

WestminsterResearch

<http://www.westminster.ac.uk/westminsterresearch>

**'Nuclear prospects': the siting and construction of Sizewell A
power station 1957-1966.
Wall, C.**

This is an accepted manuscript of an article published by Taylor & Francis in
Contemporary British History.

The final definitive version is available online:

<https://dx.doi.org/10.1080/13619462.2018.1519424>

© 2018 Taylor & Francis

The WestminsterResearch online digital archive at the University of Westminster aims to make the research output of the University available to a wider audience. Copyright and Moral Rights remain with the authors and/or copyright owners.

Whilst further distribution of specific materials from within this archive is forbidden, you may freely distribute the URL of WestminsterResearch: (<http://westminsterresearch.wmin.ac.uk/>).

In case of abuse or copyright appearing without permission e-mail repository@westminster.ac.uk

‘Nuclear prospects’: the siting and construction of Sizewell A power station 1957-1966.

Abstract

This paper examines the siting and construction of a Magnox nuclear power station on the Suffolk coast. The station was initially welcomed by local politicians as a solution to unemployment but was criticised by an organised group of local communist activists who predicted how the restriction zone would restrict future development. Oral history interviews provide insights into conditions on the construction site and the social effects on the nearby town. Archive material reveals the spatial and development restrictions imposed with the building of the power station, which remains on the shoreline as a monument to the ‘atomic age’. This material is contextualised in the longer economic and social history of a town that moved from the shadow of nineteenth century paternalistic industry into the glare of the nuclear construction program and became an early example of the eclipsing of local democracy by the centralised nuclear state.

Keywords: nuclear construction, oral history, communism, Leiston.

Introduction

In 1951 the Glasgow *Exhibition of Industrial Power* designed by Basil Spence as part of the Festival of Britain featured a ‘spectacular presentation of the new power source – nuclear energy’.¹ The exhibition aimed to inform the visiting public of the history and theory of power generation, including water and coal, and culminated in the *Hall of the Future*, which explained the production of nuclear power as an upbeat ‘national story’ of scientific and technical progress harnessed for social betterment.² This popular narrative of nuclear energy harnessed for the benefit of humanity began immediately after the end of the Second World War. Christoph Laucht has described how prior to the Festival, in 1947, the Science Museum together with the Atomic Scientist’s Association (ASA) had organised the highly successful Atomic Train: a travelling exhibition which ‘educated Britons primarily about atomic energy’.³ Throughout the 1950s the promotion of nuclear power as the clean, safe, energy of the future continued via touring exhibitions organised by the U.S. Atoms for Peace program, as well as being regularly featured in articles in the mass circulation magazine *Picture Post*.⁴ Even the accidental leak of radioactivity at one of the Windscale piles, which was given widespread media coverage, has been interpreted by Jonathan Hogg as increasing public anxiety, rather than resistance, towards the role of nuclear energy⁵. In Hogg’s estimation the initial secrecy and subsequent political cover-up of the event resulted in a growing awareness that individuals and local communities were powerless and had little

democratic voice in the face of state-controlled production of nuclear energy.⁶

It is against this background that this article focuses on the decision, in 1957, to site a Magnox nuclear power station in a typically remote rural location, on the Suffolk coast. Archive documents together with previously recorded oral histories have been used extensively to research the factors leading up to, as well as local responses to, the siting decision, while newly recorded oral histories with former building workers are used here as the basis for descriptions of the physical reality of building and working on the nuclear power station.

The use of oral history testimony, contextualised with documentary evidence, provides a more nuanced account of the 'national story' of nuclear power generation. Personal memories can enhance, and also subvert, the official histories deposited in national archives and oral histories are distinctive, according to Paul Thompson in that they, 'to a much greater extent than most sources, allow[s] the original multiplicity of standpoints to be recreated.'⁷ They can of course, never reproduce the entirety of the complex and contingent responses by people to the imposition of rapid and permanent change to their living and working environment exemplified by the arrival of a nuclear power station. They do however provide insights into a range of reactions, from acceptance to resistance. In particular, the experience of constructing the power station, related in the personal testimony of the men who built it, gives immediacy, and fleshes out the distant, bureaucratic, mechanism of the nuclear state. The harsh, primitive, unsafe working conditions experienced by the construction workers were an unknown and hidden aspect of the 'national story' of nuclear energy. These oral histories were recorded as part of a Leverhulme Trust funded project, led by the author, aiming to document the role of building workers in post-war reconstruction. Sizewell A was chosen as a case study, which exemplified nationalised industry in the Central Electricity Generating Board, and the very large infrastructure projects of the 1960s.⁸ The project case studies were all chosen to explore different aspects of the built environment produced during the era of the post-war welfare state, a period which also coincided with the Cold War and the emergence of the nuclear state. Workers, in their oral histories, recollected how conditions on building sites were often at odds with the wider social betterment aims of the welfare state and nuclear construction sites exemplified this dramatically. Despite the rhetoric of modernity associated with nuclear energy as the clean, efficient energy of the future, working conditions for those who built the power stations were primitive and dangerous. The interviews recorded with former workers still resident on the Suffolk coast reveal their experiences of work on the site, and also document how the social fabric of a small town was first disrupted

by, and subsequently adjusted to, the arrival of nuclear infrastructure.

The Sizewell decision: site selection in East Anglia

Rural East Anglia was, and still is, dominated by large arable farms owned by a small number of families, which in the post-war period witnessed increased mechanization and a rapid shift from traditional to business methods for agricultural production. Agricultural labourers in the region earned wages between 10-12% lower than equivalent labour in the rest of England and Wales, attributed by Howard Newby to local labour markets controlled by paternalistic farmers with tied cottages as part of the employment contract, thus restricting labour mobility and increasing dependency.⁹ This contributed to a clearly defined class structure of landowning farmers and hired farm workers with conservative farmers and landowners dominating in local and regional politics, as magistrates and in other civic institutions.

This pattern, while true for most of the surrounding agricultural area, does not, however, describe the small, industrial town of Leiston, nor the fishing village of Sizewell: the two communities directly affected by the construction of Sizewell A. Leiston was distinctive in accommodating an existing group of communists and a wider network of left-wing activists in the town who were at first, cautiously critical of the siting of the power station and later actively resistant to the further development of the site. By contrast Sizewell was [see photos 1,2 and 3] a small fishing village consisting of a short terrace of houses, a few Coastguard cottages and a pub, The Vulcan Arms. Ipswich lies twenty miles inland to the south and Lowestoft to the north with the popular seaside towns of Southwold and Aldeburgh on the nearby coast. Together Leiston and Sizewell, consisting of c.4,000 inhabitants in the 1950s, were administered by the Urban District Council of Leiston until local government re-organisation in 1974.

There were many objections to the early Magnox power stations, and Ian Welsh reveals that opposition to nuclear power appeared well before, and distinct from, the emergence of an organised anti-nuclear weapons movement in the early 1960s.¹⁰ His analysis of the 1956 inquiry into the siting of the Magnox station at Bradwell on the Essex coast highlighted the contradiction inherent in reassurance by the authorities that nuclear power stations were perfectly safe and the policy of siting them in remote areas of low population density.¹¹ The Bradwell Inquiry lasted five days with impassioned speeches from well organised objectors including representatives of the local oyster industry, backed up by marine biologists, and focussed on potential danger to the local population, environmental concerns and the lack of information given to the public. The Inquiry ruled against the objectors and in Welsh's

words; 'the unassailable position of the nuclear enterprise remained inviolate'.¹² This may have contributed to the lack of opposition to Sizewell A, and the widespread sense of hopelessness described by Hogg, but there were also, from the outset, a local group of outspoken voices critical of the centralised nuclear state.

Even before the arrival of Magnox the nuclear state had been in evidence on the Suffolk coast for some time. At the end of the Second World War most of the military defence installations along the coastline had been rapidly dismantled but with onset of the Cold War a significant number were put back into use. By the mid-1950s the airfields at Bentwaters and Woodbridge had been extended to make them suitable for the use of the U.S. Air Force and eight former Royal Observer Corps visual observation posts dotted along the coastline were converted, by the construction of new underground bunkers, to monitor fallout in case of nuclear war.¹³ While most of Cold War sites were concerned with early warning and monitoring against a Soviet attack the former Ministry of Defence radar development site at Orford Ness, an offshore shingle spit only accessible by boat at the mouth of the River Ore, became a research and development centre for Britain's own nuclear arsenal. Orford was chosen because of its remoteness from major centres of population, the same criteria used in the siting of nuclear power stations. From 1953 until 1971 the Atomic Weapons Research Establishment (AWRE) ran a ballistics test site on the Ness although the public have always been assured that no actual atomic material was ever used there.¹⁴ The site was always surrounded in secrecy, including in the late 1960s when it was used as site for Cobra Mist, a U.S. and British collaborative project on radar early detection.

