BNFL National Stakeholder Dialogue

Diversification Opportunities at BNFL and in the Local Economy: *Joint Fact Finding (JFF) Study – Final Report*

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FINAL REPORT

BNFL National Stakeholder Dialogue

Diversification Opportunities at BNFL and in the Local Economy: *Joint Fact Finding (JFF) Study*

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1 INTRODUCTION

The BNFL National Stakeholder Dialogue is a process of structured and managed discussions between stakeholders from over 70 organisations, including BNFL. It aims to 'inform BNFLs decision making processes on the improvement of their environmental performance in the context of wider business development'. BNFL sponsor the Dialogue process, providing resources for meetings to be held and research to be carried out, and BNFL representatives participate in meetings in the same way as stakeholders from other organisations. However, the process is not convened by BNFL; the Environment Council, an independent charity, acts as independent convenor and provides process design advice, facilitates the meetings and provides a secretariat to the stakeholders.

The BNFL National Stakeholder Dialogue process started in 1998 and has covered a wide range of topics including the management of discharges, waste, spent fuel, plutonium, security and business futures for BNFL and West Cumbria. Consensus reports have been released on all of these topics(1).

This report presents the findings of a Joint Fact Finding (JFF) study of diversification opportunities in BNFL and West Cumbria. It was carried out by a representative group of stakeholders from the Dialogue. It follows on from a scoping study completed in October 2003. The term JFF reflects the involvement of members of the Diversification Steering Group in the meetings and consultations which have informed this study. ERM have provided support to the Steering Group in these meetings and in drafting this report.

The scoping study identified three types of diversification as of particular importance to BNFL and the local economy:

- **direct diversification**: in which a company encourages the exploitation of technology, IPR and other assets to develop non core businesses;

- **less direct diversification** in which a company supports employees in establishing new businesses and suppliers in developing new products and services for existing and new customers and markets; and

- **area diversification** in which a company supports local regeneration and economic development initiatives.

There are overlaps between these three forms of diversification and they are mostly undertaken in partnership with other companies and organisations. This means that when the operating environment for a company is changing dramatically, as it is for BNFL, then it is important to ensure these partners are engaged in identifying ways in which diversification activities continue to

(1) Reports from the Dialogue process can be found at www.the-environment-council.org.uk

develop in the future. The two main changes which will have an impact on diversification are:

- the likely decline in employment at the Sellafield site, which is projected to be particularly steep at the start of the next decade combined with the long lead times for local economic development to prove effective; and

- the potential impact of the proposed changes in the structure of BNFL and nuclear industry on the level of both local economic and commercial diversification activities.

The scoping study recommended that the JFF study should be a collaborative exercise involving members of the Business Futures Working Group (BFWG) of the BNFL National Stakeholder Dialogue in addressing the key issues identified in the scoping study with consultancy support where required. *Box 1.1* sets out the main issues identified in the scoping report for each type of diversification.

Box 1.1 Issues for JFF Study on Diversification

Direct Diversification

- Identifying optimal arrangements for exploiting existing IPR
- Exploring feasibility of a non-carbon energy cluster in the North West
- Learning lessons from other companies
- Establishing mechanisms for exploiting future technologies

Area Diversification

- Establishing and ensuring the level of support for local enterprise and economic development is maintained
- Clarifying responsibilities for future area based initiatives
- Establishing the principle of including support for enterprise and economic development is included in contractual arrangements

Less Direct Diversification

- Revitalising employee Business Support Services (eg New Horizons Scheme)
- Establishing the scope for further supplier initiatives

After initial consideration of the issues BFWG put forward recommendations that were agreed by the Main Group of the BNFL National Stakeholder Dialogue to:

- Authorise the BFWG to ask ERM in the context of the socio-economic review to give guidance on what a study should cover and on its potential resource implications, and

- subject to Main Group approval and available resources, the BFWG would then initiate and steer a Joint Fact Finding (JFF) study to be reported back to a future Main Group meeting.

The aims of the JFF as set out in the scoping study were to:

- identify the optimal arrangements for commercial exploitation of existing and future IPR and in particular investigating whether there is a need for a strategic commercial partner(s) and whether energy based technologies developed by BNFL could provide a component of a non-carbon energy economy cluster in the North West;

- clarify future responsibilities for area based initiatives and how these will be integrated with other programmes supporting local economic development;

- ensure that the requirement to develop less direct forms of diversification are included in the contracts being developed by the NDA; and

- learn lessons from and exploring the transferability of the way in which other organisations and companies have responded to similar situations.

The JFF has been a collaborative exercise and the findings are based on:

- interviews and literature reviews conducted as part of the scoping study;
- further discussions with relevant BNFL managers to highlight particularly promising opportunities; and
- interviews with companies and organisations in West Cumbria to understand current and future opportunities and constraints.

The sections that follow:

- discuss different definitions and types of diversification and identify those which have most relevance in this context (*section 2*);

- briefly describe BNFL's economic significance within West Cumbria, the changes taking place within the nuclear industry and potential implications for diversification as part of community and economic development (*section 3*);

- assess potential opportunities and the actions required to further exploit them (*section 4*); and

- set out the main conclusions and recommendations arising from the study (*section 5*).

Appendix 1 lists organisations consulted and other forms of Stakeholder Engagement which have informed this report. We are grateful for the guidance and participation of the Steering Group, and to John Knox in particular for arranging and conducting part of the programme of consultations. *Appendix 2* briefly describes the diversification practices of other analogous companies.

The most **direct** form of diversification is where a company uses its existing resources to develop a new activity for either existing or new customers. This could be based on its technology, intellectual property rights (IPR), physical assets, employees' skills, finance or combinations thereof. Such activity may be undertaken either directly or in partnership with other companies and/ or organisations.

Less direct forms of diversification are those which involve working with:

- **suppliers** to enhance their capability to develop new products and services, or to sell to new customers;
- **employees** to assist them in bringing forward business ideas which could be exploited either within the company or as separate spin-offs; and
- **customers** to enhance their capability to sell on to existing or new customers.

