits on compensation from £220 million to £935 million. The Government intends to make the required changes to UK law in the Bill setting up the LMA.

Key Issues in UK Nuclear Regulation

7.9 The increasing focus on legacy management highlights the need for consistency and close coordination of safety and environmental regulation. There is increasingly close cooperation between HSE and the environment agencies to achieve this and recognition that, on occasions, there needs to be flexibility, for example for discharge levels to increase temporarily within statutory limits to allow the safe and timely clean up of nuclear sites. However, in some circumstances, the safety and environmental regimes can pull in different directions reflecting the different Government policy objectives they are designed to achieve; their different statutory bases; and the different risk criteria employed.

7.10 Broadly speaking, safety and environmental regulation is based on the proportionate weighing of cost and risks¹, with due account being given to the need to apply best practice. However, Government policy for environmental regulation additionally accords priority to the progressive reduction of discharges, which lays stress on reducing emissions below previous levels with less regard to risk and cost. This is being given increasing emphasis in implementation of the UK commitments under OSPAR.

7.11 The Government receives expert advice on these issues from a number of sources including two independent committees – the Health and Safety Commission’s Nuclear Safety Advisory Committee (NuSAC) and the Radioactive Waste Management Committee

(RWMAC). NuSAC and RWMAC are currently carrying out a joint review of nuclear regulation focused particularly on the interactions between the safety and environmental regulatory systems.

7.12 Their initial analysis recognises the strenuous efforts being made by the regulators to improve coordination but they suggest that:

- there are areas where amplification of current Government policy, particularly, where required, in guidance to the regulators, would enhance clarity and consistency with respect to principles and methodologies and make the task of the regulators more straightforward;
- the regulatory bodies, in conjunction with Government, should continue to look for a greater commonality of approach in order to promote effective and efficient regulation: taking account of costs and benefits is a central tenet of the Government’s strategy for sustainable development;
- there is additionally a need for greater clarity about the extent to which some regulatory decisions reflect factors other than risk, and the way in which risk-based and non-risk-based criteria are balanced in order to arrive at proportionate regulatory decisions; and
- there is a lack of clarity about the way in which regulation is applied at very low radiation dose levels.

Their final report, which will be published, is expected to make recommendations to address these concerns.

7.13 The UK Government will take the Committees’ views into account in finalising its

¹The Tolerability of Risk philosophy has been most recently set down in an HSE’s document “Reducing Risks, Protecting People” [ISBN 0-7176-2151-0]

statutory guidance to the EA. The guidance provides the opportunity to address the issues identified and set out a clear framework for environmental regulation, reflecting 'good regulation' principles and ensuring proper alignment with other aspects of nuclear regulation. Separate guidance will be issued to the Scottish Environment Protection Agency following public consultation.

7.14 Keeping estimated doses to critical groups as low as reasonably achievable (ALARA) through the application of best practicable means (BPM) has driven much of the reduction in discharges over the last 20 years, and will continue to be a major factor in setting discharge limits. The UK Government's view, as will be set out in the soon to be published discharges strategy, is that applying ALARA/BPM² will reduce discharges sufficiently to achieve the OSPAR objective. Ensuring full transparency of decisions, and making clear the factors weighed in reaching them, and the values attached to them, quantified wherever possible, will be essential.

Regulatory Coordination

- **7.15** The environment agencies and HSE are committed to continuous improvement and to working together to deliver consistent and transparent regulation. The Statement of Intent published by HSE and EA in August 2001 set out key working principles to underpin this cooperation. New working arrangements agreed between HSE and the environment agencies are helping to ensure that regulatory decisions are reached in an effective, efficient and consistent way. They should also help to minimise any duplication of regulatory activity and thus avoid placing conflicting demands on site operators.

7.16 Recent initiatives include the sharing of future business plans and strategies; joint regulatory activity such as increased joint investigations and audits on nuclear sites, such as that undertaken at

Dounreay by HSE and SEPA, co-ordinated guidance on radioactive waste management; and workshops with the nuclear industry on regulatory interactions. These developments should bring worthwhile improvements in the operation of the nuclear regulatory system.

7.17 **The Government, for its part, will continue to encourage further steps by HSE and the environment agencies to improve coordination and, wherever possible, align their approaches. Their achievements to date are of real value and should be taken forward in increased joint strategy development as well as 'on the ground' co-working.**

■ Delicensing

7.18 The Nuclear Installations Act 1965 as amended provides for the delicensing of all, or part, of a nuclear licensed site when HSE is satisfied that there is no danger from ionising radiations from anything on the site or the relevant part of it. Some small research reactors and areas within larger sites have been delicensed but there is no established framework for delicensing or for assessing compliance with the 'no danger' criterion. Delicensing completes the environmental remediation process and therefore represents an ultimate goal for the LMA at some sites.

7.19 There is a lack of clear guidance on the level of clean up required in order to satisfy the 'no danger' test. HSE has therefore been working for some time on the development of generic criteria for its assessors in making decisions about the acceptability of a licensee's case for delicensing.

