



NRA

*National Rivers Authority
Anglian Region*

ENVIRONMENTAL PILOT AUDIT
NATIONAL RIVERS AUTHORITY
ANGLIAN REGION CENTRAL AREA
BRAMPTON HUNTINGDON

February 1995

ENVIRONMENT AGENCY

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ANNEX 1: REVIEW OF BRAMPTON SITE'S ENVIRONMENTAL MANAGEMENT SYSTEMS

EXECUTIVE SUMMARY

The following table is a summary of the recommendations made in the pilot audit report of the National Rivers Authority (NRA), Brompton Facility.

Audit Report No: C1094 Summary of Recommendations Pilot Audit, NRA, Brampton

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	3.0	<p>Environmental Management (Full recommendations - Annex 1)</p> <ul style="list-style-type: none"> • develop site environmental policy structure and establish organisational responsibilities to manage the sites environmental effects, • appoint site Environmental Focal Point with responsibility for the co-ordination and implementation of the sites environmental policy and programmes, • undertake management review of environmental training needs and integrate environmental training into the appraisal process, • establish site specific environmental objectives and targets and develop management procedures to ensure that these are being met, maintained and monitored against NRA and site policy, • develop site emergency response plans. 				

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.1.1	Land Management Improve Aesthetic/Visual Appearance of Site by: <ul style="list-style-type: none"> • removing unused plant and equipment, • develop landscape management plan, • ensure proper pricing of groundworks contract. 				
	4.2	Energy Management <ul style="list-style-type: none"> • undertake comprehensive review of site energy usage (gas, water and electricity) and establish a detailed understanding of load distribution, major users and potential energy saving opportunities, • develop management procedures to address: <ul style="list-style-type: none"> - the consistent measurement of energy performance; and - comparison of performance against the NRA/site objectives and targets. • develop energy management strategy linked to site asset management programmes. 				

Rec No	Report Para No	Recommendations	Est Cost: Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.3	Transportation <ul style="list-style-type: none"> • improve awareness of drivers of their performance, • review and monitor 'essential mileage' more closely, • monitor vehicle servicing periods more closely, • use inboard diesel or 4-stroke outboard motors in preference to 2-stroke engines, • whilst using 2-strokes, use biodegradable oil, • develop spill procedures for refuelling. 				
	4.4	Procurement and Suppliers <ul style="list-style-type: none"> • improve contractual conditions for catering and cleaning contracts to include specific requirements for materials storage and use and reporting back on environmental performance, • provide environmental procurement training to purchasers. 				

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.5	Flood Defence <ul style="list-style-type: none"> • review remote locations against NRA PPG2, • adapt maintenance inspection reports to include environmental checks, • provide training and basic guidance to NRA flood defence engineers on good environmental practices. 				
	4.6	Environmental Impacts <p>Air and Noise</p> <ul style="list-style-type: none"> • develop a complaint log and procedure for dealing with nuisance complaints should they arise. 				

Rec No	Report Para No	* Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.7	Water and Wastewater <ul style="list-style-type: none"> • monitor quality of abstracted water annually, • undertake drain survey and produce a drain plan for the site, • check recommendations on drainage within PPG 18 and Pollution Prevention Pays video, • re-route potentially contaminated drainage to sewer, • improve access to vehicle washdown sump to enable servicing, • identify whether sewer discharges require a consent, • request review of consent conditions for discharge from ozonolysis plant, • establish monitoring system for discharge from the ozonolysis plant. 				

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.8	Hazardous Substances <ul style="list-style-type: none"> • segregate incompatible materials (including wastes) in storage in fish lab, • fix vent and regularly check all vents in stores, • instruct cleaning contractors to update COSHH sheets in cleaners cupboards in line with their contract, • follow recommendations of PPG2 with regard to standby generator fuel tank, • review current storage against potential flood risk, • draw up spill response plan. 				

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.9	Waste Management <ul style="list-style-type: none"> • relocate skip to hard surfaced area and keep lid closed, • identify all wastes deposited in the skip to cleanaway, • consider policy of landfill of only non-incinerable or pre-treatable special wastes, • include 'lab sharps' in clinical waste description, • check whether transfer of fluorescent tubes to Peterborough is licensable activity for that site, • consider use of containment landfill sites in preference to disperse attenuate, for general wastes, • relocate vegetable oils to surfaced, contained area, • consider reduce/eliminate principals of waste minimisation, • consider composting of garden waste. 				

1.0 AIMS AND APPROACH TO THE PILOT AUDIT

1.1 Introduction

The aim of the pilot audit was to independently assess the environmental status and performance of the Brampton site's activities and operations by examining in detail the activities of operational facilities (laboratories, offices, storage facilities and workshops). The audit focused on the priority issues for National Rivers Authority (NRA) operations, ie. waste minimisation, building and their environs, transport, laboratories, elimination of toxic substances, emissions and energy efficiency. Key considerations included: risk to credibility of the NRA; integration of environmental management systems into existing management systems and identification of NRA strengths.

1.2 Objectives of the Pilot Audit

Four primary objectives were identified that applied specifically to the pilot audit:

- to evaluate the effectiveness of the draft auditing procedures;
- to develop NRA staff expertise in environmental auditing;
- to receive feed back from auditees on the audit and draft procedures; and
- to produce an environmental audit report for the benefit of the auditees, that may serve as a guide to all other NRA locations prior to the establishment of a full auditing programme.

1.3 Objectives of the Brampton Audit

The environmental aspects of the audit at Brampton were centred on three areas:

Risk to the credibility of the NRA, specifically:

- legal compliance;
- concerns expressed by external organisations;
- risk to the environment, especially water;
- implementation of the NRA's own guidelines to external bodies. (Pollution prevention pays video, pollution prevention guidance notes etc.);

- visual appearance.

Integration of environmental management into existing management systems

- waste minimisation/environmental performance against targets and procedures, etc, especially water and energy;
- environmental standards for internal operations and the use of contractors.

Identification of strengths and best practice to highlight to other areas/regions.

1.4 Process

Regulatory information pertaining to the site was assessed, (from water companies, local authorities, etc) and the environmental setting and past land-use of the site and surrounding area was examined before visiting the site. On-site work was by auditors drawn from Internal Audit, Pollution Prevention and the Environmental Policy Unit, who audited with respect to management systems, operational systems and environmental impacts. Environmental Consultants (Environmental Assessment Group Ltd) supplied expertise in areas outside of NRA current experience. The methods that were used included physical examination of the site, informal interviews with employees, formal interviews with staff selected by the auditors and examination of documentary evidence.

Evidence collected included:

- **Management:** the degree of understanding, and commitment of environmental management at all staff levels. The amount of resources allocated to environmental management. The managerial and administrative systems used to ensure implementation of best environmental practice. The production and promulgation of management procedures. The existence of a system for measuring, monitoring, and reporting;
- **Operations:** environmental performance and efficiency gains through effective resource management and waste minimisation measures. Efficacy of procedures to measure and monitor management processes/activities. The inclusion in contracts (internal and external) of measures to ensure appropriate environmental standards; and
- **Environmental Impacts:** identification of emissions and waste streams. Existence of permits/consents for discharges. Compliance with statutory controls on emissions. Compliance with NRA best practice as given to outside bodies. Implementation of best practice above that

required by national procedures. Effectiveness of measuring and monitoring of discharges whether controlled by statute or not.

1.5 Audit Criteria

The site was audited against best practice as contained in:

- NRA Internal Environmental Policy, and its targets;
- legislative requirements, eg. waste duty of care;
- NRA guidance to external bodies; and
- environmental management systems standards, eg. BS7750 and EMAS.

1.6 Audit Boundaries

The audit was limited to Brampton on-site activities and did not consider:

- the woodland areas to the south;
- the caretakers house; and
- neighbouring activities.

1.7 Audit Approach

A phased approach to the audit was adopted and included:

- a visit to the Brampton site in advance of the audit;
- pre-audit briefing of site staff including the issue of a request for information questionnaire;
- the pilot audit;
- audit close out meeting with site management; and
- the preparation of the audit report.

2.0 SITE DESCRIPTION

2.1 Site Setting

This site is located approximately 2km south-west of Huntingdon at National Grid Reference TL 222 709 (Figure 1). The facility is in a rural location, accessed by the A141. The nearest housing is located along the site boundary to the east and south of the site, approximately 50 metres from the operational part of the site. The house to the east is owned and leased by the NRA and is within the site boundary. The boundary of the village of Brampton is located approximately 500m west of the site. A golf course occupies the surrounding land to the immediate west and south of the site. A public footpath runs through the golf course in a south-east/north-west direction close and to the site boundary at its south-west corner. The Brampton Brook is the closest surface water feature to the site. It flows in a north-easterly direction approximately 50m south-east of the site boundary. The Brook joins the Great Ouse which flows west to east approximately 100m south-east of the site.

2.2 Geology, Hydrogeology and Hydrology

2.2.1 Introduction

Desk-based research of the local geology and hydrogeology was carried out by EAG in order to establish the potential for liabilities due to migration of contaminants onto the site, from adjacent contaminative uses, or away from the site onto third party land. In particular, an assessment of the surface and groundwater sensitivity of the area was carried out.

2.2.2 Geology

Information on the geological stratigraphy underlying the site was obtained from a number of sources, namely:

- examination of published geological maps produced by the British Geological Survey (BGS);
- examination of borehole logs supplied by the BGS headquarters at Keyworth, Nottingham.

The geology underlying the site comprises superficial deposits of River Gravels overlying Oxford Clay (grey mudstones, with infrequent limestone and some sand bands). The Oxford Clay extends to a depth of at least 30m beneath the site. This is in turn overlying the Kellaway Beds, Great Oolite Series, Lower Estuarine Series and ultimately the Lias at depth.

Figure 1.

SITE LOCATION.