Companies may also engage in **area diversification** by assisting business and economic development in areas in which they operate. They may, for example, contribute to business support services, venture capital funds and premises development (eg science parks) or advisory services (eg secondments to enterprise agencies).

The three types of diversification identified above (direct, less direct and area) have different levels of importance within West Cumbria and the BNFL National Stakeholder Dialogue. There is particular interest in those that contribute to or impact on:

- local and sub-regional economic development; and
- sustainable development in its widest sense.

Table 2.1 provides an indication of the potential impact of different types of diversification in relation to these objectives.

Table 2.1 Types of Diversification and Potential Impacts

Types of Diversification	Economic Development Impacts	Sustainable Development Impacts
Direct	◆◆	◆◆◆
Less Direct		
• supplier	◆◆	◆
• customer	◆	◆◆
• employee	◆◆	◆
Area	◆◆◆	◆◆
Key: ◆◆◆ major impact	◆◆significant impact	◆ limited impact

The table shows that:

- Direct diversification could have a significant impact on local economic development, as it is likely to take place in proximity to the source of skills and technology and in the case of energy related technologies could make a substantial contribution to sustainable development.

- Many of the suppliers to and customers of BNFL are specialist companies which operate in global markets. There is however also a local and largely dependent supply chain and hence less direct forms of diversification are of major importance to local economic development.

- For suppliers, dependence on BNFL may prove a disincentive to explore alternative business opportunities if sufficient work is being procured. For employees, the incentive to establish a new business is reduced by the comparatively favourable employment terms offered by BNFL. However although there is currently more pressure arising from changes taking place within the industry for both suppliers and employees to explore alternative business opportunities.

- Area diversification is a high priority in West Cumbria given the fragility of the economy. BNFL as a publicly owned company has been a major contributor to economic development initiatives. However, the changes currently taking place could alter the balance of responsibilities between the company and its successors and public agencies.

Companies may also diversify through **merger and acquisition** which may enhance a company's competitive position in a market or lead to cost reductions such activities are of limited relevance to this particular study and hence the sections which follow, are mainly concerned with direct, less direct and area diversification.

3 BNFL AND DIVESRIFICATION IN WEST CUMBRIA

3.1 INTRODUCTION

This section:

- briefly sets out the nuclear industry's importance in West Cumbria drawing on the main findings of the socio economic impact study;
- describes BNFL's support for diversification and economic development initiatives;
- summarises the changes currently taking place in the nuclear industry; and
- draws out the possible implications for future diversification and economic development.

3.2 THE NUCLEAR INDUSTRY IN WEST CUMBRIA

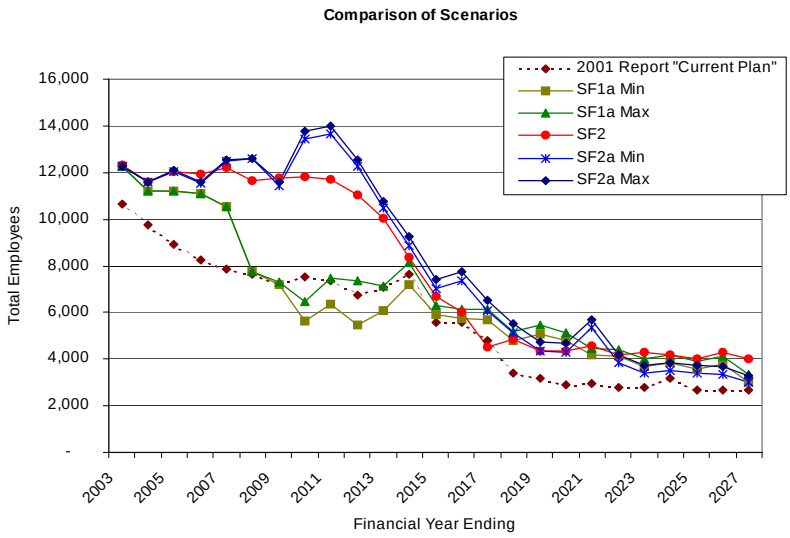
The nuclear industry is of critical importance to the economy of West Cumbria. The 2003 update of the *Socio-economic Study – West Cumbria* report clearly demonstrates the dependence of the area on BNFL employment and procurement. This update was based on BNFL's Business Plan dated 1st April 2003.

According to the report, some 12,000 jobs were located on the Sellafield site in 2003. Furthermore, modelling revealed that each five jobs on site created an additional one in local suppliers and other local businesses, leading to a total of 14,000 to 15,000 full time equivalent (FTE) jobs. This is set against a total estimated number of FTEs of 45,000 to 50,000 in West Cumbria as a whole. Therefore, BNFL Sellafield accounts, directly and indirectly, for approximately one third of the jobs in West Cumbria (with the balance being in other private companies and the public sector).

This dependence on Sellafield is particularly problematic given projected changes in employment on site. The two figures below summarise the challenges facing the area. *Figure 3.1* illustrates projected total employment on site at BNFL Sellafield to 2027. Employment is illustrated for a range of scenarios that have been considered by the BNFL National Stakeholder Dialogue (which are variants of the speed of closure and level of clean-up activity). The figure shows that whilst the historically high levels of employment on site are set to continue for a number of years, the outlook under all operating scenarios considered in the 2003 report is ultimately one of long-term decline. The 12,000 or so current jobs are therefore projected to decline to 3,000 to 4,000. This decline, which is at its most severe between

