



The National Assembly for Wales

**Environment, Planning &
Transport Committee**

**Independent Investigation
Nantygwyddon Landfill Site**

12th December 2001

Investigator's Report

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Report of Independent Investigator Nantygwyddon Landfill Site, Rhondda, South Wales

David W. Purchon, Independent Investigator

1 Introduction

1.1 I was appointed to undertake my work from 1st November 2000. Essentially my assignment was to assist the Environment, Planning and Transport Committee of the National Assembly for Wales conduct an investigation into aspects of the Nantygwyddon Landfill Site with the intention of learning any relevant lessons and informing future policy on waste disposal. In reaching my conclusions I have drawn not only on the written and oral evidence and material placed before me but also, when I felt it appropriate, on my own experience and expertise in the field of waste management and environmental pollution monitoring and control.

1.2 Nantygwyddon is a waste disposal site situated on a hill/mountain top some 350 metres (above ordnance datum - AOD) above the Rivers Rhondda Fawr and Rhondda Fach, close to the source of the Rhondda Fawr above steep sided narrow valleys (**Appendix 1 - O.S. map**). The site has caused widespread public concern, particularly about its effects on the public health of the communities (numbering some 20,000 people) living in its vicinity on the steep sided narrow valley slopes.

1.3 The National Assembly expected that my investigation could be undertaken part-time over a six-month period, but this proved impractical in view of the amount of material involved and the number of people and corporate bodies wishing to appear at public hearings held in the Rhondda Valley. Those hearings extended over 36 days in total, they were held in Rhondda Cynon Taff County Borough Council owned premises in Pentre, with the Council's approval and at no cost to the Investigation. Members of the Council staff at Pentre were most helpful to the Investigation and to those attending hearings. The venue proved very suitable. The proceedings were recorded and the evidence transcribed for the public record by contractors (Barcud Derwen and Talk Write Back Ltd.). Their service was of a high quality. Despite the apparent success of the hearings not everyone invited to give evidence (**Appendix 2 - Invitations**) responded positively to my invitations to appear and tell of what they knew of the establishment and operation of the site in the 1980's. All the bodies currently involved did appear and provided a great deal of information as listed on the Investigation web site¹ and resource centre index (**Appendix 3 – Written Evidence**). A schedule of the hearings and who appeared is appended (**Appendix 4 - Hearings**). Others who did not wish to appear but who submitted evidence are also listed. I wish to acknowledge the undoubted effort that went into presenting such material to me. The current operators of the site Amgen Rhondda Ltd. gave me access to the site as required, kept me up to date with

¹ <http://www.wales.gov.uk/keypubassembliesplantrans/content/nant/home-e.htm>

their plans and operations and shared their data and records, including photographs and maps with me which was most helpful.

1.4 I accepted detailed “terms of reference” which are appended **(Appendix 5 - Terms of Reference)** and are used as headings to format this report.

1.5 I adopted the principle that, in conducting my part of the investigation, I would welcome information and opinion from any source, on the basis that it would be made public. Information offered “in confidence” would be noted for the information and possible later use of the National Assembly. Some information, probably of relevance was withheld as “commercially confidential”. This is most unsatisfactory. **When seeking to investigate matters of great public interest, where virtually all the business concerns public money and where the risks, financial, health and environmental, fall on the public, and its purse, lack of transparency is unsatisfactory.** I am pleased to say that the volume of material withheld diminished as the investigation progressed.

1.6 Another key area in which information is not available concerns the medical/health status history of individuals who make up communities. Records of incidence of disease, maintained by the Public Health Authorities in the UK, are limited in scope and in content. Studies of patterns of recorded disease (epidemiology) are a useful, but ultimately limited way of seeking to identify patterns of possible causes of ill health. If a disease is not “notifiable” or not routinely recorded in a systematic way or is not widely prevalent, it cannot be studied retrospectively in populations. Public Health investigations are constrained too in the UK by data protection legislation and by medical confidentiality conventions, as regulated by the General Medical Council². The benefits and limitations of epidemiology are well illustrated by the Nantygwyddon case. There are indications of disease clusters in the area but demonstrating probability of the cause of disease being the landfill is beyond the scope of any health studies so far undertaken.

1.7 In conducting Public Hearings I adopted the format that those appearing would be asked to prepare what they wished to say but could adapt and depart from their prepared script when presenting their material, if they so wished. All those appearing were advised that the proceedings were not privileged and they would have to take responsibility for what they said in public, in awareness of the legal rights of others. I raised questions for clarification with the presenters during the course of the hearings and also prepared questions to elucidate matters I considered relevant, or matters raised with me by others, to be answered at a later date. The hearings were simultaneously recorded and later transcribed from one of the recordings. Presenters were permitted to correct the transcripts for errors of transcription before publication on the Investigation web-site, accessible via the National Assembly for Wales web-site <http://www.wales.gov.uk>. This worked well with

² ‘Confidentiality – Protecting and Providing Information’, September 2000, General Medical Council

only very few individuals using the opportunity to make serious allegations about corporate bodies and individual office holders.

1.8 I am very grateful to all those who assisted me in conducting the investigation. The procedure was entirely new and required a degree of innovation, tolerance, flexibility, patience and goodwill from all those involved. I am pleased to record that almost everyone appearing met those requirements. The search for facts, relevant data and opinion is never easy and in the UK we are not used to open, non-adversarial governance or inquiry procedures. The National Assembly for Wales has sought to conduct an entirely open investigation and I feel honoured to be a part of that approach in the earliest days of the Assembly's history. The idea of "Independent Investigations" as a quicker and cheaper alternative to a Public Inquiry is in my view worthy of further use and development. There are however limitations if individuals with key responsibilities choose to ignore the investigation or are permitted to claim commercial confidentiality, the investigation is frustrated in part.

1.9 One of the crucial events in the history of governance and industry, involving the disposal of waste and its dramatic effects on public health and safety in South Wales was the Aberfan Disaster of 1966. I was aware of this background before I got involved in the Rhondda. Aberfan was mentioned repeatedly to me as I began investigating. I visited the site of the coal waste dump "landslide" as a private citizen and had the unexpected privilege of meeting and talking at length with a survivor of the tip slide, Mr Howell Williams, who in 1966 was a young primary school teacher at the school. We stood, with my wife, in the memorial garden whilst Howell explained what happened and, in his view why it had happened, a combination of industrial malpractice and lack of regulation. That meeting was an emotional experience. Howell Williams and I are of an age. We have seen the coal mining industry disappear from our communities. My wife and I will carry his life changing experience with us for a very long time and we are very appreciative of his sharing his memories and thoughts with us. We went from that meeting to the Rhondda Heritage Park/Centre where I acquired a book entitled 'Aberfan - Government and Disasters'³. The last disaster covered in the book was the Hillsborough Football Ground tragedy in 1989 with which I was closely involved as the lead response officer of Sheffield City Council, the ground licensing authority, at that time.

1.10 The history of the Rhondda is littered with industrial disasters that have affected the people who live there. That history colours the public's attitude to those who are, or may be, exploiting them. Some people now refuse to be exploited or to have their concerns minimised or ignored by those in authority. I respect their fears and their precautionary attitude. In my long experience (37 years) of investigating the public's complaints about environment and health issues, very few people indeed complain to the authorities when there is no reason for their concerns. The authorities do however face an insurmountable barrier when seeking to resolve health concerns and fears

³ Ian McLean & Martin Johnes, 'Aberfan – Government and Disasters', Welsh Academic Press, 2001, ISBN 186057033X

because it is impossible to establish that any human situation is without some risk to individual or population health. All activity involves some risk. The key issue for the public is, can they, as individuals, control that risk or can they have confidence in appropriate organisations to control that risk? **(see Figs 5a & b below⁴)**.

1.11 I hope that my report will improve waste management, public health and prove the benefit of open government in the service of ordinary people. Those are great ambitions for any report and it is for others to ensure that the improvements I suggest eventually take place. I simply wish to record my admiration of the “whistleblower”. He or she takes personal risks and makes sacrifices to ensure that government wakes up to public health or safety risks. I feel that we should all respect those who show a genuine concern for our environment, for the health of future generations and who put effort into challenging “experts”, commercial interests and the status quo.

1.12 It is widely accepted that the United Kingdom needs to manage its waste much better⁵. Wales has historically managed waste less than well⁶. The once beautiful valleys of South Wales have been despoiled by waste for almost 200 years. They are emerging now to show their natural beauty and grandeur once more although the environment is often to be found badly littered, illustrating a cultural problem in the valleys. The National Assembly wishes to use its power and influence to care for the environment in Wales and I wish it every success.

⁴ See section 14 para. 9. of this report

⁵ ‘Waste Strategy 2000: England and Wales’, Cm 4693-1, Crown Copyright, ISBN 0 10 146932 2

⁶ ‘Managing Waste Sustainably – Consultation Paper’, July 2001, Crown Copyright, ISBN 0 7504 2662 4

2 *A review of the History of Nantygwyddon Landfill*

2.1 How and why did a household refuse tip come to be placed on an inaccessible, bleak, windy, exceptionally wet mountain-top relatively close to and above terraces of houses situated on steep sided narrow valley slopes?

2.2 This is the question I asked myself when I first visited the tip in October 2000 and I still have no satisfactory answer. **The choice of site is simply extraordinary when one considers the rainfall (up to 2,500mm/annum) on, and the wind speeds (up to 80mph) recorded across the site,** (see **Appendix 6-meteorological data 2001** - courtesy of Amgen Rhondda Ltd and compatible with that established by Sir William Halcrow and Partners in 1983⁷). **It has been reported to me that up to 75mm of rain has been recorded as falling on this site in one day.**

2.3 In South Wales, coal spoil had been placed on mountain sides and on mountain tops for a long time, but nevertheless, to place modern household refuse, of low density and high volume on such a site demanded engineering and operational solutions not normally found or economically feasible. **The hydrogeology of the site was of immediate concern to me and remains so.**

2.4 In **Appendix 7 – Chronology**, I reproduce a “time line” or chronology of the site helpfully prepared (from surviving files) by officers of Rhondda Cynon Taff County Borough Council (RCTCBC) ably led by Mr Mark Adams. RCTCBC is now the local authority for the area and owner of the freehold interest in the site as well as all the shares in the current operating company Amgen Rhondda Ltd. Whilst this “time line” is very helpful it is not always backed by the necessary detail. This has been a problem and will remain so. How virtually all files pertaining to design, contracting, supervision and operation of a controversial development can be “lost” is impossible to explain, unless there has been deliberate effort to destroy records. **In view of the mounting controversy about the site in the mid nineties and in the light of my findings, I suspect that a systematic “clear out” of files may have been undertaken prior to the demise of Rhondda Borough Council in 1996.** I had correspondence with Mr Gwyn Evans, former Chief Executive of Rhondda Borough Council on this point and he wrote to me at length about his recollections of the site, but could offer no insight into the fate of the files⁸. I also enquired of Mr M Bradley⁸, his successor as Chief Executive and Mr Gethin Williams⁸ the Monitoring Officer of Rhondda Borough Council on this point but no original files were obtained. Mr Evans did provide information about how the Rhondda Borough Council was organised during his tenure. I received detailed testimony however from one of his former colleagues who claimed some knowledge as to the choice of the site. He gave some

⁷ Evidence supplied by Rhondda Cynon Taff County Borough Council, RCT2, 54/83/0784

⁸ See written submissions – Appendix 3

indication of the modus operandi of the Council at the time the site was first suggested. This officer, Mr Brian Privett, alleged that corruption was rife in what was a small council controlled by a single political party over great many years. His allegations were not corroborated by others and are vigorously refuted by Mr Evans.

2.5 The Nantygwyddon site emerged “out of the blue” in 1980. The site had not been mentioned at all in the earlier waste management plans⁹ of the Council in 1978 although other sites were reviewed and clear criteria set down against which sites were to be appraised¹⁰ by officers. Only one of the sites reviewed, Cwmparc, was considered to meet the criteria listed. Nantygwyddon did not meet the criteria in several respects in my view and additionally was difficult to access and therefore very expensive to develop. The site was at that stage not owned by the Council and needed to be acquired. Access to it necessitated the construction of an entirely new road, suitable for heavily laden waste disposal vehicles, to climb up a very steep fissured hillside with a history of land slips and upon which coal spoil had been tipped earlier in the century. An effort has been made to quantify the costs involved in developing and operating the Nantygwyddon site (**Appendix 8 - Costs**). I am grateful for the help of Roger Chaffey in collating this information. I suspect this detail understates the true costs but it is still an impressive sum at over £6.5 Million in 1985-1993. It would appear that at least as much again has been spent since the opening, operating, investigating and remediating the site with much more expenditure probably to come before the site stabilises.

