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PILOT
ENVIRONMENTAL AUDIT

NRA
DARLINGTON
DISTRICT OFFICE

NORTHUMBRIA AND YORKSHIRE REGION

National Rivers Authority
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ENVIRONMENT AGENCY
099617

CLIENT	Roger Hyde, RGM Northumbria & Yorkshire Region.
AUDITEE	Darlington District Office, Darlington, and associated off-site activities.
AUDITORS	Environmental Policy Unit Lead Auditor Dave Stanley (EPU) Audit co-ordinator Martin Diaper (EPU) Auditors Marion Adkins (Internal Audit) Nigel Marshall (Thames) Barry Paddington (Internal Audit)
DATE OF AUDIT	26/27 July 1995.

REPORT STATUS	Final
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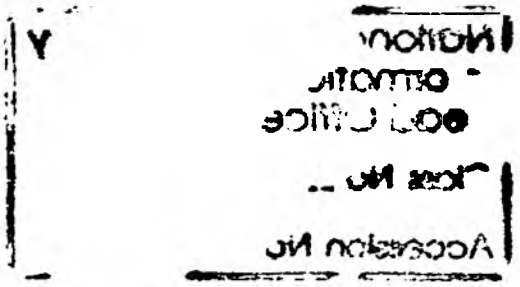
CERTIFIED	DR Stanley



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EXECUTIVE SUMMARY

AUDIT

The NRA is progressively extending and improving its own internal environmental management as required by its Environmental Policy. As essential and integral part of environmental management is environmental auditing.

A target for the EPU for 94/95 was to develop appropriate environmental auditing procedures for the NRA. Three pilot audits are being carried out to test and refine the procedures.

Environmental auditing identifies the strengths and weaknesses of a location or function. It facilitates the transfer of best practice in waste minimisation and environmental protection, and enables corrective action to be taken where required. Environmental Auditing therefore both enhances and protects the credibility of the NRA, thereby giving confidence to both Board and management. It also enables us to demonstrate that we practice that which we preach.

We have adopted a three tier approach to environmental auditing.

- **Management:** the degree of understanding and commitment to environmental management by staff at all levels. Knowledge of NRA Environmental Policy and implementation. 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 of measures to ensure appropriate environmental standards; and
- **Environmental Impacts:** identification of emissions and waste streams. Existence of permits and consents for discharges. Compliance with statutory controls on emissions. Compliance with best practice.

These are the three primary "control" areas for effective environmental management. The procedures and report reflect this approach and will enable an audit to focus according to the nature of the location.

PILOT

The third and last of the pilot audits was carried out at the depot at Darlington, Northumbria and Yorkshire Region. The other two pilot audits were at Brampton (Anglian) and Leigh (Southern). As at Leigh, the emphasis was on Operations and Environment.

The team carried out the audit over two days. The general enthusiasm of the staff to demonstrate their environmental awareness was most rewarding. There was more than some satisfaction in visiting a site that was displaying a proactive approach to environmental management. The site management were given a verbal debrief on our departure.

BEST PRACTICE

With our experience of environmental practice to date, we found much to applaud at Darlington. We have therefore revised the report format so that the conclusions acknowledge good practice as well as making recommendations for action.

FINDINGS

The full recommendations and best practices identified by the audit are to be found under "Conclusions" at the end of each section in the main document. Key recommendations are in the table following.

A brief summary of the findings is as follows:-

Management

We are pleased to note that the site has been allocated its own local objectives and targets derived from the national environmental targets 1995/96. Responsibilities were allocated to individuals. Northumbria and Yorkshire operates an 'environmental circle', with the site representative functioning in an auditor reporting role.

Consideration should be given to the full integration of environmental management into all functions, systems and procedures. Monitoring and reporting should be through line management, thus demonstrating management commitment. All NRA staff would benefit from training in overall environmental awareness to ensure a common understanding of the issues and actions necessary to continually improve performance throughout all functions.

Operations

We were pleased that a 15% reduction in energy consumption at the site had been achieved, but disappointed at the reported increase in regional transport fuel consumption stated as due to increasing numbers of 4 x 4s. Improvements to monitoring managing and feedback mechanism in both areas offer opportunities for savings in energy use.

The Dales Area Operations IBU was performing to high environmental standards. However, Service Level Agreements and Contracts would benefit from a careful review to ensure that best environmental practice is

accurately specified and that quality control mechanisms can be enacted by the client.

NRA Pollution Prevention Guidelines should be advised to development/planning applicants by our Engineers.

Environmental

The NRA's Pollution Prevention Checklist was generally being complied with at the site. There are a small number of items for action.

A landscape management plan for the site should be produced.

Procedures should be reviewed to ensure continuing full compliance with the requirements of the Duty of Care for the Disposal of Waste.

Full procedures/guidance should be available to staff attending pollution incidents to ensure the proper management, handling and disposal of the polluting/contaminated material. Waste oils should be recycled wherever practicable.

Off site activities by the contractor were generally well controlled.

CONCLUSION

This report makes 46 recommendations. This should not be seen as reflecting a level of criticism, but more the fact that we have looked harder. We hope that the recommendations will give some ideas and further encouragement to a team that is getting it right to improve still further.

Darlington's environmental performance reflects the management commitment to the issue!

SUMMARY OF KEY RECOMMENDATIONS PILOT ENVIRONMENTAL AUDIT; DARLINGTON, NORTHUMBRIA & YORKSHIRE REGION

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page 1						
Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
		MANAGEMENT				
	3.3	**Environmental Management** • At an early opportunity, all staff are given training in overall environmental awareness to ensure a common understanding of the environmental issues and the broad actions necessary to achieve continual environmental improvement.				
	3.4	**Objectives and Targets** • Consideration is given to the full integration of environmental management, including monitoring, into all functions, systems and procedures. • The site's Environmental Policy - Local Objectives 1995/96 action plan is fully implemented.				

These recommendations are summaries only, for full recommendations see report.

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page 2

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
		OPERATIONS				
	4.2	**Energy Management**				
		• The agreed Clifford Talbot energy audit recommendations are actioned.				
	4.3	**Water Consumption**				
		• The increase in water use since 1991/92 is investigated to determine its cause and possible rectification.				
	4.4	**Transportation**				
		• Line management monitor vehicle use, badged and casual/essential, and introduce systems for use minimization.				
	4.5	**Procurement**				
		• The increasing provision of less fuel efficient 4+4 vehicles is reviewed to determine need.				
		• Procurement contracts are reviewed to ensure inclusion of best environmental practice.				

These recommendations are summaries only, for full recommendations see report.

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page 3						
Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	4.9	**Off-Site Activities - Operational Aspects** • Best environmental standards are incorporated into contract documents and service level agreements with a requirement for continual environmental improvement by contractors. • The client puts in place a quality control framework to be fully exercised in the event of external contractors being employed. • Relevant NRA Pollution Prevention Guidelines are advised to development/planning applicants by area engineering staff.				

These recommendations are summaries only, for full recommendations see report.

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page 4

Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
		ENVIRONMENTAL IMPACTS				
	5.2	**Land Use and Management** • A landscape management scheme is produced for the site.				
	5.4	**Environmentally Hazardous Substances** • The oil tank installation complies with all the requirements of PPG 2, including full labelling (including the Oil Care sticker) improvement of the sight gauge arrangements, and identifying the extent of corrosion. • All forms of storage are bought up to the requirements of our own pollution prevention guidelines, including securing **all** polluting liquid storage facilities, and bunding all external oil drum storage.				

These recommendations are summaries only, for full recommendations see report.

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page 5						
Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
	5.6	**Waste Management** • Procedures issued to pollution control staff include advice on the management of remedial action at pollution incidents that reflects environmental best practice and have regard for health and safety. • The NRA considers a policy on the final disposal of waste from NRA sites to ensure best environmental practice. • Waste oils are recycled where practicable.				

These recommendations are summaries only, for full recommendations see report.

Audit Report No: NE2/4/2/6 Darlington, Northumbria & Yorkshire Region Page						
Rec No	Report Para No	Recommendations	Est Cost Implementation	Management Comments and Action	Officer Responsible	Implementation of Target Date
		BLANK FORM FOR THE USE BY THE FACILITY WHEN ACTION PLANNING THE AUDIT REPORT.				

1.0 AIMS AND OBJECTIVES OF THE PILOT AUDIT

1.1 BACKGROUND

1.1.1 Environmental Policy

In 1992 the NRA Board acknowledged the importance of environmental management by adopting 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, which at the centre includes the Environmental Policy Unit (EPU), with 2.5 staff, and an Environmental Steering Group (ESG). Together, the EPU and ESG have responsibility for advising on policy development, procedures, instruction, practices and proposing targets.

Regions nominate a Regional Co-ordinator to the ESG who should also be responsible for advising the Regional General Manager on the implementation of the NRA Environmental Policy and best environmental management practice. Line management is responsible for implementing best practice, for pursuing the objectives and achieving the targets. Regional Business Services Managers are responsible for producing quarterly environmental performance data. Many regions have also established environmental teams or circles to support the policy and gain the interest and enthusiasm of all staff.

1.1.2 Environmental Auditing

Generally, 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; 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.

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

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 (EU 1863/93), include environmental audits as an essential and integral part. They provide organisations with the necessary assurance that their activities comply with the appropriate legislative, regulatory and company policy requirements.

1.2 INTRODUCTION TO THE AUDIT

The aim of the pilot audit was to independently assess the environmental status and performance of the site, by examining in detail the activities of operational facilities (offices, workshop/garage and storage areas) and a sample of its remote activities. The audit focused on the operational and environmental aspects of these activities, i.e. waste minimisation, buildings and their environs, transport, elimination of toxic substances, emissions and energy efficiency.

Four overall objectives were identified that applied 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 DARLINGTON AUDIT

In addition to the objectives above, three site specific objectives of the audit at Darlington were:

- risks to the credibility of the NRA, specifically:
  - legal compliance;
  - concerns expressed by external organisations;
  - risks to the environment, especially water;
  - implementation of the NRA's own guidelines to external bodies. (Pollution Prevention Pays video, Pollution Prevention Guidance notes, etc.); and
  - visual appearance.

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

- the identification of strengths and best practice to highlight to other areas and regions.

1.4 PROCESS

Before visiting the site regulatory information was assessed (from water companies, local authorities, etc) and the environmental setting and past land-use of the site and surrounding area examined. On-site work was by auditors drawn from the Environmental Policy Unit, Internal Audit and Pollution Prevention. The team audited with respect to management systems, operational systems and environmental impacts. The methods used included physical examination of the sites, discussions with staff and examination of documentary evidence. In pursuing the objectives, we investigated the location at three levels:

Management

The degree of understanding, and commitment to environmental management by staff at all levels. Knowledge of NRA Environmental Policy and the approach to implementation, and its objectives and targets. The 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.

Environmental Impacts

Identification of emissions and waste streams. Existence of permits and consents for discharges. Effectiveness of measuring and monitoring of discharges whether controlled by statute or not. 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.

1.5 AUDIT CRITERIA

The site was audited against best practice as described in:

- NRA Internal Environmental Policy, and its targets;
- legislative requirements, e.g. waste duty of care;

- NRA guidance to external bodies;
- industrial best practice; and
- environmental management systems standards, e.g. BS 7750 and EMAS.

1.6 AUDIT BOUNDARIES

The audit was limited to activities on site at the Darlington District Office and those controlled from Darlington. It did not consider functions directly affecting Darlington but performed by the Area Office. Geographically, the Darlington Office was examined together with four remote working sites chosen during the Audit. Adjacent, non-NRA activities were not included.

1.7 FEEDBACK

Comments from auditees on how to further improve the report and any aspect of the audit are welcomed.

2.0 SITE DESCRIPTION

2.1 SITE SETTING

2.1.1 Darlington Office

The site is situated on the outskirts of Darlington approximately 3km east of the town centre at National Grid Reference NZ 321 146. (Figure 1). It comprises a modern industrial unit with office and garage/workshop space and an external depot area, built in 1991.

The facility is accessed from the B6280 by Lingfield Way and lies in a mixed industrial and rural setting. Immediately north and east lies agricultural land through which runs a public footpath. To the south, west and northwest lie a variety of light industrial units including several operating processes regulated under the Environmental Protection Act 1990, including both Part A & B processes. About 300m northwest is a small housing development.

The nearest surface water feature is a small unnamed tributary of the River Skerne, which arises about 50m northeast of the site. The area around the stream, and the field to the north are regarded as areas of nature interest by local residents.

2.1.2 Remote Locations

Four remote sites were inspected during the audit. On the Lustrum Beck two locations were examined; trash screen clearing at its outfall to the Tees Estuary and weed clearing in Stockton (National Grid References NZ 475 196 and NZ 435 196 respectively). The site at Stockton is in a residential area with open public access and that on the Tees Estuary lies on a public right of way. We consider the Stockton site to be 'high profile' due to its public visibility.

At Stokesley grass cutting on a flood relief channel to the Eller Beck was inspected (NGR NZ 535 081) and at Old Durham electro-fishing on the Old Durham Beck examined. (NGR NZ 293 413). Both sites are surrounded by predominately agricultural land, with limited public access.