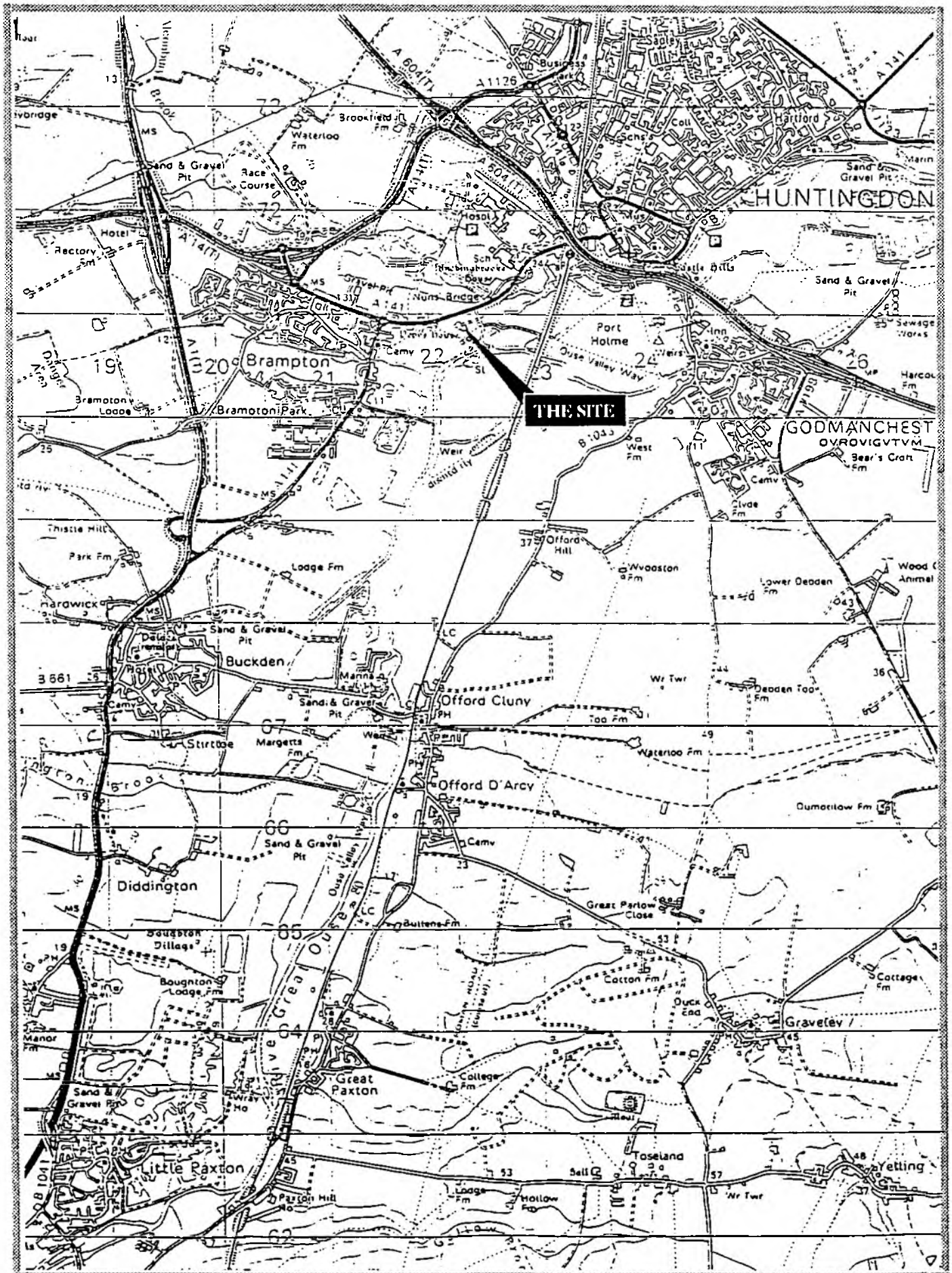
Not to Scale.

Date : January 1995

North



EAC



The shallow stratigraphy within the local area is according to a BGS borehole located 400m to the west, likely to comprise:

Strata	Depth (m)
Topsoil	0 - 0.3
River Terrace Deposits (silty sand grading to fine gravel and sand)	0.3 - 5.8
Chalky Boulder Clay (Oxford Clay Raft)	5.8 - 25.0

2.2.3 Hydrogeology

The NRA Anglian Region classify the underlying Oxford Clay bedrock as a non-aquifer in their Policy and Practice for the Protection of Groundwater Regional Appendix. The stratum is not a significant water resource, but could potentially support minor abstractions from the more substantial limestone and sand bands present within the deposit.

However, the more superficial sands and gravels have been classified as a minor aquifer which is abstracted locally for relatively 'sensitive' uses (ie. fisheries). The shallow groundwater is likely to be in hydraulic continuity with the local surface water bodies. There are three licensed groundwater abstractions within a 2km radius of the site. These have been summarised in Table 1:

Table 1: Licensed Groundwater Abstractions within a 2km Radius of TL 222 709			
National Grid Reference	Distance (km)/Direction	Source	Use
TL 221 692	1.7km S	Sands and Gravels	General Agriculture
TL 224 710 ¹	On-Site	Sands and Gravels	Fishery
TL 206 722	2.0k NW	Sands and Gravels	Spray Irrigation

The site is reported to be located within a groundwater inner source protection zone (Zone 1) due to its location immediately adjacent to a sensitive groundwater source (ie. for fishery use). The zone area is delineated by a 50 day travel time from any point below the water table to the source.

¹ It was noted that the NGR of this licence, quoted on the licence abstraction information, was TL 224 700.

2.2.4 Hydrology

The site lies within the flood plains of the River Great Ouse. The Great Ouse flows west-east 100m to the south-east of the operational part of the site, and forms the southern boundary of the wooded portion of the site (this area was not covered in the audit) to the south. The NRA Anglian Region have reported that the water quality of the Great Ouse along the Huntingdon/Brampton stretch is currently fairly good (ie. Class 2, supports a fishery). The Brampton Brook has a General Quality Assessment class E (ie. poor); it is currently failing to meet its objective set for Cyprinid Fishery and livestock watering (ie. fair quality water).

There are three licensed surface water abstractions within a 2km radius of the site. These are upstream of the site.

Table 2: Licensed Surface Water Abstractions within a 2km Radius of TL 222 709			
National Grid Reference ²	Distance/Direction	Source	Use
TL 220 700	1.1km S	Great Ouse	Spray Irrigation
TL 220 703	0.7km S	Great Ouse	Spray Irrigation
TL 206 718	1.8km NW	Alconbury Brook	Spray Irrigation

2.2.5 Significance of Geology, Hydrogeology and Hydrology

The location of the NRA facility at Brampton is considered to be very sensitive in terms of both groundwater and surface water resources.

The geology underlying the site comprises permeable deposits of River Terrace sands and gravels, overlying Oxford Clay, (a deposit of relatively low permeability). Any mobile contaminants arising could potentially migrate laterally or vertically from or to the site from third party land within the gravels, and into the surface water bodies. The NRA have however reported that there are no known pollution incidents or contamination to either surface or groundwater associated with the site to date.

² Multiple point abstraction, representative NGR has been quoted.

2.3 Site History

2.3.1 Introduction

The site history has been researched by reference to Ordnance Survey and County Series maps, by referring to the site's planning history and other archive material.

2.3.2 Historical Development

The 1889 maps show the site and surrounds to be greenfield at that time, with the surrounding area in agricultural use. The River Great Ouse and associated Mill Race to the south and Brampton Brook to the east were present in their current configuration. Brampton Mill (corn) and Bromholme Road were also present.

There was little significant change noted to the site itself or surrounds until the early 1960s. Huntingdon District Council Planning Department (HDCPD) records show outline planning permission for the construction of a water treatment plant on the north of the site in 1961. The treatment plant, access road and associated tank and a covered reservoir had been constructed by 1965. The southern portion of the site and surrounds remained greenfield; Brampton Mill had been converted to residential use by this date and is now a pub/restaurant.

According to the NRA records, the treatment plant was decommissioned in the early 1970's, Anglian Water used the facility as a water filtration research laboratory during the early 1980s and the fishery laboratory was commissioned in 1982 (still present on site). Consent was given by HDCPD in 1988 to convert the remaining buildings on-site into offices.

2.3.3 Significance of Historical Development

The site history has shown the site to have been occupied by a water treatment works (and laboratories) from the early 1960s. There is considered to be only limited potential for significant residual contamination of the underlying soil and groundwater to have occurred from this previous use. The site surrounds have had a history of greenfield use, the potential for contamination to have arisen on the surrounding land is considered to be small.

2.4 Site Operations

2.4.1 Site Layout

This facility covers an area of approximately 6 hectares (15 acres); it is broadly divided into three areas:

- meadow and two concrete 'reservoirs' cover the northern half of the site;
- pond, orchard and grassed area, east of the site buildings;
- operational area consisting of a number of buildings, car park, hardstanding and access roads.

2.4.2 Description of Operations

A number of distinct activities are undertaken at this site:

- site and Anglian Central Area are administered from the administration block, which was built in the early 1990s and has been extended twice, as the site use has expanded.
- the fish health and ageing laboratory is located in part of the former treatment plant settlement beds. The building was converted in 1982 and now comprises a tank room, where fish are received and kept prior to diagnostic and pathological examination. The fish are then killed and tissues are examined. The section has microbiology and histology laboratories for further assessment of fish tissues.
- the biology laboratory is a single small laboratory which undertakes routine analysis of samples for monitoring of rivers and marine environments, by assessment of invertebrate fauna. The laboratory also investigates samples arising from pollution incidents. Aquatic samples are received at the lab and examined in trays. After examination live river samples are returned to the River Great Ouse. Some samples are preserved in formalin. It is questionable whether returning such samples to the Great Ouse is good practice. (NRA policy/practice).
- the site has a maintenance block which consists of storage and workshops for the boats and equipment used for off-site work. This block also contains archive information and hazardous materials stores for the biology lab and pollution prevention officers. The adjacent car park area is used for washdown of vehicles on a purpose-built concrete pad.

A number of ancillary facilities are also used, these include:

- staff canteen, in a purpose-built building adjacent to the main administration building;
- ozonolysis plant for effluent treatment from fisheries lab;
- Eastern Electricity transformer and NRA standby generator unit;
- external fish tanks;
- conference facilities in the fisheries laboratory building.

3.0 ENVIRONMENTAL MANAGEMENT AUDIT

3.1 Introduction

Companies and organisations are becoming increasingly aware of the need to achieve an improved level of environmental performance. They have been motivated for a number of reasons including their potential liabilities resulting from environmental legislation; the potential for cutting costs and emerging fiscal measures; and a desire to improve their public relations image as increasingly, public concern about the environment grows.

As a result many organisations have undertaken environmental audits in order to identify and clarify potential liabilities, compliance status and to identify how their environmental performance can be improved.

In order to be effective these audits must be undertaken within the framework of a structured environmental management organisation.

Indeed with the introduction of formal environmental management systems such as the British Standard on Environmental Management Systems (BS 7750: 1994) and the European Union Eco-Management and Audit Scheme (EMAS) Regulation, environmental audits are an essential and integral part that provide organisations with the necessary assurance that their activities comply with the appropriate legislative, regulatory and company policy requirements.

3.2 National Rivers Authority (NRA)

The growing importance of environment management was further recognised in 1992 with the adoption of the NRA Internal Environmental Policy statement and objectives, the statement includes:

" In addition to vigorously pursuing its statutory responsibilities as Guardians of the Water Environment, the Authority will aim to establish and demonstrate wise environmental practice throughout all its functions."

The NRA has established a corporate environmental management organisation, incorporating a central Environmental Policy Unit (EPU), with 2.5 staff and an Environmental Steering Group with responsibility for policy development, procedures, instruction, practices, advice and compliance programmes.

3.3 Environmental Management Audit Findings

3.3.1 Environmental Policy

The NRA Internal Environmental Policy Statement was agreed by the NRA Board in 1992 and communicated to Brampton senior management through the Authority's established management briefing channels. Site managers demonstrated a fair understanding of the general policy principles and corporate objectives but this was not the case in respect of the detailed targets where the level of understanding was generally not as comprehensive. The cascading of the policy and targets below management level has been less successful and the level of penetration was generally very mixed.

No written document has been issued by senior management to site staff which endorses the NRA policy and provides information on the local arrangements and management responsibilities for implementation.