2.6 Despite the physical unsuitability of the site for tipping of household waste and the potential costs of access, the Council (as Planning Authority) granted itself a “deemed planning consent” at the first public/formal meeting held to consider the matter¹¹. This was done without apparently considering the criteria adopted by the Council as a Waste Disposal Authority or without formally consulting any corporate body or the public and properly considering objections. The conditions attached to the deemed consent were left to the Planning Officer (Mr J. Cunane) to determine and attach¹². He clearly made an effort to address all the matters and concerns of colleagues and consultees but the die was cast, consent was granted in principle and officers were left to make the best of the decision. **The handling of the granting of planning consent would appear to have been, at best, mal-administration by Rhondda Borough Council.**

2.7 Subsequently it is clear that many planning conditions¹³ were not and are not yet complied with. I conclude that the efforts of planning officers were frustrated or ignored. The authority could not have taken enforcement action against itself in any event, but some significant issues were never determined

⁹ Local Authority File RCT1 – Refuse Disposal Tipping Sites Special Report of the Borough Technical Officer – 25/9/78

¹⁰ Local Authority Submission Reference RCT1 1a

¹¹ Local Authority Submission Reference RCT1 117

¹² Local Authority Submission Reference RCT1 6

¹³ Planning Consent 54/83/0784

and remain issues of relevance and concern, not least the maximum permitted height of tipping and the area to be tipped. The “air space” of a tip is a vital factor in the life of operation and visual prominence is always a planning issue. Although tips are often referred to as “landfill” Nantygwyddon is really a “landform” as there never was a hole to fill on the mountaintop. There was a slight depression or hollow and some modest excavation of surface material took place during development but the tip was always going to be visually prominent. If large adjacent conical mounds of colliery spoil, the Gelli tips, were to be moved (re-claimed) as is common in the valleys, the waste tip was likely to become more visually prominent over time. Aerial photographs taken over the years and acquired from the National Assembly for Wales records, illustrate the site and its development. The public who expressed concerns about the hill top site appear to have been assured by representatives of the Council that the tip would not be visible from the valley floor. This assurance was clearly wrong, it is visible on the skyline from a number of vantage points.

2.8 A particularly relevant issue was the fact that the tip site is the source of the Nantygwyddon stream and close to other sources of surface water. In English the name Nantygwyddon becomes “stream of the forest”. As the Nantygwyddon stream descends the mountain it runs through a forest beauty/picnic spot before it joins the Rhondda Fawr. This area has been described as one of the most attractive parts of the borough. In addition the site was adjacent to archaeological remains (an Iron Age settlement – the Hen Drier ring and platform cairns¹⁴). Other streams rise on the mountain and there are many springs on the hillsides. The bulk of the water flow off the site was found to be to the east when an independent hydro-geological study and tracer test was undertaken in 1984 (Sir William Halcrow and Partners¹⁵). There are several bodies of water (ponds, lakes, etc.) which could be polluted by tipped waste leachate including the Glyncornel Lake trout pond.

2.9 The geology of the site was and remains important. The underlying strata is fissured, fractured sandstone over well worked coal measures (coal mining ceased in 1965). Stability was and is an issue as was and is the movement of water. The major Dinas Fault traverses the site. All these issues have been considered and reported on by the British Geological Survey (BGS) on my behalf **(Appendix 9 - BGS). I can offer little personal comment on stability, which has been an issue investigated several times, but this could be the subject of further expert work by BGS if required.** Amgen Rhondda Ltd. has had its own recent review, undertaken in 2000 by Ove Arup & Co.¹⁶. The then Borough Engineer and Surveyor to Rhondda Borough Council, Mr Malcolm Clarke delivered a paper on this

¹⁴ Rhondda Borough Council Opening Ceremony Brochure for Nantygwyddon Landfill 27th September 1988

¹⁵ Sir William Halcrow & Partners, ‘Nant Y Gwyddon: Report on the Hydrogeological Survey of a Proposed Waste Disposal Site’, report to Rhondda Borough Council, April 1994

¹⁶ Ove Arup & Partners, ‘Amgen Rhondda Ltd **Nant-y-Gwyddon Landfill** Stability Desk Study’, June 2000, Job Number 57936

issue¹⁷. I am grateful to him for supplying that perspective. **Concerns about stability are very real in the valley**

2.10 The Council took preliminary expert external advice from Sir William Halcrow and Partners¹⁸ before it developed the site. However the site design and supervision was undertaken by its own staff, led by the then Borough Engineer and Surveyor, Mr Malcolm Clarke (who has provided information to the investigation although he did not appear at public hearings). He and his officers were also initially responsible for waste regulation and the waste disposal licensing provisions of the Control of Pollution Act 1974. It was not necessary then for local authorities to grant themselves a waste disposal licence, although the Control of Pollution Act 1974 required them to proceed by resolution of the Council to adopt similar standards. No regulatory oversight of councils was undertaken in this regard at that time. **(Fig 1 illustrates the developing regulatory arrangements a little later, in 1990).**

¹⁸ 'Initial Appraisal of the Feasibility of Siting a Council Waste Tip at Nantygwyddon, Mid Glamorgan', Halcrow, April 1983

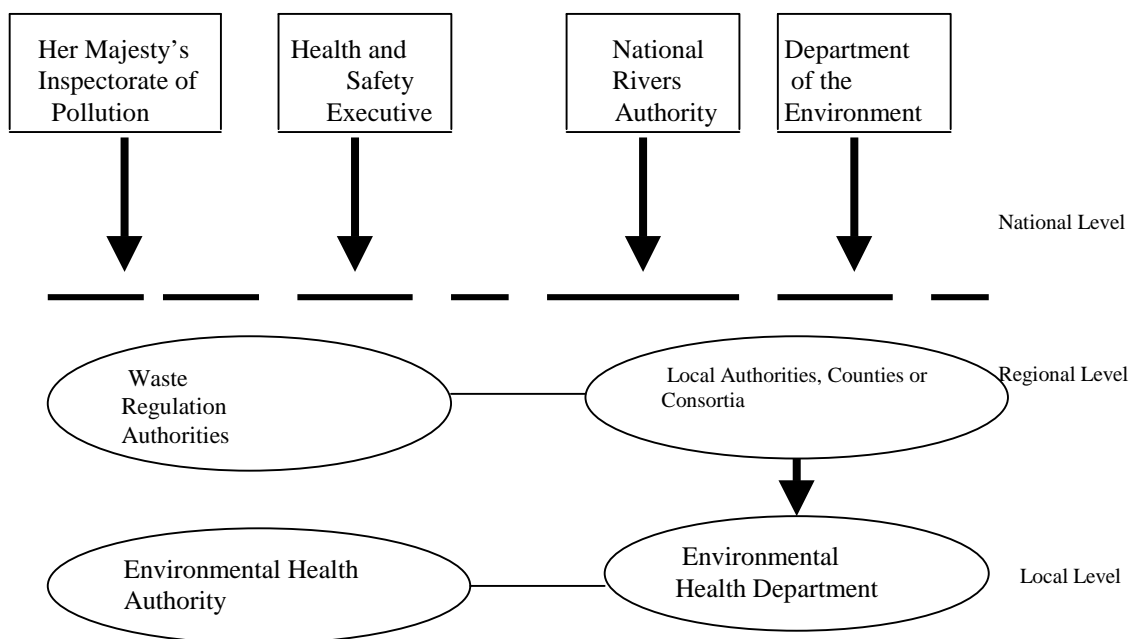


Figure 1 Agencies regulating hazardous waste at a national and local level 1990¹⁶

2.11 The development of Nantygwyddon was part funded by grants from the European Community (EC), surprisingly in my view, on the basis that “it would boost industrial development and tourism”¹⁷. Clearly EC grant was seen as the means of funding and “Regional Development Funds” were quite readily available via the Welsh Office, despite the flimsy nature of the Council’s application. I cannot believe that the provision of a household waste tip has ever boosted tourism or industrial development. There is some indication that other funds were utilised too but all paperwork and records have “disappeared”. Grant appears to have been claimed and paid for professional fees that were never apparently disbursed to external consultants who were not apparently commissioned to design or supervise the tip works, other than the access road (Halcrows). **The grant claim was not finalised even by 1996 when the Rhondda Borough Council disappeared into Rhondda Cynon Taff CBC.** The claim was “audited” by the District Audit Service - many years after the event, and in the absence of files, according to the current office holder Mr Paul Griffiths. This financial history uncovered to date is clearly unsatisfactory. **The National Assembly needs to ensure that future European Union (EU) grant applications are properly assessed, claims audited and certified as finalised in a realistic time scale, certainly before a Council and its files disappear.**

¹⁶ Adapted from ‘Hazardous Waste of Human Health’, BMA, Oxford University Press, ISBN 0-19-286142-5

¹⁷ Evidence submitted by District Audit, Rhondda Cynon Taff County Borough Council. ERDF Grant Claim Form P3 in respect of Nantygwyddon Landfill Site

2.12 The advice given to the Council by Halcrows¹⁸ was that (for disposal of the waste planned-household and local trade waste) the landform site should be a “containment site”. It was therefore decided to line the site with a proprietary plastic membrane. This was done in two distinct phases and in two different ways, designed and supervised by the Borough Engineer and Surveyor and his staff:-

PHASE 1 - involved:

- a) removing top soil and peat;
- b) preparing the fissured and fractured terrain for bedding and placement of under-liner surface water drains;
- c) laying a welded in-situ plastic, 2.5mm high density polyethylene (HDPE) liner over the drains;
- d) bedding and laying of leachate (polluted water) drains over the liner, together with access manholes and;
- e) covering of the liner and leachate drains with unscreened colliery spoil to “protect” them from the refuse and allow free drainage of the leachate;
- f) Laying perimeter drainage to collect surface water and divert it around the site to the course of the Nantygwyddon stream.

On the downward slope of the site a small (approx. 3 metre high) bund was placed and the HDPE liner was lapped over it and anchored in a trench. The intention was apparently to raise the bund as waste was deposited. The bund was apparently to be of “impermeable” material although in the event, un-screened colliery shale (not very impermeable) was used. The HDPE liner was not intended to be extended upwards with the bund as the waste was deposited, (this has led to some claims/fears expressed by members of the public and directors of Rhondda Waste Disposal Ltd that the liner did not exist or has disappeared). For containment on the downhill slope, reliance was to be placed on the mass and impermeability of the bund material. Originally waste was intended to be placed in discrete “cells” bounded by inert waste and capped when filled. Halcrows report that they advised on a detailed tipping modus operandi but this does not appear to have been adopted¹⁸. It was initially intended that each cell would be capped when full to limit leachate production that usually needs to be treated before release into surface waters). This latter point was academic. In 1980 and until recently, South Wales sewage was discharged untreated into the river system and sea. In any event the tipping cell method was never used in practice.

N.B. It should be noted that “water balance” calculations are an important aspect of designing a landfill site. The water mixing with the refuse and

¹⁸ ‘Nantygwyddon Landfill Site Operations Tipping Specification’, First Edition, Preliminary Draft prepared by Halcrow, circa June 1986

becoming polluted (leachate) usually is collected for, or measured and charged by the sewerage utility for, treatment. Any underestimate of collection/treatment capacity will probably result in the pollution of surface waters (killing aquatic fauna and flora) and possibly polluting groundwater. Pollution of groundwater is particularly significant, as it is likely to persist for a very long time. If drinking water abstraction sources are polluted by leachate they become useless. It was originally intended that leachate be stored in a large tank and discharged only when the river flow was at a required level but this does not appear to have been regulated in practice, probably because the flow of leachate was too great. The rainfall on the site is very heavy (2-2.5Metres/annum) and has been measured at up to 75 millimetres in 24 hours, torrential. To address problems of this type Amgen Rhondda Ltd are currently constructing additional leachate holding capacity lagoons on the untipped part of the site. Of course such large volumes of water do add to concerns about stability as water is both heavy and acts as a lubricant.