2.2 GEOLOGY, HYDROGEOLOGY, WATER QUALITY AND HYDROLOGY

2.2.1 Introduction

In order to establish the potential for liabilities due to migration of contaminants onto the Darlington site, from adjacent contaminative uses, or away from the site onto third party land, EAG Ltd completed desk-based research of the local geology, hydrogeology and hydrology. In particular they assessed the surface and groundwater sensitivities. The full report is in Annex 1; a summary is below.

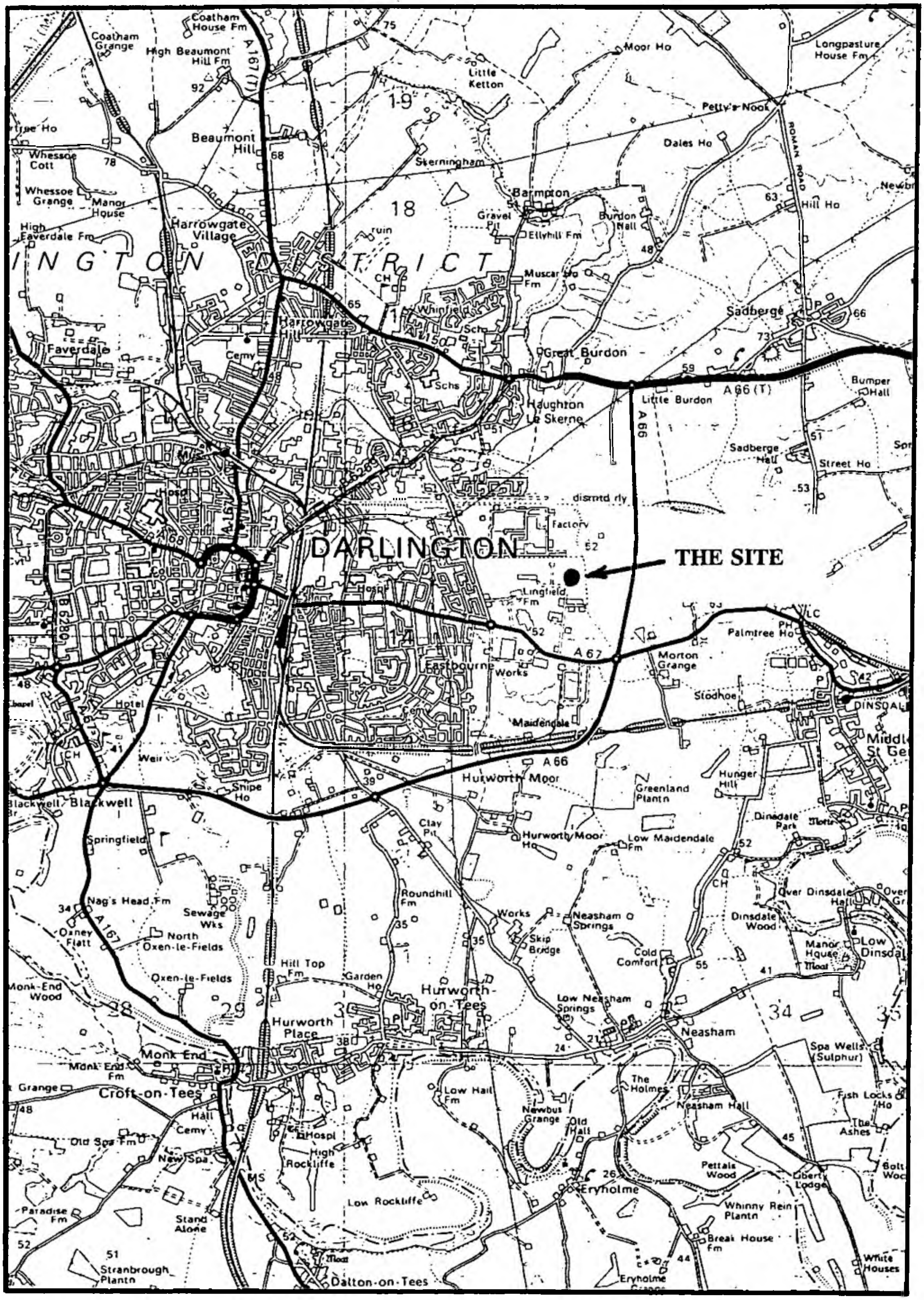
THE SITE
DARLINGTON
Coatham House Fm
Coatham Grange
High Beaumont Hill Fm
Little Ketton
Moor Ho
Longpasture House Fm
Petty's Nook
Dales Ho
ROMAN ROAD
Beaumont Hill
Whessoe Cott
Whessoe Grange
Manor House
High Faverdale Fm
Harrowgate Village
Sterningham
Barmpton
Gravel Pit
Ellyhill Fm
Burdon Hall
Hill Ho
Muscar Ho Fm
Sadberge
Harrowgate Hill
Whinfield
Faverdale
Cemy
Great Burdon
Little Burdon
A 66 (T)
Bumper Hall
Haughton Le Skerne
Schs
A 66
Sadberge Hall
Street Ho
Hospl
disused rly
Factory
Lingfield Fm
A 67
Palmtree Ho
Morton Grange
Stodhoe
Eastbourne
Works
Maidendale
DINSDALE
Hotel
Weir
Snipe Ho
Hurworth Moor
Greenland Plantn
Hunger Hill
Blackwell
Clay Pit
Hurworth Moor Ho
Low Maidendale Fm
Dinsdale Park
Springfield
Nag's Head Fm
Sewage Wks
North Oxen-le-Fields
Oxney Flatt
Roundhill Fm
Works
Neasham Springs
Skip Bridge
Over Dinsdale Hall
Dinsdale Wood
Cold Comfort
Manor House
Low Dinsdale
Hill Top Fm
Garden Ho
Oxen-le-Fields
Monk-End Wood
Hurworth-on-Tees
Low Neasham Springs
Neasham
Spa Wells (Sulphur)
Hurworth Place
Monk End
Monk End Fm
Croft-on-Tees
Low Hall Fm
The Holmes
Newbus Grange
Old Hall
Neasham Hall
Fish Locks
The Ashes
Hall
Cemy
Old Spa Fm
New Spa
Hospl
High Rockliffe
Pettals Wood
Eryholme
Low Rockliffe
Paradise Fm
Stand Alone
Whinny Rein Plantn
Break House Fm
Stranbrough Plantn
Dalton-on-Tees
Eryholme Grange
White Houses

Figure 1

2.2.2 Geology

The site is underlain by Boulder Clay (Till) and undifferentiated glacial drift deposits with Permian Upper Marls and Upper Magnesium Limestone at depth. Immediately north of the office is made ground (up to 1.8m thick) although there is no record of made ground at the site.

2.2.3 Hydrogeology

The predicted flow of the shallow groundwater is to the north. However, in boreholes about 120m north of the facility there were no groundwater strikes; Boulder Clay is generally considered an impermeable geological unit.

There are no licensed groundwater abstractions or small abstractions within 2km of the office nor is it within any designated Source Protection Zone. The Upper Magnesium Limestone, at depth, is classified as a major aquifer of regional importance.

2.2.4 Water Quality and Hydrology

The land falls gently away from the site towards the River Skerne in the north. A small stream 50m to the northeast is not classified for water quality but the Skerne (700m NW) is given a General Quality Assessment of Class D (fair quality).

2.2.5 Significance of Geology, Hydrogeology and Hydrology

The site is considered to be located in a sensitive location with respect to the underlying major aquifer. However, there are no groundwater abstractions within 2km of the site, and the site does not lie within a designated Source Protection Zone, therefore the aquifer is considered to be moderately sensitive. The underlying major aquifer would also be expected to be afforded significant protection from surface derived contamination by virtue of the presence of at least 10m thickness of low-permeability Boulder Clay. Hence, overall the risk to abstracted groundwater resources is considered to be moderately low.

It is expected that shallow groundwater beneath the site (if present) may be in hydraulic continuity with the nearby tributary of the River Skerne and, therefore, it is considered that mobile contaminants arising from the site area and present in the shallow groundwater could represent a risk to the receiving quality of the water in the nearby tributary and ultimately the River Skerne. The one licensed surface water abstraction within 2km of the site is on the Skerne "upstream" of the site and consequently is not considered a sensitive receptor.

2.3 SITE HISTORY

2.3.1 Introduction

The site history was researched by EAG Ltd for the NRA, by reference to Ordinance Survey and County Series maps, and by referring to the site's planning history and other archive material. (Annex 1).

2.3.2 Significance of Site History

The historical research has shown that there have been no former contaminative uses of the site.

The surrounds have included a number of industrial uses including, in particular, a cotton spinning factory from the 1950's. As a result there is some potential for contaminated land to be present in the site area although the potential for off-site derived contaminants to migrate on-site will be dependant upon the nature of the contaminants and the presence of permeable strata through which such potential contamination could migrate. Given that the geological sequence beneath the site is predicted to comprise largely clays of relatively low permeability, the potential for the site to be affected by the on-site migration of contaminants from nearby off-site sources is considered to be low. Such an occurrence cannot be totally discounted without an intrusive investigation to determine the actual ground condition, ie detailed site geology and hydrogeology (especially the occurrence of permeable sand lenses within the Boulder Clay).

2.4 SITE OPERATIONS

2.4.1 Site Layout and Description of Operations

The facility covers an area of about 0.6 hectare (1.5 acre) and includes one, purpose built, industrial unit sub-divided into offices and a garage/workshop. There are several storage areas within the building. The site includes a hard surfaced storage area, a tar-macadamed car parking area and a small (0.1 hectare) plot of undeveloped land. There are very small grounds associated with the site. Ancillary structures include a bunded oil storage tank and concrete retaining walls for storage of sand, etc.

The building houses District Office functions including Water Resources and Quality (Environmental Protection); Operations; Fisheries, Flood Defence and Ecology; Field Data Services; and Authorizations and Services. Geographically the office covers the Tees and Esk catchments.

3.0 MANAGEMENT

3.1 INTRODUCTION

Management aspects audited at Darlington included the degree of understanding and commitment to environmental management by staff at all staff levels. Knowledge of NRA Environmental Policy was sought and the approach to its implementation and its objectives and targets examined. The resources allocated to environmental management were assessed. The managerial and administrative systems used to ensure implementation of best environmental practice were examined together with the production and promulgation of management procedures. The system for measuring, monitoring and reporting was audited.

3.2 ENVIRONMENTAL POLICY

Audit Criteria. The NRA Internal Environmental Policy as agreed by the NRA Board in 1992 and communicated to all regions.

It is clear that a range of very commendable environmental management initiatives has been actioned. There is a general awareness of the Environmental Policy among staff who impact on the direct management of the activities within the site. The wider implications of environmental management to all functional activities are not always appreciated. Most staff are aware of, and generally contributing towards, the achievement of one or more environmental objectives. Staff are very enthusiastic about demonstrating best environmental practice.

3.3 ENVIRONMENTAL MANAGEMENT

Audit Criteria. Key environmental management principles in the NRA Environmental Policy and best environmental management practice.

3.3.1 Site Management

The Area Management had recently allocated specific responsibilities for pursuing the environmental objectives and targets to locations including Darlington. The Environmental Protection Principal (Water Resources and Quality) is cited as having overall site management responsibility, including environmental performance. This task, it was stated, is not incorporated into the Job Description. The site manager is familiar with a number of environmental performance targets, he did not recall having seen the full Environmental Policy. We are advised that environmental objectives are in the Area Business Plan.

3.3.2 Environmental Circle

In the spring of 1994, Northumbria & Yorkshire Region established the Regional Environmental Policy Action Committee (REPAC) as a mechanism for harnessing the interest and enthusiasm of staff at all levels. The Darlington representative at the group was stated to have an "auditor" role, reporting action and performance to the site manager and to the regional group. Some frustration is felt by the representatives over the reactive rather than proactive approach to the Environmental Policy, and there being insufficient management support, coupled with no penalties for non-compliance.

3.3.3 Systems and Procedures

Actions and available documents show the efforts by management to comply with the spirit and intent of the Pollution Prevention Checklist and prevent pollution arising from the site and its activities. It is also apparent that action is being taken to improve environmental performance. Achievements can be built on by ensuring that there is an awareness of the full breadth of environmental management amongst all employees and that environmental considerations are properly integrated by line management into all functions. All systems and procedures should be progressively and regularly reviewed to incorporate best environmental practice.

We are pleased to note that Darlington has a site handbook (logbook) and record of relevant environmental management documentation.

3.4 OBJECTIVES AND TARGETS

Audit Criteria. NRA Environmental Policy objectives and annual environmental performance targets.

3.4.1 Implementation

We are pleased to see that the site has been allocated its own local objectives and targets derived from the national environmental performance targets for 95/96. A copy is in Annex 2. Responsibility for specific actions is clearly allocated. There are records of routine measuring of resource consumption in many areas. Reporting is predominantly through REPAC. For maximum effectiveness, monitoring needs to be integrated into routine line management activities.

3.5 CONCLUSIONS

The action taken to date in implementing environmental management at Darlington is impressive. Further improvements can be achieved by enhancing employee overall awareness and the full integration of environmental management into line management routine. Items of good practice include:

- the allocation of appropriate staff resources for progressing environmental management at the site;
- the production of an environmental management record file and site handbook; and
- the identification and action planning of local environmental objectives and targets.