The NRA Internal Environmental Policy Statement reflects the culture and philosophy of the Authority towards the environment and sets the broad strategic objectives that it wishes to follow. These broader considerations need to be placed into context with the site specific environmental issues and all staff advised of the local arrangements and responsibilities for the implementation of NRA Environmental Policy.

A comprehensive site environmental policy strategy should be developed and communicated to all staff, which endorses the adoption of the NRA's Environmental Policy and addresses and places into context those issues related to the nature of the site's activities and significant environmental effects (See Annex 1, Clause 1.3).

3.3.2 Environmental Organisation

The NRA Area Manager Central has the executive management responsibility for the development, implementation, administration and maintenance of the NRA's Internal Environmental Policy at the Brampton Site. These responsibilities are not specifically documented under the Terms of Reference (Job Description) for the Area Manager Central.

There is no specific site structure/organisation in place which details responsibilities, allocation of authority and interrelations of key personnel in respect of the establishment and implementation of the NRA's Internal Environmental Policy. A site Environmental Focal Point has not been appointed with the authority for ensuring the requirements of the NRA's Internal Environmental Policy Statement, objectives and targets are met and maintained.

A management representative needs to be appointed with the responsibility for the co-ordination of the site's environmental activities and programmes. A possible environmental organisation is outlined in Annex 1 (Clause 2.2) to illustrate how environmental responsibilities could be assigned to different parts of the site's organisation through the department line managers.

3.3.3 Training

The training records of staff interviewed during the audit were inspected at the Anglian Region's Head Office in Peterborough. The inspection showed that all staff had typically attended between 5-15 training courses on topics relevant to their particular job responsibilities. In addition a number of those interviewed had received more specific environmental training in areas such as: planning for sustainable development; health and safety auditing; contract management; water pollution control procedures and ground maintenance. Formal records are held at Head Office in Peterborough for approved training courses. A number of managers with staff personnel responsibilities advised they kept their own records of local staff training activities.

Environmental training and education needs to be incorporated into the staff appraisal process and a management review undertaken to establish the type of specific training required (See Annex 1, Clause 3.2).

3.3.4 Objectives and Targets

Site specific environmental objectives and targets have not yet been established. Environmental performance objectives and targets for the site are currently based on the Authority policy targets and do not take account of site specific environmental issues, priorities and regulatory requirements. Specific site objectives and targets should be developed which reflect the levels of environmental performance set by the Authority and the site's environmental priorities and significant effects (See Annex 1, Clause 4.2)

4.0 SITE AUDIT - OPERATIONAL ASPECTS

4.1 Facility Management

4.1.1 Land

The Brampton Site external area is maintained by groundworks contractors on an 'as and when required' basis; any residual work is undertaken by the site caretaker. The groundworks contractors are used on occasion to undertake clearance of vegetation in hedges around the site boundary and to replant and manage garden and landscaped areas on the operational part of the site.

In terms of environmental management, the activities of the contractor are specified in the annual contract, which is overseen by the site caretaker. Although not confirmed with the groundworks contractor requirements seen were considered to be comprehensive, and included:

- all pesticides/herbicides and other hazardous materials (eg. oils) must be removed from site, with any empty containers arising.
- wastes must be properly disposed of.
- protection of watercourses during works must be ensured.
- all pesticide materials used by the contractors must be checked by the biology lab manager who will then issue written permission for these materials to be used.
- emergency/accidental spill procedures should be drawn up.

There was no evidence of peat in use in external beds, in line with NRA policy.

The meadow and orchard area on the east side of the administration building is first cut in July to permit spring flora to flower. The management of this area is to be commended.

The aesthetic/visual appearance of the remainder of the site could be improved. This is also the opinion of the local District Council Planning Officer. A number of specific comments are made:

- A number of areas on-site are untidy, with accumulation of unused plant and equipment (nets, broken sacks of sand, metal and wooden equipment) and wastes (plastic, wood, soil/silt samples). Specifically, the area around the fisheries workshops requires a clearout and improved housekeeping.
- Some effort was made in 1990 to plant hedging and saplings along the boundary of the site. It appears that many of the plants are either in poor condition, or have died as a result of physical damage or neglect. It is recommended that a review of the landscape management for this site is undertaken and a forward plan be produced to improve its appearance. This should include greater consideration of potential conservation and ecological opportunities (eg. of boundary hedges).
- The poor appearance of parts of the site may in part be the result of the groundworks contractor underpricing the work for 1993/94. It appears that as a result the minimum maintenance work has been undertaken (and permitted by site management). This situation should not be permitted during future groundworks contracts.

4.1.2 Buildings

The management of buildings cross references with a number of sections of the operational aspects of this report. Particular attention should be given to:

- energy management;
- procurement and suppliers (eg. use of sustainable products, use of recycled materials);
- waste minimisation (eg. recycling of paper);
- use of ozone depleters (eg. in air conditioning systems).

The emphasis of good environmental practice for building management is upon the communication of policies and measurement and demonstration of achievements to all site occupants. Simple measurements (eg. a reduction in number of reams of paper purchased per month), will give the incentives required to enable good practices to be adopted.

4.2 Energy Management

4.2.1 Background

The NRA Environmental Policy Targets for Energy states: "the target set for energy (to be achieved by 31 March 1995, compared to usage in 1991/92) is to reduce energy directly consumed in NRA buildings, laboratories and transport by 15% in real terms of CO₂ emissions."

The NRA Anglian Region commissioned the consultancy practice, Mott MacDonald, in 1992 to undertake an energy audit on a sample of eight buildings ranging from Regional to District Offices, to obtain a general overview on energy usage throughout the Anglian Region. The Brampton facility was included in the sample audit. The energy and water consumption figures for the period 1991/92 reported by Mott MacDonald for Brampton were as follows:

• occupancy (numbers)	105
• floor area	1,264m ² (13600 ft ²)
• water	4,460m ³
• electricity	291,948 KWh
• gas	205,754 KWh
• total energy	497,702 KWh
• total energy cost	£25,640
• £/m ² (total energy)	£20/m ²
• CO ₂	977 tonnes

The report was prepared during 1992 prior to the construction of the fish laboratory building extension and site cafeteria (Table 4 details current site areas). The 1991/92 energy base line data published in the report cannot therefore, be used as a benchmark to compare the site's year on year energy performance.

Table 4: Building Areas (June 1993)		
Description	ft ²	m ²
Offices	14,182	1318
Laboratories	8,330	774
Workshops	5,042	468
Total	27,554	2,560

Mott MacDonald proposed a number of potential energy savings for the Brampton site, which are summarised in Table 5.

Table 5: Proposed Energy Savings 1991/92				
Proposal	Capital Cost £	Payback Years	Savings Pa	
			£	KWh%
Laboratory Lighting	960	2.2	432	
Insulation	161	3.2	50	
Insulate Fisheries Roof	1920	4.5	428	
Gas Heating (workshops)	3835	8.0	480	
Secondary Glazing	480	10.4	460	
Totals	7356		1,436	7%

Site staff were unable to produce documentation to confirm which of the Mott MacDonald energy conservation projects had been approved for implementation. However, they advised that a number of local energy conservation measures had been installed, ie. boiler optimisation controls, photocopiers (time clock control) and lighting (PIR controls on external lighting).

4.2.2 Site Energy Consumption

The primary site utilities are electricity, gas and water, with electricity being the most significant in terms of annual operating cost (figures 2, 3, 4 and 5). The consumption data provided during the audit was based on two primary sources:

- direct meter readings by site staff; and
- quarterly/monthly utility invoices.

No detailed technical analysis of the consumption figures had been carried out to adjust for changes in site load demands and space utilisation. Nor have any procedures been established to compare the site utility consumption figures (appropriately adjusted) with the NRA's energy reduction targets.

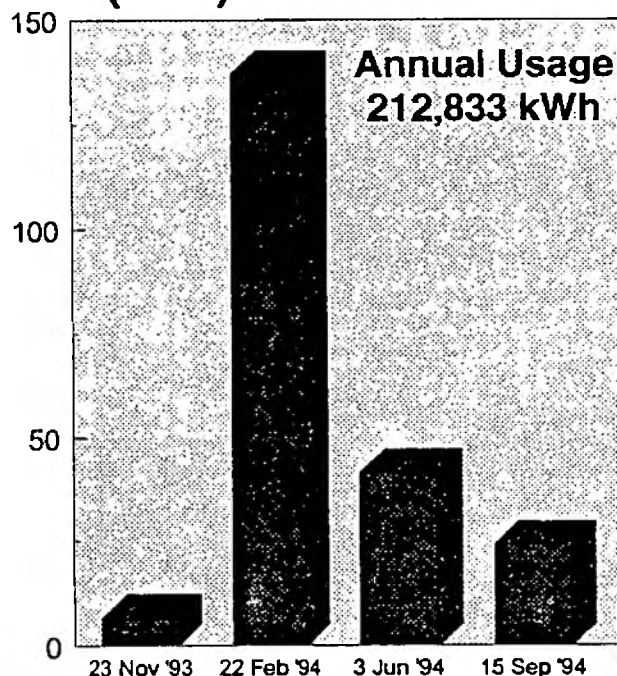
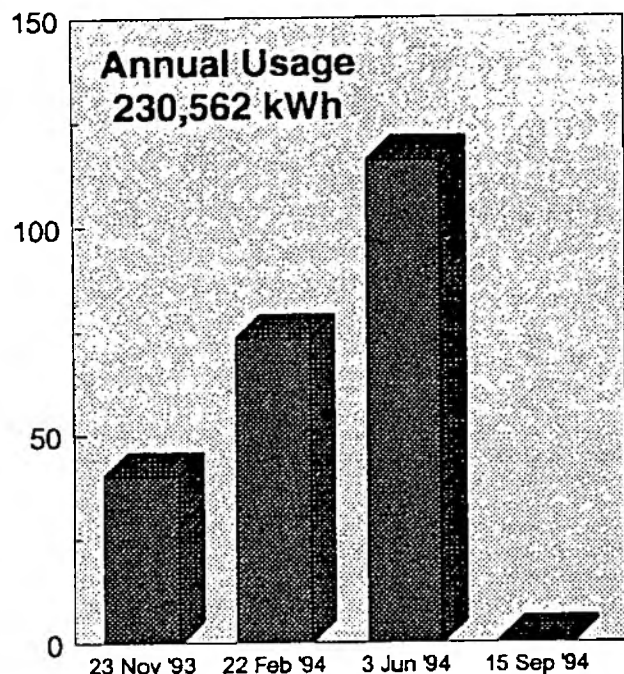
National Rivers Authority - Brampton Gas Usage & Costs