PHASE 2 was on the south westerly (upward) slope, this area was prepared with screened colliery spoil before the liner was laid as well as “protected” by screened spoil material afterwards. The screened and rolled colliery spoil would be of better impermeability than untreated spoil, without the visible rocks and lumps that could affect the bedding and stress the HDPE liner.

2.13 The big question is how effective was/is the lining? The answer is troubling. The geology of the site always threatened the physical integrity of a liner laid over rock fissures that were not sealed and were likely to move, stress and breach the liner over time. There are eye-witness reports that the liner was damaged as it was laid and covered. It is recorded that several incidents of damage and liner repair have occurred over the years including reports that fence posts have been erected through the liner. Handling vast sheets of quite thin (2.5mm), slippery plastic, liner on a mountain-top in low temperatures, high winds and driving rain/snow and ensuring absolute integrity was undoubtedly fraught with problems. The (then) Resident Engineer Mr Phillip Burgess, who did appear at a hearing, was not able to recall in any detail the steps taken to deal with such issues. A technical paper by Mr Cliff Parish in the Institute of Waste Management magazine of the time¹⁹ outlines some of the steps taken during the phase 2 construction, although others question the veracity of the account. The design and site engineering personnel of Rhondda Borough Council were described to me, by one of their professional colleagues, as very keen to make the development “state of the art” at that time. It is reported that there were many visitors to see what was being done and eventually a formal civic opening ceremony in 1988¹⁴. Whatever the criticisms now, the development was seen locally and beyond as “state of the art”. However, the British Geological Survey report I commissioned (**Appendix 9 - BGS**) shows that groundwater is probably polluted. Of course one set of samples and analyses leave the matter

¹⁹ C S Parish, Resident Engineer, Rhondda Borough Council, ‘Spoil Sandwich Seals Mountain-Top Site’, Wastes Management, Volume LXXX11 Number 2, February 1992

unresolved with any certainty. Amgen Rhondda Ltd. the current site operator is now planning a detailed longitudinal water study that should resolve uncertainty about the condition of groundwater in due course.

2.14 The Nantygwyddon stream has regularly been polluted by leachate and is very evidently physically fouled by refuse downstream of the site. Officers of the Environment Agency Wales describe the stream as “sensitive” but insist that it recovers quickly when (regularly) polluted. I find the Agency officers attitude to this pollution very odd and not one I expect in environmental regulators confronted with a stream being persistently fouled with visible refuse from a tip.

2.15 Despite repairs and re-laying, the leachate drain from Nantygwyddon continues to leak. It is laid at a very severe gradient putting pipes, joints and manholes under great hydraulic pressure where there is a manhole or change of gradient. I question the design of this system that has repeatedly leaked. It has been suggested to me that the gradient followed is a reflection of land ownership restrictions at the initial design stage. The increase of leachate storage capacity on site, the new lagoons may lower the flow/pressure in this drain. **On site leachate treatment would be much better solution in my view.**

2.16 The confidence in plastic membranes as liners for landfill sites has diminished over the years. There is no doubt that those engineers involved in the design and construction of Nantygwyddon considered they were operating at the forefront of technology in the 1980’s, however their experience and expertise has been described as, and appears to me, to have been inadequate. That said, several of the design assumptions (that would have been made by more experienced professional engineers) could have been found wanting over time in the light of the subsequent operation and management of the tip.

2.17 Examination of the “guarantees” issued by the manufacturers and installers of the liners shows them to have been of no value²³.

²³ Submitted by Rhondda Borough Council, Butek Ltd. RCT122 doc 24, Brunswick Contracts Ltd. RCT105 doc 38, Landline Ltd. RCT60 doc 1.

3 ***The reason for the choice of Nantygwyddon***

3.1 I can only conclude that this choice was politically expedient. Those around at the time recall local elected members being vehemently opposed to tipping in “their” wards at the other sites considered and examined in detail by officers. I think it reasonable to conclude that if European Regional Development Fund grant (ERDF) had not been available the development of the site would have been unaffordable to the Rhondda Borough Council. **The National Assembly should note the role of the Welsh Office in supporting the grant application, on spurious grounds, and the subsequent development of a site of strategic significance, given its original estimated life of 35 years.** As mentioned above, the time taken to finalise the accounts for the development was extraordinary, outlasting the Rhondda Borough Council that was subsumed into Rhondda Cynon Taff CBC in April 1996 after the site had been operational some 8 years. This grant funded “asset” was transferred into an arms length Local Authority Waste Disposal Company (LAWDC) at a value far below the cost of development by Rhondda Borough Council. Did anyone in the Welsh Office check that this was acceptable to the European Union? The grant was never re-paid. The financial history, in so far as it is publicly available, is dealt with in **Appendix 8 - Costs**. In short the grant aided “asset” rapidly became, under the management of the LAWDC, a significant liability despite the large ERDF grant.

3.2 I have discussed this financial history at length with the District Audit Service, with officers of the South Wales Police Fraud Squad and with a representative of the Audit Commission and **I conclude that the current audit arrangements are unsatisfactory for meeting legitimate public concerns.** The money involved in this “saga” is properly referred to as “the public pound”. The District Auditor has no role in the audit of a local authority arms length company; I regard this as unacceptable. The Chairman of the Audit Commission has stated *“I remain concerned that some aspects of public expenditure are not subject to adequate independent scrutiny. For example, local authorities can establish companies which are wholly owned, or at arms length or influenced by them, and which are subject to audit under the Companies Act. This Act provides for a less rigorous regime of audit than that required by the Audit Commission for other local authority funds, particularly in that it does not fully take into account issues of value for money. The shareholders of these companies are free to appoint their own auditors, contrary to the principles of public audit. Furthermore, because of the requirements of the Act, the Commissions own auditors are unable to fulfil this role, even if requested. The Commission would welcome legislation to ensure companies in which local authorities have an interest are audited by fully independent auditors who are able to publish reports in the public interest”*.²⁰

²⁰ Correspondence from the Audit Commission’s representative in Wales Mr Doug Elliott, Head of the Audit Commission Office in Wales, 18 September 2001

3.3 I have not been able to access all necessary information to judge whether the affairs of Rhondda Waste Disposal Ltd. were conducted in accordance with the standards expected of organisations spending public money. The company accounts were subject to independent audit by Deloitte Touche as required by the Companies Act. Such reports and financial statements were made available to me and were discussed with Messrs V.Collier and M.D. Evans, two directors of the Company in the presence of the current administrator of the Company, Mr Paul Clark, who in due course will report on such issues to the High Court. Mr Collier and Mr Evans are adamant that they discharged their responsibilities properly but that they were undermined in particular by the conduct of representatives of their sole shareholders Rhondda Borough Council. Those directors feel they were misled as to the condition of the site on transfer to their stewardship, and as individuals were entirely dependent on the contracted technical expertise of others. This latter point is clearly beyond dispute. What I have learnt about those aspects of Rhondda Waste Disposal's affairs that are in the public domain troubles me. When I enquired of the pricing policy of the company, Mr Evans advised me by letter that "normal commercial considerations applied". This could be interpreted as charging what the waste disposal market would bear rather than what the company needed to charge to cover all its costs and liabilities. When the full accounts and records of the company become available to RCTCBC from the company Administrator, Mr Paul Clarke, **I would recommend that they be subjected to the closest scrutiny and that if any evidence of wrong-doing emerges it should be pursued with vigour so that individuals, directors or representatives of shareholders are held to account for their acts or omissions.**

3.4 I was able to discuss the choice of site with former Councillor Dyfrig Hughes who was at the time an independent member of Rhondda Borough Council. He was in no doubt the choice of Nantygwyddon was political. As a retired mining engineer he has great fears about stability. He remembered that the one Labour party elected member of the Council who opposed the choice of Nantygwyddon was promptly de-selected by the ward he had represented with some distinction.

3.5 Mr Brian Privett, the then Building Inspector of the Rhondda Borough Council, who claimed some involvement in this matter at the time the choice was made, was also insistent that the choice was political despite the cost and unsuitability of the site for household refuse. He expressed the view that much wind blown litter, if it cleared the forested areas adjacent to the tip would next land in Cardiff. Winds of 80 miles per hour have been recorded across this site and I have observed wind blown plastic being widely dispersed over the last year.

4 *The management of the site*

4.1 I conclude that Nantygwyddon was not designed, constructed or supervised to the highest standards pertaining at the time and all the testimony I have heard and read demonstrates that it was not well managed when it became operational. In particular there was a chronic lack of inert “cover” material which meant that the tip was never operated as intended when under local authority direct management (and regulation). However, except for litter, occasional plagues of flies and dust nuisance in rare dry periods, the facility operated without much complaint or public concern from 1988 until the mid 1990’s. Regrettably, even under present management regulation and scrutiny, litter remains a problem inherent in a very exposed site. The usual litter screens and fences seen on and around tips are useless on such a site.

4.2 New legislation (Environmental Protection Act 1990 - EPA) required the Council to prepare to divest itself of its waste disposal facilities and operations. Together with Compulsory Competitive Tendering for selected services, this was UK government policy, apparently to improve the efficiency of local authority services by stimulating private sector management, investment and involvement. Rhondda Borough Council prepared to comply and took advice from Management Consultants who raised the prospect of a capital receipt or royalties on tipping charges, site rent and company dividends and/or the possibility of a profitable sale as a going concern. The Council eventually resolved to form a wholly owned LAWDC. **The manner in which this was done and the business plan of Rhondda Waste Disposal Ltd was approved by the Welsh Office, together with the appointment of only two directors of the company.** The chosen Managing Director, Mr Vic Collier had previously advised the council on the financial implications of the EPA and formation of the LAWDC as the lead external Management Consultant and a finance specialist, the other director, Mr Hugh Hoather, was selected after press advertising. He was a waste management specialist with a masters degree in business administration, the Managing Director of 3C Waste Ltd. a Cheshire County Council based LAWDC. Mr Hoather, according to an article in the Financial Times²⁵, subsequently made a very successful career in waste management. Rather later in the day, 1995, a further director was appointed, Mr Mike Evans. He was a retired administrative civil servant who had worked in the Welsh Office, handling the provisions of the legislation requiring divestment of local authority waste disposal operations. He had been involved in aspects of the Nantygwyddon site transfer. Mike Evans’s appointment as a director of Rhondda Waste Disposal was “cleared” by the Welsh Office. Mr Evans did submit written evidence⁸. The local authority never received a capital receipt from its divestment/transfer of the site. It did receive some income and its net cost of disposal went down initially.

²⁵ Monday February 7th 2000

4.3 Under the direction and management of the two initial directors, Mr Collier (financial specialist) and Mr Hoather (experienced and qualified waste disposal manager), there was a complete change of approach to the operation of Nantygwyddon and to the nature and character of wastes accepted. This was undoubtedly set out in the business plan of the company as required by the legislation and necessitated an amendment of the Waste Disposal Resolution/Licence. Despite the Environmental Protection Act 1990 being enacted, the licence was issued and transferred to the company as a licence under the Control of Pollution Act 1974 on 15th March 1995²⁶. The licence was pre-dated before the company was operational. This appears unusual but was envisioned by relevant government guidance²⁷. The Environmental Protection Act 1990 regime required a financial bond/provision to ensure funds for site aftercare in the event of licence holder failure, the earlier Control of Pollution Act 1974 did not. The local authority was not required to make such provision as a waste disposal operator and did not require its wholly owned company to do so. In the company accounts an “asset”, the “value” of the site in excess of the issued shares was recorded (£2.3M) in the company balance sheets for 1996, 1997 and 1998 but was never realisable. The company therefore operated Nantygwyddon without any accessible or significant reserves, bond or financial provision despite the directors stating in the audited accounts that it was making such provision. No reference was made to this anomaly by Deloitte Touche as company auditors. The Council’s Director of Finance and IT in a “Not for Publication” marked report dated 16th March 1997 states that £1.7 million has been included in the accounts for environmental liabilities but I have not seen such accounts. When the company ran into difficulties and could not fund improvements required by the Environment Agency it needed more funds from its shareholder. A further £1.1 Million was therefore provided by the Council in exchange for more shares. This “investment” was made after Counsel’s opinion was taken but was subsequently ruled inappropriate by the District Auditor. In the event only one large tranche of funds was transferred before the company failed. The financial liabilities therefore fell on the public purse, the very outcome the 1990 Act was designed to avoid. The report and financial statements of the company set out the accounting policies of Rhondda Waste Disposal Ltd and stated “full provision is made for the expected costs of gas control, capping, restoration and post closure work arising from disposal activity in the accounting period”. This ‘policy’ was not backed by any meaningful ‘provision’ in the accounts so far as I can ascertain. The arrangement for aftercare at the time of ‘vesting’ was that the Council would retain liability for the 8 years of prior operation and the company would be liable for the 12 year life then envisaged. N.B. The original 35+ year design life was reduced to 12 years as a consequence of the adopted and approved business plan business plan.