Several issues are identified for further action. We recommend that:

- at an early opportunity, all staff be given training in overall environmental awareness to ensure a common understanding of the environmental issues and the broad actions necessary to achieve continual environmental improvement;
- consideration is given to the full integration of environmental management, including monitoring, into all functions, systems and procedures; and
- the site's Environmental Policy - Local Objectives 1995/96 action plan is fully implemented.

A full consideration of best environmental performance is in Annex 3.

4.0 OPERATIONS

4.1 INTRODUCTION

The facility was audited at an operational level to determine the efficacy of procedures to measure and monitor appropriate management processes. Evidence of gains in environmental performance and efficiency through effective resource management and waste minimization measures was sought. Contracts (internal and external) were examined for inclusion of measures to ensure appropriate environmental standards.

4.2 ENERGY MANAGEMENT

Audit Criteria. NRA Environmental Policy Target (a 15% reduction compared to 1991/92, in terms of CO_2 emissions); best practice as issued by Energy Efficiency Office, (EEO); consumption guidelines from EEO.

4.2.1 Previous Survey

An energy and water use survey of the Darlington Office was undertaken for the NRA by The Clifford Talbot Partnership in March/April 1993. In the year 1991/92 a total of 577,007 kWh of energy was purchased, of which 85% was gas with the remainder electricity, at a total cost of £14,696 and a calculated use of 40.15 £/kWh/annum. They identified possible reductions in energy use of 185,013 kWh or 32%. (Table 1).

Table 1 Clifford Talbot Partnership Energy Survey Results.

Occupancy	32	FTE
Floor Area	366	m^2
Electricity	84,225	kWh
Gas	492,782	kWh
Total Energy	577,007	kWh
Total Energy	14,696	£
Cost per Floor Area	40.15	£/m^2/annum
Total CO_2 Emissions	185.10	tonnes

In their report they state, "The most significant savings come from tariff changes and re-establishment of correct control of the heating."

Their recommendations include the following:

- fitting new controls and reconfiguring heating (saving 131,409 kWh, 1.0 year payback);
- fitting opening windows in place of roof lights (10,560 kWh, 8.1 year);
- resetting boiler combustion efficiency (10,108 kWh, 0.7 year);
- fitting photocell light switch to main office (9,222 kWh, 3.3 year);
- reinstating time control on Temcana heaters (9,072 kWh, immediate payback); and
- fitting louvre fans in main office (5,880 kWh, 8.5 years.)

In a Northumbria and Yorkshire Region report dated 18/5/93 an action plan is given for the recommendations. All those with a payback of 1 year or less were to be actioned, items with a longer payback were individually assessed for action. All items were reassessed in 1994. Table 2 indicates progress on the report.

The figures for floor area in the Clifford Talbot report differ from those in the Lambert, Smith Hampton Review of Properties. To ensure comparability between sites the figure of 875 m^2 floor area from the Lambert, Smith Hampton Review is used in all further calculations in this report. (Table 3).

Table 3 Darlington Office Floor Area

Data Source	Floor Area	
	m^2	ft^2
Clifford Talbot Report	366	-
Lambert Smith Hampton Valuation:		
Office	394*	4,241
Workshop	481*	5,184

* Calculated from area in square feet.

4.2.2 Energy Consumption

The facility is connected to both electricity and gas. Space heating to the office accommodation is provided by a gas fired boiler feeding radiators, and to the garage/workshop by gas fired hot air blowers. Domestic hot water is provided from the heating boiler or from an immersion heater when the boiler is turned off.

Air conditioning is installed in limited areas where there is a significant heat load, such as the plant room and enclosed office in the roof area. The condensers vent waste heat to the interior of the garage/workshop.

Limited data is available from the site for energy consumption. Commencing in June 1995 meter

Table 2

Summary of Actions by NRA Northumbria & Yorkshire Region on Recommendations in Clifford Talbot Energy Survey.				
Item Number	**Description of Recommendation**	**Payback Period**	**Date to be Completed**	**Current Audit Findings**
2	Reinstate time control on Temcana heaters	No cost	1/9/93	All heaters off, time control to be fitted by 31/8/95.
3	Reduce boiler / Domestic Hot Water flow temperatures	No cost	1/9/93	Unable to test, reported done in maintenance.
4	Remove tube from each light in conference room	No cost	1/9/93	Work reported done.
6	Reset boiler combustion efficiency	0.7 year	1/9/93	Work reported to be included in boiler maintenance.
8	Fit new controls and reconfigure heating	1.0 year	1/9/93	Partially complete. Electric water heater timer not fitted, due by 31/8/95.
9	Fit photocell light switch to main office	3.3 years	Not to be actioned	Not done, staff awareness to switch off.
10	Fit motor load control to freezer	3.7 years	1/7/94	Subsequent advice that not suitable.
11	Replace GLS with compact fluorescent lights in entrance lobby	3.7 years	1/9/93	Complete.
12	PIR occupancy controls to lighting/air conditioning	3.9 years	1/7/94	Not done, staff campaign to switch off.

Summary of Actions by NRA Northumbria & Yorkshire Region on Recommendations in Clifford Talbot Energy Survey. (Contd)				
Item Number	**Description of Recommendation**	**Payback Period**	**Date to be Completed**	**Current Audit Findings**
13	Fit daylight switch to rear office	6.1 years	Not to be actioned	Not done, staff campaign to switch off.
14	Fit opening windows instead of roof lights	8.1 years	Not to be actioned	Not done, building structure prevents. Roof vents are fitted.
15	Fit louvre fans in main office	8.5 years	1/7/94	Not done.

readings are taken by Authority staff at the end of every month, previously readings were on an intermittent basis, in particular when specific issues were addressed. No readings are available for the period 30 Sept 1994 to 22 June 1995. Figures supplied from meter readings show that in the year ending 25 July 1995 123,036 kWh of electricity and 409,600 ft^3 gas (123,001 kWh) were used; 246,037 kWh total use.

The current consumption, compared to the same period in the previous year, is calculated in terms of daily consumption and displayed on the 'Environment' notice-board. The site manager is made aware of progress by the REPAC rep and performance is reported to the Area Business Services Manager.

4.2.3 Energy Conservation Action

Conservation initiatives, in place or planned, at the facility include actions on the Clifford Talbot Report, installation of timers on photocopiers and drinking water cooler, and an investigation of the use of Novitherm product for radiators. The energy conservation initiatives are incorporated in the site Environmental Policy - Local Objectives (Annex 2). No information was made available on the business criteria used for assessing individual initiatives; decisions are not made at the District Office level.

Staff understanding of the need to reduce energy waste is high and is translated into action. Most unnecessary lighting and computers were switched off, the heating for the domestic hot water was turned off, and radiator valves were at low settings (although the heating was off).

4.2.4 Energy Analysis

NRA Targets

No strict comparison can be made of current consumption against the NRA's target for a 15% reduction in energy use (measured as CO_2 production) compared to 1991/92. However, a comparison of current performance (year to 25/07/95) with Clifford Talbot's 1991/92 data is below. (Table 4).

Table 4 **Energy Consumption, Compared to 1991/92.**

Energy Source	Consumption (kWh)		% Change
	1991/92	Year to July 95	
Electricity	84,225	123,035	+46
Gas	492,782	123,001	-75
Total	577,007	246,036	-57
CO_2 (tonnes)	166.65	118.11	-29

The target is apparently met. However, we question the validity of the dramatic reduction in gas use during this period.

Efficiency of Use

In terms of floor area, use in the year to July 1995 was 281.6 kWh/m^2 (gas 140.6, electricity 140.6 kWh/m^2). This compares with the Energy Efficiency Office's 'typical' figure for a naturally ventilated open plan office of 285 kWh/m^2 but is in excess of the 'best practice' value of 156 kWh/m^2. However, the design of the building limits the validity of any comparison with the EEO figure, due to the garage/workshop taking the full height of the building, ie. two floors.

The Energy Saver published by GEE gives figures for energy consumption in terms of floor area for factories (excluding the use of energy for production purposes) and offices. At Darlington the use of gas for heating is rated 'excellent' but of electricity 'very poor'. The high consumption of electricity may, in part, be accounted for by its use for air conditioning and water heating during the summer. The rise in electricity consumption , although partially explained by increasing use of IT equipment, is disappointing.

The dramatic reduction in the consumption of gas is not readily explained. The Clifford Talbot report gives a normalized consumption of 563 kWh/m^2, the current data indicates 141 kWh/m^2 whilst 'typical' figures from the EEO are in the range 200-275 kWh/m^2 and 'good practice' 95-132 kWh/m^2. Clifford Talbot's recommendations (Table 2) concerning gas use were estimated to deliver a saving of 176 kWh/m^2. Although not all of the recommendations have been acted upon the reduction reported is in excess of that forecast.

The accuracy and comparability of the data for the two years questionable. The current meter readings are correct but we obtained no billing information to verify the historic data.

4.2.5 Conclusions

Considerable efforts have been made by staff to reduce the consumption of energy at the site. The site has achieved the NRA's target of a 15% reduction. Items of good practice include:

- good control over the use of energy (gas) for heating; and
- high staff awareness and action on the need to reduce the use of energy.

Several issues for action are identified. We recommend that:

- the Clifford Talbot recommendations, where action is agreed, are implemented;
- the historic data on energy use is verified for accuracy, if practicable;

- the discrepancy between the current low consumption of gas and high electricity use is investigated, in particular to determine the cause of the excessive electricity use;
- meter readings continue on a regular basis, preferably weekly, and performance data for the site continues to be reported to staff; and
- the staff initiatives for energy saving continue to be encouraged, in particular for the use of electricity.

4.3 WATER CONSUMPTION AND COSTS

Audit Criteria. NRA Environmental Policy Target (10% reduction in use by March 1995, compared to 1991/92), best practice as issued by BSRIA, CIRIA and Buildings Research Establishment.

4.3.1 Previous Survey

The Clifford Talbot Survey identified water consumption of 938m^3 per annum in 1991/92, for 'domestic' use and vehicle washing. They made only one recommendation for a water saving, the replacing of the urinal controls, which they estimated would save 3% (28m^3) per annum.

We were told that the urinal controls were replaced as recommended. Further, trials were made with dams in the toilet cisterns, but had proven ineffective. We did not check for documentary evidence to support these claims.

4.3.2 Present Position

Data from water meter readings by site staff show a consumption of 1722m^3 for the year ending 25/7/95, an increase of 84% (784m^3) over the Clifford Talbot report. A typical consumption for 'domestic' water use at work is 50 litres/person/working day giving an estimated 450-500m^3 per annum for the Darlington Office. The excess consumption reported may be from 'industrial' uses, principally the vehicle wash. This use may exceed the permitted 5m^3 maximum per day in the Trade Effluent Consent. (See Section 5.4.2). Data for consumption is reported to the Area Business Services Manager and locally to the site manager. Current performance is displayed on the 'environment' notice-board.

We were told that efforts have been made to reduce the use of the vehicle wash to cut water consumption. However, it appears that use is greater than in the baseline year and the NRA target of a 10% reduction is not met. At the site level there are no procedures to investigate changes in consumption. The site Environmental Policy - Local Objectives (See Annex 2) contains an action point to investigate means of reducing waste from the vehicle wash.

4.3.3 Conclusions

Water consumption has increased considerably over the baseline (1991/92). Principal issues for action are identified. We recommend that:

- procedures to investigate anomalies in consumption are written and promulgated;
- the increase in water consumption over the baseline 1991/2 is investigated to determine whether it is caused by increased use or leakage, and appropriate action taken;
- the vehicle wash is metered in addition to the whole site to enable consumption in the building to be separated from that in the wash area, the two uses to be properly monitored, and compliance with the Trade Effluent Consent determined; and
- meter readings are made on a regular basis, and performance continues to be reported to site staff.

4.4 TRANSPORTATION

Audit Criteria. NRA Environmental Policy Targets, (90% of vehicles to be diesel by March 1995, a 15% reduction in energy use, measured as CO_2 emissions, compared to 1991/92); Industry best practice including systems to minimize use (car sharing, route planning, journey elimination, etc) driver training, correct vehicle specification.

4.4.1 Darlington Site Performance

The associated environmental impacts for use of plant are considered in Section 5.7. Vehicle maintenance is in Section 4.5.4, vehicle procurement in Section 4.5.3.

Driver Training

Prior to the current national Efficient Driver Training programme a similar regional initiative was run. Most staff interviewed who were eligible had been or were to go on one of these schemes. However, neither the site manager nor the Regional Plant and Transport Manager had been on the current training and seen the video briefing. Other staff reported missing the initial briefing.

Fuel and Mileage Monitoring

The Regional Plant and Transport Manager receives monthly fuel consumption figures from the fuel card company for all badged vehicles. These are regularly scanned for exceptional consumption which is then investigated, either directly or by the line manager. Oil consumption is similarly monitored. The regional fuel consumption figure is worsening, due to the increased proportion of 4+4 vehicles in the fleet.