7.20 The Health and Safety Commission will launch a consultation exercise later this year inviting views on proposed criteria. These criteria will not remove the need for a rigorous safety justification for delicensing but will reduce uncertainty and provide a clear and transparent basis against which applications from site licensees can be assessed.

²See Glossary

■ Other Regulatory Issues

7.21 The Government intends to amend the Radioactive Substances Act 1993 to allow EA and SEPA to use a streamlined and simplified process when dealing with applications for transfer of authorisations for radioactive discharges when there is a change in operator of a nuclear site. At present a completely fresh authorisation is carried out, involving a lengthy and resource intensive process. The key element of the proposed process will be necessary checks to ensure that the new operator possesses the appropriate skills and resources. This change will improve the effectiveness and efficiency of the regulation under the Act, while maintaining the robustness of the authorisation process. The amendments will also provide for the EA and SEPA to review and vary discharge limits and conditions thereby bringing legislation for nuclear sites in to line with that for other industries.

■ Managing Radioactive Waste Safely

7.22 Waste management is the biggest single element in the cost of dealing with nuclear liabilities. Radioactive waste is the inevitable consequence of decommissioning and will require on-going management over the next century at least. Current uncertainties about future policy requirements need to be resolved as soon as possible so that the LMA and the nuclear industry more generally can develop strategies for implementation. But in order to provide the certainty that is required, the policy which is established must be acceptable to, and have the support of, the public as a whole.

7.23 Last September, the UK Government, together with the devolved administrations in Scotland, Wales and Northern Ireland published a consultation paper **Managing Radioactive Waste Safely**. This set out a proposed programme of action for reviewing all the options for managing solid radioactive waste in the long term, and deciding on a strategy which provides the best long term protection.

The strategy, and the decision making process, must inspire public confidence if it is to be implemented successfully.

7.24 We invited comments on the proposed programme of action, including proposals for a public debate, a new independent advisory body, the materials – such as separated plutonium – that might be included in the review, and a number of issues relating to

Nirex was formed in 1982 and made a limited company in 1985. In 1989, Nirex was asked by the then Secretary of State for the Environment (now DEFRA) to investigate the feasibility of a deep ILW/LLW disposal facility. As part of its development of that concept, it had provided the industry with specifications and advice on transport and packaging of long lived wastes from 1982. When Nirex's appeal against refusal of planning permission for a rock characterisation facility (RCF) was rejected in 1997, site investigation work ceased. Nirex's current mission is:

“To provide the UK with safe, environmentally sound and publicly acceptable options for the long term management of radioactive materials”.

To deliver this mission, Nirex continues to:

- **develop and implement an active science research programme to develop and sustain long term waste management concepts, and maintain the database from its site investigation programmes and a database of worldwide information on radioactive waste management;**
- **advise industry on packaging and transport, in the context of a phased approach to disposal; under the letter of comfort (LOC) system Nirex provides industry with guidance on their ILW waste packaging proposals;**

- maintain the UK national waste inventory in partnership with DEFRA; and
- conduct communications/education activities on nuclear waste issues based on the principles of transparency and accountability.

Nirex's ordinary shareholders are BNFL (75.5%), UKAEA (16.1%) and British Energy (8.4%). Though not a shareholder MoD contributes to Nirex funding. The Secretary of State for Trade and Industry has a special share, which confers amongst other powers the right to appoint two Directors. Sir Ken Jackson is Nirex's chairman, appointed by the Board.

managing waste while the longer term programme is being decided and implemented.

7.25 The consultation ended on 12 March. The UK Government and the devolved administrations are considering the outcomes and will announce their proposed next steps shortly.

■ NIREX

7.26 Nirex currently provides radioactive waste management services to the nuclear industry, including the ordinary shareholders – BNFL, UKAEA and British Energy - who own it and provide most of its finance.

■ Recent Developments

7.27 Recent developments affect the policy environment and institutional framework in which Nirex operates.

7.28 First, **Managing Radioactive Waste Safely** asked whether specific bodies should be set up to conduct an information gathering /consultation process on a long term solution for radioactive waste management, and to act as a centre for research expertise; and whether Nirex could fill either role in its existing, or a

modified, form. Nirex and its shareholders have put their views on these issues in their responses to DEFRA.

7.29 Second, once it is set up the LMA will be responsible for the bulk of UK radioactive wastes and, under the existing structural arrangements for Nirex, provide the bulk of its funding. This raises questions about the nature of the relationship between the LMA and Nirex in the context of the development of new institutional arrangements for long term waste management.

7.30 These developments could fundamentally change the landscape around Nirex. The time is right, therefore, for the company and its shareholders to assess how they might respond to these changes and examine the functions the company undertakes. In addition to the views of Nirex and its shareholders, there are emerging views in responses to **Managing Radioactive Waste Safely** which need to be taken into account.

7.31 About 20% of respondents to **Managing Radioactive Waste Safely** commented on Nirex. Contrasting views were received. Some argued that Nirex should be reformed or reconstituted, for example to cover all forms of radioactive wastes. While some wanted Nirex to be independent of the nuclear industry others argued for abolition. Some favoured replacing Nirex with a new body while ensuring its expertise was not lost. Others wanted its work audited in future to ensure it was rigorous and transparent.

