

Social Effects of Decommissioning Trawsfynydd Power Station

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SYNOPSIS

The decision to close Trawsfynydd in 1993 had significant implications for the staff and local community. The site is situated within a National Park and local employment opportunities are limited. The staff and local communities were consulted regarding the issues arising from closure and decommissioning. This consultation influenced the decommissioning strategy for the site, with emphasis placed on the mitigation of the effects of closure. Subsequent studies have shown that the adopted strategies have served to limit the social and economic effects. The experience at Trawsfynydd has proved to be generally applicable at other decommissioning sites.

1 INTRODUCTION AND BACKGROUND

Trawsfynydd Power Station was one of eleven Magnox nuclear power stations built in the UK refer to Figure 1. Seven of these remain operational - the original BNFL sites of Calder Hall and Chapelcross and the five Magnox Electric¹ sites of Bradwell, Dungeness A, Oldbury, Sizewell A and Wylfa. Four of the eleven sites have been shutdown - the Magnox Electric sites of Berkeley (in 1989), Hunterston A (in 1990) Trawsfynydd (in 1993) and recently Hinkley Point A (in 2000), A closure programme extending to 2021 has been announced for the seven operational sites.

These four stations were first generation Magnox design each comprising two gas-cooled reactors with steel pressure vessels using natural uranium magnox clad fuel. At that time in the early/mid 1960s, as the UK's first commercial nuclear power stations to produce electricity they stood at the leading edge of nuclear technology. Just as they were at start up, they are continuing to lead the way as the first to be decommissioned.

Construction of the Trawsfynydd nuclear power station started in 1959 and the plant was commissioned in 1965 with a nominal electrical output of 400 megawatts. After a successful operating period of over 25 years the reactors were shut down in 1991 because of concerns over the materials property data used to support the reactor pressure vessel safety case. Following an extended period, during which endeavours were made to prepare an economic case for continued operation, closure was formally announced in July of 1993.

Defuelling started almost immediately in November 1993 and was successfully completed ahead of programme and below budget in August 1995. Decommissioning and waste management activities have been progressing at the site since; the objective being to put the site into a minimum cost care and maintenance regime at the earliest opportunity. The projected date for this is March 2006, refer to table 3 for key dates for the site.

¹ Magnox Electric plc is now a subsidiary of BNFL

There have been other issues to address, not least the social and economic aspects of managing the closure of a power station in a low employment area. In addition there have been the environmental aspects to consider. Having to manage the decommissioning process within a National Park, by definition an area of outstanding natural beauty, has required special considerations.

Trawsfynydd Power Station is located in North Wales in an area which has exhibited a degree of cultural and political independence from the remainder of the United Kingdom. This independence is exemplified by the widespread use of the Welsh Language in the area and in developments such as the establishment of a National Assembly for Wales in 1999. The power station was located in an area of outstanding natural beauty which was designated as the Snowdonia National Park in 1951.

The region is overwhelmingly rural and sparsely populated, however there is a long tradition of industrial work in extractive industries (principally slate mining), in associated supporting industries and transport infrastructure.

Such industries, once the principal employers and the *raison d'être* for many local communities, have suffered a long term and terminal decline and nowadays contribute very little to the local economy. The area's economy is now largely based upon services, agriculture, tourism and some light industry. The area suffers from comparatively high levels of unemployment and low wages by UK standards, and from population migration.

2 TECHNICAL DETAILS

Trawsfynydd power station consisted of two, natural uranium, graphite moderated, gas cooled reactors of nominal thermal output of 800 MW. The steel pressure vessel reactors were located inside a 3m thick cylindrical concrete biological shield and housed in two separate reactor buildings. The reactors were fuelled on-load and spent fuel was discharged to a cooling pond for storage prior to dispatch to the BNFL Sellafield fuel reprocessing plant. The station had four 145 MW turbines installed, with a station nominal generating capacity of 400 MW

Uniquely, the station obtained its cooling water from an inland lake which also serves as a reservoir for a small (35 MW) hydroelectric power station. The station discharged active effluent to a lake. Because of this, allowable discharge levels were low. This placed a greater than usual emphasis on the treatment of active effluent, which in turn has resulted in increased accumulation on site of Intermediate Level Waste associated with such treatment.