4.4 Rhondda Borough Council, at the request of the new operational management, amended the Waste Disposal Licence to permit the tipping of a

²⁶ Local Authority file RCT 108.3

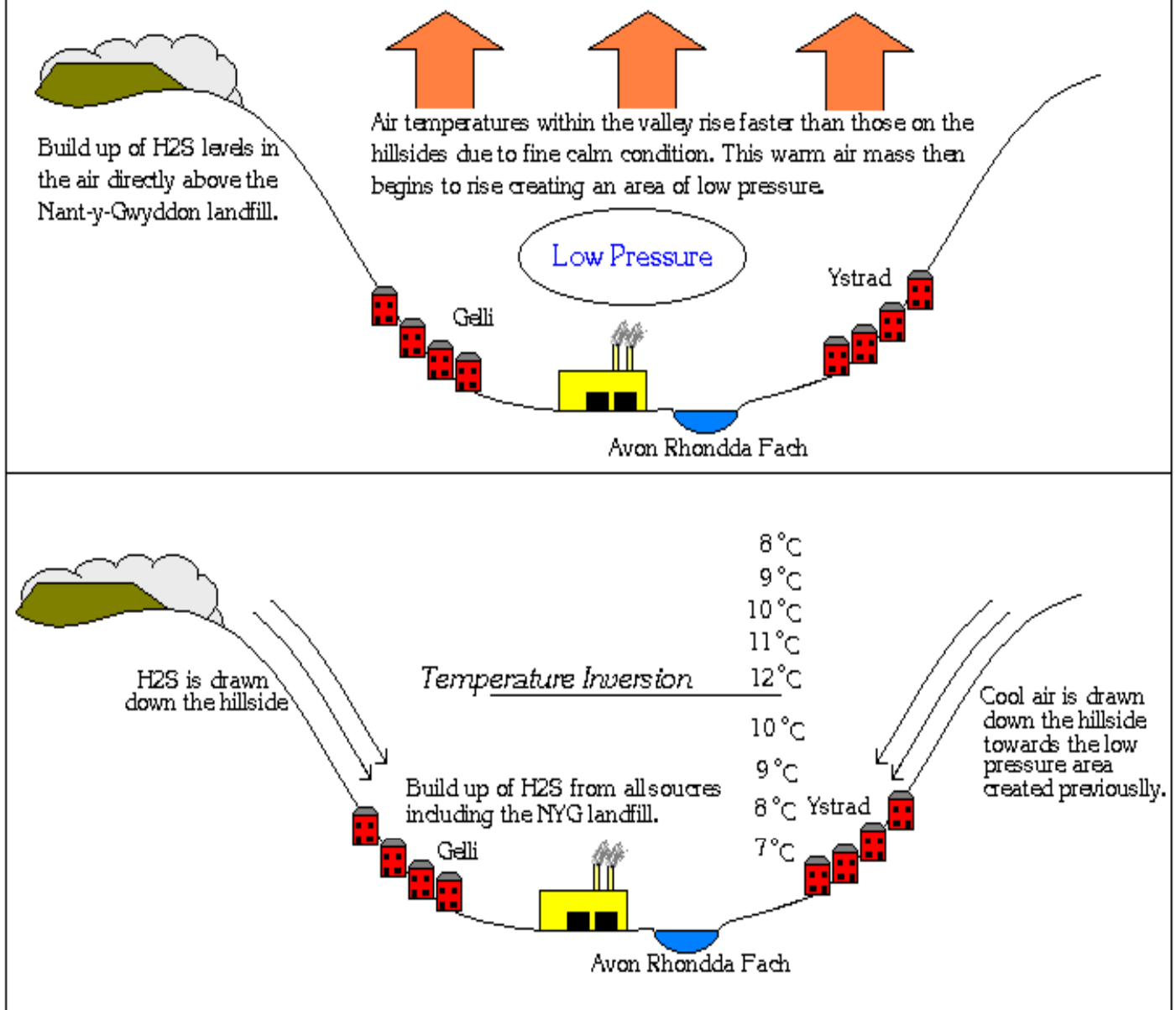
²⁷ Welsh Office Circular 8/91, DOE 24/91

range of non-special industrial wastes²⁶. The directors were contractually required and induced to make profits if possible. Some “non-special” industrial wastes were accepted in significant tonnage, water pollution control filter cake was recorded as 6% of the total at one stage. N.B. Special waste is defined in Regulations²⁷ and is what is colloquially referred to as toxic waste. Nearly all material can be toxic in some circumstances so legal definition is fraught.

4.5 Landfill gas and foul smells quickly became a serious problem on and around the site. In particular the acceptance of the “calcium sulphate” water pollution filter cake, mixed with household waste, would appear to have rapidly generated large volumes of hydrogen sulphide, a very odorous, toxic, flammable gas in addition to the usual, largely methane and carbon compound, landfill gases. Bacteriological and chemical activity, at the rate experienced, was unexpected by operator and regulator. The gas production was boosted by the very wet nature of the site and the lack of tip cover. The community quickly became aware of the pollutants in the filter cake, removed from chemical or engineering process effluents as one company employee, Mr Andrew Tree, had previously worked at the factory producing the effluent and worked as gate man at the tip. He was immediately concerned about the prospect of occupational health risks on the tip. The calcium sulphate filter cake contained heavy metals and/or organic chemicals. Members of the community made a link between the odour nuisance, these industrial substances, often regarded as toxic in workplace exposure or in water, and their health. The sketch at **Fig 2** reproduced from an Amgen Rhondda report²⁸ illustrates the gas nuisance problem.

²⁸ Evidence submitted by Amgen Rhondda, ‘Report on Air Quality Monitoring Programme, Jan - April 2001’, Author Amgen Rhondda, 1 May 2001

FIG 2



4.6 Mr Tree was subsequently dismissed by Rhondda Waste Disposal Ltd. for his protests, for appealing to the Health and Safety Executive to intervene, and for initiating media interest in the tip.

4.7 Acceptance of this type of industrial waste led to numerous and persistent nuisance complaints, to local health complaints, to a breakdown of relations with residents and to widespread public protests and the failure of the company within 4 years of its founding. The arrangements made by the Council in forming its arms length company did not secure adequate control or perhaps even awareness of the issues arising within the Council. The civil protest became disruptive to the operations of the company and of the

council. Initially the disruption was to waste disposal but extended to other council business. The police were drawn in/involvement despite the issues being primarily civil matters and not within their remit unless breach of the peace was expected. The company, following a transfer of Council owned land at the access to the site, took 7 members of the public, officers of RANT (Rhondda Against the Nantygwyddon Tip - the tip protest group) to court. Rhondda Waste Disposal Ltd. was granted an injunction against those individuals, preventing their protest at the bottom of the access road to the tip. **Those injunctions remain a constraint on the freedom of those individuals.** The operations of the Rhondda Borough Council's wholly owned company at Nantygwyddon were thus a cause of civil strife and unusually the Council was challenged publicly and vehemently by residents as widely reported in the media. The Company could not accept waste and lost contracts and business with income reduction consequences.

4.8 The Council did not engage, through its own arms length company, the operational/technical management of Nantygwyddon but contracted it out to another company managed by Mr Hugh Hoather, 3C Waste Ltd. Rhondda Waste Disposal Ltd. was therefore not able to manage the operations without specialist technical assistance. As the situation deteriorated 3C Waste Ltd. which had been subject to a take-over by Yorkshire Environmental Services Ltd. walked away from the site and their management contract. Mr Hoather resigned as a director. Mr Evans, who reports that he had resigned earlier, returned as a director and together with Mr Collier eventually decided the company must go into administration where it remains. The failure of Rhondda Waste Disposal Ltd. had serious financial implications for Rhondda Cynon Taff CBC. The nature of the contracts between the parties involved was initially deemed "commercial in confidence", but contracts were made available to the Investigation in accordance with the Council's policy, although they were unsigned and undated. Mr Collier later provided signed copies to the investigation.

4.9 The site remains controversial, troubled and unacceptable to a significant number of residents. The long-standing protest group RANT articulates this resistance effectively. It is not clear exactly how many members RANT has, but it enjoys considerable support in the Rhondda. It is reported that the current controlling political party in Rhondda Cynon Taff CBC, Plaid Cymru was elected largely on the basis of its pre-election pledge to close the tip. Despite all the operational improvements seen in the last two years of operation by Amgen Rhondda Ltd., the tip has been and remains a financial drain on the owners on what is known now. If the feared public health consequences are proven, in civil law, on the balance of probabilities, and legal process continues, the financial consequences will be serious. The settlements in health damages cases are now extremely large.

4.10 The Nantygwyddon tip was probably perceived as a cheap long-term waste disposal option originally. It later offered what was seen as a potential capital receipt or income generator for the owning authority when it was

vested in an arms length company²⁹. There was briefly income generation to support the Council's revenue budget. The judgements made in the early 1990's under pressure of national legislation may eventually be judged very expensive indeed. The tip now has a limited life (7 years in Amgen Rhondda's Ltd.'s estimation) and it is hard to see it as an asset in any sense.

²⁹ Evidence submitted by RCTCBC, Box Number RCT123, Document references 62,64,66

5 What constitutes current best practice for the management of landfill sites?

5.1 In short this can be answered by reference to UK Government Waste Management Papers, in particular paper 26A³⁰, although this is a controversial area. I should express my reservation that there has been a very significant difference between the UK and many other advanced industrial countries and this concerns the matter of “co-disposal” of wastes. Many in the waste disposal industry and this include some regulators, have long accepted the “dilute and disperse” approach to landfill waste disposal (mixing quantities of toxic/difficult/industrial wastes with larger volumes of household or inert wastes). Others, have pointed out the dangers of mixing materials, some of which may be or become, in the “experimental retort” of a landfill bio-generator, toxic, persistent in the environment, mutagenic (causing gene mutation), teratogenic (affecting the foetus in the womb across the placental barrier), or hormone/gland disrupting, affecting fertility and metabolism.

5.2 The EU Landfill Directive³¹ now resolves this controversy. Co-disposal is now to be phased out in the EU. The UK waste industry has lost this argument in Europe and environmentalists are very pleased indeed that the “precautionary principle” has for once prevailed.

5.3 Publications about best practice do not always reflect what happens in practice. Historically tips have been mere dumps, usually sited in relatively remote or deprived areas, where industrial pollution and dereliction have been evident and where the population is relatively acquiescent. Typical problems include gas, water pollution, odours, flies, litter, fires, rodents, and gulls. Refuse should be compacted and covered with inert material at the end of each working day to minimise these problems. Lack of cover is a chronic problem at most sites. Cover now often has to be purchased from contractors and even in favourable circumstances received free of tipping charge.

5.4 In South Wales where “coal was king” for 150 years, refuse tips were often merely for ash and incombustible material. In areas like the Rhondda the industrial pollution was so gross that tips were merely part of a foul, unhealthy environment. Tips of spoil and waste were everywhere, cheek by jowl with dwellings. The Rhondda Borough Council historically incinerated much of its waste but had a very unhappy experience of a modern incinerator built in Porth in the 1970’s and closed it in the 1980’s. Incineration only achieves volume reduction; the ash still requires disposal as waste and is increasingly regarded as difficult material.