Against this background of existing Cold War concealment the site for Sizewell A was chosen, ostensibly, on the grounds of its suitable fit from an engineering perspective. The factors in its favour were, according to Michael Gammon, the senior engineer at the CEGB responsible for finding sites in East Anglia, its geological formation able to take the weight of the station (c.65,000 tons), proximity to sea as a source for cooling water for the turbines, relatively close to the source of high demand for electricity (the South East), and a ready supply of potable water both for the boilers and use of station staff.¹⁵ However Gammon, when interviewed as an elderly man for the British Library's Oral History of the Electricity Supply in the UK gave more background to the process. He stated that the selection of any nuclear power station in the 1950s started with one key restriction, a consideration of the density of the local population in the immediate area and recounted that there were at the time,

strict but crude rules about how many people could be living within certain miles - sensible because if necessary, if all else failed, you had to be able to evacuate people or at least

control their movements. As engineers we thought it would never fail but ...¹⁶

Gammon does not finish the sentence and the ensuing short silence indicates a moment of discomposure in his erstwhile fluent narrative. The unflinching belief by engineers in the total safety of the power stations underpinned much of the technical and engineering decision-making on siting. As Brian Wynne has noted this was part of often, flawed decision-making, but made without any deliberate malice as the engineers and scientists involved were part of a social-intellectual community with a shared beliefs and value system operating in a 'pervading atmosphere of scientific self-confidence'.¹⁷ The infallibility of nuclear science and its practitioners was given public authority by assertions from politicians. For example, Nigel Birch, Minister of Works, stated in 1955:

I am advised that there is no danger at all associated with radioactivity from the use of atomic power for civil purposes. Such radioactive materials as are emitted are very weak and their effect is not cumulative. Their radioactivity ceases almost at once. I want to dispose of any suggestion that the use of atomic energy for civil purposes raises any danger.¹⁸

Nevertheless, at the same time, work by T. M. Fry at the Atomic Research Centre at Harwell had determined that as few people as possible should be exposed to any potential risk. This was envisaged so that for any 10 degree sector around the plant the population would have to be less than 500 within 1.5 miles, less than 10,000 within 5 miles and less than 100,000 within 10 miles.¹⁹ These criteria were not however in the public domain and as Openshaw has demonstrated, the initial guidelines and their subsequent revisions in 1959 and 1963 were anyway, completely disregarded by the CEGB in relation to Sizewell A.²⁰ Michael Gammon admits later in his interview that they were 'doing things rushed' in the 1950s, cutting corners and 'doing things' he would never allow junior engineers to do today, an approach also admitted by Sir Christopher Hinton and evident in the Windscale fire of 1957.²¹

Site investigations in Suffolk began early in 1957 with geological surveys to ascertain foundation conditions. Seven possible sites were identified on the coast including Dunwich and Orford. Dunwich was abandoned because of the difficulty of digging down a cliff and Orford was considered problematic because of the shifting shingle ridge in the River Ore preventing its use as a source of cooling water, although it would be interesting to know whether the presence of the AWRE also affected the decision. Gammon considered that Sizewell fulfilled the technical criteria and in 1958 proceeded to write the report proposing it as the best option. He

remembered Christopher Hinton's sarcastic response to the news, when he made a biblical reference to the wisdom of building a power station on sand.²² There was minimal environmental investigation at Sizewell and the East Suffolk Council, with the authority to call for an enquiry remained silent. Openshaw suggests that a deal might have been made between the Council and the CEGB to agree on Sizewell as the site that would have the least detrimental effect on the environmentally sensitive Suffolk coastline and also on the visual amenity of the nearby tourist centres of Aldeburgh and Southwold.²³

An oral history recorded by two local historians reveals that the Town Clerk of Leiston also had a hand in the CEGB decision.

I well remember the chappy from the CEGB... He popped in here one day and declared himself to be looking for sites for nuclear power stations on the east coast. He thought the best place would be off Orford Ness, because it was remote and it wouldn't be too difficult to put power lines across the river at that point. But we were so desirous of increasing opportunities for local employment that the Clerk of the Council, Mr. Bonham, persuaded him to take a visit down to Sizewell where there was ample foreshore, ample hinterland and unspoilt coastland, but nevertheless available.²⁴

This account is backed up by a letter from Mr. Bonham written to the Ministry of Power, and dated 7th March 1957, which does not offer unqualified support but asks for more information.

My council are interested in introducing new industry into the district and they may favour the establishment of an atomic power station, but it may be that our district has not some of the requisites necessary for such an establishment. On the other hand, when the requirements of such a station are made known it may appear that this district is eminently suitable as there is a wide expanse of sub-standard agricultural land and easy access to the sea.²⁵

By early 1958 it is likely there were rumours circulating locally, indicating that Sizewell was under consideration, to the extent that one Leiston resident wrote in January, in a personal capacity, to Lord Mills, Minister of Power, making a plea for the station to be sited at Sizewell. The letter, typed on headed notepaper, describes how lay-offs at the local engineering works, the threat of a four day week and the recent closure of a small factory which had employed 200 people, have caused 'a sense of foreboding' to overshadow the town. After indicating that it is generally understood that Sizewell is under consideration as the site for the new power station the writer concludes,

... I want to tell you personally, as a private person, how desperately our people are hoping that this project may be realised. If, as we hope and pray, it could come about, a heavy cloud will be lifted, and our morale will soar. If, on the other hand, the decision should go against us, I hesitate to think of the effect on our little community, for then, indeed, it would be hard to see anything to which we could fasten our hopes of an improvement.²⁶

Inhabitants of the fishing village of Sizewell itself were less desirous of the power station. In her memoir Boni Sones, who grew up in the village, remembers helping her mother gather 70 signatures from every Sizewell resident who all objected to the coming of the power station.²⁷ There is no record of the petition from the Sizewell villagers in the National Archives file on Sizewell A and it is not mentioned in the meeting, held at the Ministry of Power in September 1958, to finalise the selection of Sizewell.²⁸ At this meeting only four of the six objections that had been lodged were deemed worth discussion and as they were easily resolved the meeting agreed on the site without the necessity of a public enquiry.²⁹ The site therefore was typical of the later Magnox stations in not having an enquiry and in being cautiously welcomed at local level.³⁰ Instead a half-day exhibition of plans for the new power station was held in Leiston with CEBG staff on hand to answer any questions. It appears that tenders for the construction were sent out even before planning permission was granted.³¹ The building of Sizewell A was forgone conclusion by the time East Suffolk County Council announced the decision early in 1959. This was reported in the local Eastern Daily Press with the Chair of the Planning Committee commenting that he recommended the site, 'with great regret and as the least of all the evils.'³²

The Leiston Left

Up until the mid-twentieth century Leiston was a one-company town, the main employer being Garrett's Engineering Works, which had an international reputation for producing steam traction engines as well as a local reputation for not allowing trade union membership among its employees.³³ By the 1920s demand for steam engines had declined, the firm's attempts to diversify failed and it was forced to rationalize its assets.³⁴ In the process one of the Garrett family houses in Leiston together with its surrounding gardens and fields, was put on the market. It was bought by A.S. Neill, renamed Summerhill, and became the famous progressive school. The arrival of A.S. Neill attracted a number of left-wing radicals and Communist Party members to the town who taught at the school including Paxton Chadwick who joined the school as art teacher in 1933, together with the historian A.L. Morton.³⁵

Local Communist Party members produced a newssheet called the *Leiston Leader*, published monthly and which began in 1934 and continued until 1999, containing articles on both national and local issues.³⁶ Its peak circulation was probably in the late 1930s when 1,200 copies were distributed and it was the only communist produced publication throughout the Second World War, including the years the *Daily Worker* was banned.³⁷ During the war, while their husbands were in the forces, Lee Chadwick and Vivien Morton joined other women munitions workers at Garretts where they played prominent roles in the Transport and General Worker's Union and by the end of the war the Leiston branch of the Communist Party (CP) had forty members.³⁸