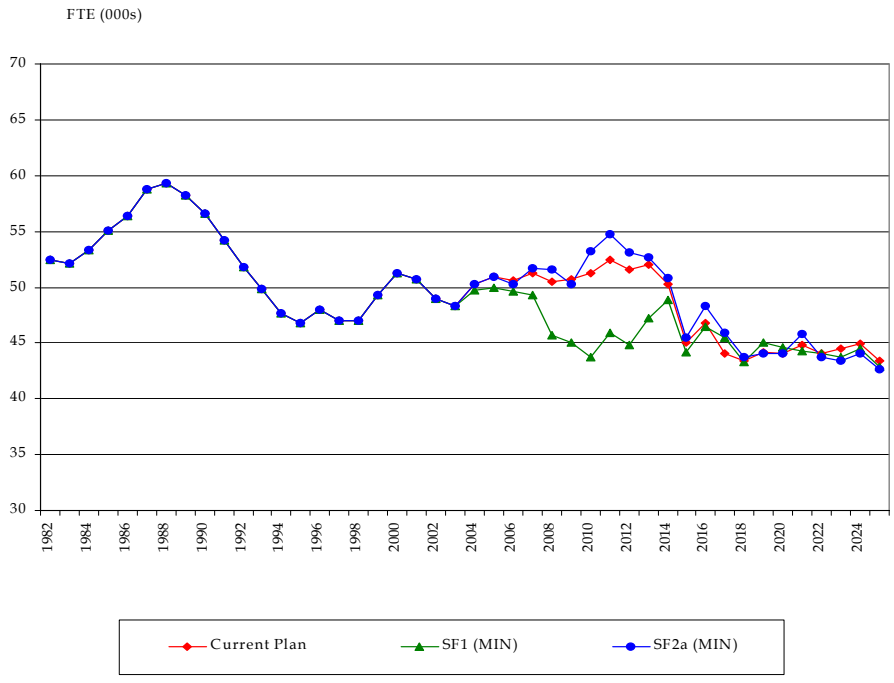
2011 and 2015, is largely the result of the various plants on site moving from a clean-up to a care and maintenance phase in their life-cycle. In the period up to 2011 an increase in clean-up and decontamination activity largely compensates for the decline in operational activity.

Figure 3.1 ***On-site Employment Under Each Scenario***



This decline in on-site employment will have significant knock-on effects in the local economy. This is illustrated in *Figure 3.2* below.

Figure 3.2 ***Employment in West Cumbria by Scenario***



The West Cumbrian economy has adjusted to large shifts in employment in the past, especially during the mid-to-late 1980s, when the completion of THORP corresponded with a general slowdown in the national and local economies. Excluding Sellafield, West Cumbria could still function as an economy, with about 35,000 full-time equivalent employees in industries including the public sector, retail and tourism. There would, however, be significant problems in terms of social and economic adjustment. The decline in employment will have adverse social consequences, for example on health and crime. Economic adjustment would be difficult even without outward migration from the area and investment in compensating employment creation projects.

In 2002, NWDA committed to a further in-depth study on the economic future in West Cumbria, taking into account scenarios to be set by Dti based on the Sellafield Life Cycle Base Line to cover the medium and long-term period, possibly until 2020, including:

- NDA presence and activity;
- decommissioning and clean-up;
- skills requirements;
- opportunities for local supply chain and SME development; and
- housing issues.

The study will confirm or adjust the forecasts from the 2003 study and will be initiated in late 2004, most likely by West Lakes Renaissance.

3.3 DIVERSIFICATION AND BNFL

3.3.1 Diversification and BNFL

BNFL has over the past decade been involved in, and explored, most forms of diversification. Set out below are the main features of the Company's involvement in direct, less direct and area based enterprise support.

3.3.2 Direct Diversification

The main challenge facing direct diversification in the nuclear industry is that whilst many ideas are technically feasible, they are not commercially viable. There has, for example, been discussion on the feasibility of producing Xenon from Krypton discharges from Thorp for a range of applications. However, the process is complex, the product may not be accepted for all applications and Xenon is commercially produced from liquefied air.

About 10 years ago the company embarked on a strategy of actively exploiting technologies to create new commercial ventures. It is instructive to review the subsequent history of some of those attempts, many of which had and have the potential to make a significant contribution to economic and sustainable

development. Several of these technologies were energy related whilst others developed out of the need to improve operational efficiency and effectiveness. Energy related technologies included:

- **fuel cells** using uranium as a catalyst. Whilst technically efficient in terms of high power to density ratios, unease over the use of uranium impeded commercial application. The IPR currently resides with a company which will pay BNFL a fee if the technology is ever successfully exploited commercially; and

- **energy storage** using magnetic impregnated flywheels and other techniques. The patents are currently held by Urenco and the flywheels are operating in test sites on the London Underground, New York Metro and in some remote districts as a means to increase security of supply. Technical efficiency is high at 95% but commercial success has proved illusive as more general applications have failed to materialise. Urenco has recently suspended further development.

These technologies could still contribute to moving towards a non-carbon economy and the potential contribution could be further considered by the renewables energy cluster in the North West, led by Renewables Northwest and the Carbon Trust.

Technologies developed as part of the continuous programme to improve operational efficiency and effectiveness have included:

- **instrumentation**: measurement and control are critical in managing nuclear operations and BNFL Instruments operates as a subsidiary of BNFL and also supplies products and services to other companies;

- **robotics**: two spin-off companies were established one of which was a joint venture with Salford University which has made little progress and the other was combined with a company acquired from Amersham which was subsequently bought out;

- **Fluorine chemistry:** F2 chemicals was formed by BNFL to exploit its fluorine chemistry expertise in the speciality chemicals market. The subsidiary was sold to Miteni SpA along with the licenses for various BNFL patents;

- **fluorine generation equipment:** Fluorogras Ltd was a small company started by a former BNFL employee to manufacture point-of-use fluorine generation equipment. BNFL Enterprises provided some finance which was subsequently repaid. The company has now been taken over by BOC.

- **nanotechnology:** a joint development agreement was made with CRL, a subsidiary of EMI. The agreement was subsequently dissolved but CRL continued to exploit the technology in non-nuclear fields; and

- **sensors**: a joint venture with Anglia Water and Cambridge University failed to materialise as a commercial venture.