Drivers do not receive regular, agency derived, reports on their fuel consumption although some are using the Efficient Driver Training fuel log cards, intended for private vehicles, to record their badged vehicle fuel consumption. The use of one vehicle by several drivers makes this approach to monitoring difficult in practice. The site Environmental Policy - Local Objectives (See Annex 2) contains actions on fuel monitoring for lease and badged vehicles by line management.

There is no evidence of on-going monitoring of casual and essential driver mileage by line management at the local level.

Use Minimization

Control of vehicle movements is the responsibility of line management. The Fisheries IBU have a programme of vehicle use minimization including vehicle sharing and route planning but there are no other schemes in the Darlington Office.

Plant

The operation of plant is the responsibility of the contractor. Each issue of fuel from the gas oil tank at the Darlington Office is recorded together with its destination and the item of plant for which it is intended.

We were advised that there are no procedures or guidelines for the efficient operation of plant, for example engine speed (rpm) and gearing, and switching off when not operating or at lunch breaks, etc.

4.4.2 Conclusions

Overall vehicle fuel efficiency is deteriorating. Monitoring and management of performance is not universal. Items of good practice identified include:

- vehicle use minimization programme by the Fisheries IBU; and
- the recording of all gas oil issues to plant.

Principal issues for further action are identified. We recommend that:

- fuel efficiency data for vehicles should be actively managed and provided to all drivers;
- all managers and staff, who have not already been briefed, are briefed on the objectives and benefits of efficient driving. This should extend to all staff, not just badged vehicle drivers;
- line management monitor vehicle use, both badged and casual/essential, and introduce systems to minimize use; and
- guidelines are produced on the efficient operation of plant to minimize its environmental

impacts.

4.5 PROCUREMENT, SUPPLIERS AND CONTRACTORS - EXTERNAL

Audit Criteria. NRA Environmental Policy - suppliers of products and systems should produce evidence of their positive environmental management; NRA procurement manual; evidence of environmental considerations in letting contracts, etc.

4.5.1 Introduction

Staff and managers based at the Darlington Office control very few contracts and procurement decisions. Most are undertaken at an Area or Regional level and are not considered in detail in this audit. A copy of the environmental procurement procedure is displayed on the 'environment' notice-board.

4.5.2 Service Suppliers

Grounds Maintenance

A specification for Grounds Maintenance, currently let to the in-house workforce, was examined for environmental concerns. It contains requirements for waste to be disposed of in accordance with the Duty of Care, a ban on the use of peat and on tropical timber, and prior approval before pesticides or fertilizers are used. The grass should be cut twice weekly when required. (See Section 5.2.1).

Domestic (Cleaning) Services

The contract details for the cleaning of the facility, currently undertaken by OCS Ltd, were examined. When the contract was let details of the environmental performance of the company were obtained. These show that OCS has an Environmental Management System with named director, environmental policy and environmental performance targets with performance reported. The environmental procurement policy was followed when the contract was let. An assessment of the products used by OCS is in Section 5.5.2.

Building Maintenance Contract

The draft specification for building maintenance, with George S. Hall Energy and Facilities Management, contains very few environmental concerns. The body of the document consists of a list of equipment, etc together with the frequency with which they are to be examined. There is no requirement for the contractor to provide advice on energy efficiency measures for the items being maintained. The schedule does not list the work to be undertaken but does include a requirement for

the testing of water quality, for Legionella, etc. The chlorination certificate and service log sheets are all in order.

4.5.3 Materials Suppliers

Vehicle Suppliers

The Regional Transport Manager has an input to the national specification for vehicles. At the local level he advises on suitable vehicles but selection is made by the local manager. There is a reported change away from vans to less fuel efficient 4+4 vehicles.

Stationery and Paper Suppliers

Stationery is purchased predominately from the national contract core list. The purchase of non-corelist or other supplier's stationery is limited. Computer stationery items are from the national contract.

The paper used in Darlington is Scimitar Copier, which has no recycled content and does not meet the Authority's requirement for the use of recycled paper. A recycled paper was used previously but was not compatible with the photocopiers. Future purchases are to be from the new national contract. (See Annex 2).

4.5.4 Contractors

Vehicle Maintenance

NRA badged vehicles are maintained by local companies, Darlington based vehicles by Northumbrian Water Ltd at Thornaby. The initial contract covered environmental concerns:

- disposal route for waste oil, tyres, batteries, used parts;
- surface water drainage to be adequately protected;
- vehicles to have emission checks every year from new, with suitable adjustment if required; and
- vehicle oil and fluid leaks were to be rectified.

During the letting of the contract detailed checks were made on these issues but no follow up inspections are made now the contract is let.

4.5.5 Conclusions

Environmental issues are being progressively incorporated into procurement decisions. Items of good practice include:

- the grounds maintenance contract contains environmental clauses to ensure compliance with NRA Internal Environmental Policy;
- stationery purchases are predominately from the 'environmentally friendly' core-list; and
- the vehicle maintenance contract incorporates environmental concerns.

Principal issues for further action are identified. We recommend that:

- the increasing provision of less fuel efficient 4+4 vehicles is reviewed to determine need;
- follow-up checks are made on the vehicle maintenance contractor to ensure that the initial high environmental standards are maintained; and
- best environmental practice is included in all contracts where not already addressed.

4.6 EMERGENCY PROCEDURES

Audit Criteria. NRA guidance to external bodies (PPG 18, Pollution Prevention Measures for the Control of Spillages and Fire Fighting Run-Off); best industry practice.

4.6.1 Darlington Site Performance

A draft emergency spill plan is available for the site and includes sections on oil delivery, oil use, delivery of other chemicals, and the effects of fire water. The production of this plan is commendable. It identifies the main risk at the site as oil spillage during delivery and dispensing, and gives details of the procedure to use during these operations. The emergency plan does not refer to procedures to ensure the correct disposal of polluted waste, which should be included in the final version.

4.6.2 Conclusion

The production of a Site Emergency Plan is good practice. We recommend that:

- the emergency procedure is finalised and implemented.

4.7 WASTE MINIMIZATION

Audit Criteria. Best industry practice; NRA Internal Environmental Policy priority issue.

There are several waste minimization initiatives at Darlington, although we found no formal waste minimization programme. Specific points are listed below, energy is covered in Section 4.2.3 and water in Section 4.3:

- old headed paper is made into scrap pads for general use;
- a 'blitz' on paper disposal, ensuring all paper is placed in recycling bins; and
- only small stocks of stationery are held.

The site Environmental Policy - Local Objectives (See Annex 2) contains action points for the minimization of stationery use and the recycling of sample and glass bottles.

4.8 BUILDING AND PREMISES MANAGEMENT

Audit Criteria. Best industry practice; BSRIA and CIRIA Codes of Practice.

A guidance note on Building and Premises Management issued by the National Health and Safety Office dated April 1995 was recently received at the facility. It is intended as a reference guide to health and safety matters but does include environmental issues. There are short but distinct sections on pollution prevention and on environmental policy. Annexed is a three page pollution prevention guide and inspection form. Although useful as an aid memoir the guidance is insufficient to afford adequate environmental protection.

4.9 OFF-SITE ACTIVITIES - OPERATIONAL ASPECTS

Audit Criteria. Best industry practice; the incorporation of environmental criteria in contracts, service level agreements, working procedures and practices.

4.9.1 Introduction

We examined the operational framework for three off-site activities associated with the Darlington office. They were:

- Fisheries - Service Level Agreement (Draft);
- Flood Defence - client/contractor relationship; and
- Flood Defence - planning and development.

The environmental impacts of the off-site activities are covered in Section 5.7.

4.9.2 Fisheries - Service Level Agreement.

The provision of fisheries services by the Dales Area Fisheries IBU to the Area Fisheries, Flood Defence and Ecology Department is governed by a Service Level Agreement (SLA). It contains general requirements for the Provider (the IBU) to ensure that the service is supplied in accordance with NRA policies (eg Environmental Policy, etc.) and that compliance can be demonstrated to the User. The User has to ensure that work plans allow for compliance monitoring by the Provider. There is no requirement for sub-contractors selected by the IBU to be similarly compliant.

The bulk of the SLA is concerned with listing the services to be provided, and the levels of those services and contains no specific internal environmental concerns.

4.9.3 Flood Defence - Client/Contractor Relationship

The operational aspects of the flood defence work investigated are:

- waste minimisation;
- inclusion of best practice in contract specifications; and
- control and monitoring of contractors.

A client/contractor split is effected at Darlington. The continuing close, co-operative and also business-like relationship between the two components is very encouraging and beneficial to the quality of the overall service. Were this relationship not the case, the achievement of good environmental practice would be more difficult.

Client

It is apparent that on the client side, there is a less than clear understanding of the NRA's requirements on environmental standards. The Flood Defence Catchment Officer, who is relatively new to the post, received no formal training in the job, and he stated that he has no real understanding of the environmental issues. A recent "Environmental Awareness" course (on environmental impact assessment) did not give him the information on resource use and waste disposal that he expected. There is no guidance given on what represents good environmental practice.

Contract

The Dales Area River Maintenance Contract (11/04/95 - draft - 90% complete) was briefly inspected. It would benefit from close scrutiny to ensure that there are no assumed standards and knowledge, and that best environmental practice is clearly specified to contractors, whether internal or external. Examples we have identified include the following:

- the contract appears to afford the contractor control of disposal of waste. The differing

methods for the disposal of timber (eg burn, chip, log) have different environmental impacts and cost/benefit implications for the contractor. The disposal of any biodegradable or recyclable material to landfill is questionable practice;

- the specifications and guidelines on the frequency and methodology of bank and river maintenance should be carefully considered to minimise inputs (eg plant and fuel) and outputs (eg waste disposal) yet still facilitate adequate inspection and any conservation opportunities;
- the contract should place a requirement on contractors to have previously undergone training in best environmental practice and recognition of protected plants, invasive weeds, etc;
- the textiles used for sand-bags are treated with preservative to BS 2087. One of the BS approved treatments uses pentachlorophenyl laurate a red list substance. To eliminate the risk of leaching bags treated with this process should not be used;
- worked exposed parts of timber revetments are to be treated with preservative - possibly copper chrome arsenate (CCA), adjacent to the water course;
- opportunities to specify recycled materials should be exercised; and
- the requirements of the Duty of Care for the disposal of waste are incorporated. Consider appending any reference to disposal of waste with "in accordance with Duty of Care"/"by authorised and licensed contractor" to emphasise the need for legal compliance.

Contractors - Control and Monitoring

The client understood that the contractor adopts best practice for refuelling in or near watercourses. The contractor's standards are of the highest order. (See Section 5.7.2). However, there are no client procedures nor quality control framework in place to monitor contractor performance.

We are advised that the contractor has acquired items of specialist equipment to minimise bank and river bed damage, and for improving the cutting of water vegetation and its disposal. Innovative approaches by a contractor to reduce environmental impacts, where effective, should be acknowledged and rewarded to encourage further continuous improvement in environmental performance.

4.9.4 Flood Defence - Planning and Development

In controlling proposed development around water courses, the basic environmental conditions are that it should not cause flooding or pollution. Best environmental practice in the specifying and carrying out of the works is not advised to applicants. The Planning and Development Engineer stated that environmental issues are largely outside the powers of control which the NRA uses. His place is to look at effects of a project on the watercourse affected - not at the environmental implications of the project as a whole. The specific training he had received (shadowing, technical courses and the Internal Development Control Manual) had not highlighted environmental (as opposed to conservation) issues.

We consider that the manner in which works in and around watercourses requiring consent are carried out are of concern to the NRA and guidance or specifications should be issued (ie use of concrete, paints, etc). The need to ensure that the overall environmental impacts of a planned development are minimised should be a matter for longer term consideration. We therefore consider there is benefit to making reference to relevant NRA publications, for example Pollution Prevention Guidelines, when commenting on applications.

4.9.5 Conclusions

The incorporation of environmental concerns into contracts and procedures for off-site operations is not widespread. Knowledge of certain environmental issues needs improvement. Items of good practice include:

- the incorporation the Duty of Care for waste disposal in the Dales Area River Maintenance Contract; and
- the use by the contractors of equipment designed to minimize damage to the river bank.

Principal issues for action are identified. We recommend that:

- the Fisheries Service Level Agreement is reviewed to incorporate relevant environmental concerns, such as the requirement for sub-contractors to comply with the NRA Environmental Policy, and a requirement for the Provider to be compliant with environmental legislation;
- the draft Dales Area Maintenance Contract is reviewed to ensure that best environmental practice and continual improvement is required of any contractor;
- the client puts in place a quality control framework to be fully exercised in the event of external contractors being employed;
- training in environmental awareness and best practice is given to all staff specifying goods and services; and
- relevant NRA Pollution Prevention Guidelines are advised to development/planning applicants by area engineering staff.

5.0 ENVIRONMENTAL IMPACTS

5.1 INTRODUCTION

The facility was examined to assess its immediate environmental impacts and the controls on them. Emissions and waste streams were identified together with the existence of permits or consents for the discharges. Compliance with statutory controls on emissions were assessed together with compliance with NRA best practice as given to outside bodies. Implementation of best practice above that required by national procedures was sought for use as examples by other Areas or Regions. The effectiveness of measuring and monitoring of discharges, whether controlled by statute or not, was appraised.