E A G

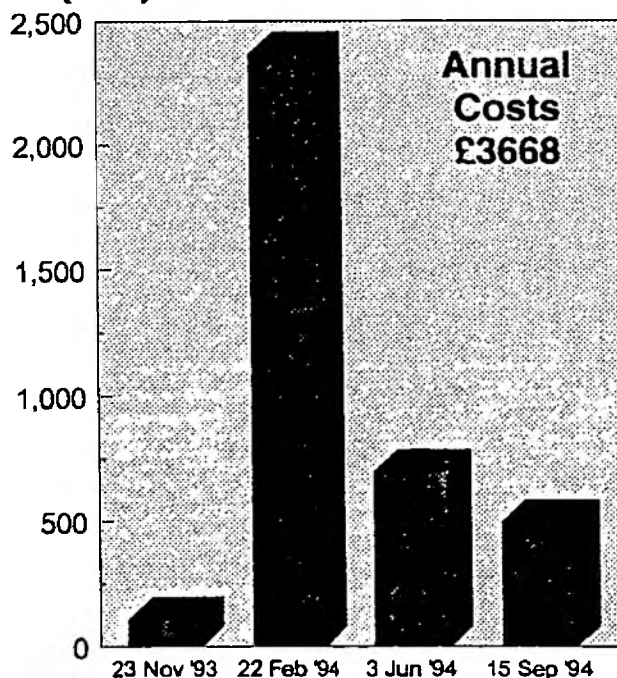
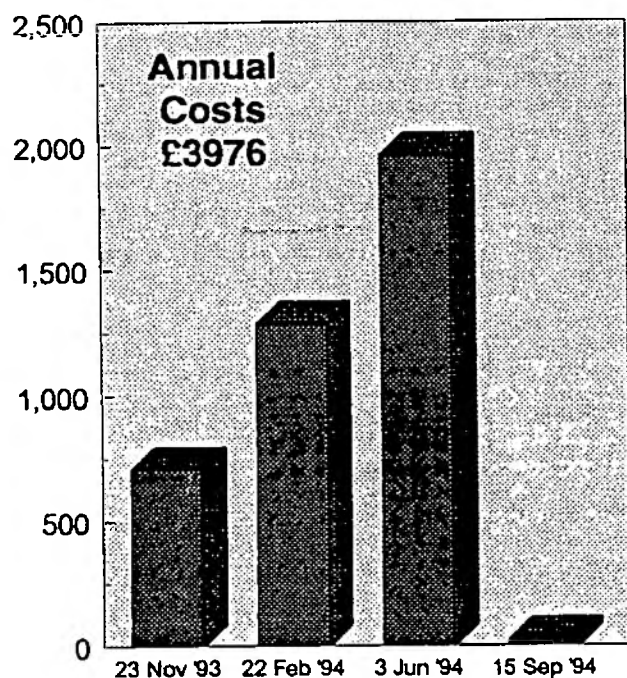
Fish Laboratory

Office & Workshops/Depot

Total Units kWh ('000)



Gas Costs (£'s)



Based on Eastern Gas Billing Data

Figure 2

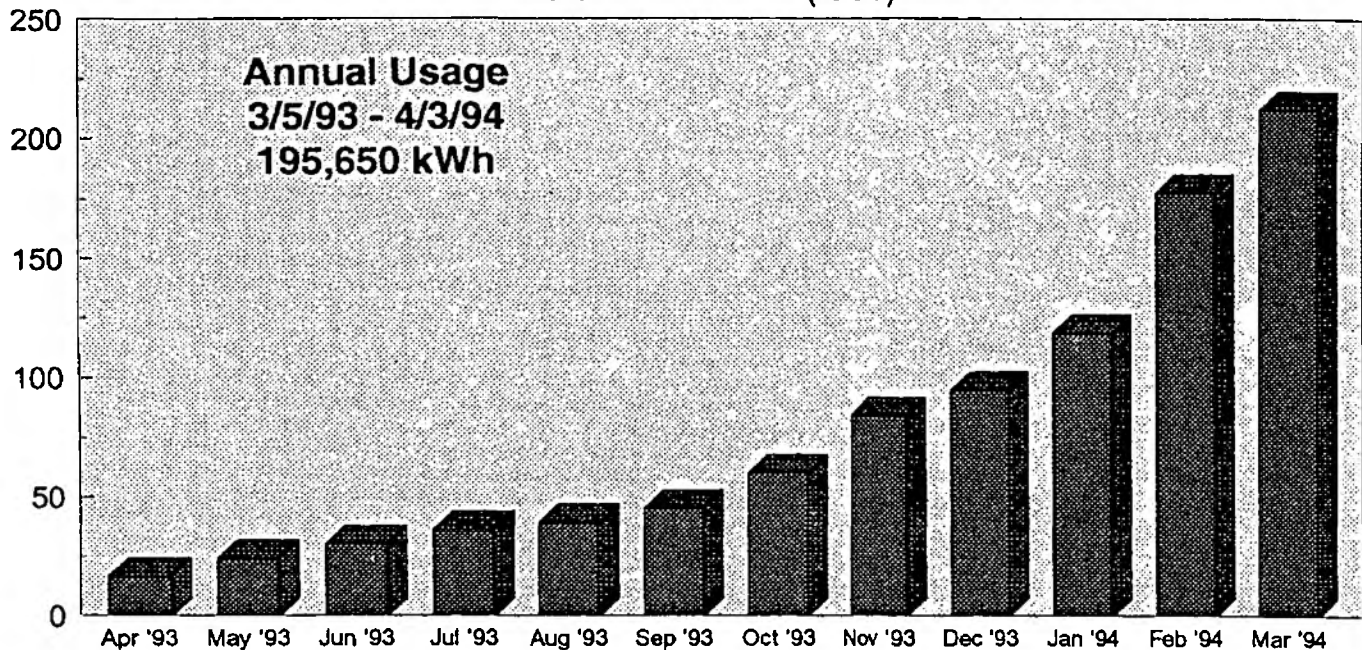
ENVIRONMENTAL ASSESSMENT GROUP LIMITED

National Rivers Authority - Brompton Gas Usage

E A G

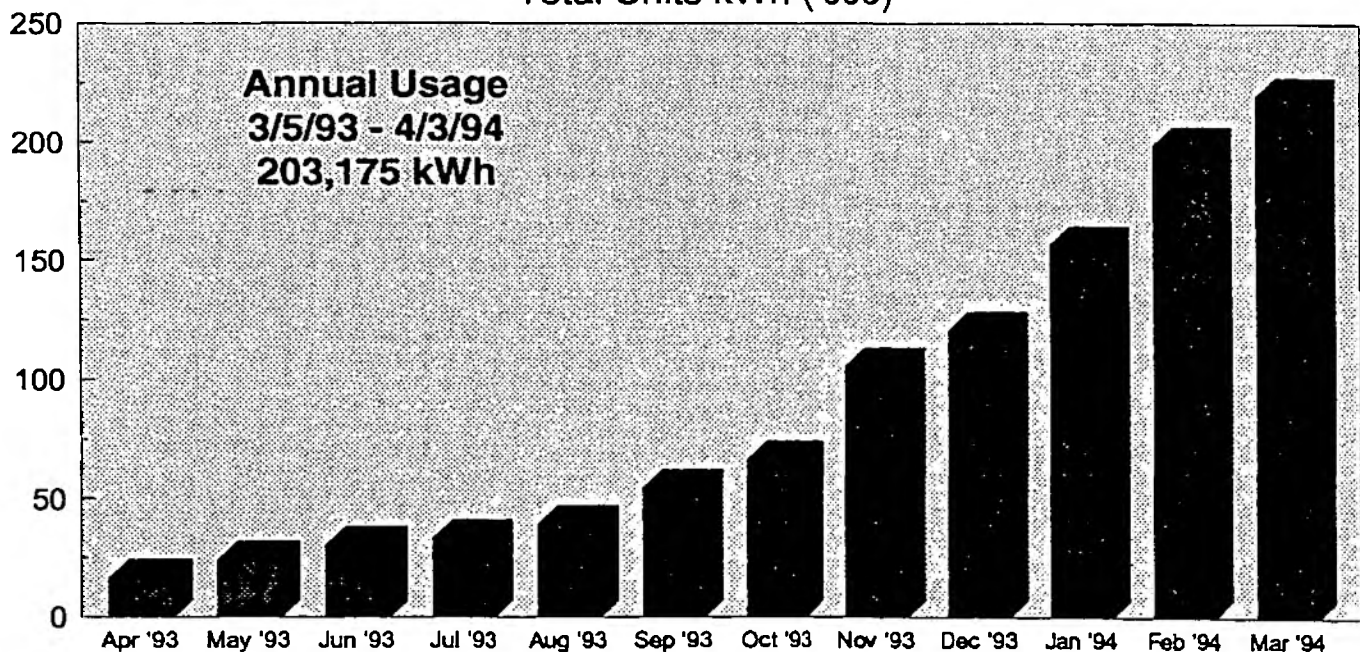
Fish Laboratory

Total Units kWh ('000)



Area Office

Total Units kWh ('000)