5.5 Little or no interest was taken in regulating waste disposal nationally in the UK until the 1970’s. Such standards as did exist were application of Public

³⁰ Department of the Environment, Waste Management Paper No 26A ‘Landfill Completion’, HMSO, 1993, ISBN 0 11 752807 2

³¹ European Council Directive 1999/31/EC

Health Act 1936 statutory nuisance law, trade or professional standards of practice. Following a short media campaign, the Deposit of Poisonous Wastes Act was swiftly enacted in 1970. Interest developed rapidly until codified under the Control of Pollution Act 1974 when waste disposal facility licensing was introduced across the UK. Regulation was by local authorities, (County Councils in England but not in Wales), which used Waste Management Papers (which their staff helped draft) as the standards. Local authorities, (District Councils), were also major operators of waste disposal facilities (in Wales, “poachers” and “gamekeepers”). Codification of standards and licensing raised standards but not evenly or consistently. Abolition of Metropolitan County Councils in England introduced the “poacher” and “gamekeeper” problem to parts of England in 1986 where it was tackled in a variety of unconvincing ways (Joint Regulatory Units) for the next decade. Coincidentally, the drive for clean air and water across Europe was affecting all waste disposal options and old incinerators and other plants were closing, costs were rising. The notion of tackling contaminated land also began to be discussed, adding soil to the environmental media of air and water to be protected/remediated.

5.6 The Waste Disposal Industry began to consolidate with big players emerging. In urban areas waste was travelling further for disposal, costs were rising and operational expertise was increasing, as were public expectations. Her Majesty’s Inspectorate of Pollution was given an enforcement/regulation audit role in the late 1980’s and the move towards an Environment Agency, aimed at securing consistent national standards across the UK and across the environmental media of air, water and land was completed by 1996. The Landfill Tax was introduced and increased, seeking to limit landfill and stimulate alternative methods of disposal. Devolution/Regional government now requires the Environment Agency to report to devolved administrations.

5.7 The theory of what constitutes current best practice is now encapsulated in Environment Agency guidance listed in their submissions to the investigation and indexed for reference in the resource. The big question is how does the industry shape up and the Environment Agency ensure that its published standards are met? The waste disposal industry remains controversial and as a consequence the Environment Agency receives much criticism, from campaigners, a range of locally based protestors³², from the media, from a parliamentary committee and even currently from one of its own Board members³³.

³² Material from RATS – a protest group in Wakefield, West Yorkshire

³³ AJP Dalton ‘The Environment Agency: An Enemy of the People’, Press Notice, 5 September 2001

6 Assess how the establishment, management and regulation of the Nantygwyddon landfill site measures up against that benchmark as well as against best practice guidance at the time decisions were taken

6.1 I have covered the establishment and management of the site whilst in local authority direct control in section 4 above. I conclude that it was an unsuitable site for household waste, it was not well developed, not well managed and not regulated formally at all in its early years. **When the site was transferred to the LAWDC the Rhondda Borough Council regulator recorded some criticism of operations, but no formal action was taken. For all practical purposes the situation did not improve and due to the nature and type of waste accepted the need for regulation was set to increase.**

6.2 From the litany of Environment Agency files in the public domain, and studied by my colleague Mr Peter Wright, who assisted me with file scrutiny, references to breaches of licence conditions are legion whilst enforcement action is exceedingly rare. **It is clear that the site never met the published benchmark standards during the operations of Rhondda Waste Disposal Ltd., including the time the company was under administration.** Officers of the Environment Agency undoubtedly recorded and expressed their concerns but the 5 year experience of the public around Nantygwyddon is far from encouraging for those who pressed the case for the UK equivalent of the Environmental Protection Agency of the USA. The residents of the Rhondda have clearly no confidence in the Environment Agency.

6.3 Good practice literature is of very little use if it remains on the page rather than on the ground. Regulators must be responsive to public complaints and concerns and fully transparent in their decision making. If they are not, they will be seen as elitist and favouring commercial or other interests rather than the public interest. The public in the Rhondda cannot understand why the Nantygwyddon site was allowed to continue to operate whilst in obvious breach, indeed in almost total disregard of the licence conditions. I declare myself not at all convinced by the protestations of Environment Agency officers that they could have done no more. **(Mr John Harrison explained what the Agency could do on National news, including site closure).**

6.4 Experience and observation, “empirical evidence”, is at least as good as other evidence and should be used by regulators. In my experience, courts value lay opinion, testimony and observations and can be sceptical of “expert evidence” and monitoring data unless personal observation and testimony support it.

6.5 “Sound science” is a currently fashionable notion and was stressed very heavily by Mr Steve Lee, Head of Waste Policy of the Environment Agency when he gave evidence to the Investigation. However, “sound

science” is spectacularly difficult in the area of environmental pollution and in assessing the impact of pollutants on the environmental determinants of health. Mr Lee appeared to me to have little knowledge of the science he was advocating. For example he admitted he knew nothing of the work of the US Agency for Toxic Substances and Disease Registry (ATSDR)³⁴. Empirical observation is at least as good as scientific theory in this area. Extrapolation of experimental data from one chemical’s toxic effects to assessing how mixtures of chemicals may affect vulnerable people, chronically exposed to low levels of those mixtures is fraught with scientific problems. **A precautionary approach must be paramount, as opposed to acting only where proof or very strong suspicion of harm can be demonstrated.** This dilemma is faced by all those currently wrestling with the assessment of the effect of chemicals in the environment as well as in the workplace. I served as an adviser to the Health and Safety Commission’s Advisory Committee on Toxic substances in the 1990’s, I currently represent my professional body on the UK National Chemicals Forum, advise (as an independent) the Health and Safety Executive on the EU Existing Substances Management Advisory Group, and am on the Health and Safety Commission’s Occupational Asthma Project Management Board so am very well aware of the difficulties.

6.6 Since 1996 the Environment Agency has been slow to embrace what I see as its key role in relation to human health risks from the activities it is charged with regulating. Perhaps it has not appreciated how ill equipped many local authorities and health authorities are to play a lead role in these matters. The relationship between the various authorities and their regulatory roles at Nantygwyddon is considered later. It is encouraging to note that the Agency has recently taken steps to improve its health assessment capability. It is, as yet, a long way from being regarded as a protector/champion of the environment and of the people, indeed one of its current board members, AJP Dalton, has described it as “an enemy of the people”³³. Correspondence submitted to the investigation by Mr Paul Dainton of RATS³² confirms that this opinion is shared beyond the Rhondda and a network of such protest groups is emerging.

6.7 Not only at Nantygwyddon has the Environment Agency been found wanting during its formative years. It was much criticised by the House of Commons Select Committee in 2000³⁵ and faces very similar challenges to those at Nantygwyddon with regard to the Wellbeck site in Wakefield, West Yorkshire where RATS has emerged mirroring RANT. It now has a new Chairman and Chief Executive and is probably adopting a new approach but from the public perspective in the Rhondda it has been a sore disappointment, failing to take timely, robust enforcement action whilst claiming to do so. I find this perplexing. The officers of the Environment Agency in Wales I have dealt with have been very professional, informative, open, “people friendly” and concerned about their reputation and that of their

³⁵ Environment, Transport and Regional Affairs Committee, ‘Sixth Report – The Environment Agency’, 20 May 2001, HMSO, ISBN 0 10 232500 6

Agency when I have dealt with them. Is the problem therefore lack of enforcement ethos, lack of guidance from Government or their top management, lack of resources to respond in a timely way or does the public have unrealistic expectations of them and of the Waste Industry? Perhaps the agency has yet to develop a clear culture, ethos and positive reputation.

6.8 The National Assembly is ideally placed to inform the Environment Agency in Wales what enforcement policy and openness it requires of it.

I see a pressing need for transparency in operations and modern professionalism, working with the population and industry rather than being remote and unapproachable and bristling at criticism. Campaigners believe they have a right to environmental information, indeed a European Directive and consequent UK law demands it, but the Environment Agency is not open. It is reportedly keen to charge for copies of documents when the cost of accounting for photocopies probably outweighs any reasonable charges. Is it not possible for waste disposal licences and other consents to be openly accessible via their web site for example? Should Agency officers be able to refuse to attend meetings if they are or expect to be criticised or challenged? Should they not be obliged to explain the rationale for their decisions/judgements on matters such as

- “fit and proper person”,
- “adequate financial provision”
- a decision not to suspend or revoke a licence?

If their decisions may be taken to avoid financial liabilities falling on the Agency should this not be known and challengeable?

7 Lessons for the future operation of the Nantygwyddon landfill site and additional investigations or actions necessary at Nantygwyddon.

7.1 I suggest the following lessons: -

7.2 The operation of Nantygwyddon needs to be fully transparent. It is a site owned and operated for the public. So called “commercial confidentiality” cannot be justification for keeping council taxpayers and elected members in the dark.

7.3 The liabilities associated with the Nantygwyddon site, as assessed by the Environment Agency and by the owning local authority need to be in the public domain. One local authority arms length company has failed and the current operator could be at risk. The liabilities are a matter of legitimate public interest and could with benefit be considered by the District Auditor when set against the local authority’s reserves (or lack thereof). If those liabilities could fall to the Environment Agency that should be made known.

7.4 An approved operational plan for completion of tipping on the site, reflecting regulatory requirements and finished area and levels needs to be determined, published and worked to. Earlier plans have been a fiction. The current operator has never had an approved working plan.

7.5 The landfill gas management system needs to be regularly appraised by operator and regulator and the appraisal published. Flare performance should be recorded and publicised. Given modern telemetry results could be displayed for the public to see in real time as well as recorded over time.

7.6 The operator, advised by the Environment Agency, and in close collaboration with the local authority, needs to develop a thorough environmental pollution-monitoring regime including leachate, surface water, ground water, flare and air sampling. The regime needs to reflect the concerns about pollution of groundwater, springs, intermittent contamination of the streams and the air quality in the immediate vicinity of the site and analysis needs to be for a wide range of determinands.

7.7 The local authority RCTCBC does not have meaningful local air quality data and is in no position to assess the contribution, if any, of the site. For reasons of environmental health capability generally this needs to be urgently addressed. Personal samplers could also be used to good effect to assess specific substance dose received.

7.8 The relevant regulatory and health authorities have no adequate baseline data against which to assess the contribution of this site to environmental pollution and to health status and this deficiency needs to be urgently addressed. It is no accident that Environmental Impact Assessment (EIA) has now spawned Health Impact Assessment (HIA), the two techniques

are most promising when used together. The lack of data predating the development of this site is no excuse for now failing to assess the future of the area against the present. The authorities in the USA, known as NEHANES, ASTDR and CDC Atlanta are now routinely gathering such data for their entire population³⁶.

7.9 The performance of the landfill gas flare systems at Nantygwyddon has never been monitored in real time. Correlation of flare performance with odour complaints has therefore never been possible. A simple temporal chart recorder linked to a temperature probe would at least record when the flare was burning and at what temperature. More detailed appraisal should usefully record gas residence time, and the levels of principal pollutants in the flue gas emitted. As mentioned above (**para. 7.5**) this data could usefully be placed in the public domain in real time.

7.10 If the leachate drain keeps leaking a fundamental re-design is needed to reduce hydraulic pressure. It is possible that the new leachate lagoons under construction may reduce the pressure. Leachate could and should preferably be treated on site before discharge.

7.11 It is not clear to me why the cattle grid at the entrance to the site was removed rather than repaired or replaced with some other barrier at the height of the Foot and Mouth Disease outbreak in 2001. Secure fencing/gates, etc., are required to keep livestock off the site. This sort of action, without explanation, serves to undermine public confidence.

7.12 A web based record of the waste received accessible to the public would reduce the level of suspicion that unidentified waste is being accepted.