5.2 LAND USE AND MANAGEMENT

Audit Criteria. Best industry practice, for example as outlined in Welsh Water's "Making the Most of Your Site." NRA Guidance in The New Rivers and Wildlife Handbook; and South Western Region's Regional Environmental Policy for NRA Grounds Maintenance.

5.2.1 Darlington Site Performance

There is no landscape management plan for the site. The sides and yard (most of the rear of the site) are protected by a 2 metre high steel security fence. At the time of the building's construction, trees and hedging were planted but there has since been only partial growth. (Photograph 1)

Grass and cuttings, etc, are currently disposed of to landfill through the general waste skip. Landfill should be the last choice for the disposal of biodegradable material, it is preferable to compost and use as mulch. According to the Environmental Policy - Local Objectives (See Annex 2) it is intended to review this disposal.

At the rear of the site is an area of land which has benefitted from tree planting in the past but has since been neglected. There is a pleasing variety of flora. Some management may be necessary to prevent dominant species taking over.

Best practice is available in the SW Region's Grounds Maintenance Policy.

5.2.2 Conclusions

The managed part of the site has limited scope for enhancement of the grounds. We recommend that;

- a landscape management scheme is produced for the site;
- the benefits (security) of having a complete hawthorn hedge are considered; and

- plant material from grounds maintenance is composted where practicable.

5.3 AIR AND NOISE

Audit Criteria. Legislative requirements, Clean Air Act 1993, Environmental Protection Act Part III, 1990 - statutory nuisance.

Atmospheric emission sources comprise one 'domestic' gas fired boiler.

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 facility lies within a smoke control area. There is no evidence of rubbish burning on site.

The operations undertaken at this site are not inherently noisy and the location of the buildings on an industrial estate make it unlikely to present a significant potential for noise nuisance.

5.4 WATER AND WASTEWATER

Audit Criteria. Legislative requirements, eg Water Resources Act 1991, section 24 (abstractions) and section 88 (discharges) and relevant Statutory Instruments. Advice by NRA to outside bodies, eg Pollution Prevention Guidance Notes and Pollution Prevention Pays video.

5.4.1 Water Abstraction

There is no abstraction of water at this site.

5.4.2 Wastewater

Wastewater discharges comprise:

- foul drainage from toilets, kitchen, etc;
- boiler draindown and air conditioning unit condensate;
- vehicle washdown effluent; and
- storm-water drainage.

- plant material from grounds maintenance is composted where practicable.

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Photograph 1 A general view of the Darlington Office. The growth of trees in the foreground, planted when the site was developed, has been patchy.

Photograph 2 The storage and dispensing area within the garage/workshop. Containers are held within a galvanised metal tray.

Site Drainage

These wastewaters discharge via a variety of routes; a drainage plan was available for inspection which accurately identified the routes of both surface and foul water and the location of inspection chambers. However, no details of the oil separator installed on the surface water system are available. All inspection chamber covers on the surface and foul water systems have been colour coded recently (red for foul water and blue for surface water), and the directional indicators are apparently correctly located, however, the office should ensure the markings are sufficiently durable.

Discharges to Sewer

Effluent arising from toilets, wash basins, kitchen areas and the sink in the sample storage area discharges to the foul drainage system which connects with the main drain serving the industrial estate. This discharges to the Darlington Sewage Treatment Works operated by Northumbria Water Ltd.

Effluent from the washdown area, marked out by a red line in the yard at the rear of the building, was originally connected to the surface water system but is now diverted to the foul sewer and covered by a trade effluent consent issued by Northumbria Water Ltd. However, it appears that there are occasional discharges of liquid contaminated with disinfectants which are not covered in the trade effluent description and this situation should be regularised. There does not appear to be any monitoring of the quality of this effluent nor any recording of water usage. Discharge from the washdown may exceed the daily volumetric limit of $5m^3$ contained in the consent. (See Section 4.3.2).

Discharges to River

The surface water from the site is collected in a separate system. All run-off water from the building, car parking and yard areas passes through an oil separator (which is thought to be of the by-pass type although no detailed information was available) before connecting to the off-site drainage system which discharges to the south to a minor tributary of the Tees. There is a written maintenance schedule applicable to the separator and associated log sheet, however, this had not been completed for the specified inspection periods. Although the outfall to the stream was not inspected the inspection chamber where the site drainage connected with the main drain was investigated and was dry with no evidence of contamination. All rainwater downpipes are sealed at ground level to prevent contamination.

Discharges to Groundwater

The site is located on Boulder Clay, which due to the occasional presence of sands and gravels is classified as a minor aquifer. However, all surface water from the site is directed to the local stream and there are no discharges to groundwater from this site.

5.4.3 Conclusions

Discharges to the water environment are well controlled. We identified the following good environmental practices:

- the inspection covers are colour coded with directional markers;
- the vehicle washdown is connected to the foul sewer and a trade effluent consent is in place;
- an oil separator is installed;
- a written separator maintenance schedule is in place with associated log sheet; and
- all rainwater pipes are sealed at ground level.

Several issues are identified for further action. We recommend that:

- the drainage plan is updated to include full details of the oil separator;
- the trade effluent consent should be reviewed to ensure the correct description is included and the volumetric conditions accord with actual practice;
- water usage to the vehicle wash area is monitored; and
- the oil separator maintenance programme should be complied with.

5.5 ENVIRONMENTALLY HAZARDOUS SUBSTANCES

Audit Criteria. NRA Environmental Policy for the elimination of toxic substances and emissions where practicable. NRA policy on the elimination of ozone depletors. NRA Guidance in Pollution Prevention Guidelines and in "The Use of Herbicides in or Near Water."

5.5.1 Introduction

A wide range of environmentally hazardous substances, especially oils including gas oil, hydraulic oil, and waste oil are stored on the site with small volumes of other liquids including disinfectant, battery acid, and solvents. Details of all substances stored are contained in the COSHH sheets which are available within the various departments. The environmental impacts associated with environmentally hazardous substances used off-site are covered in Section 5.7.

5.5.2 Storage

Environmentally hazardous materials are located in four locations:

- the oil storage tank bund and yard environs;
- the garage and associated storage rooms at the rear of the offices;
- the cleaners cupboard; and

- the fire extinguishing drench system.

Oil Storage Tank Compound

- **Bulk Oil Tank** The bulk gas oil storage tank serving the site is located in the yard area just outside the garage and adjacent to the southern perimeter fence. The tank provides a refuelling facility for off-site plant. It is believed that the tank has an approximate capacity of 5000 litres, and is surrounded by an adequately sized concrete built bund compound; the internal surface does not appear to be rendered with oil proof render and there is evidence that spillage from the re-fuelling facility is penetrating the concrete. The tank itself bears a stencilled label describing its contents but there is no advisory label showing spillage arrangements or the volume of the tank, and the outlet control valves are not locked. The delivery point is located within the bund area and we were advised that all fuel deliveries are always supervised in accordance with the draft spill procedures (referred to in Section 4.6) and oil absorbents are always available on site. Finally the oil tank itself was showing signs of corrosion around some of the seams at its base.

  The sight gauge is affixed to the tank at the end adjacent to the perimeter fence and is vulnerable to interference from outside the site; a public footpath runs through the adjacent land. Additionally the outlet from the tank and its associated valve is encased within a metal box welded to the tank and would be extremely difficult to access on the occasion of damage to the sight tube. (Photograph 3).

- **Bund Compound** There is no sump within the compound to allow the removal of accumulated rainwater and there is no pump permanently mounted to allow rainwater to be decanted off. We were advised that rainwater is removed regularly by means of a portable pump, however, markings on the inside of the bund wall indicated that the level may be allowed to rise too far on occasions. Also located within the bund compound is a metal cabinet containing the refuelling pipe and fuel meter which are served by gravity feed. At the time of inspection the cabinet was padlocked but the valves controlling the gravity feed were not. The cabinet is sited close to the front containment wall, and, although there is a sign affixed to the door warning users of the dangers of spillage (Photograph 4), there could be a risk of leakage from the pipe-work falling outside the bund. There is also evidence of heavy oil staining, which appears to have seeped through the concrete, on the wall adjacent to the cabinet.

- **Compound Environs** Outside the bund compound, but adjacent to it, there were stored several oil drums (45 gallon size), most of which were empty; all were labelled with the words 'GAS OIL' and are used to transport fuel out to remote sites to refuel plant. These are refuelled via the fill point served by the gas oil tank and although there are draft emergency

Photographs 3 & 4 The bulk oil storage tank; showing sight gauge valve enclosed within a welded box (A), locked refuelling cabinet (B), unlocked feed valve (C), spill refuelling notice (D) and oil staining to the wall (E).

procedures available there is a surface water gully nearby which is vulnerable to spillages both from these activities and deliveries to the main tank. A small metal tray is available for use when refuelling small containers. Although the drums are contained within a kerbed area this is not bunded. Adjacent to this kerbed area is a locked cage which contains various small fuel containers within a metal bund for use with various items of small plant stored within the garage area. (Photograph 5).

Just outside the rear of the building also against the southern perimeter fence is a galvanised metal compound used for the storage of waste oil in labelled 45 gallon drums and various other oil contaminated items. (Photograph 6). These materials are stored here pending removal by an approved waste disposal contractor. Unfortunately the oil is not recycled due to difficulties associated with the quality and variety of waste oils.

Garage and Storerooms

The garage/workshop is used for the storage of small items of plant eg a trailer mounted boat and a mower. Around its edge are several small rooms used by various functions, eg Fisheries, Flood Defence, and Environmental Quality. In one corner of the garage is a store of various types of oil absorbents which are available for use either on site if an emergency occurs or at remote sites; we saw no peat based products. The garage is also used for the storage of liquids including oils and detergents for the vehicle wash. These are either stored in a sealed sump within the floor, which was originally designed as a maintenance pit, or within a galvanised metal tray, located near the main doors and lined with absorbent. (Photograph 2). There are also three large refrigerators used for the storage of water samples and small amounts of chemicals required by the sampling personnel. Affixed to the outside of the door of the chemical storage cabinet are details of the stored chemicals.

Other liquids and chemicals stored in this area include disinfectant and antifreeze in the fisheries store, which are not contained within a protected area. The herbicide Glyphosate (Roundup), complete with detailed advisory literature, is kept in a locked cabinet within the flood defence storeroom and bottles of bleach and other cleaning materials are held within a separate cupboard. Any spillage would be contained within this area.

Cleaners Cupboard

Cleaning materials are stored in a small, tidy under-stair cupboard. The majority of products held are 'own brand' by the cleaning contractor. An examination of the COSHH sheets (expiry date 1-4-95) revealed that many of the products are 'environmentally friendly' incorporating concerns such as biodegradability, as is expected from a contractor operating an Environmental Management System. (See Section 4.5.2). There were no aerosols present.

Photograph 5 A storage area in the rear yard. Drums are stored kerbed but unbunded (A). Small petrol containers are bunded in a locked cage (B).

Photograph 6 Waste oil drums (labelled pollution) stored in the open in the yard in a labelled galvanised metal tray.

Halons

The fire extinguishing drench system in the plant room had the halon replaced with FM200, a non-ozone depleting agent, in March 1995. This is commendable.

5.5.3 Use of Herbicides

It was reported that herbicide use is restricted to the treatment of hogweed in accordance with NRA guidelines. A metered lance is in use to allow accurate spot treatment of weeds.

5.5.4 Conclusions

Significant effort has been made to prevent pollution incidents arising in the site. We identified the following good environmental practices:

- oil absorbents are available on site;
- a draft spill procedure is written;
- all oil drums are labelled with their contents;
- waste oil and oily materials are stored within a bunded area;
- the availability of metal trays to collect oil spillage;
- safe storage of herbicides and use in accordance with NRA guidelines;
- the use of a non-ozone depleting agent in the fire extinguishing system; and
- the completion of COSHH sheets.

Several issues are identified for further action. We recommend that:

- the oil tank installation complies with all the requirements of PPG 2, including full labelling (including the Oil Care sticker) improvement of the sight gauge arrangements, and identifying the extent of corrosion;
- all forms of storage comply with the requirements of our own pollution prevention guidelines, including securing **all** polluting liquid storage facilities, and bunding all external oil drum storage;
- the fuel delivery cabinet is moved further into the compound; and
- a seal should be available to protect the surface water gully near to the refuelling point.

5.6 WASTE MANAGEMENT

Audit Criteria. Duty of Care for the Disposal of Waste, NRA PINs SC/CC/013 and OP/EM/011, best industry practice for the disposal of waste - reduce, reuse, recycle.

5.6.1 Waste Sources

Wastes arising at the facility were identified in the audit and are given in Table 5.