Data based on meter readings taken by NRA staff

Figure 3

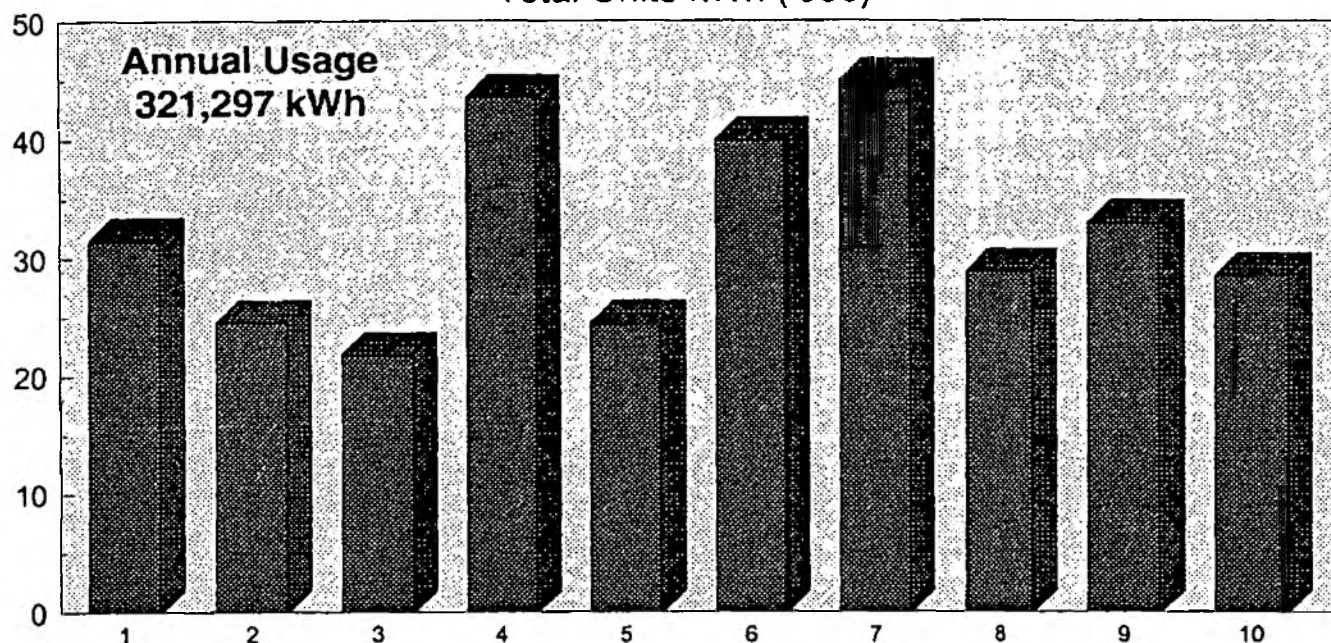
ENVIRONMENTAL ASSESSMENT GROUP LIMITED

National Rivers Authority - Bampton Electricity Usage & Costs

E A G

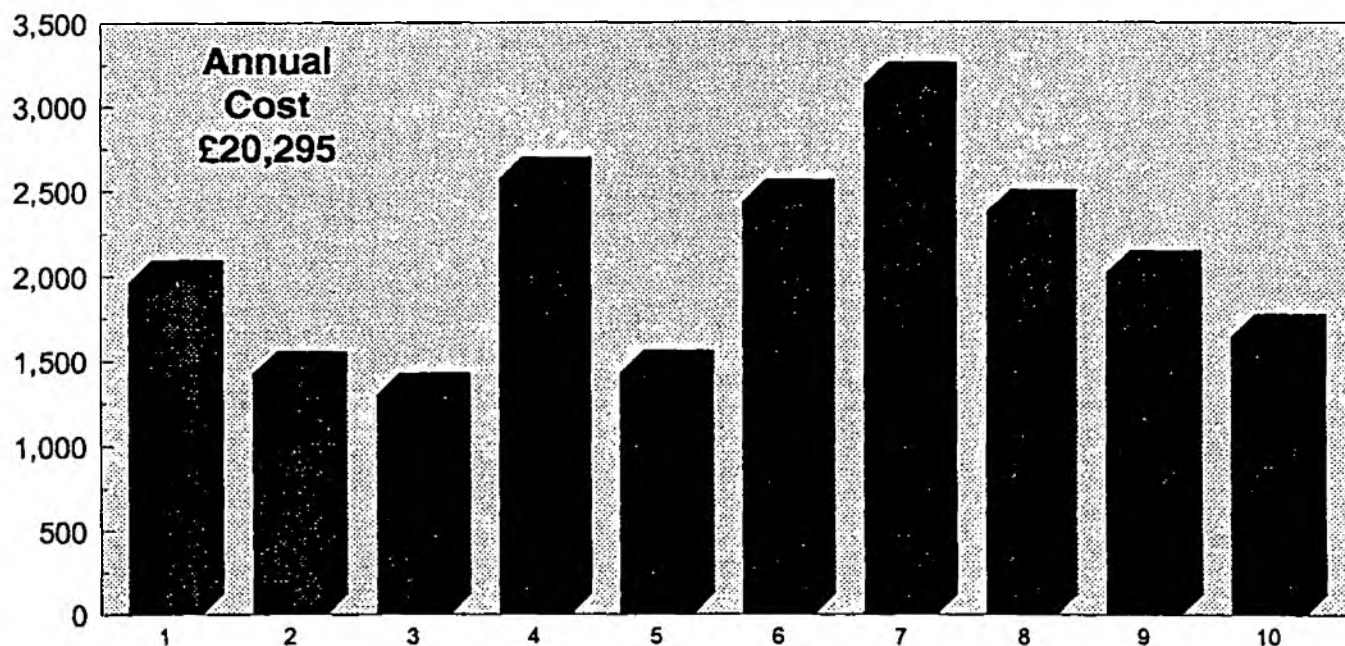
Electricity Usage

Total Units kWh ('000)



Electricity Costs

(£'s)



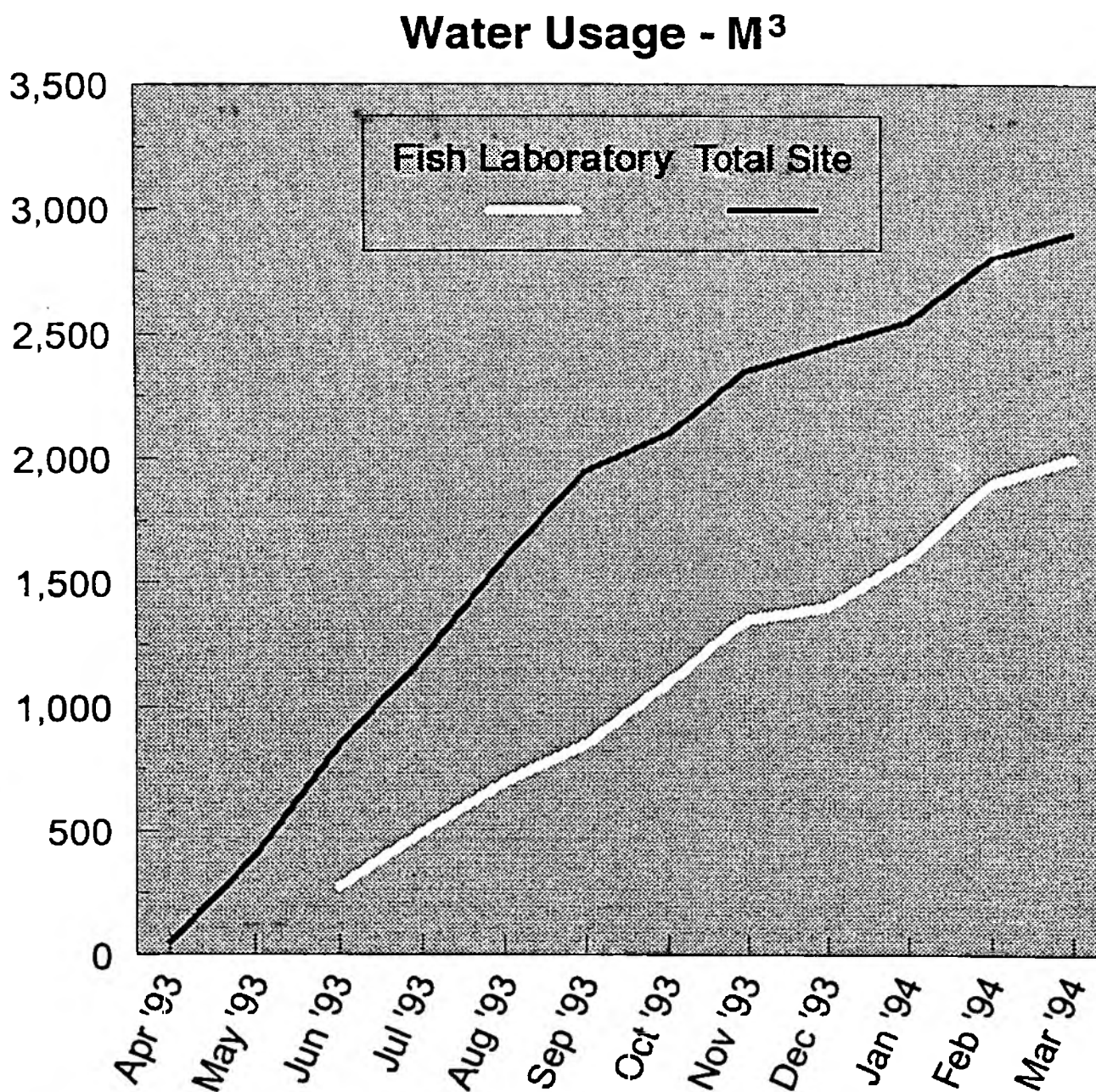
Data based on NRA Finance supplied billing information

Figure 4

ENVIRONMENTAL ASSESSMENT GROUP LIMITED

National Rivers Authority - Brompton Water Usage

E A G



Data based on meter readings taken by NRA staff

Figure 5

ENVIRONMENTAL ASSESSMENT GROUP LIMITED

4.2.3 Energy Conservation

As highlighted by the Mott McDonald energy audit, the opportunities for making significant energy reductions are limited at the Brampton site with its relatively modern building portfolio and engineering services.

The audit team examined the capital energy project submissions made during 1993. These included provisions to install passive infra red (PIR) presence detectors for lighting and fan heaters in various areas of the Brampton Complex. The proposals projected annual energy savings of £826 at a capital cost of £2,323 giving a 2.8 year payback (based on an electricity cost of 5.79p per kwh).

The business case was re-calculated using current electricity charges, a revised installation cost of £5,000 and a Discounted Cash Flow assessment procedure. The resultant payback was 10 years. Typically, energy conservation projects with relatively small electrical loads prove difficult to justify using a business return on investment case approach.

An energy management strategy should be established in conjunction with a Site Asset Management programme. The development of an asset management approach will allow the implementation of energy efficiency improvements within the planned space refurbishment and plant and equipment replacement programmes.

4.2.4 Energy Analysis

The variations in the quality and consistency of energy data obtained during the audit did not allow an accurate assessment of the site's energy usage against good practice. Nor, was it possible to establish the site's performance against the NRA Environmental Policy targets for energy reduction.

Given these reservations, a considerable change in energy usage efficiency has occurred since the 1991/92 Mott MacDonald energy survey. The survey reported an annual energy figure for the site of 497,702 KWh (1264 m²) giving an energy usage of 393 KWh/m² of usable floor area. The figures obtained during the audit (Figures 2 and 4) indicated a site annual energy figure of 764,692 KWh (2560 m²) giving an energy usage of 298 KWh/m² of usable floor area, an improvement of approximately 25%.

Guidance provided by the Energy Efficiency Office (EEO) indicated a figure of 250 KWh/m² for a typical office and 120 KWh/m² for a good practice offices. The EEO figures, therefore, support the findings of the Mott McDonald report that there is flexibility for only minor improvements in energy usage.

4.2.5 Review of Energy Consumption Data (Figures 2, 3, 4 and 5)

- **Gas Consumption and Costs (Figures 2 and 3)**

The annual gas consumption and costs for the Fish Laboratory (Figure 2 - 230,562 KWh/£3,976) appears high in relation to the rest of the site (212,833 KWh/£3,668). The annual profile of gas usage (Figure 2) shows consumption peaking in the summer quarter. Since gas is predominantly used for heating this would normally be expected to occur in the winter quarter. This may be explained by the use of data taken from Eastern Gas invoices which included a number of estimated gas readings. A more typical distribution of gas consumption is provided in Figure 3 which is based on actual meter readings taken by NRA site staff.

A comprehensive review of gas consumption is required to establish a detailed understanding of load distribution, potential energy saving measures and to develop an appropriate assessment procedure to monitor the site's performance against the NRA's energy reduction objectives and targets.

- **Electricity Consumption and Costs (Figure 4)**

The consumption figures and costs for site electricity (Figure 4) are based on billing information provided by the NRA's finance department (electricity company invoices were not available for inspection during the audit). The graphs show electricity consumption peaking in the summer months which may be explained by estimated meter readings and billing dates not reflecting actual demand periods.

A comprehensive review of electricity consumption is needed to establish a detailed understanding of load distribution, potential energy saving measures and to develop an appropriate assessment procedure to monitor the site's performance against the NRA's energy reduction objectives and targets.

- **Water Consumption and Costs (Figure 5)**

The water consumption figures for the site (Figure 5) are based on meter readings taken by NRA site staff. (Water Company invoices were not available for inspection during the audit).