³⁶ Website addresses for NEHANES <http://www.cdc.gov/nchs/nhanes.htm> , ATSDR <http://www.atsdr.cdc.gov> , and CDC Atlanta <http://www.cdc.gov/irmo/data.htm>

8 *Identify any General Lessons for the future of waste management in Wales*

8.1 In addition to the site specific (Nantygwyddon) lessons, all of which are applicable in some way generally I would list the following:-

8.2 **Landfill is not the very cheap option for waste disposal that it has appeared to be for many years.** If one accepts lifetime costs as a proper basis for decision making, then aftercare liabilities should be assessed and if possible quantified. In addition to Environmental Impact and Health Impact a lifetime Financial Impact Assessment should be attempted when appraising waste disposal options. The attractions of landfill have traditionally been cheapness and local availability of a waste disposal facility. Increasingly the cost of landfill is rising and (potential) sites are disappearing. **Local solutions to waste disposal needs are however desirable, not least so that consumers make the link between their consumption and the disposal solutions needed.** There is no doubt that locating any waste disposal site is difficult politically. The role of the Rhondda Borough Council in site selection of Nantygwyddon was critical and a failure by the criteria the Council set itself. How often has this been replicated? Could it continue to be a problem in choosing sites? There is an argument for a more strategic overview but the link between local consumption and disposal needs to be preserved.

8.3 The EU Landfill Directive sets the scene for alternatives to landfill disposal to be developed. These are explored in the Draft Waste Disposal Strategy for Wales⁵. Similar exercises are on going in other devolved administrations but the impressive lessons are to be learned from elsewhere. I display a table comparing Cardiff with Copenhagen and Canberra, capital cities of roughly comparable size, to show the differences that have emerged with differing political backgrounds (**Table 1**). The data is compiled from the emerging Greater London Assembly Waste Strategy Consultation document³⁷ and from the National Assembly data⁵.

TABLE 1 Capital City Comparative Waste Data

	Canberra	Cardiff	Copenhagen
Population	309,000	324,370	491,082
Total number of Households	116,000	132,552	279,300
Household waste 1998-total tonnes	187,950	153,308	215,400
Household waste 1998 – per capita (Kg)	610	473	439
Central composting Tonnes (per cent)	66,100 (35.17%)	None	None
Energy Recovery Tonnes (per cent)	None	None	164,800 (76.51%)
Recycling – tonnes (per cent)	32,750 (17.42%)	6,391 (4.2%)	44,100 (20.47%)

8.4 The biological activity in domestic and green (biodegradable) waste generally is the major cause of landfill gas management problems but that waste is amenable to rapid volume reduction through industrial style and through agricultural style composting. Such techniques avoid difficult gas management and leachate management problems and need not be energy or unduly labour intensive. Indeed composting is a waste management technique that controls and speeds the processes that occur in a landfill, it need not be polluting and provides jobs and soil conditioning compost as a product. The waste thus returns to the earth in a beneficial state closing the Eco-loop. I suggest that in Wales a combination of industrial scale plants in urban areas and windrow composting in rural areas could be viable and may also be combined with suitable water pollution control sludges and with animal slurry, to enrich the compost with soil/plant nutrients.

8.5 The re-use of materials is often possible and is certainly desirable. Notable examples are iron, steel and other metals. Construction materials, paper, glass and oils are all commonly re-used or recycled, sometimes only

on an industrial scale but increasingly on a materials exchange basis. The problems here are organisational and economic and are thus amenable to government intervention. Clearly it is helpful if waste is not mixed but elements separated, for separate collection and re-use. Where markets are unstable or are distorting production, government often intervenes. Agriculture is one of the clearest examples with subsidies and “set aside”, but fuel supply (duty and VAT), public transport (subsidy) and utilities (through regulation) are somewhat similar. **Producer responsibility is a key principle if materials re-use is to be embraced wholeheartedly.** If re-use is foremost in the product designers’ mind the re-use techniques can be simplified and the consumer contributes to the costs. Here the Eco-loop is not closed but virgin materials do not have to be continuously won from the earth to replace those consumed and wasted.

8.6 Thermal treatment of waste, even if described as energy from waste, is tarnished by the experience we all have of crude incineration or inefficient burning of fuel, particularly coal, resulting in prominent smoke stacks. The large industrial chimney is probably as unpopular as the prospect of a landfill site as a neighbour is. Nevertheless for some wastes, thermal treatment is the best practicable environmental option. For clinical wastes, pathogenic organisms and for some persistent organic chemicals there is no better disposal option as yet. Where material cannot feasibly be re-used but has some calorific value it is better to extract the energy than dump/waste/or store it. Bulk incineration of mixed waste is not supportable in my view although I suspect it will continue as an interim solution for some considerable time. A technique such as pyrolysis may in time become viable on a relatively small as well as on a large scale. So far this seems to me to be the best solution for waste tyre disposal. The National Society for Clean Air and Environmental Protection has recently reviewed the health risks of municipal waste incineration in a balanced and authoritative manner³⁸.

8.7 In section 7 above I mention the need for transparency in decision making. The time has long passed where any elected body can hustle through the granting of consents, licences or permissions without consultation. This should also mean that in assessing the status of individuals as “fit and proper persons”, to hold a waste disposal licence, the criteria used by the licensing body should be open to scrutiny. I can see no justification for confidentiality although this is clearly envisaged in the Environmental Protection Act 1990. When I questioned the Environment Agency’s Head of Waste Policy, Mr Steve Lee, on this matter he saw no problem with that restriction of information available to the public. **I take this as indicative of a problem many officials appear to have with open government. I believe the National Assembly should demand openness in such matters in Wales.**

8.8 It is inevitable that in discharging enforcement responsibility, officers and authorities have some discretion in the decisions they take. However this

³⁸ Andrew Farmer & Peter Hjerp, Institute for Environmental Policy ‘Municipal Solid Waste Incineration: Health Effects, Regulation and Public Communication’, A Report to the National Society for Clean Air and Environmental Protection, May 2001, ISBN 0903 474 51 4

should be in the context of an adopted enforcement policy that illustrates the criteria adopted. Such decisions should be open to scrutiny wherever mal-administration, bias or injustice is alleged. The delays in taking appropriate action in response to alleged nuisance for Nantygwyddon are an example of the need for a scrutiny role as performed by the Local Authority Ombudsman. I understand there are now similar arrangements for Ombudsmen to tackle the Environment Agency in Wales (the Welsh Administration Ombudsman) and the Health Authorities (the Welsh Health Commissioners). These institutions were only mentioned to me when I took advice, I suspect few members of the public know of them or their role and probably they need to be much better publicised.

8.9 A particular problem arising from this investigation was the lack of files or documents from an abolished regulatory/operational body. I think it should be regarded as essential for files to be secured, if at all possible. Restructuring of local, health and environmental authorities seems likely to continue. There are a great many problems in achieving this end and perhaps the responsibility needs to be specifically allocated to a named individual, for example the Designated Head of Service or the Monitoring Officer of a local authority. At least someone could then be held to account for their loss.

8.10 I have mentioned earlier the problem of control of financial risks, audit trails and the responsibilities of external auditors. With the blurring of distinctions between public and private sectors, with private contractors delivering public services and with companies and partnerships being formed to deliver public services, I think it is important that transparency in the affairs of “the public pound” is maintained. Clearly if a contractor or partner takes risks they should be able to make profits but the “rate of return” is subject to restraint in the utilities. Is such restraint not in order for municipal waste disposal? Perhaps more important than profits are financial risks/liabilities which may be accumulating as knowledge improves and outstripping the provision made to meet them.

8.11 The public health impacts/risks associated with waste disposal are not dissimilar to those from some other polluting processes. If Health Impact Assessment is to be adopted for new proposals, perhaps for those that currently require Environmental Impact Assessment, this should address future problems. What however about established sites? **I suggest that a community, perhaps acting through its local authority or its health service, should have a right to commission a Health Impact Assessment.** This raises the issue of who could commission such a study and who could undertake it in a timely and expert manner? The essential components are expertise and independence. The source of funding for such studies is an immediate problem to be addressed by the National Assembly and could be through establishing an independently managed research fund. I would suggest the creation of a Commission or Commissioner to fund and oversee such work. In my view, and that view has been supported in discussion by several eminent researchers, such studies need to go beyond study of routinely available data. I suspect that some epidemiological studies are undertaken simply because that is all that can be afforded/funded.

Particularly where a possible association of environmental cause and health effect has been demonstrated, it is essential that no time is lost in mounting a study to attain specific environmental and personal health data relevant to the issues of concern. I mentioned above the work being undertaken in the USA by ATSDR. The baseline data is also being developed by the US Center for Communicable Disease Control - Environmental Health Department³⁹. Until a baseline is established the exceptional cannot be recognised yet alone studied.

³⁹ <http://www.cdc.gov/irmo/data.htm>

9 The suitability of the Nantygwyddon site in the light of planning guidance available now and at the time the planning permission was given

9.1 I have earlier expressed the view that the choice of site was extraordinary. My opinion is based on practical matters and not on matters particularly relevant to planning guidance. As a tip for high density, dry waste, such as colliery spoil or construction waste the site was and is reasonably suitable. The practical problems concerning cost of access were a separate issue, as were visual prominence and the matter of stability (addressed in part with the National Coal Board).

9.2 The planning issues surrounding the establishment of a tip remain essentially the same now as they were in 1980. If the then planning authority had acted as a reasonable authority I do not think a household waste disposal site would have been regarded as a reasonable land use for which planning permission would be granted. I do not believe such an application would be approved now. Essentially the planning considerations have not changed. It follows that I believe no reasonable planning authority could have granted permission for tipping of the type that has taken and is taking place.

10 The design of Nantygwyddon and the role played by promoting and regulatory bodies in determining that design

10.1 I take the “promoting” bodies to be the Rhondda Borough Council and the then Welsh Office who helped secure the funding to realise the project.

10.2 The regulatory body of relevance was also the promoting Council whose officers designed it, supervised its construction as well as regulating it, although the National Rivers Authority had a limited and restraining role. The new regulator, the Environment Agency has been struggling to improve the site but that current role cannot address the design issues that were settled over a decade before it was established.

10.3 I reiterate that I believe the design and construction was unsatisfactory and no independent regulatory body was present to restrain a local authority that was clearly supported by the Welsh Office. The National Rivers Authority did express concerns but seems to have given up in the face of determined promotion of the original and modified waste types deposited. The fears expressed by their representative in meetings and letters in the 1980’s and mid 90’s have been realised.

10.4 I believe that the legislators failed to recognise the very different roles of promoter, operator and regulator, failed to properly separate roles until 1996 and complicated an already unsatisfactory system by introducing compulsory dis-integration of waste collection and disposal through Compulsory Competitive Tendering and attempts to induce privatisation of public waste disposal services.

11 Collate evidence of adverse health effects attributed to the site and evidence of ill health and specific diseases in the local population

11.1 Satisfactory “evidence” of ill health has not been available to me, indeed it is not available to specialist epidemiologists and health researchers. The various studies that have been undertaken examine routinely collected health data. Many of the alleged health effects are not routinely noted/collected and limited attempts have been made to collect site/area specific data as detailed in the reports referred to by the health agencies listed in the index to the Resource Centre of the Investigation.

11.2 The health studies undertaken use distance from the site as a proxy for exposure. This is understandable as no population exposure data has been collected. The distances adopted have been arbitrary and ignore topography that could be critical in exposure terms. What would be very helpful would be actual personal exposure data and ambient as well as site pollution data. The only reference to this data was in relation to occupational exposure of tip site staff which was advised, as a precaution only, by the Health and Safety Executive but not followed up by them. I have not seen this data which I understand was collected by Rhondda Waste Disposal Ltd.

11.3 The Medical Research Council's Institute of Environment and Health, Leicester, undertook a review of the toxicological literature relevant to landfills and assessed the health risks from Nantygwyddon from a classic toxicology viewpoint on my behalf (**Appendix 10 - Institute of Environment and Health Report**). Taking each of the most likely “suspect” chemicals/elements separately they could envisage no health risks of concern on the basis of the concentrations that had been occasionally measured by consultants. This sounds reassuring but their literature search did not reveal adequate research on low level exposure of vulnerable people to low level concentrations of mixtures of chemicals as recorded from landfills. Such research has not yet been done.

11.4 The diseases about which concerns have been expressed include:-

- congenital anomalies, particularly gastroschisis (intestines outside the abdomen),
- sarcoidosis (a condition of skin also affecting the lymphatic system),
- diabetes,
- non-specific respiratory complaints,
- asthma,
- berylliosis (which it is claimed can be confused with sarcoidosis),
- tuberculosis,

There is concern about the elevated mortality rates in the locality and common complaints of persistent irritation to/infection of mucus membranes, associated with the smell that also causes nausea.