■ Options for the Future

7.32 Nirex has built up an unrivalled expertise in geological disposal options for radioactive materials in the UK which it is important to safeguard. It is also clear that some of Nirex's existing activities, in particular the advice it provides to waste producers on packaging and transport, are valued by both the industry and its safety and environmental regulators. These activities need to continue in the interim period.

7.33 There also appears to be an emerging consensus, across Nirex, the nuclear industry and other stakeholders and interested parties, that leaving current arrangements unchanged is simply not an option. This is borne out by the results of Nirex's own work in consulting stakeholders and the wider public on the lessons to be learned from the rock characterisation facility process. Nirex itself recognises that its "historical baggage" means that a new direction is required and argues that the ownership link with the nuclear industry needs to be broken as a pre-requisite for progress.

7.34 The Government believes that, in the short-term, the key objective for Nirex and its shareholders should be to focus on maintaining the core activities and expertise as described in paragraph 7.32. To this end, Nirex and its shareholders have already put in place arrangements which place their relationship on a contractual basis under which Nirex will deliver services rather than rely on the shareholders for loan funding.

7.35 Turning to the longer term, the institutional arrangements which flow from the Government's radioactive waste policy review process will clearly be the main determinant of what services Nirex provides in the future.

7.36 It is in this context that the question of the independence of Nirex (or successor bodies) from the industry should be addressed. The UK Government sees the arguments in favour of independence but considers it important that those funding Nirex (or successor bodies) now and in the future are satisfied that they continue to get value for money for expenditure undertaken on their behalf. The relationship between Nirex and the LMA will be considered as part of the UK wide process for developing proposals for long term management of radioactive waste. Views will be invited on these proposals in due course.

■ Decommissioning Policy

7.37 Current policy on decommissioning was laid down in a 1995 White Paper (Cm2919) reflecting the outcome of the 1994 Nuclear Policy Review. The way in which the policy described in Cm2919 has been implemented in practice by licensees and regulators was summarised in **Managing Radioactive Waste Safely**. Some possible shortcomings were described in the conclusions of the Quinquennial review of the UKAEA published in November 2001.

7.38 In summary, the key points of the policy as set out in Cm2919 are:

- decommissioning should progressively reduce hazard within a framework that ensures safety of workers and the public and protects the environment;
- decommissioning should be undertaken as soon as is reasonably practicable, taking account of all relevant factors (including the type of facility, the nature of its radioactive inventory, cost and overall financial, economic and resource issues);
- nuclear licensees should draw up decommissioning strategies acceptable to the regulators and discussed with them in advance, including justification of the timetables proposed; these strategies should be prepared on a case by case basis for each facility, be seen as living documents and reviewed quinquennially by the HSE consulting with the EA or SEPA as appropriate; and
- privatised nuclear operators (British Energy) should put in place segregated funds for decommissioning while the HSE's periodic reviews of decommissioning strategies for those in the public sector should consider, amongst other things, financial provisions.

7.39 Views on this general approach to decommissioning were sought by **Managing Radioactive Waste Safely**. Of those respondents (around one in three) who mentioned decommissioning, a third, including the nuclear

industry and the regulators were broadly satisfied with the current arrangements. Many noted that decisions on decommissioning were related to decisions on managing radioactive waste in the longer term. Around one in ten mentioned the importance of assessing decommissioning projects on a case-by-case basis, while others said that all existing reactors should be shut down immediately and decommissioned rapidly (within 30 years) with waste stored on site in perpetuity. On funding, there was a fairly common view that waste producers (and specifically not taxpayers) should cover the costs.

7.40 While many respondents expressed broad satisfaction with the current position on decommissioning policy, others raised issues which require further examination. In addition, it is now some seven years since Cm 2919 was published. It was written against the background of proposals to privatise nuclear power stations in 1995-96 and was not intended to reflect the full range of decommissioning challenges which bodies like the LMA will have to deal with.

7.41 The Government believes, therefore, that now is a good time to examine the current policy on decommissioning and whether there is value, for the industry, regulators and the public more widely, in addressing uncertainties in its application and interpretation.

KEY NOTE

7.43 *The UK Government and devolved administrations would welcome views on these issues and those raised by “Managing Radioactive Waste Safely” on the need for a more comprehensive statement of decommissioning policy. This should serve to guide the LMA and others with responsibility for decommissioning. Work will be taken forward in the context of the Government’s response to comments on “Managing Radioactive Waste Safely” and in consultation with the industry and other interested parties as appropriate.*

7.42 Issues include :

- what is meant by decommissioning being carried out “as soon as reasonably practicable”;
- should whole site remediation plans (such as the Dounreay Site Restoration Plan) be developed for all sites;
- the best way of ensuring review and audit of decommissioning strategies on the basis of independent advice and consultation, and the frequency of these reviews;
- the need for advances in decommissioning practices to be shared across the nuclear industry as new participants enter the market place and with the nuclear regulators;
- confirmation that safe, timely and effective decommissioning is fully consistent with UK obligations under OSPAR;
- clarification of some particular points in Cm2919: for example, what a ‘soundly based’ decommissioning strategy should contain; the criteria against which its adequacy should be addressed; and the end point which it is intended to achieve; and
- the new institutional arrangements associated with the LMA and described elsewhere in this White Paper, for example, funding arrangements for public sector civil nuclear liabilities.