The above list provides illustrations of the difficulties BNFL have faced in establishing commercial ventures. It has been more successful in forming research partnerships with universities. The main university research alliances at the current time are with:

- **University of Manchester:** where BNFL has invested in excess of £2 million in the Centre for Radiochemistry Research helping to support 4 academic staff and nearly 40 researchers;

- **University of Leeds** where a £2 million investment has helped to establish the school of Process, Environmental and Materials Engineering; and

- **The University of Sheffield** where £2 million has been invested in the Department of Engineering Materials helping to create 40 research positions.

These alliances allow the Universities to leverage additional funds and benefit BNFL through access to their research programmes. It remains to be seen whether these programmes will generate new commercial opportunities.

In 2004 the BNFL Technology Centre based at Sellafield will become fully operational and offer an integrated Research and Technology complex with laboratories and conference facilities dedicated to chemical and engineering development and hosting 300 residential technologists. Primarily dedicated to nuclear research, the centre may also generate new commercial ventures.

In summary, BNFL has been involved in numerous ventures few of which have created diversification opportunities which have succeeded commercially. The main reasons for limited success include the main focus of company being on core activities which is further reinforced by the requirement to operate in a highly regulated environment, the limited applicability of nuclear technologies in other industries and the fact that much of the IPR has been adapted from other industries for nuclear applications. The company does, however, continue to sustain a science and research base from which further opportunities may flow in the future.

3.3.3 Less Direct Diversification

BNFL has taken several initiatives to encourage the local supply base and to assist employees in establishing their own business. The socio-economic study 2003 update estimated that 2630 jobs were supported through indirect and multiplier effects. Specific examples of spin outs include a protective clothing manufacturer in Cumbria and Deva manufacturing, a drum manufacturer near Capenhurst. Other examples of scientific and research based businesses which have spun out from BNFL, include the Geoffrey Schofield laboratory and Westlakes Scientific Consulting on the Westlakes

Science Park. BNFL continues to be the major customer for these enterprises which also in some cases remain in BNFL ownership. The current restructuring may lead to further opportunities for the spin out of non-core activities with the potential to supply other markets.

Helping such suppliers diversify their product and customer bases will become more important as the role of BNFL and activities at Sellafield change in the decade ahead. BNFL is likely to become more constrained in providing such support with responsibility transferring to agencies specifically responsible for economic development.

Local stakeholders in West Cumbria are anxious that the opportunities arising from the decommissioning programme should be used to develop and extend the local supplier base with the objective of establishing West Cumbria as a centre of excellence in nuclear decommissioning and environmental restoration. This will depend on the development of sustainable local businesses. The 'local' supply base of knowledge-based nuclear specialist businesses currently consists largely of branch offices of national or international organisations which are more likely to leave when the major programmes at Sellafield come to an end. The development of local, knowledge based businesses is therefore viewed as a high priority.

Attempts to support employees in establishing their own businesses have usually been initiated in times when employment has been reducing at Sellafield. The New Horizons scheme for example, was initiated at the time when building Thorp was scaling back. The scheme provided business advice, training and unsecured loans to employees leaving BNFL and wishing to establish their own business. Successes under the scheme included:

- Fluorogas Limited which was set up to exploit BNFL's fluorine technology;
- a company involved in marine sampling for commercial fishing;
- a café/bar; and
- a shoes and leather goods retailer.

Although successes have been limited, now might be the right time to consider reviving the scheme or developing a similar scheme to manage the projected decline in employment over the next decade.

A further issue related to less direct diversification is that of skills training both for the nuclear industry and other major employers within West Cumbria. BNFL's apprentice training programme has in the past exceeded the Company's requirements and the excess apprentices were recruited by local industry. This ceased some years ago, when BNFL's apprentice training programme was taken over by Gen II, a joint venture with Corus, Amec, Iggesund and UCB (other leading West Cumbrian employers). Gen II initially was intended to employ more apprentices than the partner companies required. The extra "Community Apprentices" were employed by Gen II and

assigned to local SMEs during their apprenticeships. The SMEs had the option to employ the apprentices at the conclusion of their training. As the demand for apprentices within BNFL and the partners expanded, the Community Apprenticeship initiative lapsed and Gen II now only trains for the partners and for other employers on a third party basis.

The Coverdale Report on Nuclear skills, commissioned by DTI in 2002, has forecast significant future shortages in skills for the nuclear industry. This reflects the general situation in industry, the combination of an ageing workforce and the consequence of a reduction of training programmes over the last 15-20 years. Furthermore, a consequence of the increased contractorisation of the industry will be fluctuating workloads and employment levels, making it increasingly difficult for BNFL and the supply chain to sustain the current training programmes let alone expand them.

NWDA is undertaking a Nuclear Skills Project in partnership with Cumbria LSC, Cogent, the industry, regulators, academia and training organisations, to develop the infrastructure to meet future national needs for skills for the nuclear industry.

An aspect of less direct diversification could therefore be to, provide funding towards the employment of trainees at all levels from operator to professional. As in the past, this will not only benefit the nuclear industry but also other firms in the surrounding area.

The nature of the industry is such that there is little scope for assisting customer companies to diversify and hence the focus has and will continue to be on suppliers and employees.

3.3.4 Area Diversification

Support for economic and community development has and continues to be provided in a variety of ways including:

- **The West Cumbrian Development Fund (WCDF)** dates back to 1988 and the end of the main Thorp construction programme. The fund has an independent board including local authority representatives, BNFL and independent members and supports ventures through a combination of grants and soft loans. BNFL has previously contributed £2.5 million per annum and is committed to providing £1.5 million per annum in the period 2000 to 2005. The fund operates through the West Cumbria Development Agency (WCDA);

- **WestLakes Science Park** has been a major beneficiary of the WCDF and now hosts 29 companies employing 700 people. Plans for further expansion include two new buildings to be occupied by BNFL and a further building which could become the home for the NDA. Whilst the park was established to diversify the knowledge and employment base of West Cumbria, the tenants are largely related to the nuclear industry.