11.5 The appended OS Map (Appendix 11) produced from one initially prepared by the Chairman of RANT, Mr Garrod Owen indicates the gastroschisis “cluster” reported on by Palmer et al⁴⁰. It also locates some known therapeutic abortions, other congenital anomalies and sarcoidosis. A later report considered time to pregnancy (fertility)⁴¹. Bro Taf Health Authority staff have reported their internal studies concerning sarcoidosis⁴², tuberculosis⁴³ and diabetes⁴³. This map undoubtedly gives cause for concern. No explanation other than the tip has been postulated although there could be other explanations. I think it would be of interest, in the light of a recently reported study⁴⁴, see below 11.6, to see recorded low birth weights now plotted on the same scale of map.

11.6 Research is on going as part of Department of Health/ National Assembly/Environment Agency response to the concerns about landfills and health. The recent very large study by the Small Area Health Statistics Unit (SAHSU)⁴⁴ again illustrated some concern about elevated levels of congenital anomalies and levels of low birth weights amongst those living within 2 kilometres of landfill sites. However the study population was very large and the confounding factors legion and the expert conclusions of the Committee on Toxicity⁴⁵ were that yet more evidence/research is required before reliable conclusions can be drawn.

11.7 Other relevant research is publicised on the Department of Health web site as on going⁴⁶. Some of this is yet more literature searches that are unlikely to produce any more certainty, but some is at last to be actual measurements of pollutant exposure that may move matters forward. There remains the need for blood/fat/urine sampling and analysis before dose received, as compared to exposed to, can be ascertained. The response to those doses will of course probably vary according to susceptibility of individuals. The nature of the risk first has to be assessed by toxicological research, environmental and biological monitoring, and study of the population at risk. This should lead to epidemiological investigations where an estimate is made of the effects of exposure on human health as indicated in Figure 3.

⁴⁰ Dr HMP Fielder, Dr S Monaghan, Dr CN Poon King, Professor SR Palmer, Welsh Combined Centre for Public Health, October 1997

⁴⁶ <http://www.doh.gov.uk>

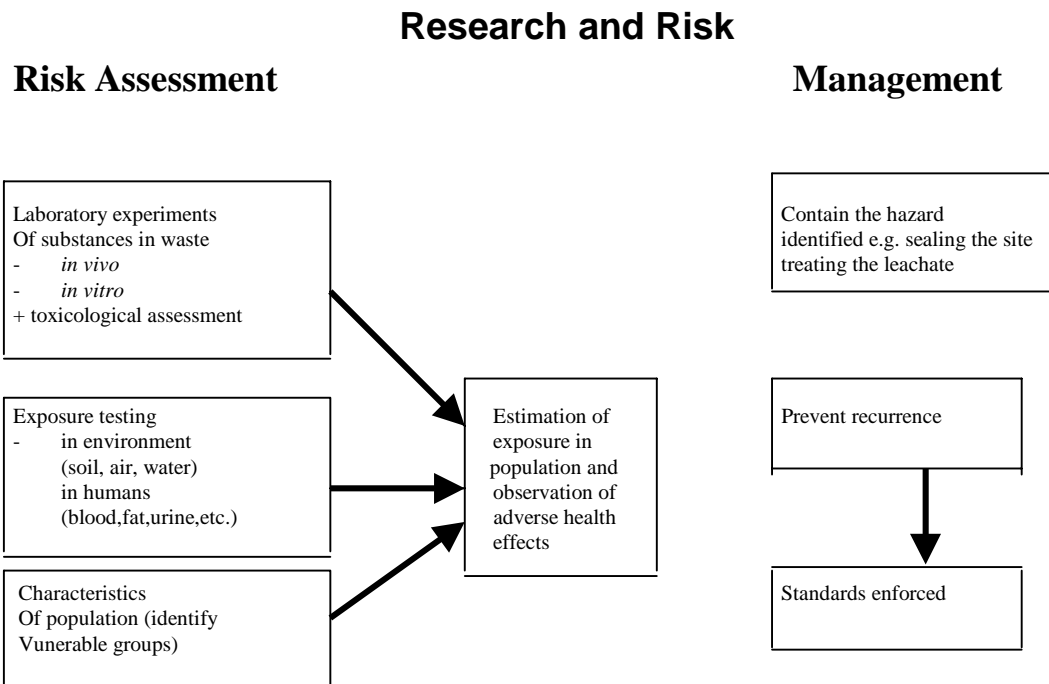


Figure 3 Assessing the risks of waste & managing the hazard.
 Routes of exposure may be complex and multi-media as illustrated in Figure 4.⁴⁷

⁴⁷ Figs 3 and 4. Adapted from 'Hazardous Waste and Human Health', BMA, Oxford University Press, ISBN 0-19-286142-5

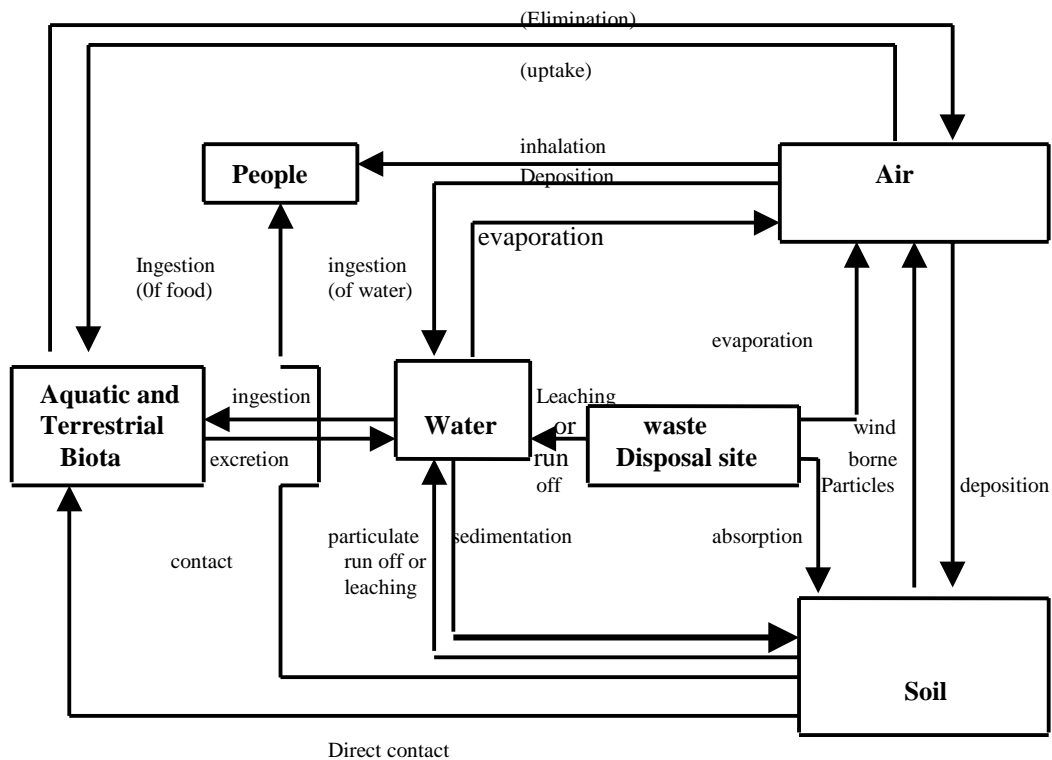


Figure 4. Routes of exposure.

There are a number of ways in which humans can be exposed to hazardous waste. Substances from a waste disposal site may migrate through the soil and enter the food-chain, leach into water supplies, or evaporate into the air.

12 Establish what systems have been in place in the Health Authority, Local Authority, the Welsh Office and National Assembly for Wales to respond to concerns expressed regarding ill health in relation to the Nantygwyddon Landfill site

12.1 Bro Taf Health Authority is responsible for Public Health protection in the area. There is some overlap with the Environmental Health responsibilities of the Local Authority; RCTCBC and the Environmental Health responsibilities overlap those of the Environment Agency. For the last 6 years these authorities have been well aware of the health concerns and have sought to respond and co-operate within the limits of their expertise and resources. I think it would be stretching the liaison mechanisms explained to me to describe them as a system.

12.2 I have received no evidence of formal protocols or memoranda of understanding developed by the authorities to clarify how they will proceed together to address the issues. I have understood that the Local Authority Environmental Health Service regarded itself for some years as the junior partner, deferring to the Environment Agency on site regulation and to the Health Authority on public health issues. This attitude may have been much influenced by resources, expertise (the Director was a Trading Standards Professional), and political direction and by their Council's ownership of the controversial site operating company. Nevertheless the authority, through its Environmental Health Service, was active in discussing and commissioning advice and studies referred to in the Council's submissions. I do not think there is now any doubt as to which authority does what but that clarity took some time to develop. Formal liaison now appears to be regular and thorough although it has not resulted in what I could yet regard as an adequate response to the issues.

12.3 It has been made clear to the investigation that the National Assembly (and previously the Welsh Office) are very reluctant to get involved in local issues. The Planning function is very concerned to protect the "appellate" role in planning. The Public Health function appears to wish to preserve their strategic and over-view role in health and to exercise their higher level functions. This seems to have confined the health role to commissioning research (jointly with the UK Department of Health), attending scoping meetings, liaising generally and advising Ministers.

12.4 I think it is unfortunate that the bodies listed above, including the National Assembly, have not been able to commission or influence the commissioning of sound environmental pollution data and specific personal sampling/dose and population health status studies of the Nantygwyddon area.

13 Identify and assess responses made since the landfill site opened in respect of the health concerns of local people and the interdisciplinary liaison undertaken. This to include GPs, the Environment Agency, the Health Authority and the Welsh Office/National Assembly for Wales

13.1 This question is little different to the previous one. The Health Authority through its then Consultant in Communicable Disease Control, Dr Arun Mukerjee, did write to GPs asking if they had noticed anything untoward amongst patients consulting them in 1997⁴⁸. He got little response. Subsequently several clinics were organised to gather health information. A report was published in 1999⁴⁹. This health clinics survey was planned to happen at the same time as a local authority commissioned environmental pollution survey but the plan went awry. I doubt that this made any difference but it made the official liaison look ineffectual to the public who doubted the good faith of the officers involved. Further epidemiological studies were undertaken, some peer reviewed and published others essentially “in house”. These are all referred to in detail in Bro Taf Health Authority and National Assembly (Health) submissions indexed in the Investigation Resource Centre. They can be characterised as confirming some cause for concern and further study or illustrating no cause for concern so far as the particular parameters of the study were concerned.

13.2 I mentioned above that the Environment Agency has been slow to see the health implications of its work and responsibilities. Nantygwyddon has been one of the “running sores” which has changed Environment Agency approaches, together with the criticism it has taken from a number of sources including its own field staff⁵⁰. The Board of the Agency is currently in disarray, one member issuing a press release entitled “The Environment Agency: An Enemy of the People”, on 5th September 2001, to coincide with their Annual Meeting as mentioned earlier in this report.

13.3 Further studies (mentioned above) commissioned by the National Assembly, etc., are being or are expected to be published. The long awaited SAHSU study⁴⁴ was finally published in mid August 2001, around 15 months later than anticipated. It revealed some better indications of the “effect” of landfills on incidence of cancers but confirmed the “effect” on some birth defects and low birth weights. Some of the studies still to report are unlikely to be published until the EU Landfill Directive³⁰ is implemented through UK legislation. A cynical commentator could point out that when “evidence” is available and published it will be of only historic significance, as waste management will have moved on from crude landfill.

⁴⁸ Letter 21st January 1997

⁵⁰ ENDS Report 292, May 1999

⁵¹ ‘The Eurohazcon Study’, H Dolk, Mvrijheld, B Armstrong, Labramsky, F Bianchi, E Garne Vnelen, E Robert, JES Scott, D Stone, R Tenconi, The Lancet, August 1998

13.4 There has been a clear need for some time as pointed out by Professors Palmer and Coleman (University of Wales in Cardiff) when they gave evidence to the Investigation, for the systematic collection of site specific data. In discussion with Professor Helen Dolk (now University of Ulster - formerly London School of Hygiene and Tropical medicine) - an author of the much quoted EUROHAZCON study⁵¹, she agreed the need to move forward with more specific studies. This has still not commenced in connection with any controversial site, to my knowledge.