8

Security and the UKAEA Constabulary

CHAPTER 8

8.1 This chapter explains the basis for the nuclear security regulatory regime and sets out the Government's proposals for reconstituting the UKAEA Constabulary (AEAC) as a standalone force independent of the nuclear industry.

8.2 Effective security regulation is vital to combat the terrorist and proliferation threats to which the nuclear industry is exposed. The need for this was heavily underlined by the events of 11 September. It is not the Government's policy to disclose details of security measures at civil nuclear sites but it is determined to ensure that the UK's regulatory regime remains effective and robust.

Reform of the Nuclear Security Regulatory Regime

8.3 The UK's civil nuclear security regulatory regime seeks to counter the risks of sabotage of nuclear sites and theft of nuclear material by requiring operators to ensure they are properly protected. A number of sites, including the most sensitive, are protected by the AEAC which provides an armed response capability against terrorist attack.

8.4 Over the past three years, the Government has taken forward a major programme of modernisation and reinforcement of the regulatory regime. In October 2000, the Office for Civil Nuclear Security (OCNS), the Government's security regulator headed by the Director of Civil Nuclear Security (DCNS), was transferred from UKAEA to DTI, to make it fully independent of the industry it regulates. It retains broad autonomy within DTI, and is supported by an Advisory Board which provides strategic advice. Transparency and

accountability have been strengthened through publication by the DCNS of an annual report. His first report was placed in the libraries of both Houses on 11 June and is available on the DTI website at <http://www.2.dti.gov.uk/nid/index.htm>.

8.5 The Anti-terrorism, Crime and Security Act 2001 extended the jurisdiction of the AEAC, strengthened sanctions against the disclosure of sensitive nuclear information and technology and brought in powers for reform of the civil nuclear security regime through secondary legislation. Public consultation on draft regulations to achieve this will begin very shortly, with a view to implementation towards the end of this year. The consultation document and draft regulations will be placed on the DTI website.

8.6 The new regulations will bring in a comprehensive, consistent and transparent regime, rationalising and where necessary strengthening current obligations. The core requirement is for nuclear operators to submit a Security Plan to OCNS for approval and to implement those plans once approved. The main new obligation is the introduction of direct regulation of transporters of nuclear material to replace the current system of indirect regulation through operators' transport contracts. This will strengthen the protection of nuclear material in course of transport. Other aspects of current OCNS regulation, including site inspections and security vetting, will remain broadly unchanged.

8.7 While security and safety precautions at nuclear sites are kept under regular review, the terrorist attacks in the United States on 11 September led to a thorough review of the implications for the civil nuclear industry in the

UK. OCNS and the Health and Safety Executive, worked closely together to review all relevant precautions. Though there were already stringent security measures in place, additional security requirements were introduced and others strengthened around all civil nuclear sites and the RAF also reviewed its readiness in support of the air defence of the UK. Steps have been taken since 11 September to review, reinforce and test emergency planning arrangements at civil nuclear sites to ensure that they are robust and appropriate.

■ The UKAEA Constabulary

8.8 The AEAC protects a number of civil nuclear sites - Sellafield, Dounreay, Chapelcross, Harwell, Capenhurst, Springfields and Winfrith - and escorts sensitive nuclear material in course of transport. It is an integral part of the nuclear security regulatory framework, and works within security parameters set by the DCNS. The force operates in Scotland under reserved powers.

8.9 The events of 11 September underlined the seriousness and unpredictability of the terrorist threat, and the consequent need for a specialist, armed police force familiar with the complex environment inside nuclear sites and able to provide an immediate response. The Government is committed to maintaining the operational efficiency and effectiveness of the AEAC and to ensuring that it operates within a modern framework of accountability consistent with that which applies to police forces generally.

■ Proposals for Change

8.10 The AEAC was established under the Atomic Energy Authority Act 1954 with a statutory remit to protect nuclear material on specified sites and currently forms part of UKAEA. It is about 570 strong and fully funded by the nuclear site licensees whose sites it

polices. It is overseen by a non-statutory Police Authority composed of representatives of the site licensees involved, the DCNS, an expert police adviser and another representative of DTI. The Authority has no legal authority and is only indirectly accountable to the Secretary of State.

8.11 The Government intends to separate AEAC from UKAEA and reconstitute it as a standalone force in order to make it independent of the nuclear industry. It also proposes to improve its governance arrangements through establishing a statutory Police Authority with an independent element, to strengthen accountability and transparency.

8.12 The key objectives of the proposed changes are:

- to ensure the continued efficient and effective operation of the AEAC, and in particular the effective discharge of its security role, in line with security standards and objectives set by the DCNS on behalf of the Secretary of State;
- to provide improved governance for the force through a statutory Police Authority accountable to the Secretary of State;
- to provide increased openness and transparency. This will be achieved both by legislative means, e.g. through a statutory requirement for both the Police Authority and Chief Constable to publish annual reports, putting current practice on a statutory basis, and administratively, through holding a number of Police Authority meetings on an open basis; and
- to provide a statutory framework appropriate to the needs of a modern police force.