Table 5 Wastes Arising at Darlington Site

	Waste Description	Source	Storage - on Site	Disposal Route
1	General wastes	All of Site	Covered Skip	Landfill
2	Paper	Offices	No specific area	Courier to York Office - recycled
3	Drinks cups	Vending machine	Container by machine	Save-a-Cup recycling scheme
4	Print cartridges	Printer / copier	Sent to IT at Newcastle-no storage information available	
5	Batteries	All of site		Sent by courier to York Office for recycling
6	Pollution control materials	Dales Area; brought to site in NRA vehicles	Stored within metal bunded area in yard	Removed for Landfill by approved contractor - Leigh Environmental
7	Collected pollutants (Drums etc)	Dales Area; brought to site in NRA vehicles	Stored within marked drums in metal bunded area	Removed for Landfill by approved contractor - Leigh Environmental
8	Fish Carcasses	Dales Area; brought to site in NRA vehicles	Stored in freezer	Taken to Public Incinerator at Stockton

5.6.2 Disposal Practice and Compliance

General Waste

General rubbish is deposited in a covered skip located in the centre of the yard; the area around the

skip was clean and tidy. The waste is removed by contractor to landfill. The waste is described as "General Rubbish - Industrial" on the Waste Transfer Notes. We were advised that the disposal arrangements had not been audited as suggested in the Code of Practice on the Duty of Care for the Disposal of Waste.

Paper and Drinks Cups

Waste paper and used drinks cups are recycled from the facility. The amounts are small given the size of the facility and no waste documentation is raised. There is unlikely to be a need for such documentation in view of the "trivial" quantities concerned.

Print Cartridges

These are collected and sent to the IT section at Newcastle for recycling. No details of the documentation is available. The IT section should be able to supply details.

Pollution Control Materials

Oil contaminated absorbent material collected following pollution incidents is stored in a galvanised metal bund compound at the rear of the garage and removed, when appropriate, by Leigh Environmental, a specialist contractor from the approved list and taken to landfill. The Waste Transfer Notes were inspected and found to be in order.

Collected Pollutants - Oil

Waste oil is collected on the site and labelled before removal by specialist contractors for disposal at an approved site. It is not currently recycled because of difficulties with adequate identification and description. Waste Transfer Notes (as specified in PIN SC/CC/013) were checked and found to be in order. However, although the incident procedures handbook is carried on vehicles by the flood defence workforce which contains advice on dealing with clean up operations there is no reference to the NRA document OP/EM/011 dealing with contaminated pollution control equipment.

Fish Carcasses

Occasionally, following fish mortalities, dead fish are collected for either post mortem or disposal. These carcasses are generally transported either to Darlington, where they are temporarily stored in a freezer, or directly to the public incinerator at Stockton. Waste Transfer Notes are completed by the bailiffs who normally carry out this job but none were available for inspection.

5.6.3 Waste Disposal Contractors

Waste disposal contractors are used at the site and at pollution incidents. They are selected on the basis of being "reputable". We found no specification for waste disposal contractors but there is a list of contractors in the Emergency Procedures file. There was no report of any audit being carried out on a contractor removing waste from the site and licences were not always checked, in accordance with the Code of Practice on the Duty of Care for the Disposal of Waste.

There is no policy on the type of waste disposal facility to be used by waste contractors.

The Environmental Protection Principal advised that the arrangements for waste disposal both at the site and arising from pollution incidents is to be reviewed as the last large spill was "very costly".

5.6.4 Procedures and Training

We were advised that the formal procedures for remedial action at pollution incidents are published in a controlled document, entitled Pollution Incident Investigation & Enforcement Response Manual, issued to all relevant personnel. It does not include procedures for the management, handling and proper disposal of any polluting or contaminated material that is collected. Staff are not given training in such procedures other than by suppliers of specialist equipment; training records appeared to confirm this.

5.6.5 Conclusions

Wastes arising at the site are identified and disposed of correctly. We identified the following good environmental practices:

- Waste Transfer Notes satisfactorily completed; and
- recycling schemes in place.

Several issues are identified for further action. We recommend that:

- the handling of waste at the site (and at incidents) is reviewed to ensure continuing compliance with the Waste Disposal Duty of Care;
- procedures issued to pollution control staff include advice on the management of remedial action at pollution incidents that reflects environmental best practice and have a regard for health and safety;
- an approved list of waste disposal contractors is produced for use at incidents;
- training is given to appropriate staff in procedures for the handling and disposal of waste

hazardous chemicals;

- the disposal of site waste is regularly audited, as given in the Code of Practice on the Duty of Care for the Disposal of Waste;
- the NRA considers a policy on the final disposal of waste from NRA sites to ensure best environmental practice; and
- waste oils are recycled where practicable.

5.7 OFF-SITE ACTIVITIES, ENVIRONMENTAL IMPACTS

Audit Criteria. Relevant criteria from earlier sections, viz Waste Disposal, Environmentally Hazardous Substances, Transport, and Land Use.

5.7.1 Introduction

There were four off-site locations inspected during the audit; three maintenance operations carried out by the Flood Defence Internal Business Unit, and an electro-fishing operation undertaken by the Fisheries IBU. These are listed below.

- Weed Cutting on the Lustrum Beck, Stockton, (Flood Defence).
- Grass Cutting on the flood land by the Eller Beck, Stokesley, (Flood Defence).
- Outfall screen clearance on the Lustrum Beck, Tees Estuary, (Flood Defence).
- Electro-fishing on the Old Durham Beck, Durham, (Fisheries).

5.7.2 Flood Defence Operations

The most significant environmental impacts of the flood defence operations, disregarding ecological effects, were identified as:

- waste disposal (general rubbish, weed cuttings, tree cuttings);
- statutory nuisance (noise, smoke); and
- spillage (refuelling, hydraulic leaks).

Lustrum Beck, Stockton

- **Waste Disposal** There were two types of cutting operations in use; 1) manual cutting using a scythe; 2) machine cutting using a Case Poclain tracked vehicle equipped with a long arm and hydraulic cutter. With both techniques the cut weed is removed from the stream and left to lie on the bank. (Photographs 7 & 8). This spoil is exempt from control as 'Directive Waste' by the Waste Management Licensing Regulations, 1994. Any large object retrieved is removed for later disposal.

Photographs 7 & 8 Weed cutting on the Lustrum Beck, Stockton. The site is in a developed area with adjacent paths (A) on the engineered bank top. Weed is deposited within the reach of the excavator on the side of the bank.

- **Spillage - Refuelling** The machine is refuelled via plastic containers of gas oil which are carried in the Land Rover. These are then carried to the machine which has a built in pump and delivery hose arrangement which transfers the fuel into the fuel tank. There are no absorbents kept with the tracked vehicle although these are available on the Land Rover.

  It was reported that refuelling is also carried out using 45 gallon oil drums which are filled at the depot and transported to site in a trailer. This trailer at the moment has no protection provided in case of spillage. It was also reported that plant is never refuelled within a water course, and no drums are left on site overnight in case of vandalism. This is good practice.

- **Spillage - Hydraulic Fluids** Topping up the hydraulic oil is not often required but when necessary biodegradable hydraulic oil carried in the Land Rover is delivered to the cutting machine. The cutting blades are also occasionally greased, especially when maintenance work is required.

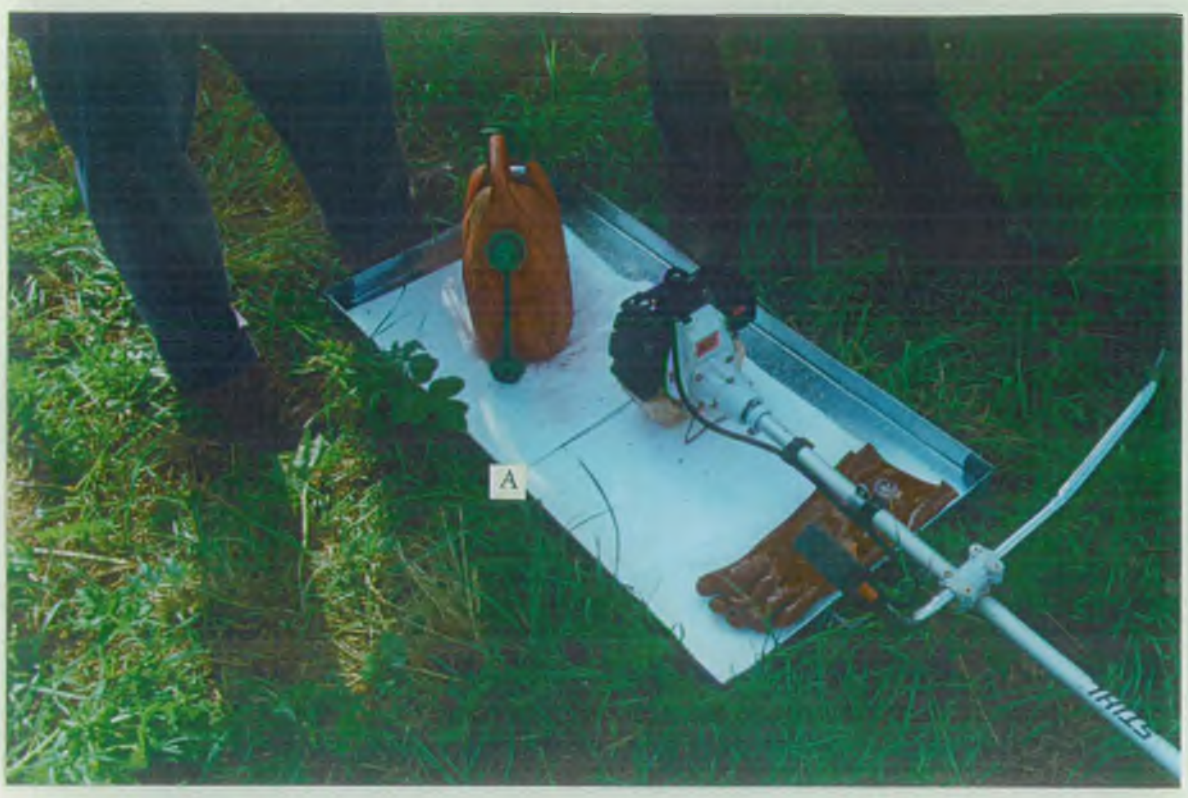
Eller Beck, Stokesley

- **Waste Disposal** Once again there were two operations in use at this site; 1) cutting using hand-held powered strimmers; 2) machine cutting using a tractor with a long arm grass cutting attachment. Standard practice is for all cuttings to be left lying on site.

- **Spillage - Refuelling** Refuelling the strimmer is carried out on site using plastic fuel containers carried in the Land Rover; during refuelling a metal tray lined with absorbent is used in case of any spillage. Refuelling the tractor is also via plastic fuel containers carried in the Land Rover; these are carried to the tractor and oil absorbents are carried in the Land Rover in case of spillage. All liquids are kept neatly in the rear of the Land Rover and the floor is lined with absorbent. (Photographs 9 & 10).

Lustrum Beck, Tees Estuary

- **Waste Disposal** The debris removed from the outfall screen includes vegetable matter and refuse thrown into the river, eg tyres, gas bottles, drums, dead animals, sofas, etc. These various wastes are removed by lorry to landfill in Darlington. Each load has a correctly completed Waste Transfer Note giving the description of the waste as 'river debris'. Some sorting of the rubbish is required since tyres, gas bottles, and dead animals have to be redirected. Carcasses are normally disposed of at knackers yards and tyres, gas bottles, and drums which are not empty are returned to the yard at Darlington for disposal by specialist contractor.



Photographs 9 & 10 Refuelling equipment in use near the Eller Beck, Stokesley. Portable metal tray (A) with absorbent mats, and absorbent mats inside a Land Rover (B).

5.7.3 Fishery Operations - Old Durham Beck

- **Waste Disposal** There are no waste disposal implications attached to this operation.

- **Refuelling** Power for the electro-fishing equipment is supplied by a small 4-stroke generator which is located on the river bank. Although refuelling was not required prior to this particular operation with sufficient fuel already in the tank it was reported that refuelling is carried out on the Land Rover from two 5 litre plastic containers; there were absorbent mats available in case of spillage.

5.7.4 Conclusions

Environmental concerns are well controlled during off-site work. We identified the following good environmental practices:

- no refuelling takes place in a watercourse and no oil drums are left on site overnight;
- oil absorbents and metal trays are available on site during refuelling operations; and
- Waste Transfer Notes correctly completed.

Several issues are identified for further action. We recommend that:

- fuel is transported to sites by bowser or within a protective bund in all but the most exceptional conditions;
- spill procedures are produced, briefed to staff, and displayed in plant and vehicles where practicable; and
- spill absorbents are carried on all large plant that refuel on site.

ANNEX 1

SITE GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

AND

SITE HISTORY

Prepared by

Environmental Assessment group Ltd

for NRA

1.0 SITE DESCRIPTION

1.1 SITE SETTING

The site is located on the Yarm Road Industrial Estate approximately 3.0km east of Darlington City Centre at National Grid Reference NZ 321 146 (see Figure 1).

The site is accessed via the B6280 carriageway (0.75km to the south of the site) and Lingfield Way (which forms the site's western boundary). A stream which flows from south to north, arises approximately 50m north-east of the site, beyond which lies the A66(T) carriageway. To the immediate north and east of the site are fields. Light industrial units are located south and 100m to the south-west of the site. Housing is present 300m north-west of the site, beyond which is a large factory and warehouses. In summary, the site is located in a mixed rural, residential and light industrial area.

1.2 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

1.2.1 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.

1.2.2 Geology

Information on the geological stratigraphy underlying the site was provided by the NRA namely:

- borehole records in the vicinity of the site, provided by BGS Edinburgh.