From the 1930s onwards Leiston developed a longstanding co-operation between Labour and Communist Party activists resulting in a local council without the Conservative majority typical of rural Suffolk.³⁹ The first success of this collaboration was when Paxton Chadwick, locally known as 'Chad', became the first Communist councillor in Suffolk when he was elected in 1938. The combined forces of Communist and Labour party members successfully fielded socialist candidates to every local election and in 1946 wider success was achieved when Lee Chadwick became the first Communist elected to East Suffolk County Council. Later, in 1956, she became secretary of the East Anglian Federation of Women for Peace in response to the siting of U.S. Air Force nuclear bombers at Lakenheath.⁴⁰ By the late 1950s, when the CEGB began investigating Sizewell as a possible site for a Magnox nuclear power station, there was an extant and organised nucleus of politically informed and active residents just over a mile down the road from the coast. Paxton's position as a popular local councillor enabled him to respond formally to anxiety among the local population concerning radioactive leaks and contamination. These were expressed in a letter written by Chadwick in his capacity as Secretary of the Leiston branch of the Communist Party, to E.J. Turner, Secretary, CEGB, in which he stated that,

...while we do not oppose, and never have opposed, in any way the building of a Nuclear Power Station at Sizewell, we do not think that the general assurances so far published by the Central Electricity Generating Board are sufficient. ⁴¹

Chadwick's letter on the subject of the siting of the new nuclear power station stayed within the guidelines of Communist Party's manifesto *The British Road to Socialism* which supported the peaceful use of atomic energy with its potential for 'bringing into being immense new productive forces, making substantial economies in labour and transport, and paving the way for abundance and more leisure for the people.'⁴² However the letter also clearly reflected the concerns of local people and the questions

asked were well informed. Queries were raised over the safeguarding of public drinking water supply, the build-up of radioactivity in the sea, and, given the life of the station was presumed to be only for twenty years, whether plans were in place to restore the countryside when it ceased production. The final paragraph was a plea for less secrecy from both the Ministry of Power and the CEGB:

We urge the Board to take the public into its confidence and give details of measures to be taken to prevent any possible biological effect on the population. For example, we would like to know what degree of safety, in terms of röntgen units, is the Board working when it says the wastes will contain no harmful degree of radiation? ⁴³

At the time the nuclear power industry did not have any information on 'degrees of safety' of exposure to radiation and it was a scientifically contested field.⁴⁴ The letter reflects increased public awareness of the risks attached to nuclear power generation after the Windscale accident in 1957, which released air-borne radioactive material. The extent of the release and the subsequent destruction of milk from local dairy herds had received significant media coverage including the fact that the CEGB had delayed informing the public of the accident.⁴⁵ Chadwick's letter, copied to the Minister of Power, urged the Board to 'take the public into its confidence and give details of measures to be taken to prevent any possible biological effect on the population'. While there is no record of a response from the Ministry the CEGB replied promptly and politely.

Thank you for your letter of the 18th March from which it is noted that the Leiston Branch of the Communist Party are not opposed to the building of a nuclear power station at Sizewell.⁴⁶

The CEGB's reply addressed the concerns raised at length, with general reassurances on both drinking and seawater quality, and stating that there would be no significant rise in sea-water temperature. There were also reassurances that any harmful radioactive discharge would not result in a 'harmful build-up of radioactivity' but there were no technical details forthcoming.

It is regretted that, at this stage, no actual levels of radioactivity can be stated but these will, in any case, be matters which will be dealt with by the Ministry of Power under the Nuclear Installations (Licensing and Insurance) Bill in the course of the licensing procedure when this becomes law.⁴⁷

Perhaps the most important revelation for the local community in the CEGB's reply was information on the future of the Sizewell site. The letter specified that when Sizewell A ceased production it was going to be replaced by a new power station and that, 'the Sizewell site will continue to be used indefinitely for power generation'.⁴⁸ This statement predicted the inevitable arrival of Sizewell B in the 1980s.⁴⁹

This remarkable exchange of letters, in 1959, despite Cold War anxieties about the Soviet nuclear threat, reveals how Communist Party members were working openly at a local level to challenge state decisions. Christopher Andrew's authorised history of MI5 states that by the early 1950s the Secret Service had almost fully penetrated the Communist Party. Using informers and other sources they had compiled a list of 90% of members throughout the country and were well aware of communist involvement in trade unions.⁵⁰ Paxton Chadwick was, by the late 1950s, well-known nationally as the illustrator of an acclaimed series of Puffin natural history books for children and the Leiston communists, openly elected councillors and local activists, were likely of minor security significance. Peter Hennessey's history of Cold War Britain suggests that at this time the real threat to national security was perceived to be from a small number of senior men, with no obvious links to the CP, in influential positions within the civil service, and thus able to pass intelligence to the Soviet military.⁵¹

Notwithstanding its highly politicised group of activists, by the end of the 1950s, Leiston had moved from the mantle of local, paternalistic nineteenth century industrialism into the remote, and even more disenfranchising and secretive, realm of the twentieth century nuclear state.

Short term gain: long term stagnation

For some the arrival of the power station was seen as a business opportunity. The new landlords of the White Horse Hotel moved to Leiston in 1959 precisely because of its 'nuclear prospects', making a gamble that came off as trade increased greatly after the decision was ratified by the Ministry of Power early in 1960.⁵² Relatively high unemployment in Leiston and the surrounding countryside was cited widely, in the press, by the Ministry of Power, and by the Leiston U.D.C as a compelling reason why the power station should be welcomed. It remained for the local communists to sound a note of warning:

The new power station will bring trade to the shops but with a few exceptions the jobs will be temporary. Don't be misled into thinking the power station is the answer to Leiston's problems. ... Leiston is likely to become a town of aging people instead of a balanced community. New Industries are vital!⁵³

At the opposite end of the political spectrum local farmers and landowners became worried at the prospect of men leaving the land for the higher wages of the construction industry. This was epitomised in an angry letter sent to local M.P. Col. Harwood Harrison from a local farmer asking that no agricultural workers be employed on the site as 'they seem to think they will all have jobs offered them, and they will be roping in big money (which we can ill afford) at the Government's expense'.⁵⁴ The *Leiston Leader* meanwhile, continued to point out that the government was deliberately siting nuclear power stations away from highly populated urban areas and this might result in future difficulties for Leiston developing in other directions.⁵⁵

Both Leiston UDC and East Suffolk County Council seem to have been blinkered, or perhaps misled, as to the long-term effects of the siting of a nuclear power station within a mile and half of the town. Conflict between local government procedures and policy decisions emanating from a nationalised industry and central government became evident when plans for the expansion of the town were released.

The town's population had declined from 4,611 in 1921 to 4,056 in 1951 and the Leiston and District Plan, published in October 1961, intended to address inherent social and economic problems by attracting new industry and building new housing.⁵⁶ It considered that the effect of building of a nuclear power station nearby would be 'felt mainly in the short term' and was 'bound to have a livening effect on trade in Leiston', and to not have a lasting effect on land use apart from the station itself and the new housing planned for CEGB staff.⁵⁷

[photo 5]

Planning permission was already in place to build 350 new houses, and the CEGB had asked that at least 200 of these be allocated to manual staff required for the station maintenance. Interestingly, in the light of Leiston's many well-built Victorian villas, it was assumed that professional and salaried staff would not live in Leiston, but further out in the surrounding countryside and only manual staff working shifts, would need to live close to the station.⁵⁸

However the development plan was halted when, early in 1962 the Ministry of Housing and Local Government (MHLG) issued a circular to planning authorities stating that all applications for new development near a nuclear power station had to be referred directly to the Minister. After extensive negotiations between the County Planning Officer, Leiston UDC, the CEGB, and Ministries of Power and MHLG, a revised and much reduced plan was re-calculated using Ministry of Power safety criteria and the CEGB also reduced their demand for 200 houses to 100.⁵⁹ As these new criteria resulted in the revocation of planning consent for residential and industrial development of 45 acres the CEGB agreed to reimburse the County Council by payment of compensation.⁶⁰ Meanwhile the

Minister of Power wrote in January of 1962 warning the County Planning Officer that 'generally, the increase in the population of Leiston should be kept to a very modest level'.⁶¹ Although the original County Plan hoped to increase and diversify industry in Leiston a revised plan published in 1962 stated unequivocally that the government's policy of siting nuclear power stations away from large centres of population had to be followed.