3 OPERATIONAL PHASE STAFFING

Trawsfynydd Power Station started commercial operation in 1965 and continued to generate until February 1991. During this period approximately 500-600 were employed at the power station and approximately £15M per annum (1990) was injected into the local economy. During the period from 1989 onwards significant efforts were made to reduce costs in the company and site staff was reduced to 487 by 1993. Additionally, the age profile of the station staff was increasing alarmingly, with the majority of the employees with more than 25 years service by this period. The average age of the employees was approaching 50 years old. The company offered generous redundancy terms to encourage

staff to volunteer selective voluntary severance 'SVS'². In general the staff that took advantage of the SVS scheme at this time were those approaching normal retirement i.e. those aged over 55. The scheme proved popular with this age group, in practice more than 120 staff took advantage of the scheme and some were replaced with younger employees. This resulted in a lowering the age profile of the employees.

The power station provided stable, skilled, well paid employment in the area. Additionally, there was training for apprentices and career development for existing employees. In contrast, much of the other work in the locality, such as that associated with agriculture and tourism was mostly poorly paid and seasonal.

4 DEFUELLING PHASE STAFFING

The closure of Trawsfynydd Power Station was announced on the 20 July 1993.

Final staff structures for the defuelling phase were decided following consultation with the staff and their representatives. Out of an original workforce of 487, the initial staff complement for the defuelling phase was approximately 270. The Nuclear Installations Inspectorate was kept informed so that the Site Inspector could be satisfied that sufficient suitably qualified and experienced staff would be retained to allow defuelling to proceed safely.

All staff were counselled regarding their personal preferences, three choices were given:

- Relocate to a different site within the company;
- Leave the company on SVS terms (see section 3);
- Remain at Trawsfynydd for defuelling work.

The allocation of posts and preference was through face to face management briefings with individual staff.

An agreed appeals procedure was available for staff who were not satisfied with their allocation. Where there were more staff wanting to remain at Trawsfynydd than could be accommodated, selection was carried out by manager on the basis of ability, flexibility, quality of service and employment record. A small number chose to appeal against their allocation but the majority of the appeals were eventually resolved to everyone's satisfaction. Approximately 75% of the staff were allocated to their first choice, only a small number, say 10, were significantly dissatisfied with their final allocation.

A total of 87 members of staff were redeployed to other Nuclear Electric sites.

² **Selective Voluntary Severance** - is a system designed to be mutually beneficial to the company and the employee. Firstly, the employee must volunteer to take redundancy. Secondly, the company selects those employees who it can release without the loss of key skills or expertise from the company. SVS has been a guiding principle for all employees taking redundancy. The severance terms have reduced over time with one year salary and 10 years of supplementary pension offered in 1990, 7 years in 1993, 5 years in 1995, 3 years in 2000. Presently a lump sum of up to 22 months of salary is available for staff leaving the company under the SVS scheme.

A review of the staffing levels for defuelling concluded that the requirements for carrying out the actual workload were met. As defuelling progressed natural wastage and the release of staff to take up other employment opportunities reduced staff numbers to 260 - but this did not impair staff performance in any way.

Table 1 Staff numbers

Number of staff	Allocation	Period
487	Original staff structure	July 1993 - before station closure
87	Redeployed to other Nuclear Electric stations	September 1993 - after counselling
130	Took advantage of the severance scheme	September 1993 - after counselling
around 270	New staff structure	October 1993 - after allocation + during defuelling

The majority of the 87 men who choose to be deployed to other nuclear power stations were family men with children in the age group 25 to 45.

The majority of the 130 staff who took advantage of the severance terms were aged over 50. There were some younger men who also choose to leave, many of them using the lump sum money from the redundancy terms as capital to set up small businesses in the area.

During the defuelling stage a small number of staff (5) left the company as a result of normal retirement, ill health etc.

5 DECOMMISSIONING PHASE STAFFING

Similar procedures were followed to manage the reduction in staffing which followed the completion of defuelling. It was decided following consultation that the staffing for the decommissioning phase of the work would be 145 staff, a reduction of approximately 120.

Staff were given the same three choices, relocate, severance, or remain for decommissioning work as they were given at the start of the defuelling phase. The defuelling staff were aware of the length of the defuelling phase (2 yrs.) and many had planned ahead in anticipation of receiving their severance money at the end of the period. The process of allocating staff at the end of this period was consequentially much easier than after station closure. In the event 15 staff relocated to other sites within the company, 105 staff accepted the severance terms.

The method of selection of staff differed from that adopted during the previous, defuelling phase staffing. Staff were selected on the First In First Out (FIFO) principle. The staff on the site at that time had already been selected on the basis of their ability, employment record, etc. repeating that process was considered of little benefit. Selection using the FIFO principle was more mechanistic, application was clear cut and not subject to questioning and appeal regarding its application. FIFO is also a traditional and widely used principle in industry and is generally accepted by Trade Unions as an equitable method for the selection of staff for redundancy.