Some of these companies have a small customer base outside the nuclear industry but continue to remain dependent on it. The new buildings currently being constructed are also largely for nuclear industry tenants. The park and its tenants will therefore continue to face a major challenge in broadening the range of activities over the medium term.

- **BNFL Enterprise Limited** was a wholly owned subsidiary venture fund which was established in 1995 with £2.5 million to invest. By the end of 2003 it had made eight investments. The main constraint has been the number and quality of investment opportunities being brought forward. The fund recently became independent of BNFL;

- **The Harris Knowledge Fund was set up in 1999 and** complemented and operated in parallel with the Business Development Fund within BNFL Enterprise. It is a small venture fund operated in partnership with the University of Central Lancashire. The objective of the £0.5 million fund is to promote economic growth in the North West through technology and knowledge transfer leading to the creation of new businesses. The fund has invested in eight companies and divested in three whilst covering operating costs and not depleting the capital base;

- **The Cumbria Inward Investment Agency** was established to attract companies to Cumbria. It receives £150k per annum from BNFL which is used to lever further public funding. It now works closely with the NWDA; and

- **The Cumbria Trust,** which is a charitable foundation providing support to voluntary and community groups.

BNFL also provides support to the Prince's Trust and local enterprise agencies and has education and training programmes which encourage interest in engineering in schools and colleges.

In conclusion, the company has made a major contribution to local economic development. The effectiveness of these interventions has been constrained by the dominance of the industry within the local economy and the limited attractiveness of the area to other forms of economic activity. This contributes to a lack of entrepreneurship which has in particular limited the effectiveness of venture capital and other support activities aimed at small businesses. The extent to which the circumstances make it difficult to achieve success, nevertheless, only serves to emphasise their importance particularly given the greater difficulties which alternative strategies face.

A key issue is how this support will be sustained in the future and the extent to which BNFL and successor organisations should be responsible for this support and the extent to which responsibility should transfer to public sector agencies such as the NWDA and West Lakes Renaissance (WLR).

This issue is in part being addressed by the West Cumbria Task Force which has been created to address the impact of nuclear decommissioning at Sellafield and aid the long-term social and economic regeneration of the area. The task force is led by Dti and involves all Government departments to oversee the needs of the entire community including social, educational, economic and infrastructure issues. It will build on, and add value to, the existing local and regional partnerships and regeneration work being undertaken in West Cumbria.

3.4 CHANGES IN THE NUCLEAR INDUSTRY

The DTI has announced plans to restructure the nuclear industry nationally, and these changes may have profound effects on the future of the Sellafield site and the economy of West Cumbria. Although the changes are complex, in the context of this report they can be summarised as:

- BNFL will cease to be both the owner and operator of all its sites, including Sellafield;
- ownership of many UK nuclear sites, including Sellafield, will be transferred to the new Nuclear Decommissioning Authority (NDA), which the government is committed to headquarter in West Cumbria. The NDA will be a public body that will take on the liabilities associated with decommissioning these sites;
- BNFL will then essentially have two major areas of business:
    - through the British Nuclear Group division, it will be a contractor to NDA, with a focus on decommissioning projects including at Sellafield;
    - through its Westinghouse division, it will provide nuclear fuel and other nuclear services (such as decommissioning or reactor design) to a range of customers, many of whom will be overseas and who are already customers of the company; and
- under the new arrangements, BNFL will be one of a number of commercial suppliers to the NDA, and will have to tender for contracts at former BNFL and other sites in competition with other companies. BNFL will continue to seek other profitable business opportunities outside the UK market. At present, it is expected that the firm will retain a tight focus on the nuclear sector and the government may in the future explore alternative ownership options.

3.5 *IMPLICATIONS FOR FUTURE DIVERSIFICATION AND ECONOMIC DEVELOPMENT*

BNFL has a dominant position within the West Cumbria economy and has been extensively involved in direct, less direct and area forms of diversification:

- success with direct diversification based on technologies primarily developed to improve operational effectiveness and efficiency has been mixed. There are, however, several technologies for which there may be commercial applications in the future and the continuing investment in research and technologies is likely to create further opportunities;

- less direct forms of diversification will assume increasing importance as the level of activity at the site reduces and the nature of that activity changes. Supporting local suppliers and employees through skills development and other support initiatives is perhaps the most significant challenge in the next decade; and

- the main constraint on the effectiveness of area diversification initiatives has been the limited number of alternative viable commercial activities in the local economy. Despite this constraint, there have been several successes and the challenge will be ensuring that these activities continue under the new arrangements for the industry.

Future activity at Sellafield and changes in the nuclear industry pose major challenges in terms of securing the current level of diversification activity and exploiting new diversification opportunities. There are a large number of organisations involved including, the West Cumbria Task Force, NWDA, WLR, NDA, BNFL and other companies inside and outside the nuclear industry. The scale of the challenge and number of parties involved means that high levels of communication and co-ordination are required to underpin future diversification activities.

4 OPPORTUNITY ASSESSMENT

4.1 INTRODUCTION

Diversification opportunities are currently affected by uncertainty about the way in which current proposals for the nuclear industry will work out in practise. The industry is in a period of transition. This section draws on previous sections to assess the current status of opportunities for direct, less direct and area forms diversification. It also looks forward to ways in which diversification initiatives should be developed under the new arrangements proposed for the nuclear industry.

4.2 DIRECT DIVERSIFICATION

Previous attempts to exploit BNFL's IPR have been constrained by a range of factors including:

- the focus of the business on core activities which is reinforced by stringent regulatory requirements;
- the fact that most of the technologies used are adapted from those used in other industries or specific to the nuclear sector; and
- the limited applicability of nuclear technologies in other industries.

As a result there have been few successes. Where there has been success is with a number of spin outs of research and technology services which continue to support the nuclear industry and which have a small but growing external customer base.