This factor would now appear to require emphasis to the extent that future development in Leiston itself must be strictly limited. This is in order that the Ministry of Power safety criteria regarding the size of population in the vicinity of the power station are not infringed. The object of these criteria is to ensure that any people living in the vicinity can be safely evacuated should an accident occur at the nuclear power station.⁶²

The spectacle of the construction site: 5,000 men over five years

Sizewell A was one of the twelve nuclear power stations outlined in the 1955 White paper '*A Programme of Nuclear Power*' (Cmd.9389). The Magnox program, its technical problems, inefficiency, and problems of communication between the designers, the Atomic Energy Authority, and the newly constituted body with the responsibility for their running and maintenance, the Central Electricity Generating Board, have been described and analysed in depth elsewhere.⁶³

The design and construction of the plants was carried out by consortia consisting of several private firms and on completion the stations were handed over to the Central Electricity Generating Board who then became responsible for running and maintenance. Five industrial consortia were established to compete for the reactor orders, although the domestic market was not large enough to sustain all five, and Sizewell A was built by Nuclear Design and Construction (NDC), comprising English Electric, Babcock and Wilcox and Taylor Woodrow Construction.⁶⁴

There are very few sources for examining the building process from the perspective of the workers themselves, and while there exist some sympathetic accounts of the lives of Irish building workers in post-war Britain, generally, the workers who brought the major infrastructure projects of the 1960s to completion are invisible.⁶⁵

The accounts here provide insights into the social world of constructing a nuclear power station, where industrial relations, working conditions, friendships and hardships are recalled by the men who built Sizewell A. They also provide a range of voices in relation to the nuclear power station, those who abhorred what it represented, those who willingly worked for short-term high wages, those who used it as an entry to a career in the construction

industry, and those who benefitted from its arrival as a new source of steady employment. The recordings of their working lives were detailed and animated and full of anecdotes, for most of these men work on the power station construction site had been only a short stage in their working lives, but all of them still lived in the town of Leiston or nearby. Their accounts, including personal photographs of the construction site, were published at the end of the project in a small booklet intended as a keepsake for all the participants.⁶⁶

The first stage of construction was the building of the concrete foundation, a reinforced concrete raft 8 feet thick, surrounded by the 'biological shields' to prevent radiation escaping from the reactor which were 100 feet high and 10-14 feet thick. One of the young Irishmen who arrived to work on the site was Patrick O'Kane, who had sailed to England, as thousands of his countrymen did, to look for work in the 1960s.⁶⁷ He arrived at Sizewell in the early stages of construction and lived in the site accommodation, which he remembered as very cramped. There were four in a room with two beds to a cubicle separated by a hatch so that "you could speak to one another... like some animals could look over in a shed where they were living there, you know".⁶⁸ Pat worked on the concrete gangs and earned about £20 a week, as he put it 'You had to work long hours to try and get a week's wages'. Conditions were harsh especially in the winter when the temperature dropped below that required for concrete to set:

The working day was long. It was very, very long. And I think the coldest experience that I ever witnessed was at Sizewell Power station in 1963 when it used to thaw in the morning and freeze at night and we used to make fires to keep the concrete warm, to keep the heat in the concrete.⁶⁹

Pat was then moved to tunnelling work: constructing the cooling water tunnels for the inflow and outflow of seawater, running from the pump house on the main site under the sea to two offshore rigs. Here he contracted an injury to his hand which landed him hospital where he met a local nurse he later married. The minor injury probably saved his life as it said locally that within ten years nearly all the tunnelers were dead from complications arising from decompression sickness.⁷⁰ As a young Irishman Pat was part of a strong network of Catholic Irish building workers where the 'elders' helped the younger men along in getting work and building careers in construction. The site camp had a resident Catholic priest and mass was said every day, but Leiston was without a RC church. Pat and a number of other Irish workers volunteered their labour in building a new church for the town, partly paid for by Taylor Woodrow the civil engineering contractor, and which still stands as a permanent reminder of the Irish men who worked on the first nuclear construction site.

[Photos 8 and 9]

Taylor Woodrow also built the off shore rigs positioned over the inflow and outflow seawater tunnels. A small gang of local men worked on this section of the works, based on the beach and employed because of their experience as boatmen they ended up doing a very wide range of jobs. Pat Cable, a former merchant seaman from Aldeburgh two miles down the coast, became ganger to these local men all of whom he knew personally.⁷¹ After a slipway had been built and the rigs assembled and towed out to sea Pat became a diver and spent many hours underwater bolting together the off shore platforms. He was not trained for this job and had never done any diving before, and his account is typical of the gung-ho approach in the construction industry of the mid-1960s before improved Health and Safety legislation came into force.

“No, I never had any training for it... My general foreman was a Dutchman who was a naval wartime salvage diver, and he just said to me one day, ‘Have you done any diving?’ So I said ‘No.’ He said, ‘Do you want to have a go?’ So [laughing], I said, well, try anything...so he said, ‘Well, put the suit on and go down and see what you think of it.’ So I did...”⁷²

Pat was clear that the incentive was a very good wage: for the two years he spent diving he earned £60 a week, money that went towards buying a house for his young family. When the offshore work was completed he worked as a labourer for English Electric on the next phase of construction, fitting graphite blocks into the reactor core, a completely new type of work and again without any formal training. Pat recalled, ‘It was all clean conditions, where you changed all your clothing – underwear, overalls, you wore hats and silk gloves and everything, to work inside the reactor.’⁷³ He remembered this process,

In each reactor, there’s 11 layers of graphite blocks, and the blocks are about three foot tall, about a foot diameter, and there’s 11 layers of them in each reactor, and there was 3,000-some-odd blocks in a layer and we used to have to lay all these blocks in a certain sequence, because there was a chart that you had to lay them to, to make up a certain pattern, because they’re all machined, these blocks, to make up a certain pattern. Once you’d done the whole layer, which you used to do in about two 12-hour shifts, one shift would lay about half of them, and the other shift would lay about the other half, and they were all in...one [layered partition], and then there was integral steelwork that went all the way round the outside to keep them all clamped together, and then you went and done your next layer, and so it went on till you got to the top.

When the reactor began generating he became one of the few local men who ended up with 'a job for life' with the CEBG, working on Sizewell A as a rigger with the maintenance team. He took early retirement on a good pension at the age of 54 and was very positive about how much the CEBG and Sizewell had contributed to the town: a social centre, swimming pool and sports centre, and also to his own working life, including regular health-checks from CEBG doctors.

The construction process was an enormous undertaking and was widely publicised in the national, local and technical presses. Photographs of the site including shots of the cranes, night-working in the snow and lifting of the pile cap into place, represented the site as a spectacle of technological progress and featured regularly in the local press.⁷⁴ This sense of the site as a spectacle was encouraged when the construction consortium erected a forty feet high observation platform just inside the site boundary in the summer of 1961 so that visitors could look out over the works towards the sea. This attracted over 3,000 visitors over the August Bank holiday with many brought to the coast by the Eastern Counties Omnibus Company who were running tours from 44 places in East Anglia to view the construction works.⁷⁵ The Town Council had recently bought the foreshore of Sizewell beach, as part of the negotiations for the power station site, to ensure that the beach remained open to the public during construction for the use of holidaymakers and fishermen.⁷⁶ A small car park, public conveniences and a tea shack were installed, while the local pub, the Vulcan Arms, was accommodating both visitors and construction workers in an extension erected in the garden to cater for the increased numbers of drinkers.

[photos 6 ,7]. The extraordinary scale of the reactor and its components was recognized in a series of photographs taken by a welder, Charlie Dennis, his photographs conveying the construction site from the perspective of one of the workers.