8.13 Where appropriate, the proposals reflect existing police legislation tailored to the circumstances of AEAC. In a number of areas, however, necessary aspects of police practice will be adopted through non-statutory means. For example the force will continue its present practice of adopting administratively the regulations made under Section 50 of the Police Act 1996, which underpin broad areas of police practice.

■ The New Framework

8.14 Under the new arrangements:

- the **Secretary of State** will appoint the Police Authority and set the regulatory framework and security standards within which the Constabulary operates (acting on security matters through the DCNS);
- the **Police Authority** will have oversight of, and thus overall responsibility for, the force; and
- the **Chief Constable** will be responsible for controlling the force and its performance.

■ The Secretary of State

8.15 The security requirements set by the Secretary of State through the DCNS underpin both the nuclear security regulatory regime generally and the AEAC as one of its key components. These reflect the DCNS' assessment of security threats and international security commitments.

8.16 The new arrangements must maintain the Secretary of State's ability to specify to the Police Authority the security standards the AEAC is required to meet and verify compliance with them. These include prescribing the sites the AEAC are to protect, minimum police numbers, security duties and deployments at these sites and other aspects of policing bearing on the force's security role. Powers for the Secretary of State to set security objectives (and

other objectives that may be appropriate) will be included in the implementing legislation.

8.17 While this should normally be sufficient, the Bill will also include powers of direction, for use on a fallback basis, enabling the Secretary of State to require the Police Authority to remedy any shortcoming in the AEAC's or its own performance, in relation to security or otherwise. It is expected such a power would be used rarely.

8.18 Other responsibilities of the Secretary of State will include:

- **appointing the chair and members of the Police Authority;**
- **approving the appointment of the Chief and Deputy Chief Constables);**
- **exercising her powers to promote the efficiency and effectiveness of the force; and**
- **setting the financial framework for the Police Authority and force.**

8.19 The Secretary of State will also have a range of 'safety net' powers, paralleling those in other police legislation, intended to address deficiencies in the force or in the performance of its senior officers. These will include powers to approve a recommendation from the Police Authority to seek the resignation or retirement of the Chief and Deputy Chief Constables (or suspend the Chief Constable) in the interests of efficiency, and to require the Police Authority to exercise these powers; power to issue directions requiring the Police Authority to take remedial measures following an adverse report from Her Majesty's Inspectors of Constabulary (HMIC); and power to seek a report from the Chief Constable on any policing matter.

■ The Police Authority

8.20 The Police Authority will be accountable to the Secretary of State and have overall supervisory responsibility for the force and for

ensuring that it carries out its role effectively. Its establishment will bring the force's governance arrangements more closely into line with those generally applying to police forces, providing improved transparency and accountability, while retaining due regard for necessary security constraints.

Composition of the Police Authority

8.21 The implementing legislation will provide for a minimum of seven and a maximum of thirteen members. While the legislation will not prescribe the detailed composition of the Authority, the intention is to achieve a balanced membership containing a clear independent element, including the Chair, whilst retaining the expertise of the site licensees whose sites the AEAC protects. All appointments will be made by the Secretary of State.

8.22 The initial membership of the Authority will comprise an independent Chair, two independent members and four representatives of the site licensees. The ceiling of thirteen will allow for increases in the number of licensees as a result of the new arrangements for liabilities management outlined in Chapter 3 and a comparable increase in the number of independent members with the site licensees always having a majority of one.

8.23 The Government considered the case for appointing a majority of independent members, to accord more closely with practice in other police authorities, but concluded that the special circumstances of the AEAC justify the proposed majority for site licensees. They are legally responsible for the safety and security of their sites and necessarily have a critical interest in the AEAC's performance. They also fund 100% of its costs. Conversely, the force's specialised role, limited to the protection of nuclear sites and nuclear material, means that, relative to other police forces, it has minimal contact with general public. Whilst it is essential that the public should have confidence in the AEAC's

ability to carry out its role, the need for local public representation on the Police Authority is therefore less strong.

8.24 The Chair and the independent members will be appointed following OCPA public appointments principles. The current Authority has benefited from the membership of a high calibre expert police adviser and it is proposed that one of the independents should have this background. The representatives of the nuclear site licensees would be nominated by their companies and appointed ex officio. Detailed terms of appointment would be settled administratively. Given the sensitive nature of the AEAC's work, appointments would need to be subject to vetting clearance.

8.25 In view of his role in setting standards for the AEAC's performance through the objectives he sets for the Police Authority, it would not be appropriate for the DCNS to continue to be a member. But it will be valuable to the Authority for him to attend meetings to provide advice and raise any concerns about the Constabulary's security performance. It is likely too to be useful for another DTI representative to continue to attend in view of DTI's complementary responsibilities.

Role and Functions of Police Authority

8.26 The Police Authority's core task will be to maintain an efficient and effective force; set strategy, objectives and performance targets for the force, reflecting those set by the Secretary of State, including security objectives; and hold the Chief Constable to account. It will set the annual budget and follow normal corporate governance principles, including preparation of audited accounts and ensuring a sound system of internal control. It will publish an annual report.