In looking forward there are a number of changes which will influence future opportunities including:

- the extent to which ownership of IPR is shared between the NDA and BNFL;
- within BNFL the respective role of different divisions for nuclear clean-up and nuclear development; and
- the increasing importance of publicly funded agencies notably the NWDA and West Lakes Renaissance in promoting economic development.

There are several opportunities based on technologies developed to date and whilst BNFL has made it clear that it will not be involved directly in developing these technologies for non-nuclear markets it has expressed its willingness to transfer or offer responsibility for exploiting IPR to interested

parties. The NWDA, for example, is organising meetings between BNFL and other potentially intended parties on a sector basis. The sector which seems to offer the best opportunities is bioremediation and chemicals processing. This is in line with the greater emphasis on decontamination and clean-up, rather than energy generation. In fact it is doubtful whether the company retains sufficient expertise in energy related technologies to form a basis for developing non-nuclear energy related technologies.

There may be opportunities to find a partner(s) to take a more strategic view of commercial exploitation as illustrated by the Qinetiq and BT examples as described in *Appendix 2*.

Suggested actions, therefore, include:

- early clarification of the future ownership of IPR between the NDA and a continued commitment by the NWDA and BNFL to continue to seek opportunities to exploit or transfer IPR outside the nuclear industry;

- public agencies, notably the NWDA, continuing to foster links between the NDA/BNFL and its industry clusters notably in technologies such as bioremediation and clean up which will increasingly become the main focus of the business an initial meeting for such a cluster is to be organised in the near future; and

- exploring the feasibility of engaging a major partner organisation to assist in the commercial exploitation of technologies outside the nuclear industry.

4.3 LESS DIRECT DIVERSIFICATION

4.3.1 Introduction

The significance of different forms of diversification varies over time dependent on a company's strategy and in particular, whether it is expanding or contracting. Companies do not have a universal obligation to support their local supply chains or employees in setting up in business but they do undertake such activities to the extent that it supports their own commercial development. This sub-section reviews current issues facing suppliers and employees and suggests the types of action required to support diversification activities.

4.3.2 Suppliers

BNFL over the years has supported a wide range of businesses and this presents a problem in that the current uncertainty is leading to delays in procurement which is causing a number of suppliers commercial difficulties. Some of these suppliers will respond by seeking alternative markets, however,

these take time to develop. Others may scale back their operations in the local economy.

There is, therefore, both a transitional issue in relation to the supply chain as well as a longer term issue as to how the new arrangements will affect the proportion of goods and services supplied from within West Cumbria. The current uncertainty is in part a result of speculation as to what the longer terms impacts will be of:

- **contractorisation:** this could lead to a reduction in BNFL's capacity to act as a 'paternalistic' procurer of services and introduce new suppliers with limited or no significant base within West Cumbria. These new businesses may diversify the supply base;

- **reducing the number of suppliers and introducing more rigid tiers into the supply chain:** this is likely to reduce the extent to which small and medium sized companies have direct relationships with BNFL and other first tier suppliers to the NDA and introduce a more competitive element into second and third tier procurement decisions. In practice, the commitment that there will be no reduction in the overall level of spend means that there should be the same level of opportunities and the change is in the procurement routes rather than levels;

- **following public procurement procedures:** this should increase openness and transparency in procurement procedures thereby opening up more opportunities. However it may also lead to increasing use of framework agreements and prime contractor arrangements thereby reinforcing the tiers within the supply chain and a reduced number of suppliers; and

- **make or buy:** this approach to deciding what BNFL should procure as distinct from delivering directly is intended to ensure that services are delivered efficiently and effectively. In the short term it is likely that services will continue to be supplied by BNFL using in-house resources as the process is still being developed. In the medium and longer term it could lead to more 'buy' rather than 'make' decisions and to spin out opportunities, as a 'level playing field' is achieved for sub-contractors, suppliers and in-house resources.

These changes within the supply chain have profound implications for the extent to which suppliers to the nuclear industry in West Cumbria are able to use this position as a platform for diversification into other markets. The degree of concern over the way in which these changes are working through is evidenced by the formation of a local supplier group to voice their concerns. The medium and longer term aims of greater openness, transparency and competitiveness are shared by procurers and suppliers alike and it is really in ensuring that the transition doesn't seriously jeopardise companies existing diversification strategies and activities that action needs to be focused.

The Energy Act places a duty on the NDA in carrying out its function, to have particular regard to the desirability of optimising through NDA contracts the benefits to the social and economic life of the community. EU procurement rules place some limits on the support that can be provided. However local agencies are gathering information on best practice from other public sector organisations with a view to advising DTI and the company on ways to deliver the aspirations in the Energy Act.

Suggested actions are therefore:

- continuous communication by NDA, BNFL and other major contractors on future procurement practices, procedures and decisions as they become clearer. This is particularly important in relation to the near term work plans;

- direct discussion with small and medium sized suppliers on the commercial implications of changes in the supply chain and delays in procurement decisions during the transitional period and thereafter for SME suppliers engaged in developing key technologies;

- investigation of ways in which future procurement could be used to benefit the social and economic life of the community; and

- analysis and facilitation of diversification opportunities in other industries eg oil and gas decommissioning, for small and medium sized suppliers in West Cumbria which are largely dependent on BNFL.

4.3.3 Employees

The changes taking place in the industry also inevitably create a period of uncertainty for employees in BNFL and in its suppliers. At the present time the issue is not so much the number of jobs but the organisation or company in which they are or will be located. This only impacts on diversification to the extent that the uncertainty may encourage some people to consider alternative opportunities outside the industry. There is no evidence to suggest that this is the case to any significant extent.

There are also issues related to the future skills base to support the nuclear industry and other industries in the area. Various training initiatives are being developed as part of the Nuclear Skills Project and it will be important to ensure that these initiatives are both funded and take into account implications for skills transfer to non-nuclear activities.