Water consumption for 1992 (Mott McDonald Energy Survey Report) was reported as 4460m³/year. From the meter readings provided by site staff for the 12 month period ending March 1994 water consumption was 2900m³/year, a reduction of approximately 35% for the

period 1992/1994. This has been achieved through site staff initiatives on water reduction, including additional metering for the Fish Laboratory which resulted in the correction of a significant leak and the installation of energy efficient water treatment plant.

Site water consumption should continue to be reviewed to establish the potential for further water savings and appropriate procedures developed to monitor the site's performance against the NRA's water reduction objectives and targets.

4.3 Transportation

4.3.1 Introduction

The following criteria was used to assess the performance of the Brompton site's transportation operations:

- **Best Industry Practice include:** use of systems to minimise vehicle use (efficient driver training, car sharing, route planning, journey elimination etc). Correct specification of vehicles for the work required, including energy efficiency provisions, long lifecycle, use of recycled materials, and low emission criteria. Encouragement of the use of public transport where appropriate.
- **NRA Policy - Procurement and Vehicle Use:** authority policy is for an all diesel vehicle fleet, and requires a 15% reduction in energy (fuel) consumption by 1994/5 compared to 1991/2. Environmental guidelines are incorporated in the procurement manual for vehicle purchases. A programme of efficient driver training was due to start in early 1995.

4.3.2 Brompton Site Performance

Using the above performance criteria for comparison purposes, the following sets out the findings of the audit:

- **Road Transport:** Regional Headquarters have the responsibility for vehicle procurement based on a National Contract.
 - There was a progressive implementation of the 'all diesel' target.
 - All vehicles were on the 'Dialcard' fuel reporting system with monthly reports. Site staff advised that these were checked for abnormalities but there was no close monitoring of individual vehicles or drivers.

- Drivers were not generally made aware of their performance although there was a safe driver scheme. Opportunity exists to encourage improvements and to increase a general awareness of the 15% target.
- A pool of five cars was operated for use by staff. Experience with other organisations operating pool/rented cars typically results in reduced mileage and costs. Its adoption is to be commended.
- Close monitoring of essential mileage by the Water Quality section had resulted in a 3% reduction. This practice should be more widely adopted.
- A review of route management/co-ordination of journeys to achieve further savings should be considered.
- Vehicle servicing was managed by Regional Headquarters. Although garages were chosen locally there was no programme of inspection of the environmental performance of the garages. In particular there was no knowledge of the disposal for used tyres, oil, etc. Vehicles were reported to be serviced every six months. Recommended that servicing should be at the time/mileage periods required by the vehicle manufacturer.
- **Aquatic Transportation:** several boats were operated from the site. Site staff advised that in the main they were powered by two-stroke petrol engines and that environmental aspects were not considered during procurement. There were no procedures for the containment of spills during refuelling at the river bank as site staff considered that there was no risk.

It is recommended that:

- when boats or motors are replaced, preference should be for inboard diesel or 4-stroke outboard motors, to reduce oil releases to water.
- whilst two-strokes continue to be used a biodegradable oil should be specified.
- spill procedures for refuelling operations should be developed.

4.4 Procurement and Suppliers

4.4.1 Introduction

The NRA internal policy requires suppliers of products and systems to "*produce evidence of their positive environmental management*". Using this policy for comparison purposes, the following sets out

the findings of the audit.

4.4.2 Service Suppliers

Suppliers of services for the NRA, Brampton site are subject to written contractual conditions after a tendering process. Comments on environmental management contracted services for off-site work are covered in Section 4.11.

Services contracted-out for the Brampton site include catering, cleaning/domestic services and ground maintenance. Inspection of tender documents and contracts showed that some inclusion of environmental requirements were made in the NRA 'General Conditions for Catering Services'. These include specifications for use of cleaning materials, and requirements for the caterer to have a purchasing policy and waste management procedures. However, the actual catering tender document issued by Brampton site did not refer to environmental matters. This was in contrast to the groundworks contract, which is a good example of the inclusion of environmental management specifications.

4.4.3 Materials Suppliers

The selection of materials purchased for the office, including consumables does not appear to be subject to specific environmental selection procedures, and the site purchasers have not assessed environmental performance/policies of suppliers.

4.4.4 Recommendations

The purchasing of goods and services for Brampton site could be significantly improved with respect to environmental aspects. Several recommendations are made to enable compliance with the NRA policy.

- requirements for selection, storage and use of hazardous materials (eg. cleaning materials) should be developed for service suppliers (ie. cleaners and caterers).
- service suppliers should be required to report back on environmental policies and performance to demonstrate on-going commitment to continuous improvement.
- purchasers at Brampton site require training on supplier environmental assessment. This should be addressed under the current national training scheme on environmental procurement. This will enable a site specific purchasing policy to be developed for all materials purchased. Following this, assessment of suppliers should be made with regard to their environmental

performance and their steps to minimise the environmental impact during materials production and distribution activities.

4.5 Off-Site Activities

4.5.1 Introduction

A number of off-site activities are co-ordinated from Brampton; these include:

- undertaking flood defence capital projects;
- maintenance of flood defence plant and equipment, river banks and other areas;
- conservation work.

The undertaking of flood defence work is on-going maintenance work on gates, locks and sluices and one-off projects. Dredging, vegetation clearance and construction of major flood defence schemes. The off-site facilities themselves were not inspected as a part of this audit.

4.5.2 Flood Defence

This work is managed and co-ordinated by NRA engineers. The work is undertaken by some NRA site staff, although the majority is contracted out to third party companies. The work mainly comprises:

- 4, 6 and 12 monthly inspections of flood defence pumps, gates, locks and sluices;
- Maintenance of river corridors, including grasscutting, clearance and dredging.
- Other projects comprising individual projects or schemes which require planning, contracting and management as a one-off.

The flood defence pumping stations are either diesel or electric fired. The diesel pump locations have associated fuel storage. It was reported that some diesel tanks may not be compliant with present standards. Newer storage tanks tend to be double-skinned, although it appears unlikely that the recommendations of PPG2 'Above Ground Storage Tanks', have been taken into consideration during installation of tanks since it was issued in 1992. It is recommended that all remote locations are reviewed where fuel is stored and measures taken to comply with PPG2.

The inspections are governed by an issued checklist for specific plant (eg. gearboxes, switchboxes,

hydraulic units). Electrical checks are co-ordinated from the NRA Ely depot. The use of the checklists should identify maintenance issues, such as a fuel or oil leak, which could impact upon ground and surface waters. Each remote location also has an operators log, which contains details of operating problems, repairs etc, undertaken (eg. fuel or hydraulic oil leaks). However, the checklist does not currently include checks on environmental protection aspects (eg. condition of bunding, presence of absorbent material etc). It is recommended that the inspection report be adapted to include environmental checks. This will also require basic training and guidance notes for off-site workers.

Sub-contractors undertaking maintenance work are deployed from Brampton and report back, using the standard inspection reports. Contractors are subject to more rigorous and regular spot checks, than NRA in-house staff. In-house employees are checked on occasion; they are reportedly very aware of environmental protection measures required, on-site and after work has been undertaken.

Selection of contractors is based on previous experience and expertise. Some time is spent on developing the specific contract specification and regular checks are made during the works. Contractors are issued with a 'Special Requirements' Document, which relate to requirements to comply with environmental and other related legislation, flood defence and control of pollution requirements, water resources, conservation and fisheries, and navigation requirements. The document gives comprehensive guidance on appropriate measures required and emergency contacts within the NRA.

Particular issues which were reported to arise during maintenance contract works are:

- Use of pesticides is the responsibility of contractors. Reportedly, they must provide proof of training, however it does not appear that systematic checks are made.
- Secondary containment has been found to be inadequate and bunding, locking-off of caps has had to be insisted upon by the NRA.
- Awareness of the requirement for segregation of hazardous wastes from general wastes in skips on-site does not appear to have been strictly enforced and written guidance for contractors has not been produced.

In general, awareness of legal requirements and good environmental practice within NRA engineering staff involved with letting of contracts, monitoring of contractor performance and guidance to contractors is required. This will enable NRA engineers to have the expertise to advise over and above the contractual specifications and on-site specific issues as they arise.

4.5.3 Conservation

Conservation Officers are primarily involved with surveys of rivers and provision of conservation advice to other NRA departments and external organisations. The environmental impact of the activities of the conservation work is therefore considered to be limited to aspects such as transportation (Section 4.9) and energy/materials use at the Brampton Site (Sections 4.7 and 4.10).

5.0 SITE AUDIT - ENVIRONMENTAL IMPACTS

5.1 Air and Noise

Atmospheric Emission Sources comprise:

- venting from laboratory fume cupboards, autoclaves and storage cupboards;
- 'domestic' gas fired boilers.

The regulation of emissions to atmosphere from this site does not come within the scope of the Environmental Protection (Prescribed Processes and Substances) Regulations 1991. Regulatory control rests with the local authority provisions regarding nuisance. It is considered that the risks of nuisance emissions arising are small. The laboratory fume cupboards are a potential source of nuisance should a highly odorous material be handled. However, the relatively open location of the buildings and distance from housing is considered unlikely to give rise to complaint.

The operations undertaken at this facility are not inherently noisy and the location of the buildings at a distance from housing was considered unlikely to represent a significant potential for noise nuisance.

It is recommended that any nuisance complaints arising are entered into a complaints log, including the action taken by the NRA and any related correspondence.

5.2 Water and Wastewater

5.2.1 Water Abstraction

The fish health laboratory abstracts water from two on-site boreholes located at NGR TL 224 710. The borehole water is used for the live fish brought into the laboratory; it is preferable to using river water, which may contain pathogens, which could further affect the health of the fish.

The borehole abstraction was approved by the Department of the Environment in March 1984, although a formal written authorisation was not issued until 1991, due to an administrative oversight. The licence was issued in accordance with the Water Resources Act 1963 and Water Act 1989, (now replaced with respect to abstractions by the Water Resources Act 1991). The abstraction licence permits 39,800m³ per year at a rate not exceeding 109m³ per day and 4.5m³ per hour. An annual return is required by the licensing section on the monitored rates and total volumes abstracted. To enable this, the abstraction point is metered. It is considered that the abstraction is undertaken in accordance with the licence.

The quality of the abstracted water is not monitored, other than the fish acting as biological indicators, should the quality deteriorate. Although the risks of groundwater contamination in the locality are considered to be small, it is recommended that water quality monitoring is undertaken on occasion (eg. annually), to ensure compliance with any effluent discharge requirements after use.

Water use minimisation is commented upon in Section 4.2.5.

5.2.2 Wastewater

Wastewater discharges comprise:

- used water from the fish health laboratories, including water from fish tanks and floor washdown;
- vehicle washdown;
- foul drainage from toilets;
- discharges from laboratory and washroom sinks;
- boiler blowdown and air conditioning unit condensates;
- stormwater drainage.