[Dennis photos 6 and 7]

When the concrete superstructure was completed a very different workforce began to arrive. These were the highly paid and highly skilled welders needed to assemble the boilers manufactured by Babcock and Wilcox, a separate British subsidiary of the U.S. firm founded in 1891, at their Renfrew works. Made of 2.25 inch thick steel they were shipped in sections to Lowestoft from where they were then hauled by road to Sizewell. This work attracted highly skilled welders from further afield, although there were also local men and those who abandoned the Garrett's Works in favour of the construction site. Ian Roberts and John Mittel were both local men who sought out the higher wages available at Sizewell, but while wages were high, working conditions were hellish. Up to twenty welders at a time worked inside a boiler, where, with no individual air filtration masks and just one main extractor, it was hot, dusty and very noisy. The welders were given salt tablets and only allowed to work for up to two hours at a time without a break. John Mittel recalled that

the plates were, 'pre-heated up to about 200, 250 degrees centigrade, before welding could commence, and it was hot, very hot.'⁷⁷ Ian Roberts remembered the heat of the plates that were being welded was so high that the welders were supplied with asbestos mats:

the mats were about...eight inches deep, sprung mattress, all covered in blue asbestos, so that you didn't have to lay on the heated plates, you know, and that was a bit uncomfortable, the sweat and that, you know.⁷⁸

The responses of former workers who were exposed to asbestos varied. While John did not comment on the presence of asbestos Ian knew of two men who had died of asbestos related disease and said he 'often wondered if that's going to be my lot'. John and Ian also worked on preparing the reactor by machining the openings for the reactor tubes, which pierced the reactor dome. This was very precise work to dimensions of within three-thousandths of an inch. John tried to describe the conditions in the dome:

There would be 20 welders, about 20 machinists, and don't forget, with double-shifting there would be about 40, and then you've got other ancillary trades, ... So, there would be about 10 or 12 scaffolders, who were constantly moving boards and equipment,. ...just imagine a great big dome of steel 90 feet across, and there's all this scaffolding, and then there's the welders and a mass of electrical equipment – all the welding equipment, the wires, etc. ...terrific voltages in there, and then there's us fitters, with the machines, and we're all connected up to electricity,. ...

And then the other thing was ... I mean, we were cutting metal. So...all 20 of the machines, blasting away! So, you've got horrendous noise!...

79

Welders were members of the Boilermakers Union and renowned for determinedly arguing their wage rates at the outset of any project. Ian Roberts had been working as a welder in the Ipswich engineering works of Ransomes and Rapier for around £18 but at Sizewell he immediately earned £60-70 a week.⁸⁰ John Mittel considered that 'the welders, the boilermakers, were the kingpins, they held the key to the salaries...' ⁸¹ In terms of wages Sizewell A was typical of large civil engineering sites in the 1960s, prior to a unifying industrial agreement, with a large number of different unions on site and wide disparities in wages between occupations. The site saw a number of strikes and disputes but these were all resolved through a very efficient site committee so that there were no overruns, and Sizewell opened on time. Jim Ward, a labourer and union convener who travelled in every day from Lowestoft, summed up the industrial organization of Sizewell as a balance between local men desperate for high wages over a short period of time and the 'travelling men' used to fighting hard to maintain their pay and conditions from site to site.⁸² He reflected that

Generally speaking, the East Anglian workforce were more, if you like, gentle – that's the wrong word... peaceful,

peaceable, than the travelling men, who were used to the hard, rough way of working and getting what they wanted, and I think the two things helped each other. There was the reticence of the local, earning good money, and there was the hardness, if you like, of the travelling men, and the two went together very well, I thought.⁸³

Apart from mechanised lifting and other plant, much of the physical process of nuclear construction, including the 'clean conditions' required for assembling the reactor core, was undertaken by manual workers and on reflection, many years later, they still took pride in their work. As Jim Ward reflected, 'Sizewell was a good job and it was well done, and I've got no qualms about it. I did a small part of it, a very small part.'

Working on the Sizewell A site provided a window on a world very different from the rigidly controlled, low paid employment in local engineering works and the even lower pay of agricultural work. For some local men it was not just an introduction to the harsh life of the construction industry but, through working alongside incoming workers, the wider world beyond rural Suffolk, which arrived as a consequence of nuclear power. Dick Nettlingham, who had left his job at Garrett's, had joined the local 'boys' on the off-shore rigs and remembered it as an intense time:

well, it was an eye-opener and an experience, hell of an experience, because I hadn't worked with those sort of men and that before sort of thing, you know, and I suppose it...sort of broadened your outlook a bit but I still think the job...on the offshore was the best lot of boys I worked with.⁸⁴

In 1966 when the station began operating Bill Howard moved to Leiston to take up a job as a fitter after working at a coal-fired power station near Liverpool.⁸⁵ He found the working conditions at Sizewell 'a dream' in comparison and was well aware of how nuclear power had been pushed in the media as the clean, safe, energy of the future. Bill had decided on the move partly because Leiston had an active branch of the Communist Party, which he joined as soon as he started work at Sizewell. One of his first political campaigns in Leiston was to lead a successful rent strike against the CEBG with the discovery that manual workers living in council houses were paying far higher rents to the CEBG than their neighbours were to Leiston UDC.

Later disputes with CEBG over wages involved mass meetings on Sizewell beach, but Bill left the CEBG after six years, finding the link between power generation and nuclear weapon production increasingly difficult to reconcile with his politics and his conscience. He became involved with local politics, and one of the last editors of the *Leiston Leader*, and was elected to the UDC for many consecutive years, first as a Communist candidate and later as an Independent councillor. Bill's experiences, as an elected local

councillor and as an objector in the enquiry for Sizewell B, had made him very aware of the role of the state in promoting nuclear power. His personal experience of political campaigning for his local community has brought him into close contact with the nexus of state secrecy, which surrounds the production of nuclear power. He gave evidence at the Sizewell B enquiry and recounted how his post was regularly opened before he gave evidence to support Dr. Alice Stewart and her research findings on the cluster of leukaemia deaths found in former Sizewell workers.⁸⁶ More recently he has publically criticised the role of the armed civil nuclear constabulary, a force he considered were outside local democratic control. With a remit to protect the station from terrorist attacks they patrol the dunes on Sizewell beach but also have jurisdiction within five kilometres of the power station, which includes the town.⁸⁷ He remains actively opposed to further development of nuclear and power and is part of the local campaign group organising against the building of Sizewell C.⁸⁸

Nuclear construction: acceptance, anxiety and resistance.

When the photographer, Libby Hall, moved to Leiston in 1962 to work as a housemistress at Summerhill School, she noted some resentment among the local male workforce towards the incomer workers at the power station.⁸⁹ Throughout the 1960s she, and other Summerhill staff members, drank at the Engineers Arms, a pub opposite the gates of the Garretts Works and frequented by the Garrett's workers, agricultural workers and a few American Air Force servicemen stationed at nearby U.S. airfields.⁹⁰ The Sizewell construction workers drank elsewhere, and a number of interviewees recounted that many of the 'hard, travelling men' drank excessively and recalled Saturday night brawls on the Leiston streets between American servicemen and Irish construction workers.

Throughout the period she lived in the town Libby did not remember much concern expressed about the safety of the station, but that people were more interested in the wonderful new technology of nuclear power. After Sizewell became fully operational in 1966, she and other Summerhill staff would regularly swim in the sea at Sizewell because the water was 'almost tropical', the sea warmed by the outflow from the power station. Local people were not enthusiastic about swimming there because, as Libby recalled, they believed the seawater was warmed from radioactivity leaking from the power station.⁹¹ This was a belief held for many years and Sizewell beach, as late as 1988, was described in the *Companion Guide to East Anglia* as having seawater temperature raised by ten degrees by the 'monstrous' nuclear power station.⁹²

The stories of Boni Stones who grew up in Sizewell, including her childhood memories of practising emergency evacuation procedures, recount the cynical acceptance of the villagers to the industrialisation on their doorstep and new anxieties about nuclear

accidents.⁹³ The uneven trajectory of nuclear modernity is perfectly expressed in the photograph below. It was some time after Sizewell A began operating and exporting power to London and the Southeast that electricity was installed for the villagers living in the shadow of the nuclear power station.