Approximately 85% of the staff were allocated to their first choice, with again a small number, say 5, dissatisfied with their final allocation.

A further 23 staff volunteered for SVS in March 2000; these were all aged over 50 years, the majority being over 55. At this time a small number of new posts were created on the site to deal with specialist aspects of decommissioning work.

The present site complement is 120 and it is anticipated that this number will remain approximately the same until 2004.

Specialist companies are engaged on the site to progress decommissioning work. These contracting companies employ approximately 100 additional staff. The contractors are encouraged to employ local labour; some staff previously employed by the company now work for these contractors.

6 CONSULTATION STRATEGY

The closure of Trawsfynydd was a sensitive issue because of the location of the site within a National Park and the impact of the loss of jobs in an area of limited employment opportunities. Additionally, the company was endeavouring to act in a responsible manner by discharging its obligations to staff leaving the company and by seeking a consensus regarding decommissioning strategy with those affected by the closure.

Those who the company believed it should consult were identified as being the people on whom the decommissioning of Trawsfynydd power station was likely to have an environmental or socio-economic impact. These were:

- Trawsfynydd station employees and trade union representatives.
- People living within an approximate 25 to 30km radius of the station.
- Three locally elected county/district councils and the statutory body responsible for the Snowdonia National Park.

The strategy evolved for consulting with these three groups of people involved:

- Announcement of the closure to staff and circulation of an information pack.
- Counselling of staff to determine their personal preferences, ie whether they wanted to volunteer for severance, seek redeployment or continue employment at Trawsfynydd.
- Announcement of the closure at a special station Local Community Liaison Council meeting (in addition to the normal six-monthly meetings) with representatives of local authorities and the media and circulation of information.
- A three-week touring exhibition visiting 13 local venues, supported by fully briefed technical and visitor centre staff.
- Separate presentations by the power station manager, engineering manager and company waste and decommissioning manager to the three county and district councils, including representatives of the Snowdonia National Park.
- Questionnaires which were designed and analysed independently were made available to the local public at the visitor centre and through the touring exhibition.

The closure announcement was a surprise to station staff – although the station had not been generating electricity for some months, many staff had held high hopes that the reactors would eventually be restarted. Understandably, the staff were concerned for their futures – consequently, an information pack was circulated to each member of staff within a week of the closure announcement to help answer some of their questions. It contained:

- An estimate of the severance terms available to the individual
- Information on opportunities for redeployment within the generating industry
- Information on the company’s “Options” scheme which provides training and advice for those wishing to leave the company.
- Details of an Opportunities Centre to be set up and staffed by specialists available to advise on career opportunities, help with CV preparation and interview techniques and advise on self-employment.

Information material was produced for the public and their political representatives. This material discussed options for decommissioning and their predicted impact on the environment, safety, local employment, etc. The material consisted of the following;

- Brochure outlining the options illustrated with artist impressions
- Video explaining the options using a graphics sequence
- Mobile and visitor centre exhibitions explaining the options
- Full page adverts in the local press detailing the touring exhibition
- Questionnaire to gauge the opinion of local people
- Supporting technical brief.

The outcome of the consultation

The company received feedback of the consultation in three ways:

- Direct response from staff during counselling on the draft staff structures prepared by the station management team
- Formal feedback from the three local councils
- Independent analysis of the completed questionnaires

Local Councils

The views of those consulted were:

- One local council, the trade union and the majority of those who completed questionnaires favoured the Early Safestore option.
- They also expressed a strong desire to reduce the visual impact of the site by reducing the height of the safestore structures lower than that put forward in the consultation briefing material.
- Two local councils (and the Snowdonia National Park Authority) favoured Early Site Clearance.

Questionnaires

Questionnaires were given to people who visited the decommissioning exhibition seeking their opinion regarding the policies to be adopted for decommissioning the site.

The views reflected are listed below as a percentage of the total number of people who filled in questionnaires – with “job creation for local people” being the aspect viewed as most important by the public and “job creation for non local people” being the aspect viewed as least important:

- 78% Job Creation for local people
- 76% Visual impact of the site in the longer term
- 70% Amount of radioactivity dealt with by dismantling workers
- 61% Returning the site to its original state
- 58% Height and shape of safestore structures
- 53% Leaving radioactivity to decay for as long as possible
- 49% How soon the process can start
- 40% How long the process will take
- 27% Cost
- 21% Amount of site clearance traffic
- 16% Visual impact of site during dismantling
- 14% Job creation for non local people

Response to consultation

The company was wholly committed to consulting those people on whom decommissioning Trawsfynydd would have an impact, and invested considerable time and money in carrying out the consultation process. The company had promised to listen to the views of those consulted and took these views into very careful consideration before identifying a strategy for decommissioning the station.