These wastewaters discharge via a variety of routes. An up to date drainage plan was not available for inspection, therefore the exact drainage routes on-site could not be identified by those interviewed. The main drainage routes were identified, although a full assessment of risks to drain could not be made. It is recommended that a drain survey be undertaken and an accurate drainage plan be produced. Once this has been done, the drain covers should be colour coded. Reference should be made to NRA guidance (PPG 18 "Pollution Prevention Measures for the Control of Spillages and Fire Fighting Run-Off" recommendation 4b; and the 'Pollution Prevention Pays' video).

- **discharges to sewer**

Effluent arising from toilets, wash basins and laboratory sinks discharge to sewer for treatment. This discharge is not subject to a consent to discharge. It is recommended that this position be clarified with the local water undertaker.

discharges to river

The effluent arising from the fish diseases lab passes through an ozonolysis plant to destroy any residual pathogens which may be present, prior to discharge into the river. The discharge was consented in 1985 to Anglian Water who operated the site at that time. The effluent quality is monitored by the NRA Water Quality section, in addition to upstream and downstream river quality monitoring. No monitoring is undertaken by the fish lab operators at the discharge point from the treatment plant.

The lab uses disinfectant chemicals for washdown of potentially contaminated (ie. with pathogens) water. These contain iodine and have been internally approved for use, although the actual water quality after the ozone treatment plant has not been assessed.

The consent is no longer relevant to the type of treatment undertaken (ie. it has changed from chlorine to ozone disinfection). Given the profile of the NRA, it may be prudent to request a review of the consent conditions and re-issue of the consent to the NRA. It is recommended that an internal monitoring system be established to ensure compliance of this discharge with the consent conditions.

The stormwater drainage system is thought to discharge into the Brampton Brook, although the current number and route of discharges could not be identified without an up-to-date plan. It is considered that the risks of contamination of stormwater drains has been minimised by effective storage of hazardous materials. (See Section 4.4). However, it could not be determined whether the drainage from the car park area is intercepted to remove oil prior to discharge. Similarly, the drainage route from the vehicle wash area could not be established and was reported in an internal environmental report in 1992 to be linked to the stormwater system. However, subsequent advice indicates it may now be connected to the sewer. Although detergents are not used for vehicle washing, the effluent could be oily and have a high suspended solids content; for this reason a sump is installed to intercept such material but the access cover is cemented in place and cannot be removed for cleaning purposes. Some boiler blowdown water and air conditioning unit condensates, which can contain oils, inhibitors and biocides, are directed to the stormwater system. Finally, some rainwater down-pipes were not sealed at ground level, which could be a source of contamination.

It is recommended that all potential discharges that could enter the river be traced and that the risks of contamination of discharges into the Brook be minimised, by taking the appropriate action, which include diversion of potentially contaminated discharges to the sewer system. The discharges from the vehicle washdown may require a consent from the local water company, and access to the sump should be improved to enable servicing.

5.2.3 Groundwater

It is known that this site is located above an important groundwater resource. Risks of contamination of groundwater arising as a result of migration of mobile contaminants is considered to be small, given the 'low key' activities on-site.

It is understood that some surface water drainage may pass to soakaway. Recommendations regarding protection from contamination as above also apply.

5.3 Hazardous Substances

5.3.1 Introduction

A wide range of hazardous substances are used in small volumes in the laboratories at this site. These include:

- solvents - eg. methanol, hexane, acetone and small volumes of chlorinated solvents;
- various laboratory reagents;
- acids;
- alkalis.

5.3.2 Storage

In addition to storage during use in the laboratories, the site has a number of hazardous materials storage areas:

- the biology lab has a lockable cabinet and fume cupboard for hazardous materials in use.
- the biology lab uses the hazardous materials store located in the maintenance block for 'flammable' and 'toxic' materials, which largely comprise samples preserved in formalin.
- the fisheries lab uses a purpose built store which is located outside of the laboratory building. The store is divided into two separate stores for 'corrosives' and 'flammable materials'.
- staff who undertake work in the field, have a store for equipment and some chemicals. Hazardous materials stored include mainly acid/alkali buffer solutions and cleaning agents for on-site testing, and disinfectants.

In general, the storage facilities for hazardous materials are good. The facilities have secondary containment, sparkproof lighting and appropriate protection against improper use (ie. sign posting, lockable). Housekeeping also was satisfactory, both in the stores and the laboratories.

Segregation of incompatibles within the fish health laboratory could be improved. The flammable materials store is currently used for storage of a mixture of waste chemicals awaiting disposal. It is recommended that wastes are stored in a dedicated area and segregated within it, or that incompatible wastes are kept separate in the two stores. Likewise the segregation of raw materials should be reviewed, to ensure that risks of incidents arising from the mixing of incompatibles have been minimised.

At the time of inspection, the vent in the biology lab store was not working, which could result in health and safety risk to those using it. It is recommended that the vent is repaired and that all vents be regularly checked.

5.3.3 COSHH

Other storage comprises the following:

- Cleaning materials used by contract cleaning staff are stored in cupboards in each building.

The cleaning materials include detergents, polishes, bleaches etc. The cleaning cupboards were seen to have generally small quantities in store, with company work instruction and COSHH sheets posted. The COSHH sheets were seen to be out of date (1990) and it is recommended that the cleaning contractors be instructed to review them, as required by the domestic services contract (ie. *"The contractor shall ensure that every person employed by the contractor is at all times properly and sufficiently trained and instructed with regard to all relevant Rules and Procedures concerning health and safety at work"*).

It was reported by the site that the COSHH assessments previously undertaken were inadequate for the requirements of the legislation (following COSHH awareness courses). Steps are due to be taken to rectify this and should be treated as a matter of priority given the current potential non-compliance position.

5.3.4 Standby Generator

The standby generator, located adjacent to the administration building, has an associated diesel tank. Both the diesel tank and generator are located outside, within a shallow brick bund, on a concrete base. The diesel tank was not labelled to show its contents or capacity. The tank has a capacity of

approximately 3000 litres. The tank is 'double skinned', with a feed pipe passing above ground to the generator. At the time of inspection the fill point was unlocked, giving a risk of unauthorised access and tampering. Also the feed pipe was unprotected and at risk of physical damage, which could lead to a release. The shallow bund appeared to be satisfactory, although there was some establishment of vegetation in the base, which requires removal, and the bricks require rendering impermeable (ie. with a skim of concrete).

It appears that, although risks of a release of diesel arising from the tanks entering surface water drains are small, the actual design of the tank may not be in accordance with NRA internal Pollution Prevention Guidance notes (PPG's). PPG2 gives guidance on above ground storage tanks. The guide was not used for the installation of this tank. The guide recommends:

- support and protection of external pipework from damage;
- the use of high level alarms (audible or visual);
- the vessel should be marked with the product type and capacity;
- render the bund impermeable
- valves should be lockable and kept locked when not in use.

It is recommended that the availability of the guides is ensured for all employees involved with maintenance and construction of facilities on NRA sites, and that the recommendations are followed with regard to PPG2.

5.3.5 Recommendations

Although the risks of a major release of hazardous materials are relatively small, given the volumes in storage. The location of this site on a flood plain should be a consideration during positioning of external hazardous materials storage areas. It is recommended that current storage be reviewed with the potential for flooding as a consideration. Additionally, a spill response plan and procedures to deal with hazardous materials releases should be drawn up for the site.

5.4 Waste Management

5.4.1 Waste Sources

Waste arisings from this facility are given in Table 3.

Table 3: Waste Arisings at NRA Brampton			
Waste Description	Source	Storage On-Site	Disposal Route
General Wastes	All of Site	Skip	Cleanaway - landfill
Hazardous Wastes	Fish Health Lab	Hazardous Materials Store	Cleanaway - landfill/incineration
Dead Fish	Fish Health Lab	Freezer in Lab Area	Addenbrookes Hospital - incineration
Fluorescent Tubes	General-building	Maintenance Building	Via Peterborough site - landfill
Paper	Offices/Administration	Collection Bins	Recycled
Aluminium Cans	Canteen	Canteen	Recycled
Cooking Oil	Canteen	Canteen	Recycled
Empty Glass Bottles	Labs	Labs	Returned to BDH Suppliers

5.4.2 Disposal Compliance

Wastes arising from the Brampton site for disposal are subject to the Duty of Care Regulations 1992. General compliance with Duty of Care was confirmed by inspection of waste transfer and Special Waste consignment notes, which are maintained on file in the various departments responsible for arrangement of waste disposal.

However, a number of findings and recommendations are given below:

- General wastes are stored on-site in a lidded and lockable skip. The skip is uplifted on a two weekly basis. At the time of inspection wind blown material was evident around the skip area and the area was unsurfaced. It is recommended that the skip be kept closed when waste is not being deposited in it and that it be relocated to a hard surfaced location. The waste disposed of via this route includes wood, paper, plastic, office waste and some garden waste. Also, waste from the laboratories (ie. including agar plates, glassware etc.) is deposited in the skip after autoclaving. Although, this waste is classed as non-hazardous, the description given on the transfer note may not include laboratory waste. Cleanaway have coded the waste as "light industry/engineering". It is recommended that the NRA identify all wastes which may be present and forward the list to the waste contractors, to ensure that they are aware of the potential contents of the skip. This will minimise the risk of potential poor publicity arising in the event of a query by Waste Regulation Inspectors or the receiving landfill site, should

the waste be inspected.

- Special Wastes (surplus used chemicals) arise on occasion for disposal from the laboratories. These have been disposed of in the past in accordance with the Special Waste Regulations 1980. The consignment note was inspected and seen to be in order. The previous collection was seen to have been taken to the Shanks and McEwan co-disposal landfill, in Bedfordshire. Given the potentially negative public profile associated with co-disposal. Although this disposal is permitted, the NRA may wish to consider a policy of landfill of only non-incinerable or non-pre-treatable wastes. This, however, obviously has a cost implication to the Authority.
- Fish bodies which have been subject to examination in the fish laboratory are frozen and stored until sufficient number have accumulated. The bagged fish waste is then taken to Addenbrookes hospital for incineration as a clinical waste. Discussions with the Local Waste Regulation Authority confirmed that Addenbrookes hospital was licensed to receive and incinerate clinical wastes from off-site facilities. The waste also includes 'laboratory sharps', which are currently not on the transfer note description. It is recommended that the description is amended to ensure compliance with Duty of Care.
- Fluorescent tubes arising from maintenance activities are stored on-site prior to transfer to the NRA Peterborough site, which has a skip collection for fluorescent tubes. Only approximately 20 tubes arise over a six month period. The transfer of fluorescent tubes via Peterborough is strictly speaking, a licensable waste transfer activity under the Environmental Protection (Waste Management Licensing) Regulations 1994. It is recommended that Peterborough site check with its local authority to confirm whether this activity can continue without licensing.
- Information on the wastes disposal facilities used for general wastes arising from Brampton has not been updated since 1992, when a skip load was followed to the disposal site. It is recommended that information be obtained regarding the landfill facility used. Such information should also include reference to groundwater sensitivity in the location of the landfill site used and records of risks arising to groundwater from the site. **In particular, the use of disperse and attenuate sites as a less desirable option should be considered where containment sites are available.**
- Cooking oils are stored outside the canteen on unmade ground. It is recommended that the storage be relocated to a surfaced, contained area. This waste route requires transfer note documentation to be raised.