By the mid 1960s most of the construction workforce had moved on, many following the work to the next Magnox power station in North Wales at Wylfa. Leiston adjusted to a decrease in population but suffered a further setback to its future prospects when the railway station was closed as part of Beeching's rationalisation. The East Suffolk line that looped between Leiston and Aldeburgh was closed in 1966 and all the tracks lifted apart from a five and half mile length stretching from the main Ipswich to Lowestoft line which ran through the southeast corner of Leiston directly to Sizewell A. This was retained as the route for spent nuclear fuel rods to be transported to Sellafield and remains intact and in use today. Paxton Chadwick's early plea for increased communication was realised in the setting up of a liaison committee between CEBG staff at the power station and local community representatives, which met for many years. It was only in 1986 that community members of the committee discovered that the CEBG had failed to mention that radioactive waste was being stored at Sizewell, and had been from the very first year that Sizewell A began operating.⁹⁴ After Paxton's death in 1961 Lee Chadwick remained living on the heathland just over a mile behind the nuclear power station where she wrote *'In Search of Heathland'*, a meticulous study of a rapidly vanishing habitat, published in 1982.⁹⁵ A few years later she gave evidence at the Sizewell B enquiry against the siting of another power station on environmental grounds pointing out the irony of the recent designation of the area as heritage coast because of its outstanding natural beauty and the immediate plan to turn it into 'a nuclear park'.⁹⁶ She had anticipated the enquiry would be 'the focus for yet another form of popular struggle concerning the use of one-time open land'.⁹⁷ This land, deemed in the 1950s of poor agricultural value by both the CEBG and the then Town Clerk, was for Lee Chadwick and many others, environmentally rich and a precious remnant of open 'commons': unenclosed land which remained free for the use of local people. Viewed from the beach and surrounding heathland the group of buildings, which make up the station are unashamedly monstrous in scale. Sizewell A, now decommissioned and no longer producing electricity will stay in place until it is safe to be dismantled, estimated to be in 2110.⁹⁸

Conclusion: when 'a new world' came to Leiston

It was a new world when Sizewell A started... It was a new world for the people here. It was a new world at the end of the day.

Patrick O'Kane, building
worker.

The construction of the first wave of nuclear power stations, the Magnox reactors, brought the 'atomic age' abruptly into the lives of rural communities. While the decision on siting the power station at Sizewell was not contested at the level of county politics, resistance and criticism were expressed locally through the pages of the communist broadsheet, *The Leiston Leader*.⁹⁹ Meanwhile, the organisation of the construction of the power station, supposedly representing the fusion of scientific progress and modernity, was broadly equivalent to the way in which the canals and railways of the eighteenth and nineteenth centuries were built. Thousands of workers were bussed in or accommodated on site where long hours of hard physical labour in harsh conditions were the norm, and the strange new world of the atomic age became familiar through the traditional, physical processes of production: pouring concrete, welding metal, drilling holes, and putting up scaffolding. The widespread media coverage of construction and subsequent employment of local men at Sizewell A, is likely to have contributed to a sense of 'ordinariness' in relation to the power station: a factor that enabled the local community to carry on their lives with the attendant risks of nuclear power.¹⁰⁰ Centralised decision-making, and Welsh's notion of the 'nuclear juggernaut', ensured that nuclear power generation, its waste and contamination, would affect generations of people living within the ambit of Sizewell. At a local level the use of oral histories has enabled a range of voices to comment on the arrival of nuclear power. For some it gave a 'job for life', for others a temporary period of relative affluence, but the majority were left to live their lives in a town frozen by restrictions placed on its development, and exposed to secrecy and surveillance surrounding the station.

Leiston, at the time of writing and unusually compared to other similarly sized towns close to the heritage coast of Suffolk, remains small, without an influx of second homeowners. It could be argued that the presence of the power station has saved it from the fate of gentrification, and in many ways it is a thriving community with library, schools, local shops and a small industrial estate of local businesses. Leiston's historical legacy of socialist activism survives and it is still a locus of resistance to the nuclear state. Power generation, including a new off-shore wind-farm, continues to provide local employment, while Sizewell A sits on the shoreline, adjacent to the huge dome of Sizewell B, as a monument to the labour of thousands of men and, for generations to come, a reminder of the nuclear state.

Acknowledgements

I am very grateful to all those who talked at length of their experiences of Leiston and Sizewell in the 1960s and allowed their testimony to be reproduced here. Thanks also to the staff and

volunteers of the Leiston Long Shop Museum, to Boni Sones for her help with the photograph, to Bill Howard, the staff at Ipswich Records Office and the Town Clerk and Secretary of Leiston Town Council and Charlie McGuire, Research Fellow on the Leverhulme funded project. This paper could not have been written without your help.

¹ Conekin, B., Mort, F., Waters, C., eds, *Moments of modernity : reconstructing Britain 1945-1964*, London : Rivers Oram, 1999, p242.

² Jolivette, Catherine, 'Representations of Atomic Power at the Festival of Britain' in Jolivette, C., ed. *British Art in the Nuclear Age*. Routledge, 2017, p121.

³ Laucht, C. (2012). Atoms for the people: The Atomic Scientists' Association, the British state and nuclear education in the Atom Train exhibition, 1947–1948. *The British Journal for the History of Science*, 45(4), 591-608.

⁴ See, Krige, John, 2006, Atoms for Peace, Scientific Internationalism, and Scientific Intelligence, *Osiris*, 2nd Series, 21, Global Power Knowledge: Science and Technology in International Affairs pp. 161-181; Alario, M. V. and Freudenburg, W. R. (2007), Atoms for Peace, Atoms for War: Probing the Paradoxes of Modernity. *Sociological Inquiry*, 77: 219–240 and Laucht, Christoph. "'Dawn—Or Dusk?' Britain's Picture Post Confronts Nuclear Energy." *The Nuclear Age in Popular Media*. Palgrave Macmillan, New York, 2012. 117-148.

⁵ Hogg, Jonathan. *British nuclear culture: official and unofficial narratives in the long 20th century*. Bloomsbury Publishing, 2016, p92.

⁶ Ibid.

⁷ Thompson, Paul, *The Voice of the Past*, Third Edition, OUP, 2000, p101.

⁸ The Leverhulme Trust funded project *Constructing Post-War Britain: building workers' stories 1950-70* was led by the author who was Principle Investigator together with Co-Applicant Linda Clarke, at the University of Westminster. The project archive can be viewed at www.westminster.ac.uk/probe/projects/constructing-post-war-britain

⁹ East Anglia Economic planning Council, *East Anglia: A Study*, HMSO, 1968 p4 and Howard Newby's classic text, *The Deferential Worker*, 1977, London, Allen Lane, p186.

¹⁰ See chapter 3, Resisting the Juggernaut: opposition in the 1950s, in Welsh, Ian. *Mobilising modernity: the nuclear moment*. Routledge, 2003.

¹¹ Ibid. 73-82.

¹² Ibid. 81.

¹³ *Suffolk's Defended Shore, Coastal Fortifications from the Air*, Cain Hegarty and Sarah Newsome, 2007, English Heritage, p77

¹⁴ *Ibid.* p 86.

¹⁵ Gammon. K. M., and Pedgrift, G. F., 1961, The selection and investigation of potential nuclear power station sites in Suffolk, *Proceedings of the Institute of Civil Engineers*, 21, Session 1961-2, Jan. 130-160

¹⁶ Gammon, Mike (3 of 9). An Oral History of the Electricity Supply in the UK, <http://sounds.bl.uk/Oral-history/Industry-water-steel-and-energy/021M-C1495X0025XX-0003V0> accessed March 09, 2017.

¹⁷ Wynne, in *Rationality and Ritual. The Windscale Enquiry and Nuclear Decisions in Britain*, 1982, uses the term 'cosmologies' to describe a system of thought rooted social practice and belief and with intellectual frameworks which must be articulated without contradiction or doubt, pp12-13 and p19.

¹⁸

<http://hansard.millbanksystems.com/commons/1955/mar/22/nuclear-explosions-genetic-effects>, *Hansard* (1955), 'Nuclear explosions (genetic effects)', HMSO.

¹⁹ Marley W. G. and Fry T. M. (1955), 'Radiological hazards from an escape of fission products and the implications in power reactor location', *Proceedings of the International Conference on the Peaceful Uses of Atomic Energy, Geneva*, United Nations.

²⁰ Openshaw, Stan. "Nuclear power: siting and safety." (1986) pp .99-109.

²¹ Wynne, p20-21

²² Gammon, Mike (3 of 9). An Oral History of the Electricity Supply in the UK.

²³ Openshaw, 1986, p167.