13.5 Essentially the responses of the authorities must be characterised as too little and too late, hence the demand for an investigation by the National Assembly.

14 Assess investigations/research undertaken to inform action by GPs, the Health Authority, local authority and by the Welsh Office and National Assembly for Wales and how this has been communicated to local residents and other interested parties

14.1 In addition to the epidemiological studies referred to in section 13 the other investigations of relevance have been those dealing with pollutants/toxic pollutants arising from the site. These are listed in the submissions from the Environment Agency and Local Authority listed in the Index to the Resource Centre of the Investigation.

14.2 The Health and Safety Executive (HSE) considered complaints from a tip worker, Mr Andrew Tree when the character of waste was altered by the operator with the agreement of the Regulator in 1995 and their inspector investigated the issues. He gave evidence to the Investigation and confirmed that he saw no cause to intervene beyond advising on the precautionary collection of personal chemical exposure samples. The complainant, Mr Tree was subsequently disciplined, essentially for involving the media, and lost his job. He was not supported by his trade union and remains aggrieved by all three parties, illustrating the cost of whistleblowing to a lone worker. He could not pursue this particular issue and HSE did not do so. Another issue referred to HSE over the years concerned pesticide use on the tip and after some confusion the inspector declared himself satisfied that only approved pesticides were in use and that site personnel knew how to use them. He confirmed this judgement to a Hearing.

14.3 Dr Mukerjee's initial enquiring letter to GPs in July 1997, referred to in section 13 was followed by briefings of GPs about the clinics that followed and were reported on in 1999. There can be no doubt that local GPs are aware of the alleged problems.

14.4 The studies commissioned have all been referred to by the Health Authority and considered along with their own studies and information as they have sought to respond to the issues. Residents continue to gather personal health problems data as best they can.

14.5 The only information of relevance that did not find its way into the public domain was a report or minutes of a workshop held in Leicester (Medical Research Council (MRC), Institute of Environment and Health) to discuss the health effects of landfills. For some reason a report was never published although the (selected) conclusions of that event did find their way on to the Department of Health web site in the week that the SAHSU study was published (16 August 2001). Dr Alan Watson of Public Interest Consultants had previously referred to the workshop in evidence. Another expert participant in that workshop was Professor Helen Dolk, (University of Ulster) who was also unaware that a record of the meeting had been available until I mentioned it to her. Dr Lesley Rushton of the MRC, IEH Leicester was one of

the rapporteurs and confirms that no publication was required by the funders of this workshop (Department of Health). This does not give any comfort to those interested in the health issues that we have entered an era of more open government.

14.6 On the matter as to how (health and other) information has been communicated to local residents and other interested parties, the testimony of those residents and parties is eloquent in illustrating what they regard as thoroughly objectionable behaviour by authorities and their officers on occasions and characterise as :-

- professional arrogance,
- professional disdain,
- a simple failure to do what could reasonably be expected of public servants/bodies,
- persistent obstruction,
- obfuscation,
- claiming perceived confidentiality,
- claiming privilege,
- threats of legal action,
- failure to take notes for the file,
- failure to keep records,
- failure to respond to letters & telephone calls,
- deliberate destruction of files and records,
- failure to minute important meetings,
- failure to answer formal correspondence
- delays in responding generally,
- supporting/encouraging legal action to restrain protest.

14.7 I can only conclude that communication has been dreadful on occasions although it has improved over time. Difficulties have been exacerbated by less than ideal courtesy and by wild accusations as to the motives of individuals. In matters pertaining to health risks to children and grandchildren, feelings do run deeply and emotions get out of control. The hearings included a range of those experiences. I had very moving testimony from a mother who spoke of the many operations her tiny daughter had endured to remedy gastrochisis. I had an elderly lady unable to continue her testimony as she recalled the worry she had endured over a high court injunction restraining her protests and threatening her modest assets. I heard officers in the public service being accused of misconduct and had one mass walk out of the hearings when a particular officer did not appear as publicised.

14.8 I was a member of the Independent Commission for Environmental Health which published Agendas for Change in 1997⁵². One of our significant conclusions then was that in the future professionals would need to be “on tap” for communities and no longer regarding themselves as “on top” of communities, their historical position

²¹ ‘Agendas for Change’, Chadwick House Group Ltd. London, 1997, ISBN 0 900103 03 5

14.9 I reproduce below in **Figures 5a and 5b**⁵³ a Risk Communication Check List circulated by the UK Department of Health in 1999. This summarises far better than I can the “fright factors” and the “media triggers” concerning public health risks, published/circulated to advise authorities on how to communicate about risks to public health.

FIG 5a Fright Factors

The following usually make risks less acceptable:

- risk seen as **involuntary** (e.g. pollution contrasted with sports)
- risk seen as **inequitable** – some profit while others suffer
- risk seen as **inescapable** by taking personal precautions
- source of risk **unfamiliar or novel**
- risk **man-made** rather than natural
- damage may be **hidden and irreversible**
- danger to **small children** or **future generations**
- form of harm arouses **particular dread** (e.g. cancer)
- victims **identifiable** rather than anonymous
- risk appears **poorly understood by science**
- contradictory statements **from responsible sources**

⁵³ Material extracted from ‘*Communicating about Risks to Public Health: Pointers to Good Practice*’, The Stationary Office, 1998, ISBN 0 11 322257 2

Figure 5b Media Triggers

The following additionally tend to amplify media interest

- Questions of **blame**
- Alleged **secrets** and **“cover-ups”**
- “human interest” through heroes, villains, dupes etc.
- links to **existing high profile issues** or personalities
- **Conflict** (between experts or experts versus public)
- Story as a **sign of further problems** (“what next?”)
- **Many people at risk**, even if at low levels (“It could be you!”)
- Strong **visual impact**
- Links to **sex** and/or **crime**
- Reference back to **other reportage** (A “story because it’s a story”)

14.10 The open government and transparency often aspired to in theory has not applied in the case of Nantygwyddon. In general the authorities have been characterised as defensive and reluctant to admit to their problems, of resources or of competence and have not apparently been prepared to say they did not know the answers but would try to find out and proceed to do so.

15 Conclusions

15.1 The Nantygwyddon site was and is not suitable, in my view, for the disposal of low-density household waste. The proponents of the site did not consider objections/concerns and ignored even their own criteria and common sense in developing the site for such a purpose.

15.2 The Nantygwyddon site was not suitable, in my view, for the disposal of the mixed industrial waste that was taken there from 1995. The licensing authority did not make a sound judgement on the application to amend the Waste Disposal Licence to permit the acceptance of industrial waste. There was inadequate advice given by officers at that stage.

15.3 The design of the site was probably as good as could have been expected from the professional engineers directly employed in a small borough's surveyor's department in the early 1980's. The manner in which containment was designed/planned to take place was never implemented in practice and, for the area tipped to date, no expert quality control system was used to ensure the design was executed as intended. There is evidence of quality control for phase 2 although this liner was later damaged and eventually repaired by the current operator.

15.4 The manner in which the site was operated did not cause particular problems to people in the vicinity when it received the material for which it was initially intended. It is however likely that landfill gas and leachate would have become problematic over time.

15.5 Persistent nuisance was caused to people living in the vicinity, when Nantygwyddon was operated by Rhondda Waste Disposal Ltd./ 3 C's Ltd. This led to fears about public health consequences of the foul odours from landfill gas with a high hydrogen sulphide content together with other trace elements known to be toxic. The fears were exacerbated by an apparent cluster of congenital anomalies, respiratory problems and skin conditions etc. that have not been explained to date. The Council appeared to lack both the will and the mechanisms to control their wholly owned company.

15.6 Enforcement of Waste Disposal Licence conditions has been inadequate at Nantygwyddon.

15.7 Enforcement of Public Health/ Environmental nuisance legislation has been inadequate in the case of Nantygwyddon.

15.8 Public Health studies have so far been inadequate to offer any explanation for the empirical observations of health problems noted by residents or to resolve the concerns raised by epidemiological studies. Health studies now need to be site specific, substance(s) specific and person specific. It should be possible to plot the incidence of low birth weights in the locality of Nantygwyddon and this could be of considerable interest and relevance in the light of the SAHSU study⁴⁴ recently published

15.9 Measurement of pollution levels generally in the Rhondda has been inadequate, giving no baseline information to enable comparison with other areas to be undertaken.

15.10 Measurement of pollutants from Nantygwyddon has been inadequate to date to enable comparisons to be made to other sources of industrial pollution.

15.11 Liaison by the authorities with one another was initially lacking and with the residents has been poor. Communication has been similarly lacking on occasions leading to residents lacking confidence in those authorities, their representatives and even to residents suspecting collusion to deny that problems existed.

15.12 The release of untreated leachate from Nantygwyddon to surface watercourses is undesirable and unnecessary. It is practicable to treat it on site before release.

15.13 Wind blown litter will remain a problem at Nantygwyddon with the waste types for which it is licensed.

15.14 Landfill gas collection and disposal will remain a problem at Nantygwyddon whatever is now done with the site.

15.15 Risk communication principles need to be adopted by all public authorities dealing with problems of this type.

16 Recommendations

16.1 I recommend that there should be an end to household waste disposal at Nantygwyddon.

16.2 I recommend that the phase 1 area should be swiftly completed to suitable finished levels to ensure a sound, stable landform and reasonably impervious cap. I would suggest that the authorities consider the merits of using the currently untipped area to complete the “reclamation” of the Gelli coal spoil tips, and perhaps other similar prominent tips in the immediate area, seeking to achieve a land form compatible with the topography of the vicinity. I am concerned about the intended gradient of finished slope levels.

16.3 I recommend that a landfill gas management system be devised, implemented, monitored and regularly reviewed, this to include real time recording of flare temperature, gas residence time and complete combustion monitoring instruments.

16.4 I recommend that leachate be treated on site before discharge.

16.5 I recommend that until the landfill is successfully “planted” with vegetation surface water collection and management be maintained.

16.6 I recommend that specific health studies related to person/dose/substance(s) be commissioned involving blood, urine and fat sampling/testing and analysis. Results should be published with independent expert commentary as soon as possible. These tests and analyses need to be undertaken in the context of ambient and site specific pollution data. Attempts should be made to plot low birth weights in the vicinity of the Nantygwyddon site as soon as possible.

16.7 I recommend that the National Assembly issue mandatory guidance to the Environment Agency Wales to require all the openness and transparency permitted by current legislation and furthermore press UK government to espouse freedom of environmental information generally and certainly removing “commercial confidentiality” as a barrier to public accountability.

16.8 I recommend that the National Assembly support the principle of public accountability for the “public pound”.

16.9 I recommend that accountability for securing files upon the proposed abolition of a public authority be considered and improved.

16.10 I recommend that the National Assembly commission an authoritative stability study of Nantygwyddon.

16.11 I recommend a review of EU grant criteria, audit and the prospect of repayment if a grant aided asset is transferred with no public finance benefit.

16.12 I recommend that when the financial information about the trading and contractual affairs of Rhondda Waste Disposal Ltd. is available to RCTCBC it should be subjected to the closest scrutiny and that if evidence of wrong doing emerges it should be pursued with vigour so that individuals are held to account for their acts and omissions when exercising stewardship of public money

16.13 I recommend that the National Assembly, after obtaining any necessary legal and other advice, considers the human rights implications of the use of legal sanctions by public or quasi-public bodies to restrain the activities of officers of organisations such as RANT who organise protests against those bodies.

16.14 I recommend that the National Assembly consider how formal impact assessment (environmental, health and financial) can best be used in Wales to properly consider the implications of plans, programmes and projects concerning waste disposal.

16.15 I recommend that the National Assembly consider how communities may seek independent research and health risk appraisal to allay their fears and respond to inactivity or failure by the regulatory/health protection bodies.

16.16 I recommend that the National Assembly consider how they may best secure the principle of producer responsibility for waste minimisation, re-use and recycling in Wales.

David W. Purchon
December 2001