8.27 Effective disciplines will be put in place to ensure a proper level of resourcing for the force and counterbalance any pressures that might

KEY POWERS AND DUTIES OF THE POLICE AUTHORITY

- A general duty to maintain an efficient and effective force.
- Setting strategy, objectives and performance targets for the force, reflecting those set by the Secretary of State, including security objectives. The Police Authority should also have regard to the policing objectives and performance indicators set by the Home Secretary for police forces generally, though most of these will not be directly relevant to AEAC's specialist role.
- Issuing an annual Policing Plan including the annual budget and a three-year strategy plan every three years.
- Exercising financial management duties, including maintenance and audit of accounts.
- Publishing an annual report and submitting it to the Secretary of State.
- Appointing the Clerk to the Authority.
- Employing members of the force and civilian staff.
- Appointing the Chief Constable and Deputy Chief Constable, subject to the approval of the Secretary of State.
- Power to seek the retirement or resignation of Chief Constable and Deputy Chief Constable, or to suspend the Chief Constable, subject to approval of the Secretary of State, in the interests of efficiency.
- Nominating constables (ie to putting forward new members to be sworn in by a Justice of the Peace as officers with police powers).
- Approving collaborative arrangements with other forces, subject to consultation with the Secretary of State (for example to set up joint training facilities with another force).
- Liability for the wrongful acts of force members and powers to pay out sums in settlement.

arise to focus on cost reduction to the detriment of police numbers and the effectiveness of the force. The Authority will be under an obligation to ensure that the Constabulary meets prescribed security standards and procedures and to resource the force accordingly. In addition, the Secretary of State will have broad and flexible powers to issue directions to the Police Authority which, should the need arise, could be used to ensure that the budget is set at a satisfactory level.

8.28 The Police Authority will act as the employer both of police and civilian staff. It will be a body corporate, entering into contracts and holding assets. It will have responsibility, made clear on the face of the statute, for the wrongful

acts of force members and for meeting any successful claims made.

■ Financial Responsibilities

8.29 The Police Authority will be accountable to the Secretary of State, within a financial framework determined by the Secretary of State comparable to that applying to Non-Departmental Public Bodies. The Police Authority will need to assure itself that effective financial controls are in place and that value for money is being secured. Specific statutory powers and duties, including provisions for loans and grants, are set out in the box [right].

FUNDING OF THE POLICE AUTHORITY

The Implementing Legislation Will:

- include powers for the Police Authority to make charges to recover the AEAC's costs and to borrow, both on an overdraft basis to smooth out short term cash flows and from the DTI. The borrowing powers would be supported by guarantees from the Secretary of State;
- give the Secretary of State powers to make grants to the Police Authority and to determine the financial duties of the Authority.
- require the Police Authority to keep proper accounting records and prepare annual accounts in the form prescribed by the Secretary of State;
- require the Police Authority's accounts to be audited by the C&AG, submitted to the Secretary of State and be laid before Parliament

The loans provisions are intended to fund larger capital items, such as vehicles, for which funding is currently provided by UKAEA as the AEAC's 'owner'. Repayments would be made through charges to the nuclear operators on a formula linked to depreciation over the life of the asset concerned. The provision for the Secretary of State to make grants is intended as a safety net if the operator funding mechanism failed.

8.30 As now, the force will be fully funded by the nuclear site licensees whose sites it protects. The implementing legislation will

contain broadly couched powers for the Police Authority to make charges to recover the AEAC's costs, leaving the detailed arrangements for cost recovery to be defined in non-statutory agreements between the Police Authority and the nuclear operators.

8.31 The legislative provisions will be supported by a detailed Financial Memorandum between the Police Authority and the DTI setting out the financial framework in full, establishing financial rules and guidelines and providing for financial accountability. The Chief Constable is expected to act as Accounting Officer.

■ Meetings

8.32 Open meetings are the norm for Police Authorities of Home Office and Scottish Police Service forces in order to provide the local community with information and reassurance about policing in the area. The security sensitivity of the matters discussed in the AEAC's case however markedly limits the scope for this. The present Police Authority holds closed meetings only. It is proposed that while most meetings should remain closed, the Police Authority should hold an occasional meeting open to the public once or twice a year aiming to give a general account of the AEAC's work.

■ The Chief Constable

8.33 The Chief Constable is responsible for the management of the force, and has autonomy for operational issues. He is accountable to the Police Authority for the performance of the force overall, and for implementing the three year and annual plans approved by the Police Authority and the specific objectives they contain. He has responsibility for financial and personnel management, strategic planning and other administrative functions. It is expected that the DCNS and the Chief Constable will maintain close working relationships. As indicated in 8.31, the Chief Constable will also be the Accounting Officer responsible to

Parliament, in conjunction with DTI's Accounting Officer (the Permanent Secretary) for the proper and cost effective use of the force's funds.

8.34 The implementing legislation will contain provisions giving the Chief Constable:

- the power of control and direction of the force (paralleling similar provisions in other police legislation); and
- the duty to prepare an annual report to the Police Authority and publish the report.