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

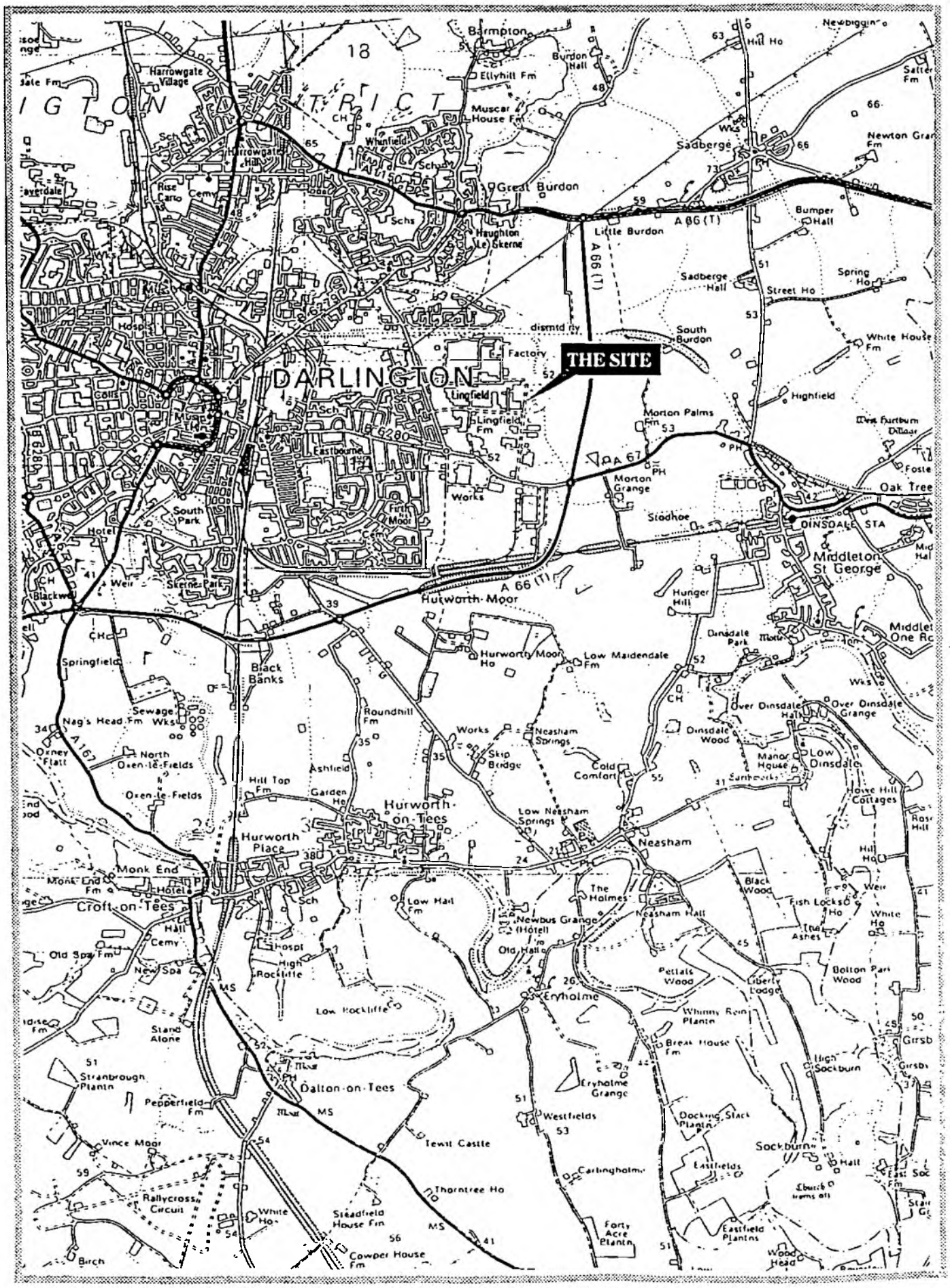
- examination of geological maps published by the British Geological Survey (BGS); and
- review of the Policy and Practice for the Protection of Groundwater, Northumbria and Yorkshire Regional Appendix, published by the National Rivers Authority (NRA).

According to BGS Sheet 33 (Stockton), 1:50,000 Series, and BGS Sheet NZ31NW, 1:10,000 Series, the site is underlain by Boulder Clay (Till) and undifferentiated drift of Glacial (Devensian) Age. The

Figure 1.

SITE LOCATION.

Scale. 1 : 50,000 Date : July 1995 North



site also lies within the recorded extent of laminated clay which is located beneath the Boulder Clay deposits. This is underlain by Permian Upper Marls (Roxby Siltstone Formation) which can attain a thickness of up to 70m and forms part of the Esksdale Group, Permian in age. An outcrop of lake deposits of post-glacial age lie approximately 150m south-east of the site and outcrops of made ground are indicated approximately 120m north of the site.

The Permian Upper Marls are further underlain by Upper Magnesium Limestone (Seaham Formation) which can attain a thickness of up to 20m, which is in turn underlain by Permian Middle Marls (Edlington Formation). The Upper Magnesium limestone formation is a division of the Teeside Group and the Permian Middle Marls formation is a division of the Aislaby Group.

The Boulder Clay comprises a sandy silty clay with occasional sand lenses and is of variable thickness. The Permian Upper Marl is essentially a mudstone with some sandstone bands and the Permian Upper Magnesium limestone is a basal sand, overlain by dolomitic limestones of variable lithology including reef limestones, oolitic and pisolitic dolomites, marls and collapse breccias.

Details of the local geological stratigraphy specific to the site area, was obtained from borehole records obtained from the BGS. Three logs of boreholes excavated approximately 120m north-north-west of the site indicated the following summarised stratigraphic succession:

Borehole - (NZ 3200 4185, 100m West-North-West)

Geological Classification	Strata	Thickness (m)	Depth (m bgl)
Made Ground	Turf	0.05	0.05
Made Ground	Topsoil	0.25	0.3
Made Ground	Made ground - firm to stiff reddish brown to brown locally grey slightly silty sandy clay with occasional sub-angular fine to medium gravel, ash, brick fragments and rare rootlets.	1.5	1.8
Boulder Clay	Firm to stiff brown and grey slightly sandy silty clay with occasional roodets.	0.7	2.5

Geological Classification	Strata	Thickness (m)	Depth (m bgl)
Boulder Clay	Stiff brown locally grey silty clay with occasional sub-angular fine to medium gravel becoming poorly laminated @ 6.5m	4.7	7.2
	Occasional loose to medium brown silty coarse and sand and sub-angular to sub-rounded fine to coarse gravel bands.	0.3	5.9
Boulder Clay	Medium dense brown slightly silty fine to coarse sand with rare sub-angular fine to medium gravel.	2.8	10.0

In summary the underlying shallow geology in the vicinity of the site comprises made ground up to 1.8m thick which is, in turn, underlain by Boulder Clay. However, according to the BGS (Sheet 33, Stockton , 1:50,000) map there is no indication of made ground beneath the site and it is thought that the area of made ground described above is probably confined to the area north of the site (ie. where the boreholes were excavated).

1.2.3 Hydrogeology

According to the information obtained from the borehole records, groundwater strikes were not encountered. However, given that the topographic fall of the area which is to the north, and the direction of flow of the stream located approximately 50m north-east of the site which is also northerly, the predicted flow direction of shallow groundwater would be expected to be towards the north. However, Boulder Clay is generally considered to be an impermeable geological unit, although sand and gravel units which are commonly present are often water bearing and are frequently utilised for locally important water supplies. The Boulder Clay is classified by the NRA as a minor aquifer, and considered to be a locally important.

The underlying Upper Permian Marls are also classified as a minor aquifer, by the NRA, this is largely due to the existence of sandstone units at the top of the sequence which can be utilised for locally important abstractions.

The Upper Magnesium Limestone is a permeable, waterbearing deposit, extensively used for water supply and is classified by the NRA as a major aquifer of regional importance.

Groundwater Abstractions

From consultation with the NRA (Northumbria and Yorkshire Region), there are no licensed groundwater abstractions within 2km of the site.

According to the NRA (Newcastle Office), the site does not lie within a Source Protection Zone, ie. the site is not located in a recharge/catchment area of a public water supply.

Groundwater abstractions for private supply which, on the basis of volume, are exempt from licensing control of the NRA, require registration with the local Environmental Health Department (EHD). Darlington Borough Council informed EAG that according to their knowledge, there are no groundwater abstractions in the vicinity of the site for which they are responsible for monitoring.

1.2.4 Hydrology

The site is located in an area which, topographically, falls towards the north. The site is located at approximately 50m above Ordnance Datum (AOD), as is the nearest stretch of a tributary of the River Skerne, 50m to the north-east (which flows from south to north). The tributary eventually joins the River Skerne, which lies 700m north-west of the site.

Surface waters in England and Wales are classified by the NRA. This classification scheme was changed in 1994 from the National Water Council (NWC) classification scheme to the General Quality Assessments (GQA) classification scheme. The GQA classification is available from map data published by the NRA. The nearby stream is not classified by the NRA and the nearest stretch of the River Skerne is classified as Class D (fair quality).

Surface Water Abstractions

According to information obtained from the NRA, there is only one water abstraction from the River Skerne (located 2km north (up-stream)), which is detailed below.

Grid Reference	Distance & Direction	Licence Holder	Use	Source
1. TZ 320172-317167 2. TZ 317165-316159	2.0km North	H. Dent & Sons	Spray Irrigation	River Skerne

The site is designated as being located outside the floodplain of the River Skerne.

2.2.5 Significance of Geology, Hydrogeology and Hydrology

The site is considered to be located in a sensitive location with respect to the underlying major aquifer. However, there are no groundwater abstractions within 2km of the site and the site does not lie within a designated Source Protection Zone, therefore the aquifer is considered to be moderately sensitive. The underlying major aquifer would also be expected to be afforded significant protection from surface derived contamination by virtue of the presence at least 10m thickness of the low permeability Boulder Clay. Hence overall, the risk to abstracted groundwater resources is considered to be moderately low.

It is expected that shallow groundwater beneath the site (if present) may be in hydraulic continuity with a nearby tributary of the River Skerne and therefore, it is considered that the mobile contaminants arising from the site area, and present in the shallow groundwater could represent a risk to the receiving quality of the water in the nearby tributary and ultimately the River Skerne. In addition, there is one licensed surface water abstraction from the River Skerne for spray irrigation purposes. The abstraction is located approximately 2km "upstream" of the site, and consequently it is not considered a sensitive receptor.

1.3 SITE HISTORY

1.3.1 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.

1.3.2 Historical Development

The historical maps indicated that the site remained in greenfield use up until the construction of the NRA offices in the late 1980s, early 1990s. The historical development is as follows:

- the map of **1871** shows the site and surrounds to be greenfield at that time, with the surrounding area mainly in agricultural use. The Great Northern Railway, aligned east to west, was located 550m north of the site;

- by **1897**, Lingfield Farm was located 500m south-west of the site. There was no change to the site or its surrounds until **1954** when a Cotton Spinning Factory was constructed (Patons and Baldwins Worsted Spilling Mill), with an associated reservoir and pumping house, 300m north-west of the site;

- by **1954**, housing development had taken place 900m west of the site and a number of sports grounds were present 800m to the south-west of the site. Beyond the housing, 1.2km west of the site, was a brickworks and associated clay pit;

- by **1971**, engineering works were located 830m south-west of the site and factories were located 800m south-west of the site (on the former sports ground);

- further light industrial development had taken place by **1982** to the south and west of the site and comprised works, factories, warehouses and depots (of unrecorded specific use). The cotton spinning factory, 300m north-west of the site, was occupied by a depot and two factories by this date (again of unspecified use); and

- Yarm Road Industrial Estate was fully established at the site **1991**.

1.3.3 Local Authority Research

The Waste Regulation Authority (Durham County Council) was contacted regarding the location of landfill sites in the site area. According to the Council's records, there are no operational landfill sites within 500 metres of the site and the site is consequently not considered to be at risk from on-site migration of landfill gases or leachates.

The nearest landfill site is 1.2km south-south-west of the site and was operated prior to licensing (ie. pre 1974), and is now closed. The site received mixed waste, including domestic waste. According to the WRA, there have been problems with landfill gas generation. However, contamination (on-site migration of landfill gas and/or other leachate) from this disused landfill is considered unlikely to affect the site.

A waste transfer depot, operated by Leigh Environmental, lies 50m west of the site. However, this site does not hold a waste management licence.

Darlington Borough Council Planning Department has confirmed that the site was greenfield prior to the construction of the NRA's offices. In addition, the Planning Department has informed EAG that two areas of Local Nature Interest, including the nearby stream (50m north-east of the site) are located approximately 50m north of the site. However, there are no formal nature conservation sites (SSSI's, nature reserves etc) in the site area.

1.3.4 Significance of Site History

The historical research has shown that there have been no former contaminative uses of the site.

The surrounds have included a number of industrial uses, including, in particular, a cotton spinning factory from the 1950s. As a result, there is some potential for contaminated land to be present in the site area although the potential for off-site derived contaminants to migrate on-site will be dependant upon the nature of the contaminants and the presence of permeable strata through which such potential contamination could migrate. Given that the geological sequence beneath the site is predicted to comprise largely clays of relatively low permeability, the potential for the site to be affected by the on-

site migration of contaminants from nearby off-site sources is considered to be low. Such an occurrence cannot be totally discounted without an intrusive investigation to determine the actual ground condition ie. detailed site geology and hydrogeology (especially the occurrence of permeable sand lenses within the Boulder Clay).