The company modified its corporate decommissioning strategy (deferred Safestore) for Trawsfynydd in direct recognition of public opinion and the views of local government bodies. The company agreed to undertake additional measures to reduce the visual impact of the station by lowering the height of the safestore structures by almost half – a significant amount of work over and above that planned. In addition, it was agreed that prompt dismantling of all non-radioactive buildings would be undertaken in order to provide local jobs sooner. Commitment was also given to the issues that the questionnaires had indicated were viewed as important by the public.

The conclusions of the consultation and the modified strategy was then communicated to the site staff, local government bodies and to the general public.

7 SOCIAL AND ECONOMIC EFFECTS OF CLOSURE

In 1984 the Institute of Economic Research, University of Wales, Bangor was commissioned to carry out an independent research study on the Economic and Social Impact of Closure of Trawsfynydd Power Station. This report concluded approximately eight years prior to closure that the closure would have “profound and lasting socio-economic effects” on the area around the power station. It was anticipated that approximately 1000 direct and indirectly employed persons would lose their jobs and that

approximately half (550) would leave the area, a loss of 1.7% of the district population. An increase of 4% in the area's unemployment rate was predicted.

With hindsight, it is now recognised that the conclusions of this report were flawed, principally because the slow rundown of employment and the continuing economic contribution resulting from decommissioning work had not been considered. In 1997, approximately four years after closure, the Institute of Economic Research, University of Wales, Bangor were again commissioned to research the economic impact of decommissioning.

Employment

The research considered the employment and non employment patterns of the 342 staff who had lost their jobs at Trawsfynydd Power Station in the period July 1993 to November 1995 and the impact of those job losses on the local economy.

The employment pattern for the group of 342 staff are listed in Table 2.

Table 2 Employment Pattern for Severed and Redeployed Staff

	Work %			Nonwork %			
	Generating Industry	Other Employer	Self Employed	Early retirement	Unemployment	Sickness Benefit	Gov. Training
Under 36	56	32	5	-	4	-	3
36-49	48	33	13	-	4	-	2
50-55	3	30	27	13	18	6	3
56-59	-	47	-	33	13	7	-
60-65	-	20	7	57	9	7	-
All ages	31	33	12	12	7	3	2

It is seen from the table that 76% of the former staff are in employment. The preference for younger staff to transfer to other power generating sites is clearly seen. It is also noted that a significant percentage of those working outside the industry have become self-employed.

The majority of those not in work have chosen early retirement and this dominates non-work for those aged 55 and over. It is noted that 7% of the total remained unemployed.

Regarding the 120 staff that those SVS terms prior to station closure, the overwhelming majority of these were in the Early Retirement category, some have subsequently gained other employment. The terms and conditions of the SVS scheme would not allow transfer within the Generating Industry.

Local Income retention

The study identified that in addition to the 147 staff still working at Trawsfynydd Power Station, 23 of the staff which had transferred to other generating sites were still living locally. Of those that had severed from the company, 338 were living locally.

All of this group were contributing to the local economy from their involvement with the power station by means of salaries, pensions and redundancy payments. It was calculated that this contribution amounted to 53% of the contribution made in salaries by the power station when fully operational.

When the additional wages earned by those who had gained employment was taken into consideration the economic contribution of the group rose to 78% of that previously made.

In addition, decommissioning contractors employ approximately 100 people on the site, approximately 30-40 of these are local people, some of them ex-employees of BNFL Magnox.

It is thus concluded that the Trawsfynydd site continues to make a very significant contribution to the local economy as a result of decommissioning activities. The level of the contribution being in the region of say 60% of the previous contribution. However, it is inevitable that this contribution will dwindle and fade over time. Key to this will be the completion of decommissioning work and the declining importance of the contribution provided by redundancy and severance compensation.

Effect on local unemployment

The effect on local unemployment of station closure was small and difficult to detect, local unemployment being subject to heavy seasonal variations and national economic conditions. The increase in unemployment as a result of closure was less than 1 percentage point.

BNFL Magnox has sought to encourage local start-up projects to provide new employment by providing financial and management support. In particular there has been support to development agencies, to tourist based developments associated with Trawsfynydd Lake, and to a project to convert slate mining wastes to a useful saleable product.

7

COMPARISON WITH OTHER DECOMMISSIONING SITES

This section compares the situation at Trawsfynydd with, in particular, Bradwell and Hinckley Point power stations.