Implementation

8.35 The separation of the AEAC from UKAEA will involve the transfer of its assets, liabilities and police and civilian staff to the new Police Authority. Statutory provisions which could be used for this purpose already exist in the Atomic Energy Authority Act 1995. Staff terms and conditions will be fully protected on transfer in accordance with the requirements of TUPE. The implementing legislation will also make provision for employees of the Police Authority, current and future, to belong to the UKAEA Combined Pension Scheme. Existing staff will therefore retain their membership of the Scheme on current terms.

8.36 The implementing legislation will also include a number of provisions designed to improve the operation of the force.

These will:

- provide for the appointment of officers as constables rather than special constables as at present so as to better reflect their status as full-time members of a professional force with a capability for armed response;
- in line with the position of Home Office and Scottish Police Service forces, prohibit

members of the force belonging to a trade union and make it an offence for anyone to induce members of the force to withhold their services;

- give statutory recognition to the Constabulary's staff representative body, the AEAC Police Federation, again bringing the force into line with Home Office and Scottish Police Service forces; and
- require inspection of the force by Her Majesty's Inspectors of Constabulary, replacing the current arrangement under which HMIC inspections are carried out on a voluntary basis. AEAC protects sites in England and Scotland and a single process of inspection is desirable rather than separate inspection by HMIC (England & Wales) and HMIC (Scotland). This will be achieved by administrative agreement between the inspectorates.

8.37 The force's jurisdiction, which was recently extended by the Anti-Terrorism, Crime and Security Bill 2001, will be unchanged save for two minor adjustments. The first of these will remove its jurisdiction on premises and land in the possession or control of UKAEA (by virtue of Schedule 3 to the Atomic Energy Authority Act 1954) and of certain nuclear operators, as specified in Schedule 1 of the Nuclear Installations Act 1965 and s19 of the Atomic Energy Authority Act 1971, other than on licensed nuclear sites and the area within a 5km radius. There is no longer any need for the force to protect these areas. The second will remove the force's jurisdiction to exercise police powers to retrieve site operators' property within a 15 mile radius of their sites. This is no longer relevant to the force's core duties.

8.38 Consideration is also being given to including provision for a new category of civilian support officer to undertake searches of people and vehicles in or just outside the sites

the AEAC protects. The purpose would be to free police manpower for more demanding tasks. Such staff would be specially trained, exercise limited and specified powers, and operate under the Chief Constable's control. This provision would be included only if Parliament has previously accorded comparable powers to other police forces.

KEY NOTE

8.39 *The Government would welcome comments, both of principle and detail, on the proposals set out above for reconstitution of the AEAC as a standalone force overseen by a statutory Police Authority.*

9

International Nuclear Safety and Global Clean up

CHAPTER 9

9.1 This chapter deals with the UK contribution to international efforts to tackle the nuclear legacy in the former Soviet Union (FSU) and, more generally, with the scale of the opportunities potentially open to UK firms in nuclear clean up worldwide.

The Nuclear Legacy and the FSU

9.2 The UK and other western countries are by no means alone in having to address the nuclear legacy of the past 50 years. In particular, the nuclear legacy of the FSU is one of the most important challenges facing the international community. The considerable environmental, security and proliferation threats it presents do not respect international boundaries and pose a direct threat to the UK and UK interests.

9.3 Cleaning up the nuclear legacy in the FSU will cost hundreds of billions of pounds, and will take several decades to address. The sheer scale of the challenge is such that it can only be tackled by the international community working together: including FSU countries making a financial contribution themselves as their economies grow. It will take a number of years before most of the FSU countries can provide such funds themselves. However, in order to reduce these significant environmental, security and proliferation threats in an acceptable timescale, action is required now. The events of 11 September give added urgency to the need for the international community to work closer together to reduce the proliferation threat from nuclear material, of whatever form.

9.4 The UK is, and intends to remain at the centre of the international effort to address nuclear legacy issues in the FSU. The UK

therefore has already entered into a number of international commitments, e.g. through the G7, the EU and the European Bank of Reconstruction and Development, to assist the FSU with both financial and, where appropriate, technical assistance. It is also preparing a portfolio of bilateral and multilateral collaboration and assistance programmes with countries such as the US, Norway and Sweden, to ensure that high priority areas of concern can be tackled without delay.

9.5 UK activity is channelled through a budget managed by the DTI in consultation with the Foreign and Commonwealth Office, the MOD, other Government Departments and our Embassies in the FSU. The total budget allocated in the 2000 Spending Review for the three years to March 2004 is £84 million. An Interdepartmental Advisory Committee chaired by a senior DTI official oversees the FSU Programme

9.6 The UK programme is focused on three areas:

- improving operational safety by encouraging FSU states to adopt western standards of safety and regulation for their operational plant and providing systems training and expertise;
- improving the security of nuclear materials and preventing the spread of nuclear weapons expertise. Key objectives here are the introduction of improved nuclear materials accounting and control arrangements at Russian processing facilities and working with international partners to secure the safe disposition of plutonium declared surplus to Russian defence requirements. Programmes are

also aimed at refocusing scientific and technical know how from weapons development to sustainable non-weapons industries to prevent the spread of nuclear weapons expertise to countries of proliferation concern; and

- mitigation of the legacy by supporting work at Chernobyl (covering the Shelter, decommissioning of the plant, re-training and new infrastructure projects), the decommissioning of redundant nuclear submarines and a wide range of other projects to clean up wastes and make sites safe.