The main issue in relation to employees and diversification is the run down in employment at the end of the decade and the long lead times involved in developing initiatives which support people in developing their business ideas. As discussed in the previous section, initiatives have had limited success but this probably has more to do with the comparative security and

remuneration afforded by jobs in the nuclear industry. The changing procurement practices discussed above are likely to generate opportunities within the industry for new businesses which could then develop an external customer base hence it would seem advisable to revive some of the previous support initiatives and reshape them to reflect the changing context. The main initiatives which have supported previous employee diversification are the New Horizons Scheme and to a lesser extent the Harris Knowledge Fund. The suggested actions therefore are to:

- review the current initiatives which support employees in the nuclear industry wishing to leave to establish their own businesses; and

- develop packages of support appropriate to employees wishing to leave to establish their own businesses.

4.4 AREA DIVERSIFICATION

A characteristic of local economies dominated by a major employer in that they have low levels of innovation and entrepreneurship as a secure job with that company reduces the attraction to people of establishing their own business. This is sometimes referred to as the 'Upas Tree' effect. Partly as a consequence of this effect, the main barriers to area diversification are the limited number of alternative activities and the time and effort required to make such initiatives successful. To a large extent the limited number of alternatives is attributable to economic factors such as location, accessibility, infrastructure and the local resources base. These are in part being addressed by the West Cumbria Task Force and the Nuclear Skills Project. However, a concerted effort across all agencies will be required to respond to the new challenges and opportunities.

The focus of attention in area diversification is often primarily on the level of funding. However, time and effort of senior management within a company is a major resource cost. Most activities are conducted through some form of partnership arrangement and creating and maintaining such arrangements is a time consuming activity. To date BNFL has made such resources available. Whether the future site manager contractors will continue to do so depends on the contractual requirements set out by the NDA and inclusion of such activities in the near term workplans.

What is important, however, is to ensure that the level and nature of resources allocated to area diversification are appropriate to the scale and nature of the problem and opportunities. WLR fulfil the areas diversification role at a local level and NWDA fulfils this role at regional level. Both are actively involved in discussions with BNFL to ensure that on-going initiatives continue and that the new arrangements in the industry do not jeopardise and may in fact create additional opportunities.

Suggested actions are therefore:

- ensuring that the total level of support continues at least at current levels and that the nature of the support is adapted to the changing needs of the area and opportunities arising from the changing focus of the nuclear industry;

- ensuring that an obligation to support and contribute to local economic development is part of contractual obligations and in near term work plans throughout the supply chain;

- developing a prospectus on ways in which companies and future contractors are best able to contribute to local economic diversification; and

- ensuring mechanisms, notably the West Cumbria Task Force, are in place for effective communication and co-ordination of regeneration in general and diversification activities in particular.

The difficulties arising from the location of West Cumbria and the dominance of the nuclear industry mean direct, less direct and area diversification continue to be of great importance to the economic well being of West Cumbria. There is little doubt that more opportunities have existed in the past than have been exploited and that the current transitional period in the industry is creating an uncertainty which puts at risk previous achievements and on-going programmes and initiatives. The pattern of future responsibilities will undoubtedly be different from that which has hitherto been the pattern to date and it is therefore critical to clarify these responsibilities, ensure that what has been achieved isn't lost and to put in place arrangements and a programme for future diversification activities. *Table 5.1* summarises the actions recommended in the previous sections and identifies those organisations which have a significant role to play in ensuring that the recommendations are implemented.

Table 5.1 Recommendations and Responsibilities

Recommendations	Responsibilities	Section Reference
Direct diversification		
• clarification of ownership of IPR	Dti, BNFL	4.2
• commitment to exploitation of IPR	NDA, BNFL	4.2
• establishing links for technology transfer to other sectors	NWDA/WLR	4.2
• exploring feasibility of attracting major partner in commercial exploitation	Dti, NDA	4.2
Less Direct Diversification		
Suppliers		
• continuous communication on procurements procedures	NDA/BNFL	4.3.2
• using procurement to benefit the community	WLR/NWDA	
• SME transitional supplier discussions	BNFL	4.3.2
• diversification opportunities for SMEs	NWDA/NLR	4.3.2
Employees		
• review of current support	WLR/BNFL/WCDF	4.3.3
• develop new packages of support	WLR/NWDA/WCDF	4.3.3
• training and skills development and transferability	NWDA/Cumbria LSC./Industry	4.3.3
Area Diversification		
• ensuring appropriate resources are allocated to area diversification	NWDA/WLR/NDA	4.4
• ensuring support to area diversification is a contractual obligation	Dti/LMU	4.4
• preparing a prospectus on ways in which companies are able to contribute most effectively to area diversification	NWDA/WLR	4.4
• effective communication and co-ordination	Dti/NDA/West Cumbria Task Force	4.4

Several of the recommendations in *Table 5.1* relate to on-going initiatives and actions which have been beneficially informed and influenced by the National Stakeholder Dialogue. It is essential that communication and co-ordination are continued through the successor stakeholder arrangements. It is therefore further recommended that the recommendations in the table form part of the agenda for the first task force meeting in October 2004, and for other meetings between the organisations listed and are taken up by the new stakeholder engagement arrangements once established. Without such commitments there is a serious risk that much of the impetus behind diversification activities will be lost.

APPENDIX 1: STAKEHOLDER ENGAGEMENT AND ORGANISATIONS CONSULTED

1. Steering Group responsible for JFF

John Knox (NWDA)
Pete Wilkinson (Wilkinson Consulting)
Howard Rooms (Trade Unions, Sellafield)
Fergus McMorrow (Copeland BC)
Fred Mudway (BNFL)
Frank Duffy (GONW)
Rosie Mathisen (WLR)

2. Stakeholder Engagement

As part of the process of developing this project and recommendations, several meetings took place including:

- Diversification Steering Group Meetings on 10th March 2004, 19th May 2004 and 21st June 2004.