5.4.3 Waste Minimisation

Figure 6 illustrates the waste minimisation hierarchy. The reduction/elimination of materials have been undertaken to some extent (eg. by the fish lab for list 1 and 2 substances). It is considered that further considerations could be given by the laboratories (eg. through the extension to COSHH procedures) and purchasers of consumables, to reduce or eliminate the use of other materials.

Various schemes are in operation for the recycling/reuse of wastes. These include:

- paper collection from offices are sent up to Peterborough for a centralised collection for recycling;
- aluminium cans are collected for a charity scheme;
- empty lab bottles are returned to the supplier BDH, who have a 'take-back' scheme in operation;
- cooking oils are collected by the canteen and sent to a company which reclaims them.

In addition to the above, consideration should be made to composting of garden waste instead of disposal as a general waste. Particularly during contract groundworks, when large volumes arise.

Waste Management Hierarchy

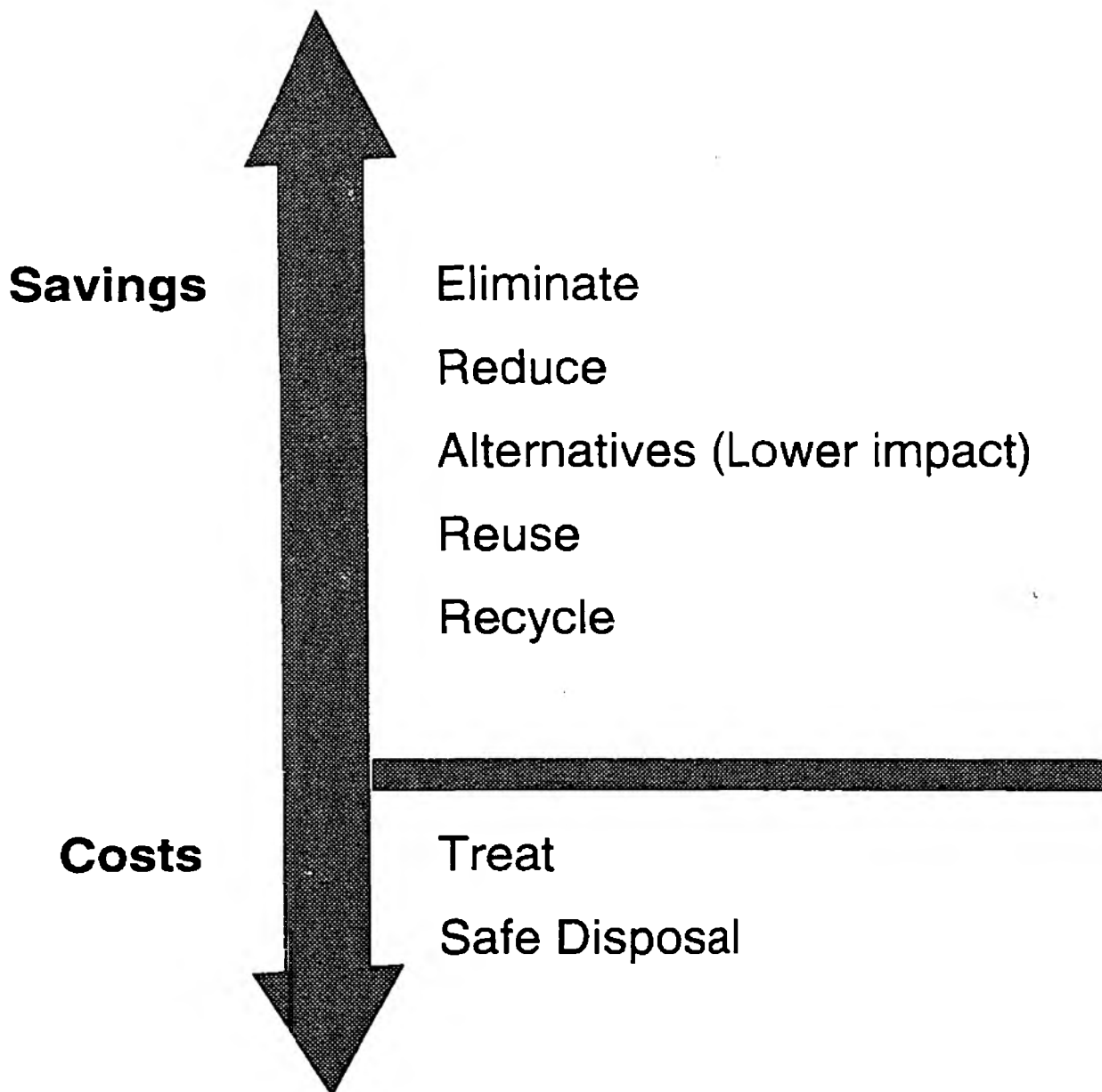


Figure 6

ANNEX 1

**REVIEW OF BRAMPTON SITE'S ENVIRONMENTAL SYSTEMS AGAINST
BEST MANAGEMENT PRACTICES**

1.0 BEST ENVIRONMENTAL MANAGEMENT PRACTICE

1.1 Introduction

Our approach was to review each stage of the management process in relation to:

- best management practice based on BS 7750: 1994 (shown in italics); and
- recommended future tasks that should be considered to effectively manage and monitor the sites environmental effects and performance.

2.0 ENVIRONMENTAL POLICY

2.1 Best Management Practice

To establish, define and document a site environmental policy strategy. The policy/strategy should be "initiated" and "actively supported" by senior site management and must be consistent with and adopted within the broader context of the NRA's Internal Environmental Policy Statement.

2.2 Recommendations

- the development of a comprehensive site environmental policy strategy statement which:
 - endorses the adoption of the NRA Internal Environmental Policy Statement at the highest site management level;
 - adopts the broader corporate philosophy of the NRA's Internal Environmental Policy Statement;
 - addresses and places into context the relevant environmental issues related to the nature of the sites activities and significant environmental effects;
 - states the relevant environmental targets and allocates responsibilities for their achievement;
 - states the sites actions and priorities with respect to the environment and details management responsibilities for each action; and

- establishes procedures for internal and external communication of the sites environmental strategy and to ensure that the strategy is regularly reviewed and updated in the light of audit results and changes to site and business activities.

3.0 ENVIRONMENTAL ORGANISATION

3.1 Best Management Practice

To establish and implement an appropriate environmental organisation structure which optimises existing skills and resources and operates within the overall framework of existing business and quality management site systems.

3.2 Recommendations

- the establishment and implementation of a site environmental management organisation. Figure 1 outlines a possible site environmental organisations to illustrate how environmental responsibilities could be assigned to the different parts of the site's organisation through the departmental managers. The benefits of such a structure would include:
 - spread ownership and accountability for performances to as many levels as possible;
 - matches responsibility to authority and the ability to manage and control resources;
 - actively encourage line management ownership of the issues;
 - the allocation of a senior manager with overall responsibility for site environmental performance and environmental management systems, who has the authority to make financial, personnel and technological decisions in connection with the environmental programme; strong relationship and business credibility with the other site line managers who can have a significant effect on the environment; appropriate seniority to demonstrate the correct level of management commitment to the environment; and the knowledge and experience of industrial activities at the site in order to make effective decisions;
 - the establishment of a cross-functional site Environmental Team to: advise the Area Manager on-site priorities and programmes; facilitate changes required to achieve improvements; monitor performance of improvement programmes review results of audit compliance activities; maximise use of in-house skills and resources; and minimise central staff resource requirements;

- incorporation of environmental responsibilities and performance measurements within existing personnel system documentation eg. job description; and
- the development of management procedures and communication programmes to make all site staff aware of the environmental effects of their work activities, the importance of compliance with NRA Policy, the site's environmental organisation and the roles and responsibilities allocated.

4.0 ENVIRONMENTAL TRAINING

4.1 Best Management Practices

The provision of appropriate environmental training for: senior site management personnel to ensure they understand the NRA's Internal Policy Statement, objectives and targets and have the necessary knowledge to play their part in it and understand the performance criteria by which the sites effectiveness will be measured and reported to executive management; other personnel, to ensure that they can make an appropriate contribution to the sites environmental performance and develop the necessary skills to manage and understand those environmental effects which result specifically from their area of work activity; and environmental awareness training for new recruits and staff assigned to new tasks.

4.2 Recommendations

- incorporation into the appraisal process of a review of employee environmental training and education needs;
- a site management review to establish the types of training required, eg:
 - good environmental management practices;
 - environmental protection legislation;
 - waste management systems;
 - monitoring and record keeping;
 - contractor awareness training; and
 - training for staff with specific environmental responsibilities.

5.0 ENVIRONMENTAL OBJECTIVES AND TARGETS

5.1 Best Management Practice

The establishment and maintenance of procedures to establish site specific environmental objectives and targets based on NRA policy and the evaluation of the sites significant environmental effects. The objectives and targets must ensure that all relevant legislative and regulatory requirements are complied with.

The sites objectives and targets must be consistent with the NRA's Internal Environmental Policy and should also actively pursue the NRA's environmental performance targets. The targets derived from each objectives should be demanding, quantitative and achievable.

5.2 Recommendations

- the development of detailed site objectives and measurements in terms of the levels of environmental performance set by the Authority and the site priorities.
- the establishment of management procedures to manage and meet the sites objectives/targets within a time-scale agreed by site management; the procedures should include: designation of responsibility for each objective at each appropriate management level and function of the site; and
- the tasks and resources for achieving the objectives and targets.

6.0 ENVIRONMENTAL MANAGEMENT PROGRAMME

6.1 Best Management Practice

The establishment of an environmental management programme for achieving the intended objectives and targets. The environmental programme should address those specific activities carried out or necessary to meet the site's objectives for environmental improvements within the time-scales agreed by site management.

6.2 Recommendations

- The development, implementation and maintenance of environmental management programmes to address those site activities identified as significant environmental impact operations and an issue for site managements attention.

Key management programmes include:

- waste management and minimisation;
- energy consumption and conservation;
- on-site and off-site contractor performance (control of contractor chemicals, contract terms and conditions etc);
- site emergency planning and incident reporting and prevention;
- site chemical management;
- supplier performance;
- capital project management procedures.

7.0 ENVIRONMENTAL DOCUMENT CONTROL

7.1 Best Management Practice

To establish and maintain an Environmental Manual or Site Log (either in paper or electronic form) to bring together all the documentation and systems developed from previous actions.

The manual should address normal and abnormal operating conditions of the site's operations and accidents and potential emergency situations. Quality management procedures must also be established and maintained to ensure that all documentation can be identified with the appropriate site owner; are regularly reviewed and are available at all site locations where operations essential to the effective functioning of the environmental management system are undertaken.

7.2 Recommendations

- the development of a site Environmental Manual/Site Log.

The Brampton site does not handle complex or major polluting activities and the extent and level of documentation should, therefore, be developed accordingly. The documentation should wherever possible be integrated with existing site management systems and procedures and other forms of auditing documentation used by the site. Documentation should be kept as simple as possible.