Information about the UK programme, including profiles of all funded projects is available from the DTI website at www.dti.gov.uk/nid/fsu

9.7 Although not the prime objective of UK support, this new programme should offer

considerable business opportunities to UK industry with specialist nuclear clean up and project management expertise to work on a number of the projects over the next few years. As international effort grows and the FSU countries themselves take projects forward the scope for further work should grow substantially – a growing market worth several billion pounds over the next decade and beyond (some £1 billion alone is expected to be required to clean up Chernobyl and decommission the power plant). The UK programme is already helping to foster closer working relationships with Russia and other FSU countries. It should also enhance the scope for pursuing a longer term policy of encouraging overall economic, bureaucratic and energy market reform in the FSU.

PLUTONIUM DISPOSITION

At the Okinawa summit in July 2000 the UK announced a contribution of £70 million over 10 years to deal with the disposition of weapons grade plutonium declared surplus to defence requirements by the Russian Federation. The current UK programme (2001-2004) includes £20 million of the total UK commitment to the Russian disposition effort.

This money is to be spent in support of the US-Russian disposition programme, which arose from their September 2000 agreement on “management and disposition of plutonium designated as no longer required for defence purposes”. This agreement obliges both sides to dispose of no less than 34 metric tonnes of weapons grade plutonium removed from weapons programmes.

Since the Okinawa summit a G8 experts group has been working to develop an international financing plan for plutonium disposition in Russia based on a detailed project plan, and a multilateral framework to coordinate this cooperation.

The project plan so far developed envisages the construction of industrial scale facilities in Russia to convert 34 tonnes of weapons grade plutonium into mixed oxide fuel to be irradiated in civil nuclear reactors.

The estimated cost of the Russian disposition programme is approximately \$2 billion spread over an estimated 25 years. International financial commitments currently amount to about \$600 million with further commitments from G8 and non G8 countries expected in the near future.

It is intended that a new international organisation will be created to administer the Russian disposition programme and that a new legal framework agreement will be negotiated to govern its operation.

The UK continues to play an important role in the ongoing negotiations to further establish the details of the programme.

**Key FSU programme milestones
achieved during 2001-02**

- **Identifying and negotiating a portfolio of bilateral and multilateral projects for UK support focused on NW Russia associated with spent nuclear fuel and decommissioned nuclear submarines.**
- **Developing co-ordinated strategies for future work to prevent the transfer of nuclear weapons expertise in Russia to countries of proliferation concern (focus on closed cities in Russia) and addressing social impact issues associated with nuclear power plant closure.**
- **Initiated 34 projects worth some £2.5 million in 8 beneficiary countries, to enhance power plant nuclear safety.**
- **Contributed some £2.9 million to aid the closure of early Soviet design reactors in EU accession candidate countries (e.g. Lithuania, Bulgaria and Slovakia).**
- **Agreement with our G7 partners on a set of core principles that will underpin cooperation with Russia at the G8 level and pave the way for a possible G8 group on Nuclear Safety.**

9.10 The LMA's focus will be firmly on clean up in the UK. However, the development of a more competitive market for clean up and a stronger nuclear skills base can only increase the competitiveness of UK firms overseas. Lessons learned from driving forward clean up in the UK, and techniques, processes and management strategies developed for that purpose, are also likely to be transferable to overseas programmes.

9.11 In delivering its objectives, the LMA can therefore be a catalyst for change worldwide. Just as the UK led the world in the development of nuclear technology we can lead the world in dealing with the legacy it has left behind.

■ Global Clean Up

9.8 The FSU is one part of a global clean up market which will be created over the next 30 years as the first generation of nuclear reactors and associated facilities come to the end of their operational lives.

9.9 Through the DTI, FCO and British Trade International, the Government will help UK firms to exploit the opportunities on offer. Improving the regulatory framework through the revised Paris and Brussels Conventions represents a major step in that direction. Once ratified, the new Conventions will allow the UK to extend third party nuclear liability treaty relations worldwide, thereby making safety and clean up work more attractive to UK firms.

SUBMARINE DECOMMISSIONING

The UK is proposing to fund the complete dismantling of an early generation Russia nuclear submarine. This will probably be a so-called Victor class boat, most of which have laid-up for decommissioning but none of which have been dismantled so far. A number of the boats are in poor condition, kept afloat only through considerable effort, and require speedy dismantling. Of particular concern is the fact that a number still have their spent nuclear fuel loaded in their reactors.

The project will provide for a model plan for the dismantling by a major Russian naval shipyard, Zvezdochka yard, of a submarine that has been defuelled. This model plan, based on actual experience, will assist Russian efforts in further, safe dismantling of early generation submarines. It will also contribute to Russia's management of the disposal of their decommissioned submarine fleet, including the spent nuclear fuel.

The project is expected to take about 18 months to complete and will cost in total some \$4m.