²⁴ David Gooderham interviewed by Daphne Yasodhara in, May D.Y. and May, K, 2001, *From Flint Knappers to Atom Splitters; a history of Leiston-cum-Sizewell*, Leiston: Quickthorn Books, p237. Openshaw reveals that the CEBG many years later expressed an interest in Orford Ness but that any application was embargoed until the Sizewell site was fully developed.

²⁵ NA/AB/16/3825 Folder: CEBG Power Station, Sizewell.

²⁶ *Ibid.*

²⁷ Sones, Boni, *The Mermaid's Tale: a portrait of Suffolk*, 2009, published by www.wpradio.co.uk. p 28.

²⁸ NA POWE 14/1406 Minutes of a meeting held at the Ministry of Power, September 18th, 1958. Headquarters Committee on the Siting of Power Stations. Sizewell Nuclear Power Station. This was declassified in 1988, three years after the end of the Sizewell B Enquiry.

²⁹ NA/AB/16/3825 Minutes of a meeting held at Ministry of Power, 19th September 1958.

³⁰ Welsh, p90

³¹ Openshaw, Openshaw, Stan. "Nuclear power: siting and safety." (1986) pp .99-109.

³² Eastern Daily Press, February, 1959.

³³ Set up by Richard Garrett (the great grandfather of Elizabeth Garrett Anderson) in 1778, in what was then a small agricultural village, the Garrett's works expanded over the nineteenth century as their steam-driven threshing machines were exported throughout Europe. R. A. Whitehead, 1964, *Garretts of Leiston*, London: Percival Marshall and Co. Ltd., p193 and see also Richard Webster, n.d., *Leiston: the sickle, the hammer and the progressive school*, www.suffolkcottage.net/leiston_garretts_summerhill.pdf downloaded April 2010

³⁴ A major setback to the financial viability of the firm occurred in 1918 when the contemporary equivalent of tens of millions of pounds invested in Russian Imperial bonds, which, after the Russian Revolution, were cancelled by the Central Committee of the Communist party.

³⁵ These included Vivien Jackson (daughter of T. A. Jackson), A. L. Morton (author of *A People's History of England*), Richard Goodman, Cyril Eyre and Lee Bosence who later married Paxton Chadwick. See John Saville's biography, *Paxton Chadwick. Artist and Communist 1903-1961*, 1993, Leiston: Leiston Leader.

³⁶ Suffolk Archives hold some copies of the *Leiston Leader*, at Ipswich Records Office, HD2272/309/162.

³⁷ Lee Chadwick, Leiston Communists and the 1939 War: a grassroots view, *Socialist History Journal* No 19, May 1992, 14-21

³⁸ *Ibid.*, p16

³⁹ Bob Little, 1982, Report back - Early Socialism in East Anglia, *History Workshop Journal*,

hwj.oxfordjournals.org/content/13/1/180.full.pdf

⁴⁰ Dictionary of Labour Biography, v9 p37.

⁴¹ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell. Letter from Paxton Chadwick, Secretary of the Leiston branch of the Communist Party, to E.J. Turner, Secretary, CEGB and copy to Lord Mills, Minister of Power, 18th March 1959.

⁴² *The British Road to Socialism*, 1958, Communist Party of Great Britain, accessed from Marxist Internet Archive, March 08 2017, www.marxists.org/history/international/comintern/sections/britain/brs/1958/58.htm

⁴³ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell. Letter from Paxton Chadwick, Secretary of the Leiston branch of the Communist Party, to E.J. Turner, Secretary, CEGB and copy to Lord Mills, Minister of Power, 18th March 1959.

⁴⁴ In 1958 *New Scientist* published an article stating that given the long-term effects of radiation, 'it is impossible to be sure of safety levels at this stage'. Quoted in Wynne, 1982, p23.

⁴⁵ See Simon Taylor, 2016, *The Fall and Rise of Nuclear Power in Britain*, Cambridge: UIT, p12.

-
- ⁴⁶ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell. Letter dated 27th April 1959 from H.V. Barnett, CEGB to the Secretary of the Leiston Branch of the Communist Party, copy to Leiston U.D.C.
- ⁴⁷ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell. Letter from CEGB, Winsley St. London W.1. to the Secretary of the Leiston branch of the Communist Party, 27th April 1959, signed H.V. Bartlett.
- ⁴⁸ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell. Letter from CEGB.
- ⁴⁹ Friends of the Earth refused to take part seeing the building of Sizewell B, Britain's first PWR station, as a foregone conclusion. See
- ⁵⁰ See Section D, Chapter Five, The Communist Party of Great Britain, the Trade Unions and the Labour Party, in *The Defence of the Realm. The Authorized History of MI5*, 2009, London: Allen Lane, pp 400-419. Peter Hennessey in *The Secret State. Preparing for the Worst 1945-2010*, Penguin, 2010, p105, points out that Soviet intelligence also knew that King Street was bugged via Anthony Blunt's presence in MI5.
- ⁵¹ Hennessey, p100.
- ⁵² *The Times*, April 5th, p6.
- ⁵³ Ipswich Public Records Office, HD 2272/161/ 113 Communist Party leaflet for local election, Lee Chadwick and Daphne Oliver, no date.
- ⁵⁴ NA/AB/16/3825 Folder: CEGB Power Station, Sizewell, letter dated March 6th, 1959, from A. Cooper, Manor Farm, Framlingham.
- ⁵⁵ *Leiston Leader*, (September/October 1960), Ipswich Public Records Office, HD 2272/161/ 113.
- ⁵⁶ *Leiston and District Plan, Factual Survey and Outline Plan*, 1961, T.B. Oxenbury, County Planning Officer, County Hall, Ipswich. Copy held at Leiston Long Shop Museum.
- ⁵⁷ *Ibid.* para 36 The nuclear power station.
- ⁵⁸ NA/AB/16/3825 Minutes of a meeting held at Ministry of Power, 19th September 1958.
- ⁵⁹ These deliberations involving meetings, letters, visits from representatives of the Ministry of Power to Leiston and threatened delegations from Leiston UDC to the MHLG in order to speed up the decision process, are recorded in the minutes of Leiston UDC and held in the Town Clerk's office in Leiston.
- ⁶⁰ The Leiston/Aldeburgh Development Plan. Amendment Report. T. B. Oxenbury
County Planning Officer, June 1962, East Suffolk County Council.
- ⁶¹ Leiston UDC, Minutes of the Meeting held on January 13th, 1962.
- ⁶² The Leiston/Aldeburgh Development Plan. Amendment Report. T. B. Oxenbury
County Planning Officer, June 1962, East Suffolk County Council. Pt. 4.
- ⁶³ The Magnox program has been described and analysed by many commentators, the following titles cover policy, technical, economic and social aspects: Walker, John, 1987, *The Road to Sizewell*,

Contemporary British History, 1(3) 44-50; Williams, Roger, 1980, *The Nuclear Power Decisions. British Policies 1953-78*, London: Croom Helm; Steward, F., and Wield, D., 1984, Science Planning and the State, in *State and Society in Contemporary Britain*, eds. Gregor McLennan, David Held and Stuart Hall, Cambridge: Polity Press; Wearne S. H., and Bird R. H., 2009, *UK Experience of Consortia Engineering for Nuclear Power Stations*, School of Mechanical, Aerospace & Civil Engineering, University of Manchester, Dalton Nuclear Institute, downloaded April 2011, <http://www.dalton.manchester.ac.uk/about-us/reports/consortia-engineering/>; Hannah, L., 1982, *Engineers, Managers, and Politicians: the first fifteen years of nationalised electricity supply*, London: Macmillan; Green, R., 1995, The Cost of Nuclear Power Compared with Alternatives to the Magnox Programme, *Oxford Economic Papers, New Series*, 47, (30) 513-524

⁶⁵ Cowley, U., 1998, *The Men Who Built Britain: A History of Irish Labour in British Construction* and Sykes, A.J.M., 1969. Navvies: Their social relations. *Sociology*, 3(2), pp.157-172

⁶⁶ See, Wall, Christine, et. al., 2012, *It was a new world: building Sizewell a nuclear power station*, University of Westminster. It can be downloaded here:

www.westminster.ac.uk/probe/projects/constructing-post-war-britain/sizewell

⁶⁷ Author interview with Patrick O’Kane, Leiston, March 3rd 2011.