All magnox stations were constructed in areas of low population density, they are thus to be found in rural areas and some distance from major towns. The social and economic issues thus tend to be similar for all such sites, the difference being of degree rather than in substance. In many ways the issues and problems associated with decommissioning are exemplified to a high degree by the Trawsfynydd site by virtue of its relative remoteness, by UK standards, its location by an inland lake in a National Park. Nevertheless, all sites have their own particular issues associated with both their location and date of closure.

Deployment opportunities

The first commercial nuclear power station to be shut in the UK was Berkeley Power Station in 1989. At that time the Central Electricity Generating Board (CEGB) who owned and operated all power stations nuclear and conventional in England and Wales owned Berkeley. Since that time the state owned CEGB has been split up into a number of privatised successor companies, with two companies British Energy (private) and BNFL (state) owning all operating nuclear power plant. Additionally, a program of phased closure of all Magnox power stations extending up to 2021 has been announced by BNFL. It is thus apparent that the opportunities to redeploy staff to other power stations following closure is diminishing with the generating companies being responsible for fewer sites and in particular, fewer operational power stations.

Hinkley Point

Hinkley Point Power Station was closed in May 2000 and presently the station is staffed for defuelling. The decision to close followed a period of non-generation resulting from technical and safety case problems. As in the case of Trawsfynydd, the decision to close was sudden and consequently there was no opportunity for a planned closure of the site.

The strategy adopted for the management of the staffing for defuelling were based on those adopted for Trawsfynydd. Staff were counselled regarding their preferences, as described in Section 4. Staff were selected on a point scoring system similar to that adopted at Trawsfynydd. The response of the staff was broadly similar with older staff selecting SVS, younger staff electing to redeploy or to leave on SVS terms. One significant difference to Trawsfynydd was that more staff wanted to leave than could be released. It is conjectured that this was as a result of the buoyant job market in the Bristol area, which is within the travel to work area for many of the staff.

Regarding the impact on the local area; at present it is too early to judge the overall impact.

The closure of the station came as a shock to the local community with its significant potential impact because of the loss of jobs and work opportunities. However, the impact is much less than at Trawsfynydd because the adjacent Hinkley Point B power station, a 1220MW Advanced Gas Cooled Nuclear power station, commissioned in 1976, remains operational. Additionally, the area is within commuting distance of the economically buoyant Bristol area.

Bradwell Power station

Bradwell Power Station, currently still operational, is scheduled for closure in March 2002. This will be the first planned closure of a BNFL owned nuclear power station.

The approach to dealing with staff issues is again broadly similar to that adopted at Trawsfynydd; staff have been counselled regarding their future aspirations.

The staff has broadly split three ways with equal fractions choosing severance, relocation and continuing to work on site. The situation is thus similar to the Hinkley Point station

with more staff wishing to be released than are required for future defuelling and decommissioning work. In common with Hinckley Point Power Station the retention of, in particular, some workers with key skills is problematic. The timing of the release of staff is another key issue; presently the station employs 340 staff. It is anticipated that the staffing will reduce to 240 following closure in 2002.

It is in the interest of some staff to leave as soon as possible; however, staff numbers have to be maintained for operational purposes and for defuelling after March 2002. The station has chosen to release some staff and to balance the numbers by recruiting new staff.

This is considered beneficial to maintaining staff morale in the period prior to shutdown.

Regarding the potential impact on the local community; studies have indicated that there will be an economic downturn in the area local to the power station. This was also predicted for Trawsfynydd, see Section 7. In mitigation, the Bradwell area is within commuting distance (45 minutes) of major industry and also of the London area.

10 CONCLUSIONS

- The staff, local community and their political representatives should be supplied with accurate reliable and prompt information regarding the company's future intentions. There should be no surprises to any of the parties involved.
- Staff should be counselled regarding their future aspirations and, if possible, those aspirations should be met. The criteria for the selection of staff should be transparent and demonstrably fair in application. Uncertainty should be minimised and selection carried out in a timely manner. Following closure, the company has been able to fulfil the aspirations of the majority of the staff.
- Retention of key staff for defuelling and decommissioning can be problematic with the younger, ambitious, and highly skilled staff (i.e. the more employable) making full use of the opportunities presented by closure with its associated severance payments and in-company transfers.
- Seeking and acting upon the opinions of the staff and the local community regarding decommissioning strategy places the company in a stronger position regarding the implementation of such a consensus strategy. However, in order to meet the aspirations of the community the company committed itself to significant additional decommissioning costs.

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