1.3.5 Other Issues

The site has no authorizations to operate Part A or B scheduled processes and lies within a smoke control zone[1]. In addition, there have been no complaints about the site (ie. relating to nuisance to neighbours) to the Local Authority.

There are several registered Part B processes and one Part A process in the site area. Protim Solignum Plc. (400m south), operate a timber preservative and damp-proofing chemical manufacturing plant (Part A). It is permitted to hold substantial quantities of various chemicals. Magnet Joinery (500m west) operates a coating process for an incineration process for waste wood (Part B). Rotherham's Pall Mall (500m north-west) operate a treatment process for vegetable matter (cigarette manufacture) which is controlled for odour (Part two). Two coating processes are operated about one kilometre south and south-south-east of the office (Part B).

The site has a trade effluent consent for vehicle washdown, which discharges to Darlington sewage treatment works. There are no consents from the NRA with respect to the site.

According to Darlington Borough Council Environmental Health Department, there have been no noise complaints received about the site. In addition, the EHD has no knowledge of contaminated land in the immediate vicinity, although 600m north-west of the site is a disused coal fired power station.

[1] 1956 Act which allows a local authority to declare the whole or any part of its district a smoke control area where it is an offence to allow smoke emission from a chimney, unless the smoke is caused by the use of an "authorised fuel".

ANNEX 2

TEESDALE HOUSE DARLINGTON

ENVIRONMENTAL POLICY - LOCAL OBJECTIVES

1995/96

Document Prepared by

Area Management

for Darlington Site

TEESDALE HOUSE, DARLINGTON
ENVIRONMENTAL POLICY - LOCAL OBJECTIVES
1995/96

1. MINIMISE RESOURCE USE AND WASTE

ENERGY CONSUMPTION

NATIONAL OBJECTIVE

Reduce energy directly consumed in NRA buildings, labs and transport by 15 % compared with usage in 1991/92.

REGIONAL/LOCAL OBJECTIVE

Reduce energy directly consumed in NRA buildings by 5 % with usage in 1994/95.
(Regionally agreed that figures for 1991/92 are unreliable and 1994/95 be used as base).

LOCAL ACTIONS	DATE/CONTACT	
- Remove tube from light fittings in conference room.	1/6/95	KJ
- Fit new controls and reconfigure heating/water systems .	31/8/95	KJ
- Fit motor load control to freezer unit.	31/7/95	KJ
- Local switch off campaign.	1/7/95	ALL
- Timer switches for copiers.	31/7/95	KJ
- Investigate use of NOVITHERM product for radiators.	31/7/95	CR
- Action ideas generated by staff.	Ongoing	KJ

ENERGY EFFICIENCY AND PUMPING STATIONS

NATIONAL OBJECTIVE

Combine to seek energy efficiency measures in relation to pumping.

REGIONAL/LOCAL OBJECTIVE

Promote any initiatives/actions generated nationally.

REGIONAL /LOCAL ACTION	DATE/CONTACT	
Obtain optimum electricity tariffs for all pumping stations.	Regional	JM

FUEL EFFICIENCY/ ACCIDENT MONITORING/ LOSSES AND DAMAGE TO VEHICLES

NATIONAL /REGIONAL/LOCAL OBJECTIVE

Through the efficient driver training programme:-

- Improve fuel efficiency by 10 %
- Reduce accident costs by 20 %
- reduce losses from theft by 50 %
- Improve driver safety and operational effectiveness
- Introduce effective monitoring of fuel consumption, accident rates, theft.

REGIONAL/LOCAL ACTIONS	DATE/CONTACT	
- Complete efficient driver training programme for badged and leased vehicles.	31/8/95	YM
- All leaseholders to complete fuel monitoring cards and return to managers.	After training.	ALL
- All managers to monitor fuel consumption for. leased vehicles.	After training.	ALL
- Continue to report Nationally on fuel consumption and accidents.	Ongoing	OD TE
- Introduce a mechanism for reporting fuel consumption for badged vehicles on a departmental basis.	20/9/95	OD
- Continue to report insurance claims to DAMT	Ongoing	TE
- Introduce system for reporting statistics on Thefts to RMT	31/8/95	TE
- Increase security awareness.	Ongoing	CR

DIESEL IN BADGED VEHICLES

NATIONAL/REGIONAL/LOCAL OBJECTIVE	DATE/CONTACT	
Achieve 95% diesel vehicles in badged fleet.	Ongoing.	JS

STATIONERY

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Reduce consumption of stationery (excluding paper) by an additional 5% compared with 1994/95.

LOCAL ACTIONS	DATE/CONTACT	
- Monitor expenditure/consumption. Publish on notice boards on a quarterly basis.	31/7/95	KJ
- Promote local initiatives for reducing consumption.	Ongoing	KJ
- Develop a strategy for reducing consumption/expenditure.	31/8/95	CR
- Action ideas generated by staff.	Ongoing	KJ

PAPER RECYCLING

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Recycle at least 60 % of paper used.

LOCAL ACTION	DATE/CONTACT	
- Continue to use/promote current arrangements for recycling paper.	Ongoing	KJ
- Action ideas generated by staff.	Ongoing	KJ

PAPER

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Ensure that all paper purchased for internal use and printing is recycled paper, totally chlorine free and has a minimum of 50% C or D class of post consumer waste.

LOCAL ACTION	DATE/CONTACT	
Continue to use National contracts for all paper purchased.	Ongoing	KJ

RECYCLING SYSTEMS

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Implement, where practicable, systems for recycling plastics, tyres, batteries, bottles and corporate clothing.

LOCAL ACTIONS	DATE/CONTACT	
- Continue with/promote current recycling initiatives :-	Ongoing	ALL
- Waste paper (Area)		
- Batteries (Region)		
- Aluminium cans (Area)		
- Tyres (Area)		
- Plastic cups (Area)		
- Toner cartridges (Region)		
- Uniforms (Region)		
- Investigate possibility of recycling:-	30/9/95	KJ
- Sample bottles		
- Glass bottles.		
Action accordingly.		
- Action ideas generated by staff.	Ongoing	KJ

WATER CONSUMPTION

NATIONAL OBJECTIVE

Reduce water consumption by 10% over that used in 1991/92

REGIONAL/LOCAL OBJECTIVE

Aim to reduce by 5 % over 1994/95 use.
(Regionally agreed that figures for 1991/92 are unreliable and 1994/95 be used as base).

LOCAL ACTIONS	DATE/CONTACT	
- Switch flush controls on urinals to minimum flow.	1/6/95	KJ
- Place brick in all toilet cisterns.	30/6/95	KJ
- Confirm effectiveness of current urinal controls and action as appropriate.	31/7/95	KJ
- Investigate means of reducing waste from vehicle wash and action as appropriate.	30/11/95	KJ
- Action ideas generated by staff.	Ongoing	KJ

2. MINIMISE OR ELIMINATE PRACTICES KNOWN TO BE HARMFUL

RED/BLACK LIST SUBSTANCES

NATIONAL OBJECTIVE

Implement policy on use of red/black list substances from April 1994.

REGIONAL/LOCAL OBJECTIVE

Promote any initiatives/actions generated nationally.

REGIONAL/LOCAL ACTIONS	DATE/CONTACT	
- Contact EP Unit to obtain specific targets. Action accordingly.	Regional	JM
- Purchase water based Tip-Ex.	Ongoing	KJ

HARDWOOD POLICY

NATIONAL OBJECTIVE

Develop hardwood policy for NRA structures and flood defences.

REGIONAL/LOCAL OBJECTIVE

Promote any initiatives/actions generated nationally.

REGIONAL/LOCAL ACTIONS	DATE/CONTACT	
Contact EP Unit to obtain specific targets. Action accordingly.	Regional	JM

OZONE DEPLETION

NATIONAL OBJECTIVE

Implement policy to phase out the use of ozone depleters from April 1994.

REGIONAL/LOCAL OBJECTIVE

Promote any initiatives/actions generated nationally.

REGIONAL/LOCAL ACTIONS	DATE/CONTACT	
- Contact EP Unit to obtain specific targets. Action accordingly.	Regional	JM
- Eliminate Halon fire extinguisher systems in telecommunication rooms.	Regional	JM
- All new fridges purchased to be Halon free.	Ongoing	ALL
- Eliminate Halon fire extinguishers from use in NRA vehicles. (Maintenance contracts are impemenfing this requirement).	Ongoing	JS

TROPICAL HARDWOODS

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Eliminate the use of tropical hardwoods in office furniture.

LOCAL ACTIONS	DATE/CONTACT	
Ensure that all new furniture is not made from tropical hardwood.	Ongoing	KJ .

3. ESTABLISH EFFECTIVE SYSTEMS AND PROCEDURES TO SUPPORT IMPLEMENTATION OF THE ENVIRONMENTAL POLICY

POLLUTION RISK AUDITS

NATIONAL /REGIONAL/LOCAL OBJECTIVE

Implement the findings from the pollution risk audit of NRA sites.

LOCAL ACTION	DATE/CONTACT	
Review sites bi-annually to ensure continued compliance.	31/5/95	GH
	31/10/95	GH

SITE AUDITS

NATIONAL OBJECTIVE

Continue with audit programme introduced in April 1994.

REGIONAL/LOCAL ACTIONS

- Provide support for National Audit team prior to and during any site audit.
- Implement action points arising from any site audit. (At the site and at other sites in the Region/Area).

ENVIRONMENTAL STEERING GROUP

NATIONAL/REGIONAL OBJECTIVE

Establish Environmental Steering Group liaison with contract development programme.

LOCAL ACTION

Promote any initiatives/actions disseminated by the national group.

MONITORING ARRANGEMENTS

NATIONAL/REGIONAL/LOCAL OBJECTIVE

Implement improved monitoring systems.

LOCAL ACTION	DATE/CONTACT	
- New reporting structure in place and effective from 1/6/95.	31/5/95	CR
- Ensure all data is reported on time.	Ongoing	JL/ CR

STAFF AWARENESS

NATIONAL/REGIONAL /LOCAL OBJECTIVE

To develop and implement a proactive promotion and education campaign to heighten staff awareness of the policy.

LOCAL ACTIONS	DATE/CONTACT	
- Set up EP notice board to supplement work of REPAC, Business Support Officer and Site Responsible Officer. The board will be used to :-	1/6/95	KJ

- Confirm who's who.
- Publicise Regional/local objectives.
- Publicise current recycling initiatives.
- Publicise performance.
- Provide focus for generating ideas and obtaining feedback on the application of current initiatives.
- Publicise good/bad practices at the site.

Notice Boards are usually boring. Nobody reads them These boards may start off boring but watch this space. The aim is to get the message across by introducing a bit of humour.

- Ensure that all staff have one EP performance objective.	31/8/95	ALL
- Make more effective use of local Team Talk to promote best practices/initiatives.	Ongoing	CR
- Action ideas generated by staff.	Ongoing	KJ

GROUND MAINTENANCE

NATIONAL OBJECTIVE

Develop and implement a ground maintenance programme.

REGIONAL/LOCAL OBJECTIVE

Implement National programme when developed.

LOCAL ACTIONS

-	Continue to ensure that :-		
-	Peat based products are not used on site.	Ongoing	SY
-	Tropical hardwoods not used on site.	Ongoing	KJ
-	Substances used for weed control are environmentally friendly.	Ongoing	SY
-	Consider recycling waste from ground maintenance works. Action accordingly.	1/8/95	SY

PAUL TULLETT
DALES AREA GENERAL MANAGER

ANNEX 3

REQUIREMENTS FOR A SITE'S ENVIRONMENTAL SYSTEM

COMPARED WITH

BEST MANAGEMENT PRACTICES

1.0 BEST ENVIRONMENTAL MANAGEMENT PRACTICE

1.1 INTRODUCTION

The following is a guide to Best Management Practice at any location within the NRA. It is not intended to reflect actions that have or have not occurred at Darlington. 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 tasks that should be considered to effectively manage and monitor a site's 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 site's activities and significant environmental effects;
- states the relevant environmental targets and allocates responsibilities for their achievement;
- states the site's 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 site's 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 is integrated into the overall framework of existing business and quality management site systems.

3.2 RECOMMENDATIONS

The establishment and implementation of a site environmental management organisation. The site environmental organisation should 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;

The incorporation of environmental responsibilities and performance measurements within existing personnel system documentation, eg. job descriptions.

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 site's effectiveness will be measured and reported to executive management; other personnel, to ensure that they can make an appropriate contribution to the site's 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

The 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, in particular duty of care;
- 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 site's significant environmental effects. The objectives and targets must ensure that all relevant legislative and regulatory requirements and complied with.

The site's 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 site's objective/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.

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:

- compliance with the NRA Pollution Prevention Checklist;
- 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;
- specification of goods and materials in accordance with the Environmental Procurement Policy.
- compliance with project management guidelines, in particular Annex E.

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.

Most NRA sites do 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.