- Diversification and IPR meeting at BNFL on 22nd March 2004

3. Organisations Consulted

In addition to the above meetings individual discussions took place with the following organisations as part of the scoping and JFF studies:

- Amicus
- BNFL plc various
- BNFL Enterprise Ltd
- Department of Trade and Industry (Dti)
- Friends of the Earth/Greenpeace
- Nuclear Skills Project NWDA
- North West Development Agency (NWDA)
- React Engineering Ltd
- SDC (Multi disciplinary Design House)
- Shepley Engineers Ltd
- Westlakes Properties Ltd
- Westlakes Research Institute

1. Introduction

In order to narrow down the list of potential comparators, this study sought to identify companies:

- for which direct and area diversification were likely to be a major concern;
- operating in technologically advanced sectors with long lead times;
- where major industrial restructuring had or is taking place; and
- for which information is readily available.

On this basis, brief descriptions of companies with some of these characteristics are shown in *Table A1* and their diversification strategies are described below.

Table A1 ***Key Features of Comparator Companies***

Company	Diversification		Technology	Industry	Information
	Direct	Area	Driven	Restructuring	Available
Qinetiq	♦♦♦		♦♦		♦♦♦
BT	♦♦♦		♦♦	♦♦	♦
Pfizer		♦♦	♦♦		♦♦
Savannah River		♦♦	♦	♦	♦♦
BP		♦♦♦		♦♦	♦♦♦

2. Qinetiq

The Ministry of Defence (MoD) decided that the Defence Research Agency (DERA) was to be restructured to facilitate private sector involvement. In 2002, The MoD announced that the Carlyle Group would become its strategic partner to assist in the future development of Qinetiq, the vehicle established to achieve these objectives. Qinetiq's plan is to develop its non-MoD business by commercialising technologies first developed for the defence industry into applications for a much broader range of sectors. Carlyle began its venture capital activities in 1987, and is helping Qinetiq to decide the best way forward in its transition from the public to the private sector. Qinetiq aims to form partnerships and joint ventures with companies who share the same views on the importance of technology and who bring an extra competitive edge to joint projects. Qinetiq has established a first venture fund to provide early stage capital to develop Qinetiq technology for commercial exploitation. Qinetiq's strategic partnership with the Carlyle Group has been a key feature in its success to date.

3. BT

The new BT is structured so that BT Group plc provides a holding company for the separately managed businesses, which make up the group. BT Exact, BT's research and development organisation supports these businesses and is BT's advanced research and technology business. Recently it has teamed up with Coller Capital and New Venture Partners (NVP) to create a new, independent corporate venturing partnership known as NVP Brightstar. NVP Brightstar will have the exclusive rights to create new start-up businesses with BT Exact using BT's intellectual property portfolio. Initially it will purchase the majority of the existing portfolio of technology ventures developed by Btexact's corporate incubator, Brightstar.

4. Pfizer

Pfizer Limited, the subsidiary of Pfizer Inc has been in the UK since the 1950's. Pfizer is now the largest pharmaceutical company in the UK. There are 6,000 people employed by Pfizer in discovery, development, manufacture and marketing of human and animal medicines. Currently, 3,600 of these employees are based at the Sandwich site. Pfizer is the largest employer in the area and is the backbone of the local economy. Pfizer expenditure in the UK economy is substantial and new research and development facilities have been established in Sandwich over the past five years. Pfizer provides employment for local people and to some extent helped the region recover from a number of economic shocks in recent years. Pfizer actively extends its role in the local economy through a wide range of area based initiatives, environmental projects and positive supplier relationships.

5. Savannah River

The downsizing of the US's nuclear industry has affected many isolated communities. Economic development organisations have been set up to promote diversification of these local economies. The Savannah River Regional Diversification Initiative (SRRDI) was established to help cope with the impact of downsizing the Savannah River Site through regional planning and economic diversification. The SRRDI aimed to create an environment suitable for technology-based start-ups and business expansion, as well as attracting new investment and ventures to the area. SRRDI has also created a venture capital fund, a Proposal Development Centre, a Challenge Fund for technology development and a small business research and development programme. SRRDI has been successful in attracting a new Bridgestone-Firestone tyre assembly plant and a new SKF ball bearing plant to its Aiken County Industrial Park with support from the State of Carolina and has helped create 3,860 new jobs.

6. BP (Aberdeen)

Aberdeen has been economically dependent upon a few key sectors, especially oil and gas. Aberdeen is now in the process of diversifying its economy. It is recognised as "The Energy City", a global leader in oil and gas, and renewable energy. The city has secured the Energy Intermediary Technology Institute (EITI) and the lead body in the development of renewable energy 'Renewables UK' is based in the city. Aberdeen City Council are supporting the diversification into renewable energy and driving forward the energy industry. Aberdeen is also focussing on business tourism and cultural and creative industries, and creating a 'City of Knowledge' in research and technology. Aberdeen has a vision for the future and projects are already in place to see this vision through.

7. Concluding Remarks

Whilst no two situations are the same and the examples cited above are largely based on secondary information, there are a number of lessons for successful diversification strategies including:

- the use of strategic partnerships to ensure a commercial perspective in exploiting proprietary technologies (Qinetiq, BT);
- acceptance of a greater responsibility where firms are dominant employers within an area (Pfizer, Savannah River);
- taking early action ahead of restructuring and run down in employment (BP and Aberdeen);
- working through partnership with local authorities and other agencies to ensure initiatives are responsive to local need and opportunity (Pfizer, BP, Savannah River);
- building on technological strengths and skills to attract new industries (BP/Aberdeen and renewables); and
- supporting a wide range of initiatives to create strength though diversity (Pfizer and BP).

BNFL's involvement in West Cumbria and diversification strategies have already demonstrated many of these characteristics, however the challenge in terms of industry restructuring and future run down in activities at the Sellafield Site is now greater than ever before.