⁶⁸ Ibid.

⁶⁹ Ibid.

⁷⁰ Trevor Branton, in a talk to the East Anglian branch of the IEE in great Yarmouth on March 10 2011, recounted that local people told him that ten years after the tunnels were finished none of the men who worked on them were still alive due to them short-cutting the de-compression process.

⁷¹ Author interview with Pat Cable, Aldeburgh,

⁷² Ibid

⁷³ Ibid.

⁷⁴ Ipswich Records Office, 1176/2/2/19/662, *The Lowestoft Journal*, 5TH April 1961, through to views inside the finished reactor in 1967.

⁷⁵ *The Times*, September 21st 1961, p20.

⁷⁶ Leiston UDC, Minutes of the Meeting held on July 13th, 1961

⁷⁷ Author interview with John Mittel

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Author interview with Ian Roberts, Kesgrave, 15th September, Suffolk, 2011.

⁸¹ Author interview with John Mittel, October 12th, Kesgrave, Suffolk, 2011.

⁸² Author interview with Jim Ward, Lowestoft, 13th September, 2011.

⁸³ Ibid.

⁸⁴ Author interview with Dick Nettlingham, Leiston, May 2011.

-
- ⁸⁵ Author interview with Bill Howard, Leiston, February, 2011.
- ⁸⁶ See, Gayle Greene, *The Woman Who Knew Too Much, Revised Ed.: Alice Stewart and the Secrets of Radiation*, University of Michigan Press, 2017.
- ⁸⁷ See *East Anglian Daily Times*; <http://www.eadt.co.uk/news/leiston-concern-over-nuclear-police-responding-to-incidents-1-823471> first accessed 10 Oct. 2016.
- ⁸⁸ Together Against Sizewell C (TASC) campaign literature can be found on their website: <http://tasizewellc.org.uk/>
- ⁸⁹ Author interview with Libby Hall, Hackney, London, March 2017.
- ⁹⁰ Libby Hall's photographs of Leiston and drinkers at the Engineers Arms were exhibited at PhotoEast Festival and later in Leiston at the Long Shop Museum, in August 2016.
- ⁹¹ Author interview with Libby Hall, Hackney, London, March 2017.
- ⁹² *The Companion Guide to East Anglia*, 1988, John Seymour, Collins, p37.
- ⁹⁴ Ipswich Records Office, Newspaper Cuttings on Sizewell A. *Ipswich Star* 26th March, 1986. It was understood that spent fuel rods were being transported to Sellafield for re-processing, but Sizewell staff were stripping the fins from the rods in order to fit more in to the transporting canisters. The radioactive fins and other low-level waste was stored on site in water-filled vessels enclosed in thick concrete.
- ⁹⁵ Chadwick, Lee, *In Search of Heathland*, 1982, Durham: Dobson Books Ltd.
- ⁹⁶ She argued passionately against further destruction of the unique habitat formed by the windswept, grass duneland above the shoreline. See *The Guardian*, 13th January, 1983.
- ⁹⁷ *Ibid.* p66.
- ⁹⁸ <https://magnoxsites.com/wp-content/uploads/2014/03/Sizewell-A-Lifetime-Plan.pdf> accessed 11 August 2017.
- ⁹⁹ Jonathan Hogg identified these characteristics of nuclear culture in the 1950s 'defined by the limits of democracy'. See Hogg, 2016, p82.
- ¹⁰³ *East Anglian Daily Times*, 'Never talk to a Mermaid', Saturday, July 19, 2010,
- ¹⁰⁴ Parkhill, K.A., Pidgeon, N.F., Henwood, K.L., Simmons, P. and Venables, D., 2010. From the familiar to the extraordinary: local residents' perceptions of risk when living with nuclear power in the UK. *Transactions of the Institute of British Geographers*, 35(1), pp.39-58.

References

- Alario, M. V. and Freudenburg, W. R. Atoms for Peace, Atoms for War: Probing the Paradoxes of Modernity. *Sociological Inquiry*, 77: 219-240, 2007.
- Burn, Duncan, , *Nuclear Power and the Energy Crisis*, London: Macmillan,1978.
- Edgerton, David, The 'White Heat' revisited: the British government and technology in the 1960s, *Twentieth Century British History*, 7(1) 53-82, 1996.
- Edgerton, David, *Warfare state : Britain, 1920-1970*, Cambridge : Cambridge University Press, 2006.
- Foley, G., *The Energy Question*, Harmondsworth: Penguin Books, 1982.
- Gammon. K. M., and Pedgrift, G. F., The selection and investigation of potential nuclear power station sites in Suffolk, *Proceedings of the Institute of Civil Engineers*, 21, Session 1961-2, Jan. 130-160, 1961.
- Glasson, J and Chadwick, A., Auditing the Socio-Economic Impacts of a Major Construction Project: the Case of Sizewell B Nuclear Power Station, *Journal of Environmental Planning and Management*, 42(6) 811-836, 1999.
- Glasson, J., Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, *Impact Assessment and Project Appraisal*, 23 (3) 215-226, 2005.
- Gowing, M., *Independence and Deterrence. Britain and Atomic Energy, 1945-52*. Volume 1: Policy Making (assisted by Lorna Arnold). London: Macmillan,1974.
- Green, R., The Cost of Nuclear Power Compared with Alternatives to the Magnox Programme, *Oxford Economic Papers, New Series*, 47, (30) 513-524,1995.
- Hecht, G., *The Radiance of France: nuclear power and national identity after World War II*, Cambridge Mass: MIT Press,1998.
- Hogg, Jonathan. *British Nuclear Culture: Official and Unofficial Narratives in the Long 20th Century*. Bloomsbury Publishing, 2016.
- Krige, John, Atoms for Peace, Scientific Internationalism, and Scientific IntelligenceAuthor(s): *Osiris*, 2nd Series, 21, Global Power Knowledge: Science and Technology in International Affairs pp. 161-181,2006.
- Leiston Leader, , Suffolk's Little Moscow, 1981, downloaded March 2011, <http://country-standard.blogspot.com/search/label/leiston>
- Little, Bob, Report back - Early Socialism in East Anglia, 1982, *History Workshop Journal*, hwj.oxfordjournals.org/content/13/1/180.full.pdf.
- May D.Y. and May, K, 2001, *From Flint Knappers to Atom Splitters; a history of Leiston-cum-Sizewell*, Leiston: Quickthorn Books.

Ministry of Fuel and Power A Programme of Nuclear Power, Cmd 9389, HMSO, London, 1955.

Nehring, Holger, Cold War, Apocalypse and Peaceful Atoms, Interpretations of Nuclear Energy in the British and West German Anti-Nuclear Weapons Movements, 1955-1964, *Historical Social Research*, 29 (3) 150-170, 2004.

Saville, John, *Paxton Chadwick. Artist and Communist 1903-1961*, Leiston: Leiston Leader, 1993.

Sones, Boni, *The Mermaid's Tale. A portrait of Suffolk*, www.pradio.co.uk, 2009.

Steward, F., and Wield, D., Science Planning and the State, in *State and Society in Contemporary Britain*, eds. Gregor McLennan, David Held and Stuart Hall, Cambridge: Polity Press, 1984.

Walker, John, The Road to Sizewell, *Contemporary British History*, 1(3) 44-50, 1987.

Wearne S. H., and Bird R. H., *UK Experience of Consortia Engineering for Nuclear Power Stations*, School of Mechanical, Aerospace & Civil Engineering, University of Manchester, Dalton Nuclear Institute, 2009, downloaded April 2011, <http://www.dalton.manchester.ac.uk/about-us/reports/consortia-engineering/>

Webster, Richard, n.d. www.suffolkcottage.net/leiston_garretts_summerhill.pdf

Welsh, Ian. *Mobilising modernity: the nuclear moment*. Routledge, 2003.

Williams, Roger, *The Nuclear Power Decisions. British Policies 1953-78*, London: Croom Helm, 1980.

Wynne, Brian, *Rationality and Ritual. Participation and Exclusion in Nuclear Decision-making*, London: Earthscan, 2011.

Reports and Inquiries

Report of the Committee of Inquiry into Delays in the Commissioning CEGB Power Stations, 'The Wilson Report', 1969, HMSO.

Large Industrial Sites, Report, 1970, National Economic Development Office